



Baker City Municipal Airport



2024 AIRPORT MASTER PLAN

**AIRPORT MASTER PLAN
FOR
BAKER CITY MUNICIPAL AIRPORT (BKE)
CITY OF BAKER CITY
Baker City, Oregon**



**SUBMITTED TO
FEDERAL AVIATION ADMINISTRATION
SEATTLE AIRPORTS DISTRICT OFFICE
AND
OREGON DEPARTMENT OF AVIATION (ODA)**

PREPARED BY



2024

The preparation of this document may have been partially paid for through an Airport Improvement Program (AIP) planning grant from the Federal Aviation Administration as provided under Title 49 U.S.C., § 47104 (AIP Project No. 3-41-0005-021-2022). The contents do not necessarily reflect the official views or policies of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States government to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable or would have justification in accordance with appropriate public laws.

CONTENTS

1

Executive Summary

Provides a brief summary of the contents and purpose of this report.

2

Introduction

Outlines each element of the master plan and provides the context necessary to understand its goals and objectives.

3

Airport Overview

Provides an overview of the airport's location and history as well as the economy and demographics of the surrounding area.

4

Inventory

Introduces all of the major airport components, structures, and pavements and includes a detailed wind analysis.

5

Forecast

Provides a forecast of the anticipated aviation demands at the airport for the next two decades.

6

Facility Requirements

Describes FAA design and safety standards relative to the existing condition of the runways, taxiways, and other facilities.

7

Development Alternatives

Identifies and evaluates potential alternatives for meeting the needs of the airport and its users.

8

Environmental Overview

Presents environmental factors the airport will need to take into consideration as part of any proposed development.

9

Airport Layout Plan

The airport layout plan is a set of drawings that depicts the current facilities along with recommended improvements.

10

Implementation Plan and Financial Analysis

Reviews the planned improvement projects in conjunction with the FAA Capital Improvement Plan.

11

Planning For Compliance

Discusses the obligations and grant assurances the airport must comply with when accepting FAA-administered grant assistance.

12

Sustainability and Recycling

Discusses sustainability requirements and recommendations for recycling and solid waste management.

13

Glossary

Explains many of the aviation terms and abbreviations commonly used throughout this airport master plan.

Photo:

View of the Picturesque Wallowa Mountains From Taxiway A.

Table of Contents

1 Executive Summary

Overview and Findings..... 1-2
Public Involvement 1-2
Proposed Development Summary 1-3

2 Introduction

FAA Role in Airport Master Plans..... 2-2
Purpose of Airport Master Plans..... 2-3
Objectives of Airport Master Plans 2-3
Elements of Airport Master Plans 2-4

**3
Airport Overview**

| | |
|------------------------------|------|
| Introduction | 3-1 |
| Regional Setting | 3-2 |
| Regional Environment | 3-3 |
| History of the Airport..... | 3-5 |
| The Airport Today | 3-7 |
| Airport System Planning..... | 3-9 |
| Land Use Planning | 3-11 |
| Economic Impact..... | 3-15 |
| Socioeconomic Overview..... | 3-17 |

**4
Inventory**

| | |
|--|------|
| Introduction | 4-1 |
| Airport Layout..... | 4-1 |
| Airspace | 4-3 |
| Instrument Approach Procedures..... | 4-5 |
| Airfield and Airside Facilities | 4-10 |
| Landside and Landside Facilities | 4-23 |

**5
Forecast**

Introduction 5-1
Existing Aviation Activity and Forecast Summary 5-2
Historical Aviation Activity 5-5
Review of Previous Forecasts..... 5-7
Factors Affecting Aviation Activity..... 5-10
Aviation Forecast Methodologies..... 5-16
Sources of Data..... 5-17
Aircraft Operations..... 5-18
Based Aircraft..... 5-21
Fleet Mix..... 5-23
Critical Aircraft 5-24
Forecast Evaluation 5-26

**6
Facility Requirements**

Summary of Facilities and Recommendations 6-2
Airport Design and FAA Standards 6-4
Airport Airspace..... 6-10
Instrument Approach Procedures..... 6-13
Airfield Facilities 6-14
General Aviation Facilities..... 6-37
Air Cargo Facilities 6-38
Support Facilities 6-39
Land Use Requirements, Policies, and Regulations.... 6-42
Baker City Strategic Vision & Comprehensive Plan.... 6-43
Primary Management & Compliance Documents 6-44
Emerging Trends..... 6-44

**7
Development Alternatives**

Alternative Development 7-2
Evaluation and Selection of the Preferred Alternative 7-6
Conclusion 7-8

**8
Environmental Overview**

The Environmental Review Process 8-2
Environmental Overview Summary 8-3
Resources Not Affected 8-4
Air Quality 8-4
Biological Resources 8-5
Climate 8-8
Department of Transportation Act, Section 4(f) 8-9
Farmlands 8-11
**Hazardous Materials, Solid Waste,
and Pollution Prevention 8-12**
**Historical, Architectural, Archeological,
and Cultural Resources 8-14**
Land Use 8-17
Natural Resources and Energy Supply 8-18
Noise and Noise Compatible Land Use 8-19
**Socioeconomics, Environmental Justice,
and Children’s Health & Safety Risks 8-22**
Visual Effects 8-25
Water Resources 8-26

9
Airport Layout Plan

Airport Layout Plan Drawing Set 9-2
Sheet 1: Title Sheet..... 9-2
Sheet 2: Airport Data Sheet 9-2
Sheets 3A–3B: Airport Layout Plan 9-3
Sheet 4: Airport Airspace 9-3
Sheets 5A–5B: Runway Profile 9-3
Sheets 6A–6C: Inner Portion of Approach Surface 9-3
Sheets 7A–7C: Runway Departure Surfaces..... 9-3
Sheet 8: Terminal Area..... 9-3
Sheet 9: Airport Land Use 9-3
Sheet 10: Photo and Contours 9-3
Sheet 11: Exhibit ‘A’ 9-4
Airport Layout Plan Changes..... 9-4

10
Financial Analysis and Implementation Plan

Capital Improvement Plan 10-2
Development Phasing Plan..... 10-2
Airport Funding Sources 10-11
Revenue Enhancement 10-13
Financial Feasibility..... 10-13
Summary 10-14

**11
Planning For Compliance**

Grant Agreements and Sources of Obligations..... 11-2
Federal Grant Assurances 11-2
Complaint Resolution 11-5
Compatible Land Use 11-5
Compliance at Baker City Municipal Airport..... 11-6
Summary 11-6

**12
Sustainability and Recycling**

Sustainability 12-1
Legislative Background 12-2
Types of Airport Waste..... 12-3
Airport Recycling, Reuse, & Waste Reduction Plan ... 12-4
Summary 12-7

13

Glossary of Terms

**Common Terms, Abbreviations,
Acronyms, and Initialisms 13-1**

Appendices

Appendix A: Community Engagement A-1
Appendix B: FAA Forecast ApprovalB-1
Appendix C: Cultural Resources SurveyC-1
Appendix D: Airport Layout Plan.....D-1

EXECUTIVE SUMMARY



| | |
|------------------------------------|-----|
| Overview and Findings | 1-2 |
| Public Involvement | 1-2 |
| Proposed Development Summary | 1-3 |



TABLES

Table 1.1: Public Involvement Meetings 1-2

CHAPTER ONE

SUMMARY

The Federal Aviation Administration (**FAA**) recommends that public-use airports prepare a new airport master plan every five to ten years or as often as necessary to address significant changes in local aviation conditions. The previous airport master plan for Baker City Municipal Airport (**BKE**) was completed in May 2010 by Aron Faegre & Associates and had a base year of 2008. The purpose of this 2024 Airport Master Plan is to evaluate the airport's current capabilities and role, forecast future aviation demand, and to plan for the timely development of new or improved facilities that may be required. The ultimate goal of this planning document is to provide guidance for the airport's overall maintenance, development, and operation. This airport master plan is intended to provide a strategy to accommodate future airport demand in a safe, cost-effective, operationally efficient, and flexible manner.

The 2024 Airport Master Plan was completed by Ardurra on behalf of the airport sponsor, the City of Baker City. It was prepared in accordance with FAA requirements, including Advisory Circular 150/5300-13B, *Airport Design*, and Advisory Circular 150/5070-6B, *Airport Master Plans*, and all other applicable rules, standards, and regulations.



1.1. Overview and Findings

The main findings of the 2024 Airport Master Plan were developed as part of the planning process and are based on input received during the public involvement process. These findings include the following:

- For this planning period (2021–2041), the FAA-approved forecast indicates total operations are expected to increase from 16,900 in 2021 to 20,959 in 2041.
- Based aircraft are expected to increase from 43 in 2021 to 65 in 2041.
- The existing critical aircraft was determined to be category B-I small represented by the Cessna Citation CJ1, and the future critical aircraft was determined to be category B-II small represented by the Beechcraft King Air 260.
- A future need for 16 additional hangars was identified.
- Taxiway geometry revisions are needed to comply with current design standards.
- Runway 8/26 and Runway 17/35 are not eligible to receive FAA funding for maintenance. Due to the condition of the Runway 8/26 pavement, the preferred alternative included decommissioning Runway 8/26 in order to distribute resources to operate Runway 17/35.
- Water and sewer infrastructure should be added to future airport development.

1.2. Public Involvement

Public involvement consisted of both traditional, in-person meetings and virtual meetings to allow as much community participation as possible. As shown in [Table 1.1](#), public involvement also included a technical advisory committee (TAC) and a series of public presentations and workshops held at City Hall.

Table 1.1: Public Involvement Meetings

| Type of Meeting | Meeting Date |
|---------------------------------|--------------------|
| Technical Advisory Committee #1 | September 29, 2022 |
| Public Meeting #1 | September 29, 2022 |
| Technical Advisory Committee #2 | April 26, 2023 |
| Public Meeting #2 | June 7, 2023 |
| Technical Advisory Committee #3 | October 31, 2023 |
| Public Meeting #3 | December 6, 2023 |

1.3. Proposed Development Summary

The major development projects planned for the 20-year planning period are discussed in **Chapter 10, Implementation**. Total improvements for the 20-year planning period are estimated to be more than \$41.1 million with at least \$13.6 million expected to be funded locally, primarily by private investment, and includes the following projects.

- Decommission Runway 8/26 and repurpose it to a taxiway leading to new aviation development.
- Phased reconfiguration of the taxiway system.
- Hangar and pavement expansion in the terminal area.
- Adding a grass operating and tie-down area.
- Adding new water wells and septic drain fields.
- Adding airport access roads.
- Phased scheduled pavement maintenance of the runways, taxiways, and apron areas.
- Land acquisition of west side parcels for airport development and land-use compatibility.

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INTRODUCTION

2

| | |
|---|------------|
| Federal Aviation Administration Role in Airport Master Plans | 2-2 |
| National Plan of Integrated Airport Systems | 2-2 |
| Airport Improvement Program | 2-2 |
| FAA Design Standards..... | 2-3 |
| Purpose of Airport Master Plans | 2-3 |
| Objectives of Airport Master Plans | 2-3 |
| Elements of Airport Master Plans | 2-4 |
| 2024 Airport Master Plan Elements | 2-4 |
| Public Involvement..... | 2-5 |



FIGURES

| | |
|--|-----|
| Figure 2.1: Airport and Airway Trust Fund..... | 2-2 |
| Figure 2.2: Airport Master Plan Process..... | 2-4 |

CHAPTER TWO

INTRODUCTION

An airport master plan is the process of establishing an airport's blueprint for long-term development. It is a comprehensive study of the airport to determine an effective plan for future airport development. It helps to ensure the airport will be able to continue to meet the needs of its customers and that development is consistent with local, state, and national planning goals. This includes identifying potential environmental and socioeconomic impacts of airport development projects. An airport master plan is an important step in helping the airport be financially and socially responsible and operate as efficiently as possible.

Airports should update their long-term planning documents every five to ten years in order to identify and respond to emerging national, statewide, and local trends expected to affect the airport. The last master plan for Baker City Municipal Airport (**BKE**) was completed in 2010 and had a base year of 2008. This airport master plan study is being undertaken to evaluate and document the airport's current capabilities and facilities, identify its role in both the national and state aviation systems, and to develop a forecast of aviation demand in order to plan for the timely development of improved or new facilities that may be required to meet that demand. This airport master plan is intended to be a proactive document that also provides guidance for funding future development projects.



2.1. Federal Aviation Administration Role in Airport Master Plans

Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, provides guidance for the preparation of airport master plans. The intent of this guidance is to provide planning requirements for airports ranging in size and function from small general aviation to large commercial service facilities. This guidance also allows for each master plan to be customized to meet the specific needs of the airport and the surrounding community.

While the FAA does review all elements of an airport master plan to ensure that sound planning techniques have been applied, it only approves the forecast and the airport layout plan. FAA approval is required for these elements because the agency uses them to help determine the airport’s eligibility for grant funding of proposed development. Additionally, the FAA Seattle Airports District Office (ADO) project manager will interact with the planning team throughout the master planning process and will provide the planning team with additional direction and guidance as needed.¹

2.1.1. National Plan of Integrated Airport Systems

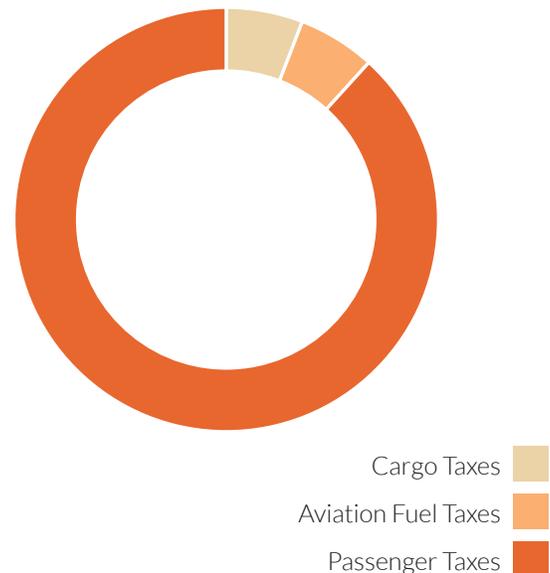
The National Plan of Integrated Airport Systems (NPIAS) identifies the nearly 3,300 public-use airports included in the national airport system, the roles they currently serve, and the amounts and types of airport development eligible for federal funding under the Airport Improvement Program.² NPIAS and the airport’s role in the national aviation system are discussed in more detail in [Chapter 3](#).

2.1.2. Airport Improvement Program

The Airport Improvement Program (AIP) is administered by the FAA to provide grants to public agencies for the planning and development of public-use airports included in the NPIAS. For general aviation airports, like BKE, these grants typically cover between 90-95% of eligible costs for planning and development projects. To be eligible, projects must be related to enhancing airport safety, capacity, security, or environmental concerns. These typically include airfield construction and rehabilitation, airfield lighting and signage, navigational aids, and land acquisition as well as planning and environmental studies. Certain professional services that are necessary for eligible projects, such as planning, surveying, and design, can also be eligible.³

The AIP is funded by the Airport and Airway Trust Fund (AATF). As shown in [Figure 2.1](#), the AATF is supported by taxes on ticket sales, taxes on air cargo and airmail, and taxes on aircraft fuel.⁴ The preparation of the 2024 Airport Master Plan has been partially paid for through an AIP grant.

Figure 2.1: Airport and Airway Trust Fund



Source: FAA, Airport & Airway Trust Fund (AATF).

a. Grant Assurances and Obligations

Airports sponsors that accept AIP funds must also agree to certain obligations and conditions referred to as grant assurances. These assurances require the airport to maintain and operate their facilities safely and efficiently. This includes having an up-to-date and approved ALP on file with the FAA.⁵ These obligations and grant assurances are discussed in more detail in [Chapter 11, Planning For Compliance](#).

2.1.3. FAA Design Standards

The FAA uses the advisory circular (AC) system to provide guidance to the aviation community regarding acceptable methods, procedures, and practices for complying with airport design standards, recommendations, and requirements as well as any other FAA rules and regulations. This system allows airport planners and engineers to identify design criteria for nearly every aspect of an airport.⁶ Several ACs are used and referenced throughout this airport master plan. However, AC 150/5070-6B, *Airport Master Plans*, and AC 150/5300-13B, *Airport Design*, are two of the most relevant. FAA design standards are discussed in more detail in [Chapter 6, Requirements](#).

a. Critical Aircraft

A key determination of any airport master plan is the identification of the critical aircraft. The critical aircraft is the most demanding aircraft, or a family grouping of aircraft, with at least 500 annual operations. Identification of the critical aircraft is important because it is used to establish the FAA design standards that will be used for airfield facilities. These standards are based on the physical requirements of the critical aircraft and are used to determine several aspects of airport design such as runway and taxiway dimensions. For airports such as BKE where the infrastructure must support a wide range of aircraft and operations, it is wise to identify separate critical aircraft for the different areas of operations.⁷ The critical aircraft is discussed in [Chapter 5, Forecast of Aviation Demand](#).

2.2. Purpose of Airport Master Plans

The purpose of an airport master plan is to provide airport personnel with a longterm strategy for maintaining its important role within the national, state, and regional transportation systems. To serve as an effective planning guide, it should determine future aviation demand, identify and prioritize future development needed to maintain the safe and efficient operation of the airport, and provide justification for these projects. It should also include a realistic schedule for project implementation as well as a capital improvement program (CIP) that identifies potential federal, state, and local sources for funding.⁸

2.3. Objectives of Airport Master Plans

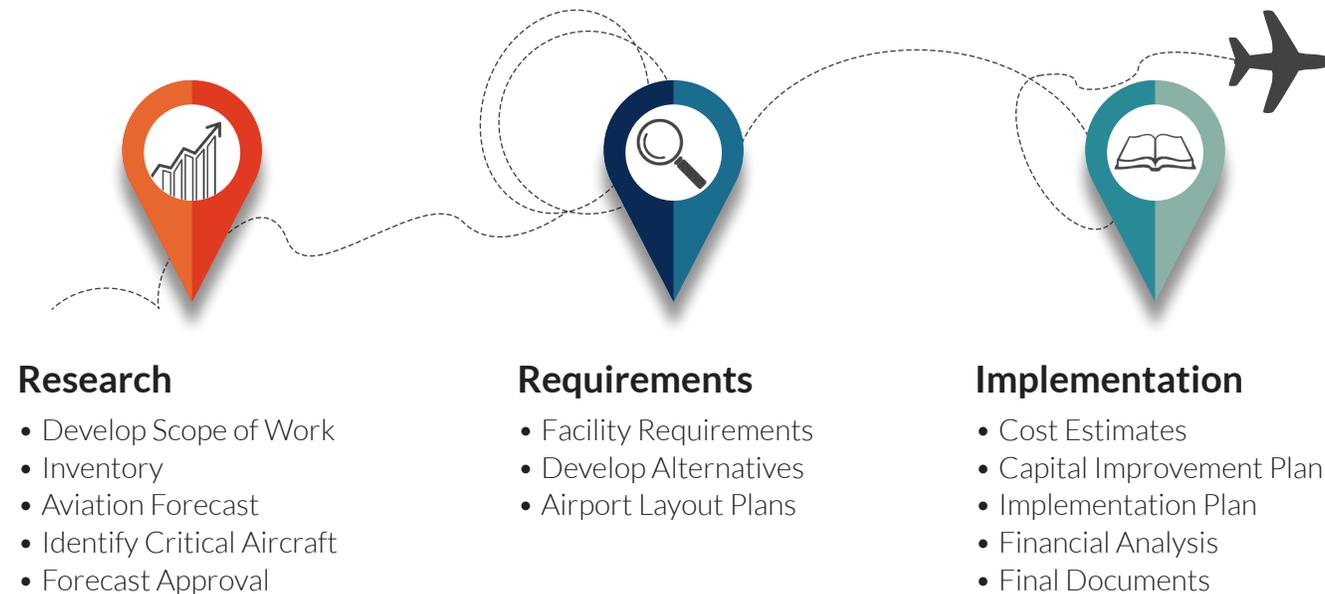
In general an airport master plan should meet the following objectives:

- Understand the issues, opportunities, and constraints of the airport.
- Consider the impact of aviation trends.
- Identify the capacity of existing airport infrastructure.
- Determine need for airport improvements.
- Obtain stakeholder and public input.
- Estimate project costs and funding sources.
- Develop a schedule for project implementation.⁹

2.4. Elements of Airport Master Plans

While the elements of an airport master plan are guided by the FAA, they vary in detail and complexity depending upon the size, function, and issues of each airport. As shown in **Figure 2.2**, these elements build upon each other throughout the planning process.

Figure 2.2: Airport Master Plan Process



Source: Ardurra.

2.4.1. 2024 Airport Master Plan Elements

The 2024 Airport Master Plan includes the following elements:

Airport History and Overview

Provides an overview of the airport’s location and history as well as the economy and demographics of the surrounding area.

Inventory

Identifies the airspace surrounding the airport as well as the existing instrument approach procedures. It also documents the condition of all airport facilities and pavements.

Forecast

Identifies existing aviation activity and provides a forecast of the anticipated aviation demand at the airport for the next two decades.

Facility Requirements

Describes design and safety standards relating to the condition of runways, taxiways, and other facilities.

Development Alternatives

Identifies and evaluates potential alternatives for meeting the needs of the airport and its users.

Environmental Overview

Presents environmental factors the airport will need to take into consideration as part of proposed projects.

Airport Layout Plan

A set of technical drawings that depict airport facilities and recommended improvements. It includes all of the airport's major components (e.g., runways, taxiways, and aprons) and all applicable FAA design standards.

Implementation Plan and Financial Feasibility Analysis

Provides a proposed schedule for each of the projects recommended in the master plan and includes a capital improvement plan that identifies potential sources of funding.

Planning For Compliance

Discusses the obligations and grant assurances the airport must comply with when accepting FAA-administered grant assistance.

Sustainability and Recycling

Discusses sustainability requirements and recommendations for recycling and solid waste management.

2.4.2. Public Involvement

Every airport master plan includes a public involvement program. The level of public involvement typically corresponds to the complexity of the airport and the project as well as community interest. Effective public involvement connects numerous stakeholders such as aircraft owners, hangar tenants, and local businesses owners with public officials, airport planners, and government agencies. Public input is highly encouraged throughout the planning process. However, public involvement has its greatest impact during the early stages of the planning process when planners are better able to respond to concerns and incorporate feedback received from the community. A public involvement program typically includes several methods for the planning team to keep the community informed as well as receive comments and suggestions throughout the master planning process.

Technical Advisory Committee

These typically include forming a technical advisory committee (**TAC**). Committee members typically have a high level of technical competency associated with some aspect of aviation or airport operations and are stakeholders in the airport's operation.

Public Information Meetings

Public meetings or open houses with interactive information stations staffed by members of the planning team can be a very effective method of engaging the public and stakeholders in soliciting feedback on development options. The formality of these meetings can vary depending on the complexity of the study as well as the needs of the community. Due to the COVID-19 pandemic, public meetings evolved from traditional, in-person meetings to virtual or hybrid formats.

Public Awareness Campaign

An effective public awareness campaign is an essential part of an effective public involvement program. It is helpful in generating stakeholder involvement and maintaining stakeholder interest throughout the planning process as well as keeping the community informed. Aspects of a public awareness campaign can include fliers, fact sheets, press releases, newspaper ads, and general information packets. Additionally, websites with interactive or self-guided presentations as well as electronic copies of the airport master plan are becoming an increasingly popular part of public awareness campaigns.

An extensive public involvement program was developed and implemented for the 2024 Airport Master Plan. Details regarding this program are included in **Appendix A: Community Engagement Summary**.

Endnotes

- 1 U.S. Department of Transportation. Federal Aviation Administration. "Advisory Circular 50/5070-6B, Airport Master Plans." January 27, 2015. https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_150_5070-6B_with_chg_1&2.pdf.
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- 9 Ibid.

AIRPORT OVERVIEW AND SOCIOECONOMIC INFORMATION



| | |
|--|-------------|
| Introduction | 3-1 |
| Regional Setting..... | 3-2 |
| Baker City..... | 3-2 |
| Baker County..... | 3-2 |
| Regional Environment | 3-3 |
| Geology | 3-3 |
| Soil..... | 3-3 |
| Vegetation..... | 3-3 |
| Climate..... | 3-3 |
| History of the Airport..... | 3-5 |
| Recent Airport Development | 3-7 |
| The Airport Today..... | 3-7 |
| Airport Administration..... | 3-7 |
| Federal Oversight..... | 3-7 |
| Airport Location | 3-7 |
| Ground Access..... | 3-9 |
| Airport System Planning | 3-9 |
| National Plan of Integrated Airport Systems | 3-9 |
| Oregon Airport System Plan..... | 3-10 |
| Local Airport Planning..... | 3-11 |
| Land Use Planning | 3-11 |
| Oregon Department of Aviation Land Use Compatibility Guidebook | 3-11 |
| County Land Use Protections | 3-12 |
| City Land Use Protections | 3-14 |

| | |
|---|-------------|
| Economic Impact..... | 3-15 |
| Economic Impact of Oregon Airports..... | 3-15 |
| Economic Impact of Oregon’s General Aviation Visitors | 3-16 |
| Economic Impact of Baker City Municipal Airport..... | 3-16 |
| Socioeconomic Overview..... | 3-17 |
| Population Rates | 3-17 |
| Household Income | 3-17 |
| Top Industries by Employment..... | 3-17 |
| Top Industries by Earnings..... | 3-19 |
| Unemployment Rates..... | 3-19 |

TABLES

| | |
|--|-----|
| Table 3.1: Recent Airport Development, 2010–2021 | 3-7 |
|--|-----|

FIGURES

| | |
|--|------|
| Figure 3.1: Airport Location and Vicinity Map | 3-2 |
| Figure 3.2: Average Temperatures, Precipitation, and Snowfall..... | 3-4 |
| Figure 3.3: Barnstormers at Baker City, circa 1925, 1929 | 3-5 |
| Figure 3.4: Heilner Field, circa 1940s..... | 3-5 |
| Figure 3.5: Workshop and Office Building, Built 1946 | 3-6 |
| Figure 3.6: First Airmail Service, October 1, 1946 | 3-6 |
| Figure 3.7: Airport Property and Location | 3-8 |
| Figure 3.8: Ground Access..... | 3-9 |
| Figure 3.9: NPIAS Airports in Oregon..... | 3-10 |
| Figure 3.10: Relationship Between the Oregon Land Use Program and Airports | 3-12 |
| Figure 3.11: Baker County Airport Overlay Zone Map | 3-13 |
| Figure 3.12: Economic Impact of Oregon Airports, 2014 | 3-15 |
| Figure 3.13: Economic Impact of Oregon’s General Aviation Visitors, 2014..... | 3-16 |
| Figure 3.14: Economic Impact of Baker City Municipal Airport, 2014 | 3-16 |
| Figure 3.15: Age Distribution, 2021 | 3-17 |
| Figure 3.16: Top Industries by Employment, 2021..... | 3-18 |
| Figure 3.17: Top Industries by Earnings, 2021 | 3-19 |
| Figure 3.18: Unemployment Rates, 2011–2021..... | 3-19 |

CHAPTER THREE

AIRPORT OVERVIEW

An important goal of this airport master plan is to consider the airport's history and its current role in our local community in order to determine how it can best contribute to the success of the region. Examining the community's characteristics and developing an understanding of how the community is expected to grow and change will help the airport continue to meet the needs of the people it serves.

This chapter provides a general description of the airport and the surrounding area. It includes a brief history of the airport and describes its role in both the national and state aviation systems. It also includes socioeconomic data for the local area and discusses the airport's economic impact. This overview helps to illustrate the nature of the community and the market the airport serves as well as its role in the community, region, and state.

3.1. Introduction

Baker City Municipal Airport (**BKE**) supports a variety of general aviation (**GA**) traffic that ranges from small, single-engine aircraft to large, corporate jets. This includes charter flights, privately owned aircraft used for business or personal travel, flight training, recreation, agricultural, aerial firefighting, and medical transport or other types of emergency flight services.



3.2. Regional Setting

As shown in Figure 3.1, the airport is located in northeast Oregon. The region is considered a sportsman's paradise and attracts many tourists due to its close proximity to the Elkhorn Mountains, the Wallowa Mountains, the Eagle Cap Wilderness area, the Hells Canyon recreation area, and the Snake River.¹

Figure 3.1: Airport Location and Vicinity Map



Source: Ardurra

3.2.1. Baker City

Baker City encompasses approximately 7.16 square miles and is the county seat of Baker County.² The city is nestled between the Elkhorn Mountains to the west, the Wallowa Mountains to the north, and the Eagle Cap Wilderness to the east.³ In addition to the many tourists looking to enjoy the abundant outdoor activities the area offers, the city also attracts visitors who come to enjoy its other attractions such as the National Historic Oregon Trail Interpretive Center, nearby ghost towns, and the Anthony Lakes ski area. The downtown area has a charming historic business district featuring the Geiser Grand Hotel, art galleries, shops, and amazing cuisine as well as award winning beers and spirits.⁴ The major roadways include U.S. Route 30, which passes through downtown, Oregon Route 7, and Interstate Highway 84 (I-84). In addition to tourism and recreation, the local economy is also heavily tied to the cattle ranching, manufacturing, and lumber industries.⁵

3.2.2. Baker County

Baker County, which is known as “the base camp for eastern Oregon,” encompasses approximately 3,067.97 square miles.⁶ It is bordered by Wallowa County to the northeast, Union County to the north, Grant County to the west, Malheur County to the south, and Idaho to the east. The county has nine incorporated towns including Baker City, Greenhorn, Haines, Halfway, Huntington, North Powder, Richland, Sumpter, and Unity. There are also several unincorporated communities located within Baker County as well as several ghost towns. At one time, the county was the largest gold producer in the northwest. However, agriculture, stock, logging, and tourism have now become the primary industries in the area.⁷ The major roads through the county are I-84, U.S. Route 30, and Oregon routes 86 and 7.

3.3. Regional Environment

Baker County and the surrounding area is located within the Blue Mountains ecoregion. At approximately 23,984 square miles in size, it is the largest ecoregion in Oregon. While it is named for its largest mountain range, the Blue Mountains ecoregion is diverse and complex with several mountain ranges, valleys, and plateaus that extends well beyond Oregon.⁸

3.3.1. Geology

The Blue Mountains ecoregion contains deep rock-walled canyons, glacially-cut gorges, sagebrush steppe, juniper woodlands, mountain lakes, forests, and meadows. Broad alluvial-floored river valleys support ranches surrounded by irrigated hay meadows and wheat fields. The region's elevation ranges from 1,000 feet at the Snake River (located approximately 44 miles to the east of BKE) to 9,838 feet at the top of Sacajawea Peak (located approximately 38 miles northeast of BKE).⁹

3.3.2. Soil

According to the Natural Resources Conservation Services (NRCS) Web Soil Survey, there are three types of soils located on airport property. The main soil type is Wingville silt loam, 0–2% slopes, which makes up approximately 99% of the property. It is considered to be prime farmland if irrigated. The other types of soils present include Burkemont silty clay loam, 0–2% slopes (0.9%), which is considered to be farmland of statewide importance, and Baldock silt loam, 0–2% slopes (0.1%), which is considered to be prime farmland if irrigated and drained.^{10,11}

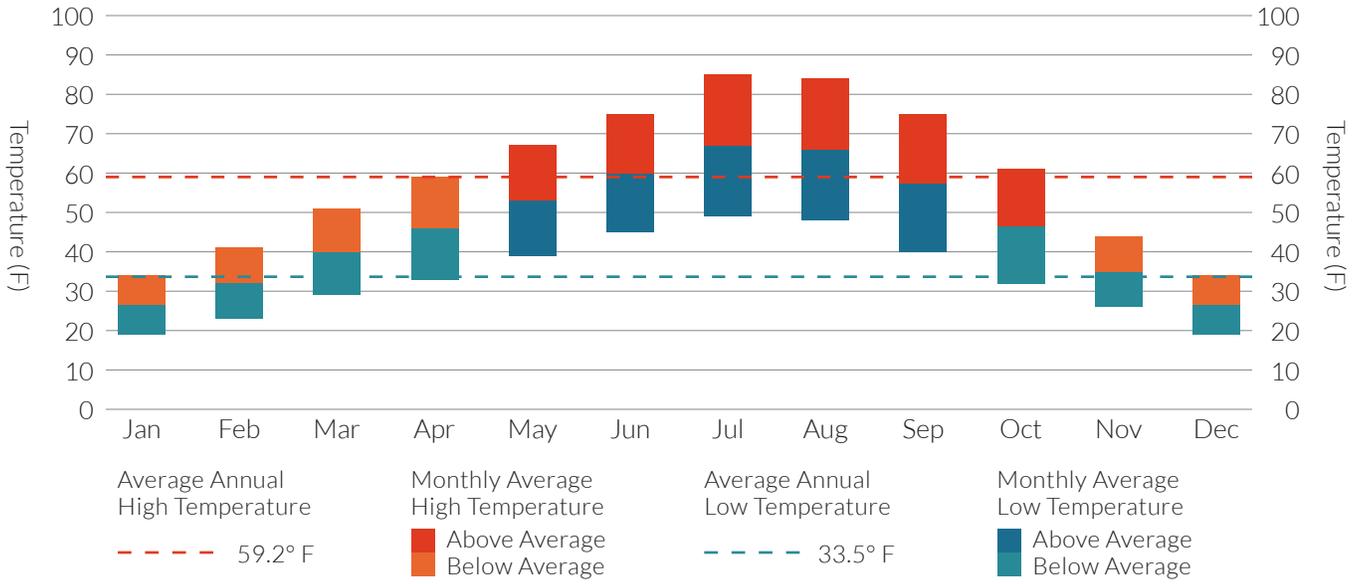
3.3.3. Vegetation

Vegetation in Baker County varies widely and includes cultivated crops, deciduous forest, emergent herbaceous wetlands, evergreen forest, hay or pasture, open water, shrub/scrub, and woody wetlands. The area around the airport is primarily sagebrush steppe habitat.¹²

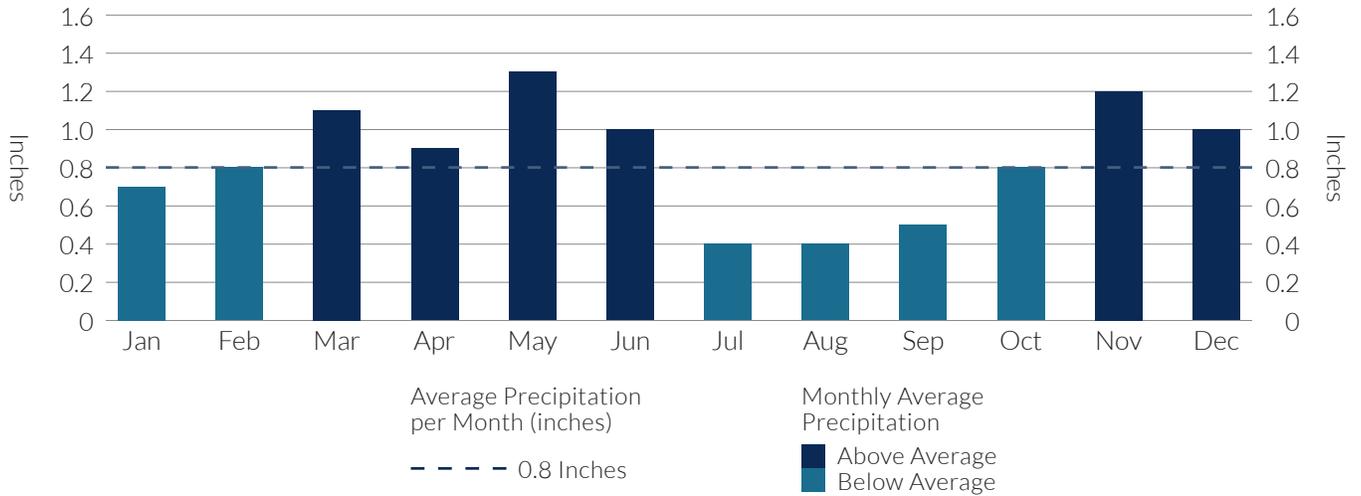
3.3.4. Climate

The climate within the Blue Mountains ecoregion varies over broad temperature and precipitation ranges because of elevational differences. Overall, the ecoregion has short, dry summers and long, cold winters with much of the precipitation falling as snow.¹³ In Baker City, the temperature is typically between 18°F to 87°F and is rarely below 2°F or above 95°F. The hottest month of the year is July which has an average high of 85°F and an average low of 49°F. The coldest month of the year is December which has an average high of 34°F and an average low of 19°F. On average, the area gets some form of precipitation 68 days of the year with an average of 10.1 inches of rain and 23.5 inches of snow per year.¹⁴ Figure 3.2 shows the average temperatures, precipitation, and snowfall for Baker City.

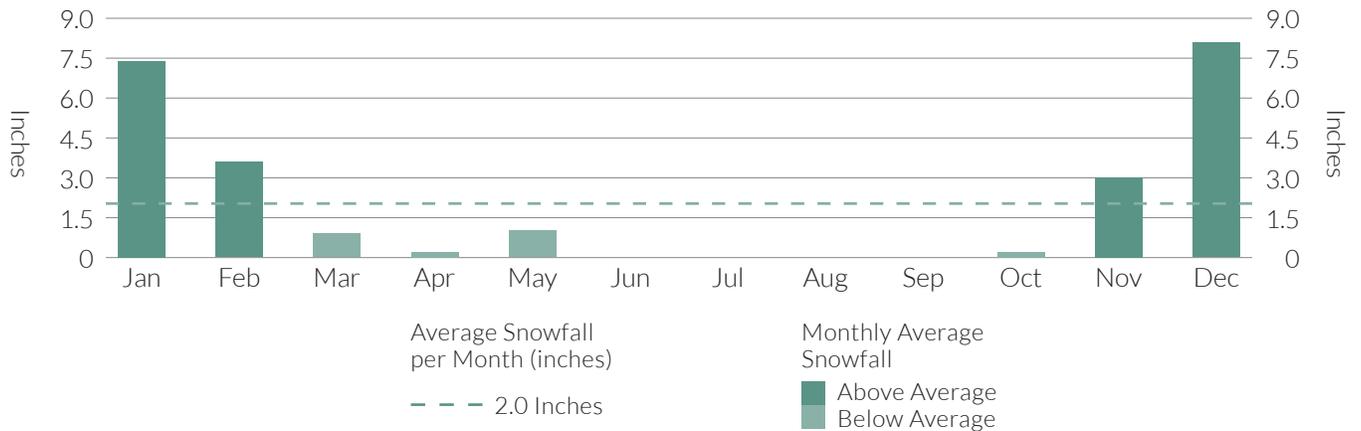
Figure 3.2: Average Temperatures, Precipitation, and Snowfall
Average Temperatures



Average Rainfall



Average Snowfall



Source: National Oceanic and Atmospheric Administration (NOAA).

3.4. History of the Airport

Baker City Municipal Airport, which is also known as Heilner Field, was named for Joseph Heilner, a Baker City attorney and flying enthusiast, who was the leader in establishing the airport.¹⁵ The airport originally began as a simple landing strip in 1920 when American Legion Post 41 purchased a pasture (located between Airport Road and the Richland interchange) so it could be used by barnstormers during aviation's pioneer era (Figure 3.3).¹⁶

Figure 3.3: Barnstormers at Baker City, circa 1925, 1929



Source: Herman Webb, Courtesy of Baker County Library Digital Archive

In the early days of aviation, airports developed along airmail routes, and cities were encouraged to build their airports where lights and a beacon could be installed on public land. The airport as we know it today, with its existing three runway configuration, was built in 1942 when the American Legion purchased the property where the airport is currently located (Figure 3.4).^{17,18}

Figure 3.4: Heilner Field, circa 1940s



Source: Robert N. Gambs, Courtesy of Baker County Library Digital Archive

The airport continued to grow, and, with help from the federal government, the runways were paved and lengthened during World War II.¹⁹ After the war ended, a new workshop and office building were built, and the airport was officially dedicated September 28, 1946 (Figure 3.5). Later that year, the town celebrated the arrival of the first airmail delivery (Figure 3.6).^{20,21}

Figure 3.5: Workshop and Office Building, Built 1946



Source: Baker County Library, Baker City, Oregon

Figure 3.6: First Airmail Service, October 1, 1946



Source: Baker County Library, Baker City, Oregon

In 1953, West Coast Empire Airlines began providing daily air service from Baker City to locations throughout Oregon, Washington, and Idaho. The airline eventually dropped this route, and the airport has mainly supported GA traffic ever since. The airport has continued to make improvements such as lengthening Runway 12-30 in 1983 and constructing a parallel taxiway for Runway 12-30 in 1991.

3.4.1. Recent Airport Development

Table 3.1 summarizes the major capital improvement projects the airport has made since the last airport master plan was completed in 2010.

Table 3.1: Recent Airport Development, 2010–2021

| Year | Brief Project Description |
|------|--|
| 2010 | Rehabilitate Taxiway |
| 2011 | Construct Taxiway |
| 2012 | Rehabilitate Taxiway |
| 2015 | Rehabilitate Apron |
| 2016 | Rehabilitate Apron |
| 2018 | Reconstruct Apron |
| 2020 | Seal Taxiway and Runway Pavement Surface and Pavement Joints |
| 2021 | Seal Taxiway and Runway Pavement Surface and Pavement Joints |

Source: FAA, AIP Grant History, 2010–2020

3.5. The Airport Today

The airport property encompasses approximately 398 acres. The airport elevation (i.e., the highest point on any runway) is approximately 3,373.4 feet above mean sea level (MSL). The airport reference point (ARP), which is the approximate center of all the usable runways, is located at 44° 50' 14.4" N and 117° 48' 32.9" W.²²

3.5.1. Airport Administration

The airport is a public-use facility that is owned and operated by the city of Baker City. The city is governed by an elected city council consisting of seven members. The city council selects one of its members to serve as mayor for a two-year term. The Baker City Airport Commission was created to advise the city manager regarding the management, care, and control of the airport. The seven members of the airport commission are appointed by the city council. One city council member also serves as a member of the airport commission. The daily operations of the airport are overseen by the city manager via the public works director. The city manager is appointed by the city council, and the public works director is appointed by the city manager.²³

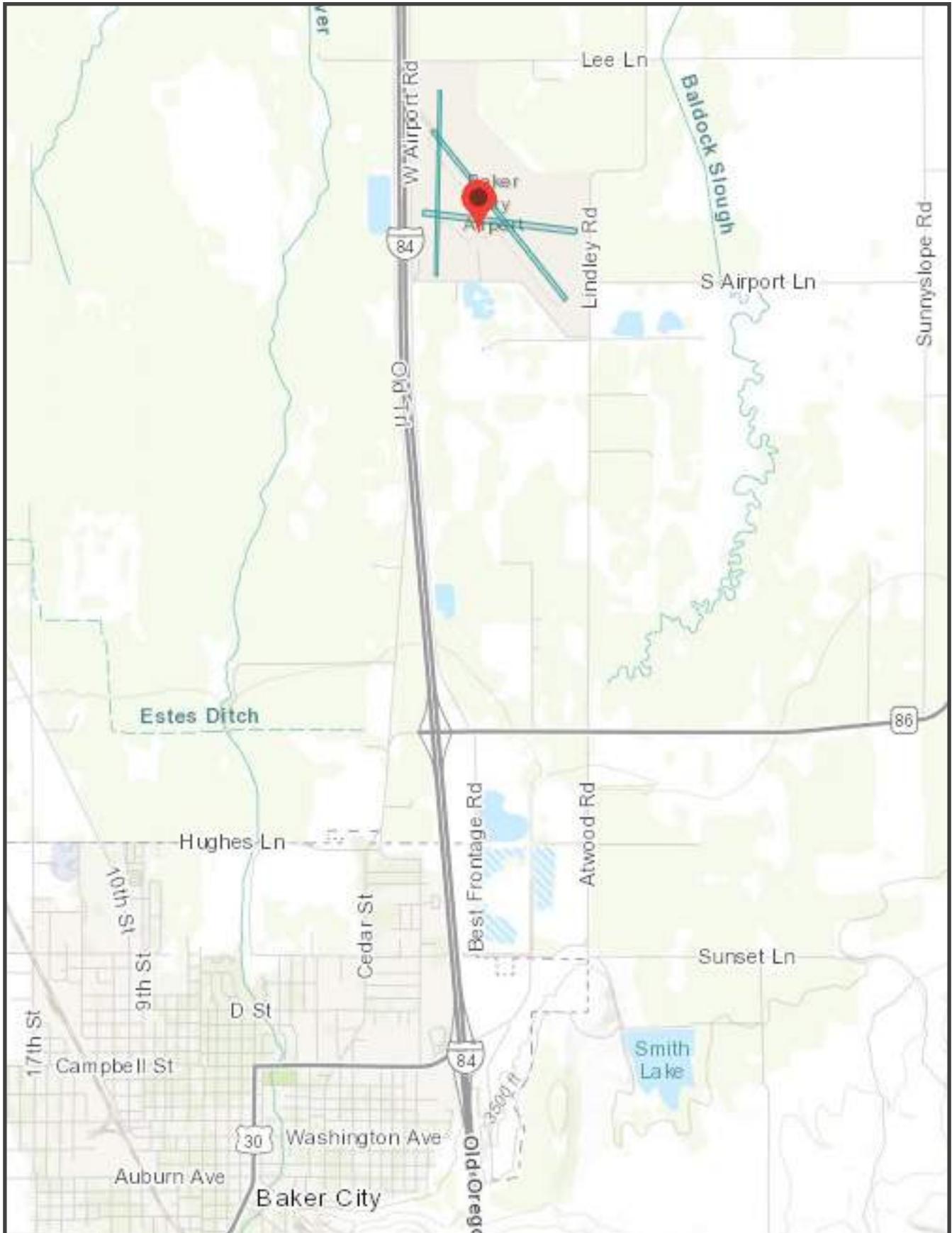
3.5.2. Federal Oversight

Federal regulatory oversight is fulfilled by the FAA's northwest mountain region through the Seattle Airports District Office (ADO).²⁴

3.5.3. Airport Location

The airport is located within Baker County and is approximately three miles north of Baker City, Oregon. It sits just east of I-84 (Vietnam Veterans Memorial Highway) and approximately two miles north of Oregon Route 86 (Baker-Copperfield Highway). The airport is bordered mainly by farmland as well as by South Airport Lane to the south, Lindley Road to the east, Lee Lane to the north, and State Highway 203 (West Airport Road) directly to the west (Figure 3.7).

Figure 3.7: Airport Property and Location



Source: FAA, Airport Data and Information Portal

3.5.4. Ground Access

I-84 provides primary regional access to Baker City and the airport. I-84 is the main transportation route between the largest population centers in Oregon and Idaho. In Oregon, I-84 runs 367 miles from the Idaho border at Ontario and continues to the north and west through to Portland where it meets Interstate Highway 5 (I-5).

As shown in Figure 3.8, the airport's main facilities are all accessed via public roadways. The fixed-base operator (FBO) office and maintenance hangar are both accessed via Heilner Drive as well as the aircraft hangar and automobile parking areas.

Figure 3.8: Ground Access



Source: Ardurra

3.6. Airport System Planning

Airport planning takes place at the national, state, and local levels. These plans work together to provide the public with a safe, efficient, and integrated airport system.

3.6.1. National Plan of Integrated Airport Systems

The Federal Aviation Administration (FAA) updates the *National Plan of Integrated Airport Systems (NPIAS)* every two years, and the current edition covers fiscal years (FY) 2023–2027. All commercial service airports, all reliever airports, and selected public-owned general aviation airports are included in the NPIAS. In addition to discussing the roles these airports currently serve, the NPIAS is used by the FAA in administering the Airport Improvement Program (AIP).

NPIAS airports are categorized as either primary or nonprimary. Primary airports are defined as public airports receiving scheduled air carrier service with 10,000 or more enplaned passengers per year (i.e., revenue paying passengers boarding commercial flights) while nonprimary airports mainly support general aviation.

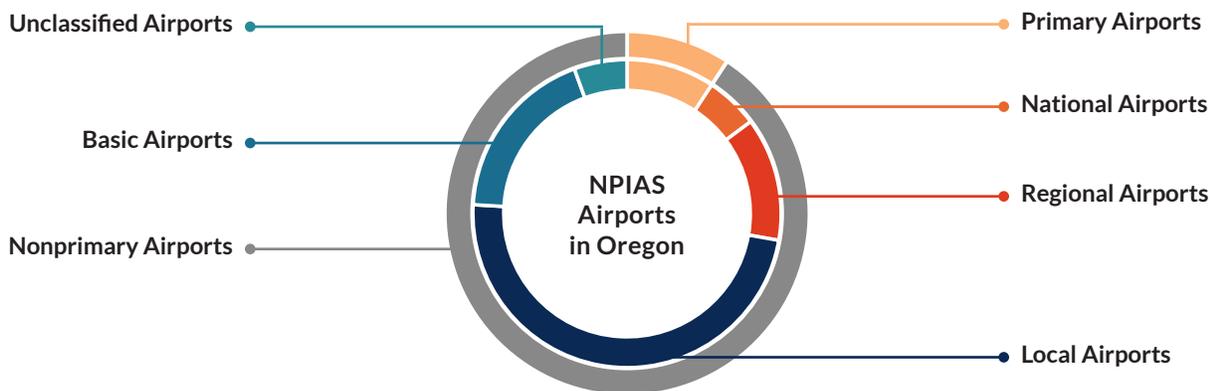
Nonprimary airports make up the vast majority (89%) of the airports included in the NPIAS. They are grouped into five categories based on existing aviation activity (e.g., the number and types of based aircraft or volume and types of flights), geographic factors, and public interest functions. These categories are national, regional, local, basic, and unclassified.²⁵

a. NPIAS Airports in Oregon

According to the 2023–2027 NPIAS, there are 54 NPIAS airports in Oregon. This includes five primary and 49 nonprimary airports. Of the 49 nonprimary airports, three are classified as national, seven are classified as regional, 26 are classified as local, and ten are classified as basic, and three are unclassified.

Baker City Municipal Airport is included in the 2023–2027 NPIAS and is classified as a nonprimary, local, general aviation airport (Figure 3.9). Airports in this category account for 36% of all NPIAS airports. These airports have been identified as supporting the needs of the local community by providing access to other local and regional markets. They typically accommodate business and personal air travel, flight training, emergency services, and charter flights.²⁶

Figure 3.9: NPIAS Airports in Oregon



Source: FAA, 2021–2025 NPIAS

3.6.2. Oregon Airport System Plan

The Oregon Department of Aviation (ODA) develops and implements the *Oregon Aviation Plan (OAP)*. This statewide aviation plan collectively assesses the conditions of airports located throughout the state and identifies the system’s ability to meet current and future aviation demand. The plan aids the ODA in successfully developing and planning for the state’s airport system as a whole and provides input for federal planning documents. The current version is version 6.0 which was published in 2019.²⁷

OAP airports are placed into one of the following five categories based on existing aviation activity and services, geographic location, facility type, and market area characteristics.

Category I: Commercial Service

Category II: Urban General Aviation

Category III: Regional General Aviation

Category IV: Local General Aviation

Category V: Remote Access/Emergency Services (RAES)

There are 97 airports included in the current OAP. Seven of these airports are categorized as commercial service, 12 are urban GA, 12 are regional GA, 27 are local GA, and 39 are RAES.

Baker City Municipal Airport is one of the 97 aviation facilities included in the current version of the OAP and is classified as a Category III: Regional General Aviation airport. These airports support regional transportation needs of a large and often sparsely populated service area. They mostly support twin and single-engine aircraft and may also occasionally accommodate business jet operations. The minimum runway length objective for Category III airports is 4,000 feet.²⁸

a. Distance From Nearby Oregon Aviation Plan Airports

- La Grande Airport (**LGD**) is classified as Category II: Urban General Aviation and is approximately 33 miles northwest in La Grande.
- Joseph State Airport (**JSY**) is classified as Category IV: Local General Aviation and is approximately 46 miles northeast in Joseph.
- Ontario Municipal Airport (**ONO**) is classified as Category III: Regional General Aviation and is approximately 68 miles southeast in Ontario.
- Eastern Oregon Regional Airport (**PDT**) is the closest commercial service airport (Category I) and is approximately 78 miles northwest in Pendleton.

3.6.3. Local Airport Planning

This airport master plan is a comprehensive, airport-wide study to determine future aviation demand so the airport can continue to operate as safely and as efficiently as possible. It provides a 20-year vision for airport development based on aviation demand forecasts. The FAA recommends that public-use airports prepare a new airport master plan every five to ten years or as often as necessary to reflect significant changes in local aviation conditions. Prior to this update, an airport master plan was last completed May 2010.

3.7. Land Use Planning

Land use is the term used to describe how property is currently being used and how it can be used in the future. The existing and planned land uses near an airport can impact the local community, airport operations, and potential growth. It is important to identify the nearby land uses that will be exposed to airport operations as well as any land uses that may affect the safe operation of the airport or influence its expansion.

Effective compatible land use planning around airports addresses airspace, safety, and noise considerations. In many instances, the community's willingness to take a proactive approach in establishing compatible land use policies prevents the need to be reactive and deal with more severe conflicts in the future.

Effective land use compatibility plans take both height and land use restrictions into consideration and are incorporated via zoning laws. Coupled with other proactive measures, such as voluntary noise abatement programs and selective fee-simple land acquisition, proactive planning around the airport protects both the airport and the surrounding community. Furthermore, federal grant assurances require airport sponsors to operate and maintain the airport in a safe and serviceable condition, prevent and remove airport hazards, and take appropriate measures to ensure compatible land uses exist around the airport.

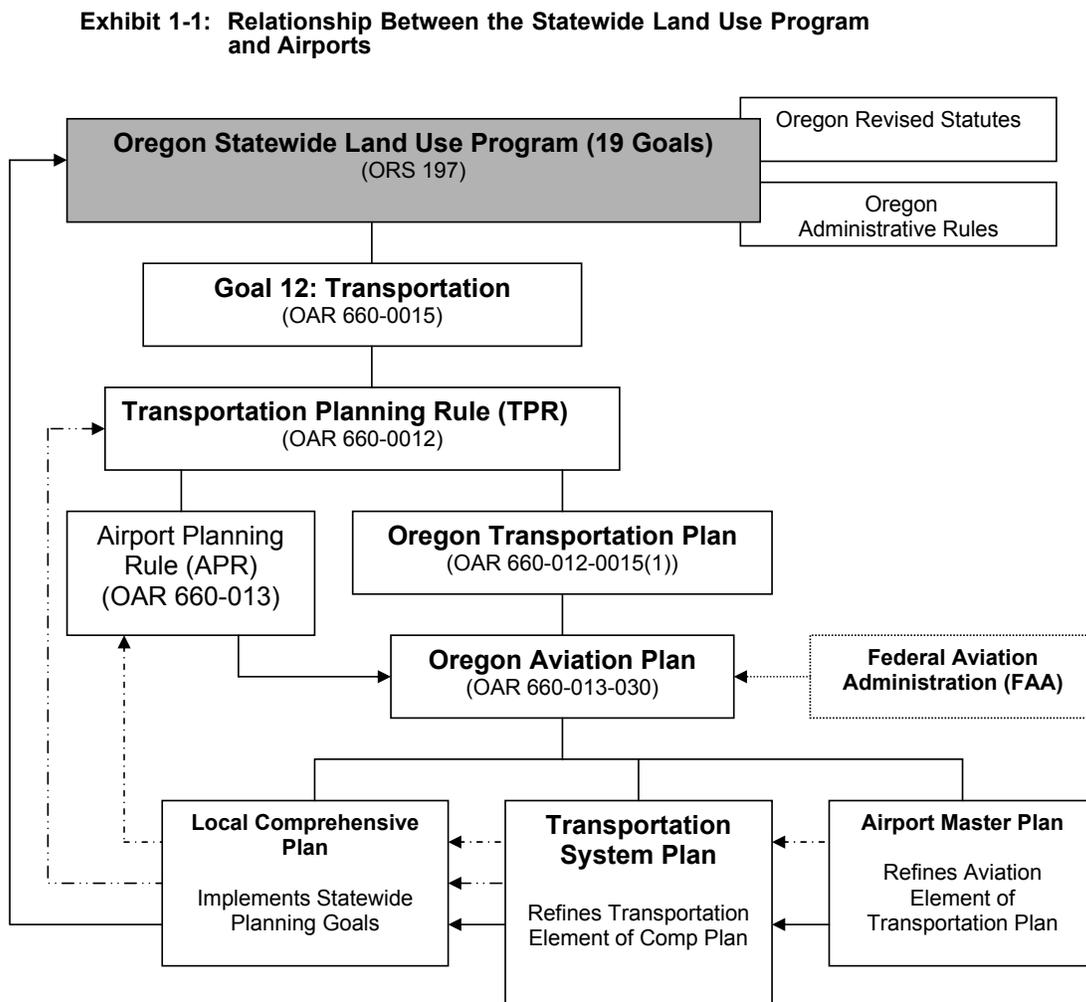
It is important to point out that there is a difference between height restrictive zoning and basic land use zoning. As its name implies, the intent of height restrictive zoning is to protect the airspace around an airport from objects or structures that may pose hazards to aircraft operations. In general, this type of zoning conforms to the surface definitions and height limitations of Title 14 of the Code of Federal Regulations Part 77 (**Part 77**): Safe, Efficient Use and Preservation of the Navigable Airspace. On the other hand, the intent of land use zoning is to prevent incompatible land uses near an airport. Not only does this practice protect the airport, but it also helps prevent the effects of airport operations, such as noise, dust, fumes, or aircraft accidents, from negatively impacting nearby sensitive land uses such as residential areas.

3.7.1. Oregon Department of Aviation Land Use Compatibility Guidebook

Since 1974, Oregon's Land Use Planning Act has required all cities and counties to develop and adopt comprehensive plans [Oregon Revised Statutes (**ORS**) Chapter 197]. These plans must be updated through a process known as periodic review (ORS 197.682-650) to ensure the plan continues to meet applicable statutes, administrative rules, current laws, and policies of the state of Oregon.

The Airport Planning Rule (APR) further refines the provisions for local government airport regulation. The APR established a series of local government requirements and rules pertaining to aviation facility planning. These rules are intended to promote land use planning to reduce risks to aircraft operations and nearby land uses. The APR serves as the state regulatory basis for ensuring local government airport planning conforms to the hierarchy of state plans and statutory requirements. These rules outline the parameters for local governments to follow as a framework for airport planning. Exhibit 1-1 from Oregon’s *Airport Land Use Compatibility Guidebook* provides a graphic representation of the relationship between federal and state agencies as well as rules and regulations related to airport planning and land use compatibility issues (Figure 3.10).²⁹

Figure 3.10: Relationship Between the Oregon Land Use Program and Airports



Source: Oregon Department of Aviation, Airport Land Use Compatibility Guidebook

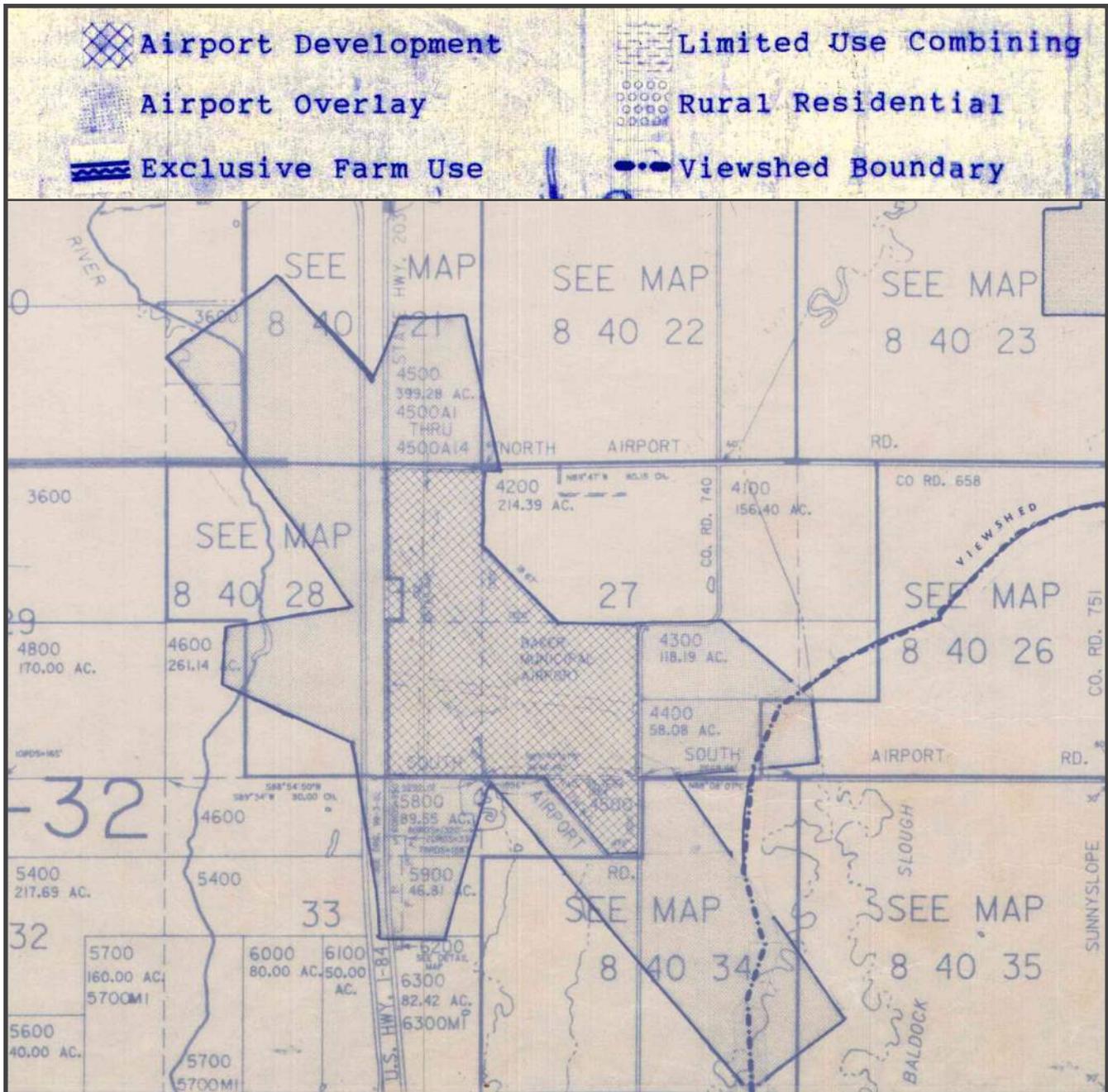
3.7.2. County Land Use Protections

Baker County has adopted an airport development zone that refers to the publicly and privately owned land at the airport that is designated for airport related land use activities (Baker County Zoning Ordinance, Chapter 540). These ordinances limit construction and certain land uses within the airport development zone. The purpose of the airport development zone is to allow continued development of the airport and associated uses.

The county has also adopted an airport overlay zone that refers to clear zones adjacent to the airport (Baker County Zoning Ordinance, Chapter 610). These ordinances restrict land uses that are in conflict with safe and harmonious use of the airport by setting the boundary for the airport overlay zone, defining the federal aviation regulations for height restriction, and limiting structures within airport approach zones.

Together, these ordinances protect the lands surrounding the airport from development that is incompatible with the airport and its associated uses. They also reinforce the county’s airport zoning ordinance of 1975 which include height limitations and restrictions on land uses producing interference to aircraft. The following protections are included in these ordinances which are intended to allow continued development of the airport and associated uses.³⁰ The airport development zone and the airport overlay zone are both pictured in Figure 3.11.

Figure 3.11: Baker County Airport Overlay Zone Map



Source: Baker County

The following uses are prohibited within the airport overlay zone:

- Landfills and garbage dumps.
- Churches, auditoriums, schools, hospitals, daycare centers, and other public or private meeting places which are designed to accommodate more than 25 people at one time.
- Uses which interfere with aviation resulting from height of structures, glare from buildings, smoke, lights which shine upward, and radio interference from transmission.
- All structures not in relation to navigation within the runway protection zone (RPZ).

The following development standards apply within the airport overlay zone:

- The height of any structure or part of a structure, such as a chimney, tower, antenna, etc., shall be limited according to requirements established by FAA, Part 77 Airport Imaginary Surfaces and Oregon administrative rules (OAR) Chapter 738, Division 70 which details the rules regarding physical hazards to air navigation.

3.7.3. City Land Use Protections

Baker City and Baker County maintain an agreement that provides for administration of lands and land use regulations. The city also prohibits structures either within city limits or the urban growth boundary that impacts airport conical surface.³¹

3.8. Economic Impact

An airport’s economic impact is essentially a measure of the financial effect it has on the local economy. To determine the financial effect of Oregon’s airports, the Oregon Department of Aviation studied the annual economic impact of Oregon airports as part of the *Oregon Aviation Plan v.6.0*. As stated in Chapter 8, Economic Impact of Oregon Airports, this information is based on the methodology and analysis used in the FAA’s *2014 Economic Impact Statement for NPIAS Airports*.

There are three types of economic impacts discussed in this report: direct, indirect, and induced. Direct impacts are attributed to on-airport activity such as car rentals, concessions, and fuel sales as well as capital improvements and off-airport visitor spending. Indirect impacts are typically the result of interactions between businesses and suppliers of goods and services. Induced impacts are associated with respending income earned within a community. (Both indirect and induced impacts are considered to be multiplier effects.) An airport’s total impact is the sum of the direct, indirect, and induced impacts which are expressed in the following four ways:

1. **Jobs or Employment:** The number of people employed at businesses associated with the airport.
2. **Earnings or Labor Income:** Wages, salaries, and benefits received by those employees.
3. **Gross Domestic Product (GDP):** The dollar value of final goods and services. It does not include the value of intermediate goods and services used to produce the final product.
4. **Output:** The economic activity generated by the operation of the airport and all related activities including the dollar value of intermediate goods and services.

3.8.1. Economic Impact of Oregon Airports

As shown in [Figure 3.12](#), the total statewide impact of the 97 Oregon airports included in the 2014 study is \$28.5 billion annually. They also support 213,240 jobs with a resulting annual payroll of \$10 billion.³²

Figure 3.12: Economic Impact of Oregon Airports, 2014



Source: ODA, Oregon Aviation Plan v6.0

3.8.2. Economic Impact of Oregon’s General Aviation Visitors

As shown in Figure 3.13, the total statewide impact of visitors arriving in Oregon via general aviation aircraft is more than \$103.6 million annually. They also support 1,200 jobs with a resulting annual payroll of more than \$50.8 million.³³

Figure 3.13: Economic Impact of Oregon’s General Aviation Visitors, 2014

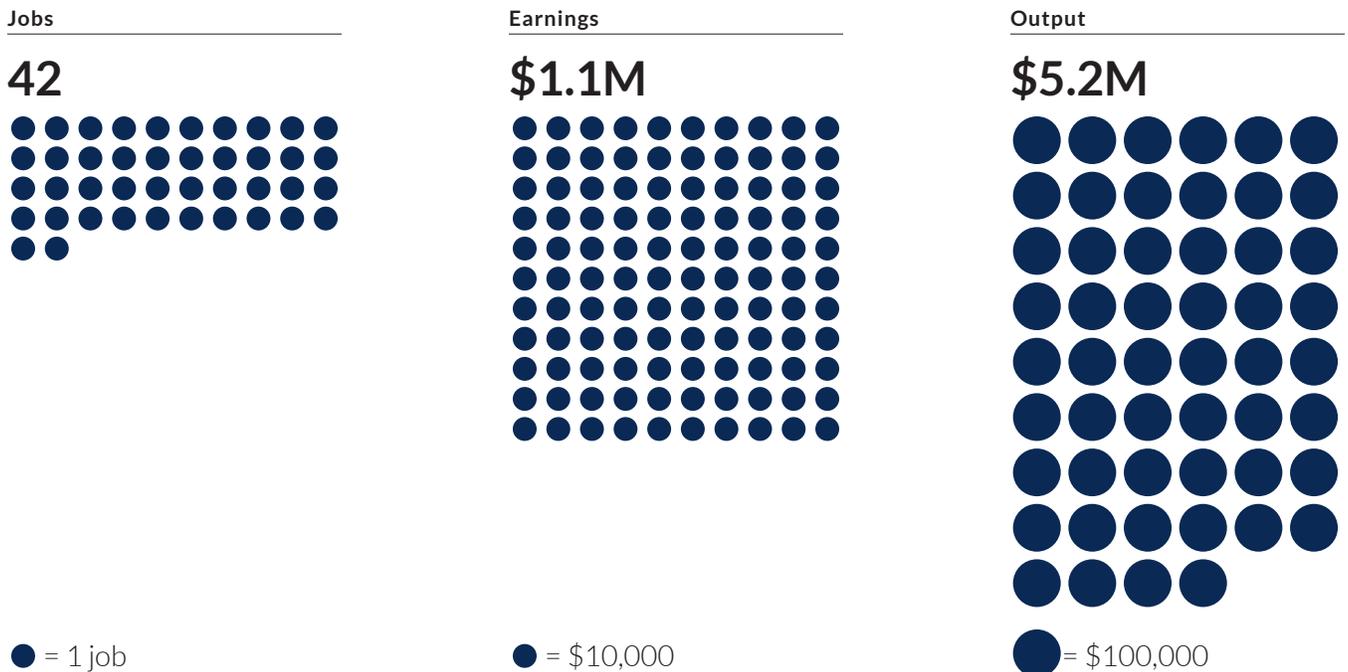


Source: ODA, Oregon Aviation Plan v6.0

3.8.3. Economic Impact of Baker City Municipal Airport

As shown in Figure 3.14, the economic output for Baker City Municipal Airport is \$5.2 million annually. The airport also supports 42 jobs with a resulting annual payroll of nearly \$1.1 million.³⁴

Figure 3.14: Economic Impact of Baker City Municipal Airport, 2014



Source: ODA, Oregon Aviation Plan v6.0

3.9. Socioeconomic Overview

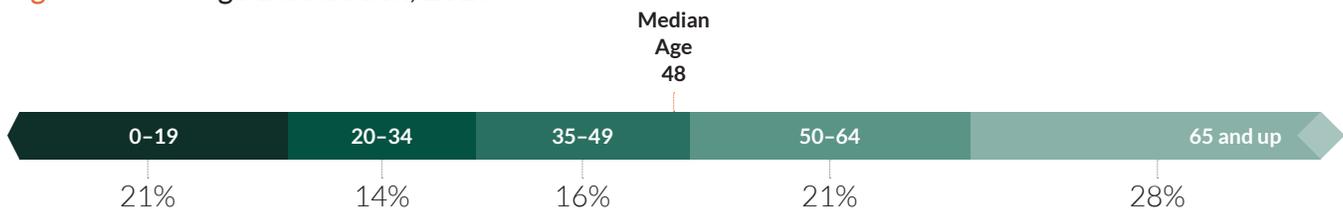
The socioeconomic characteristics of a community may influence demand for air travel within an airport's geographic region. Data about the area's population, employment, and income activity can help identify trends that may impact current and future aviation operations. These trends are especially important to consider when preparing aviation demand forecasts. This information is also helpful in making sure the community's long-term needs are taken into consideration as part of the airport planning process.

Baker County is the geographic focus of this socioeconomic overview. Much of the data was obtained from Woods and Poole Economics, Inc.; an independent firm that specializes in long-term economic and demographic projections.

3.9.1. Population Rates

According to Woods and Poole, the population of Baker County was 16,111 for 2021. The population has remained relatively steady this past decade with a compound annual growth rate (CAGR) of 0.03% for 2011 to 2021. The population is projected to shrink at a CAGR of -0.04% through 2041. As shown in [Figure 3.15](#), the median age is 48 and the majority of the population is 49 years of age or younger.³⁵

Figure 3.15: Age Distribution, 2021



Source: Woods and Poole Economics, Inc.

3.9.2. Household Income

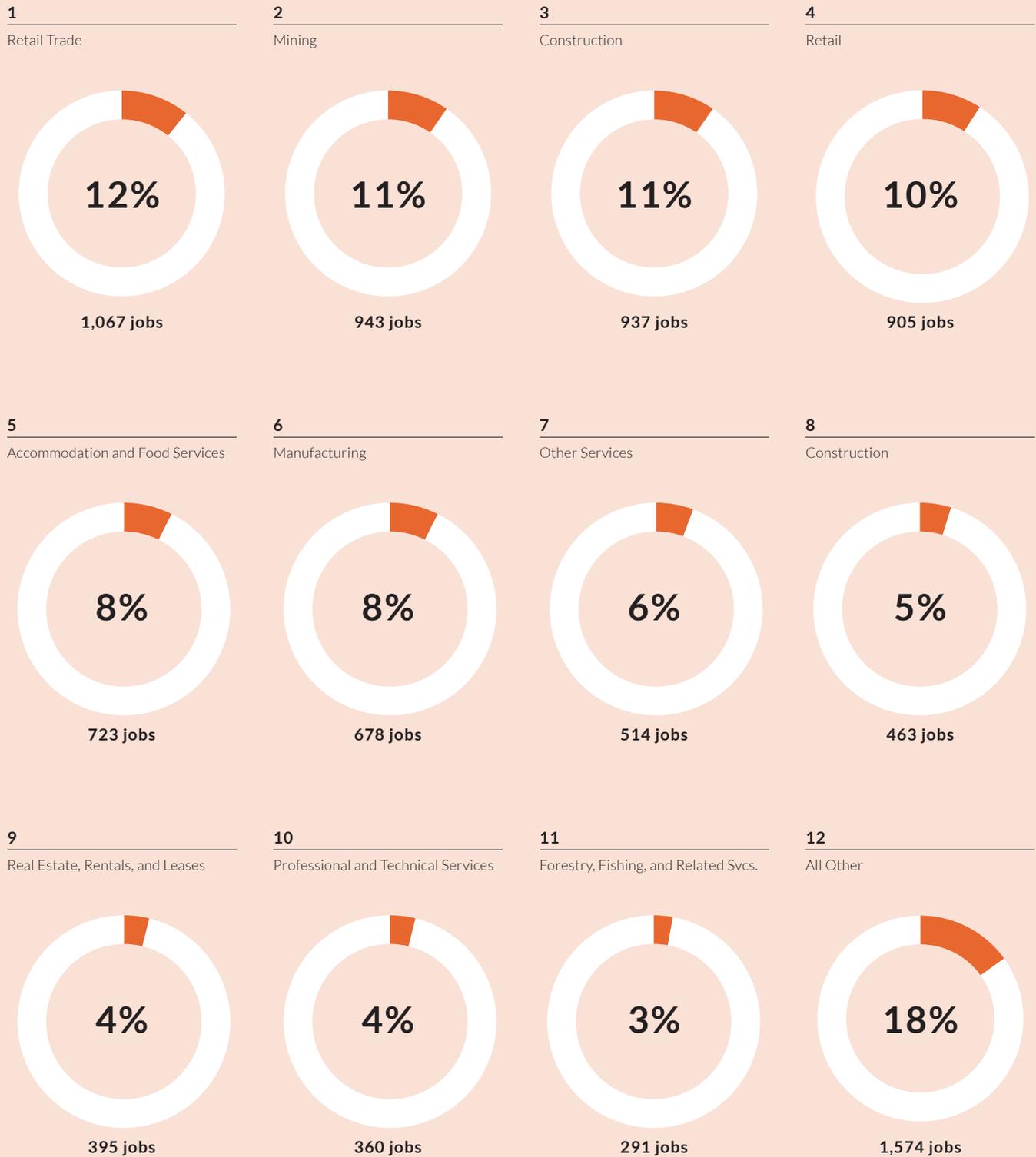
According to Woods and Poole, the average (i.e., mean) household income was estimated to be \$96,622 for 2021 while the total per capita personal income was \$44,752.

3.9.3. Top Industries by Employment

According to Woods and Poole, the top five industries for 2021 in terms of employment were retail trade; state and local government; farming; health care and social assistance; and accommodation and food services. [Figure 3.16](#) shows the top industries in which people are employed within Baker County.

Figure 3.16: Top Industries by Employment, 2021

Baker County Employment by Industry

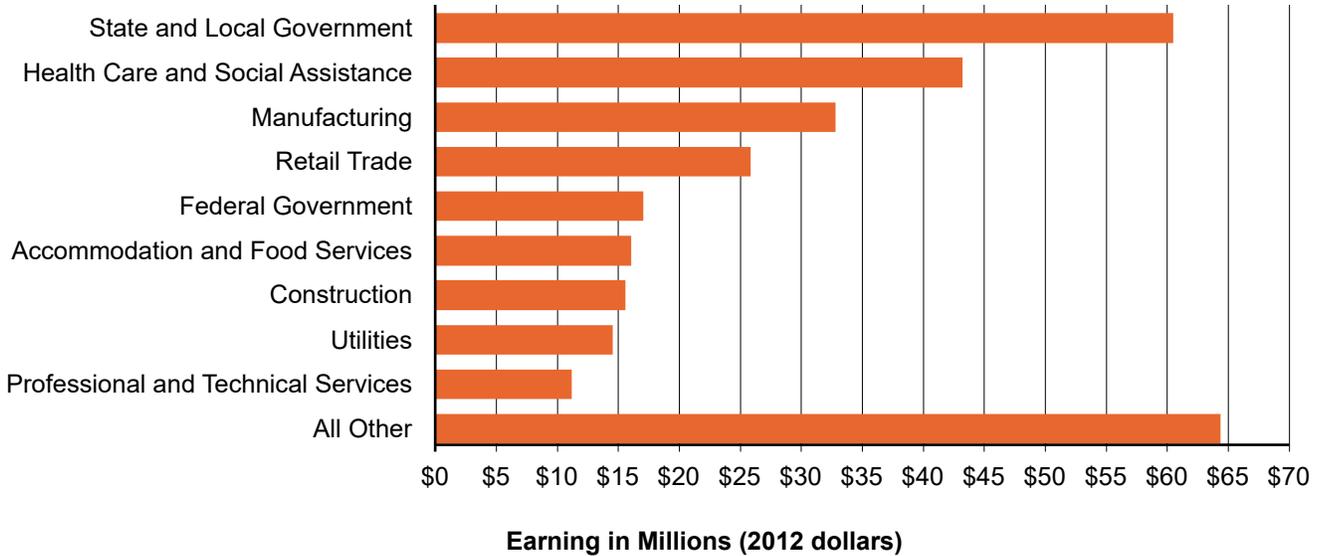


Source: Woods and Poole Economics, Inc.

3.9.4. Top Industries by Earnings

According to Woods and Poole, the top five industries in terms of earnings for 2021 were state and local government; health care and social assistance; manufacturing; retail trade; and the federal government. Figure 3.17 shows the top industries in terms of earnings for Baker County.

Figure 3.17: Top Industries by Earnings, 2021

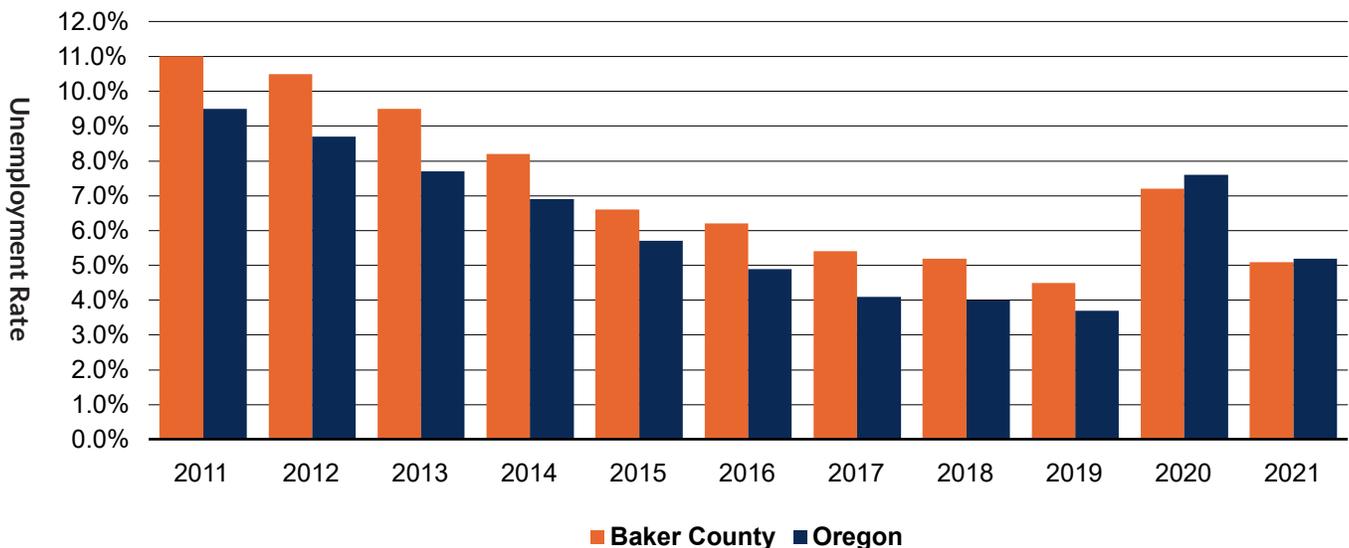


Source: Woods and Poole Economics, Inc.

3.9.5. Unemployment Rates

According to the U.S. Bureau of Labor Statistics, the county unemployment rate was declining at a steady pace until 2020 when the COVID-19 pandemic caused rates to increase. However, the unemployment rate did show a significant decrease for 2021. Figure 3.18 shows the county unemployment rates alongside the statewide unemployment rates.³⁶

Figure 3.18: Unemployment Rates, 2011–2021



Source: U.S. Department of Labor, Bureau of Labor Statistics

Endnotes

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AIRSIDE AND LANDSIDE INVENTORY



| | |
|---|-------------|
| Introduction | 4-1 |
| Airport Layout..... | 4-1 |
| Airspace..... | 4-3 |
| Federal Airspace Classifications..... | 4-3 |
| Airspace at Baker City Municipal Airport | 4-4 |
| Instrument Approach Procedures | 4-5 |
| Approach Procedures for Baker City Municipal Airport..... | 4-5 |
| Airfield and Airside Facilities..... | 4-10 |
| Runways | 4-10 |
| Taxiways and Connectors | 4-14 |
| Airfield Pavements | 4-15 |
| Airfield Signage | 4-17 |
| Airfield Lighting Systems..... | 4-18 |
| Navigational Aids..... | 4-20 |
| Weather Reporting Equipment | 4-21 |
| Landside and Landside Facilities | 4-23 |
| Main General Aviation Terminal Apron..... | 4-23 |
| Aircraft Hangars..... | 4-23 |
| Aircraft Tiedowns..... | 4-27 |
| Helicopter Parking Pads..... | 4-27 |
| Fixed Base Operator | 4-28 |
| FBO Apron and Maintenance Hangar | 4-29 |
| Fuel Facilities | 4-29 |
| Fire and Emergency Medical Response..... | 4-30 |

CONTENTS

| | |
|---|------|
| Snow Removal and Ice Control | 4-30 |
| Landscaping and Pest Control..... | 4-30 |
| Security, Fencing, and Vehicle Access Gates | 4-30 |
| Automobile Parking..... | 4-31 |
| Utilities and Stormwater | 4-32 |
| Lighting Vault..... | 4-32 |
| Storage Sheds..... | 4-33 |
| Stormwater Drainage Systems | 4-33 |

TABLES

| | |
|---|------|
| Table 4.1: Instrument Approach Procedures..... | 4-5 |
| Table 4.2: Taxiway and Taxiway Connector Dimensions | 4-14 |

FIGURES

| | |
|--|------|
| Figure 4.1: Airport Layout | 4-2 |
| Figure 4.2: Controlled Airspace Diagram | 4-3 |
| Figure 4.3: Aeronautical Chart for Baker City Municipal Airport..... | 4-4 |
| Figure 4.4: Runway 13 RNAV Approach Plate | 4-7 |
| Figure 4.5: Runway 13 VOR/DME Approach Plate..... | 4-8 |
| Figure 4.6: VOR-A Approach Plate | 4-9 |
| Figure 4.7: Runway Diagram..... | 4-10 |
| Figure 4.8: Runway 13/31..... | 4-11 |
| Figure 4.9: Runway 17/35..... | 4-12 |
| Figure 4.10: Runway 8/26..... | 4-13 |
| Figure 4.11: Pavement Condition Diagram..... | 4-15 |
| Figure 4.12: Five-Year Pavement Maintenance and Rehabilitation Plan Diagram..... | 4-16 |
| Figure 4.13: FBO Destination Sign with Taxiway A Location Sign..... | 4-17 |
| Figure 4.14: Runway End Identifier Lights..... | 4-18 |
| Figure 4.15: Medium Intensity Runway Lights | 4-19 |
| Figure 4.16: Very High Frequency Omnidirectional Range with Distance Measuring Equipment | 4-20 |
| Figure 4.17: Segmented Circle and Wind Indicator | 4-21 |
| Figure 4.18: Automated Surface Observing System..... | 4-21 |
| Figure 4.19: Hygrothermometer | 4-22 |
| Figure 4.20: Ceiling Light Projector | 4-22 |
| Figure 4.21: Hangar Area A..... | 4-23 |
| Figure 4.22: Main Hangar Row..... | 4-24 |
| Figure 4.23: City Owned T-Hangar | 4-24 |
| Figure 4.25: City Owned Quad Hangar..... | 4-25 |
| Figure 4.24: Heilner Hangar | 4-25 |
| Figure 4.26: Hangar Area C..... | 4-26 |
| Figure 4.27: Hangar Area D | 4-26 |
| Figure 4.28: Aircraft Tiedowns..... | 4-27 |
| Figure 4.29: Helicopter Parking Pads..... | 4-27 |
| Figure 4.30: FBO Office Building and Maintenance Hangar | 4-28 |
| Figure 4.31: Crew Lounge..... | 4-28 |
| Figure 4.32: FBO Apron..... | 4-29 |
| Figure 4.33: Fuel Storage Tanks | 4-29 |
| Figure 4.34: Airfield Maintenance Equipment | 4-30 |
| Figure 4.35: Main Entrance | 4-31 |
| Figure 4.36: Vehicle Security Gate..... | 4-31 |
| Figure 4.37: Main Well..... | 4-32 |
| Figure 4.38: Lighting Vault..... | 4-33 |
| Figure 4.39: Storage Sheds..... | 4-33 |

CHAPTER FOUR

AIRPORT INVENTORY

One of the first steps in preparing the airport master plan update for Baker City Municipal Airport (**BKE**), also known as Heilner Field, is to identify existing airport facilities and assets. Conducting a detailed inventory is a critical step in the airport master planning process because it helps to establish the current baseline for several elements of the planning process and is used when conducting the analyses discussed in later chapters. This includes determining if the existing facilities are able to accommodate current and forecasted aviation demand and then determining the correct facility requirements.

4.1. Introduction

This chapter provides a general description of the airspace surrounding the airport and the airport's aircraft operating procedures. It also includes an inventory and description of the airport's existing facilities and assets. These include airfield and airside facilities, general aviation (**GA**) facilities, support facilities, parking facilities, utilities and stormwater infrastructure, and nonaeronautical uses as well as a description of the services offered at the airport. This information was obtained through on-site inspections, interviews with airport staff and tenants, public databases, the Federal Aviation Administration (**FAA**), and the aeronautics division of the Oregon Department of Aviation (**ODA**).

4.2. Airport Layout

The general layout of the airport is shown on the following page in [Figure 4.1](#), Airport Layout.



Figure 4.1: Airport Layout



Source: Ardurra

4.3. Airspace

The FAA, which is responsible for the safe and efficient use of national airspace, created the National Airspace System (NAS) to “protect persons and property on the ground, and to establish a safe and efficient airspace environment for civil, commercial, and military aviation.” The NAS is the network of air navigation facilities, air traffic control (ATC) facilities, and airports as well as the related rules, regulations, and procedures needed to operate the system.¹

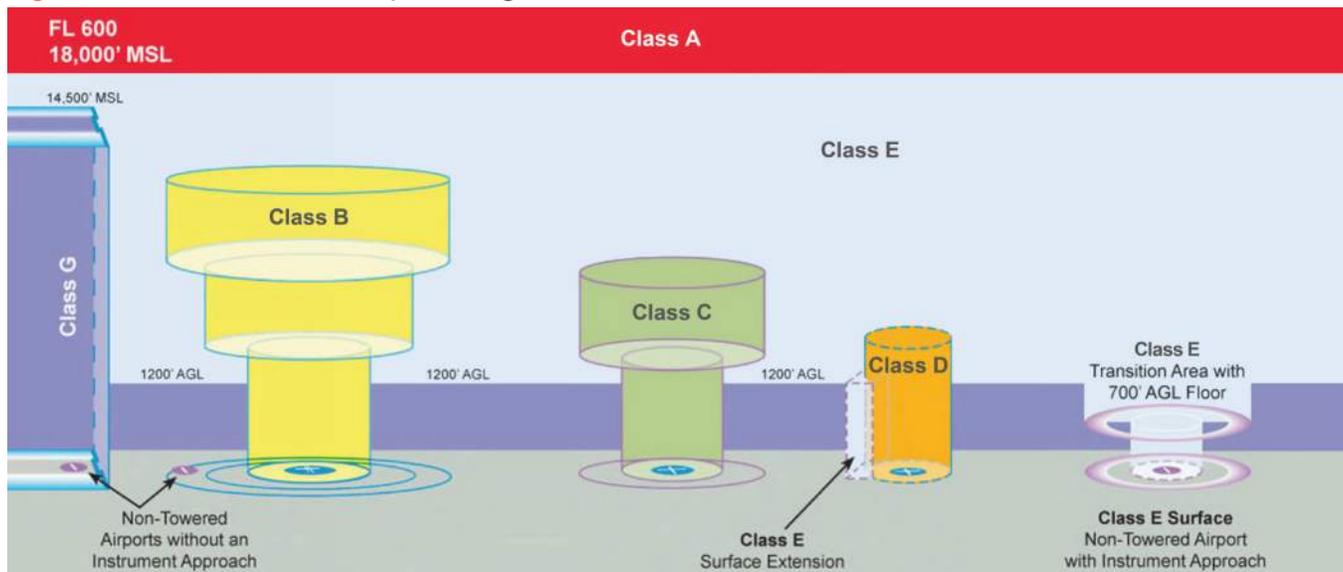
4.3.1. Federal Airspace Classifications

The FAA has established four types of airspace based on the complexity of aircraft movements or density of traffic, nature of the operations conducted, the level of safety required, and national and public interest. The four types of airspace are controlled, uncontrolled, special use, and other.²

Controlled Airspace: As shown in Figure 4.2, controlled airspace consists of five classifications of airspace within which ATC service is provided.

- **Class A:** Airspace from 18,000 feet mean sea level (MSL) up to and including 60,000 feet MSL. This class of airspace is primarily used by large aircraft during the cruise and transitioning phases as they travel from one airport to another. All aircraft in Class A airspace must operate under instrument flight rules (IFR).
- **Class B:** Airspace from the surface up to 10,000 feet MSL that surrounds the nation’s busiest airports. This airspace has more restrictive operating rules than Class A airspace, and clearance is required for all aircraft to operate in the area.
- **Class C:** Airspace from the surface up to 4,000 feet above the airport elevation (charted in MSL) that surrounds airports with an operational control tower, are serviced by a radar approach control, and meet a minimum number of annual operations or passenger enplanements.
- **Class D:** Airspace from the surface up to 2,500 feet above the airport elevation (charted in MSL) that surrounds smaller airports with an operational control tower but are not serviced by a radar approach control. They do not have to meet a minimum number of annual operations or passenger enplanements.
- **Class E:** Controlled airspace not classified as Class A, B, C, or D. In most areas, this airspace begins at 1,200 feet above ground level (AGL) and extends up to 18,000 feet MSL.

Figure 4.2: Controlled Airspace Diagram



Source: FAA, *Aeronautical Chart Users' Guide*, 2022

Uncontrolled Airspace: Uncontrolled, or Class G airspace, is the portion of the airspace that has not been designated as Class A, B, C, D, or E. In general, Class G airspace extends from the ground surface to the base of Class E airspace. Even though this airspace is uncontrolled and ATC has no authority or responsibility to control air traffic in Class G airspace, the FAA mandates that visual flight rules (VFR) still apply in this airspace.

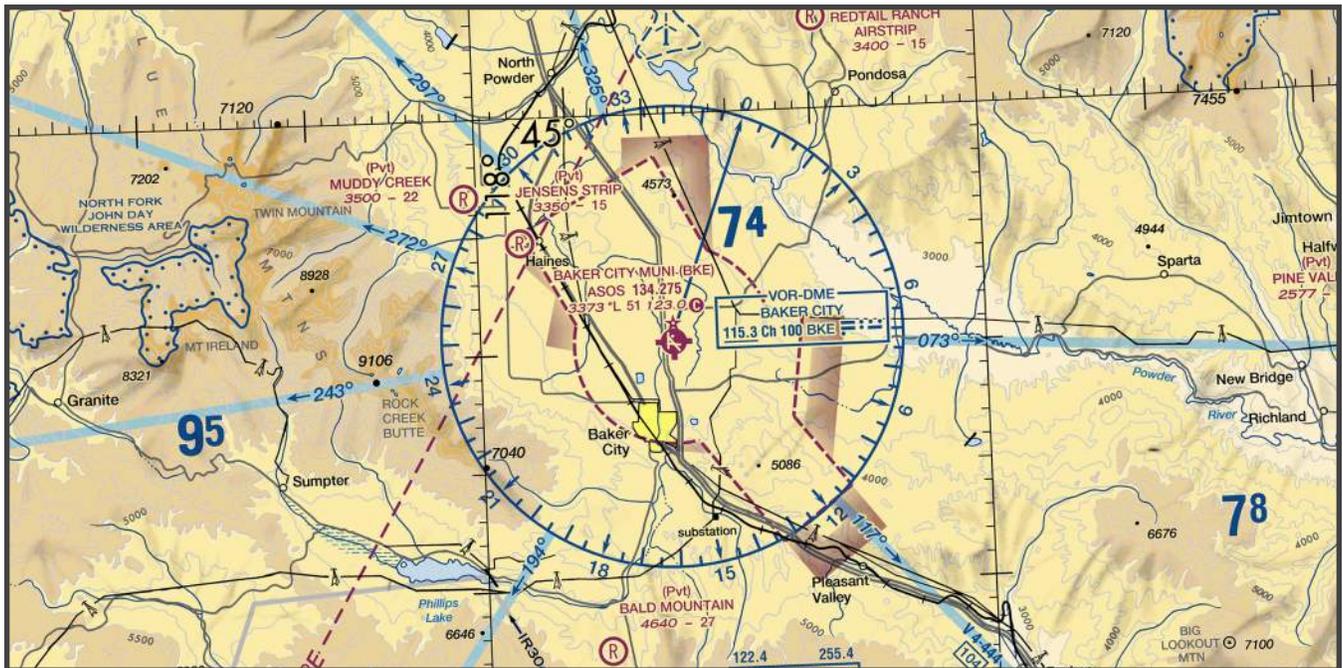
Special Use Airspace: Nonregulatory airspace includes several types of special use areas. Typically, these areas are used for military operations, restricted due to national security, or reserved for similar uses.

Other Airspace: This is a general term that refers to the majority of the remaining airspace and includes areas reserved for local airport advisories, military training routes, temporary flight restrictions (such as those around fire suppression activities), parachute jump aircraft operations, and similar uses.³

4.3.2. Airspace at Baker City Municipal Airport

The airport does not have a control tower; as a result, the airspace immediately surrounding BKE is designated as Class E airspace beginning at the ground surface. Additional Class E extensions progressively step up moving away from the airport (Figure 4.3).

Figure 4.3: Aeronautical Chart for Baker City Municipal Airport



Location Identifier → **NAME (NAM)**
AWOS 123.8
285 L 72 122.95 **C**
 ← UNICOM

- C** - Follows the Common Traffic Advisory Frequency (CTAF)
 ASOS/AWOS 135.42 - Automated Surface Weather Observing Systems
- UNICOM** - Aeronautical advisory station
- 285** - Elevation in feet
- L** - Lighting in operation Sunset to Sunrise
- *L** - Lighting limitations exist; refer to Supplement
- 72** - Length of longest runway in hundreds of feet; usable length may be less

LEGEND

- Airports having Control Towers are shown in **Blue**, all others in **Magenta**. Consult Chart Supplement for details involving airport lighting, navigation aids, and services.
- Hard-surfaced runways greater than 8,069 ft. or some multiple runways less than 8,069 ft.
- Non-Directional Beacon (NDB)
- Rotating airport beacon in operation Sunset to Sunrise
- Class E Airspace with floor 700 ft. above surface that laterally abuts 1,200 ft. or higher Class E Airspace

Source: FAA, Seattle Sectional Chart (effective November 3, 2022)

4.4. Instrument Approach Procedures

Instrument approach procedures (IAP) are a series of predetermined maneuvers published by the FAA to assist pilots in aligning an aircraft with the runway when flying under IFR. There are two categories of instrument approach procedures: precision and nonprecision approaches. A precision approach is one in which both horizontal and vertical guidance is provided, and a nonprecision approach is one in which only horizontal guidance is provided. An approach with vertical guidance (APV) is a type of nonprecision approach in which both horizontal and vertical guidance is provided but it does not meet the requirements to be considered a precision approach.⁴

4.4.1. Approach Procedures for Baker City Municipal Airport

There are three nonprecision instrument approach procedures published for BKE. These approach procedures incorporate multiple types of navigational aids and equipment to provide pilots with several options when landing at the airport. These approach procedures are summarized in Table 4.1 along with the minimum altitude and minimum visibility requirements associated with each approach.

Table 4.1: Instrument Approach Procedures

| Minimum Altitude* and Minimum Visibility** by Aircraft Approach Category*** | | | | |
|---|-----------------------|-----------------------|-----------------------|--------------------|
| Approach | Category A | Category B | Category C | Category D |
| Runway 13: RNAV (GPS) | | | | |
| LPV | | 3,621 ft & 3/4 mile | | |
| LPV | | 3,833 ft & 1 1/2 mile | | |
| LNAV/VNAV | | 3,916 ft & 1 7/8 mile | | |
| LNAV | 4,200 ft & 1 mile | 4,200 ft & 1 1/4 mile | 4,200 ft & 2 1/2 mile | |
| CIRCLING | 4,200 ft & 1 1/4 mile | | 4,560 ft & 3 miles | 4,720 ft & 3 miles |
| Runway 13: VOR/DME | | | | |
| Straight-In | 4,000 ft & 1 mile | | 4,000 ft & 1 3/4 mile | 4,000 ft & 2 miles |
| CIRCLING | 4,000 ft & 1 mile | | 4,560 ft & 3 miles | 4,720 ft & 3 miles |
| VOR-A | | | | |
| CIRCLING | 5,200 ft & 1 1/4 mile | 5,200 ft & 1 1/2 mile | 5,200 ft & 3 miles | |

*Altitude shown in feet above mean sea level (MSL).

**Visibility shown in statute miles. (One statute mile is equal to 5,280 feet.)

***Aircraft approach categories (AAC) are based on the speed an aircraft travels when configured for landing. (Typically 1.3 times the stall speed.)

- Category A: 0–90 knots
- Category B: 91–120 knots
- Category C: 121–140 knots
- Category D: 141–166 knots

Source: FAA, Instrument Approach Procedure (IAP) Charts for BKE (October 6–November 3, 2022)

The minimum altitude, known as the minimum descent altitude (MDA) or decision altitude (DA), is the lowest altitude a pilot may descend to until visual reference is obtained (i.e., visually identify the runway). The visibility minimums refer to the horizontal distance the pilot must be able to see in order to complete the approach. If the pilot is unable to establish the required visual reference, due to a low layer of clouds, fog, or other occurrence, the pilot cannot complete the approach.

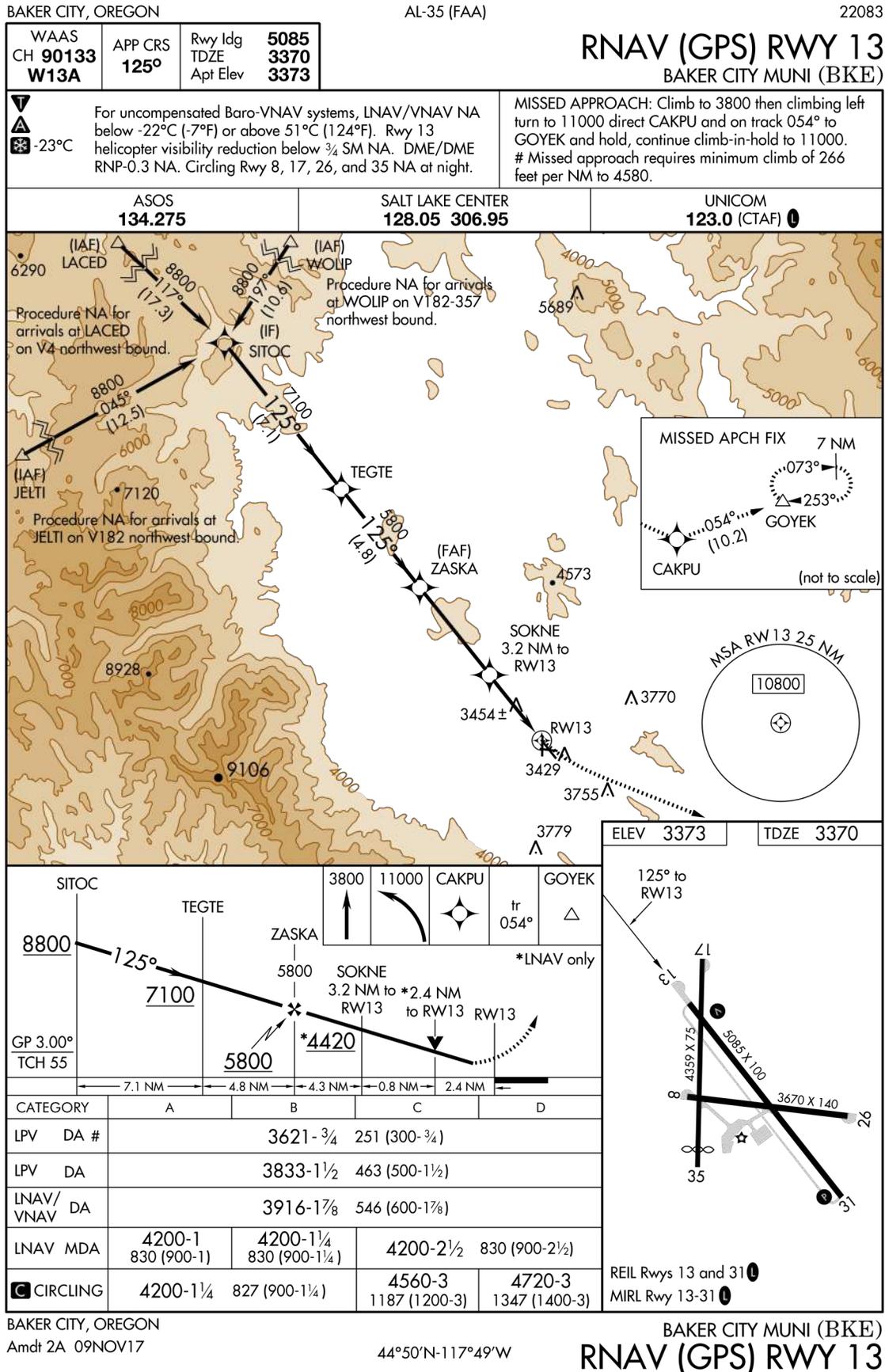
The most precise instrument approach procedures available at the airport are the approaches associated with area navigation (RNAV). Instrument approaches using RNAV are quite common; especially now that

GPS is so widely used. The sophistication of RNAV approaches vary based on the capabilities of the system used. For example, localizer performance with vertical guidance (**LPV**) systems typically provide the lowest minimums of all RNAV approaches because the lateral sensitivity increases as the aircraft gets closer to the runway. On the other hand, lateral and vertical navigation (**LNAV/VNAV**) systems do not have increased lateral sensitivity, and lateral navigation (**LNAV**) systems only provide lateral guidance.

The other two instrument approach procedures use the VOR/DME, a ground-based NAVAID. Ground-based instrument approach procedures will eventually be phased out in favor of the more widely used satellite-based procedures. However, many pilots still use these more traditional ground-based procedures.

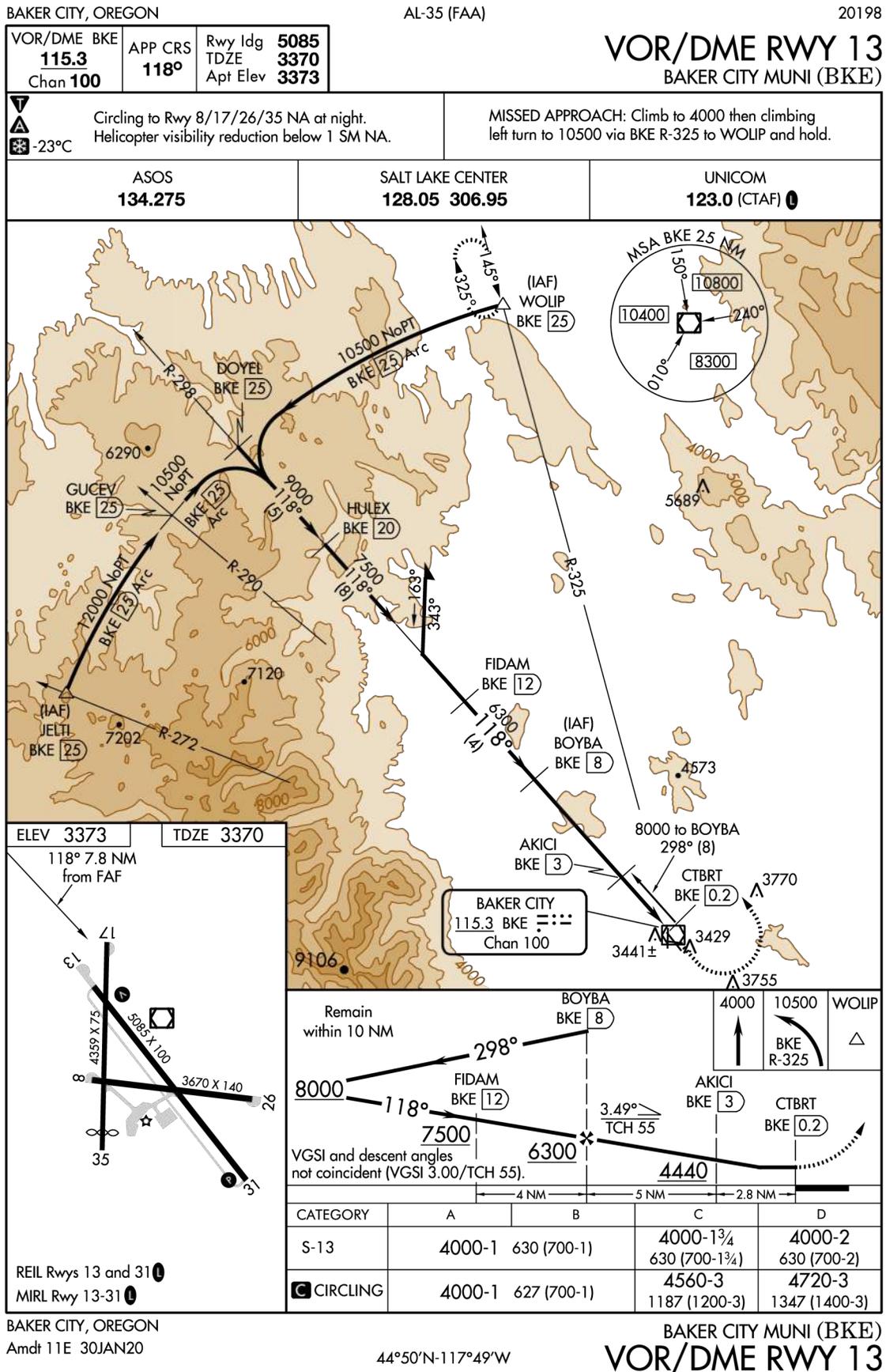
The approach plates, which are the graphical representation of these approach procedures, are shown in [Figure 4.4](#), [Figure 4.5](#), and [Figure 4.6](#).

Figure 4.4: Runway 13 RNAV Approach Plate



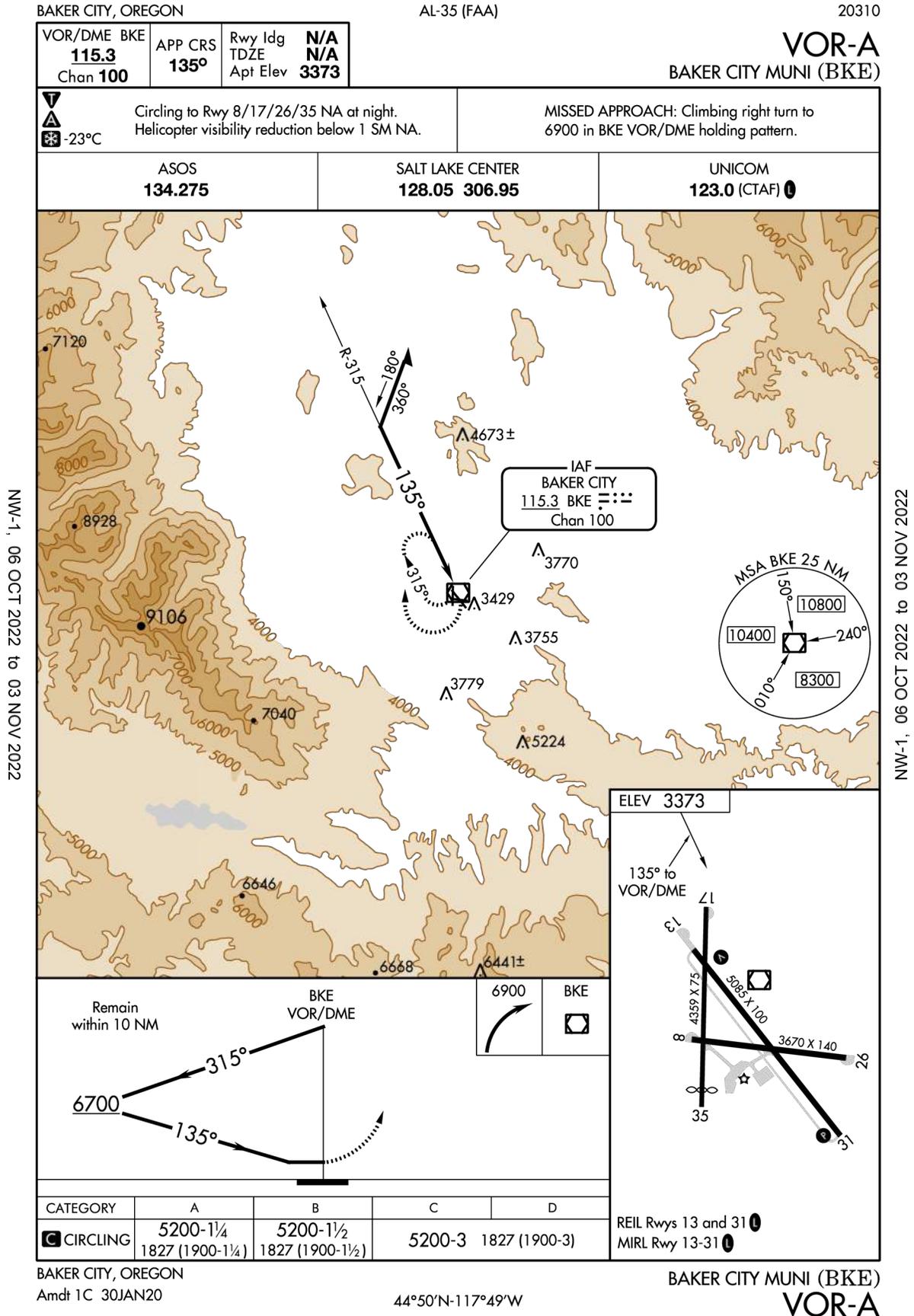
Source: FAA, Airport Data and Information Portal (ADIP)

Figure 4.5: Runway 13 VOR/DME Approach Plate



Source: FAA, Airport Data and Information Portal (ADIP)

Figure 4.6: VOR-A Approach Plate



Source: FAA, Airport Data and Information Portal (ADIP)

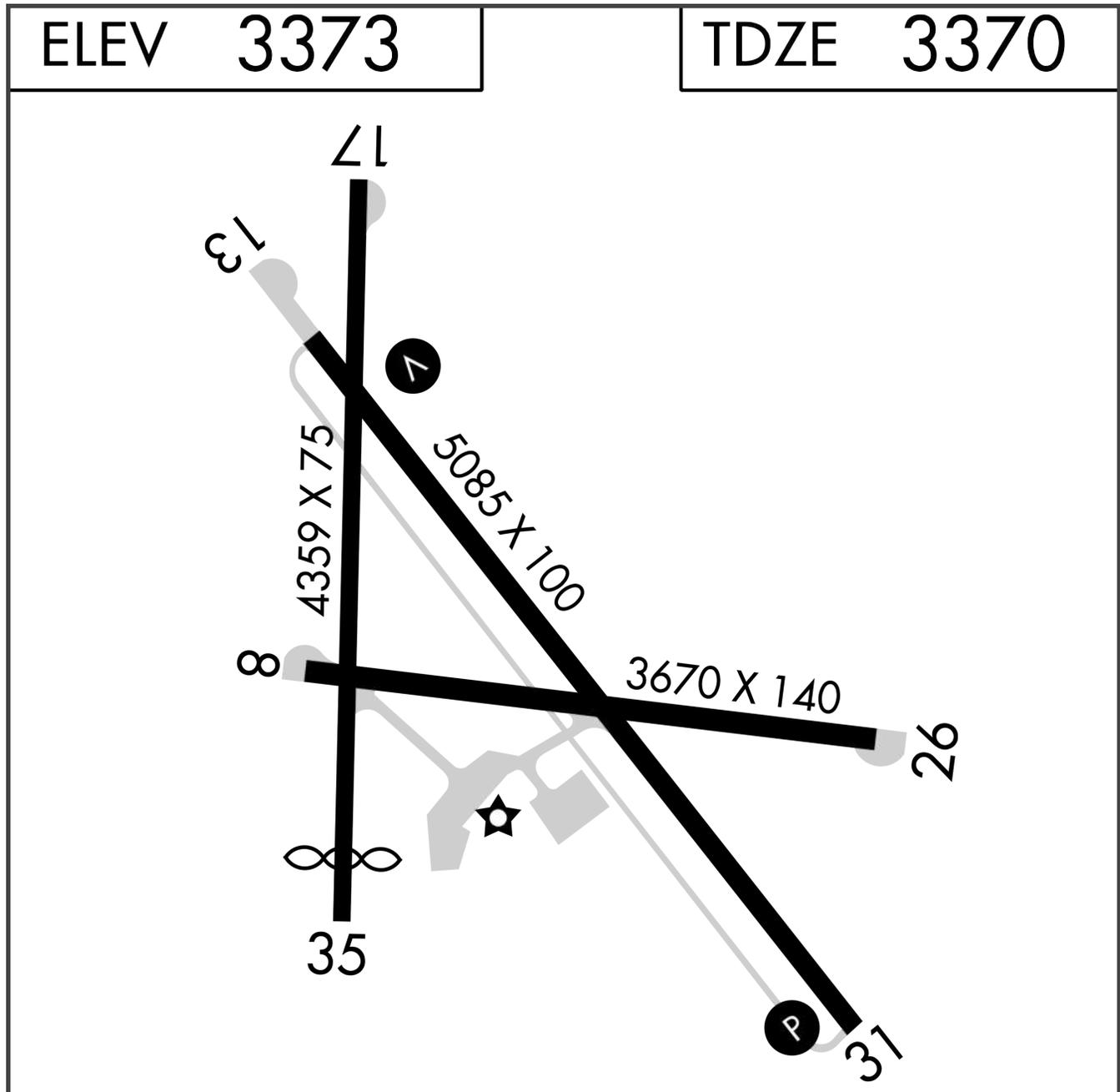
4.5. Airfield and Airside Facilities

The airfield is the portion of an airport that contains the facilities necessary for aircraft operations. This includes the runways, taxiways, and other aircraft movement areas as well as the airside facilities that support aircraft operations. These support facilities generally include the airfield pavements, markings, signage, lighting systems, navigational aids (NAVAIDS), and weather reporting equipment.

4.5.1. Runways

As shown in Figure 4.7, the airport has three runways; a primary runway, Runway 13/31, and two crosswind runways, Runway 17/35 and Runway 8/26. Following is a summary of the existing runway conditions with additional details discussed later in the relevant sections.

Figure 4.7: Runway Diagram



Source: FAA, Airport Data and Information Portal (ADIP)

a. Runway 13/31: Primary Runway

The airport's primary runway, Runway 13/31, is oriented in a northwest-southeast direction. As shown in Figure 4.8, it has a full-length parallel taxiway, Taxiway A, that runs along the southwest side. The runway is 5,085 feet long and 100 feet wide, and declared distances are all equal to the full runway length.⁵ The Runway 13 end is equipped with a blast pad that is 140 feet wide and 572 feet long. Runway blast pads help to limit erosion caused by jet engines and airplane propellers during takeoff.⁶

Runway Lighting Systems

The runway is equipped with medium-intensity runway lights (MIRL), which run along the sides of the runway, and runway end indicator lights (REIL) at each end of the runway. Runway 31 is equipped with a precision approach path indicator (PAPI), and Runway 13 is equipped with a visual approach slope indicator (VASI) to provide pilots with approach slope guidance while landing.⁷

Runway Markings

Both ends of Runway 13/31 have nonprecision instrument markings consisting of threshold markings with eight stripes, designation markings, aiming points, and a centerline. The runway markings are currently in good condition.⁸

Runway Pavement Strength

The asphalt surface is in good condition and has a published weight bearing capacity of 50,000 pounds for single wheel (SW) gear configurations and 65,000 pounds for dual wheel (DW) gear configurations.⁹

Runway Pavement Gradient

Runway 13/31 has a gradient (i.e., slope) of 0.15% which means the runway is nearly flat.¹⁰

Figure 4.8: Runway 13/31



Source: Ardurra

b. Runway 17/35: Crosswind Runway

The secondary or crosswind runway, Runway 17/35, has a north-south orientation (Figure 4.9). The runway is 4,359 feet long and 75 feet wide, and declared distances are all equal to the full runway length. The Runway 35 end has a 397-foot displaced threshold.¹¹ There is a taxiway turnaround at the Runway 17 end. A taxiway turnaround can serve as a combination holding bay and bypass taxiway in cases where providing a parallel taxiway is impractical.¹²

Runway Lighting Systems

Runway 17/35 is not lighted.¹³

Runway Markings

Both ends of Runway 17/35 have visual (i.e., basic) runway markings consisting of designation markings and a centerline stripe. The runway markings are currently in fair condition.¹⁴

Runway Pavement Strength

The asphalt surface is in good condition and has published a weight bearing capacity of 30,000 pounds for single wheel (SW) gear configurations.¹⁵

Runway Pavement Gradient

Runway 17/35 has a gradient (i.e., slope) of 0.16% which means the runway is nearly flat.¹⁶

Figure 4.9: Runway 17/35



Source: Ardurra

c. Runway 8/26: Crosswind Runway

Runway 8/26 has an east-west orientation and is 3,670 feet long and 140 feet wide (Figure 4.10). Declared distances are all equal to the full runway length. There is a taxiway turnaround at both runway ends.¹⁷

Runway Lighting Systems

Runway 8/26 is not lighted.¹⁸

Runway Markings

The markings on Runway 8/26 consists only of designation markings (i.e., numbers only with no centerline). The runway markings are very faded and are considered to be in poor condition.¹⁹

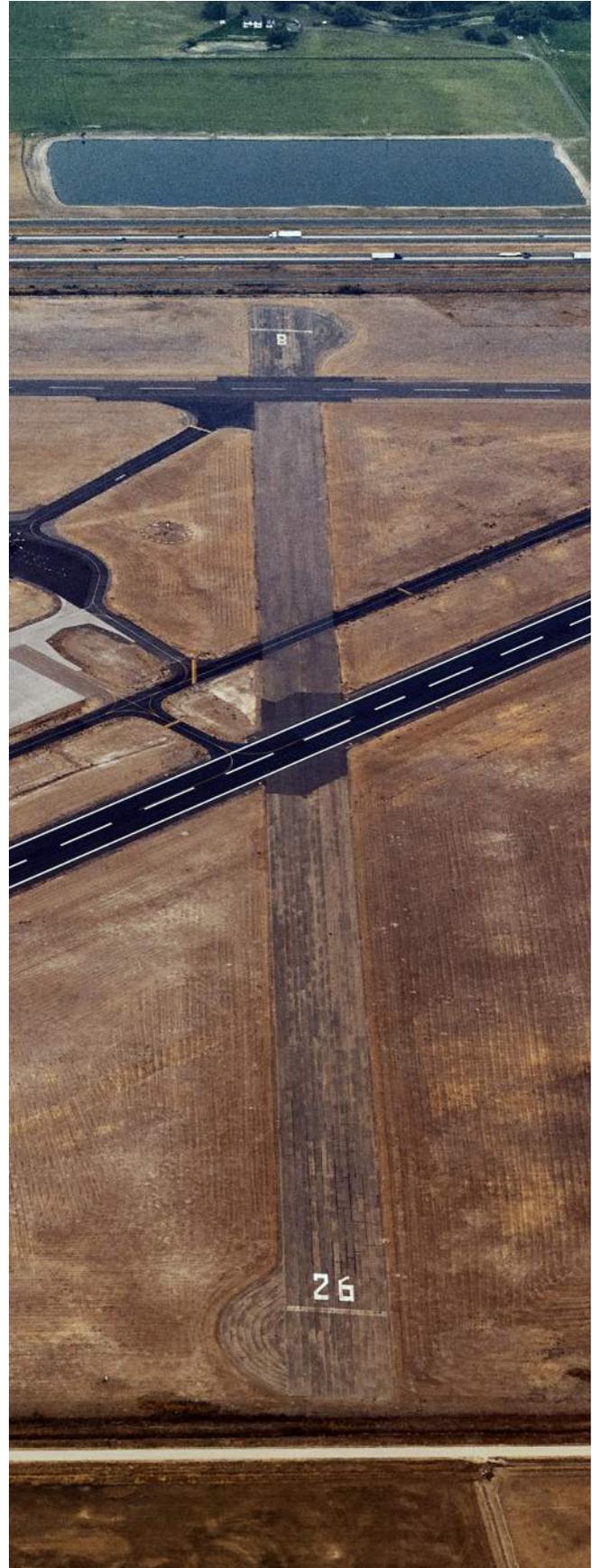
Runway Pavement Strength

The asphalt surface is in poor condition and has a published a weight bearing capacity of 30,000 pounds for single wheel (SW) gear configurations.²⁰

Runway Pavement Gradient

Runway 8/26 has a gradient (i.e., slope) of 0.01% which means the runway is nearly flat.²¹

Figure 4.10: Runway 8/26



Source: Ardurra

4.5.2. Taxiways and Connectors

Taxiways and taxiway connectors are used by aircraft to get to and from the runway without interfering with takeoffs or landings. Taxiways are designated with a letter or a letter and number combination. As shown in [Figure 4.1: Airport Layout](#), the airport has two taxiways and three connecting taxiways.

a. Taxiway Alpha

Taxiway Alpha (A) is a full-length parallel taxiway for Runway 13/31. It is approximately 5,000 feet long and 35 feet wide ([Table 4.2](#)). The southeast end of Taxiway A connects directly to Runway 31 via taxiway connector A-1, and the northwest end connects to Runway 13 via taxiway connector A-3. Taxiway A is equipped with medium intensity taxiway lights (MITL).

b. Taxiway Bravo

Taxiway Bravo (B) connects Runway 8 and Runway 35 to the main GA apron. It is 50 feet wide and is not equipped with lights or reflectors.

c. Connecting Taxiways

There are three connecting taxiways. They run perpendicular to Taxiway A and Runway 13/31 and are designated as A1, A2, and A3. They are each 35 feet wide and all three are equipped with a MITL system. The markings for all three connectors are new and in good condition.

Table 4.2: Taxiway and Taxiway Connector Dimensions

| Taxiway / Connector | Dimensions |
|---------------------|-----------------|
| Taxiway A | 5,000 x 35 feet |
| Taxiway B | 50 feet |
| A-1 | 35 feet |
| A-2 | 35 feet |
| A-3 | 35 feet |

Source: Ardurra

4.5.3. Airfield Pavements

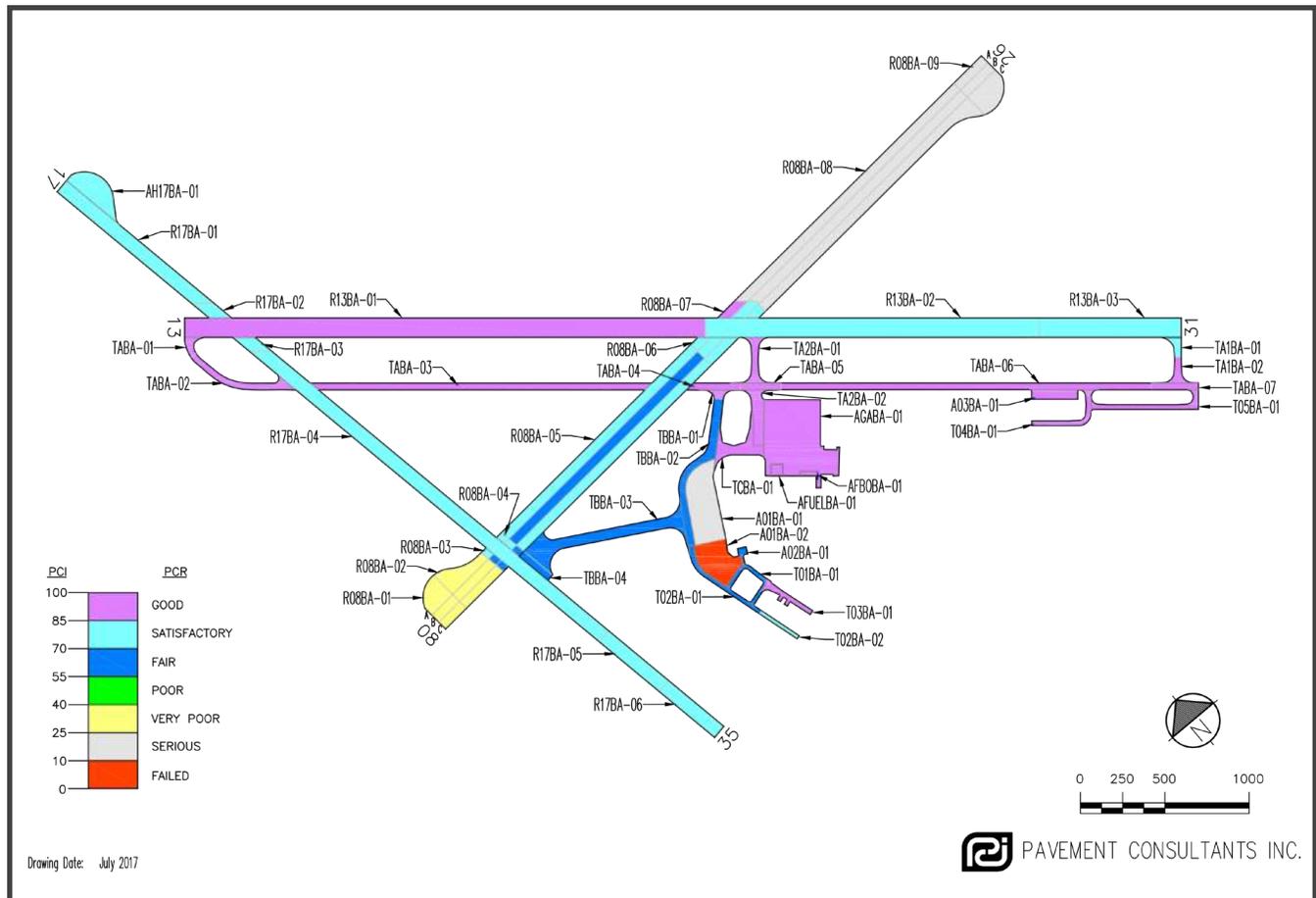
The Oregon Department of Aviation (ODA) routinely inspects the condition of airfield pavements at public-use NPIAS airports as part of its statewide pavement evaluation program (PEP). As part of this program, the ODA provides each airport with a pavement condition report every three years. This report includes recommendations for a five-year maintenance and rehabilitation plan. These recommendations are then incorporated into the statewide pavement maintenance program (PMP) which helps to fund the required projects. In this manner, the PEP provides an efficient mechanism for Oregon airports to identify and prioritize pavements requiring maintenance, rehabilitation, or replacement.²²

These programs help the ODA, FAA, and Baker City in planning and budgeting for pavement maintenance and construction projects. This process also assists airport sponsors in being compliant with FAA grant assurance #11 which requires airports that accept federal funds for pavement improvement projects to implement an effective airport pavement maintenance and management program.²³

The most recent inspection of the airport’s airfield pavements was conducted June 2017, and the report was published September 2017. The inspection was performed using the pavement condition index (PCI) methodology developed by the U.S. Army Corps of Engineers as outlined in the current edition of ASTM D-5340, *Standard Test Method for Airport Condition Index Surveys*. The results of this inspection are illustrated by the pavement condition index diagram (Figure 4.11).

The pavement condition report includes a pavement condition index rating for each section of the paved airfield surface. The PCI is a rating of the condition of each pavement surface that indicates the surface’s functional performance. Standard PCI values range from 0 (i.e., failed) to 100 (i.e., good). As shown in Figure 4.11, there are seven corresponding color-coded categories.²⁴

Figure 4.11: Pavement Condition Diagram

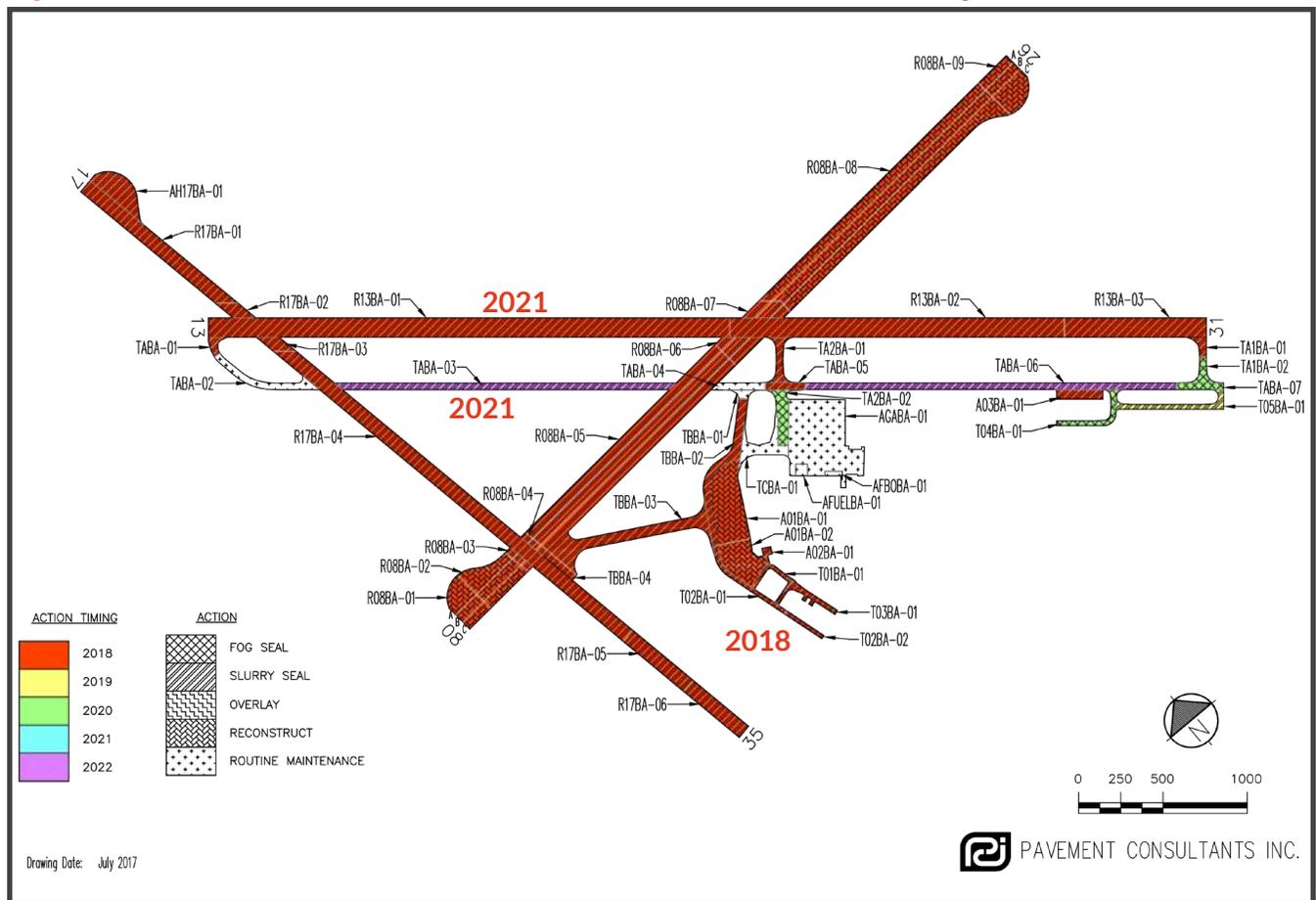


Source: ODA, 2017 Pavement Evaluation / Maintenance Management Program Report for BKE

Overall, the airport's pavements were determined to have an area-weighted average PCI rating of 71 which corresponds to an overall PCR of Satisfactory. The primary distresses observed during the inspection of asphalt concrete pavements were weathering, longitudinal and transverse cracking, block cracking, patching, and alligator cracking with isolated occurrences of bleeding and raveling. The concrete pavements are new and showed no distress.

Data collected during the visual condition survey were used by the PAVER software to generate a network maintenance report. This report identifies, for each pavement section, the recommended localized maintenance activities (i.e.-crack sealing, patching) that should be completed to repair the defects observed during the visual inspection. If the repair activities identified are completed, the pavement deterioration rate will be slowed. A five-year maintenance and rehabilitation plan (2018-2022) was produced using the results of this inspection. The pavement maintenance and rehabilitation projects that have been completed since this plan was put in place are listed in Table 3.1, and are noted in Figure 4.12. The remaining projects will be completed according to the plan timeline.²⁵

Figure 4.12: Five-Year Pavement Maintenance and Rehabilitation Plan Diagram



Source: ODA, 2017 Pavement Evaluation / Maintenance Management Program Report for BKE

4.5.4. Airfield Signage

An airport's runway and taxiway signage system is essential to the safe and efficient use of the airfield for both aircraft and ground vehicles. The airfield is equipped with a variety of signs such as destination signs, location signs, and mandatory instruction signs. These signs provide pilots with visual cues and useful information that is important during takeoff, landing, and taxiing. In general, airports use standard sign types and formats to help avoid confusion for pilots and ground crews. The signs located at Runway 13/31 and Taxiway A as well as connectors A-1, A-2, and A-3 are new, lighted signs in good condition. All other airport signage is unlit.

a. Destination Signs

A destination sign has a black inscription on a yellow background. These signs always have an arrow indicating the direction of the taxiing route to a remote location. Destinations commonly shown on these types of signs include runways, aprons, terminals, and fixed base operators (Figure 4.13).²⁶

Figure 4.13: FBO Destination Sign with Taxiway A Location Sign



Source: Ardurra

b. Location Signs

These signs identify the taxiway or runway upon which the aircraft is located. The sign has yellow lettering with a yellow border on a black background. (Figure 4.13).²⁷

c. Mandatory Instruction Signs

Mandatory instruction signs have white lettering with a black outline on a red background. They are used to denote an entrance to a runway or other critical areas. At uncontrolled airports (i.e., airports without an air traffic control tower), such as BKE, vehicles and aircraft may proceed beyond these signs only after appropriate precautions are taken.

4.5.5. Airfield Lighting Systems

Airfield lighting systems extend an airport's usefulness during periods of darkness and reduced visibility. They also provide information and guidance to pilots while maneuvering at the airport. The airfield lighting systems at BKE are pilot activated using the common traffic advisory frequency (CTAF) 123 MHz. It is important to note that the owner of the light system or navigation aids is responsible for maintenance. In many cases, the ODA and FAA help the airport pay for this maintenance through grants.

a. Runway End Identifier Lights

Runway end identifier lights (REIL) provide rapid and positive identification of the approach end of a runway. They are especially helpful when the runway is surrounded by a preponderance of other lighting, lacks contrast with the surrounding terrain, or during periods of reduced visibility. The system consists of a pair of synchronized flashing lights placed laterally on each side of the runway threshold facing the approach area. Runway 13 and Runway 31 are both equipped with a REIL system (Figure 4.14). They are both located laterally on each side of the runway threshold. Both sets are owned by the airport.

Figure 4.14: Runway End Identifier Lights



Source: Ardurra

b. Airport Beacon

Airport beacons are a lighted navigation aid that indicates the location of the airport. In the United States, different types of airports, such as land, water, or military, are represented by specific color combinations. A white and green beacon indicates the facility is a lighted land airport. Beacons marking public-use airports typically flash at a rate of 22–26 per minute and are mounted on top of towering structures.²⁸ The beacon at BKE is a standard green and white beacon. It is on top of the Heilner Hangar and is owned by the airport.

c. Medium Intensity Runway Lights

Medium intensity runway lights (MIRL) are a series of lights used to outline the runway to improve safety and visibility. These types of systems typically use white lights to define the lateral limits of the runway. The lights marking the ends of the runway typically emit red light toward the runway to indicate the end of runway to departing aircraft and emit green outward from the runway end to indicate the threshold to landing aircraft. Runway 13/31 is equipped with a MIRL system (Figure 4.15). It is owned by the airport.

Figure 4.15: Medium Intensity Runway Lights



Source: Ardurra

d. Visual Glideslope Indicators

The airport is equipped with two visual glideslope indicators; a precision approach path indicator and a visual approach slope indicator.

Precision Approach Path Indicators

Precision approach path indicator (PAPI) systems aid pilots by providing visual glideslope guidance during landing. They consist of one row of two or four lights and are typically located at the left side of the landing runway at the approximate touchdown point. Runway 31 is equipped with a two-light PAPI. It is located to the left side of the runway at the approximate touchdown point (44°49'55.14"N, 117°48'8.95"W). It has a standard three-degree glide path angle. A pilot on the correct glideslope path will see two white lights and two red lights. The PAPI is owned by the airport.

Visual Approach Slope Indicators

Visual approach slope indicator (VASI) systems aid pilots by providing visual guidance during an approach to the runway. A pilot on the correct glideslope path of three degrees will see a set of red lights over a set of white lights. They are typically positioned to the left of the runway and consist of two or four light units. Runway 13 is equipped with a VASI consisting of four light units and has a standard three-degree glide path angle. It is located just to the left of the runway and is approximately 533 feet from the threshold (44°50'28.79"N, 117°48'42.61"W). The VASI is owned by the airport.

4.5.6. Navigational Aids

There are several different types of navigation aids (NAVAID) available for use at airports that can vary widely in function and level of sophistication. These can be simple devices that serve as visual markers, communication equipment that transmits radio signals, or sophisticated systems that provide navigational guidance with a high degree of accuracy.

a. Very High Frequency Omnidirectional Range with Distance Measuring Equipment

A very high frequency omnidirectional range (VOR) is a ground-based NAVAID that is widely used within the National Airspace System (NAS). It is aligned with magnetic north and transmits azimuth information for high and low altitude routes and airport approaches. When the VOR is located alongside distance measuring equipment (DME), it is referred to as a VOR-DME. Together, they transmit both azimuth and distance information to aircraft.

There is a federally-owned VOR-DME located near the northeast corner of the airport at approximately $44^{\circ}50'26.19''\text{N}$ and $117^{\circ}48'28.37''\text{W}$ (Figure 4.16). Its identifier, BKE, is the same as the airport's. The VOR-DME is surrounded by a circular area with a 1,000-foot radius that is designated as critical. Other structures are not permitted within this area.

Figure 4.16: Very High Frequency Omnidirectional Range with Distance Measuring Equipment



Source: Ardurra

b. Segmented Circle and Wind Indicator

A segmented circle is a visual indicator that performs two functions; it aids pilots in visually locating an airport and provides a centralized location for other airport indicators and signal devices. They generally have a wind cone located in the center and are lighted at night for improved visibility. Additionally, they will include traffic pattern indicators if there is any variation from the normal left-hand traffic pattern.

The lighted wind cone at BKE is located in the center of the segmented circle (Figure 4.17). It is approximately 323 feet west of Taxiway B and approximately 180 feet south of Runway 8/26 ($44^{\circ}50'9.15''\text{N}$, $117^{\circ}48'36.51''\text{W}$). It is owned by the airport.

Figure 4.17: Segmented Circle and Wind Indicator

Source: Ardurra

4.5.7. Weather Reporting Equipment

a. Automated Surface Observing System

An automated surface observing system (ASOS) is a weather sensing suite designed to assist pilots and flight planners by automatically providing up-to-date meteorological observations. These systems, which can have a variety of sensors, typically measure wind direction and speed, cloud ceiling height, visibility, air temperature, precipitation, dew point, barometric pressure, and humidity. The weather reports can be accessed via telephone, online, radio, or local computer terminal.

The ASOS is at BKE located at the northeast corner of the airport and is approximately 677 feet east of Runway 17/35 (Figure 4.18). People can receive these weather reports via radio at 134.275 or by calling (541) 523-5412. This system is owned by the National Oceanic and Atmospheric Administration (NOAA).

Figure 4.18: Automated Surface Observing System

Source: Ardurra

b. Hygrothermometer System

There is a H083 hygrothermometer transmitter system located at airport (Figure 4.19). It is a climatic thermometer and dew/frost point indicator. It is located just west of Taxiway A at approximately 44°50'15.74"N and 117°48'36.99"W. This system is not in use and has been decommissioned. It is owned by the National Weather Service (NWS) which has scheduled this system for removal.

Figure 4.19: Hygrothermometer



Source: Ardurra

c. Ceiling Light Projector

The airport is equipped with a ceiling light projector (Figure 4.20). It is a type of cloud-height indicator that projects a narrow, focused beam of light to measure vertical visibility.²⁹ It is located just west of Taxiway A at approximately 44°50'14.58"N and 117°48'35.82"W. This system is not in use and has been decommissioned. It is owned by the National Weather Service which has scheduled this system for removal.

Figure 4.20: Ceiling Light Projector



Source: Ardurra

4.6. Landside and Landside Facilities

The landside is the portion of an airport that contains the facilities necessary for the processing of passengers, cargo, freight, and ground transportation. At Baker City Municipal Airport they include the main general aviation (GA) terminal apron, aircraft hangar and tiedown areas, the fixed base operator (FBO), support facilities and equipment, security fencing, automobile parking, and utilities.

4.6.1. Main General Aviation Terminal Apron

The main GA terminal apron is approximately 96,000 square feet. It is located between the end of Taxiway B and taxiway connector A-2. It provides access to the main hangar area, an aircraft tiedown area, the helicopter parking pads, the former flight service station (FSS), the former FAA building, the storage sheds, and the Heilner hangar. It is used by both local and itinerant aircraft. The former FSS building is partially leased by the U.S. Forest Service during fire season and is used as a base of operations.

4.6.2. Aircraft Hangars

As shown in [Figure 4.1: Airport Layout](#), the airport has four hangar areas with a total of 33 hangar spaces that vary in size.

a. Hangar Area A

Hangar Area A is located at the southwest corner of the airport between West Airport Road and the end of Runway 35. There are six, small, private, box hangars located at this hangar area ([Figure 4.21](#)).

Figure 4.21: Hangar Area A



Source: Ardurra

b. Hangar Area B

Hangar area B is the main hangar area. It is located at the southwest corner of the main GA terminal apron. There are twelve, small, private, box hangars located along the main hangar row (Figure 4.22). There is also a city-owned T-hangar (Figure 4.23), a city-owned quad hangar with four spaces (Figure 4.25), and the Heilner hangar which is also owned by the city (Figure 4.24).

Figure 4.22: Main Hangar Row

Source: Ardurra

Figure 4.23: City Owned T-Hangar

Source: Ardurra

Figure 4.25: City Owned Quad Hangar



Source: Ardurra

Figure 4.24: Heilner Hangar



Source: Ardurra

c. Hangar Area C

Hangar area C is adjacent to the FBO apron. There are two large, private hangars and two, small, portable hangars located in this hangar area (Figure 4.26).

Figure 4.26: Hangar Area C



Source: Ardurra

d. Hangar Area D

Hangar Area D is located near the southeast corner of the airport between the end of Runway 31 and South Airport Lane. There are two private hangars located in this hangar area (Figure 4.27).

Figure 4.27: Hangar Area D



Source: Ardurra

4.6.3. Aircraft Tiedowns

There are 19 small aircraft tiedowns located on the main GA terminal apron (Figure 4.28).

Figure 4.28: Aircraft Tiedowns



Source: Ardurra

4.6.4. Helicopter Parking Pads

There are three helicopter parking pads located on the main GA terminal apron. This includes two for small helicopters and one for a medium helicopter (Figure 4.29).

Figure 4.29: Helicopter Parking Pads



Source: Ardurra

4.6.5. Fixed Base Operator

A fixed base operator (FBO) is a business that operates at an airport and provides services to airport users. Typically, these services are related to the operation and maintenance of aircraft but they can also extend to services and amenities like flight instruction, charters, rentals, pilots lounges, conference rooms, and car rentals. At BKE, the FBO office building is located adjacent to the main parking area (Figure 4.30).

Figure 4.30: FBO Office Building and Maintenance Hangar



Source: Ardurra

Baker Aircraft is the sole FBO at BKE. The company provides a full range of services including aircraft fuel, aircraft rentals, charter flights, aircraft maintenance and repair services, hangar rentals, aviation equipment and supplies, oxygen service, flight instruction, a courtesy car and car rentals, crew lounge, and more (Figure 4.31).³⁰ The FBO also has a contract with the city to perform airport maintenance and snow removal.

Figure 4.31: Crew Lounge



Source: Ardurra

4.6.6. FBO Apron and Maintenance Hangar

The FBO apron is approximately 126,000 square feet and is located immediately northeast of the FBO office building. It has eight marked tie-down spaces available for small aircraft and three for medium aircraft. The maintenance hangar is located next to the office building (Figure 4.32).

Figure 4.32: FBO Apron



Source: Ardurra

4.6.7. Fuel Facilities

There are two 6,000-gallon Jet-A fuel storage tanks and one 12,000-gallon 100LL avgas storage tank located at the northwest corner of the FBO apron where fuel is available via self serve (Figure 4.33). All three storage tanks are operated by the FBO but are owned by the city. The FBO also operates a 3,000-gallon capacity full-service Jet-A fuel truck.³¹

Figure 4.33: Fuel Storage Tanks



Source: Ardurra

4.6.8. Fire and Emergency Medical Response

The airport does not have aircraft rescue and fire fighting (ARFF) equipment on site. The Baker City Fire Department (BCFD) and Baker Rural Fire Protection District provides emergency fire fighting services at the airport. A private pond located just south of South Airport Lane has a connecting dry stand pipe at the roadside to allow water from the pond to be used for firefighting purposes. Emergency medical services are provided by Metro West Ambulance under a contract with Baker County.³²

4.6.9. Snow Removal and Ice Control

Snow removal and ice control is performed by FBO staff. The FBO uses a six-wheel deuce army rig equipped with a plow blade for snow removal. It is owned by the airport.

4.6.10. Landscaping and Pest Control

The FBO is under contract by the airport to mow and maintain the landscaped areas of the airport property. As shown in Figure 4.34, the airfield maintenance equipment available at BKE include both a tractor with a

Figure 4.34: Airfield Maintenance Equipment



Source: Ardurra



mower attachment and a tractor with a spray attachment. Both are owned by the FBO.

4.6.11. Security, Fencing, and Vehicle Access Gates

The airport is enclosed by a four-foot, wire, wildlife fence. However, there is a significant gap in the fencing at the main entrance (Figure 4.35). There are two electric security gates located at the entrance to Hangar Area D, and a swing gate at the entrance to Hangar Area A (Figure 4.36).

Figure 4.35: Main Entrance

Source: Ardurra

Figure 4.36: Vehicle Security Gate

Source: Ardurra

4.6.12. Automobile Parking

There is a 32,000 square foot gravel parking area located near the FBO. It is unmarked and can accommodate about 20 vehicles. When needed, there is additional space in the unpaved, unmarked areas adjacent to the various hangars and buildings.

4.6.13. Utilities and Stormwater

The developed areas of the airport are serviced by both public and private utilities.

a. Water and Sewer Service

Municipal services are not available at Baker City Municipal Airport. All water services at the airport are supplied by three wells located in the central terminal area. The main well used to supply all domestic water for the airport is located at the lawn area just east of Heilner Drive (Figure 4.37). It is approximately 730 feet deep and is chlorinated. A second well is used by the FBO for irrigation. It is located approximately 100 feet southeast of the southeast corner of the maintenance hangar. There is a third well located along the western row of hangars at approximately 44°50'1.72"N, 117°48'40.13"W.

All sanitary sewer for the structures serviced by domestic water is handled by various septic systems. There are septic tanks and drainfields located at the northwest corner of the FBO building, to the north and south of the former FSS building, and just southwest of the former FBO hangar.³³

Figure 4.37: Main Well



Source: Ardurra

b. Telephone and Internet Service

The FBO provides public Wi-Fi available within the FBO office building and crew lounge area.³⁴

c. Power

Oregon Trail Electric Cooperative (OTEC) provides the airport with electricity used at all airport buildings as well as the airfield lighting systems and navigational aids. Electric power is routed to the airport from the intersection of West Airport Road and South Airport Lane. Feeder lines come approximately 1,000 feet east along South Airport Lane and then into the airport where lines are placed in conduits below ground.³⁵

d. Airport Tenants

It is the responsibility of each airport tenant to arrange for utility connections and pay for these services.³⁶

4.6.14. Lighting Vault

There is a lighting vault located at the northwest edge of the east lawn area (Figure 4.38).

Figure 4.38: Lighting Vault

Source: Ardurra

4.6.15. Storage Sheds

There are two city-owned storage sheds located next to the former flight service station (Figure 4.39).

Figure 4.39: Storage Sheds

Source: Ardurra

4.6.16. Stormwater Drainage Systems

An open drainage ditch runs along the airport boundary, and stormwater runoff generally flows to the north.³⁷ The stormwater systems will be discussed in more detail in Chapter 8: *Environmental Overview*.

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FORECAST OF AVIATION ACTIVITY



| | |
|---|-------------|
| Introduction | 5-1 |
| Existing Aviation Activity and Forecast Summary | 5-2 |
| Aircraft Operations..... | 5-2 |
| Based Aircraft..... | 5-3 |
| Critical Aircraft | 5-3 |
| Forecast Summary | 5-4 |
| Historical Aviation Activity..... | 5-5 |
| Aircraft Operations..... | 5-6 |
| Based Aircraft..... | 5-6 |
| Review of Previous Forecasts | 5-7 |
| 2010 Airport Master Plan Forecast | 5-7 |
| Terminal Area Forecast..... | 5-8 |
| Oregon Aviation Plan Forecast..... | 5-9 |
| Factors Affecting Aviation Activity | 5-10 |
| National Aviation Forecast, FAA Aerospace Forecast, Fiscal Years 2022-2042..... | 5-10 |
| National Factors Affecting Aviation Activity..... | 5-12 |
| Statewide Aviation Industry Forecast, Oregon Aviation Plan v6.0 | 5-13 |
| Local Factors With Potential to Affect Aviation Activity..... | 5-15 |
| Aviation Forecast Methodologies | 5-16 |
| Regression Analysis..... | 5-16 |
| Trend Analysis | 5-16 |
| Market Share Analysis..... | 5-16 |
| Smoothing | 5-16 |
| Forecasting Methodology and Approach Used | 5-16 |
| Sources of Data | 5-17 |
| Aircraft Operations..... | 5-18 |
| Air Taxi Operations | 5-18 |
| General Aviation Operations | 5-19 |
| Military Operations | 5-20 |

CONTENTS

| | |
|---|-------------|
| Based Aircraft | 5-21 |
| Based Aircraft Inventory..... | 5-21 |
| Based Aircraft Forecast..... | 5-22 |
| Based Aircraft Forecast by Aircraft Type..... | 5-22 |
| Fleet Mix | 5-23 |
| Critical Aircraft..... | 5-24 |
| Existing Critical Aircraft..... | 5-24 |
| Future Critical Aircraft..... | 5-25 |
| Forecast Evaluation | 5-26 |

TABLES

| | |
|--|------|
| Table 5.1: Forecast Summary | 5-4 |
| Table 5.2: Historical Aviation Activity, 2011–2020..... | 5-5 |
| Table 5.3: Terminal Area Forecast for BKE, 2021–2041..... | 5-8 |
| Table 5.4: Oregon Aviation Plan Forecast for BKE, 2015–2035..... | 5-9 |
| Table 5.5: Statewide Forecast for General Aviation Operations, 2015–2035 | 5-13 |
| Table 5.6: Statewide Forecast for Military Operations, 2015–2035 | 5-14 |
| Table 5.7: Statewide Forecast for Based Aircraft, 2015–2035..... | 5-14 |
| Table 5.8: Socioeconomic Forecast for Baker County, 2021–2041..... | 5-15 |
| Table 5.9: Air Taxi Operations Scenarios..... | 5-18 |
| Table 5.10: Itinerant GA Operations Scenarios..... | 5-19 |
| Table 5.11: Local GA Operations Scenarios..... | 5-19 |
| Table 5.12: Military Operations Forecast..... | 5-20 |
| Table 5.13: Based Aircraft Forecast Scenarios | 5-22 |
| Table 5.14: Based Aircraft Forecast by Aircraft Type..... | 5-22 |
| Table 5.15: Fleet Mix | 5-23 |
| Table 5.16: Cessna Citation CJ1 Specifications..... | 5-24 |
| Table 5.17: Beechcraft King Air 260 Specifications | 5-25 |
| Table 5.18: Forecast Evaluation..... | 5-26 |

FIGURES

| | | |
|-------------|---|------|
| Figure 5.1: | Review of 2010 Airport Master Plan Forecast | 5-7 |
| Figure 5.2: | FAA Aerospace Forecast for Active General Aviation Aircraft, 2022–2042 | 5-11 |
| Figure 5.3: | FAA Aerospace Forecast for General Aviation Hours Flown, 2022–2042..... | 5-11 |
| Figure 5.4: | FAA Aerospace Forecast for Active Pilots by Certificate Type, 2022–2042 | 5-12 |
| Figure 5.5: | Based Aircraft, 2011–2020..... | 5-21 |
| Figure 5.6: | Based Aircraft Inventory, 2021 | 5-21 |
| Figure 5.7: | Existing Critical Aircraft, Cessna Citation CJ1 | 5-24 |
| Figure 5.8: | Future Critical Aircraft, Beechcraft King Air 260..... | 5-25 |

CHAPTER FIVE

FORECAST

The forecast is a critical component of the airport master planning process. It is used to document existing operations and aircraft and help anticipate the aviation activity that is expected to occur at the airport during the 20-year planning period of 2021–2041. It also provides the basis for guiding airport development needed to meet future demand by identifying the airport’s critical design aircraft.

5.1. Introduction

An effective forecast should be realistic, based on current data, and developed using appropriate methods. Developing a forecast for an airport master plan involves considering a variety of factors that can vary in complexity—such as the size and location of the airport, the type of aircraft using the airport, and activity levels. However, every forecast is developed using the same series of basic steps. As outlined in FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, these steps include identifying existing aviation activity; reviewing historical activity levels and previous forecasts; examining industry trends and regional socioeconomic data; selecting the appropriate forecast method; and then applying the methodology and evaluating the results.

The forecast developed for this airport master plan includes projections for a short-term planning horizon of five years, a medium-term planning horizon of ten years, and a long-term planning horizon of 20 years. Each of these projections uses 2021 as the base year when applying the selected forecasting methodology.



5.2. Existing Aviation Activity and Forecast Summary

It is important to first identify existing aviation activity to make sure the forecast includes all relevant activities likely to affect airport facilities. At Baker City Municipal Airport (BKE), these activities include aircraft operations (i.e., takeoffs and landings) and the critical aircraft as well as the number and type of aircraft based at the airport.

5.2.1. Aircraft Operations

Every landing, takeoff, or touch-and-go procedure conducted at an airport is counted as one operation. They are separated into three main categories—air taxi, general aviation, and military operations. These operations are then classified as either itinerant or local. In general, local operations are flights that originate and terminate at the same airport while itinerant operations are flights that originate and terminate at different airports. Each type of operation is forecasted separately in order to account for the different national or local trends and socioeconomic factors that are expected to affect each category.

a. Air Taxi

Air taxi, or charters, are unscheduled, for-hire flights conducted using aircraft with 60 or fewer seats. It is important to note that air taxi operations are not handled the same way in every forecast. For example, the FAA's Terminal Area Forecast (TAF) considers air taxi operations to be commercial service operations. However, for this forecast, they are considered to be a type of general aviation operations because these flights are not operated according to pre-published schedules. While this forecast considers these operations to be a type of general aviation operation, they are forecasted separately in order to avoid skewing the forecast for total general aviation operations. Air taxi operations are expected to increase from 3,600 for 2021 to 4,393 for 2041 with a compound annual growth rate (CAGR) of 1.00%.

b. General Aviation

General aviation includes all operations that are not scheduled commercial service or military operations. At BKE this includes a wide variety of activity such as privately owned aircraft used for business or personal travel, pilot training, recreation, agricultural, aerial firefighting, and medical transport or other types of emergency flight services. Itinerant general aviation operations are expected to increase from 10,057 for 2021 to 12,631 for 2041 with a CAGR of 1.15%. Local general aviation operations are expected to increase from 3,143 for 2021 to 3,835 for 2041 with a CAGR of 1.00%. Overall, general aviation operations are expected to increase from 13,200 for 2021 to 16,466 for 2041 with an overall CAGR of 1.11%.

c. Military

Unless there is specific knowledge of an upcoming change, military operations are typically forecast to continue at current levels because the Department of Defense provides limited details regarding future activity levels. BKE supports occasional military operations, and there are no indicators to suggest a significant change will occur during the 20-year planning period. As a result, itinerant military operations are projected to remain at 100 annual operations, and local military operations are projected to remain at zero for the 20-year planning period.

5.2.2. Based Aircraft

A based aircraft is any operational and airworthy aircraft that is based at the airport for the majority of the year.¹ The type, size, and number of aircraft based at an airport are important factors to consider when analyzing airport capacity, facility requirements, and planning future development. This is because the forecast of based aircraft can indicate the need for new hangar space as well as new or expanded services. Based aircraft can also impact facility requirements for runways, taxiways, and aprons. Overall, based aircraft are expected to increase from 43 for 2021 to 65 for 2041 with a CAGR of 2.10%.

5.2.3. Critical Aircraft

The critical aircraft is the most demanding type of aircraft, or group of aircraft with similar characteristics, that regularly use the airport. (Regular use is defined as a minimum of 500 annual operations; excluding touch-and-go operations).² The critical aircraft is often referred to as the design aircraft because it is used to determine the correct design standards for many areas of the airport.

a. Existing Critical Aircraft

The existing critical aircraft is a Cessna Citation CJ1 because it best represents the most demanding group of aircraft with similar characteristics that regularly use the airport. This aircraft has an aircraft approach category (AAC) of B, an aircraft design group (ADG) of I, a taxiway design group (TDG) of 1A, and is classified as a small aircraft.

b. Future Critical Aircraft

Based on the projected fleet mix and the general aviation operations forecast, the Beechcraft King Air 260 is the aircraft selected as the representative future critical aircraft. This aircraft has an AAC of B, an ADG of II, a TDG of 2A, and is classified as a small aircraft.

5.2.4. Forecast Summary

Table 5.1 summarizes the forecast of aircraft operations and based aircraft that has been developed for this airport master plan. However, it is important to understand that actual activity may differ from these forecasts because aviation activity can be affected by a wide range of unforeseen developments at the local, regional, and national levels. A copy of the FAA approval of this airport master plan forecast is included as Appendix B: FAA Forecast Approval.

Table 5.1: Forecast Summary

| | Base Year | Forecast Years | | | Compound Annual Growth Rate | | |
|-----------------------------|---------------|----------------|---------------|---------------|-----------------------------|--------------|--------------|
| | 2021 | 2026 | 2031 | 2041 | 5-Year | 10-Year | 20-Year |
| Operations | | | | | | | |
| Air Taxi | 3,600 | 3,784 | 3,977 | 4,393 | 1.00% | 1.00% | 1.00% |
| Itinerant GA | 10,057 | 10,647 | 11,271 | 12,631 | 1.15% | 1.15% | 1.15% |
| Local GA | 3,143 | 3,303 | 3,472 | 3,835 | 1.00% | 1.00% | 1.00% |
| Itinerant Military | 100 | 100 | 100 | 100 | 0.00% | 0.00% | 0.00% |
| Local Military | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% |
| Total Operations | 16,900 | 17,834 | 18,820 | 20,959 | 1.08% | 1.08% | 1.08% |
| Based Aircraft | | | | | | | |
| Single Engine | 33 | 36 | 40 | 47 | 1.76% | 1.94% | 1.78% |
| Multi-Engine | 3 | 4 | 4 | 5 | 5.92% | 2.92% | 2.59% |
| Jet | 1 | 1 | 2 | 3 | 0.00% | 7.18% | 5.65% |
| Helicopters | 6 | 7 | 7 | 10 | 3.13% | 1.55% | 2.59% |
| Total Based Aircraft | 43 | 48 | 53 | 65 | 2.22% | 2.11% | 2.09% |

Source: Ardurra.

5.3. Historical Aviation Activity

It is important to examine the airport's historical aviation activity and identify past trends before preparing the forecast. Understanding the airport's usage patterns and historical demand for aviation services is used to help analyze the accuracy of previous forecasts as well as develop and evaluate the current forecast.

Table 5.2 summarizes the historical activity levels of aircraft operations and based aircraft for 2011–2020 as reported in the TAF.

Table 5.2: Historical Aviation Activity, 2011–2020

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|-----------------------------|-------------------|---------------|---------------|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Operations | | | | | | | | | | |
| Air Taxi | 0 | 0 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 |
| Itinerant GA | 3,055 | 3,096 | 9,500 | 9,500 | 9,500 | 9,500 | 9,500 | 9,500 | 9,500 | 9,500 |
| Local GA | 9,164 | 9,287 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| Itinerant Military | 0 | 0 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Local Military | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Operations | 12,219 | 12,383 | 16,200 | 16,200 | 16,200 | 16,200 | 16,200 | 16,200 | 16,200 | 16,200 |
| Based Aircraft | | | | | | | | | | |
| Total Based Aircraft | 35 | 37 | 35 | 35 | 25 | 29 | 29 | 45 | 43 | 38 |
| CAGR | | | | | | | | | | |
| | Operations | | | Based Aircraft | | | | | | |
| 2011-2021 | 3.30% | | | 2.08% | | | | | | |

Source: FAA, TAF.

5.3.1. Aircraft Operations

As shown in **Table 5.2**, total aircraft operations have increased steadily since 2011 and have increased at a CAGR of 3.3% for 2011–2021. The following summarizes the historical data as reported in the TAF for each of the three main categories of aircraft operations. It is important to note that, for airports without an air traffic control tower, operations data is recorded by airport personnel and reported to the FAA via the airport master record (FAA Form 5010-1). The FAA then uses this information when updating the TAF.

a. Air Taxi

There were no air taxi operations recorded for 2011 or 2012. Air taxi operations have remained at 3,600 operations per year since 2013.

b. General Aviation

Itinerant GA operations and local GA operations data were apparently transposed for 2011 and 2012. For 2011 to 2021, itinerant GA operations increased at a CAGR of 0.93%, and local GA operations increased at a CAGR of 0.28%.

c. Military

There were no itinerant or local military operations recorded for 2011 or 2012. Itinerant military operations have remained at 100 operations per year and local military operations have remained at zero since 2013.

5.3.2. Based Aircraft

The number of aircraft based at the airport has varied from a low of 25 for 2015 to a high of 45 for 2018. Overall, based aircraft have increased at a CAGR of 2.08% for 2011–2021.

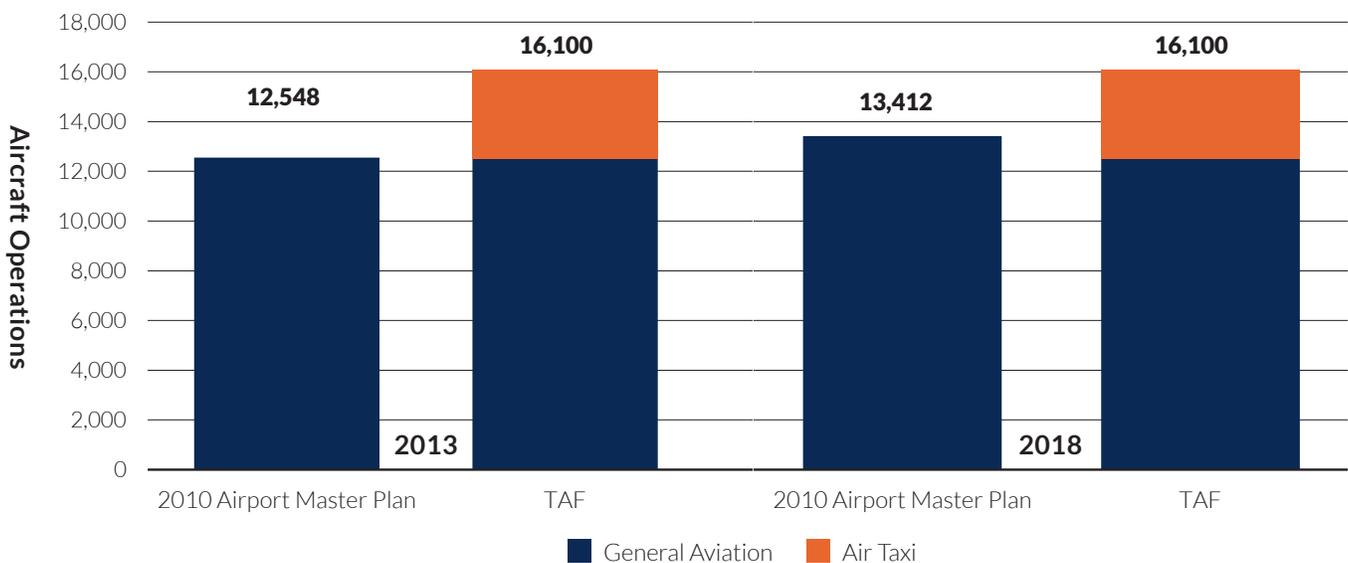
5.4. Review of Previous Forecasts

When preparing a forecast of aviation demand, it is important to examine other forecasts prepared for the airport. In this case it includes reviewing the forecast prepared for the previous airport master plan, the Terminal Area Forecast (TAF) prepared by the FAA, and the forecast prepared for the Oregon Aviation Plan. These forecasts should be examined in terms of the assumptions made at the time as well as the actual projections. Analyzing the accuracy of previous forecasts can help identify past trends and changes in the aviation industry that have affected the airport’s usage patterns.

5.4.1. 2010 Airport Master Plan Forecast

The previous airport master plan for Baker City Municipal Airport was completed May 2010. The forecast prepared for this master plan uses 2008 as the base year and includes projections for a short-term planning horizon of 2013 and medium-term planning horizon of 2018. The 2010 Airport Master Plan forecast evaluated a low, medium, and high growth rate fore the forecast. The baseline forecast, which was the preferred forecast, used the TAF growth rate of 1.34%. The high growth rate was based on the 17-year historic growth rate of 2.4%, and the low growth rate was a static growth rate of one half the TAF growth rate at 0.67%. The 2010 Airport Master Plan forecast is shown in **Figure 5.1** alongside the aircraft operations reported in the TAF for 2013 and 2018.

Figure 5.1: Review of 2010 Airport Master Plan Forecast



Source: 2010 Airport Master Plan; FAA, TAF.

The 2010 Airport Master Plan expected there to be approximately 12,548 general aviation operations for 2013 and, as reported by the TAF, there were 12,500 general aviation operations. The forecast expected there be approximately 13,411 general aviation operations for 2018, and, as reported by the TAF, there were 12,500 general aviation operations. The 2010 Airport Master Plan forecast did quite well in anticipating general aviation operations. However, there were no air taxi or military aircraft operations forecast throughout the 20-year planning period.

The 2010 Airport Master Plan also included a forecast for based aircraft that was calculated based on the number of operations per based aircraft (OPBA). This resulted in a forecast of 52 based aircraft for 2013 and 56 based aircraft for 2018. According to the TAF, there were 35 based aircraft for 2013 and 45 based aircraft for 2018.

5.4.2. Terminal Area Forecast

The Terminal Area Forecast (TAF) is the FAA’s official forecast of aviation activity for all U.S. airports included in the National Plan of Integrated Airport Systems (NPIAS). This forecast is published annually, and the current edition is Terminal Area Forecast, Fiscal Years 2021–2045. It includes historical and forecast data for aircraft operations and based aircraft. This forecast is developed based on local and national economic conditions as well as other conditions affecting the aviation industry.³

The TAF is discussed throughout this chapter because it serves as an important point of comparison for local airport master plan forecasts and is used to evaluate the reasonableness of local airport master plan forecasts. As shown in Table 5.3, both air taxi and military operations are expected to remain at current levels, and GA operations are forecast to increase at a CAGR of 1.33% for 2021–2041. Additionally, based aircraft is expected to remain at 38.

Table 5.3: Terminal Area Forecast for BKE, 2021–2041

| | Base Year | Forecast Years | | | Compound Annual Growth Rate | | |
|-----------------------------|---------------|----------------|---------------|---------------|-----------------------------|--------------|--------------|
| | 2021 | 2026 | 2031 | 2041 | 5-Year | 10-Year | 20-Year |
| Operations | | | | | | | |
| Air Taxi | 3,600 | 3,600 | 3,600 | 3,600 | 0.00% | 0.00% | 0.00% |
| Itinerant GA | 9,625 | 10,280 | 10,986 | 12,560 | 1.33% | 1.33% | 1.34% |
| Local GA | 3,039 | 3,244 | 3,462 | 3,937 | 1.31% | 1.31% | 1.30% |
| Itinerant Military | 100 | 100 | 100 | 100 | 0.00% | 0.00% | 0.00% |
| Local Military | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% |
| Total Operations | 16,364 | 17,224 | 18,148 | 20,197 | 1.03% | 1.04% | 1.06% |
| Based Aircraft | | | | | | | |
| Total Based Aircraft | 38 | 38 | 38 | 38 | 0.00% | 0.00% | 0.00% |

Source: FAA, TAF.

5.4.3. Oregon Aviation Plan Forecast

As previously discussed in [Section 3.6.2. Oregon Airport System Plan](#), the Oregon Department of Aviation (ODA) prepares a statewide forecast as part of its statewide aviation plan. The current edition, Oregon Aviation Plan v6.0 (OAP v6.0), was published in 2019 and uses 2015 as the base year. It has a 20-year planning horizon ending in 2035.⁴

As shown in [Table 5.4](#), this forecast combines air taxi, itinerant GA, and local GA operations and simply lists them as GA operations rather than listing them separately like with the TAF. The GA operations forecast, which is based on the FAA Aerospace Forecast for general aviation hours flown, expects GA operations at BKE to increase at a CAGR of 0.90% for 2015–2035. The military operations forecast, which was based on the historic growth rate for military operations in Oregon, expects military operations at BKE to increase at a CAGR of 1.32% for 2015–2035. The based aircraft forecast, which was based on the FAA’s TAF growth rate for based aircraft, expects based aircraft at BKE to increase at a CAGR of 0.95% for 2015–2035.

Table 5.4: Oregon Aviation Plan Forecast for BKE, 2015–2035

| | Base Year | Forecast Years | | | Compound Annual Growth Rate | | |
|-----------------------------|---------------|----------------|---------------|---------------|-----------------------------|--------------|--------------|
| | 2015 | 2020 | 2025 | 2035 | 5-Year | 10-Year | 20-Year |
| Operations | | | | | | | |
| General Aviation | 16,100 | 16,838 | 17,609 | 19,260 | 0.90% | 0.90% | 0.90% |
| Military | 100 | 107 | 114 | 130 | 1.36% | 1.32% | 1.32% |
| Total Operations | 16,200 | 16,945 | 17,723 | 19,390 | 0.90% | 0.90% | 0.90% |
| Based Aircraft | | | | | | | |
| Total Based Aircraft | 24 | 25 | 26 | 29 | 0.82% | 0.80% | 0.95% |

Source: ODA, OAP v6.0, Table 3-20 and Table 3-26.

5.5. Factors Affecting Aviation Activity

This section identifies the national, statewide, and local forecasts, trends, and factors expected to affect aviation activity. It also identifies the geographic area served by the airport and the regional characteristics that influence local aviation demand.

5.5.1. National Aviation Forecast, FAA Aerospace Forecast, Fiscal Years 2022-2042

Local aviation trends generally follow national trends. Therefore, it is necessary to review the industry from a broad perspective and then apply local socioeconomic factors to refine the forecast. The FAA publishes an annual update of the agency's national aviation forecast. While this national forecast is prepared to meet budget and planning needs of the FAA, it is also reviewed by state and local authorities, the aviation industry, and the general public. It is developed using statistical models to explain and incorporate emerging trends for each segment of the aviation industry including commercial airlines, cargo operations, GA, unmanned aircraft systems, and commercial space travel. The following discussion is summarized from the current edition, *FAA Aerospace Forecast, Fiscal Years 2022-2042*.

This year's forecast is driven, at least in the near-term, by the pace of recovery from impacts to the U.S. and global economies as well as the aviation industry as a result of the COVID-19 pandemic. Additionally, the domestic forecast is based on economic assumptions from IHS Markit's ten-year and 30-year U. S. Macro Baseline forecasts. According to these forecasts, real gross domestic product (GDP) for the U. S. is forecast to grow at 2.3% for 2022-2042.⁵

a. National Forecast for General Aviation

The FAA Aerospace Forecast includes projections for fleet mix and hours flown for GA aircraft. This includes fixed wing piston, fixed wing turbine, rotorcraft, and light sport aircraft (LSA) as well as experimental and other types of aircraft. The agency uses estimates of fleet size and activity levels based on the results of its annual General Aviation and Part 135 Activity Survey as baseline figures. It also includes forecasts of new aircraft deliveries using data from the General Aviation Manufacturers Association (GAMA), together with assumptions for retirement rates, to generate growth rates for fleet size by aircraft category. The forecast is then further refined based on discussions with industry experts. It is important to note that these forecasts are for active aircraft, not total aircraft, with active aircraft defined as one that has been flown at least one hour per year.

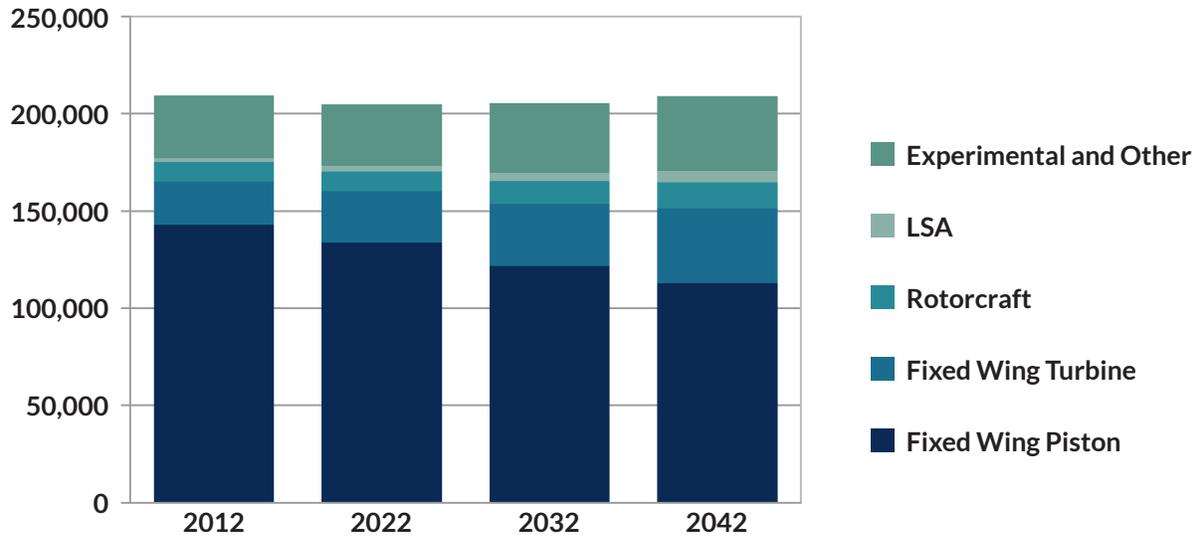
Overall, the forecast for the GA sector is promising. This is largely because it was not as affected by the COVID-19 pandemic as the airlines. Growth at the higher end of the market is expected to continue to offset retirements of mostly piston-powered aircraft which is at the traditional low end of the market. GA operations accounted for 57% of total U.S. operations for 2021. This share has been increasing since the pandemic and is up from 51% for 2019. General aviation operations are forecast to increase an average of 0.6% per year for 2022-2042.⁶

FAA Aerospace Forecast for General Aviation Fleet Mix

The results of the FAA's most recent General Aviation and Part 135 Activity Survey shows an estimated 204,140 active aircraft for 2020. This was a decline of 3.2% from 2019 as decreases of fixed wing piston aircraft, rotorcraft, and light sport aircraft (LSA) as well as experimental and other types of aircraft outpaced increases of fixed wing turbine aircraft. Overall, deliveries of GA aircraft for 2021 were 7.4% higher than deliveries for 2020. However, this was 5.7% lower than deliveries for 2019.

As shown in **Figure 5.2**, fixed wing piston aircraft are forecast to decrease 0.8%, fixed wing turbine aircraft are forecast to increase 1.9%, rotorcraft are forecast to increase 1.5%, LSA are forecast to increase 3.4%, experimental aircraft are forecast to increase 1.0%, and other types of aircraft are forecast to increase 0.7% per year. Overall, the GA fleet is expected to increase at an average of 0.1% per year for 2022-2042.⁷

Figure 5.2: FAA Aerospace Forecast for Active General Aviation Aircraft, 2022–2042



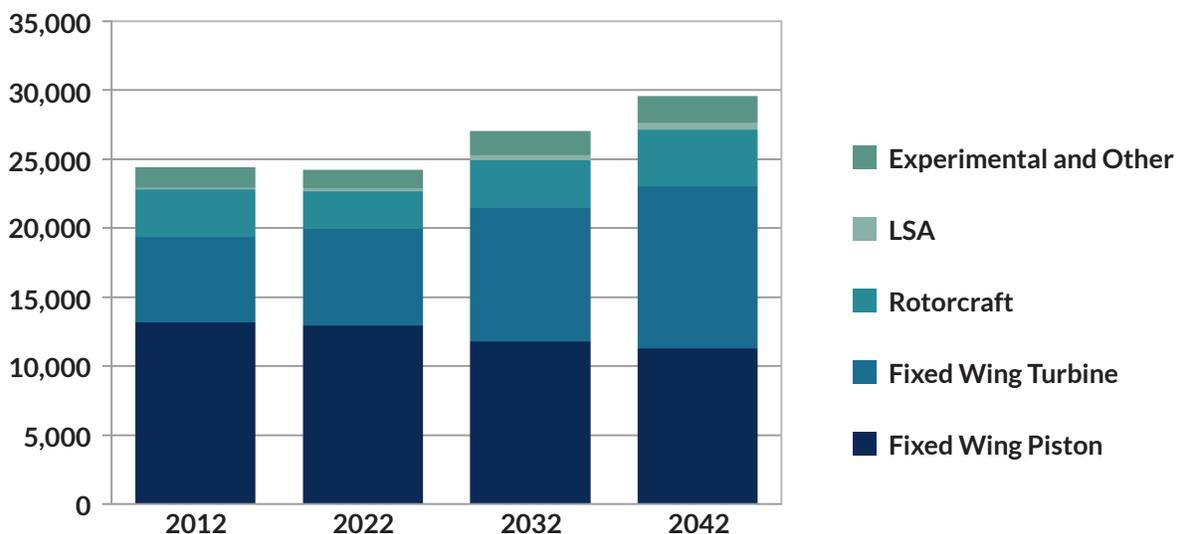
Source: FAA Aerospace Forecast, 2022-2042.

National Forecast for General Aviation Hours Flown

Although only a marginal increase is expected for the total GA fleet, the number of general aviation hours flown is forecast to increase an average of 1.0% per year for 2022–2042 with total hours flown increasing from 22.5 million hours for 2020 to 29.6 million hours for 2042. This increase is partly due to an anticipated increase in hours flown for newer aircraft. However, the majority of this increase is expected to result from a significant increase in hours flown for jet aircraft due to the increasing size of the business jet fleet.

As shown in Figure 5.3, hours flown for fixed wing piston aircraft are forecast to decrease 0.7%, fixed wing turbine aircraft are forecast to increase 2.6%, rotorcraft are forecast to increase 2.1%, LSA are forecast to increase 3.8%, experimental aircraft are forecast to increase 1.9%, and other types of aircraft are forecast to increase 1.3% per year. Overall, total GA hours flown are expected to increase an average of 1.0% per year.⁸

Figure 5.3: FAA Aerospace Forecast for General Aviation Hours Flown, 2022–2042



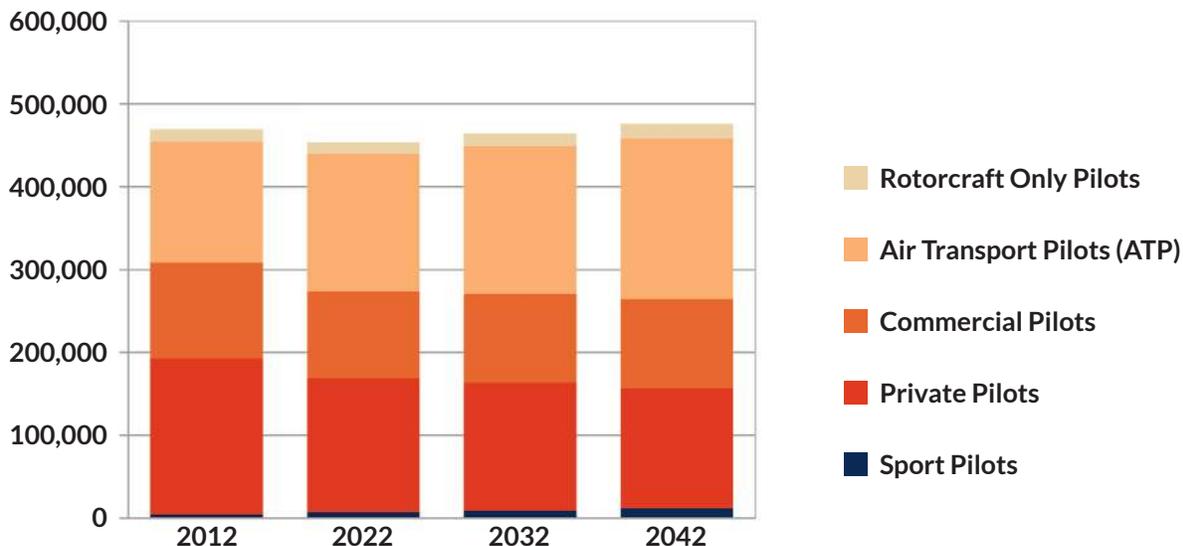
Source: FAA Aerospace Forecast, 2022-2042.

National Forecast for Active General Aviation Pilots by Certificate Type

According to the FAA Aerospace Forecast, there were 720,605 active pilots certificated by the FAA at the end of 2021. This includes 250,197 student pilots, 306,474 GA pilots, and 163,934 air transport pilots (ATP).

As shown in Figure 5.4, the FAA has forecasted a decrease of 6.7% for recreational pilots and 0.5% decrease for private pilots for 2022–2042. It also projects a 2.7% increase for sport pilots, a 0.1% increase for commercial pilots, a 0.8% increase for ATP certifications, a 1.3% increase for rotorcraft pilots, and a 0.8% increase for glider pilots. Overall, the number of active GA pilots is projected to decrease at an average rate of -0.03% per year for 2021–2042.⁹

Figure 5.4: FAA Aerospace Forecast for Active Pilots by Certificate Type, 2022–2042



Source: FAA Aerospace Forecast, 2022-2042.

5.5.2. National Factors Affecting Aviation Activity

It is important to take national factors into consideration when developing local aviation forecasts. The following factors were considered, either directly or indirectly, in developing the aviation activity forecasts for Baker City Municipal Airport.

a. National Economy

In 2021, global GDP expanded as countries recovered from the pandemic. After falling 3.5% in 2020, GDP increased by 5.1% in 2021 due to economic stimulus packages, vaccines, and recovery of consumer spending that had been curtailed in 2020. In the U.S. real GDP growth is expected to slow from 5.5% in 2021 to 4.3% in 2022, and 2.9% in 2023. This is due to the stimulus measure wearing off, normalization of consumer spending, and rising interest rates.¹⁰

Accompanied by the rebound in global economic activity was an increase in the demand for oil in 2021. After dropping from about \$60 per barrel to \$43 per barrel in 2020, the price returned to \$60 and is projected to increase to \$75 in 2022. This does not include the potential effect of the war in Ukraine, which may result in higher oil prices for 2022 and beyond.¹¹

b. Threat of Terrorism

The potential recurrence of terrorism incidents against either domestic or international flights has been a risk since September 11, 2001. Tighter security measures restored the public’s confidence in the integrity of both the U.S. and global aviation security systems. However, any terrorist incident targeting aviation could have an immediate and significant impact on the demand for aviation services that could be greater than its impact on overall economic activity.¹²

c. COVID-19 Pandemic

Operations at FAA facilities recovered 7.4% from 2020 to 2021 following a 16.7% decrease from 2019 to 2020. The pace of recovery accelerated starting in the spring of 2021 and continued into 2022 despite the fourth wave of COVID-19 driven by the Delta variant. Elevated growth in operations is expected to continue into 2024 as the unemployment rate is forecast to reach pre-pandemic levels. After operations return to pre-pandemic levels, the growth in air travel demand and the business aviation fleet will drive the long-term growth in operations at FAA facilities.¹³

The Pandemic’s Impact on BKE

As indicated in the FAA’s Aerospace Forecast, GA was not as severely affected as the airlines. At BKE, historic operations between 2019 and 2021, as reported by the FAA’s TAF, showed no decrease. Operations that had flight plans filed, as reported by the FAA’s Traffic Flow Management System Counts (TFMSC) increased from 501 in 2019 to 517 in 2020, and 797 in 2021. Consequently, there appears to have been no impact on operations at BKE because of the pandemic.

5.5.3. Statewide Aviation Industry Forecast, Oregon Aviation Plan v6.0

The Oregon Aviation Plan (OAP v6.0) is a statewide assessment of the airports located throughout the state and determines the system’s ability to meet current and future aviation demand. The plan aids the ODA in successfully developing and planning for the state’s airport system as a whole and provides input for federal planning documents. The most recent edition was completed prior to the COVID-19 pandemic and subsequent economic downturn. Nonetheless, it is still useful to review the perspective it provides regarding regional and statewide aviation trends.¹⁴

a. Statewide Forecast for General Aviation Operations

General aviation, which includes air taxi operations, is the largest segment of the overall Oregon airport system. Portland-Hillsboro Airport, which supports approximately 12% of all general aviation operations in Oregon, is by far the busiest general aviation airport in the state. In comparison, BKE supports approximately 1% of all general aviation operations in Oregon. The preferred methodology selected for the statewide forecast of general aviation operations was based on the FAA’s projected growth rate of 0.9% for GA hours flown. The statewide forecast for GA operations is listed in **Table 5.5**.

Table 5.5: Statewide Forecast for General Aviation Operations, 2015–2035

| | Base Year | Forecast Years | | | Compound Annual Growth Rate | | |
|-------------------------|-----------|----------------|-----------|-----------|-----------------------------|---------|---------|
| | 2015 | 2020 | 2025 | 2035 | 5-Year | 10-Year | 20-Year |
| GA Operations | | | | | | | |
| Total Operations | 1,636,699 | 1,712,003 | 1,790,778 | 1,959,394 | 0.90% | 0.90% | 0.90% |

Source: ODA, OAP v6.0, Table 3-20.

b. Statewide Forecast for Military Operations

The preferred methodology selected for the statewide forecast of military operations was the historical growth rate of 1.33% for military operations within Oregon. The statewide forecast for military operations is listed in Table 5.6.

Table 5.6: Statewide Forecast for Military Operations, 2015–2035

| | Base Year | Forecast Years | | | Compound Annual Growth Rate | | |
|----------------------------|-----------|----------------|--------|--------|-----------------------------|---------|---------|
| | 2015 | 2020 | 2025 | 2035 | 5-Year | 10-Year | 20-Year |
| Military Operations | | | | | | | |
| Total Operations | 67,657 | 72,277 | 77,213 | 88,120 | 1.33% | 1.33% | 1.33% |

Source: ODA, OAP v6.0, Table 3-22.

c. Statewide Forecast for Based Aircraft

The preferred methodology selected for the statewide forecast for based aircraft was based on the FAA’s TAF growth rate of 1.1% for NPIAS airports in Oregon. The statewide forecast for based aircraft is listed in Table 5.7.

Table 5.7: Statewide Forecast for Based Aircraft, 2015–2035

| | Base Year | Forecast Years | | | Compound Annual Growth Rate | | |
|-----------------------------|-----------|----------------|-------|-------|-----------------------------|---------|---------|
| | 2015 | 2020 | 2025 | 2035 | 5-Year | 10-Year | 20-Year |
| Based Aircraft | | | | | | | |
| Total Based Aircraft | 4,489 | 4,639 | 4,900 | 5,466 | 0.66% | 0.88% | 0.99% |

Source: ODA, OAP v6.0, Table 3-26.

5.5.4. Local Factors With Potential to Affect Aviation Activity

A forecast should also examine local trends and regional socioeconomic conditions as these can significantly affect local aviation activity.

a. Baker City Municipal Airport Service Area

An airport's service area is the geographic area surrounding an airport where the majority of the airport users would be expected to live. BKE's service area consists of Baker County. There are five private airfields in Baker County, but BKE is the only NPIAS airport located in Baker County. The NPIAS airport closest to BKE is La Grande/Union County Airport (LGD) which is located in Union County and is approximately 32 statute miles (28 nautical miles) north of BKE. Consequently, there are no competing airports within BKE's service area.

b. Baker County Socioeconomic Trends

There is typically a strong connection between socioeconomic trends and aviation demand. Local socioeconomic conditions—especially population, employment, and income—can have either an upward or downward influence on local aviation activity levels. This is particularly true for GA activity which tends to be largely influenced by local population and income levels. In addition to providing a general understanding of the socioeconomic conditions within the airport's service area, local and regional socioeconomic trends typically serve as an important indicator of future demand for aviation services.

As previously discussed in [Section 3.9. Socioeconomic Overview](#), Woods and Poole Economics, Inc. is an independent firm specializing in long-term economic and demographic projections. The company's population, employment, and per capita income growth projections for Baker County are summarized in [Table 5.8](#).

Table 5.8: Socioeconomic Forecast for Baker County, 2021–2041

| | Base Year | Forecast Years | | | Compound Annual Growth Rate | | |
|--------------------------|-----------|----------------|----------|-----------|-----------------------------|---------|---------|
| | 2021 | 2026 | 2031 | 2041 | 5-Year | 10-Year | 20-Year |
| Population | 16,111 | 16,151 | 16,148 | 15,989 | 0.05% | 0.02% | -0.04% |
| Employment | 8,850 | 9,007 | 9,136 | 9,298 | 0.35% | 0.32% | 0.25% |
| Per Capita Income | \$44,752 | \$55,379 | \$70,255 | \$114,169 | 4.35% | 4.61% | 4.79% |

Source: Woods and Poole Economics, Inc.

5.6. Aviation Forecast Methodologies

There are several acceptable methods for forecasting aviation activity. Selecting the most appropriate method is typically a matter of professional judgment and experience based on the analyst's industry knowledge and assessment of local conditions. Quite often, the most reliable approach for generating a reasonable estimate involves using multiple methods. As stated in FAA AC 150/5070-6B, *Airport Master Plans*, the most common techniques are regression analysis, trend analysis, market share analysis, and smoothing.

5.6.1. Regression Analysis

Regression analysis is a statistical technique used to identify trends in data by measuring the relationship between dependent variables (e.g., aviation demand) and independent variables (e.g., population, income). This method is most effective when using relatively simple sets of data, a strong statistical correlation is evident, and reliable data is available for the independent variables.

5.6.2. Trend Analysis

Trend analysis uses historical patterns to project future activity. This approach is useful when local conditions are unusual enough to differentiate the study airport from other airports in the region.

5.6.3. Market Share Analysis

This technique assumes a top-down relationship between national, regional, and local forecasts. It involves conducting a historical review of the airport activity and identifying its percentage, or share, of a larger regional, state, or national aviation market. The historical market share is then used to project the future market share based on forecasts developed for the larger geographical area. This methodology is typically most useful when the activity has a constant share of a larger market.

5.6.4. Smoothing

Smoothing is a statistical technique used to make predictions based on applying recent trends and conditions to historical data. It is most effective for generating short-term forecasts.

5.6.5. Forecasting Methodology and Approach Used

It is best to divide the forecast into separate elements in order to use the forecasting method that will best reflect the specific factors expected to affect each element of the forecast. The assumptions and methodologies used to develop each element of the forecast for BKE are discussed in the relevant section.

Forecasts should include a sensitivity analysis to measure potential variations in activity levels should the factors influencing aviation activity change during the 20-year planning period. One method of accommodating uncertainty in a forecast is to include a series of forecast scenarios to examine how potential changes in industry trends or socioeconomic conditions could affect the forecast. By including a range of potential outcomes, airport planners are better able to accommodate changes in aviation activity levels in response to new or changing conditions during the 20-year planning period.

5.7. Sources of Data

The following sources of operations and aircraft data were used in developing the forecast for this airport master plan.

Airport Staff

Interviews with airport and FBO staff were conducted in order to determine the local conditions affecting airport activity that may not be captured by other sources. This information was used to fine-tune the forecast projections.

Camera Data

Four motion-activated cameras were used to record aircraft operations at BKE during the summer of 2021 in order to gather data related to aircraft activity at the airport. This data was used to supplement the TAF and TFMSC data.

Terminal Area Forecast

As previously discussed in [Section 5.4.2. Terminal Area Forecast](#), the TAF is the FAA's official forecast of aviation activity and includes projections for all NPIAS airports. It is used as a source for both historical and forecast data for aircraft operations and based aircraft.

Traffic Flow Management System Counts

The FAA's Traffic Flow Management System Counts (TFMSC) database includes data generated when pilots file flight plans as well as other flights detected, usually via RADAR, within the National Airspace System (NAS). This database includes the specific types and models of aircraft that operate under instrument flight rules (IFR) and are therefore required to file a flight plan. In general, this typically includes only a portion of GA activity because they often operate under visual flight rules (VFR) and are therefore not required to file a flight plan.¹⁵ Despite this limitation, TFMSC data is helpful in identifying general trends in airport activity and provides a good estimation of the more demanding aircraft types using the airport.

5.8. Aircraft Operations

This section presents the forecast for aircraft operations at Baker City Municipal Airport. The projections for air taxi, general aviation, and military operations are each presented separately along with the assumptions and methodologies used to develop each forecast. For unknown reasons, operations recorded for 2011 and 2012 are drastically different from the operations data recorded for 2013–2021. This means using a 10-year historical growth rate will not provide an accurate representation of historical operations. As a result, a five-year historical growth rate using data from 2016–2021 will be used for the forecast analysis.

5.8.1. Air Taxi Operations

The following scenarios were evaluated in order to determine the most suitable forecast for air taxi operations:

- **Scenario #1:** A forecast based on the five-year historical growth rate of 0.0% for air taxi operations at BKE for 2016–2021.
- **Scenario #2:** A forecast based on the FAA Aerospace Forecast for air taxi hours flown which is 1.0% for the total GA fleet.

It is reasonable to expect some growth for air taxi operations during the 20-year planning period; especially given the flight plan data for BKE showing there are air taxi operators using the airport. Additionally, there is a Beechcraft King Air 200 and Cessna Citation CJ1 based at the airport which indicates a current demand for aircraft that could be used for air taxi operations. Therefore, the FAA Aerospace Forecast growth rate of 1.0% will be used as the preferred forecast air taxi operations. As shown in **Table 5.9**, the preferred forecast for air taxi operations is Scenario #2.

Table 5.9: Air Taxi Operations Scenarios

| Year | Five-Year Trend | FAA Aerospace Forecast |
|-----------|-----------------|------------------------|
| 2021 | 3,600 | 3,600 |
| 2026 | 3,600 | 3,784 |
| 2031 | 3,600 | 3,977 |
| 2041 | 3,600 | 4,393 |
| CAGR | Five-Year Trend | TAF Forecast |
| 2021–2041 | 0.0% | 1.0% |

Source: FAA, TAF; Ardurra.

5.8.2. General Aviation Operations

The following scenarios were evaluated in order to determine the most suitable forecast for general aviation operations:

- **Scenario #1:** A forecast based on the five-year historical growth rate of 1.15% for itinerant GA operations and 0.94% for local GA operations at BKE for 2016–2021.
- **Scenario #2:** A forecast based on the FAA Aerospace Forecast for general aviation hours flown which is 1.0% for the total GA fleet.
- **Scenario #3:** A forecast based on the average number of operations per based aircraft (OPBA) at BKE for 2016-2021. There was an average of 76 itinerant GA operations per based aircraft and an average of 242 local GA operations per based aircraft. The resulting growth rates were determined to be 1.22% for itinerant GA operations and 1.25% for local GA operations.

As shown in **Table 5.10** and **Table 5.11**, these three scenarios produced a low, medium, and high growth rate. Each of these scenarios are plausible depending on future economic conditions. As such, the scenarios that produced the medium growth rates will be used as the preferred forecast. For itinerant operations, this is scenario #1 which is based on the five-year historical trend (**Table 5.10**). For local operations, this is scenario #2 which is based on the FAA Aerospace Forecast (**Table 5.11**).

Table 5.10: Itinerant GA Operations Scenarios

| Year | Five-Year Trend | FAA Aerospace Forecast | OPBA |
|-----------|-----------------|------------------------|--------|
| 2021 | 10,057 | 10,057 | 10,057 |
| 2026 | 10,647 | 10,570 | 10,961 |
| 2031 | 11,271 | 11,109 | 11,549 |
| 2041 | 12,631 | 12,271 | 12,821 |
| CAGR | Five-Year Trend | FAA Aerospace Forecast | OPBA |
| 2021–2041 | 1.15% | 1.00% | 1.22% |

Source: FAA, TAF; FAA, Aerospace Forecast; Ardurra.

Table 5.11: Local GA Operations Scenarios

| Year | Five-Year Trend | FAA Aerospace Forecast | OPBA |
|-----------|-----------------|------------------------|-------|
| 2021 | 3,143 | 3,143 | 3,143 |
| 2026 | 3,293 | 3,303 | 3,444 |
| 2031 | 3,450 | 3,472 | 3,629 |
| 2041 | 3,786 | 3,835 | 4,028 |
| CAGR | Five-Year Trend | FAA Aerospace Forecast | OPBA |
| 2021–2041 | 0.94% | 1.00% | 1.25% |

Source: FAA, TAF; FAA, Aerospace Forecast; Ardurra.

5.8.3. Military Operations

According to the TAF, itinerant military operations have remained consistent at 100 annual operations for 2013–2021, and local military operations have remained at zero. While the TAF forecast for BKE continues this trend forward, the OAP shows a forecasted a growth rate of 1.33% for all military operations at Oregon GA airports; including BKE. However, local conditions indicate the OAP is overly optimistic for BKE. Consequently, the preferred forecast for military operations is the FAA TAF growth rate of 0.0% (Table 5.12).

Table 5.12: Military Operations Forecast

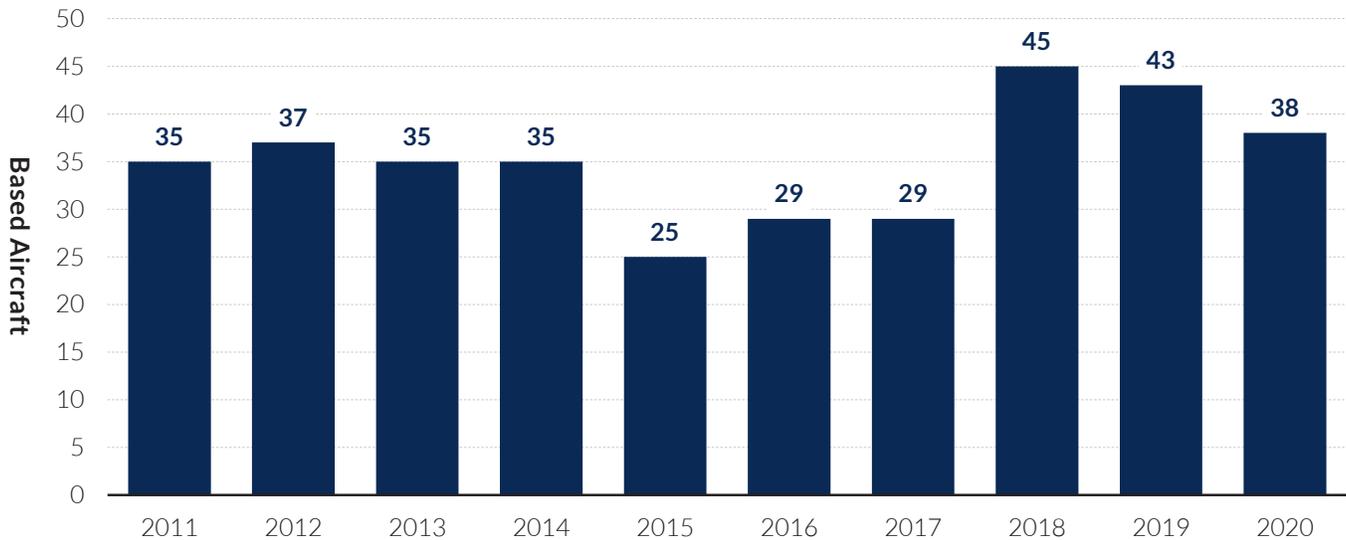
| Year | Itinerant Military Operations | Local Military Operations |
|-----------|-------------------------------|---------------------------|
| 2021 | 100 | 0 |
| 2026 | 100 | 0 |
| 2031 | 100 | 0 |
| 2041 | 100 | 0 |
| CAGR | TAF Forecast | TAF Forecast |
| 2021–2041 | 0.0% | 0.0% |

Source: FAA, TAF; Ardurra.

5.9. Based Aircraft

The number of aircraft based at the airport for 2011–2020, as reported by the TAF, are shown in Figure 5.5.

Figure 5.5: Based Aircraft, 2011–2020

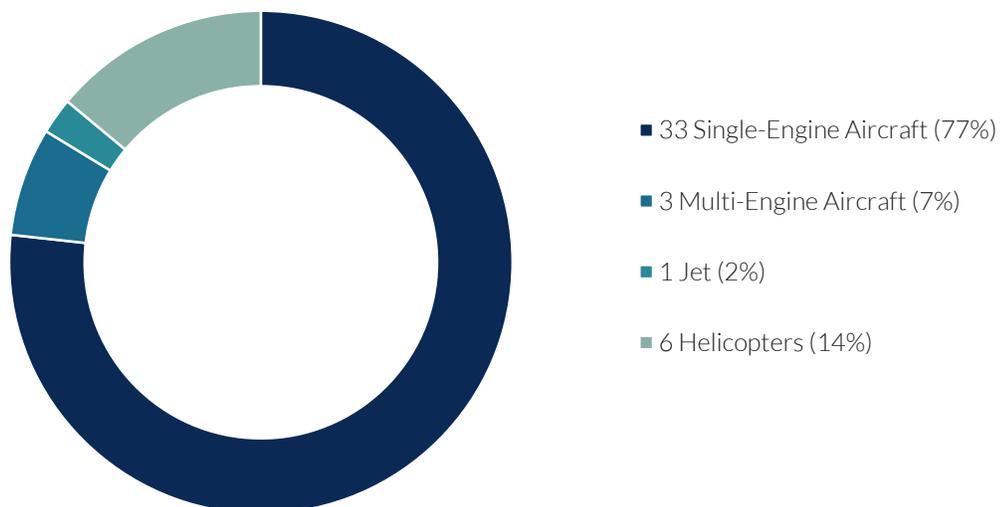


Source: FAA, TAF.

5.9.1. Based Aircraft Inventory

According to the TAF there were 38 aircraft based at the airport for 2021. However, the FAA aircraft registration database indicates there were actually 43 based aircraft which was confirmed using BKE airport records for based aircraft. As shown in Figure 5.6, 33 of these aircraft were single-engine aircraft, three were multi-engine aircraft, one was a jet, and six were helicopters. The number of based aircraft listed the FAA aircraft registration database will be used as the baseline for this forecast. As a result, the historical growth rate for based aircraft is 2.1% for 2011–2021.

Figure 5.6: Based Aircraft Inventory, 2021



Source: FAA, aircraft registration database.

5.9.2. Based Aircraft Forecast

The following scenarios were evaluated in order to determine the most suitable forecast for based aircraft:

- **Scenario #1:** A forecast based on the TAF forecast for based aircraft. As previously discussed, the TAF expects based aircraft at BKE to remain flat and indicates a growth rate of 0.0% for 2021–2041 (**Table 5.3**).
- **Scenario #2:** A forecast based on the ten-year historical growth rate of 2.1% for based aircraft at BKE from 2011 to 2021.
- **Scenario #3:** A forecast based on a regression analysis to determine the historical relationship between aircraft based at BKE and the employment rate for Baker County which resulted in a growth rate of 2.1%.

As shown in **Table 5.13**, the preferred forecast for based aircraft uses a 2.1% growth rate. While it is significantly higher than the TAF growth rate, it represents the most realistic projection for BKE—especially since there is currently a wait list for hangar space at the airport.

Table 5.13: Based Aircraft Forecast Scenarios

| Year | TAF Forecast | Ten-Year Trend | Employment |
|-----------|--------------|----------------|------------|
| 2021 | 38 | 43 | 43 |
| 2026 | 38 | 48 | 48 |
| 2031 | 38 | 53 | 53 |
| 2041 | 38 | 65 | 65 |
| CAGR | TAF Forecast | Ten-Year Trend | Employment |
| 2021–2041 | 0.0% | 2.1% | 2.1% |

Source: FAA, TAF; Woods and Poole Economics, Inc. Ardurra.

5.9.3. Based Aircraft Forecast by Aircraft Type

The existing based aircraft fleet mix was determined using data retrieved from the FAA aircraft registration database for Baker County and then confirmed using BKE airport records. As shown in **Table 5.15**, aircraft based at the airport for 2021 consisted of 77% single-engine aircraft, 7% multi-engine aircraft, 2% jets, and 14% helicopters. Using these percentages as a starting point, the 2.1% increase was applied to existing numbers and then the forecasted fleet mix was adjusted based on the FAA Aerospace Forecast for active general aviation aircraft. As previously discussed in **Section 5.5.1.a. National Forecast for General Aviation**, the FAA Aerospace Forecast expects fixed wing piston aircraft to decrease 0.8% per year while fixed wing turbine aircraft are expected to increase 1.9% per year and rotorcraft are expected to increase 1.5% per year. The resulting fleet mix forecast for based aircraft is shown in **Table 5.14**.

Table 5.14: Based Aircraft Forecast by Aircraft Type

| Year | Single-Engine | Multi-Engine | Jet | Helicopters | Total |
|------|---------------|--------------|-----|-------------|-------|
| 2021 | 33 | 3 | 1 | 6 | 43 |
| 2026 | 36 | 3 | 1 | 7 | 48 |
| 2031 | 40 | 4 | 2 | 8 | 53 |
| 2041 | 47 | 5 | 3 | 10 | 65 |

Source: Ardurra.

5.10. Fleet Mix

Determining the fleet mix is particularly important because it used to help identify the critical aircraft which is an essential step in identifying the correct FAA design criteria for the airport. The FAA has developed a coding system that allows airport planners and engineers to identify airport design criteria based on the operational and physical characteristics of the types of aircraft that typically operate at the airport. The aircraft approach category (**AAC**) is designated by a letter and is based on the speed of an aircraft as it approaches a runway when landing. It is generally used to help determine dimensional standards for runway safety areas. The airplane design group (**ADG**) is designated by a Roman numeral and is based on an aircraft's wingspan or tail height; depending on which is most restrictive. ADG is typically used to establish dimensional standards needed for taxiway clearance.¹⁶

As previously discussed in **Section 5.7. Sources of Data**, the FAA's TFMSC database was used to determine the types and models of aircraft that operate at the airport. For 2021, there were 789 flight plans filed for flights that originated or terminated at BKE. The AAC and ADG was then determined for each of these aircraft to determine the most demanding type of aircraft, or group of aircraft with similar characteristics, that regularly use the airport (**Table 5.15**). The top three aircraft used were the Pilatus PC-12 (A-II small) with 201 operations, Beechcraft King Air 200 (B-II small) with 198 operations, and the Cessna Citation CJ1 (B-I small) with 174 operations.

Table 5.15: Fleet Mix

| AAC & ADG | Percentage | 2021 |
|--------------|-------------|------------|
| A-I | 94.73% | 81 |
| A-II | 1.18% | 201 |
| B-I | 1.38% | 257 |
| B-II | 1.97% | 233 |
| C-I | 0.03% | 10 |
| C-IV | 0.12% | 1 |
| Helicopter | 0.54% | 6 |
| Total | 100% | 789 |

Source: FAA, TFMSC; BKE, 2021.

5.11. Critical Aircraft

As previously discussed, the critical aircraft is the most demanding type of aircraft, or group of aircraft with similar characteristics, that makes a minimum of 500 annual operations at the airport; excluding touch-and-go operations. It is often referred to as the design aircraft because it is used to determine design standards for many areas of the airport.

5.11.1. Existing Critical Aircraft

As shown in **Table 5.15**, there were 501 operations by aircraft with an AAC of B or greater and therefore qualifies as the AAC designation for the critical aircraft. However, there were only 435 operations by aircraft with an ADG of II or greater. As a result, the existing critical aircraft is best described as B-I and is represented by the Cessna Citation CJ1.

Figure 5.7: Existing Critical Aircraft, Cessna Citation CJ1



Source: Textron Aviation Inc.

Table 5.16: Cessna Citation CJ1 Specifications

| Characteristic | Specification |
|--------------------------------------|-------------------|
| Aircraft Approach Category (AAC) | B |
| Airport Design Group (ADG) | I |
| Taxiway Design Group (TDG) | 1A |
| Approach Speed | 108 knots |
| Wingspan | 46.92 feet |
| Length | 42.58 feet |
| Tail Height | 13.77 feet |
| Cockpit to Main Gear (CMG) | 15.33 feet |
| Outer to Outer Main Gear Width (MGW) | 13.00 feet |
| Main Gear Configuration | Single Wheel (SW) |
| Maximum Takeoff Weight (MTOW) | 10,600 pounds |

Source: FAA Aircraft Database, AC 150/5300-13B.

5.11.2. Future Critical Aircraft

The examination of flight plan data indicates there was a temporary one-year drop in B-II operations for 2022. However, long term projections from the preferred forecast show an increase in operations. Consequently, it is reasonable to expect ADG II operations to reach the 500 annual operations threshold and therefore qualify as the ADG designation for the critical aircraft—especially considering there is a King Air 200 currently based at the airport. Therefore, the future critical aircraft for the airport is best described as B-II and is represented by the Beechcraft King Air 200. However, the upgraded version of the King Air 200, the King Air 260, will be used for future planning.

Figure 5.8: Future Critical Aircraft, Beechcraft King Air 260



Source: Textron Aviation Inc.

Table 5.17: Beechcraft King Air 260 Specifications

| Characteristic | Specification |
|--------------------------------------|-----------------|
| Aircraft Approach Category (AAC) | B |
| Airport Design Group (ADG) | II |
| Taxiway Design Group (TDG) | 2A |
| Approach Speed | 98 knots |
| Wingspan | 57.90 feet |
| Length | 43.75 feet |
| Tail Height | 15.00 feet |
| Cockpit to Main Gear (CMG) | 14.75 feet |
| Outer to Outer Main Gear Width (MGW) | 17.17 feet |
| Main Gear Configuration | Dual Wheel (DW) |
| Maximum Takeoff Weight (MTOW) | 12,500 pounds |

Source: Textron Aviation Inc., King Air 260, Specifications.

5.12. Forecast Evaluation

According to FAA AC 150/5070B, *Airport Master Plans*, the general requirement for FAA approval of the a master plan forecast is that it is supported by an acceptable forecasting analysis and is consistent with the TAF. For general aviation airports, the master plan forecast is considered to be consistent with the TAF if it is within 10% of the TAF for the five-year forecast and within 15% for the ten-year forecast. That being said, when the five-year forecast or ten-year forecast is for less than 100,000 total annual operations or 100 based aircraft, the forecast does not need to be reviewed at FAA Headquarters. However, the data should be provided to the FAA for the annual update of the TAF.

Table 5.18 shows the preferred master plan forecast alongside the TAF forecast for BKE. While the forecast of aircraft operations is consistent with the TAF, the forecast of based aircraft is not. However, this is because the TAF doesn't show any forecasted growth for based aircraft at BKE, nor does it reflect the correct number of based aircraft for the baseline year.

Table 5.18: Forecast Evaluation

| | Base Year | Forecast Years | | |
|--------------------------------|---------------|----------------|---------------|---------------|
| | 2021 | 2026 | 2031 | 2041 |
| Air Taxi | | | | |
| Master Plan Forecast | 3,600 | 3,784 | 3,977 | 4,393 |
| TAF Forecast | 3,600 | 3,600 | 3,600 | 3,600 |
| Difference | 0.00% | 4.86% | 9.48% | 18.05% |
| Itinerant GA Operations | | | | |
| Master Plan Forecast | 10,057 | 10,647 | 11,271 | 12,631 |
| TAF Forecast | 9,625 | 10,280 | 10,986 | 12,560 |
| Difference | 4.30% | 3.45% | 2.53% | 0.56% |
| Local GA Operations | | | | |
| Master Plan Forecast | 3,143 | 3,303 | 3,472 | 3,835 |
| TAF Forecast | 3,039 | 3,244 | 3,462 | 3,937 |
| Difference | 3.31% | 1.79% | 0.29% | -2.66% |
| Military Operations | | | | |
| Master Plan Forecast | 100 | 100 | 100 | 100 |
| TAF Forecast | 100 | 100 | 100 | 100 |
| Difference | 0.00% | 0.00% | 0.00% | 0.00% |
| Total Operations | | | | |
| Master Plan Forecast | 16,900 | 17,834 | 18,820 | 20,959 |
| TAF Forecast | 16,364 | 17,224 | 18,148 | 20,197 |
| Difference | 3.17% | 3.42% | 3.57% | 3.64% |
| Based Aircraft | | | | |
| Master Plan Forecast | 43 | 53 | 58 | 65 |
| TAF Forecast | 38 | 38 | 38 | 38 |
| Difference | 11.63% | 28.30% | 34.48% | 41.54% |

Source: FAA, TAF; Ardurra.

Endnotes

- 1 U.S. Department of Transportation. Federal Aviation Administration. "National Based Aircraft Inventory Program, Frequently Asked Questions." <https://basedaircraft.com/public/FrequentlyAskedQuestions.aspx#faq2>.
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- 7 Ibid.
- 8 Ibid.
- 9 Ibid, Table 30.
- 10 U.S. Department of Transportation. Federal Aviation Administration. "FAA Aerospace Forecast Fiscal Years 2022–2042." Accessed February 22, 2023. <https://www.faa.gov/dataresearch/aviation/faa-aerospace-forecast-fy-2022-2042>.
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- 15 U.S. Department of Transportation. Federal Aviation Administration. "TFMSC." Accessed March 1, 2023. <https://aspm.faa.gov/aspmhelp/index/TFMSC.html>.
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FACILITY REQUIREMENTS



| | |
|--|-------------|
| Summary of Facilities and Recommendations | 6-2 |
| Airport Design and Federal Aviation Administration Standards | 6-4 |
| Aircraft Classes, Categories, and Groups..... | 6-4 |
| Critical Aircraft and Airfield Design Criteria..... | 6-9 |
| Airport Airspace | 6-10 |
| Part 77: Safe, Efficient Use, and Preservation of the Navigable Airspace | 6-10 |
| Approach and Departure Surfaces | 6-11 |
| Instrument Approach Procedures | 6-13 |
| Airfield Facilities | 6-14 |
| Airfield Capacity..... | 6-14 |
| Runways | 6-15 |
| Taxiway and Taxilane System..... | 6-25 |
| Runway and Taxiway Intersection Design | 6-27 |
| Airfield Pavements | 6-32 |
| Pavement Markings..... | 6-34 |
| Airfield Signage | 6-34 |
| Electronic, Visual, and Satellite Navigational Aids..... | 6-35 |
| General Aviation Facilities | 6-37 |
| Main General Aviation Apron | 6-37 |
| Air Cargo Facilities..... | 6-38 |
| Support Facilities..... | 6-39 |
| Fixed Base Operator | 6-39 |
| Fuel Facilities | 6-39 |
| Fire and Emergency Medical Response..... | 6-39 |
| Snow Removal and Ice Control | 6-40 |
| Landscaping and Pest Control..... | 6-40 |
| Security, Fencing, and Vehicle Access Gates | 6-40 |
| Automobile Parking..... | 6-40 |
| Utilities and Stormwater | 6-41 |

CONTENTS

| | |
|---|-------------|
| Land Use Requirements, Policies, and Regulations | 6-42 |
| Protecting Runway Protection Zones | 6-42 |
| Wildlife Hazard Attractants | 6-43 |
| Baker City Strategic Vision and Comprehensive Plan | 6-43 |
| Primary Management and Compliance Documents | 6-44 |
| Emerging Trends | 6-44 |

TABLES

| | |
|---|------|
| Table 6.1: Airport Facilities Assessment Summary..... | 6-2 |
| Table 6.2: Aircraft Size, Weight, and Wake Turbulence Classifications | 6-5 |
| Table 6.3: Aircraft Approach Categories | 6-5 |
| Table 6.4: Airplane Design Groups | 6-6 |
| Table 6.5: Visibility Minimums and Runway Visual Range Values..... | 6-8 |
| Table 6.6: Part 77 Surface Dimensions..... | 6-11 |
| Table 6.7: Departure Surface Obstructions..... | 6-12 |
| Table 6.8: Runway 13/31 Dimensions and Standards..... | 6-16 |
| Table 6.9: Runway 17/35 and 8/26 Dimensions and Standards..... | 6-17 |
| Table 6.10: Recommended Runway Lengths..... | 6-18 |
| Table 6.11: Runway 13/31 Declared Distances..... | 6-20 |
| Table 6.12: Runway 17/35 Declared Distances..... | 6-20 |
| Table 6.13: Runway 8/26 Declared Distances..... | 6-21 |
| Table 6.14: Allowable Crosswind Component by Runway Design Code..... | 6-22 |
| Table 6.15: All Weather Wind Coverage Percentages..... | 6-23 |
| Table 6.16: Instrument Flight Rules Wind Coverage Percentages | 6-24 |
| Table 6.17: Taxiway Dimensions and Standards | 6-25 |
| Table 6.18: Taxilane Dimensions and Standards | 6-26 |
| Table 6.19: NAVAID Requirements..... | 6-35 |
| Table 6.20: Hangar Requirements | 6-37 |
| Table 6.21: Tiedown Requirements | 6-38 |

FIGURES

| | |
|--|------|
| Figure 6.1: Key Aircraft Dimensions | 6-4 |
| Figure 6.2: Representative Aircraft | 6-7 |
| Figure 6.3: Taxiway Design Groups | 6-8 |
| Figure 6.4: Part 77 Surfaces | 6-10 |
| Figure 6.5: All Weather Wind Rose, Combined Runways..... | 6-23 |
| Figure 6.6: Instrument Flight Rules Wind Rose, Combined Runways..... | 6-24 |
| Figure 6.7: Direct Runway Access From Taxiway B | 6-27 |
| Figure 6.8: Taxiway B Intersection Signage..... | 6-28 |
| Figure 6.9: Direct Runway Access From FBO Apron..... | 6-28 |
| Figure 6.10: Angled Hold Line at Undesignated Taxiway..... | 6-29 |
| Figure 6.11: Intersection of Taxiway A-3 and Runway 13 | 6-30 |
| Figure 6.12: Taxiway Turnaround at Runway 17 | 6-31 |
| Figure 6.13: Pavement Condition Diagram | 6-33 |

CHAPTER SIX

REQUIREMENTS

To properly plan for the future of Baker City Municipal Airport (BKE), it is necessary to determine if the existing airport facilities can safely and efficiently accommodate current and forecasted levels of activity. Each of the facilities described in [Chapter 4, Airside and Landside Inventory](#), must be analyzed to determine if any improvements are needed to meet new or updated standards developed and adopted by the Federal Aviation Administration (FAA) or other regulatory agencies. This analysis will also be used to help determine if any improvements are needed as a result of the sponsor’s comprehensive plan or strategic vision and mission statements.

The main goal of this analysis will be to identify if improvements are needed, when they will be needed, and the purpose and need for these improvements. Each facility will be analyzed to determine its ability to safely and efficiently accommodate the forecasted activity levels discussed in [Chapter 5, Forecast of Aviation Activity](#). Facilities will also be examined to determine if they meet current FAA design standards, recommendations, requirements, and design considerations. Alternative methods of addressing these potential development projects will be discussed and evaluated in [Chapter 7, Development Alternatives](#).



6.1. Summary of Facilities and Recommendations

The following summarizes the airport facilities that were examined in this evaluation as well as the conclusions and recommendations that are discussed in this chapter.

Table 6.1: Airport Facilities Assessment Summary

| Facility | Conclusion and Recommendations |
|--|---|
| Airspace Obstructions | <ul style="list-style-type: none"> The objects penetrating the Part 77 surfaces, approach surfaces, and departure surfaces should be eliminated or marked and lighted. These surfaces should continue to be protected to the maximum extent possible in order to prevent new obstructions. |
| Approach Procedures | <ul style="list-style-type: none"> The existing instrument approach procedures are adequate. The approach and departure corridors should continue to be maintained and protected to allow the airport to potentially pursue more precise instrument approach procedures. |
| Airfield Capacity | <ul style="list-style-type: none"> The airport’s annual service volume is estimated to be 230,000 operations. There is no need to begin planning for capacity improvements as demand is expected to remain at less than 10% of the annual service volume for the 20-year planning period. |
| Runway Requirements | <ul style="list-style-type: none"> Runway 13/31 exceeds the standard runway width. Runway 17/35 meets the standard runway width. Runway 8/26 exceeds the standard runway width. The length of all three runways are adequate for the types of aircraft using them. Declared distances need to be implemented for all three runways. All three runways meet line of sight standards. Runway 8/26 will need to be redesignated as Runway 9/27 in 2041. |
| Runway Orientation and Wind Coverage | <ul style="list-style-type: none"> The primary runway, Runway 13/31, meets the wind coverage requirement of 95% for all crosswind components. Runways 8/26 and 17/35 are not justified as crosswind runways. |
| Taxiways and Taxilanes | <ul style="list-style-type: none"> Taxiway shoulder widths do not meet current standards. Taxilanes meet all appropriate dimensional standards. |
| Runway and Taxiway Intersection Design | <ul style="list-style-type: none"> Taxiway B allows direct access to Runway 17/35 and Runway 8/26. Taxiway A-2 allows direct access to Runway 13/31. The intersection of Taxiway A and the undesignated taxiway located just to the north of Taxiway A-2 does not meet current design standards. The Taxiway A-3 and Runway 13 intersection is not at a right angle. The Runway 17, Runway 8, and Runway 26 taxiway turnarounds do not meet current design standards. |
| Airfield Pavements | <ul style="list-style-type: none"> The runways, taxiways, and aprons all have adequate weight bearing capacity. Runway 8/26 pavement conditions are in serious need of immediate reconstruction. Portions of Taxiway B require rehabilitation. The Hangar Area A pavement requires complete reconstruction. |

| Facility | Conclusion and Recommendations |
|---------------------------------------|--|
| Pavement Markings | <ul style="list-style-type: none"> The markings on Runway 8/26 should be updated to meet current standards for visual runway markings. |
| Airfield Signage | <ul style="list-style-type: none"> Runway and taxiway signage is consistent with FAA standards for color and configuration |
| Navigational Aids | <ul style="list-style-type: none"> The VOR-DME and ASOS critical areas meet siting clearance standards. VGSI surface clearances requirements are met. |
| General Aviation Facilities | <ul style="list-style-type: none"> 16 hangars are required by 2041. Aircraft tiedowns requirements are met. The existing helicopter parking is sufficient. |
| Air Cargo Facilities | <ul style="list-style-type: none"> Air cargo requirements are met. The airport should continue to reserve space for an air cargo apron. |
| Support Facilities | <ul style="list-style-type: none"> FBO requirements are met. Fuel storage requirements are met. No additional firefighting facilities are required at this time. No additional snow or ice control equipment is required at this time. The fencing does not meet Oregon Aviation Plan requirements. Automobile parking requirements are met. |
| Utilities | <ul style="list-style-type: none"> Water and sewer service should be expanded at the airport. Electrical service capacity should be investigated further to accommodate future development needs. |
| Land Use | <ul style="list-style-type: none"> City and county land use policies should be updated following the conclusion of this master plan. Incompatible land uses and wildlife attractants should be avoided or eliminated as much as possible. |
| Baker City Strategic Vision | <ul style="list-style-type: none"> The city’s strategic vision should be updated following completion of the master plan. |
| Management & Compliance Documentation | <ul style="list-style-type: none"> Consideration should be given to creating a set of minimum operating standards and rules and regulations for BKE. Airport rates and charges and minimum insurance requirements should be reviewed annually and adjusted accordingly. |
| Emerging Trends | <ul style="list-style-type: none"> Accessibility enhancements should be incorporated into future development. |

6.2. Airport Design and Federal Aviation Administration Standards

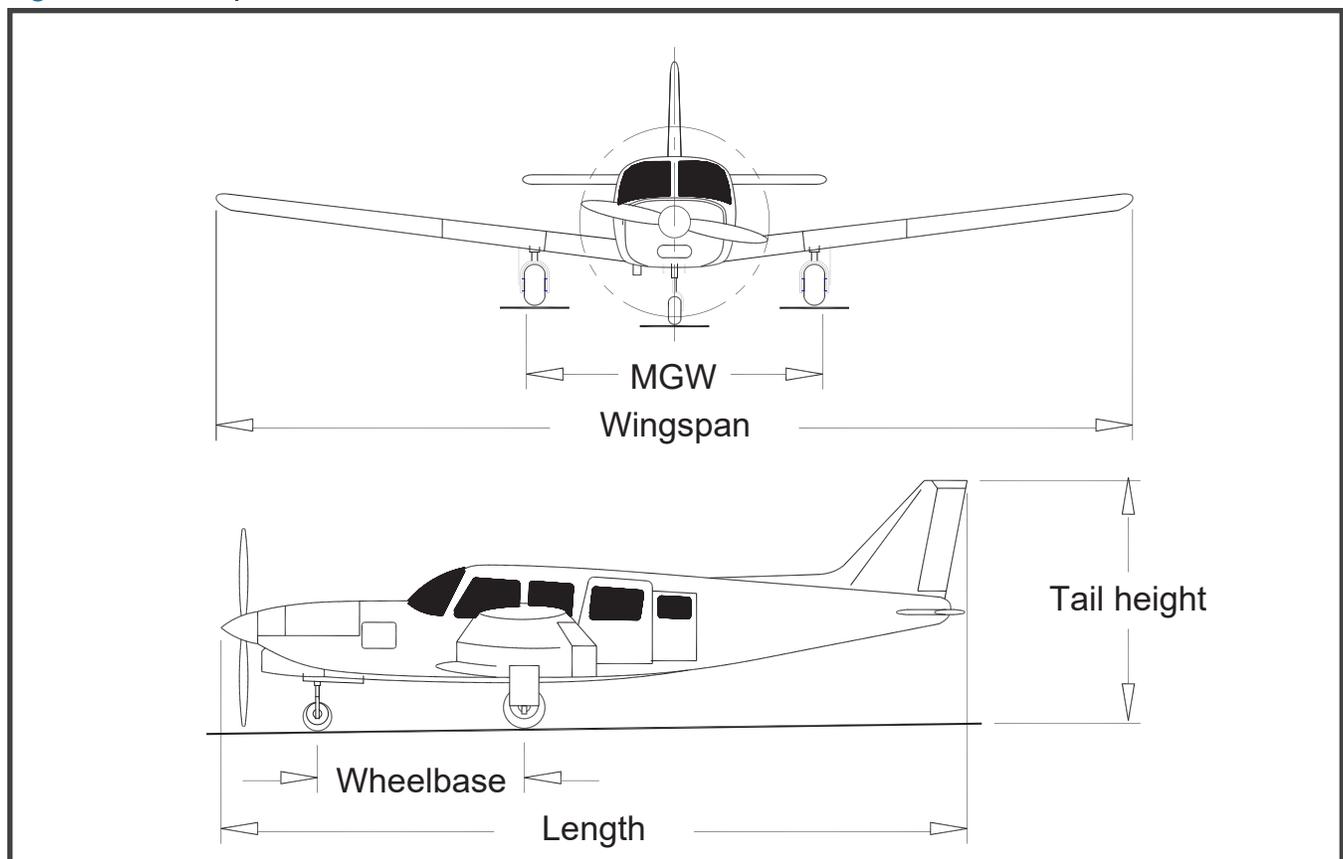
Effective airport design and planning helps to ensure airport facilities are able meet current and future aviation demand and comply with necessary environmental considerations while maintaining acceptable levels of safety, efficiency, and capacity. The airport design process involves a series of steps to identify aviation demand at an airport and then apply the corresponding FAA standards to each of the airport's facilities. This generally includes the following steps:

1. Identify the size, approach category, airplane design group, and taxiway design group of the critical aircraft.
2. Identify reasonably attainable visibility minimums.
3. Identify the applicable runway design code.
4. Apply the appropriate design standards from FAA Advisory Circular (AC) 150/5300-13B, *Airport Design*.¹

6.2.1. Aircraft Classes, Categories, and Groups

The FAA has developed a coding system that allows airport planners and engineers to identify airport design criteria based on the operational and physical characteristics of the critical aircraft (Figure 6.1). As previously discussed, the critical aircraft is the most demanding type of aircraft, or grouping of aircraft with similar characteristics, that regularly use the airport. It can be a single aircraft or a composite of the most demanding characteristics from different aircraft. Incorporating these characteristics as part of the coding system in this way helps airport planners and engineers design the airport to meet both current and future needs while also ensuring the correct design standards are applied.²

Figure 6.1: Key Aircraft Dimensions



Source: FAA, AC 150/5300-13B, *Airport Design*, Figure A-2.

a. Size, Weight, and Wake Turbulence Classifications

The FAA has established four classifications of aircraft based on maximum certificated takeoff weight (MTOW), number of engines, and wake turbulence effect. These classifications, which are summarized in [Table 6.2](#), are typically used for capacity planning purposes.³

Table 6.2: Aircraft Size, Weight, and Wake Turbulence Classifications

| Category | Maximum Certificated Takeoff Weight | Number of Engines | Wake Turbulence* |
|----------|-------------------------------------|-------------------|------------------|
| A | 12,500 pounds or less | Single | Small |
| B | 12,500 pounds or less | Multi | Small |
| C | 12,500 to 300,000 pounds | Multi | Large |
| D | More than 300,000 pounds | Multi | Heavy |

*Wake turbulence is a measure of weight and its capacity to disturb the air.

Source: FAA, AC 150/5060-5, *Airport Capacity and Delay*, Table 1-1.

b. Aircraft Approach Category

The aircraft approach category (AAC) is designated by a letter and is based on the speed of an aircraft as it approaches a runway when landing ([Table 6.3](#)). It is generally used to help ensure an airport's runway safety areas can safely accommodate the critical aircraft.⁴ (Both the AAC and the aircraft size, weight, and wake turbulence classifications listed in [Table 6.2](#) are designated by a letter so it is important to understand the distinction between the two.)

Table 6.3: Aircraft Approach Categories

| Category | Approach Speed |
|----------|---|
| A | Less than 91 knots |
| B | 91 knots or more but less than 121 knots |
| C | 121 knots or more but less than 141 knots |
| D | 141 knots or more but less than 166 knots |
| E | 166 knots or more |

Source: FAA, AC 150/5300-13B, *Airport Design*, Table 1-1.

c. Airplane Design Group

The airplane design group (ADG) is designated by a Roman numeral and is based on an aircraft’s wingspan or tail height; depending on which is most restrictive (Table 6.4). It is typically used to establish dimensional standards needed for adequate clearances.⁵

Table 6.4: Airplane Design Groups

| Group | Tail Height | Wingspan |
|-------|--------------------|----------------------|
| I | <20 feet | <49 feet |
| II | 20 feet – <30 feet | 49 feet – <79 feet |
| III | 30 feet – <45 feet | 79 feet – <118 feet |
| IV | 45 feet – <60 feet | 118 feet – <171 feet |
| V | 60 feet – <66 feet | 171 feet – <214 feet |
| VI | 66 feet – <80 feet | 214 feet – <262 feet |

Source: FAA, AC 150/5300-13B, *Airport Design*, Table 1-2.

d. Representative Aircraft Examples

Figure 6.2 illustrates the representative aircraft for several AAC and ADG combinations.

Figure 6.2: Representative Aircraft

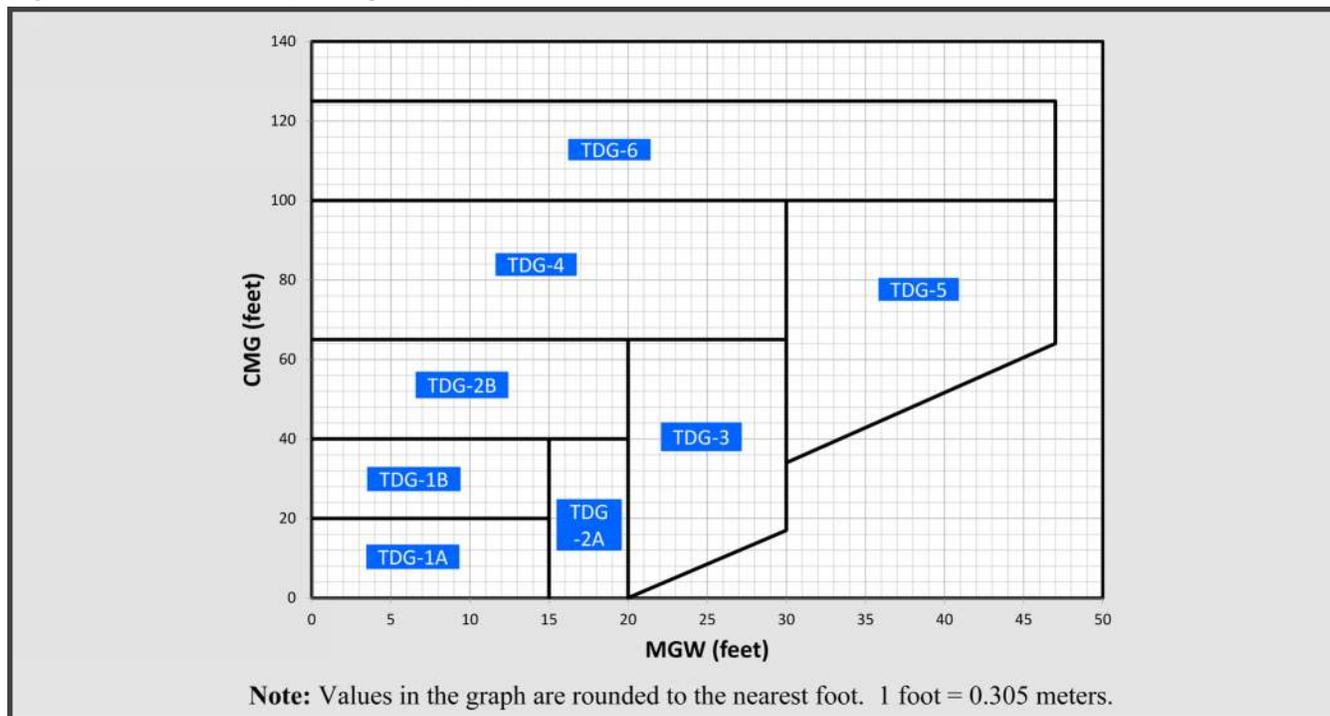
| | | Wingspan/Tail Height | | | |
|----------------|---|---|--|--|---|
| | | I | II | III | IV |
| Approach Speed | A | A-I Cessna 172  | A-II Pilatus PC-12  | A-III CL-415 Super Scooper  | |
| | B | B-I Citation Mustang  | B-II King Air 200  | B-III ATR-72, Q-400  | |
| | C | C-I Learjet 45  | C-II Challenger 300  | C-III Airbus A320  | C-IV Boeing 757, C-130  |
| | D | | D-II Gulfstream IV  | D-III Gulfstream 550  | D-IV Douglas DC-10  |

Source: Ardurra

e. Taxiway Design Groups

The taxiway design group (TDG) is used to establish the correct dimensions for taxiway width. As shown in Figure 6.3, it is based on the dimensions of an aircraft’s landing gear. This includes the distance from the cockpit to the main gear (CMG), and the main gear width (MGW). Each taxiway at an airport can have a different TDG classification based on the size and type of aircraft expected to use that particular taxiway.⁶

Figure 6.3: Taxiway Design Groups



Source: FAA, AC 150/5300-13B, *Airport Design*, Figure 1-1.

f. Visibility Minimums and Runway Visual Range Values

A runway’s lowest visibility published on an instrument approach chart is used to determine its runway visual range (RVR) value. As shown in Table 6.5, a runway that does not have an instrument approach is classified as a visual runway and does not have an RVR value.⁷

Table 6.5: Visibility Minimums and Runway Visual Range Values

| Runway Visual Range Value | Instrument Flight Visibility (statute miles) |
|---------------------------|---|
| VIS | Visual Approach Only |
| 5,000 feet | Not lower than 1 mile |
| 4,000 feet | Lower than 1 mile but not lower than 3/4 mile |
| 2,400 feet | Lower than 3/4 mile but not lower than 1/2 mile |
| 1,600 feet | Lower than 1/2 mile but not lower than 1/4 mile |
| 1,200 feet | Lower than 1/4 mile |

Source: FAA, AC 150/5300-13B *Airport Design*, Table 1-3.

g. Runway Design Code

The runway design code (RDC) is comprised of the AAC, ADG, and RVR and is used to establish the design criteria for each runway. Each runway at an airport can have a different RDC based on the type of aircraft expected to use that particular runway.⁸

6.2.2. Critical Aircraft and Airfield Design Criteria**a. General Aviation Critical Aircraft**

As previously discussed in **Chapter 5, Forecast of Aviation Activity**, the Beechcraft King Air 260 has been identified as the future critical aircraft. Its maximum certificated takeoff weight is 12,500 pounds which means it is classified as a small aircraft, and it has an AAC of B, an ADG of II, and a TDG of 2A.

b. Runway Design Codes for Baker City Municipal Airport

- Runway 13/31 is the primary runway. Its lowest published visibility minimum is 3/4-mile for Runway 13. Accordingly, Runway 13/31 has an RDC of B-II (small)-4,000.
- Runway 17/35, which does not have an instrument approach procedure, has an RDC of B-II (small)-VIS.
- Runway 8/26, which does not have an instrument approach procedure, has an RDC of B-II (small)-VIS.

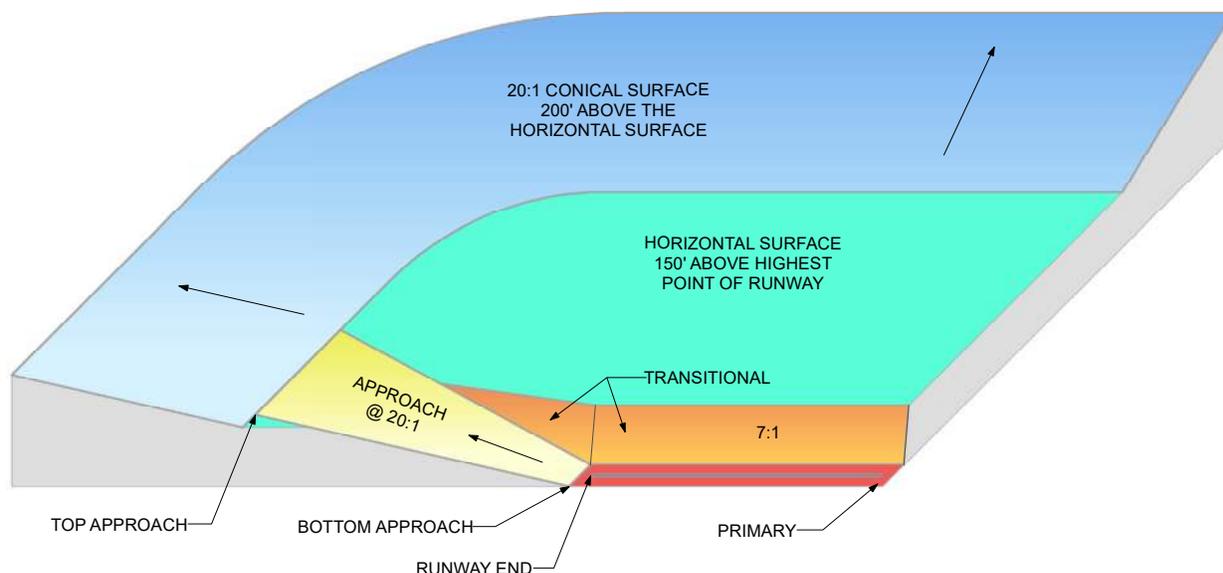
6.3. Airport Airspace

It is important to evaluate the airport’s airspace in order to plan for and protect both existing and future approaches. This includes determining if there are any obstructions of the imaginary surfaces defined in Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace* or the approach and departure surfaces defined in FAA AC 150/5300-13B, *Airport Design*.

6.3.1. Part 77: Safe, Efficient Use, and Preservation of the Navigable Airspace

Title 14 of the Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, was used to establish the standards for evaluating the airport’s airspace. This Federal Aviation Regulation (FAR), which is simply referred to as Part 77, describes the imaginary surfaces surrounding airports that are to be protected from natural and man-made obstructions considered to be aeronautical hazards. As shown in Figure 6.4, the Part 77 surfaces associated with civil airports are the primary, approach, transitional, horizontal, and conical surfaces.

Figure 6.4: Part 77 Surfaces



Source: 14 CFR Part 77; Ardurra.

The standards for Part 77 surface dimensions are applied individually to each runway based on its category (i.e., visual, nonprecision instrument, or precision instrument), and the most precise instrument approach associated with that runway. The Part 77 surface dimensions for Runway 13/31, Runway 17/35, and Runway 8/26 are listed in Table 6.6.

Recommendation

Existing obstructions should be eliminated or marked and lighted. These surfaces should continue to be protected to the maximum extent possible in order to prevent new obstructions.

Table 6.6: Part 77 Surface Dimensions

| Surface | Runway 13/31 | | Runway 17/35 | | Runway 8/26 | |
|--------------------------------|---------------|---------------|---------------|---------------|--------------|---------------|
| Primary Surface | | | | | | |
| Width | 500 feet | | 250 feet | | 250 feet | |
| Length Beyond Runway End | 200 feet | | 200 feet | | 200 feet | |
| Approach Surface | RWY 13 | RWY 31 | RWY 17 | RWY 35 | RWY 8 | RWY 26 |
| Inner Width | 500 feet | 500 feet | 250 feet | 250 feet | 250 feet | 250 feet |
| Outer Width | 2,000 feet | 1,250 feet | 1,250 feet | 1,250 feet | 1,250 feet | 1,250 feet |
| Length | 5,000 feet | 5,000 feet | 5,000 feet | 5,000 feet | 5,000 feet | 5,000 feet |
| Slope | 20:1 | 20:1 | 20:1 | 20:1 | 20:1 | 20:1 |
| Part 77 Category | A (NP) | A (V) | A (V) | A (V) | A (V) | A (V) |
| Transitional Surface | | | | | | |
| Slope | 7:1 | | 7:1 | | 7:1 | |
| Horizontal Surface | | | | | | |
| Height Above Airport Elevation | 150 feet | | 150 feet | | 150 feet | |
| Radius Arc | 10,000 feet | | 5,000 feet | | 5,000 feet | |
| Conical Surface | | | | | | |
| Length | 4,000 feet | | 4,000 feet | | 4,000 feet | |
| Slope | 20:1 | | 20:1 | | 20:1 | |

Source: 14 CFR, Part 77; Ardurra.

6.3.2. Approach and Departure Surfaces

FAA AC 150/5300-13B, *Airport Design*, was used to determine the dimensional standards for the runway approach and departure surfaces. It is important to note that the approach and departure surfaces defined in the AC are different from the surfaces defined in 14 CFR Part 77. However, like the Part 77 surfaces, these surfaces also need to be protected and kept free from proposed development or natural vegetation growth that could penetrate these surfaces. Maintaining clear approach and departure surfaces allow pilots to follow standard instrument approach and departure procedures and helps to protect the usability of the airport’s runways; especially during meteorological weather conditions. The FAA publishes these procedures in the U.S. Terminal Procedures Publications (TPP) which includes all instrument approach procedure (IAP) charts, departure procedure (DP) charts, standard terminal arrival (STAR) charts, charted visual flight procedures (CVFP), and airport diagrams for the entire United States.⁹

The following sections present the dimensional standards that apply to the runway approach and departure surfaces at BKE based on normal conditions (e.g., standard three-degree glidepath angle). There is an approach surface associated with each end of a runway. The dimensions of each approach surface are based on the visibility minimums and approach procedures associated with the runway. Unless otherwise stated in the FAA’s Terminal Procedures Publication (TPP), the departure surface applies to both ends of a runway. For runway ends without an instrument departure surface, the airport operator coordinates with the FAA to identify it in the TPP as not authorized for IFR departures.¹⁰

a. Runway 13 Approach Surface Analysis

As summarized in [Table 4.1, Instrument Approach Procedures](#), the approach procedure with the lowest minimum visibility requirement for Runway 13 is associated with the localizer performance with vertical guidance (LPV) approach (i.e., RNAV/GPS) which has a 3/4-mile visibility requirement. According to Table 3-4 and Figure 3-7 from AC 150/5300-13B, *Airport Design*, which specify dimensional standards for instrument runway approach surfaces, Runway 13 requires approach surface 5 and surface 6.¹¹

Recommendation

Existing obstructions should be eliminated or marked and lighted. These surfaces should continue to be protected to the maximum extent possible in order to prevent new obstructions.

b. Runway 31, Runway 17/35, and Runway 8/26 Approach Surface Analysis

Runway 31, Runway 17/35, and Runway 8/26 are visual runways intended for use by small aircraft (i.e., 12,500 pounds or less) with approach speeds of 50 knots or more. According to Table 3-2 and Figure 3-5 from AC 150/5300-13B, which specify dimensional standards for visual approach surfaces, these runway ends require approach surface 2.¹²

Recommendation

Existing obstructions should be eliminated or marked and lighted. These surfaces should continue to be protected to the maximum extent possible in order to prevent new obstructions.

c. Runway Departure Surfaces

There is an instrument departure procedure for Runway 13/31, Runway 35, and Runway 8/26 with a specified route to the national airspace system. However, Runway 17 is listed in the TPP as not having an instrument departure for environmental reasons. According to Table 3-5 and Figure 3-9 from AC 150/5300-13B, which specify dimensional standards for instrument departure surfaces, Runway 13/31, Runway 35, and Runway 8/26 require departure surface 7. According to the TPP, which lists obstacles to be avoided upon departure, there are several obstructions penetrating the departure surfaces at the airport ([Table 6.7](#)).

Table 6.7: Departure Surface Obstructions

| Runway | Obstructions |
|-----------|--|
| Runway 8 | Vehicles on Roadway and Trees |
| Runway 13 | Trees and Bushes |
| Runway 26 | Bushes, Vehicles on Roadway, Pole, and Trees |
| Runway 31 | Trees, Sign, and Vehicles on Roadway |
| Runway 35 | Trees |

Source: FAA, Departure Procedures for BKE (effective March 23–April 20, 2023).

Recommendation

Existing obstructions should be eliminated or marked and lighted. These surfaces should continue to be protected to the maximum extent possible in order to prevent new obstructions.

6.4. Instrument Approach Procedures

It is important to evaluate the airport's existing approach capabilities and determine the potential for obtaining more precise instrument approach in the future. This should include conducting an airport airspace obstruction analysis in order to protect existing approaches and plan for potential future approaches. As previously discussed in [Section 4.4.1. Approach Procedures for Baker City Municipal Airport](#), there are currently three nonprecision instrument approach procedures published for BKE. This includes two approach procedures for Runway 13 and a circling procedure available to any runway.

Runway 13 Approach Procedures

The most precise instrument approach procedure for Runway 13 is the LPV approach which has a 3/4-mile visibility requirement.

Circling Approach Procedure

Unlike the nonprecision instrument approaches with a straight-in procedure that provides electronic course guidance to a particular runway end, like the approaches to Runway 13, a circling procedure provides electronic course guidance to the runway environment rather than to a specific runway end. This type of procedure can be accommodated on a visual runway, including Runway 17/35 and Runway 8/26, because the pilot must maintain visual contact with the runway environment once they reach the missed approach point and are proceeding to a runway end for landing. As a result, this type of approach requires only visual Part 77 surfaces and visual runway markings.

Recommendation

The current instrument approach procedures are likely the best available for the airport given the existing technology and terrain. The approach and departure corridors for Runway 13/31 should continue to be maintained and protected in order to allow the airport to potentially pursue more precise instrument approach procedures should conditions allow for it in the future.

6.5. Airfield Facilities

An assessment of the airfield facilities was conducted to determine their ability to safely and efficiently accommodate the activity forecasted for the 20-year planning period. This determining if the runways, taxiways, and navigational aids are in compliance with FAA design and safety standards. This analysis is also used to help determine if and when improvements are needed to meet specific operational demands.¹³

6.5.1. Airfield Capacity

The purpose of an airfield capacity analysis is to assess the airport's ability to efficiently accommodate its day-to-day and long-term demands without undue delays or compromises to safety. The analysis also assists in determining when improvements would be needed to meet operational demands.

The most widely recognized and accepted method for conducting an airfield capacity analysis is found in FAA AC 150/5060-5, *Airport Capacity and Delay*. The methodology included in this AC for long range planning can be used to determine an airport's hourly capacity and its annual service volume (ASV) to provide a reasonable estimate for annual capacity. This methodology accounts for differences in runway use, weather conditions encountered during the course of a typical year, and aircraft mix. This methodology can be used to determine an airport's capacity if the conditions at the airport do not differ significantly from the assumptions listed in the AC, and enough of these conditions were met for BKE.

a. Aircraft Mix Index

As previously discussed in [Section 6.2.1.a. Size, Weight, and Wake Turbulence Classifications](#), the FAA classifies aircraft based on their maximum certificated takeoff weight (excluding helicopter operations). The aircraft mix index is a ratio of the forecasted fleet mix based on this weight classification system. The mix index increases as the number of heavier aircraft increases. This increase indicates a decrease in hourly capacity because the FAA requires heavier aircraft to be spaced further apart from other aircraft for safety reasons. The aircraft mix index is a mathematical expression of the fleet mix. The equation is the percent of C aircraft (more than 12,500 pounds but less than 300,000 pounds) plus three times the percent of D aircraft (more than 300,000 pounds) which is written as $\%(C+3D)$.¹⁴

For BKE, the aircraft mix index for 2021 was determined to be 7.3% for 2021 and is expected to increase to 9.1% by 2041. The runway configuration listed in the AC that best fits the airport is runway configuration #9. This configuration is used in conjunction with the airport's mix index to determine annual service volume.

b. Annual Service Volume

With a mix index between 0–20, the airport's annual service volume is estimated to be approximately 230,000 annual aircraft operations with up to 98 VFR operations per hour and 59 IFR operations per hour. As previously discussed in [Chapter 5, Forecast of Aviation Activity](#), there were 16,900 aircraft operations at BKE in 2021, and these are forecasted to reach 20,959 by 2041. This indicates the airport was at 7.3% capacity for 2021 and is expected to reach 9.1% capacity by 2041. According to the AC, an airport should begin planning airfield capacity improvements when capacity reaches 60% of ASV. At 80%, plans should be complete, and construction should begin. At 100%, the airport has reached capacity and improvements should be completed to avoid delays.

Recommendation

With demand expected to remain below the 60% threshold for the 20-year planning period, there is no need to begin planning airfield capacity improvements at this time.

6.5.2. Runways

Runways should be examined with respect to dimensional criteria, orientation, length, width, and pavement design strength. FAA AC 150/5300-13B, *Airport Design*, was used to determine the design standards, recommendations, design considerations, and requirements for runways. The AC describes features essential for safe and efficient aircraft operations based on the RDC of the critical aircraft associated with each runway. This includes dimensions for runway width, and separation distances from fixed or movable objects as well as the safety and object free areas that surround a runway. These areas act as a protective buffer around the airport's operating surfaces. They protect both airport operations and the community by limiting access to the associated property and by limiting how that property can be used.¹⁵

a. Runway Design Standards

As previously discussed in [Section 6.2.2. Critical Aircraft and Airfield Design Criteria](#), the RDC for Runway 13/31 is B-II (small)-4,000, and the RDC for both Runway 17/35 and Runway 8/26 is B-II (small)-VIS. The existing conditions for Runway 13/31 are listed in [Table 6.8](#) and existing conditions for Runway 17/35 and Runway 8/26 are listed in [Table 6.9](#). The dimensional standards associated with each runway are also listed, and areas that do not conform with current FAA design standards are noted in the table.

b. Runway 17/35 and Runway 8/26 Dimensional Standards

As previously discussed in [Section 6.2.2.b. Runway Design Codes for Baker City Municipal Airport](#), Runway 17/35 and Runway 8/26 both have an RDC of B-II (small)-VIS. The associated dimensional standards are listed in [Table 6.9](#) alongside the current dimensions of Runway 17/35 and Runway 8/26.

Recommendation

Possible solutions for each of the areas that do not conform with current FAA design standards will be discussed in the Development Alternatives chapter.

Table 6.8: Runway 13/31 Dimensions and Standards

| Design Criteria | Existing | FAA Standards | Compliance |
|---|--------------|--------------------------------|------------|
| | Runway 13/31 | B-II (small)-4,000 | |
| Runway Design | | | |
| Runway Length | 5,085 feet | See Table 6.10 | Y |
| Runway Width | 100 feet | 75 feet | Exceeds |
| Runway Shoulder Width | 10 feet | 10 feet | Y |
| Stopway / Blast Pad Width | 140 feet | 95 feet | Exceeds |
| Stopway / Blast Pad Length | 573 feet | 150 feet | Exceeds |
| Crosswind Component | 13 knots | 13 knots | Y |
| Runway Protection | | | |
| Runway Safety Area Length Beyond Departure End | 300 feet | 300 feet | Y |
| Runway Safety Area Length Prior to Threshold | 300 feet | 300 feet | Y |
| Runway Safety Area Width | 150 feet | 150 feet | Y |
| Runway Object Free Area Length Beyond Runway End | 300 feet | 300 feet | Y |
| Runway Object Free Area Length Prior to Threshold | 300 feet | 300 feet | Y |
| Runway Object Free Area Width | 500 feet | 500 feet | Y |
| Runway Obstacle Free Zone Length Beyond RWY End | 200 feet | 200 feet | Y |
| Runway Obstacle Free Zone Width | 250 feet | 250 feet | Y |
| Runway 13 Runway Protection Zone | | | |
| Approach Length | 1,700 feet | 1,700 feet | Y |
| Approach Inner Width | 1,000 feet | 1,000 feet | Y |
| Approach Outer Width | 1,000 feet | 1,510 feet | Y |
| Departure Length | 1,000 feet | 1,000 feet | Y |
| Departure Inner Width | 500 feet | 500 feet | Y |
| Departure Outer Width | 700 feet | 700 feet | Y |
| Runway 31 Runway Protection Zone | | | |
| Approach Length | 2,500 feet | 2,500 feet | Y |
| Approach Inner Width | 1,000 feet | 1,000 feet | Y |
| Approach Outer Width | 1,750 feet | 1,750 feet | Y |
| Departure Length | 1,700 feet | 1,700 feet | Y |
| Departure Inner Width | 500 feet | 500 feet | Y |
| Departure Outer Width | 1,010 feet | 1,010 feet | Y |
| Runway Separation | | | |
| Runway Centerline to Holding Position | 200 feet | 125 feet | Exceeds |
| Runway Centerline to Parallel Taxiway Centerline | 300 feet | 240 feet | Exceeds |
| Runway Gradient | 0.15% | 2% max | Y |

Source: FAA, AC 150/5300-13B, Table G-3, Runway Design Standards Matrix, A/B-II Small Aircraft; Ardurra.

Table 6.9: Runway 17/35 and 8/26 Dimensions and Standards

| Design Criteria | Existing | Existing | FAA Standards | Compliance |
|--|------------|------------|------------------|-------------|
| | RWY 17/35 | RWY 8/26 | B-II (small)-VIS | |
| Runway Design | | | | |
| Runway Length | 4,359 feet | 3,670 feet | See Table 6.10 | Y |
| Runway Width | 75 feet | 140 feet | 75 feet | Y / Exceeds |
| Runway Shoulder Width | 10 feet | None | 10 feet | Y / N |
| Blast Pad Width | None | None | 95 feet | N / N |
| Blast Pad Length | None | None | 150 feet | N / N |
| Crosswind Component | 13 knots | 13 knots | 13 knots | Y / Y |
| Runway Protection | | | | |
| RWY Safety Area Length Beyond Departure End | 300 / 60 | 210 / 213 | 300 feet | Y/N / N/N |
| RWY Safety Area Length Prior to Threshold | 300 / 300 | 213 / 210 | 300 feet | Y / N |
| RWY Safety Area Width | 150 | 150 | 150 feet | Y / Y |
| RWY Object Free Area Length Beyond RWY End | 300 / 60 | 210 / 213 | 300 feet | Y / N |
| RWY Object Free Area Length Prior to Threshold | 300 / 300 | 213 / 210 | 300 feet | Y / N |
| RWY Object Free Area Width | 500 | 500 feet | 500 feet | Y / Y |
| RWY Obstacle Free Zone Length Beyond RWY End | 200 / 60 | 200 feet | 200 feet | Y/N / Y/Y |
| RWY Obstacle Free Zone Width | 250 feet | 250 feet | 250 feet | Y / Y |
| Runway Protection Zone | | | | |
| Approach Length | 1,000 feet | 1,000 feet | 1,000 feet | Y / Y |
| Approach Inner Width | 250 feet | 250 feet | 250 feet | Y / Y |
| Approach Outer Width | 450 feet | 450 feet | 450 feet | Y / Y |
| Departure Length | 1,000 feet | 1,000 feet | 1,000 feet | Y / Y |
| Departure Inner Width | 250 feet | 250 feet | 250 feet | Y / Y |
| Departure Outer Width | 450 feet | 450 feet | 450 feet | Y / Y |
| Runway Separation | | | | |
| Runway Centerline to Holding Position | 215 feet | Varies | 125 feet | Exceeds |
| Runway Centerline to Parallel Taxiway Centerline | None | None | 240 feet | N/A |
| Runway Gradient | 0.16% | 0.01% | 2% max | Y / Y |

Source: FAA, AC 150/5300-13B, Table G-3, Runway Design Standards Matrix, A/B-II Small Aircraft; Ardurra.

c. Runway Length Recommendations

The FAA provides recommendations for runway length rather than design standards because a particular runway length may not be suitable for all aircraft operations. It is ultimately up to the pilot to determine if the runway length is adequate based on the aircraft and current weather conditions. That being said, it is a goal of the sponsor to provide a safe environment and to ensure the runway length is suitable for the aircraft that regularly operate at the airport.

FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides the standards and guidelines used to determine the recommended length of each of the runways at BKE. According to this AC, a variety of factors must be considered in order to determine the suitability of a given runway length. These factors include the airport’s elevation above mean sea level, average temperature, wind velocity, airplane operating weights, takeoff and landing flap settings, runway surface condition (i.e., dry or wet), runway gradient, presence of obstructions in the vicinity of the airport, and any locally imposed noise abatement restrictions.¹⁶ The manufacturers’ airport planning manuals (APM) for the Beechcraft King Air 250 and the Cessna Citation CJ1 were also reviewed for takeoff and landing runway length requirements.¹⁷

Table 6.10 lists the runway length recommendations based on the formulas included in the AC as well as data from the airport planning manuals for the current and future critical aircraft. These were calculated using conditions approximating the average temperature of the hottest month (85° F), and the airport’s elevation of 3,373 feet to account for the decline in aircraft performance as elevation and temperature increase. As discussed in Section 6.2.2. **Critical Aircraft and Airfield Design Criteria**, the critical aircraft is categorized as a small aircraft. In addition, according to the fleet mix forecast, the aircraft expected to operate at BKE for the 20-year planning period will mostly be small aircraft and, on occasion, some large aircraft. As a result, the recommended runway length is 4,800 feet.

Table 6.10: Recommended Runway Lengths

| AC 150/5325-4B Design Approach | Runway Length |
|--|---|
| Small, 95% of fleet, less than 10 seats | 4,600 feet |
| Small, 100% of fleet, less than 10 seats | 5,000 feet |
| Small, 10 or more seats (critical aircraft) | 4,800 feet |
| Large, 75% of fleet @ 60% useful load | 5,700 feet |
| Large, 75% of fleet @ 90% useful load | 8,200 feet |
| Large, 100% of fleet @ 60% useful load | 7,100 feet |
| Large, 100% of fleet @ 90% useful load | 9,100 feet |
| Airport Planning Manuals | Minimum Runway Length |
| Beechcraft King Air 250 | 2,900 feet or 5,000 feet to clear 50-foot-high obstacle |
| Cessna Citation CJ1 | 3,100 feet |

Source: FAA, AC 150/5325-4B; Beechcraft King Air 250 and Citation CJ1 airport planning manuals.

Recommendation

Currently, Runway 13/31 is 5,085 feet, Runway 17/35 is 4,359 feet, and Runway 8/26 is 3,670. According to this analysis, the existing runway lengths are adequate to support the critical aircraft throughout the 20-year planning horizon. No changes to the length of any of the runways is recommended at this time.

d. **Displaced Thresholds and Declared Distances**

A displaced threshold is when a threshold is located at a point other than the physical end of the runway. The displaced portion of the runway may not be used for landing. However, it typically remains available for takeoffs. Displaced thresholds are typically used to increase the clearance between arriving aircraft and obstacles. By moving (i.e., displacing) the threshold further down the runway, it increases the height at which the aircraft will cross the airport boundary.

When a runway threshold is moved, the protective airspace associated with that end of the runway is also moved. As a result, implementing a displaced threshold provides a means of obtaining additional runway safety area (**RSA**); obtaining additional runway object free area (**ROFA**); relocating the runway protection zone (**RPZ**) to eliminate incompatible land uses; or as a means of increasing obstacle clearance prior to the threshold.¹⁸

Displaced thresholds are communicated to pilots through pavement markings and through declared distances. Declared distances is a method used to identify the length of runway pavement that is available for use in aircraft operations. The FAA publishes these distances in the airport's chart supplement, the airport master record, and on the airport diagram. The FAA defines the following four types of declared distances:

Takeoff Run Available

The takeoff run available (**TORA**) is the runway length declared available and suitable for the ground run of an aircraft taking off. The TORA may need to be reduced in order to comply with FAA requirements for runway safety areas if there are incompatible uses located in the departure RPZ or when objects are penetrating the 40:1 instrument departure surface.

Takeoff Distance Available

The takeoff distance available (**TODA**) is the TORA plus the length of any remaining runway or clearway beyond the TORA. The TODA may need to be reduced when objects are penetrating the 40:1 instrument departure surface.

Accelerate-Stop Distance Available

The accelerate-stop distance available (**ASDA**) is the length of the runway plus the length of the stopway declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff. The ASDA may need to be reduced due to incompatible uses in the runway safety area (**RSA**) or the runway object free area (**ROFA**). It can also be increased when a runway includes a stopway.

Landing Distance Available

The landing distance available (**LDA**) is the runway length declared available and suitable for landing. A displaced threshold will cause the LDA to be less than the full runway pavement length.

Runway 13/31 Declared Distances

The published length of Runway 13/31 is 5,085 feet. However, the stopway at the Runway 13-end provides additional length in terms of calculating the maximum distance available and suitable for use by aircraft departing from Runway 31. As a result, the Runway 31 accelerate-stop distance available can be increased to 5,285 feet. As shown in [Table 6.11](#), all other declared distances for Runway 13/31 should remain equal the full length of the runway.

Table 6.11: Runway 13/31 Declared Distances

| Declared Distance | Runway 13 | Runway 31 |
|------------------------------------|------------|------------|
| Takeoff Run Available | 5,085 feet | 5,085 feet |
| Takeoff Distance Available | 5,085 feet | 5,085 feet |
| Accelerate-Stop Distance Available | 5,085 feet | 5,085 feet |
| Landing Distance Available | 5,085 feet | 5,085 feet |

Source: FAA, AC 150/5300-13B, Appendix H.

Runway 17/35 Declared Distances

The runway markings at the Runway 35-end indicate it has a 397-foot displaced threshold. However, the published length of Runway 17/35 is 4,359 feet which is the full length of the runway pavement. This means the Runway 35 landing distance available needs to be reduced to reflect the displaced threshold. Additionally, the open drainage ditch approximately 60 feet south of the end of Runway 35 is an incompatible use located in the runway safety area. As a result, the ASDA and LDA need to be reduced in order to meet FAA runway safety area requirements. The declared distances that need to be implemented for Runway 17/35 are listed in [Table 6.12](#).

Table 6.12: Runway 17/35 Declared Distances

| Declared Distance | Runway 17 | Runway 35 |
|------------------------------------|------------|------------|
| Takeoff Run Available | 3,551 feet | 4,359 feet |
| Takeoff Distance Available | 3,551 feet | 4,359 feet |
| Accelerate-Stop Distance Available | 4,059 feet | 4,359 feet |
| Landing Distance Available | 4,059 feet | 3,962 feet |

Source: FAA, AC 150/5300-13B, Appendix H.

Runway 8/26 Declared Distances

There is an open drainage ditch located approximately 210 feet from the end of Runway 8 and another open drainage ditch located approximately 213 feet from the end of Runway 26. These ditches are incompatible uses located in the runway safety areas for Runway 8/26. As a result, the ASDA and LDA for both Runway 8 and Runway 26 need to be reduced in order to meet FAA requirements for runway safety area. Additionally, West Airport Road is located just beyond the end of Runway 8, and Lindley Road is located just beyond the end of Runway 26 which means the vehicles using these roads penetrate the 40:1 instrument departure surface. As a result, the TORA and TODA distances need to be reduced in order to meet FAA instrument departure clearance requirements. The declared distances that need to be implemented for Runway 8/26 are listed in [Table 6.13](#).

Table 6.13: Runway 8/26 Declared Distances

| Declared Distance | Runway 8 | Runway 26 |
|------------------------------------|------------|------------|
| Takeoff Run Available | 3,670 feet | 3,670 feet |
| Takeoff Distance Available | 3,670 feet | 3,670 feet |
| Accelerate-Stop Distance Available | 3,670 feet | 3,670 feet |
| Landing Distance Available | 3,670 feet | 3,670 feet |

Source: FAA, AC 150/5300-13B, Appendix H.

Recommendation

The declared distances listed in [Table 6.11](#), [Table 6.12](#), and [Table 6.13](#) should be implemented in order to meet FAA requirements for runway safety areas and instrument departure clearance standards. Implementing declared distances requires prior FAA coordination and approval. If approved, declared distances would then need to be shown on the airport layout plan. Implementing these declared distances will be discussed in the Development Alternatives chapter.

e. Runway Line of Sight and Runway Visibility Zone

A runway with a clear line of sight (LOS) allows pilots to visually verify the location and actions of other aircraft and vehicles on the ground. When runways meet LOS standards, it reduces the potential for accidents. For intersecting runways, the runway visibility zone (RVZ) is an area formed by imaginary lines that connect the LOS points of both runways. A clear LOS prevents objects not fixed-by-function (e.g., buildings, structures, and parked aircraft) that are located within the RVZ from blocking the pilot's view of the intersecting runway. The RVZ provides a visual field of view that enhances a pilot's situational awareness which helps them to avoid accidents with other aircraft operating on an intersecting runway.

LOS standards for airports without an air traffic control tower, like BKE, state that any point five feet above the runway centerline must be mutually visible with any other point five feet above the centerline of the crossing runway. For non-perpendicular intersecting runways, as is the case with all three runways at BKE, the LOS points are dependent on the distance between the runway intersection and the end of the runway.

Recommendation

Runway line of sight is maintained for all runways. The runway visibility zones should continue to be kept clear in order to maintain a clear line of sight.

f. Runway Designation

The normal shifting of the magnetic poles can result in the need to renumber, or redesignate, airport runways. A review of the geodetic and magnetic headings for all three runways indicate redesignation is not required for Runways 13/31 and 17/35 during the 20-year planning horizon. However, Runway 8/26 will need to be redesignated as Runway 9/27 in 2041.

Recommendation

Redesignation of Runway 8/26 will be discussed in the Development Alternatives chapter.

g. Runway Orientation and Wind Coverage

Runway orientation is primarily a function of wind coverage requirements for the existing and projected aircraft fleet mix. FAA AC 150/5300-13B, *Airport Design*, was used to determine guidelines for wind coverage, allowable crosswind components to aid in runway orientation, wind data sources, and methods of analyzing wind data. Ideally, an airport’s primary runway should be aligned with the prevailing wind and oriented in the direction that provides the most wind coverage possible and the least amount of crosswind (i.e., wind blowing at a right angle to the runway).

The FAA recommends wind coverage of at least 95% because both wind speed and direction can significantly impact the operational safety and efficiency of an airport. While wind conditions affect all aircraft to some degree, wind generally affects small aircraft to a greater degree.¹⁹ As shown in [Table 6.14](#), the runway design code (RDC) associated with each runway is used to determine the allowable crosswind component. As previously discussed in [Section 6.2.1. Aircraft Classes, Categories, and Groups](#), the RDC is based on the critical aircraft expected to use the runway. This helps reduce the impact of crosswinds and provides conditions that are safe for the type of aircraft that typically use the runway. All three runways at BKE have an RDC of B-II. This means that, ideally, crosswinds should not exceed 13 knots more than 95% of the time.

Table 6.14: Allowable Crosswind Component by Runway Design Code

| Runway Design Code | Allowable Crosswind Component |
|--|-------------------------------|
| A-I and B-I (includes small aircraft) | 10.5 knots |
| A-II and B-II | 13.0 knots |
| A-III, B-III, C-I through C-III, and D-I through D-III | 16.0 knots |
| A-IV, B-IV, C-IV through C-VI, and D-IV through D-VI | 20.0 knots |

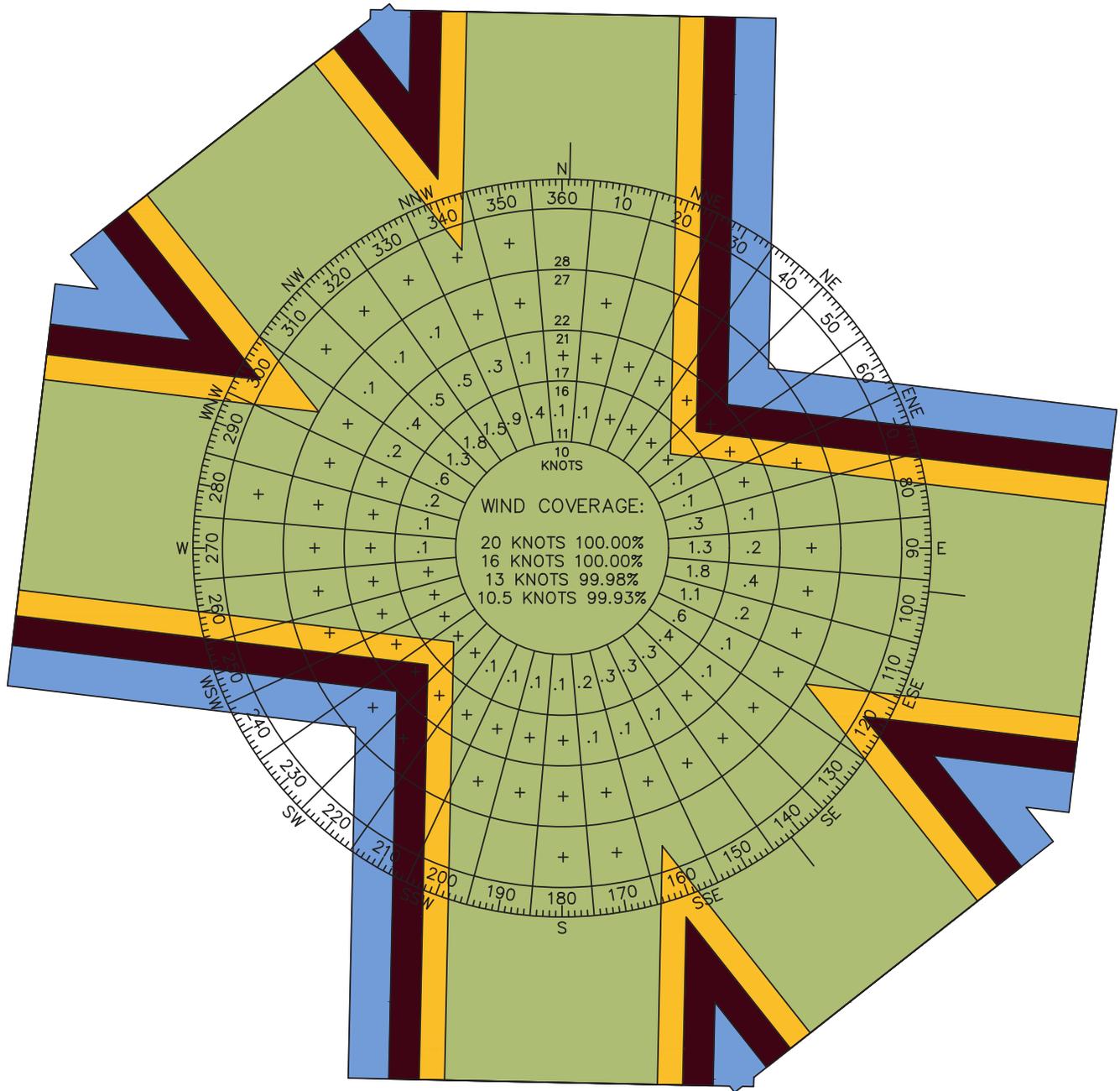
Source: FAA, AC 150/5300-13B, Table B-1

When conducting wind analysis to determine the best runway orientation, the FAA recommends using at least ten consecutive years of weather observations. This is because it is important the data reflects all conditions in order to ensure adequate runway coverage. The wind analysis for BKE was conducted using data obtained from the FAA’s Airport Data and Information Portal (ADIP) which includes observations for wind direction, speed, and visibility conditions from 2013 to 2022. This data was used to create the all-weather wind rose ([Figure 6.5](#)) and the instrument flight rules (IFR) wind rose ([Figure 6.6](#)) shown on the following pages. These wind roses illustrate how wind speed and direction have historically been distributed at the airport. This analysis incorporates 103,403 observations for the all-weather wind rose, and 15,227 observations for the IFR wind rose. The accompanying tables list wind coverage percentages for each runway ([Table 6.15](#) and [Table 6.16](#)).

Recommendation

The primary runway, Runway 13/31, meets the wind coverage requirement of 95% for all crosswind components. According to FAA Order 5100.38D, *Airport Improvement Handbook*, only one runway at any NPIAS airport is eligible for ongoing maintenance and rehabilitation funding unless the FAA Airports District Office (ADO) has made a specific determination that a crosswind or secondary runway is justified. A runway that is not a primary runway, secondary runway, or crosswind runway is considered to be an additional runway and is not eligible for FAA funding.²⁰

Figure 6.5: All Weather Wind Rose, Combined Runways



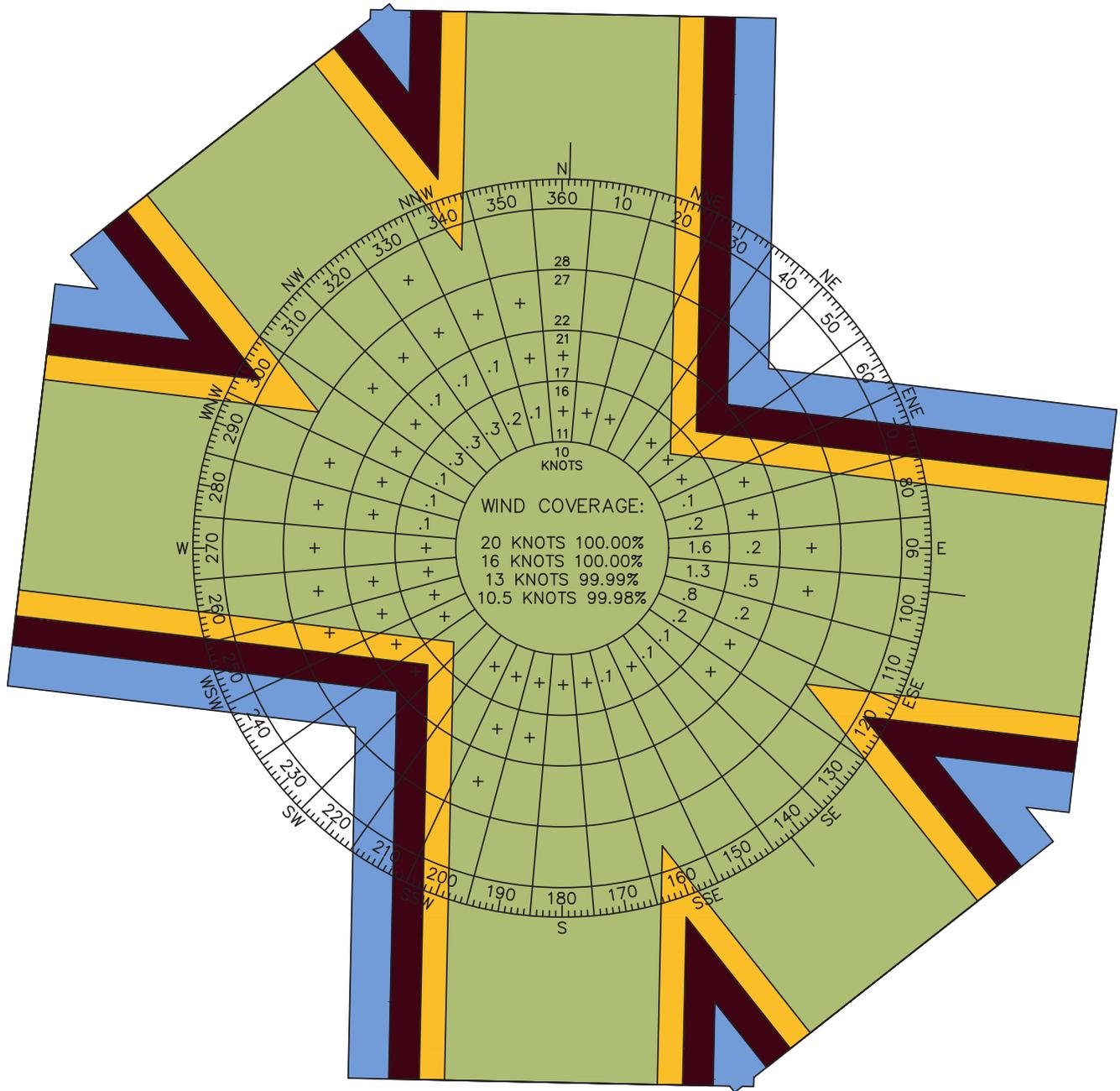
Source: FAA, Airport Data and Information Portal.

Table 6.15: All Weather Wind Coverage Percentages

| Runway | 10.5 Knots | 13 Knots | 16 Knots | 20 Knots |
|--------------|------------|---------------|----------|----------|
| Runway 13/31 | 97.00% | 98.91% | 99.76% | 99.97% |
| Runway 17/36 | 90.04% | 94.38% | 98.32% | 99.67% |
| Runway 8/26 | 93.80% | 96.87% | 99.02% | 99.82% |
| All Runways | 99.93% | 99.98% | 100% | 100% |

Source: FAA, Airport Data and Information Portal.

Figure 6.6: Instrument Flight Rules Wind Rose, Combined Runways



Source: FAA, Airport Data and Information Portal.

Table 6.16: Instrument Flight Rules Wind Coverage Percentages

| Runway | 10.5 Knots | 13 Knots | 16 Knots | 20 Knots |
|--------------|------------|---------------|----------|----------|
| Runway 13/31 | 97.53% | 99.17% | 99.81% | 99.97% |
| Runway 17/36 | 94.02% | 96.16% | 98.69% | 99.68% |
| Runway 8/26 | 98.78% | 99.35% | 99.75% | 99.94% |
| All Runways | 99.98% | 99.99% | 100% | 100% |

Source: FAA, Airport Data and Information Portal.

6.5.3. Taxiway and Taxilane System

FAA AC 150/5300-13B, *Airport Design*, was used to determine the design standards, recommended practices, and design considerations for taxiways and taxilanes. This AC provides guidance to enhance safety and efficiency based on the TDG and ADG of the critical aircraft associated with each taxiway. This includes taxiway dimensions, configuration, and separation standards; taxiway turns and intersection design; and surface gradients. Taxiway design includes standards for safety and object free areas that provide a protective buffer around taxiways and other aircraft movement areas.²¹

a. Taxiway Dimensional Standards

As previously discussed, the critical aircraft associated with all taxiways is the Beechcraft King Air 200/260 which has an ADG of II and a TDG of 2A. The existing conditions for Taxiway A and Taxiway B are listed in [Table 6.17](#) alongside the dimensional standards associated with each taxiway.

Table 6.17: Taxiway Dimensions and Standards

| Design Criteria | Taxiway A | | Taxiway B | |
|---|-----------|---------------|-----------|---------------|
| | Existing | Standard | Existing | Standard |
| Standards Based on Airplane Design Group | | ADG II | | ADG II |
| Taxiway Safety Area Width | 79 feet | 79 feet | 79 feet | 79 feet |
| Taxiway Object Free Area Width | 124 feet | 124 feet | 124 feet | 124 feet |
| Taxiway Centerline to Fixed or Movable Object | 62 feet | 62 feet | 62 feet | 62 feet |
| Standards Based on Taxiway Design Group | | TDG 2A | | TDG 2A |
| Taxiway Width | 35 feet | 35 feet | 50 feet | 35 feet |
| Taxiway Edge Safety Margin | 9 feet | 7.5 feet | 16 feet | 7.5 feet |
| Taxiway Shoulder Width | Varies | 15 feet | None | 15 feet |

Source: FAA, AC 150/5300-13B; Ardurra.

Recommendation

BKE meets appropriate dimensional standards for all taxiway design criteria except taxiway shoulder width dimensions due to the varying widths along the length of the taxiways. While there are areas of the taxiway that do meet FAA standards, the most narrow sections do not meet the FAA’s minimum design standards for taxiways. Possible solutions will be explored in the Development Alternatives chapter.

b. Taxilane Dimensional Standards

Taxilanes are defined paths designed for low speed and precise maneuvering of aircraft. In general, taxilanes allow aircraft to safely access taxiways and taxiway connectors from aircraft parking positions and other areas at the terminal. Unlike taxiways in which speeds will typically range from 15 mph to 35 mph, speeds on taxilanes are generally not more than 15 mph. While most design standards and recommended practices are the same for both taxiways and taxilanes, some design standards for taxilanes are different given the different aircraft speeds and uses of taxiways versus taxilanes. This includes standards for the width of the object free area (OFA) and the distance from the centerline to a fixed or movable object.

The critical aircraft associated with the taxilanes at the FBO and GA parking aprons is the Cessna Citation CJ1 which has an ADG of I and a TDG of 1A. The existing conditions for these taxilanes are listed in **Table 6.18** alongside the dimensional standards associated with these taxilanes.

Table 6.18: Taxilane Dimensions and Standards

| Design Criteria | FBO and GA Apron Taxilanes | |
|---|----------------------------|---------------|
| | Existing | Standard |
| Standards Based on Airplane Design Group | | ADG I |
| Taxilane Object Free Area Width | 79 feet | 79 feet |
| Taxilane Centerline to Fixed or Movable | 39.5 feet | 39.5 feet |
| Standards Based on Taxiway Design Group | | TDG 1A |
| Taxilane Width | 25 feet | 25 feet |

Source: FAA, AC 150/5300-13B; Ardurra.

Recommendation

BKE meets appropriate dimensional standards for all taxilane design criteria. No changes are required at this time for taxilane dimensions.

6.5.4. Runway and Taxiway Intersection Design

In AC 150/5300-13B, *Airport Design*, the FAA recommends the three-path concept for taxiway design. This concept is intended to prevent complex intersections that increase the possibility of pilot error and confusion which can lead to a runway incursion or accident. This design practice keeps taxiway intersections simple by providing pilots no more than three choices at an intersection—left, right, and forward. This also improves safety by allowing for proper placement of airfield markings, signage, and lighting.

Other design considerations that help reduce confusion and runway incursions are to avoid wide expanses of pavement where runways and taxiways intersect; limit runway crossings; avoid high-energy runway crossing intersections (i.e., an intersection within the middle third of a runway); increase pilot visibility by using 90-degree turns at runway entrances and crossing points; and eliminate conditions where a runway can be directly access from a parking apron without requiring a turn.

a. Intersection of Taxiway B and Runways 17/35 and 8/26

The intersection of Taxiway B and Runways 17/35 and 8/26 does not meet the three-path concept because this intersection presents pilots with four choices. Additionally, both of the runways can be accessed directly from Taxiway B (Figure 6.7), and the signage at the intersection is potentially confusing (Figure 6.8).

Figure 6.7: Direct Runway Access From Taxiway B



Source: Ardurra.

Recommendation

This configuration will be discussed in the Development Alternatives chapter.

Figure 6.8: Taxiway B Intersection Signage



Source: Ardurra.

b. Direct Access to Runway 13/31

At the FBO apron, there is direct access to Runway 13/31 via Taxiway A-2.

Figure 6.9: Direct Runway Access From FBO Apron



Source: Ardurra.

Recommendation

This configuration will be discussed in the Development Alternatives chapter.

c. Angled Hold Bar at Undesignated Taxiway

The intersection of Taxiway A and the undesignated taxiway located just to the north of Taxiway A-2 does not meet current design standards because the angled runway hold position marking at this intersection is potentially confusing.

Figure 6.10: Angled Hold Line at Undesignated Taxiway



Source: Ardurra.

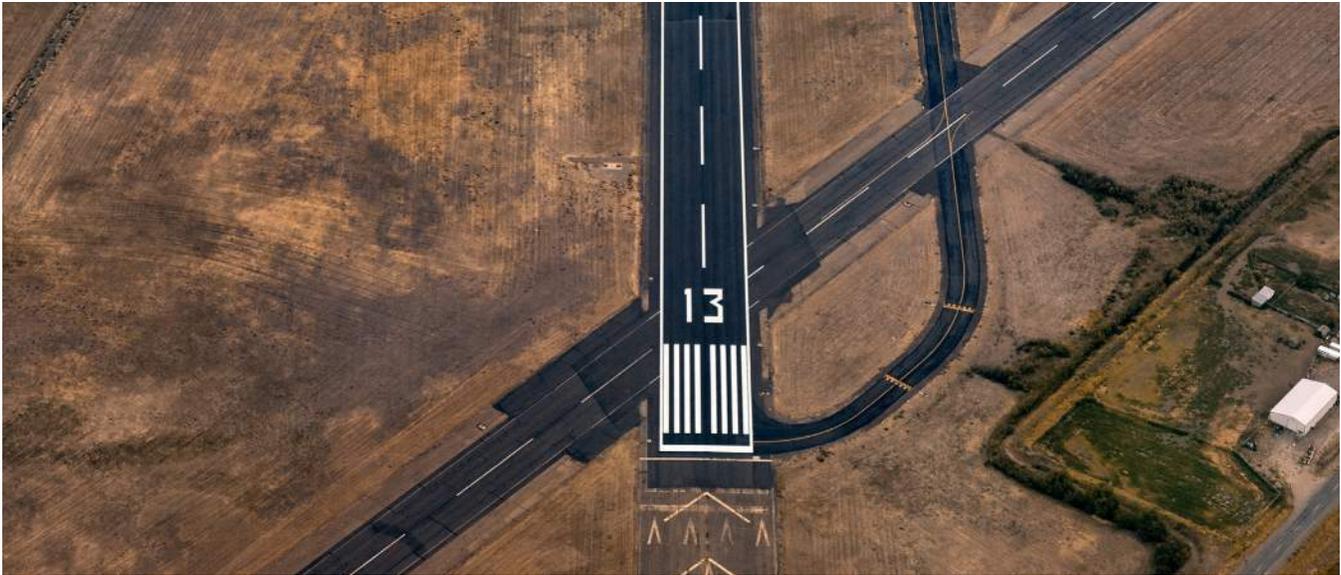
Recommendation

This configuration will be discussed in the Development Alternatives chapter.

d. Runway 13 and Taxiway A-3 Intersection

Ideally, runways and taxiways should intersect at right angles. This provides pilots approaching an intersection with the best visual perspective to observe aircraft on the runway from either direction. This also provides the optimum orientation for runway holding position signs in order to maximize visibility.

As shown in [Figure 6.11](#), the intersection of Taxiway A-3 and Runway 13 is curved rather than at a right-angle to the runway. While this provides pilots at the runway holding position with an enhanced viewing range of the approach area, it limits their field of view down the runway. This increases the risk of a runway incursion because the angle reduces a pilot's field of view as well as their ability to maintain situational awareness. While the design of this intersection is somewhat limited due to the proximity of the private property located immediately to the west, this configuration is also due in part to having a greater than required runway to taxiway separation distance for the parallel taxiway.

Figure 6.11: Intersection of Taxiway A-3 and Runway 13

Source: Ardurra.

Recommendation

Ideally, this configuration would be corrected through airport acquisition of the adjacent private property which would allow the taxiway and accompanying fillets (i.e., the extra taxiway width at an intersection) to be reconstructed to meet current geometry standards. A secondary solution would be to decrease the runway to taxiway separation distance by relocating Taxiway A and reconstructing the taxiway connectors and fillets along the full length of the taxiway to incorporate right angles and meet current design standards. This configuration will be discussed in the Development Alternatives chapter.

e. Taxiway Turnarounds Design

A full parallel taxiway may be impractical for some GA airports. In these cases, taxiway turnarounds offer an interim alternative to a full or partial parallel taxiway. These turnarounds often include a limited-sized holding bay with room for more than one aircraft to hold at a runway end.

As shown in [Figure 6.12](#), Runway 17, Runway 8, and Runway 26 each have “elephant ear” turnarounds that date back to when the runways were originally constructed. These turnarounds do not allow an aircraft to clear the runway and require pilots to back-taxi on the runway which means the runway is occupied longer than is necessary.

Figure 6.12: Taxiway Turnaround at Runway 17



Source: Ardurra.

Recommendation

If Runway 17/35 and Runway 8/26 are to remain for the long-term, proper turnarounds that meet current design standards should be constructed. Possible solutions will be explored in the Development Alternatives chapter.

6.5.5. Airfield Pavements

a. Pavement Strength

FAA AC 150/5320-6G, *Airport Pavement Design and Evaluation*, was used to determine guidelines for required pavement design strength of airfield surfaces. To meet the needs of the airport, runway pavements need to be able to accommodate the maximum takeoff weight of the existing critical aircraft as well as the other types of aircraft expected to operate at the airport in the future. They should be able to physically withstand the weight of frequent arriving, taxiing, and departing aircraft and have sufficient stability to withstand the abrasive action of adverse weather conditions and other deteriorating factors. Runway pavement strength is typically expressed in terms of aircraft weight and landing gear configuration as this determines how its weight is distributed on the pavement and how the pavement will respond to the load.

Runway Pavements

As previously discussed in [Section 4.5.1., Runways](#), Runway 13/31 a published weight bearing capacity of 50,000 pounds for single wheel (**SW**) gear configurations and 65,000 pounds for dual wheel (**DW**) gear configurations. Runway 17/35 has a published a weight bearing capacity of 30,000 pounds for SW gear configurations. Runway 8/26 has a published a weight bearing capacity of 30,000 pounds for SW gear configurations.

Taxiway Pavements

Taxiway A and its associated taxiway connectors have a weight bearing capacity of 50,000 pounds for SW gear configurations and 65,000 pounds for DW gear configurations. Taxiway B has a weight bearing capacity of 30,000 pounds for SW gear configurations.

Apron Pavements

As previously discussed in [Section 3.4.1. Recent Airport Development](#), several apron rehabilitation and reconstruction projects have been completed in recent years. As a result, the north and south sections of the main GA apron have a weight bearing capacity of 78,000 pounds for SW gear configurations and 100,000 pounds for DW gear configurations.

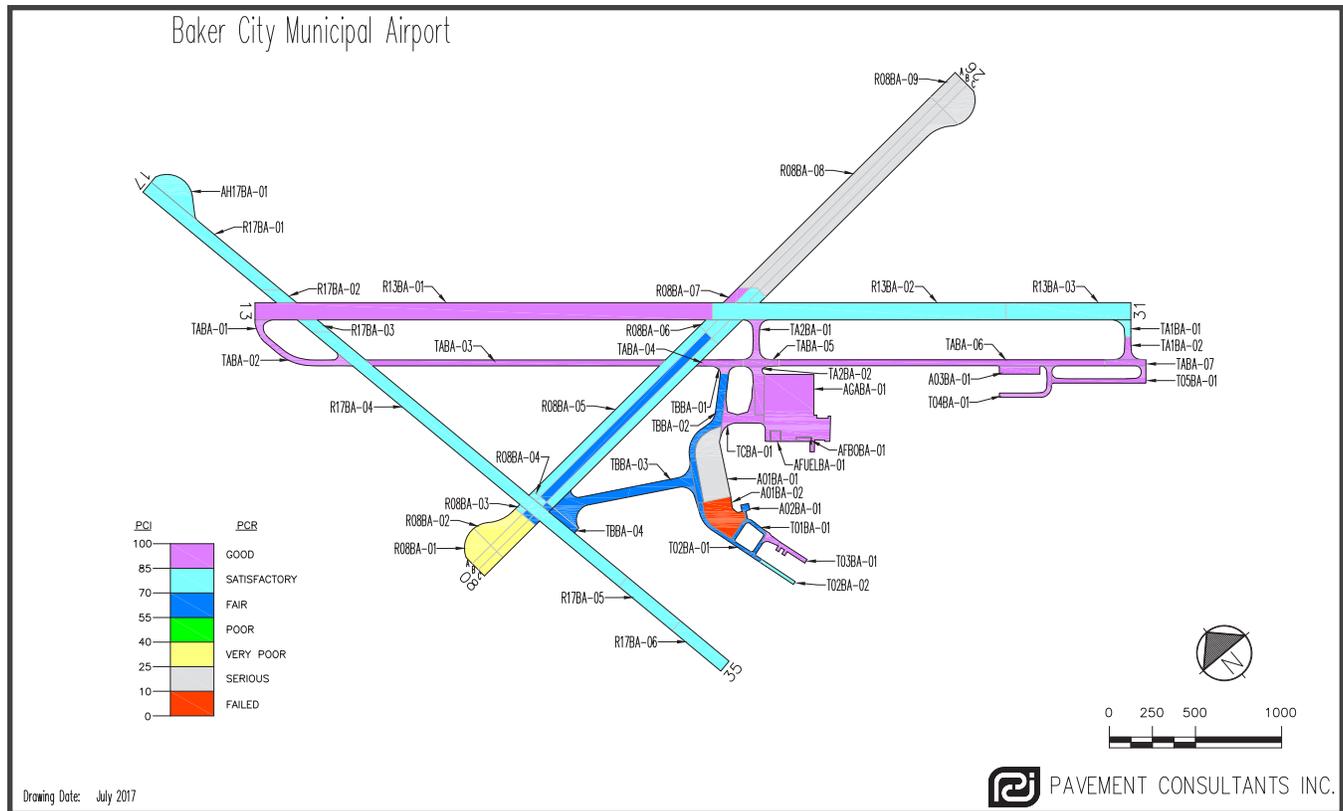
Recommendation

The critical aircraft has a maximum takeoff weight of 12,500 pounds. As a result, the runways, taxiways, and aprons all have sufficient weight bearing capacity. No changes are required at this time.

b. Pavement Condition

As previously discussed in **Section 4.5.3., Airfield Pavements**, the most recent inspection of the airport’s airfield pavements was completed June 2017 as part of the Oregon Department of Aviation (ODA) pavement evaluation program (PEP). As noted in **Table 3.1., Recent Airport Development**, several of the pavement maintenance projects identified as a result of this inspection have since been completed. Based on the conditions noted in the 2017 report, which are shown in **Figure 6.13**, as well as the pavement maintenance projects that have since been completed, several areas of pavement are in serious condition and require immediate reconstruction.

Figure 6.13: Pavement Condition Diagram



Source: ODA, 2017 Pavement Evaluation / Maintenance Management Program Report for BKE

Recommendation

- **Runway 26:** The pavement east of Runway 13/31 is in the worst condition. This section of pavement received a PCI rating of serious and needs immediate reconstruction.
- **Runway 8:** The pavement west of Runway 17/35 received a PCI rating of very poor and needs immediate reconstruction.
- **Taxiway B:** The outer taxilane along the GA apron and the GA hangar area B taxilanes received a PCI rating of fair and require rehabilitation.
- **Hangar Area A:** While the pavement located at hangar area A was not evaluated in the report, visual observations show the pavement requires complete reconstruction.
- The remaining areas should receive routine periodic maintenance to extend the life of the pavement.

6.5.6. Pavement Markings

FAA AC 150/5340-1M, *Standards for Airport Markings*, was used to determine standards for markings used on airport runways, taxiways, and aprons. Runway markings are specified according to the type of instrument approach available on the runway.

a. Runway 13/31

Both ends of Runway 13/31 have nonprecision instrument markings consisting of threshold markings with eight stripes, designation markings, aiming points, and a centerline. These markings are currently in good condition.

b. Runway 17/35

Both ends of Runway 17/35 have visual (i.e., basic) runway markings consisting of designation markings and a centerline stripe. The runway markings are currently in fair condition.

c. Runway 8/26

The Runway 8/26 markings are very faded and are considered to be in poor condition and consist of designation markings (i.e., numbers only with no centerline), threshold bars, and a series of four yellow arrows. These arrows are normally used to indicate an aligned taxiway with a runway that does not have a displaced threshold and are therefore not appropriate for this runway.

Recommendation

Both Runway 13/31 and Runway 17/35 have markings appropriate for the type of approach available for the runway and should be maintained throughout the 20-year planning period. The Runway 8/26 markings need to be updated to meet current standards for visual runways.

6.5.7. Airfield Signage

FAA AC 150/5340-18G, *Standards for Airport Sign Systems*, was used to determine standards for the siting and installation of signs on airport runways and taxiways. The airport's runway and taxiway signage is consistent with FAA standards for color and configuration, and these signs are considered to be in good condition.

Recommendation

All airfield signage should be maintained throughout the 20-year planning period.

6.5.8. Electronic, Visual, and Satellite Navigational Aids

As discussed in [Section 4.5.6., Navigational Aids](#), the airport is equipped with several types of navigational aids (NAVAIDS) that enhance safety for airport operations. These include runway end identifier lights (REIL), an airport beacon, medium intensity runway lights (MIRL), precision approach path indicators (PAPI), visual approach slope indicators (VASI), a very high frequency omnidirectional range with distance measuring equipment (VOR-DME), a segmented circle and wind cone, and an automated surface observing system (ASOS). Each of these facilities has criteria that must be met for the device to function properly such as requirements for where it’s located as well as requirements for critical areas surrounding the equipment that must be kept clear of objects and obstructions. [Table 6.19](#) lists the general function and any critical area requirements for each of these NAVAIDS.

Table 6.19: NAVAID Requirements

| Equipment Type | Requirement | Compliance |
|------------------------------|---|------------|
| REIL | N/A | N/A |
| Airport Beacon | N/A | N/A |
| MIRL | N/A | N/A |
| PAPI | N/A | N/A |
| VASI | N/A | N/A |
| VOR-DME | <ul style="list-style-type: none"> • 1,000-foot radius for structures • 200-foot radius for wire fences | Yes |
| Segmented Circle & Wind Cone | N/A | N/A |
| ASOS | <ul style="list-style-type: none"> • Obstructions within 500 feet must not be higher than 15 feet below the top of the wind sensor. • No hover or taxi operations within 100 feet. • Ideally, obstructions are not higher than 10 feet below the sensor or within 500 to 1,000 feet. | Yes |

Source: FAA Orders 6820.10, 6850.2B, 6560.10D, AC 150/5300-13B; Ardurra.

Recommendation

These facilities and the associated critical areas should be maintained throughout the 20-year planning period.

a. **Visual Glideslope Indicator Obstacle Clearance Surface**

FAA Order JO 6850.2C, *Visual Guidance Lighting Systems*, was used to determine criteria for all visual guidance lighting systems. As previously discussed in **Section 4.5.5.d, Visual Glideslope Indicators**, both ends of Runway 13/31 are equipped with visual glideslope indicators that provide pilots with visual guidance during an approach to the runway. Runway 13 is equipped with a visual approach slope indicator (**VASI**), and Runway 31 is equipped with a precision approach path indicator (**PAPI**). These kind of visual NAVAIDS must be sited and aimed so that it defines an approach path with adequate clearance over obstacles and a minimum threshold crossing height (**TCH**).

Obstacle Clearance Surface

The VASI and PAPI must be positioned and aimed so that no obstacles penetrate the obstacle clearance surface (**OCS**) associated with these systems in order to provide pilots with a minimum clearance over obstacles during approach. This surface begins 300 feet in front of the VASI or PAPI and extends outward vertically into the approach zone at an angle one degree less than the aiming angle of the third light unit for a four-light system or the outside light for a two-light system. The surface also extends ten degrees on either side of the runway centerline and extends outward from the threshold for four statute miles.

The obstacle clearance protection provided by the OCS is not always entirely sufficient because the OCS area originates at the runway centerline while the light boxes are typically located to the side of the runway. As a result, the light beams emitted from each light box can be well outside the OCS. This means a light signal clearance surface (**LSCS**) survey is required to assure full obstacle clearance for the lights. Details of the LSCS survey process can be found in FAA Engineering Brief Number 95, *Additional Siting and Survey considerations for Precision Approach Path Indicator (PAPI) and Other Visual Glide Slope Indicators (VGS)*.²²

Threshold Crossing Height

For runways without an electronic glideslope (e.g., localizer and glideslope), like BKE, the lights should be positioned and aimed at the angle that produces the required threshold crossing height (**TCH**) (i.e., the height the aircraft is when it crosses the runway threshold) and clearance over obstacles in the approach area. The minimum and maximum allowable TCH varies according to the height of the type of aircraft that use the runway. The four-light VASI system installed on Runway 13 has a standard three-degree glide path angle, and the TCH published for Runway 13 is 55 feet. The two-light PAPI system installed on Runway 31 has a standard three-degree glide path angle. There is no TCH published for Runway 31. However, the standard TCH requirement for small GA commuters and corporate turbojets is 40 feet.²³

Recommendation

These obstacle clearance surfaces should be protected to the maximum extent possible, and any existing obstructions should be eliminated or marked and lighted. A future LSCS survey may be required to assure obstacle clearance requirements are met.

6.6. General Aviation Facilities

As previously discussed in [Section 3.6.2. Oregon Airport System Plan](#), BKE is classified as a Category III: Regional General Aviation airport in the current edition of the Oregon Aviation Plan (OAP). This plan includes several facility and service objectives for Category III airports that were used to determine requirements for each of the General Aviation (GA) facilities listed in this section.

6.6.1. Main General Aviation Apron

As previously discussed in [Section 4.6.1.](#), the main GA terminal apron is approximately 96,000 square feet. It is located between the end of Taxiway B and taxiway connector A-2, and provides access to the main hangar area, an aircraft tiedown area, helicopter parking pads, and many of the buildings and private hangars.

a. Aircraft Hangars

As previously discussed in [Section 4.6.2. Aircraft Hangars](#), there are currently 33 hangars at BKE. The OAP includes an objective for Category III airports to have 75% of their based aircraft stored in hangars. The number of hangar spaces required to meet this objective was determined based on the forecast for based aircraft ([Table 6.20](#)).

Table 6.20: Hangar Requirements

| Year | Based Aircraft | Required | Existing | Needed |
|------|----------------|----------|----------|--------|
| 2021 | 43 | 32 | 33 | -1 |
| 2026 | 48 | 36 | 33 | 3 |
| 2031 | 53 | 40 | 33 | 7 |
| 2041 | 65 | 49 | 33 | 16 |

Source: Ardurra.

Recommendation

The airport currently meets the OAP objective for hangar space. However, hangar development will need to occur in order to meet the growing demand for hangar space. Potential sites for new hangars will be discussed in the Development Alternatives chapter.

b. Aircraft Tiedowns

As previously discussed in [Section 4.6.3.](#) and [Section 4.6.6.](#), there is total of 30 marked aircraft tiedowns at the airport. This includes 19 small aircraft tiedowns located on the main GA apron as well as eight small aircraft tiedowns and three medium aircraft tiedowns located at the FBO apron. The objective for aircraft tiedowns included in the OAP is for Category III airports to have enough capacity to accommodate 30% of daily transient aircraft.

The number of tiedowns required to meet this objective was determined based on the forecast for itinerant operations. The number of aircraft operations for the peak month, average day (**PMAD**) was estimated to be 11% of the annual itinerant operations, and it was assumed that approximately 70% of these aircraft could potentially require the use of short-term aircraft parking ([Table 6.21](#)).

Table 6.21: Tiedown Requirements

| Year | PMAD | Required | Existing | Needed |
|------|------|----------|----------|--------|
| 2021 | 34 | 10 | 30 | -20 |
| 2026 | 36 | 11 | 30 | -19 |
| 2031 | 38 | 11 | 30 | -19 |
| 2041 | 43 | 13 | 30 | -17 |

Source: Ardurra.

Recommendation

The airport has an adequate number of tiedowns to meet the OAP objective throughout the entire 20-year planning period. No additional capacity is required at this time.

c. Helicopter Parking Pads

As previously discussed in [Section 4.6.4., Helicopter Parking Pads](#), there are two small helicopter parking pads and one medium helicopter parking pad located on the main GA terminal apron. While there is not a specific OAP objective for helicopter parking pads, the existing helicopter parking is sufficient to meet existing and projected demand.

Recommendation

An increase in helicopter parking capacity is not required at this time.

6.7. Air Cargo Facilities

The airport does not currently have dedicated air cargo service but could in the future. A dedicated air cargo carrier would likely use aircraft similar to those currently using the airport such as a Beechcraft 1900. The 2018 OAP system objective for a Category III: Regional General Aviation airport is to have space on the existing apron to accommodate air cargo aircraft. BKE meets this objective.

Recommendation

The airport should continue to reserve space for an air cargo apron until a facility is developed.

6.8. Support Facilities

The objectives included in the Oregon Aviation Plan for Category III airports that relate to support facilities were used to determine requirements for each of the facilities listed in this section.

6.8.1. Fixed Base Operator

As previously discussed in [Section 4.6.5., Fixed Base Operator](#), Baker Aircraft provides a full range of services including aircraft fuel, aircraft rentals, charter flights, aircraft maintenance and repair services, hangar rentals, aviation equipment and supplies, oxygen service, flight instruction, a courtesy car and car rentals, crew lounge, and more. The OAP includes an objective for Category III airports to have a full-service FBO operating during normal business hours, and to have a general aviation terminal building with a small meeting area.

Recommendation

Baker Aircraft is a full-service FBO and is open during normal business hours. It also has a crew lounge at the FBO that meets the OAP objective for a small meeting area. No additional accommodations are required at this time.

6.8.2. Fuel Facilities

As previously discussed in [Section 4.6.7. Fuel Facilities](#), the airport currently has two 6,000-gallon Jet-A fuel storage tanks, and one 12,000-gallon 100LL avgas storage tank. The FBO also operates a 3,000-gallon-capacity full-service Jet-A fuel truck. The objective included in the OAP for fuel facilities at Category III airports is to have 24-hour self-serve fueling facilities with both 100LL avgas and Jet-A fuel. While the airport meets this objective, it is also important to determine if the current fuel storage capacity is sufficient to meet future demand. This was calculated based on the aircraft operations forecast with assumptions for fuel usage using historical rates. According to the airport's records for 2022, the busiest month for 100LL avgas sales was June with 3,250 gallons sold, the busiest month for Jet-A fuel sales was August with 8,114 gallons sold. The airport currently has adequate fuel storage capacity through the 20-year planning period.

Recommendation

The airport meets the objective for fuel facilities included in the OAP. Additionally, current fuel storage capacity is adequate for existing and forecasted operations at the airport. No additional fuel storage capacity is required at this time.

6.8.3. Fire and Emergency Medical Response

As previously discussed in [Section 4.6.8. Fire and Emergency Medical Response](#), the airport does not have aircraft rescue and fire fighting (ARFF) equipment on site. However, the Baker City Fire Department (BCFD) and Baker Rural Fire Protection District does provide emergency fire fighting services at the airport. Emergency medical services are provided by Metro West Ambulance under a contract with Baker County.

Recommendation

The airport is not a Part 139 commercial service airport and is therefore not required to have ARFF equipment on site. No additional firefighting facilities are required at this time.

6.8.4. Snow Removal and Ice Control

As previously discussed in [Section 4.6.9. Snow Removal and Ice Control](#), snow removal is currently performed by FBO staff, and deicing services are not currently offered at BKE. The OAP did not include an objective for snow removal and ice control service at Category III airports.

Recommendation

No additional snow or ice control equipment is required at this time.

6.8.5. Landscaping and Pest Control

As previously discussed in [Section 4.6.10. Landscaping and Pest Control](#), the FBO is currently under contract to mow and maintain the landscaped areas of the airport property.

Recommendation

No additional landscaping or pest control services or equipment is required at this time.

6.8.6. Security, Fencing, and Vehicle Access Gates

Fencing contributes to the safety of the airport by establishing a physical barrier that limits or impedes inadvertent entry of individuals and vehicles into the air operations area (AOA). Although there are no Transportation Security Administration (TSA) standards or requirements for security at a GA airport, fencing is a basic deterrent that discourages unauthorized entry.²⁴

As previously discussed in [Section 4.6.11. Security, Fencing, and Vehicle Access Gates](#), the airport is enclosed by a four-foot-high wildlife fence with a cattle guard protecting the main entrance to the terminal area. There are also three vehicle gates that provide access to hangar areas. The objective included in the OAP for fencing and access control at Category III airports is to have a fully-fenced terminal area with controlled access.

Recommendation

The airport does not currently meet the OAP objective for fencing and access control. The existing wildlife fencing installed at BKE should continue to be maintained through the 20-year planning period. A chain link security fence that is a minimum of four feet tall should be installed along the perimeter of the terminal area. Vehicle and pedestrian gates should be in locations that are easily visible as this will make it easy to monitor and be aware of individuals entering the airfield. Access should be controlled in order to limit access to people that have an aviation need to enter the airfield.

6.8.7. Automobile Parking

It is important to provide adequate parking to meet the needs of airport tenants and employees as well as airport users and visitors. As previously discussed in [Section 4.6.12. Automobile Parking](#), there is an unmarked gravel parking area that can accommodate approximately 20 vehicles. The objective included in the OAP for automobile parking at Category III airports is listed as minimal tenant and public parking.

Recommendation

The airport meets the OAP objective for automobile parking, and current parking capacity is adequate for the existing and forecasted operations at the airport. No additional capacity is required at this time.

6.8.8. Utilities and Stormwater

a. Water and Sewer Service

Lack of water and sewer service has been an ongoing challenge for the airport. An airport utility infrastructure study was conducted by Anderson Perry & Associates in 2009 in order to provide the airport with recommendations to improve its water and sewer infrastructure management system. This study determined the most viable option for wastewater management was to construct an on-site wastewater system consisting of a collection system along with on-site treatment and disposal systems. This option requires a site evaluation by the Oregon Department of Environmental Quality (DEQ) and a Water Pollution Control Facilities (WPCF) permit. The study identified two viable options for domestic water service. The first option involves using the existing wells and making improvements to the water treatment system. The second option involves constructing a six-inch water line to connect Baker City's existing infrastructure to the airport. The study also identified four possible options for providing the airport with a water supply for fire suppression.²⁵

Recommendation

Airport management should obtain updated cost estimates for the viable options identified in the 2009 airport utility infrastructure study to determine the most cost effective option for expanding the airport's water and sewer infrastructure.

b. Telephone and Internet Service

Telephone and internet services are currently provided by the FBO. Future service upgrades may be needed to enhance customer service at the airport.

c. Stormwater Drainage Systems

Stormwater drainage is met for the current facility. Stormwater infrastructure improvements will need to be incorporated into future improvement projects.

d. Electric Service and Lighting Vault

The capacity of the lighting vault and overall airport electrical service should be evaluated as airport development projects are designed to ensure airfield electrical needs are met.

6.9. Land Use Requirements, Policies, and Regulations

Land use is the term used to describe how property is currently being used and how it can be used in the future. The existing and planned land uses near an airport can impact the local community, airport operations, and potential airport growth. This is why airport-compatible land uses are defined as those uses that can coexist with a nearby airport without constraining the safe and efficient operation of the airport or exposing people living or working nearby to potential negative environmental or safety impacts.

Effective land use compatibility plans take both height and land use restrictions into consideration and are incorporated via local zoning laws. This type of proactive planning around an airport protects both the airport and the surrounding community. Furthermore, federal and state grant assurances require airport sponsors to operate and maintain the airport in a safe and serviceable condition, prevent and remove airport hazards, and take appropriate measures to ensure compatible land uses exist around the airport. Federal and state land use requirements will be discussed in **Chapter 11, Planning For Compliance**.

6.9.1. Protecting Runway Protection Zones

FAA AC 150/5300-13B, *Airport Design*, was used as guidance for determining runway protection zone (RPZ) design standards, and AC 150/5190-4B, *Airport Land Use Compatibility Planning*, was used as guidance for land use compatibility planning. A review of the 2010 Airport Layout Plan shows that each RPZ extends off airport property. Land uses in the RPZs to the north, east, and south of the airport include county roads and farming, and land uses in the RPZ to the west include county roads, Interstate Highway 84 (I-84), farms, and holding ponds. These holding ponds are a potential wildlife attractant and are discussed in **Section 6.9.2. Wildlife Hazard Attractants**.

The roads located in the RPZs are considered an incompatible use. While the county roads surrounding BKE are not well traveled and represent a relatively low risk to people and property on the ground, I-84 is a well-traveled main thoroughfare that represents a higher risk. It is highly unlikely I-84 will be relocated at the request of the airport, and using declared distances for Runway 13/31 to eliminate the incompatible use would render the runway unusable to all but light GA aircraft. Therefore, I-84 will likely continue to be an incompatible use within the RPZ.

Recommendation

The sponsor should actively monitor for the potential introduction of new incompatible land uses. It should be a high priority for the airport to acquire land or otherwise establish land use and zoning controls that prevent incompatible uses. In accordance with the *Airport Improvement Program Handbook*, if financial assistance is needed to help secure ownership or land use control, the FAA will consider requests from eligible airport sponsors for Airport Improvement Program (AIP) funding if it helps eliminate existing incompatible land uses and prevent future ones. This includes providing financial assistance to an airport sponsor for land acquisition, even if the sponsor has no land use control (i.e., when the RPZ extends into another jurisdiction), but only if the sponsor demonstrates it is taking all appropriate steps available to enhance control and mitigate existing risks.

6.9.2. Wildlife Hazard Attractants

Many types of vegetation, habitats, and land use practices can attract animals that pose a risk to aviation safety. FAA AC 150/5200-33C, *Hazardous Wildlife Attractants on or near Airports*, was used as guidance for determining the land uses on or near the airport that have the potential to attract hazardous wildlife. For airports serving turbine-powered aircraft, the FAA recommends a separation distance of 10,000 feet from any hazardous wildlife attractants. This includes municipal landfills; water, wastewater, and stormwater treatment facilities that create standing bodies of water; wetlands; many types of agricultural activities; and golf courses or other areas with similar landscaping and features.²⁶

A review of the FAA Wildlife Strike Database, which contains records of wildlife strikes reported as far back as 1990, did not show any wildlife strikes reported for BKE. However, the following wildlife attractants are located on or near the airport property.

a. On-Airport Attractants

There is the potential for standing water to collect in the drainage channels running along the perimeter of the airport which would be a wildlife attractant.

b. Off-Airport Attractants

Off-airport attractants include the ponds located on private property immediately to the west, south, and southeast of the airport, the Powder River located a half-mile west of the airport, a wastewater treatment facility located 1.6 miles southwest of the airport, and a municipal landfill located 8.5 miles south of the airport.

Recommendation

In order to protect the airport's approach and departure corridors, the FAA recommends a five-mile separation from the wildlife attractant and the nearest aircraft operating area. Airport staff should take measures to ensure the on-airport drainage channels do not retain water for more than 48 hours. City staff should take measures to prevent any new hazardous wildlife attractants in accordance with FAA AC 150/5200-33C, *Hazardous Wildlife Attractants on or near Airports*.

6.10. Baker City Strategic Vision and Comprehensive Plan

Baker City's current comprehensive plan, *Baker City Vision – 2030*, was adopted by the city council July 13, 2010. This plan was developed in an effort to support our community's vision for Baker City. This plan incorporates a number of strategic considerations which are aimed at achieving the community's aspiration to balance its rural small town character with improved economic sustainability and quality of life.²⁷

Despite the airport being somewhat disconnected from the city, BKE does support the city's strategic vision and comprehensive plan. It has a positive impact on the local economy by acting as a gateway for tourists wishing to explore Baker City's historic district, Oregon Trail sites, or the various wilderness and recreational areas of Eastern Oregon. The airport is also used as a base of operations by the U.S. Forest Service during fire season and is used for rapid air transport of medical patients; both of which help to improve the quality of life for the community. Additionally, the Heilner Hangar, which stands as a reminder of the early days of aviation in Baker City, pays homage to Joseph Heilner who was a leader in establishing the airport and contributes to the rural small town character of the community.

Recommendation

Airport management should continue to actively support the city's strategic vision and comprehensive plan.

6.11. Primary Management and Compliance Documents

An airport's primary management and compliance documents (PMCD) are a collection of policies and standards that guide the management, operation, and development of the airport. They typically include minimum operating standards, rules and regulations, leasing and development standards, minimum insurance requirements, taxes and fees, an airport master plan, and an airport layout plan. These documents provide an effective framework for airport sponsors to comply with its federal obligations, set expectations, and ensure airport access is fair, reasonable, and not unjustly discriminatory.

There are no formal minimum operating standards or rules and regulations for BKE. There are minimum insurance requirements stated in hangar leases, and, according to Baker City Airport Commission meeting notes, there are standards for hangar construction. Airport taxes and fees are set by Baker City Resolution 3884 which was passed by the city council and mayor July 1, 2021.

Recommendation

Consideration should be given to creating a set of minimum operating standards and rules and regulations for Baker City Municipal Airport. The airport's leasing and development standards, minimum insurance requirements, and taxes and fees should be reviewed annually and adjusted accordingly.

6.12. Emerging Trends

The aviation industry is always evolving, and these changes can affect the size, quantity, and type of airport facilities needed to accommodate future demand. These trends can include topics that have a direct impact on future airport growth and development needs such as unmanned aircraft systems (UAS), vertiports, sustainable aviation fuels (SAF), and electric aircraft. They can also include topics that are less directly related, such as electric vehicles or ground service equipment (GSE) integration, which should be considered for inclusion within the airport's medium- to long-term planning horizon.

Additionally, current social and political issues can have indirect ties to industry trends that will likely lead to financial and regulatory decisions at the federal, state, and local levels. These topics could include climate change and climate resilience; Americans with Disabilities Act (ADA) requirements; and social and economic justice; diversity, equity, and inclusion (DEI).

Recommendation

Accessibility enhancements should be incorporated into future development. Airport management should also remain aware of newly emerging industry trends and how they might impact the airport.

Endnotes

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- 13 U.S. Department of Transportation. Federal Aviation Administration. "Advisory Circular 150/5070-6B, Airport Master Plans." Page 50. January 27, 2015. https://www.faa.gov/documentLibrary/media/advisory_circular/150-5070-6b-change-2-consolidated.pdf.
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DEVELOPMENT ALTERNATIVES



| | |
|--|------------|
| Alternative Development | 7-2 |
| Alternative 1: Keep All Three Runways Open | 7-2 |
| Alternative 2: Close Runway 8/26 | 7-2 |
| Alternative 3: Close Runway 8/26 (short term) and Runway 17/35 (long term) | 7-2 |
| Evaluation and Selection of the Preferred Alternative..... | 7-6 |
| Conclusion | 7-8 |

TABLES

Table 7.1: Alternative Evaluation Matrix 7-6

FIGURES

| | |
|--|-----|
| Figure 7.1: Alternative 1..... | 7-3 |
| Figure 7.2: Alternative 2..... | 7-4 |
| Figure 7.3: Alternative 3..... | 7-5 |
| Figure 7.4: Terminal Area View of Alternative 2..... | 7-7 |

CHAPTER SEVEN

DEVELOPMENT

This chapter brings together many of the previous elements of this airport master plan in order to identify the development options that will best meet the needs of Baker City Municipal Airport (BKE) users and align with the strategic vision of the airport sponsor. Each of the facilities described in [Chapter 4, Airside and Landside Inventory](#), were analyzed in [Chapter 6, Facility Requirements](#), to determine if any improvements are needed in order to safely and efficiently accommodate the forecasted activity levels discussed in [Chapter 5, Forecast of Aviation Activity](#), or to meet new or updated standards developed and adopted by the Federal Aviation Administration (FAA) or other regulatory agencies.

The following approach was used to identify available development options:

- Identification of alternative ways to address facility requirements.
- Evaluation of these alternatives, individually and collectively, through a series of meetings with airport staff, the technical advisory committee (TAC), and the public to develop a thorough understanding of the strengths, weaknesses, and other implications of each option.
- Selection of the preferred alternative by the airport sponsor and adopted by the city council.



7.1. Alternative Development

As discussed in [Chapter 6](#), only the primary runway, Runway 13/31, is eligible for FAA funding. Therefore, runway alternatives were evaluated prior to evaluating other alternatives as these are dependent on which runway alternative was selected as the preferred alternative. The primary considerations in identifying potential development alternatives included the need to correct taxiway geometry, the need for hangar development, the potential for developing additional areas for new aviation uses (e.g., unmanned aerial vehicles, drones, firefighting operations), and the airport's lack of adequate water and sewer service. Three runway alternatives were developed with these considerations in mind. These included 1) keeping all three runways open; 2) closing Runway 8/26 and keeping Runway 17/35 open with the understanding that maintenance and upkeep costs for Runway 17/35 would be paid for with local and state funds; and 3) closing both Runway 8/26 and Runway 17/35.

All three alternatives incorporate common elements that are partially dependent on which runway (or runways) would be closed or repurposed. Within the terminal area, Taxiway B is realigned to comply with FAA design standards to help reduce runway incursions and allow for an expanded GA apron to the north. At the FBO, two existing port-a-port hangars are relocated to the existing apron to make space for a taxilane extension for hangar development. On the west side of the airport, a connecting taxiway joins an expanded apron to the approach end of Runway 17. This taxiway and apron are expected to be funded by local hangar development as they are not likely to be eligible for FAA funding. Space is provided between Runway 17/35 and the west hangar development area for a grass landing and tie-down area. At the southeast hangar area, the taxilane is extended to allow for additional hangars. A new taxiway connects the Runway 31-end to an aviation development area on the east side of the airport. This aviation development area is well suited for drone or firefighting activities. On the north side of the airport, an aviation development area is connected to the Runway 17-end that is accessed from the north airport property boundary. A service road connects the north and east aviation development areas. Space is allocated for new wells and sewage treatment infrastructure that would likely be funded by private investment associated with aviation development. On the west side of the airport, a private residential property is depicted as future land acquisition for compatible land use purposes and realignment of Taxiway A-3.

7.1.1. Alternative 1: Keep All Three Runways Open

Alternative 1 involves keeping all three existing runways open. Runway 8/26 is narrowed and shortened to meet current design standards, deconflict with Runway 17/35, and provide adequate clearance for vehicles on roads outside the property boundary ([Figure 7.1](#)). Since Runway 8/26 and Runway 17/35 are not eligible for FAA funding, the airport would need to secure alternate sources of funding to maintain these runways.

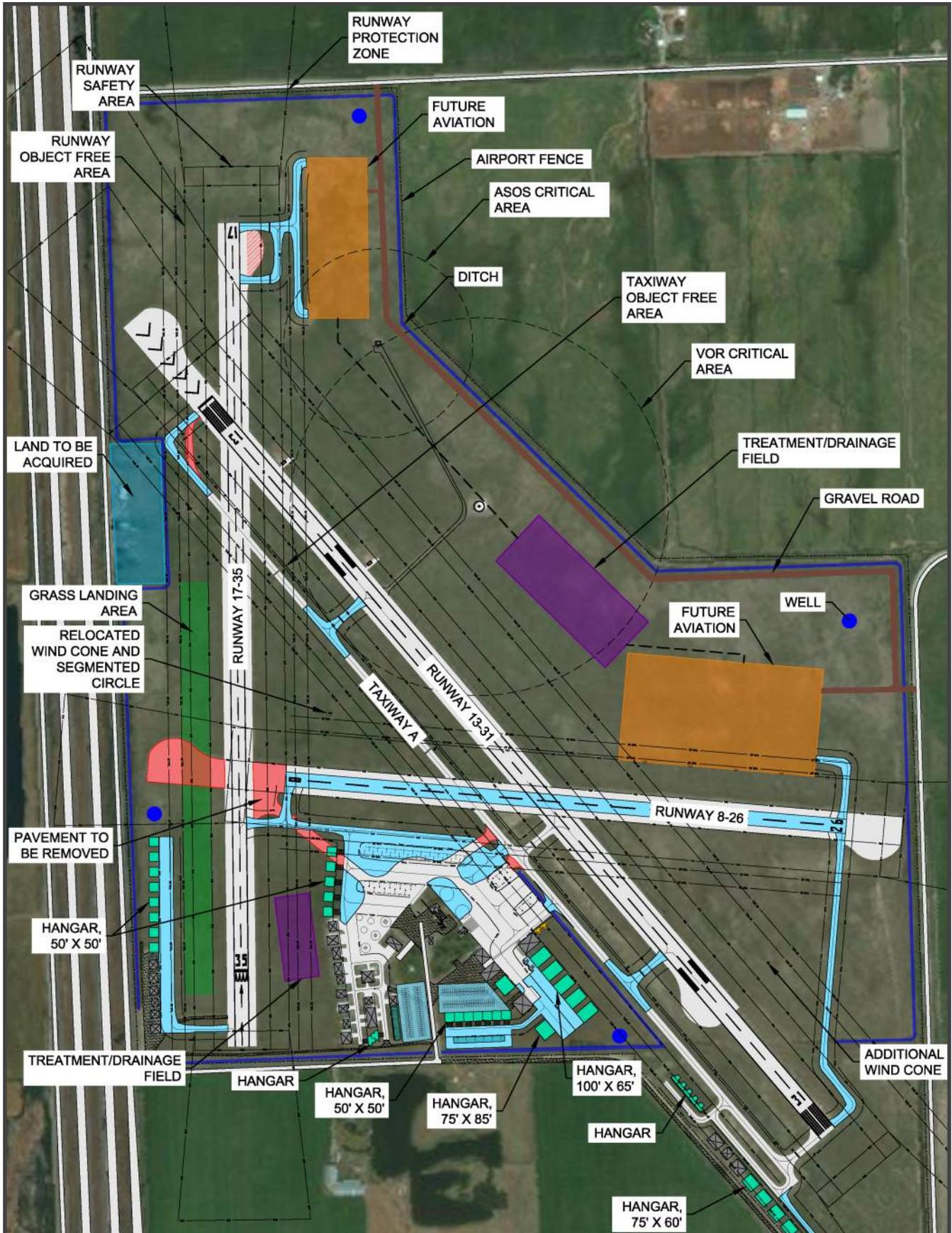
7.1.2. Alternative 2: Close Runway 8/26

Alternative 2 involves closing Runway 8/26 and converting it to a taxiway. This taxiway would be eligible for FAA funding for ongoing maintenance. By closing Runway 8/26, it frees up this area to be developed for new aviation uses along with development of a new taxiway network north of Runway 13/31 to provide access to these areas ([Figure 7.2](#)). It also frees up the funds that would have been used to maintain Runway 8/26 to be used to maintain Runway 17/35 through 20-year planning horizon of this 2024 Airport Master Plan.

7.1.3. Alternative 3: Close Runway 8/26 (short term) and Runway 17/35 (long term)

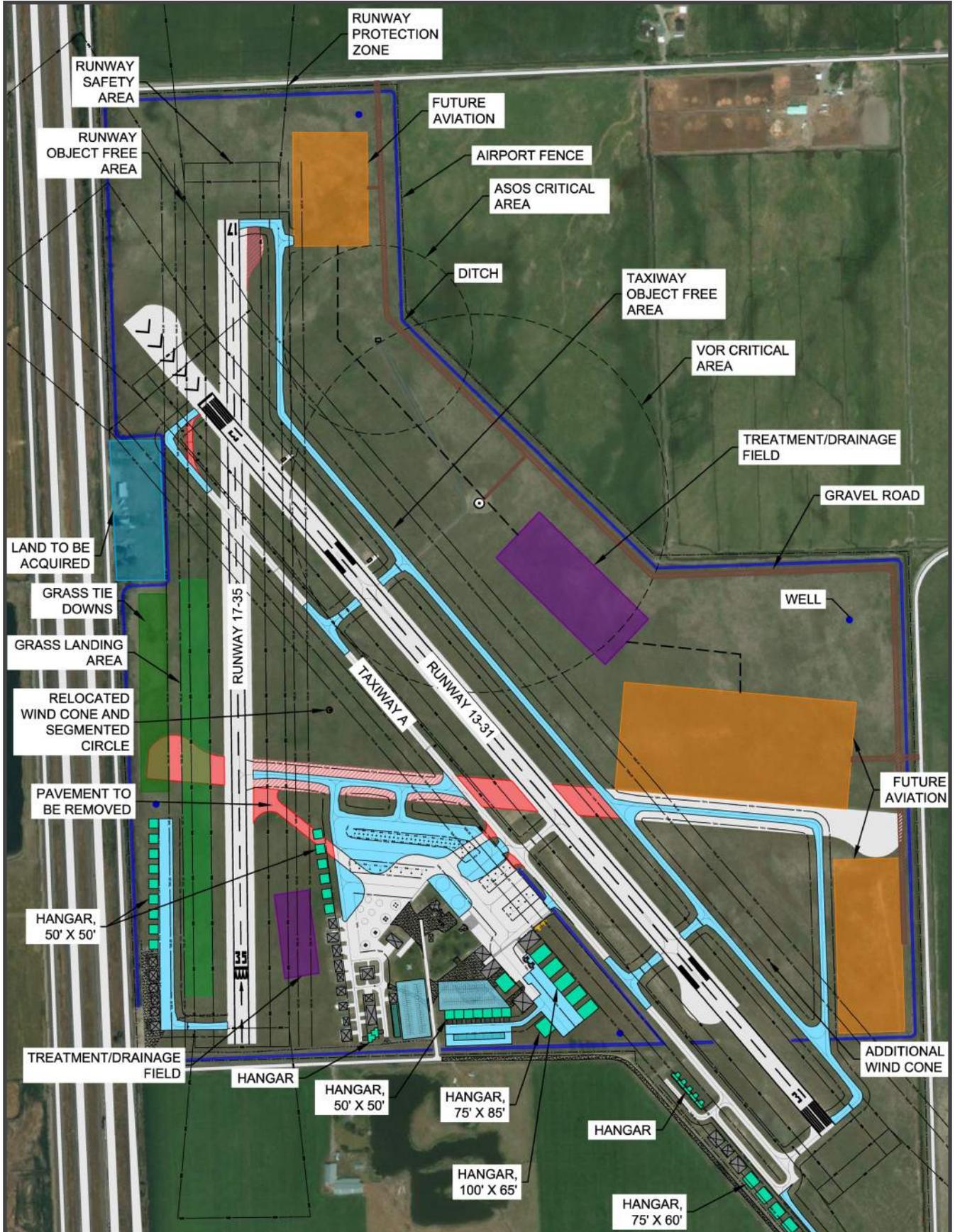
Alternative 3 involves closing Runway 8/26 in the short term (five years) and Runway 17/35 in the long-term (10–15 years) once it is no longer financially feasible to maintain the pavement. Both runways would be converted to taxiways which would make them eligible for FAA funding for ongoing maintenance. This frees up the funds that would have been used to maintain these runways and frees up this area to be developed for new aviation uses that could provide the airport with additional revenue ([Figure 7.3](#)).

Figure 7.1: Alternative 1



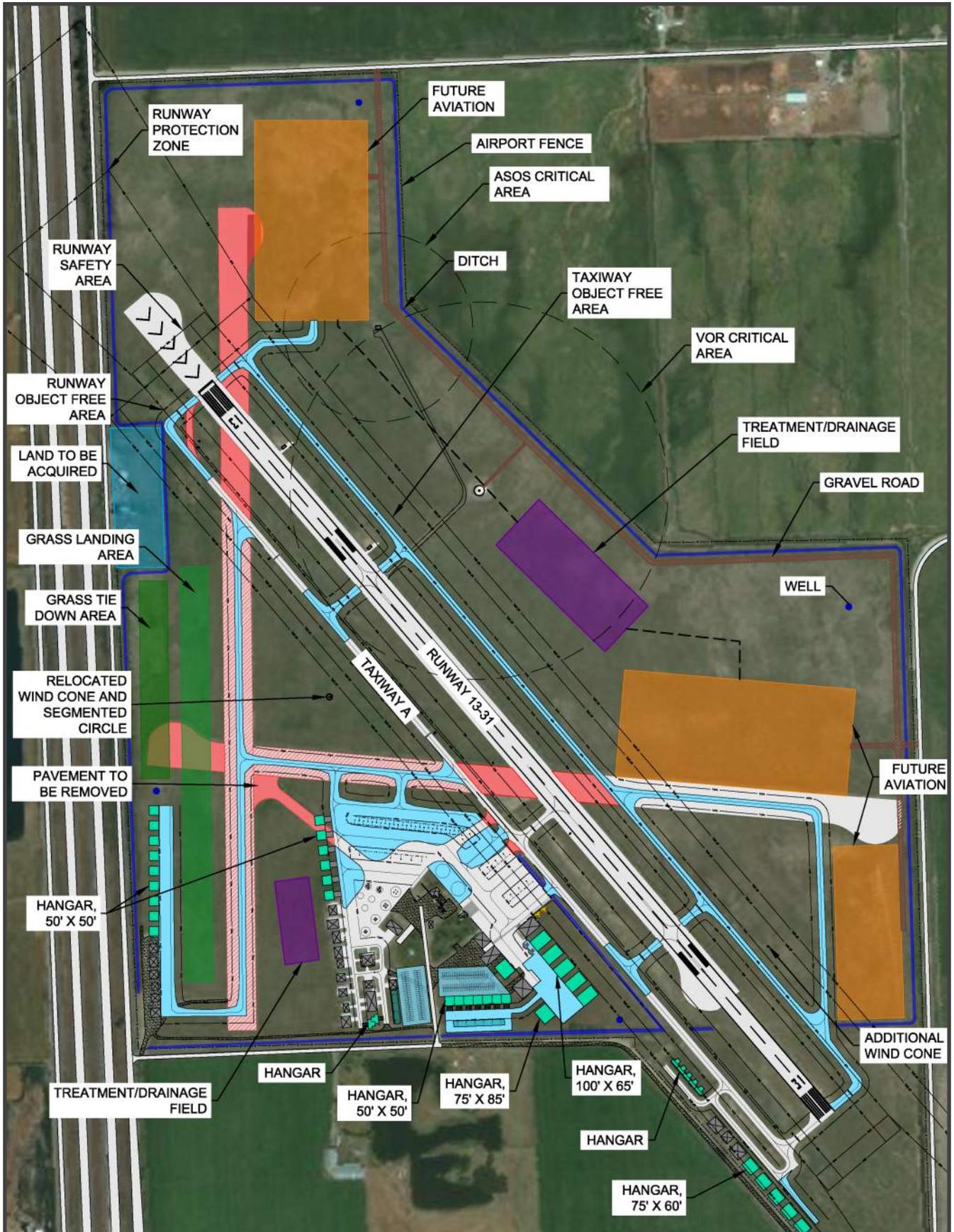
Source: Ardurra.

Figure 7.2: Alternative 2



Source: Ardurra.

Figure 7.3: Alternative 3



Source: Ardurra.

7.2. Evaluation and Selection of the Preferred Alternative

Each of the three development alternatives were assessed against the following four performance objectives:

Performance Objective 1

Performance Objective 1 measures how well the alternative addresses the requirements and design standards identified in [Chapter 6, Facility Requirements](#). This objective places a focus on correcting taxiway geometry and finding space for hangar development.

Performance Objective 2

Performance Objective 2 measures how well the alternative maximizes eligibility for FAA and state funding.

Performance Objective 3

Performance Objective 3 considers how the alternative would impact environmental resources. This objective places an emphasis on potential historical and cultural impacts.

Performance Objective 4

Performance Objective 4 measures how well the alternative enhances the economic opportunities.

The results of this analysis are summarized in [Table 7.1](#) with red indicating poor performance, orange indicating fair performance, and green indicating strong performance.

Table 7.1: Alternative Evaluation Matrix

| Performance Objective | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---------------|---------------|---------------|
| 1. Facility Requirements and Design Standards | Green | Green | Green |
| 2. Funding Eligibility | Red | Orange | Green |
| 3. Environmental Consideration | Green | Orange | Orange |
| 4. Economic Development | Orange | Green | Green |

Source: Ardurra.

As shown in the evaluation matrix, all three alternatives scored well on meeting Performance Objective 1 because they all address taxiway geometry and hangar needs. Alternative 1 scored poorly on Performance Objective 2 because it keeps two runways open that are not eligible to receive FAA funding. Alternative 2 scored fair on Performance Objective 2 because it closes one ineligible runway but keeps the other ineligible runway open. Alternative 3 scored the highest on Performance Objective 2 because it closes both ineligible runways and converts them to taxiways. Alternative 1 scored slightly better than Alternatives 2 and 3 on Performance Objective 3 because development of new aviation areas would involve ground disturbances. Alternatives 2 and 3 scored higher than Alternative 1 on Performance Objective 4 due to the potential for increasing airport revenue.

Alternative 2 was selected as the preferred alternative based on input received from a series of meetings with airport staff and the technical advisory committee as well as public comments received from the local community and stakeholders at public meetings. The airport plans to use local and state funding to maintain Runway 17/35 through the 20-year planning horizon of 2042. A terminal area view of Alternative 2 is shown in [Figure 7.4](#). In addition to converting Runway 8/26 to a taxiway and allowing for additional aviation development, Alternative 2 includes a gravel parking lot, covered tie-downs, and helicopter parking as well as development of small, medium, and large aircraft hangars.

Figure 7.4: Terminal Area View of Alternative 2



Source: Ardurra.

7.3. Conclusion

The preferred alternative meets all of the performance objectives and positions the airport to continue to be a viable community asset for the next 20 years. Additionally, the preferred alternative moves to improve compliance with FAA design standards, enhances safety and efficiency for the flying public, and protects federal, state, and local investments in the airport.

ENVIRONMENTAL OVERVIEW



| | |
|---|-------------|
| The Environmental Review Process | 8-2 |
| Environmental Documentation Required | 8-2 |
| Environmental Overview Summary | 8-3 |
| Resources Not Affected | 8-4 |
| Coastal Resources..... | 8-4 |
| Floodplains..... | 8-4 |
| Wild and Scenic Rivers..... | 8-4 |
| Air Quality | 8-4 |
| Regulatory Setting | 8-4 |
| Affected Environment..... | 8-4 |
| Environmental Consequences | 8-5 |
| Significance Determination | 8-5 |
| Biological Resources | 8-5 |
| Regulatory Setting | 8-5 |
| Affected Environment..... | 8-5 |
| Environmental Consequences | 8-6 |
| Significance Determination | 8-7 |
| Climate | 8-8 |
| Regulatory Setting | 8-8 |
| Affected Environment..... | 8-8 |
| Environmental Consequences | 8-8 |
| Significance Determination | 8-8 |
| Department of Transportation Act, Section 4(f) | 8-9 |
| Regulatory Setting | 8-9 |
| Affected Environment..... | 8-9 |
| Environmental Consequences | 8-10 |
| Significance Determination | 8-10 |
| Farmlands | 8-11 |
| Regulatory Setting | 8-11 |
| Affected Environment..... | 8-11 |
| Environmental Consequences | 8-11 |
| Significance Determination | 8-11 |

CONTENTS

| | |
|--|-------------|
| Hazardous Materials, Solid Waste, and Pollution Prevention | 8-12 |
| Regulatory Setting | 8-12 |
| Affected Environment | 8-12 |
| Environmental Consequences | 8-12 |
| Significance Determination | 8-13 |
| Historical, Architectural, Archeological, and Cultural Resources | 8-14 |
| Regulatory Setting | 8-14 |
| Affected Environment | 8-14 |
| Environmental Consequences | 8-16 |
| Significance Determination | 8-16 |
| Land Use | 8-17 |
| Regulatory Setting | 8-17 |
| Affected Environment | 8-17 |
| Environmental Consequences | 8-17 |
| Significance Determination | 8-17 |
| Natural Resources and Energy Supply | 8-18 |
| Regulatory Setting | 8-18 |
| Affected Environment | 8-18 |
| Environmental Consequences | 8-18 |
| Significance Determination | 8-18 |
| Noise and Noise Compatible Land Use | 8-19 |
| Regulatory Setting | 8-19 |
| Affected Environment | 8-19 |
| Environmental Consequences | 8-19 |
| Significance Determination | 8-19 |
| Socioeconomics, Environmental Justice, and Children’s Health & Safety Risks | 8-22 |
| Regulatory Setting | 8-22 |
| Affected Environment | 8-22 |
| Environmental Consequences | 8-23 |
| Significance Determination | 8-24 |
| Visual Effects | 8-25 |
| Regulatory Setting | 8-25 |
| Affected Environment | 8-25 |
| Environmental Consequences | 8-25 |
| Significance Determination | 8-26 |
| Water Resources | 8-26 |
| Regulatory Setting | 8-26 |
| Affected Environment | 8-27 |
| Environmental Consequences | 8-28 |
| Significance Determination | 8-29 |

TABLES

| | | |
|------------|---|------|
| Table 8.1: | Environmental Overview Summary..... | 8-3 |
| Table 8.2: | Federally Listed Species | 8-6 |
| Table 8.3: | Birds of Conservation Concern..... | 8-7 |
| Table 8.4: | Baker City Race and Ethnicity Data, 2021..... | 8-22 |

FIGURES

| | | |
|-------------|--|------|
| Figure 8.1: | Cultural Resources Survey Project Study Area | 8-14 |
| Figure 8.2: | Map of Historic Resources..... | 8-15 |
| Figure 8.3: | 2021 Noise Contours..... | 8-20 |
| Figure 8.4: | 2041 Noise Contours..... | 8-21 |

CHAPTER EIGHT

ENVIRONMENTAL

An environmental overview is designed to assist the planning team by providing information regarding the possible presence of sensitive environmental resources that could be affected by airport improvement projects. This information is intended to help determine if additional alternatives are needed in order to avoid or minimize the environmental impact of a project; identify the level of coordination and analysis needed for these projects; and identify if an environmental assessment or environmental impact statement would be required or whether categorical exclusions may apply in order to help the planning team estimate costs and scheduling necessary to complete the National Environmental Policy Act (NEPA) process.¹

The purpose of this environmental overview is to identify existing environmental conditions in and around the airport. This environmental overview is a preliminary review and is based mainly on existing studies and documentation gathered from federal, state, and local government agencies with limited field investigation or agency coordination. It is intended to help Baker City Municipal Airport (BKE) conduct an initial evaluation of the airport improvement projects discussed in [Chapter 7, Development Alternatives](#), in order to expedite the environmental review and compliance process.²



8.1. The Environmental Review Process

When federal funding is used for airport improvement projects, these activities are considered to be federal actions and are then subject to the NEPA process. This process is an independent, federal decision making process requiring public disclosure of critical planning and environmental information regarding the proposed action and its reasonable alternatives. Depending on the potential environmental effects of the proposed project, it can require either a categorical exclusion (**CATEX**), an environmental assessment, or an environmental impact statement to be completed as part of the environmental review process.

Categorical Exclusion

A proposed action may be categorically excluded from a detailed environmental analysis if it meets certain criteria that the Federal Aviation Administration (**FAA**) has previously determined to have no significant environmental impact. These actions normally involve administrative and planning-related actions such as approval of an airport layout plan (**ALP**) or authorization for the purchase of snow removal equipment. However, they can also include projects such as installing or upgrading airfield lighting as well as making certain improvements to an existing airfield facility such as resurfacing runway pavements.

Environmental Assessment

An environmental assessment (**EA**) is a concise document that takes a hard look at the expected environmental effects of a proposed action in order to determine if the proposed action has the potential to cause significant environmental effects. These actions typically involve more extensive projects such as approval of a new runway or a major runway extension. If the FAA determines the action will not have a significant environmental impact, the agency will issue a finding of no significant impact (**FONSI**) that explains the reason for this determination. If the agency determines the action will have a significant environmental impact, an environmental impact statement will be required.

Environmental Impact Statement

An environmental impact statement (**EIS**) is a more detailed and rigorous evaluation of the environmental impacts of the proposed action. The types of proposed actions that typically require an environmental impact statement include construction of a new commercial service airport located in a metropolitan statistical area. The environmental impact statement process requires the FAA to publish a notice of intent in the Federal Register to inform the public of the upcoming environmental analysis and describe how the public can become involved in the process. This is followed up with a draft of the environmental impact statement being published for public review and comment for a minimum of 45 days. Upon close of the public comment period, the FAA considers all substantive comments and, if necessary, conducts further analyses. The final environmental impact statement is then published along with responses to substantive comments. After a 30-day wait period, the process ends with the FAA issuing a record of decision (**ROD**) that explains the decision, describes the alternatives considered, and discusses any plans for mitigation and monitoring.³

8.1.1. Environmental Documentation Required

While some of the projects proposed in this airport master plan may be within the scope of a categorical exclusion, most of these projects will likely require an environmental assessment.

8.2. Environmental Overview Summary

The environmental overview discusses existing conditions associated with the environmental impact categories defined in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, that need to be evaluated as part of the environmental review and compliance processes.⁴ These environmental impact categories are listed in **Table 8.1** along with a summary of potential impacts or agency coordination and permits that may be required.

Table 8.1: Environmental Overview Summary

| Environmental Impact Category | Potential Impacts and Mitigation Measures |
|---|--|
| Air Quality | <ul style="list-style-type: none"> Air quality permitting is not anticipated. Implement emission reducing best management practices may include limiting vehicle speeds and unnecessary idle times, and/or introducing a site-specific fugitive dust control plan. |
| Biological Resources | <ul style="list-style-type: none"> Avoid construction during nesting season (April 1–August 1). As practicable, use native species in landscaping plan to benefit local wildlife. |
| Climate | <ul style="list-style-type: none"> Unlikely to have a significant impact. |
| Coastal Resources | <ul style="list-style-type: none"> No coastal resources are associated with the airport. |
| Department of Transportation Act, Section 4(f) | <ul style="list-style-type: none"> Further analysis may be required to determine impacts to Section 4(f) resources. |
| Farmlands | <ul style="list-style-type: none"> May require consultation with the Natural Resources Conservation Service (NRCS) and a Farmland Conversion Impact Rating Form AD-1006 to be completed. |
| Hazardous Materials, Solid Waste, and Pollution Prevention | <ul style="list-style-type: none"> Use best management practices during construction, recycle or reuse materials, develop hazard response and spill prevention plans, and store materials away from water resources. |
| Historical, Architectural, Archeological, and Cultural Resources | <ul style="list-style-type: none"> Avoid National Register of Historic Places (NRHP) listed and eligible resources. Coordinate with state historic preservation office (SHPO) or tribal historic preservation office (THPO) if artifacts are found during ground disturbances. |
| Land Use | <ul style="list-style-type: none"> May require coordination with the city planning department to ensure projects are consistent with local land use requirements, policies, and regulations. |
| Natural Resources and Energy Supply | <ul style="list-style-type: none"> Unlikely to have a significant impact. |
| Noise and Noise-Compatible Land Use | <ul style="list-style-type: none"> Limit construction work times to between 7 a.m. and 9 p.m. |
| Socioeconomics, Environmental Justice, and Children’s Health and Safety Risks | <ul style="list-style-type: none"> Unlikely to have a significant impact. |
| Visual Effects | <ul style="list-style-type: none"> Use shielding and baffles on light fixtures and employ architectural and landscape design elements consistent with the area. |
| Water Resources | <ul style="list-style-type: none"> Use sediment and erosion control best management practices such as fiber wattles, silt fencing, and staging areas throughout construction area. Obtain a construction permit from the Oregon Department of Environmental Quality. |

8.3. Resources Not Affected

8.3.1. Coastal Resources

Baker County is not located within the Coastal Barrier Resources System (CBRS) as shown on U.S. Fish and Wildlife Service coastal barrier maps.⁵ Therefore, no coastal resources are associated with the airport.

8.3.2. Floodplains

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Baker County (panels 41001C0225C and 41001C0385C), the airport is within Zone X (0.2% or less annual chance of flooding).⁶ This zone has been designated as an Area of Minimal Flood Hazard which indicates the airport is outside the 100-year floodplain. Therefore, the proposed airfield improvements will not impact floodplains.

8.3.3. Wild and Scenic Rivers

According to the Nationwide Rivers Inventory, which is maintained by the National Parks Service, the nearest Wild and Scenic River is the Powder River which is located approximately eight miles northeast of the airport.⁷ As this river is outside the construction footprint of the proposed airfield improvements, the projects proposed in this airport master plan would have no effect on Wild and Scenic Rivers.

8.4. Air Quality

8.4.1. Regulatory Setting

The Clean Air Act (CAA) authorized the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These pollutants, which are known as criteria pollutants, include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). The Oregon Department of Environmental Quality (DEQ) is the regulatory agency that ensures the state meets the National Ambient Air Quality Standards as required by the Federal Clean Air Act.⁸

a. Attainment, Nonattainment, and Maintenance Areas

Attainment areas are areas where the air quality meets or exceeds the national standard. If the air quality does not meet the national standard, the EPA designates the area as a nonattainment area. Nonattainment areas are then required to have a state implementation plan (SIP) that details the emission reduction strategies to bring nonattainment areas into attainment. After the air quality in that area once again meets the national standard, the EPA designates the area as a maintenance area.⁹

8.4.2. Affected Environment

According to the EPA Nonattainment and Maintenance Area Dashboard, Baker County is in attainment for all criteria pollutants.¹⁰

8.4.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on air quality, both direct and indirect impacts resulting from the construction and operation of these projects need to be examined. This requires preparing an emissions inventory to determine the amount of criteria pollutants that would be generated by construction and operation of each proposed project.

a. Construction Impacts

Construction of the projects proposed in this airport master plan would result in both direct and indirect impacts to air quality. However, these impacts will be short term and are considered normal for construction.

b. Operational Emissions

The projects proposed in this airport master plan are unlikely to result in an increase in the number of flights, type of aircraft, or number of airport users beyond expected growth, and therefore would have no impact on air quality.

8.4.4. Significance Determination

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the threshold for determining if an action would have a significant impact on air quality is if, “*The action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the Environmental Protection Agency under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.*”¹¹

a. Potential Impacts

The projects proposed in this airport master plan will not cause or create a reasonably foreseeable increase in air emissions because the projects are not anticipated to increase or change aircraft operations. Temporary air quality impacts during construction would be short term and of local impact. Emission reduction strategies will be employed to minimize air quality impacts. Potential strategies include reusing materials on site, using locally sourced materials to reduce the number of vehicle trips and trip lengths, and using dust control measures during construction.

8.5. Biological Resources

8.5.1. Regulatory Setting

The Endangered Species Act (ESA) requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to determine if a proposed action the agency authorizes, funds, or carries out is likely to jeopardize a species listed as threatened or endangered or result in the destruction or adverse modification of designated critical habitat.

8.5.2. Affected Environment

The airport sits in a broad valley between the Blue Mountains to the west and the Wallowa Mountains to the east. Much of the airport property is either developed or previously disturbed and is surrounded by agricultural fields and rural residences.

a. Federally Listed Species and Critical Habitats

Several public databases were reviewed to determine the special status species that may be present on airport property or that may be affected by the projects proposed in this airport master plan. These databases include the U.S. Fish & Wildlife Service Information, Planning, and Consultation (IPaC) database and the National Oceanic and Atmospheric Administration Essential Fish Habitat Mapper.

According to these databases, there is one endangered, two threatened, and one candidate species that may occur on airport property or within the vicinity (Table 8.2). There are no designated or proposed critical habitats, or refuge lands, and no essential fish habitats or habitat areas of particular concern located on airport property or within the vicinity.¹²

While the Monarch butterfly is listed as a candidate species with no defined critical habitat, consultation with the U.S. Fish & Wildlife Service is not required for candidate species under Section 7 of the Endangered Species Act. However, the U.S. Fish and Wildlife Service encourages agencies to take advantage of any opportunities to conserve the species.¹³

Table 8.2: Federally Listed Species

| Common Name | Scientific Name | Federally Listed Status |
|--------------------------------|--|-------------------------|
| Gray wolf | <i>Canis lupus</i> | Endangered |
| Bull trout | <i>Salvelinus confluentus</i> | Threatened |
| Howell’s spectacular thelypody | <i>Thelypodium howellii ssp. spectabilis</i> | Threatened |
| Monarch butterfly | <i>Danaus plexippus</i> | Candidate |

Source: U.S. Fish & Wildlife Service, Information for Planning and Consultation.

b. Migratory Birds

Certain birds are protected by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Activities that may result in impacts to Birds of Conservation Concern (BCC) or their habitats should be coordinated with the U.S. Fish and Wildlife Service, and all appropriate regulations and conservation measures should be followed. According to the IPaC database, there are 14 species on the Birds of Conservation Concern list that could potentially occur on or near airport property (Table 8.3).¹⁴

8.5.3. Environmental Consequences

To identify the potential impacts the projects proposed in this airport master plan would have on biological resources, impacts from construction and ongoing operations need to be examined. This includes the following:

- Identifying potential impacts from construction activities such as the destruction or alteration of habitat, disturbance or elimination of local fish, wildlife, or plant populations, and introduction of invasive species.
- Identifying the vegetation types and wildlife species associated with the project area.
- Identifying potential impacts from operation of the proposed project. This includes discussing disturbances to noise-sensitive terrestrial and aquatic animal species generated by operational noise near the project area as well as any land area or open water that aircraft would fly over.¹⁵

Table 8.3: Birds of Conservation Concern

| Common Name | Breeding Season |
|--------------------|--------------------|
| Bald eagle | January to August |
| Black tern | May to August |
| Bobolink | May to July |
| California gull | March to July |
| Cassin’s finch | May to July |
| Clark’s grebe | June to August |
| Evening grosbeak | May to August |
| Franklin’s gull | May to July |
| Golden eagle | January to August |
| Lesser yellowlegs | Breeds Elsewhere |
| Lewis’ woodpecker | April to September |
| Rufous hummingbird | April to July |
| Western grebe | June to August |
| Willet | April to August |

Source: U.S. Fish & Wildlife Service, Information for Planning and Consultation.

8.5.4. Significance Determination

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the threshold for determining if an action would have a significant impact on biological resources is if, “*The U.S. Fish and Wildlife Service or the National Marine Fisheries Service determines that the action 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.*”

The FAA has not established a significance threshold for non-listed species. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does identify the following factors to consider in evaluating potential impacts:

- A long-term or permanent loss of unlisted plant or wildlife species from a large project area.
- Adverse impacts to special status species (e.g., state species of concern, migratory birds) or their habitats.
- Substantial loss, reduction, degradation, or disturbance, of native species’ habitats or their populations.
- Adverse impacts on a species’ reproductive success rates, mortality rates, or ability to sustain the minimum population levels required for population maintenance.¹⁶

a. Potential Impacts

Due to the low likelihood of occurrence and lack of suitable habitat, the projects proposed in this airport master plan are not expected to have a significant impact on biological resources.

8.6. Climate

8.6.1. Regulatory Setting

The Clean Air Act authorized the U.S. Environmental Protection Agency to regulate greenhouse gas emissions. The EPA determined there are six greenhouse gases that need to be regulated which include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆).

8.6.2. Affected Environment

The U.S. Environmental Protection Agency prepares an annual Inventory of U.S. Greenhouse Gas Emissions and Sinks. According to the U.S. EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks by State, Oregon's total greenhouse gas emissions for 2021, which was the most recent year of analysis, was estimated at 20.35 million metric tons of carbon dioxide equivalent. In Oregon, the transportation sector contributed approximately 0.98 million metric tons of carbon dioxide equivalent.¹⁷

8.6.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on climate, the same emission sources included in the air quality analysis should be examined. For non-aircraft sources of emissions, greenhouse gas emissions should be determined from projections of fuel burn and converted to CO₂. This includes evaluating both direct and indirect emissions that would occur as a result of any operational changes as well as construction of these projects.¹⁸

a. Operational Changes

The projects proposed in this airport master plan are unlikely to result in an increase in the number of flights, type of aircraft, or number of airport users beyond expected growth, and therefore would not have a direct impact on climate.

b. Construction Emissions

Construction of the projects proposed in this airport master plan could result in both direct impacts (e.g., the use of construction equipment) and indirect impacts (e.g., worker commutes to the site) to climate. However, these impacts will be short term, of local impact, and are considered normal for construction activities.

8.6.4. Significance Determination

The FAA has not established a significance threshold for climate. However, guidance provided by the Council on Environmental Quality does recommend federal agencies consider the potential effects of a proposed action, as indicated by its greenhouse gas emissions, and the implications regarding climate change. It is also important to note that there are currently no accepted methods for determining the impact an aviation project would have on climate change.¹⁹

a. Potential Impacts

The projects proposed in this airport master plan are not expected to have a significant impact on climate.

8.7. Department of Transportation Act, Section 4(f)

8.7.1. Regulatory Setting

Under Section 4(f) of the U.S. Department of Transportation Act, any transportation project that requires the use of public land considered to be a significant resource is prohibited unless there is no feasible and prudent alternative and the project includes all possible planning to minimize harm resulting from the use. Any part of a Section 4(f) property is presumed to be significant unless there is a statement of insignificance relative to the entire property by the federal, state, or local official having jurisdiction over the property. Section 4(f) protects only those historic or archaeological properties that are listed or eligible for inclusion on the National Register of Historic Places (NRHP).

a. Land and Water Conservation Fund Act, Section 6(f)

A project that would use Section 4(f) parks or recreation areas must also comply with Section 6(f) of the Land and Water Conservation Fund if the property was acquired or developed with financial assistance under the Land and Water Conservation Fund State Assistance Program. Section 6(f) of the Land and Water Conservation Fund Act established a grant program for states and local governments to acquire and develop public outdoor recreation sites and facilities. It also prevents these lands from being converted to non-recreation uses unless the U.S. Department of the Interior (DOI) approves the conversion. Section 6(f), which is administered by the National Park Service (NPS), requires that areas funded through the program remain for public outdoor recreation use or be replaced by lands of equal value, location, and recreation usefulness.

8.7.2. Affected Environment

An initial review of publicly available records was conducted to identify potential Section 4(f) resources located at or adjacent to the airport. This includes records maintained by the National Park Service, and the National Register of Historic Places.

a. Parks and Recreational Resources

Publicly owned parks and recreational areas are considered to be Section 4(f) resources when they are of national, state, or local significance and are open to the public. Sam-O-Park is located approximately 3.7 miles south of the airport and has the potential to be a 6(f) property because it was constructed using Land and Water Conservation Fund Act funds. However, the proposed airfield improvements will not extend into Baker City and will have no impact on Sam-O-Park or any other site funded under Section 6(f) of the Land and Water Conservation Fund Act.

b. Wildlife and Waterfowl Refuges

Publicly-owned wildlife and waterfowl refuges are considered to be Section 4(f) resources when they are of national, state, or local significance and are open to the public. According to the U.S. Fish & Wildlife Service, there are no wildlife or waterfowl refuges located on or adjacent to airport property.²⁰

c. Historic Sites

Public and privately owned historic sites are considered to be Section 4(f) resources when they are of national, state, or local significance regardless of whether they are open to the public. According to a review of the National Register of Historic Places, there are currently no historic sites located on or adjacent to airport property.²¹ Please note, there could potentially be historic sites located on or adjacent to airport property that are not shown on this map because their sensitive nature requires the specific locations of these archaeological sites to be omitted from public records.

As discussed in [Section 8.10. Historical, Architectural, Archeological, and Cultural Resources](#), there is one resource that has been identified as being potentially eligible for listing in the National Register of Historic Places and, the airport has the potential to be eligible as a historic district.

8.7.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on Section 4(f) resources, both the physical use and constructive use of these resources need to be examined.²²

a. Physical Use

A physical use of Section 4(f) resources occurs if a proposed project involves the actual physical taking of a Section 4(f) property through the purchase of land or a permanent easement, physical occupation of a portion or all of the property, or alteration of structures or facilities on the property. This typically does not include the temporary occupancy of a Section 4(f) property for construction-related activities.

b. Constructive Use

A constructive use occurs if a proposed project impacts a Section 4(f) property so severely that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

8.7.4. Significance Determination

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the threshold for determining if an action would have a significant impact on Section 4(f) resources is if, *"The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource. Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately owned land from an historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished."*²³

a. Potential Impacts

The projects proposed in this airport master plan that have the potential to directly or indirectly affect NRHP-eligible resources could be considered a physical or constructive use of Section 4(f) properties. Avoidance and minimization measures must be considered before mitigation can be pursued.

8.8. Farmlands

8.8.1. Regulatory Setting

The Farmland Protection Policy Act (FPPA) regulates federal actions with the potential to convert farmland to non-agricultural uses. This includes prime farmland, unique farmland, and farmland of statewide or local importance.

8.8.2. Affected Environment

The National Resources Conservation Service (NRCS) keeps an inventory of prime and unique farmland in the United States. This inventory identifies the classification, soil type, and location of important rural lands needed to produce food, feed, fiber, forage, and oilseed crops. According to the NRCS Web Soil Survey, approximately 99% of the airport property consists of Wingville silt loam (0 to 2% slopes), which is considered to be prime farmland if irrigated, 0.9% consists of Burkemont silty clay loam (0 to 2% slopes), which is considered to be farmland of statewide importance, and 0.1% consists of Baldock silt loam (0 to 2% slopes), which is considered to be prime farmland if irrigated and drained.²⁴ However, none of the airport property is currently being used as farmland.

8.8.3. Environmental Consequences

For projects that involve converting farmlands to non-farm use, U.S. Department of Agriculture (USDA) Form AD-1006, *Farmland Conversion Impact Rating*, will need to be completed and submitted to the local National Resources Conservation Service office or U.S. Department of Agriculture service center for evaluation in order to determine potential impact on farmlands.²⁵

8.8.4. Significance Determination

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the threshold for determining if an action would have a significant impact on farmlands is if, "The total combined score on Form AD-1006, "Farmland Conversion Impact Rating," ranges between 200 and 260 points."²⁶

a. Potential Impacts

Approximately 3.5 acres of soils considered to be farmland of statewide importance located along the eastern border of the airport property will potentially be impacted by the projects proposed in this airport master plan. These projects may require completion of USDA Form AD-1006, *Farmland Conversion Impact Rating* and coordination with the local NRCS office or USDA service center to determine the level of impact.

8.9. Hazardous Materials, Solid Waste, and Pollution Prevention

8.9.1. Regulatory Setting

The Resource Conservation and Recovery Act (RCRA) authorized the U.S. Environmental Protection Agency to establish a comprehensive regulatory program that ensures hazardous waste is safely managed from the time it is created until it is disposed. This includes how it is transported, treated, and stored. In Oregon, hazardous waste is regulated at the state level by the Oregon Department of Environmental Quality.²⁷

According to FAA Advisory Circular 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program (AIP) Assisted Projects*, an adequate due diligence environmental audit should be conducted as part of the project planning and environmental assessment phases to determine if hazardous materials and contamination is present on the property. These audits include Phase I and Phase II Environmental Site Assessments which should identify quantities of any hazardous materials located at the proposed project site or in the immediate vicinity of a project site.²⁸

8.9.2. Affected Environment

Construction of the projects proposed in this airport master plan would generate construction debris that would result in a temporary increase in the quantity of solid waste generated at the airport. Additionally, this debris may potentially contain hazardous materials such as asbestos or lead-based paint.

a. Identification of Hazardous Material Storage Areas and Potentially Contaminated Sites

The U.S. Environmental Protection Agency maintains a list of superfund sites that have known or threatened releases of hazardous substances, pollutants, or contaminants throughout United States. According to EPA's NEPAAssist tool, there are no superfund sites located on airport property or in its immediate vicinity.²⁹ According to the EPA's MyEnvironment online search application, there are no toxic releases to air, land, or water reported on or near the airport property.³⁰ The nearby Baker City Wastewater System Improvements facility (ID# 110071096737) is shown as having a National Pollutant Discharge Elimination System (NPDES) discharger permit, but there are no reported violations.³¹

b. Identification of Solid and Hazardous Waste Disposal Capacity

Solid waste is processed at the Baker City Landfill.

8.9.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on hazardous materials, solid waste, and pollution prevention, impacts from construction and ongoing operations need to be examined. This includes the following:

- Describe the waste that would be generated from the construction and operation of the projects. This includes waste generated from the disturbance of hazardous materials at an existing contaminated site.
- Determine if the projects would impact the capacity of waste disposal facilities.
- Determine whether the projects would interfere with any ongoing remediation of existing contaminated sites at the proposed project site or in the immediate vicinity of a project site.

a. Hazardous Materials

- Identify types and quantities of any hazardous materials (e.g., oil, gasoline, jet fuel) that would be used during construction and operation of the proposed projects or waste generated from the disturbance of hazardous materials at a contaminated site, and describe how these hazardous materials would be stored, managed, and transported.

- Determine if any contaminated sites would be impacted by the proposed projects.
- Provide the locations of aboveground and underground storage tanks located in the area and if they would be used or potentially impacted by the proposed projects. Determine if waste disposal related to the projects would result in impacts to the capacity of disposal facilities.

b. Hazardous Waste

- Identify any hazardous waste that would be generated by construction and operation of the proposed projects, and describe how it would be stored, managed, and transported.
- Identify any on-site treatment, engineering, or administrative controls that may be applied to the hazardous waste encountered.

c. Solid Waste

- Identify the solid waste that would be generated by construction and operation of the proposed projects, and describe how it would be stored, managed, and disposed.

d. Pollution Prevention

- Describe any pollution prevention activities, plans, programs, or policies currently being undertaken or in effect that may be relevant to the proposed projects.
- Describe how pollution prevention plans or programs associated with the proposed projects would help avoid, prevent, or reduce pollutant discharges or emissions.
- Describe aspects of operations and waste generation from the proposed projects that could result in accidental discharges with the potential to negatively impact the environment.
- Describe appropriate pollution prevention planning measures that will be taken to address accidental discharges, and describe methods to be employed to control spills and any other unauthorized releases during construction and operation of the proposed projects.³²

8.9.4. Significance Determination

The FAA has not established a significance threshold for hazardous materials, solid waste, and pollution. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does identify the following factors to consider in evaluating potential impacts:

- The proposed project would have the potential to involve a contaminated site or violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials or solid waste management.
- The proposed project would generate a quantity or type of solid waste that would exceed local capacity.
- The proposed project would adversely affect human health and the environment.³³

a. Potential Impacts

The projects proposed in this airport master plan are not expected to have a significant impact on hazardous materials, solid waste, and pollution prevention.

8.10. Historical, Architectural, Archeological, and Cultural Resources

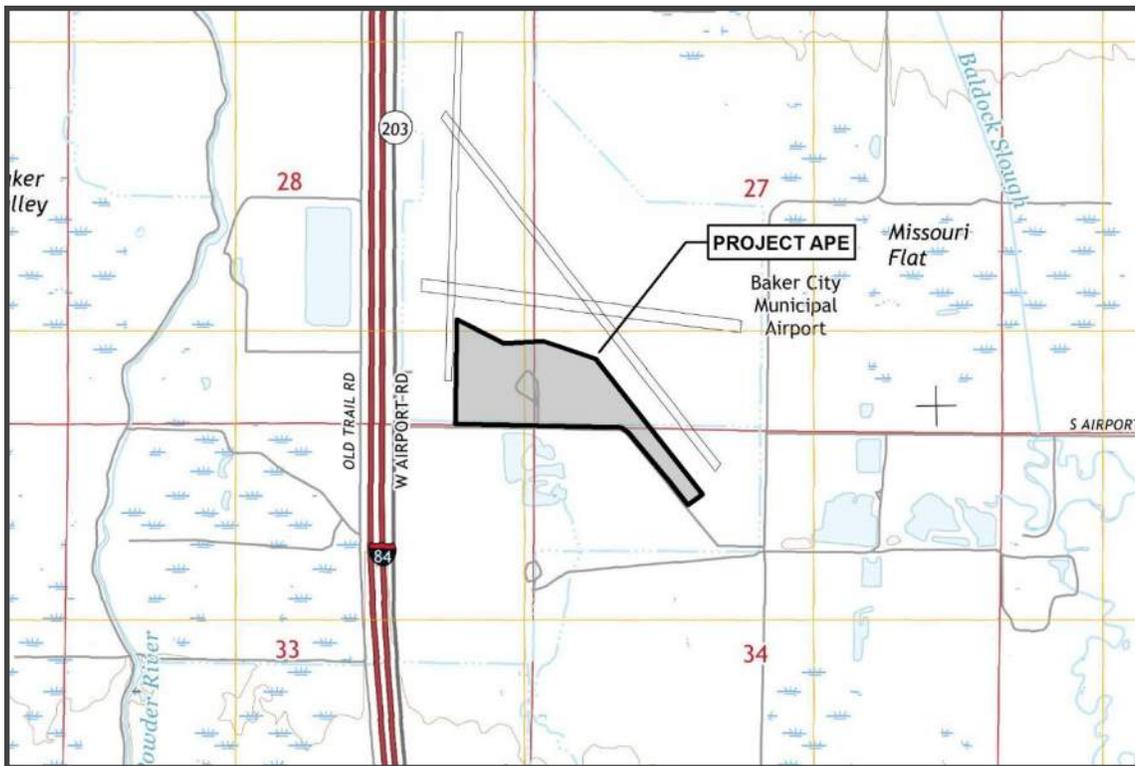
8.10.1. Regulatory Setting

The National Historic Preservation Act (NHPA) established the Advisory Council on Historic Preservation (ACHP) and the National Register of Historic Places (NRHP) within the National Park Service (NPS). In Oregon, these are administered by the Oregon State Historic Preservation Office (SHPO). Historic sites listed in, or eligible for inclusion in, the National Register of Historic Places are also protected under Section 4(f) of the U.S. Department of Transportation Act.

8.10.2. Affected Environment

A cultural resources survey of 45.5 acres of airport property was completed in 2023 by Archaeological Investigations Northwest, Inc. A copy of this report is included as **Appendix C: Cultural Resources Survey**. As shown in **Figure 8.1**, this area, referred to as the area of potential effect (APE), involves the section of the airport where the projects proposed in this airport master plan will be located.

Figure 8.1: Cultural Resources Survey Project Study Area

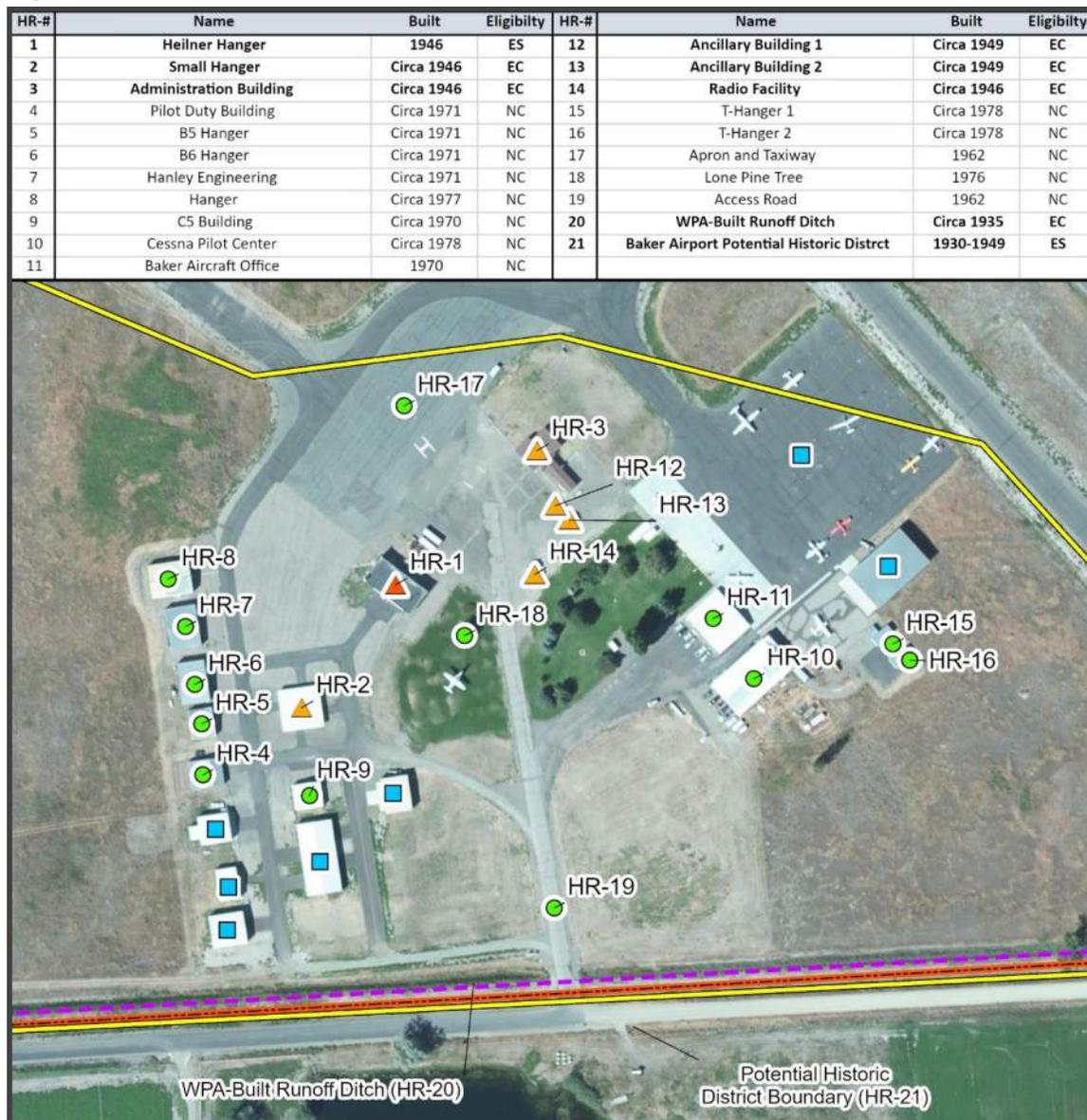


Source: Archaeological Investigations Northwest, Inc., 2023.

a. Historic and Architectural Resources

According to the 2023 report, there are no previously recorded historic or archaeological resources located within the project APE. During the on-site investigation, 21 historic resources located within the project APE were evaluated to determine NRHP eligibility. Only the Heilner Hanger (HR-1) was recommended as individually eligible for the NRHP. The Baker City Municipal Airport has the potential to be eligible for listing in the NRHP as a historic district. However, a survey of the remaining airport property will first need to be conducted to identify the district boundaries and determine eligibility as historic district. Six historic resources were found as contributing to the airport’s significance as a potential historic district. These include a small hangar (HR-2), the administration building (HR-3), ancillary buildings 1 and 2 (HR-12 and HR-13), the radio facility (HR-14), and runoff ditches constructed by laborers of the Works Progress Administration (HR-20) (Figure 8.2). One archaeological site (22/3302-1) and one archaeological isolate (22/3202-2) were also identified. However, these archaeological resources were not recommended as not eligible for listing in the NRHP.³⁴

Figure 8.2: Map of Historic Resources



Source: Archaeological Investigations Northwest, Inc., 2023.

8.10.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on historical, architectural, archaeological, and cultural resources, both direct and indirect impacts from construction and ongoing operations need to be examined. This is determined by the FAA and confirmed through consultation with the Oregon State Historic Preservation Office (**SHPO**), Tribal Historic Preservation Office (**THPO**), and other relevant agencies. When assessing effects, there are three possible outcomes: no historic properties affected, no adverse effect on historic properties, or adverse effect on historic properties.³⁵

8.10.4. Significance Determination

The FAA has not established a significance threshold for historical, architectural, archeological, and cultural resources. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does state that a factor to consider in evaluating potential impacts is if a proposed action would result in a finding of Adverse Effect through the Section 106 process.³⁶

a. Potential Impacts

Any proposed airfield improvements that may directly or indirectly affect NRHP-eligible resources, or resources contributing to a historic district, will require consultation with the Oregon State Historic Preservation Office and participating tribes or tribal historic preservation offices for Section 106 compliance. Avoidance and minimization measures must be considered before mitigation can be pursued.

8.11. Land Use

8.11.1. Regulatory Setting

Under the Airport Improvement Program (AIP), the FAA may not approve a grant for an airport development project unless the project is consistent with local land use plans. This section reviews the compatibility of land uses in the vicinity of the airport to ensure those uses do not adversely affect safe aircraft operations. This includes identifying any municipal solid waste landfills (40 CFR § 258.10), water management facilities, wildlife refuges, wetlands, or other land uses referenced in FAA Advisory Circular 150/5200-33, *Hazardous Wildlife Attractants on or Near Airports*, that have the potential to attract hazardous wildlife.³⁷

8.11.2. Affected Environment

The airport is owned by Baker City, but zoning around the airport property is governed by Baker County. A description of the existing airport zoning laws can be found in [Section 3.7, Land Use Planning](#), and a description of the existing land use policies can be found in [Section 6.9, Land Use Requirements, Policies, and Regulations](#).

a. Wildlife Hazards

As previously discussed in [Section 6.9.2, Wildlife Hazard Attractants](#), there is the potential for standing water to collect in the drainage channels running along the perimeter of the airport which could then act as a wildlife attractant. Additionally, off-airport attractants include the ponds located immediately to the west, south, and southeast of the airport, the Powder River, the wastewater treatment facility, and the municipal landfill.

8.11.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on land use, both existing and future land uses must be examined. This includes determining if these projects would result in land uses that are incompatible with existing or future planned uses and assessing the compatibility of land uses in the vicinity of the airport to ensure those uses do not adversely affect safe aircraft operations.

8.11.4. Significance Determination

The FAA has not established a significance threshold for land use. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does state that the determination that significant impacts exist in the land use impact category is normally dependent on the significance of other impact categories. For example, if a proposed project includes acquisition of property or noise impacts were associated with airport operations, the project could be considered to have a significant impact on land use.³⁸

a. Potential Impacts

The projects proposed in this airport master plan are not expected to have a significant impact on land use. However, consultation with state, tribal, or other local land use authorities may be required when land use impacts are anticipated. Each of the proposed airfield improvements reside inside the Baker County Airport Development Zone.

8.12. Natural Resources and Energy Supply

8.12.1. Regulatory Setting

The Council on Environmental Quality (CEQ) requires federal agencies to consider energy requirements, natural depletable resource requirements, and the conservation potential of proposed projects.

8.12.2. Affected Environment

As discussed in [Section 6.8.8, Utilities and Stormwater](#), the airport lacks adequate water and sewer access as those services are provided by well and septic systems.

a. Suppliers of Resources

As previously discussed in [4.6.13, Utilities and Stormwater](#), municipal water and sewer services are not available at the airport. All water services at the airport are supplied by three wells, and all sanitary sewer service is handled by various septic systems located on airport property. Oregon Trail Electric Cooperative (OTEC) provides the airport with electricity.

b. Consumption of Resources

Construction of the projects proposed in this airport master plan would likely result in a temporary increase in the airport's consumption of natural resources and energy. These resources include a variety of construction materials, electricity, fuel, oil, and water (e.g., non-potable water used for dust control).

Long-term operation and maintenance of these projects (e.g., new hangars) will likely permanently increase demands on water and electricity. These demands are expected to be met by existing infrastructure and are not expected to place an undue strain on supplies within the region.

8.12.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on natural resources and energy supply, impacts from construction as well as ongoing operations and maintenance need to be examined. This includes determining how a proposed project would increase demand for utilities servicing the area, fuel consumption, and consumable materials—especially scarce or unusual materials—in and around the airport.

8.12.4. Significance Determination

The FAA has not established a significance threshold for natural resources and energy supply. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does state that a factor to consider in evaluating potential impacts is if the action would have the potential to cause demand to exceed available or future supplies of these resources. A utility assessment may be needed to determine the potential impact of the proposed development infrastructure on energy supply and natural resources.³⁹

a. Potential Impacts

A utility assessment may be needed to determine the potential impact of the projects proposed in this airport master plan on natural resources and energy supply.

8.13. Noise and Noise Compatible Land Use

8.13.1. Regulatory Setting

The Aviation Safety and Noise Abatement Act required the FAA to establish a single system for measuring aviation noise around airport communities that takes into account noise intensity, duration of exposure, frequency of operations, and time of occurrence as well as identifying land uses normally compatible with various noise exposures. As a result, the FAA determined that a person's cumulative exposure to noise resulting from aviation activities must be established in terms of Day Night Average Sound Level (DNL).

This metric accounts for noise levels of individual aircraft operations, the number of times per day they occur, and when they occur by logarithmically averaging aircraft sound levels at a location during a complete 24-hour period. This metric applies a 10-decibel (dB) penalty to noise that occurs at night (i.e., between 10 p.m. and 7 a.m.). This penalty counts each operation occurring at night the same as ten daytime operations. This penalty attempts to correct for the fact that nighttime noise events are more disruptive than those generated during daytime hours when ambient noise levels are generally higher.

8.13.2. Affected Environment

Noise contours were developed for this 2024 Airport Master Plan using the FAA's Aviation Environmental Design Tool (AEDT) to establish a baseline of current conditions (Figure 8.3) and to estimate future noise impacts (Figure 8.4).

8.13.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on noise and noise compatible land use, both direct and indirect noise impacts that would occur as a result of construction and ongoing operation of these projects will need to be examined. This includes determining the following:

- The number of residences located within each noise contour where aircraft noise exposure is at or above DNL 65 dB as well as the location and number of other noise sensitive uses such as schools, hospitals, parks, and recreation areas.
- The identification of noise sensitive areas within the DNL 60 dB contour exposed to aircraft noise at or above DNL 60 dB but below DNL 65 dB and are projected to experience an increase of DNL 3 dB or more.

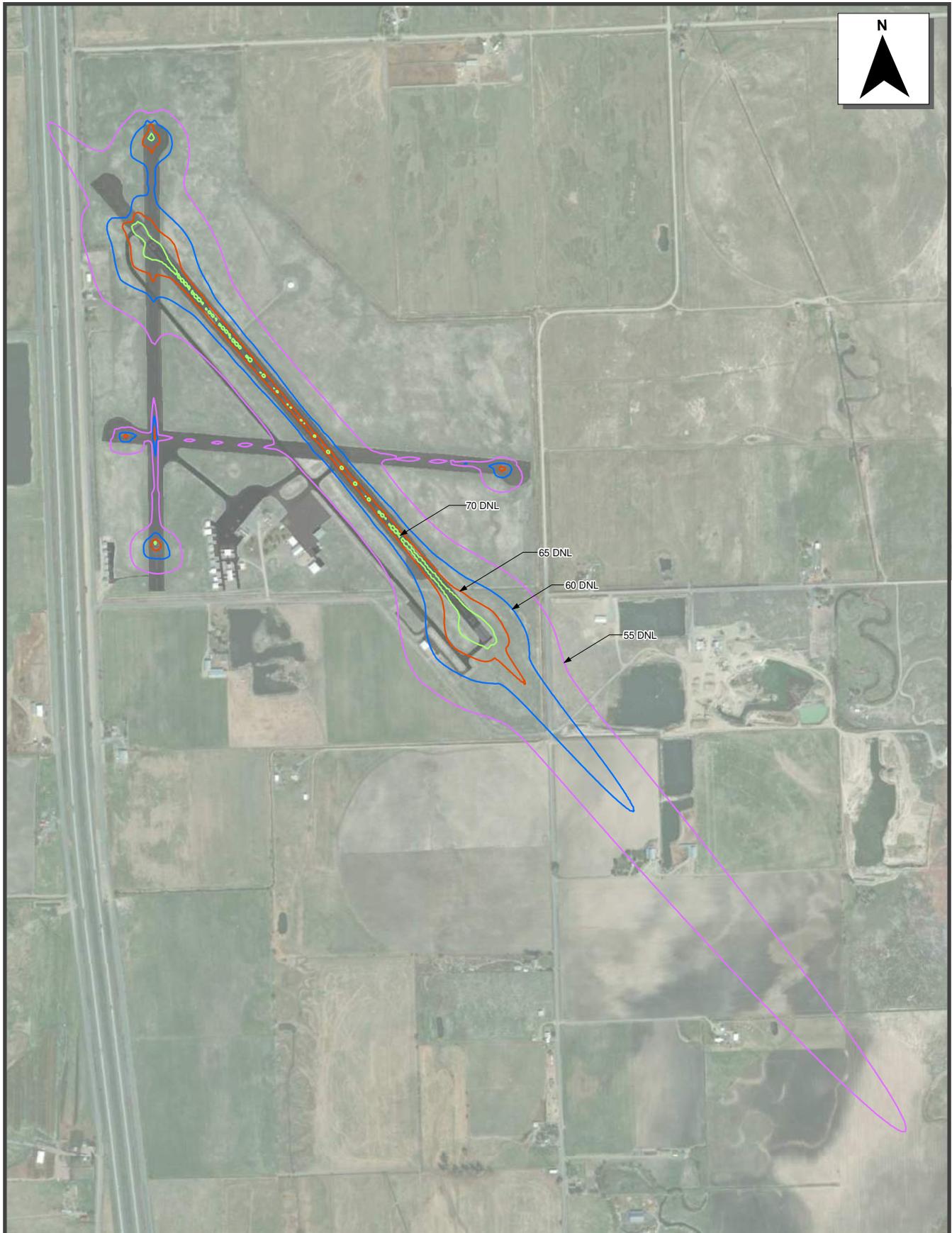
8.13.4. Significance Determination

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the threshold for determining if the action would have a significant impact on noise and noise-compatible land use is if, "The action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe."⁴⁰

a. Potential Impacts

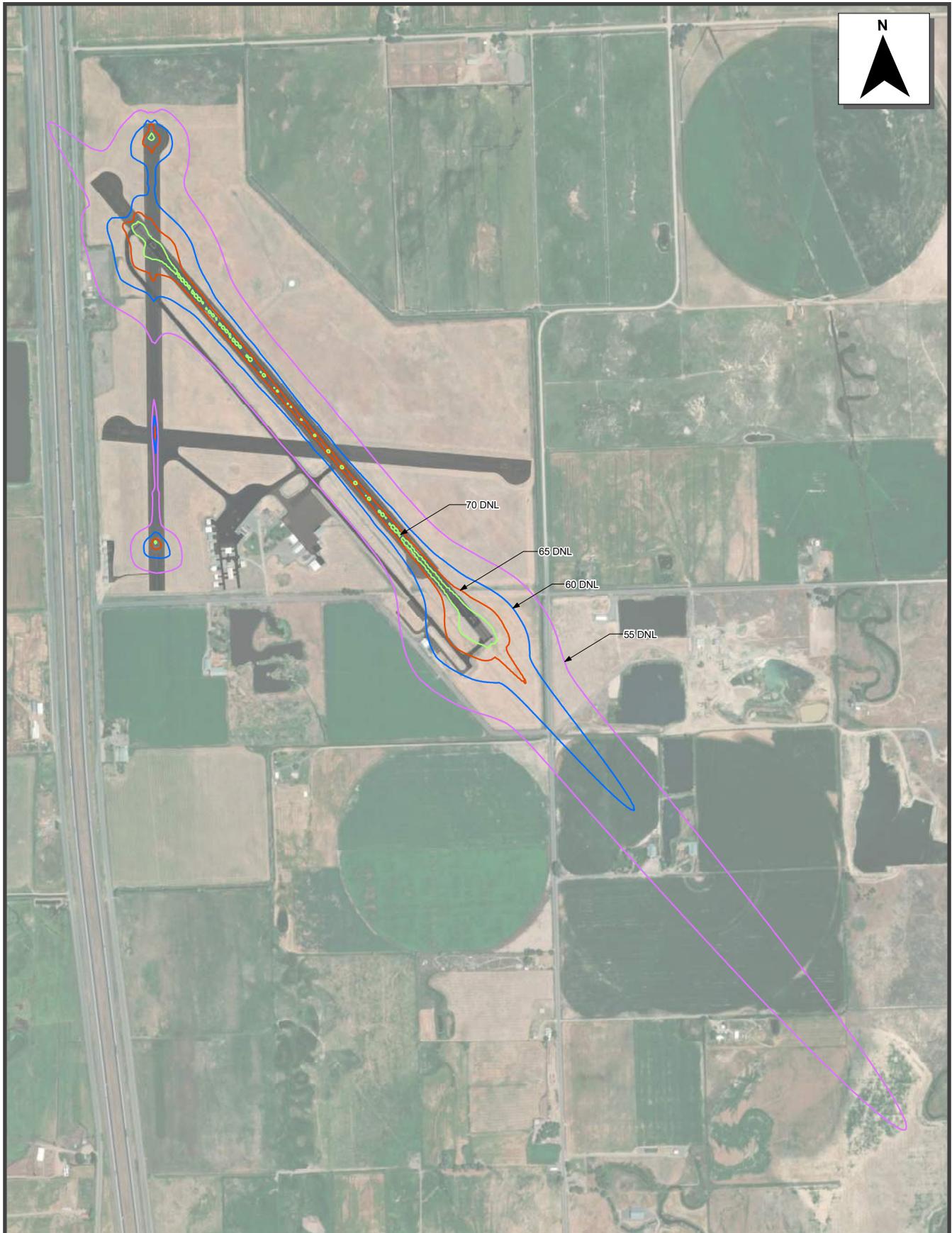
As shown in Figure 8.4, the noise contours created to estimate future conditions show the DNL 65 contour is contained entirely within the existing airport property boundary. Construction of the projects proposed in this airport master plan would result in short-term noise impacts. These impacts can be minimized by restricting work hours in noise-sensitive areas (e.g., near private residences). According to the Baker County Public Nuisance Ordinance No. 2015-01, there are no designated construction times.⁴¹ However, temporary construction activities associated with the projects proposed in this airport master plan will be restricted to daylight hours (i.e., between 7 a.m. and 9 p.m.).

Figure 8.3: 2021 Noise Contours



Source: Ardurra.

Figure 8.4: 2041 Noise Contours



Source: Ardurra.

8.14. Socioeconomics, Environmental Justice, and Children’s Health & Safety Risks

8.14.1. Regulatory Setting

a. Socioeconomics

The Uniform Relocation Assistance and Real Property Acquisitions Policy Act is a federal law that establishes minimum standards for federally funded programs or projects that require the acquisition of real estate or displaces people from their homes, businesses, or farms.

b. Environmental Justice

Title VI of the Civil Rights Act explicitly prohibits any discrimination in federally funded programs or projects, and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, requires federal agencies to identify and address any disproportionately high and adverse health or environmental effects of proposed projects on minority and low-income populations.

c. Children’s Health and Safety Risks

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires federal agencies to identify and assess environmental health or safety risks that may disproportionately affect children. This includes risks attributable to products a child might use or be exposed to or substances they are likely to come in contact with or ingest (e.g., air, food, water, soil).

8.14.2. Affected Environment

a. Socioeconomics

As previously discussed in [Section 3.9, Socioeconomic Overview](#), Baker County had a population of 16,111 people in 2021 with a median age of 48, and the median household income was estimated to be \$96,622.

b. Environmental Justice

According to the U.S. Census Bureau, the population of Baker City is predominantly white and does not have a significant number of people considered to be an environmental justice population ([Table 8.4](#)).⁴²

Table 8.4: Baker City Race and Ethnicity Data, 2021

| Race and Ethnicity | Population | Percentage |
|--|--------------|--------------|
| Total Population | 9,998 | 100% |
| Population of one race | 9,743 | 97.4% |
| White | 9,134 | 93.7% |
| Asian | 36 | 1.0% |
| American Indian and Alaska Native | 114 | 2.3% |
| Black or African American | 156 | 1.8% |
| Hispanic or Latino | 558 | 5.6% |
| Other Race | 361 | 2.9% |
| Population of two or more races | 255 | 2.6% |

Source: U.S. Census Bureau, 2021: ACS 5-Year Estimates Data Profiles.

c. Children's Health and Safety Risks

According to the U.S. Census Bureau, approximately 5.6% (565) of the Baker City population is less than five years of age, and approximately 20.8% (2,102) is less than 18 years of age.⁴³ Areas of particular concern for this impact category include schools, daycares, parks, and children's health clinics. According to the EPA's Environmental Justice Screening and Mapping Tool, EJScreen, there are no schools, daycares, or children's health clinics located on airport property or in its immediate vicinity. The closest school is Baker High School which is located approximately 3.5 miles southwest of the airport. The closest children's health care facility is Saint Alphonsus Medical Center - Baker City which is located approximately 2.0 miles southwest of the airport.⁴⁴ All schools, daycares, children's health clinics, or similar child-friendly facilities are well outside the construction footprint of the proposed airfield improvements.

8.14.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on socioeconomics, environmental justice, and children's health and safety risks, both direct and indirect impacts need to be examined. This includes identifying potential impacts that would occur as a result of operational changes and construction of these projects.

a. Socioeconomics

- Identify the impact on economic activity, employment, income, poverty rates, population growth, housing, public services, and social conditions in the study area.
- In cases where the proposed project would result in relocation of local businesses, public services, or housing, estimate the number and characteristics of the individuals and families to be displaced; describe the impact on the affected neighborhood; and provide an indication of the ability of that neighborhood to provide adequate relocation housing for the families to be displaced.

b. Environmental Justice

- Determine if a low income or minority population will sustain more of the impact than any other population segment, or if they will experience impacts that are appreciably more severe or greater in magnitude than the rest of the population.

c. Children's Health and Safety Risks

- Determine if children will sustain more of the impact than any other population segment.
- Determine if the impacts suffered by children will be appreciably more severe or greater in magnitude than the adverse effects suffered by the rest of the population.

8.14.4. Significance Determination

a. Socioeconomics

The FAA has not established a significance threshold for socioeconomics. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does identify the following factors to consider in evaluating potential impacts.

- Will the project potentially induce substantial economic growth in an area.
- Will the project potentially disrupt or divide the physical arrangement of an established community.
- Will the project potentially cause extensive relocation when sufficient replacement housing is unavailable.
- Will the project potentially cause extensive relocation of community businesses that would cause severe economic hardship for affected communities.
- Will the project potentially disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities.
- Will the project potentially produce a substantial change in the community tax base.⁴⁵

b. Environmental Justice

The FAA has not established a significance threshold for environmental justice. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does state that a factor to consider is if the action would have the potential to lead to disproportionately high and adverse impact to an environmental justice population (i.e., a low-income or minority population) or results in 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.⁴⁶

c. Children's Health and Safety Risks

The FAA has not established a significance threshold for children's health and safety risks. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does state that a factor to consider in evaluating potential impacts is if the action would have the potential to lead to a disproportionate health or safety risk to children.⁴⁷

d. Potential Impacts

The projects proposed in this airport master plan are not expected to have an impact on socioeconomics, environmental justice populations, or children's health and safety.

8.15. Visual Effects

8.15.1. Regulatory Setting

There are no special purpose laws or requirements specific to light emissions or visual effects. However, some visual resources are protected under federal, state, or local regulations. Some of these protected visual resources include scenic roadways; Wild and Scenic Rivers; national scenic areas; scenic easements; trails protected under the National Trails System Act; biological resources; parks, recreation areas, wildlife, or waterfowl refuges; historic properties; and other features protected under other federal, state, or local regulations. Additional laws protecting resources that may be affected by visual effects include Section 106 of the National Historic Preservation Act, and Section 4(f) of the Department of Transportation Act as well as any state and local regulations, policies, and zoning ordinances that may apply.

8.15.2. Affected Environment

The airport is located in a rural area approximately three miles north of Baker City and immediately east of Interstate Highway 84 (I-84). The airport and the freeway are the most prominent features with respect to light emissions and visual effects in the surrounding area.

a. Light Emissions

The airport is currently equipped with several sources of light emissions which includes airfield and apron lighting, visual navigational aids, airborne and ground-based aircraft operations, and roadway lighting. These sources of light emissions are typical for airports and are essential to the safe and efficient movement of aircraft as well as the safety of vehicles and pedestrians using the airport.

b. Visual Resources and Visual Character

The visual character of the airport consists of various airside and landside facilities including the runways, taxiways, apron areas, automobile parking areas, aircraft hangars, fuel facilities, and the fixed base operator.

8.15.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on visual effects, both direct and indirect impacts from construction and ongoing operations need to be examined.

a. Light Emissions

Light emission impacts are typically related to the extent to which any lighting or glare associated with the proposed projects would create an annoyance for people in the vicinity and would interfere with their normal activities. When the potential for annoyance exists, information should be included in the analysis such as the location of lights or light systems, pertinent characteristics of the lighting (e.g., intensity, flashing sequence for strobe lighting) and its intended use (e.g., security lighting, runway lighting), and mitigation measures that could be implemented to lessen any annoyance such as shielding or angular adjustment.

b. Visual Resources and Visual Character

Visual resources and visual character impacts are typically related to a decrease in the aesthetic quality of an area resulting from development, construction, or demolition. Analysis of visual impacts considers whether the proposed projects would affect, obstruct, substantially alter, or remove visual resources including buildings, historic sites, or other landscape features that are visually important or have unique characteristics. When the potential to obstruct a visual resource exists, information should be included in the analysis such as how a project would alter the character and quality of views and the number of locations from which the resource can be viewed.

8.15.4. Significance Determination

The FAA has not established a significance threshold for light emissions or for visual resources and visual character. However, FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, does identify the following factors to consider in evaluating potential impacts.

- The proposed projects would have the potential to create annoyance or interfere with normal activities from light emissions.
- The proposed projects would have the potential to affect the importance, uniqueness, or aesthetic value of the visual character of the area.
- The proposed projects would have the potential to block or obstruct views of visual resources or contrast with the visual character of the area.⁴⁸

a. Potential Impacts

While some of the projects proposed in this airport master plan will likely result in the introduction of new light sources, they are limited in scope and are unlikely to alter the airport's visual character. They are also not likely to create an annoyance or interfere with normal activities due to light emissions. However, measures can be used to minimize impacts such as use of shielding and baffles, angular adjustment of light fixtures, and the application of architecture or landscaping design features to enhance the aesthetics and uniqueness of the proposed project.

8.16. Water Resources

8.16.1. Regulatory Setting

a. Wetlands

Jurisdictional wetlands are federally protected under Section 404 of the Clean Water Act (CWA) which regulates the discharge of dredge or fill material into Waters of the United States, including wetlands. Under the Clean Water Act, the term wetlands means areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. This generally includes swamps, marshes, bogs, and similar areas, but does not include streams, reservoirs, and deep lakes or areas covered with water for such a short time that there is no effect on moist-soil vegetation.

b. Surface Waters

Surface waters include streams, rivers, lakes, ponds, estuaries, and oceans as well as other waters on the surface of the ground that are not considered to be wetlands, floodplains, groundwater, or Wild and Scenic Rivers. Surface waters are federally protected under Section 303(d), Section 404, Section 401, and Section 402 of the Clean Water Act which regulates the discharge of pollutants into waters of the United States and established the National Pollutant Discharge Elimination System (NPDES) permit program. In Oregon, point source pollutant discharges into surface waters are regulated the Department of Environmental Quality.⁴⁹

c. Groundwater

Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. The term aquifer is used to describe the geologic layers that store or transmit groundwater to wells, springs, and other water sources. The Safe Drinking Water Act prohibits federal agencies from funding actions that would contaminate an EPA-designated sole source aquifer or its recharge area. In Oregon, the Department of Environmental Quality issues permits relating to groundwater.⁵⁰

8.16.2. Affected Environment

a. Wetlands

According to the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) map, the airport is bordered by riverine wetlands in all four directions and is in the vicinity of four freshwater ponds and six freshwater emergent wetlands. There is one freshwater pond and six freshwater emergent wetlands just to the east-northeast of the airport property. The freshwater pond functions as a cattle stock pond and the six freshwater emergent wetlands are agricultural croplands that are seasonally flooded with waters from the Baddock Slough which is located approximately 0.50 miles east of the airport. Two additional freshwater ponds are just to the west of the airport and are located on the other side of I-84. Another freshwater pond is located just to the south and is located on the other side of South Airport Lane. These bodies of water are all outside of the airport property boundary and the projects proposed in this airport master plan are not expected to affect these wetlands as they are all located outside the airport property boundary.

The riverine wetlands consist of two unnamed irrigation channels that are hydrologically connected to the Powder River which is located approximately 1.25 miles southwest of the airport. Both irrigation channels are parallel to each other and flow along the airport property boundary.⁵¹

b. Surface Waters

Surface waters at or in the vicinity of the airport include two unnamed irrigation channels and four freshwater ponds. The two unnamed irrigation channels (i.e., Irrigation Channel 1 and Irrigation Channel 2) are parallel to each other and flow along the airport property boundary in all four directions. The headwaters of Irrigation Channel 1 are along the Powder River which is located approximately 1.25 miles southwest of the airport. Irrigation Channel 1 flows in a general northwest direction towards the airport and provides irrigation waters to adjacent properties. Irrigation Channel 1 enters the airport at the southeastern corner and flows along the eastern, northern, and western borders before naturally dissipating near the airport's southwestern corner. Irrigation Channel 2 receives diverted flows from Irrigation Channel 1 near the southeastern corner of the airport. Irrigation Channel 2 then splits into a westbound and northbound channel. The westbound channel flows through the airport property for approximately 0.75 miles before naturally dissipating. The northbound segment of Irrigation Channel 2 flows parallel to Irrigation Channel 1 and follows the same path.

Two freshwater ponds are just to the west of the airport and are located on the other side of I-84. Another freshwater pond is located just to the south and is located on the other side of South Airport Lane. These ponds are used for recreation or irrigation purposes. One freshwater pond is located approximately 1,200 feet northeast of the airport and is used as a cattle stock pond. None of the four freshwater ponds will be impacted by the proposed airfield improvements.

c. Groundwater

According to the EPA, the airport is not located within a sole source aquifer region.⁵² According to the Oregon Water Resources Department (OWRD) Well Report Mapping Tool, there are four water wells located on airport property. Three of the wells are located within the terminal area and one is located at the southwest corner of the airport.⁵³ According to the Oregon Water Resources Department Groundwater Information Mapping Tool, the depth to water table ranges between 180 feet and 390 feet at off-site groundwater wells.⁵⁴

8.16.3. Environmental Consequences

To identify the potential impact the projects proposed in this airport master plan would have on water resources, both direct and indirect impacts need to be examined. This includes identifying potential impacts that would occur as a result of operational changes as well as construction of these projects.

a. Wetlands

- Describe how the proposed project would affect or alter the physical condition or function of any wetlands. This includes impacts resulting from any fill, excavation, or construction as well as draining, dredging, channelizing, filling, diking, impounding, or related activities.
- Determine if construction within a wetland could lead to loss of a wetland function such as natural flood control, resulting in increased flooding in the vicinity of the proposed project.
- Determine if the creation of a new impermeable surface such as a runway could lead to increased runoff and affect water quality in nearby wetlands.
- Determine if these impacts would fall under the terms and conditions of a Section 404 general permit.

b. Surface Waters

- Describe the potential direct impacts to all surface waters identified within the study area that might result from construction of the proposed project.
- Identify any indirect impacts that could occur from construction of the proposed project such as sedimentation or petrochemical spills that could reach surface waters and cause water quality issues.
- Describe any potential impacts that could occur from ongoing operation of the proposed project such as increased runoff from new impermeable surfaces or changes in hydrologic patterns that could affect water quality and hydrology in nearby surface waters.
- Determine if these impacts fall under the terms and conditions of a Section 404 permit.

c. Groundwater

- Describe the potential impact impervious surfaces, excavation, and construction would have on groundwater. This includes potential petrochemical spills from construction activities that could reach groundwater through infiltration and cause water quality issues.
- Describe how ongoing operation of the proposed project would affect groundwater.

8.16.4. Significance Determination

a. Wetlands

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the threshold for determining if an action would have a significant impact on wetlands is if the action would:

- Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies including surface waters and sole source and other aquifers.
- Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected.
- Substantially reduces the affected wetland's ability to retain floodwaters or storm runoff.
- Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected wetlands.

b. Surface Waters

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the threshold for determining if an action would have a significant impact on surface waters is if the action would:

- Exceed water quality standards established by federal, state, or local regulatory agencies.
- Contaminate public drinking water supply such that public health may be adversely affected.

c. Groundwater

According to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the threshold for determining if an action would have a significant impact on groundwater is if the action would:

- Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies.
- Contaminate an aquifer used for public water supply such that public health may be adversely affected.⁵⁵

d. Potential Impacts

Each of these water resources likely contain wetlands along their borders. This means a wetland delineation, avoidance and minimization measures, United States Army Corps of Engineers (USACE) Section 404 permit, and mitigation practices may be required if the projects proposed in this airport master plan are likely to impact any of these wetlands.

A USACE Section 404 permit and Oregon Department of Environmental Quality stormwater permit may be required if the projects proposed in this airport master plan are likely to directly or indirectly impact any surface waters. While the projects proposed in this airport master plan are not expected to have a significant impact on surface waters, best management practices should be used during construction to protect water resources.

Endnotes

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AIRPORT LAYOUT PLAN

| | |
|--|------------|
| Airport Layout Plan Drawing Set | 9-2 |
| Sheet 1: Title Sheet | 9-2 |
| Sheet 2: Airport Data Sheet | 9-2 |
| Sheets 3A-3B: Airport Layout Plan | 9-3 |
| Sheet 4: Airport Airspace | 9-3 |
| Sheets 5A-5B: Runway Profile | 9-3 |
| Sheets 6A-6C: Inner Portion of the Approach Surface | 9-3 |
| Sheets 7A-7C: Runway Departure Surfaces | 9-3 |
| Sheet 8: Terminal Area | 9-3 |
| Sheet 9: Airport Land Use | 9-3 |
| Sheet 10: Photo and Contours | 9-3 |
| Sheet 11: Exhibit 'A' | 9-4 |
| Airport Layout Plan Changes | 9-4 |
| Runways 17/35 and 8/26 | 9-4 |
| Taxiway B | 9-4 |
| General Aviation Apron | 9-4 |
| Grass Landing Area..... | 9-4 |
| Aviation Development Areas and Water and Sewer Service | 9-4 |

CHAPTER NINE

AIRPORT LAYOUT PLAN

The airport layout plan (**ALP**) is a set of drawings that depicts the current airport facilities and proposed development projects. Under the Airport and Airway Improvement Act of 1982, it is necessary for airport layout plans to be reviewed and accepted by the FAA and adopted by the sponsor for an airport to receive financial assistance. The airport is obligated by federal grant assurance requirements to keep its airport layout plan current and to follow the plan. According to FAA Advisory Circular (**AC**) 150/5070-6B, *Airport Master Plans*, the primary functions of the airport layout plan are:

- An airport layout plan creates a blueprint for airport development by depicting proposed improvements. This acts as a guideline for the airport sponsor which helps to ensure development maintains airport design standards and safety requirements and is consistent with airport and community land use plans.
- The airport layout plan is a public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.
- The approved airport layout plan enables the airport sponsor and the FAA to plan for airport improvements. It also allows the FAA to anticipate budgetary and procedural needs. The approved airport layout plan will also allow the FAA to protect the airspace required for facility or approach procedure improvements.
- The airport layout plan can act as tool for the airport sponsor including development and maintenance staff.¹



9.1. Airport Layout Plan Drawing Set

This chapter describes each drawing included in the airport layout plan for Baker City Municipal Airport as well as the proposed improvements they depict. Each of these drawings were produced using FAA standards defined in AC 150/5070-6B, *Airport Master Plans*, and AC 150/5300-13B, *Airport Design*. The airport layout plan also complies with FAA Standard Operating Procedure No. 2.00, *Standard Procedure for FAA Review and Approval of Airport Layout Plans*. The airport layout plan drawings are included in as **Appendix D: Airport Layout Plan**. The updated airport layout plan for Baker City Municipal Airport includes the following sheets:

- Sheet 1: Title Sheet
- Sheet 2: Airport Data Sheet
- Sheet 3A: Airport Layout Plan (Existing)
- Sheet 3B: Airport Layout Plan (Future)
- Sheet 4: Airport Airspace
- Sheet 5A: Runway 13/31 Profile
- Sheet 5B: Runway 8/26 and 17/35 Profile
- Sheet 6A: Inner Portion of the Approach Surface – Runway 13/31
- Sheet 6B: Inner Portion of the Approach Surface – Runway 17/35
- Sheet 6C: Inner Portion of the Approach Surface – Runway 8/26
- Sheet 7A: Runway Departure Surface – Runway 13/31
- Sheet 7B: Runway Departure Surface – Runway 8/26
- Sheet 7C: Runway Departure Surface – Runway 17/35
- Sheet 8: Terminal Area
- Sheet 9: Airport Land Use
- Sheet 10: Photo and Contours
- Sheet 11: Exhibit 'A'

9.2. Sheet 1: Title Sheet

The title sheet provides an index of the individual sheets in the airport layout plan along with approval signature blocks, airport location and vicinity maps, title and revision blocks, and any other information requested by the FAA.

9.3. Sheet 2: Airport Data Sheet

The airport data sheet includes the wind roses, runway data table, airport data table, non-standard conditions table, declared distances table, and an abbreviations index. The data tables include critical information about the runway's current and future planned design and safety area dimensions. There are no current modifications to FAA standards (MOS) approved at the airport.

9.4. Sheets 3A–3B: Airport Layout Plan

These sheets are a graphical representation of existing and proposed future airport facilities. These drawings include aircraft operating areas (e.g., runways, taxiways, aprons), required facility identifications, description labels, runway protection zones, runway and taxiway safety areas, runway and taxiway object free areas, runway obstacle free zones, building restriction lines, and navigational aids. All features are shown as complying with FAA design standards corresponding to the critical aircraft. This sheet also includes an area for the FAA's signature of approval.

9.5. Sheet 4: Airport Airspace

The airport airspace drawing depicts the imaginary surfaces defined by 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, and any objects penetrating those surfaces. The obstruction data table lists each obstacle and the amount of each penetration as well as the future disposition.

9.6. Sheets 5A–5B: Runway Profile

The runway profile sheets contain a profile drawing that displays the centerline ground profile detail for each runway.

9.7. Sheets 6A–6C: Inner Portion of the Approach Surface

The Inner Portion of the Approach Surface sheets contain a top-down view of the inner approach surfaces for each runway end, critical ground profile for the inner approach of each runway end, and obstructions to the inner approach surfaces.

9.8. Sheets 7A–7C: Runway Departure Surfaces

These drawings depict the applicable departure surfaces for runway ends. There are no published standard instrument departures for Runway 17. Therefore, there is no departure surface depicted off the south end of Runway 17.

9.9. Sheet 8: Terminal Area

This sheet depicts areas associated with existing and future general aviation development. This includes the fixed base operator, hangar areas, tie-down parking areas, and vehicle parking areas.

9.10. Sheet 9: Airport Land Use

The land use drawing depicts the on-airport land use associated with future airport development. The drawing shows the DNL 65 decibel noise contour, runway protection zones, the future property boundary of the airport, existing easements outside of the airport property boundary, and future easements to be acquired based on future runway protection zone limits.

9.11. Sheet 10: Photo and Contours

This sheet is a drawing that depicts the terrain contours using five-foot and two-foot contours of land around the airport. General contours are used to highlight possible terrain obstructions and penetrations for approach and departure surfaces. Contours are also used in planning construction and earthwork. The existing airport and proposed facilities, as well as the airport property boundary and safety areas, are included for reference against terrain contours.

9.12. Sheet 11: Exhibit 'A'

Sheet 11 is a drawing that depicts the airport property boundary and the various tracts of land that were acquired to develop the airport. It also contains associated data tables that denote how each track was acquired (i.e., source of funding) or if has been sold. The Exhibit 'A' property map was prepared consistent with FAA Standard Operating Procedure No. 3.00, *Standard Operating Procedure (SOP) for FAA Review of Exhibit 'A' Airport Property Inventory Maps*. The creation of the Exhibit 'A' required a boundary survey and record of survey in compliance with Oregon Code so this sheet is stamped by the licensed surveyor who oversaw that work.

9.13. Airport Layout Plan Changes

The previous airport layout plan was completed by Aron Faegre and Associates in 2010. The current airport layout plan reflects the following changes.

9.13.1. Runways 17/35 and 8/26

The 2010 future airport layout plan depicts Runway 17/35 being closed and Runway 8/26 remaining open but being shortened and narrowed. This was the result of Runway 17/35 not being eligible for FAA funding based on wind coverage. (Runway 8/26 was also found to be ineligible for FAA funding based on wind coverage.) For this airport layout plan, the runway closures were switched, with Runway 8/26 being closed and converted to a taxiway and Runway 17/35 remaining open with the understanding that ongoing maintenance will occur without the benefit of FAA assistance. The reason for the switch was due to the poor condition of the Runway 8/26 pavement in comparison to the Runway 17/35 pavement.

9.13.2. Taxiway B

The previous airport layout plan depicts Taxiway B remaining in its current alignment as it connects the general aviation apron with the intersection of Runway 17/35 and 8/26. This airport layout plan eliminates the current alignment of Taxiway B and reconfigures it along the alignment of Runway 8/26 after its conversion to a taxiway.

9.13.3. General Aviation Apron

The previous airport layout plan maintained the existing northern boundary of the general aviation apron. This airport layout plan expands the apron north to meet the limits of a new Taxiway B over the converted Runway 8/26. This also requires the relocation of the primary windcone and segmented circle north to the infield between Runways 13/31 and 17/35. This airport layout plan also shows new taxiway connectors on the east side of the apron to prevent direct access to Runway 13/31.

9.13.4. Grass Landing Area

The previous airport layout plan depicts an unmarked grass runway adjacent to and parallel to Runway 13/31. This airport layout plan shows a future grass landing area adjacent to and parallel to Runway 17/35.

9.13.5. Aviation Development Areas and Water and Sewer Service

The general locations of new aviation development remain similar to the previous airport layout plan with the main difference being the taxiway access configuration. Also, this airport layout plan depicts placeholders for future wells and septic drain fields to service the new aviation development areas while the previous airport layout plan did not.

Endnotes

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10 FINANCIAL ANALYSIS AND IMPLEMENTATION PLAN

| | |
|---|--------------|
| Capital Improvement Plan | 10-2 |
| Development Phasing Plan | 10-2 |
| Phase 1 Development | 10-3 |
| Phase 2 Development | 10-5 |
| Phase 3 Development | 10-7 |
| Rough Order of Magnitude Cost Estimates | 10-9 |
| Airport Funding Sources | 10-11 |
| Airport Improvement Program | 10-11 |
| Other Federal Funding Programs | 10-11 |
| Local Funding | 10-11 |
| Bond Proceeds | 10-12 |
| Oregon State Grant Programs | 10-12 |
| Private Funding | 10-12 |
| Revenue Enhancement | 10-13 |
| Financial Feasibility | 10-13 |
| Rates and Charges | 10-13 |
| Airport Revenue and Expense | 10-14 |
| Summary | 10-14 |

TABLES

| | |
|---|-------|
| Table 10.1: Capital Improvement Plan: Phase 1 Projects..... | 10-9 |
| Table 10.2: Capital Improvement Plan: Phase 2 Projects..... | 10-10 |
| Table 10.3: Capital Improvement Plan: Phase 3 Projects..... | 10-10 |
| Table 10.4: Airport Fees..... | 10-13 |
| Table 10.5: Airport Revenue and Expenses..... | 10-14 |

FIGURES

| | |
|---|------|
| Figure 10.1: Phase 1 Development Plan | 10-4 |
| Figure 10.2: Phase 2 Development Plan | 10-6 |
| Figure 10.3: Phase 3 Development Plan | 10-8 |

CHAPTER TEN

IMPLEMENTATION

This chapter reviews planned capital improvement projects for Baker City Municipal Airport in conjunction with the Federal Aviation Administration (FAA) Airports Capital Improvement Plan (ACIP) and improvements recommended based on the analysis presented in this airport master plan. This implementation plan provides guidance on when to implement the recommended improvement projects and includes a planning-level cost estimate of the financial commitment necessary to complete each project. This is to help ensure adequate funds, staff, and other necessary resources are available. However, it is important to know the cost estimates included in this chapter are based on general estimates and are developed using unit costs and planning assumptions.

Projects identified through this airport master plan are depicted on the airport layout plan (ALP) which makes them eligible for FAA funding. Implementation of these proposed projects is at the sponsor's discretion and is contingent on the outcome of any required environmental reviews and funding commitments made at the time of project implementation.



10.1. Capital Improvement Plan

Capital improvement projects differ from operating and maintenance (O&M) projects in that capital improvement projects often require substantial funding, can take multiple years to complete, and are typically planned several years in advance. Operating and maintenance projects consist of short-term expenses normally related to the routine maintenance, operation, and management of the airport. Capital improvement projects are normally large infrastructure improvements and can include runways, runway extensions, taxiways, and aprons. Certain types of equipment, such as snow removal equipment, firefighting or rescue trucks and their associated storage buildings, may also be eligible for FAA and state funding assistance.

Airport master plans and airport layout plan updates are typically completed every seven to ten years for general aviation airports. Larger development needs are justified through these planning efforts, and the improvement projects recommended as part of this planning process are then added to the capital improvement plan (CIP) by the sponsor. This plan is reviewed annually by the state and FAA, and completed projects are removed, pending projects are refined, and future projects are added. Once a project has been added, it may take years to schedule the funding depending upon the priority of the project. Projects related to safety and security are the highest priority for federal funding.

10.2. Development Phasing Plan

The phasing plan is intended to help establish interrelationships between projects, determine a sequence to minimize conflicts, and help ensure priorities are maintained throughout the implementation process. The implementation of projects is typically driven by future demand. However, in some cases, projects can be undertaken at any point during the planning period. It is important for the airport sponsor to plan and schedule needed projects well in advance because this helps to ensure funding is available from the FAA, state, and airport sponsor. This is increasingly important for airport sponsors that struggle with obtaining matching funds. The phasing plan is separated into three phases based on the federal fiscal year which runs from October 1 through September 30.

10.2.1. Phase 1 Development

The first phase includes development projects expected to occur between federal fiscal year 2025 and 2029. The phase 1 development plan is shown in [Figure 10.1](#) and includes the following projects:

1-1 (2025): Rehabilitate Airport Access Road and Decommission Runway 8/26

Rehabilitate the main entrance road to the airport (gravel only) and decommission Runway 8/26 by removing the existing runway markings and removing pavement.

1-2 (2026): Rehabilitate Hangar Area B Taxilane

Rehabilitate the taxilane pavement in hangar area B (crack seal and seal coat) using Infrastructure Investment and Jobs Act funds.

1-3 (2026): Install a Well and Drain Field

Install a water well and septic drain field to provide water and sewer services to development in hangar areas B and C using private funds.

1-4 (2027): Rehabilitate Runway 17/35 and Reconfigure Taxiway B

Rehabilitate Runway 17/35 using Connect Oregon funds (mill and inlay) and reconfigure Taxiway B along the former Runway 8/26 alignment.

1-5 (2027): Rehabilitate Taxilane and Add Perimeter Fencing

Rehabilitate the taxilane pavement for hangar area B (crack seal and seal coat) and add perimeter fencing in the terminal area.

1-6 (2028): Expand South Apron

Expand the south apron for hangar area C using private funding associated with hangar development.

1-7 (2028): Expand North Apron, Relocate Windcone and Segmented Circle, and Construct Taxiways B1, B2, D, and E

Expand the north apron, construct Taxiways B1, B2, D, and E, remove pavement, and relocate the primary windcone and segmented circle.

1-8 (2029): Rehabilitate Runway 13/31

Rehabilitate the Runway 13/31 pavement (crack seal and seal coat).

1-9 (2029): Construct West Apron, Taxiway G1, Grass Landing Area and Grass Tie-Downs, and a Well

Construct an apron and Taxiway G1 at hangar area A using private funds associated with hangar development, grade and seed a grass landing and tie-down area, and install a water well to service future development at hangar area A using private funds.

1-10 (2029): Extend Hangar Area D Taxilane

Construct an extension of the taxilane for hangar area D using private funds from hangar development.

Figure 10.1: Phase 1 Development Plan



Source: Ardurra.

10.2.2. Phase 2 Development

The second phase includes development projects expected to occur between federal fiscal year 2030 and 2034. The phase 2 development plan is shown in [Figure 10.2](#) and includes the following projects:

2-1 (2030): Rehabilitate Runway 17/35

Rehabilitate Runway 17/35 using Connect Oregon funds (crack seal and seal coat).

2-2 (2031): Construct Taxiways C, C1, F and Apron

Construction of these taxiways will enable access to a new aviation development area, designated hangar area E, using a combination of federal, state, local, and private funding.

2-3 (2031): Construct a Well, Drain Field, and Water Storage Tank

Install a new water well and septic drain field to service the future development of hangar areas E, F, and G using private funding.

2-4 (2032): Rehabilitate Runway 13/31 and Install Supplemental Windcone

This will be a major rehabilitation of Runway 13/31 (mill and inlay). It includes replacing the runway lighting system (conduit and fixtures) and the installation of a supplemental windcone.

2-5 (2033): Construct Taxiways C, C3, and Apron

Construction of these taxiways will provide access to a second aviation development area on the east side of the airport, designated hangar area F, using private funds.

2-6 (2034). Rehabilitate Taxiways A, A1, and A3; Construct Taxiways A2, A4, and C2

Rehabilitate Taxiways A, A1, and A3 (crack seal and seal coat), and construct new connector Taxiways A2, A4, and C2.

Figure 10.2: Phase 2 Development Plan



Source: Ardurra.

10.2.3. Phase 3 Development

The third phase includes development projects expected to occur between federal fiscal year 2036 and 2044. The phase 3 development plan is shown in [Figure 10.3](#) and includes the following projects:

3-1. Construct Taxiways C, C4, G, G2, and G3, Apron

Construction of these taxiways will provide access to a new aviation development area on the north side of the airport, designated hangar area G.

3-2. Construct Well

Install a well to service hangar area G using private funds.

3-3. Rehabilitate Taxiways B, B1, B2

Rehabilitate the pavement of Taxiways B, B1, and B2 (crack seal and seal coat).

3-4. Rehabilitate North Apron

Rehabilitate the north apron pavement of hangar area B (crack seal and seal coat).

3-5. Rehabilitate Runway 13/31

Rehabilitate the Runway 13/31 pavement (crack seal and seal coat).

3-6. Rehabilitate South Apron

Rehabilitate the south apron pavement of hangar area C (crack seal and seal coat).

3-7. Land Acquisition

Acquire the land parcel adjacent to Runway 17/35 for airport compatibility.

3-8. Rehabilitate Runway 17/35

Rehabilitate Runway 17/35 using Connect Oregon funds (crack seal and seal coat).

3-9. Rehabilitate Taxiways C and G; Construct Taxiway A5

Rehabilitate the pavement of Taxiways C and G (crack seal and seal coat), and construct Taxiway A5 following the land acquisition from project 3-7.

Figure 10.3: Phase 3 Development Plan



Source: Ardurra.

10.2.4. Rough Order of Magnitude Cost Estimates

Rough order of magnitude cost estimates for the capital improvement projects planned for the first phase are listed in [Table 10.1](#), phase 2 projects are listed in [Table 10.2](#), and phase 3 projects are listed in [Table 10.3](#). These cost estimates were prepared in 2023 dollars and are an approximation designed to provide a general starting point. Many factors, including inflation and changes in the price of construction materials, can affect these costs. The capital improvement plan should be reviewed annually, and these cost estimates should be updated prior to projects being implemented.

The estimated amount that will be paid by the FAA, state, and airport sponsor for each of these projects is included in these tables. Under the Airport Improvement Program (AIP) grant program, the FAA typically pays 90% of the total cost of eligible improvements. This leaves the State of Oregon and Baker City to cover the remaining 10%. However, these percentages can fluctuate depending on entitlements, state policy guidelines, state apportionment, and several other factors.

Table 10.1: Capital Improvement Plan: Phase 1 Projects

| Phasing | Project Title | Federal Funds | State Funds | Local Funds | Total Cost |
|-------------|----------------------------------|--------------------|--------------------|--------------------|---------------------|
| 1-1 (2025) | Access Road and Rwy 8/26 | \$1,350,000 | \$135,000 | \$15,000 | \$1,500,000 |
| 1-2 (2026) | Hangar Area B Taxilane | \$145,000 | \$14,500 | \$1,611 | \$161,111 |
| 1-3 (2026) | Well and Drain Field | \$0 | \$0 | \$110,000 | \$110,000 |
| 1-4 (2027) | Rwy 17/35 and Twy B | \$1,260,000 | \$1,400,000 | \$740,000 | \$3,400,00 |
| 1-5 (2027) | Taxilane and Fencing | \$270,000 | \$27,000 | \$3,000 | \$300,000 |
| 1-6 (2028) | Expand South Apron | \$0 | \$0 | \$1,000,000 | \$1,000,000 |
| 1-7 (2028) | North Apron, Windcone, Taxiways | \$2,970,000 | \$297,000 | \$33,000 | \$3,300,000 |
| 1-8 (2029) | Rehabilitate Runway 13/31 | \$900,000 | \$90,000 | \$10,000 | 1,000,000 |
| 1-9 (2029) | Apron, Twy G1, Grass LA/TD, Well | \$0 | \$0 | \$1,400,000 | \$1,400,000 |
| 1-10 (2029) | Extend Hangar Area D Taxilane | \$0 | \$0 | \$110,000 | \$110,000 |
| | Total | \$6,895,000 | \$1,963,500 | \$3,422,611 | \$12,281,111 |

Notes:

- Quantities rounded to the nearest thousandth.
- COAR grants are for projects less than \$150,000.
- Connect Oregon grants are for projects more than \$150,000.
- All cost estimates include environmental review and engineering services.

Source: Ardurra.

Table 10.2: Capital Improvement Plan: Phase 2 Projects

| Phasing | Project Title | Federal Funds | State Funds | Local Funds | Total Cost |
|--------------|---------------------------------|--------------------|--------------------|--------------------|---------------------|
| 2-1 (2030) | Rwy 17/35 | \$0 | \$455,000 | \$195,000 | \$650,000 |
| 2-2 (2031) | Twy C, C1, F, apron | \$300,000 | \$30,000 | \$3,870,000 | \$4,200,000 |
| 2-3 (2031) | Well, drain field, storage tank | \$0 | \$0 | \$1,200,000 | \$1,200,000 |
| 2-4 (2032) | Rwy 13/31, windcone | \$3,870,000 | \$387,000 | \$43,000 | \$4,300,000 |
| 2-5 (2033) | Twy C, C3, apron | \$1,728,000 | \$172,800 | \$1,299,200 | \$3,200,000 |
| 2-6 (2034) | Twy A, A1, A2, A3, A4, C2 | \$2,430,000 | \$243,000 | \$27,000 | \$2,700,000 |
| Total | | \$8,328,000 | \$1,287,800 | \$6,634,200 | \$16,250,000 |

Notes:

- Quantities rounded to the nearest thousandth.
- COAR grants are for projects less than \$150,000.
- Connect Oregon grants are for projects more than \$150,000.
- All cost estimates include environmental review and engineering services.

Source: Ardurra.

Table 10.3: Capital Improvement Plan: Phase 3 Projects

| Phasing | Project Title | Federal Funds | State Funds | Local Funds | Total Cost |
|--------------|-----------------------------|--------------------|--------------------|--------------------|---------------------|
| 3-1 | Twy C, C4, G, G2, G3, Apron | \$4,050,000 | \$405,000 | \$3,045,000 | \$7,500,000 |
| 3-2 | Construct Well | \$0 | \$0 | \$80,000 | \$80,000 |
| 3-3 | Rehabilitate Twy B, B1, B2 | \$150,000 | \$15,000 | \$1,667 | \$166,667 |
| 3-4 | Rehabilitate North Apron | \$270,000 | \$27,000 | \$3,000 | \$300,000 |
| 3-5 | Rehabilitate Runway 13/31 | \$1,080,000 | \$108,000 | \$12,000 | \$1,200,000 |
| 3-6 | Rehabilitate South Apron | \$0 | \$0 | \$80,000 | \$80,000 |
| 3-7 | Land Acquisition | \$1,800,000 | \$180,000 | \$20,000 | \$2,000,000 |
| 3-8 | Rehabilitate Runway 17/35 | \$0 | \$280,000 | \$120,000 | \$400,000 |
| 3-9 | Twy C, G, A5 | \$535,500 | \$76,500 | \$238,000 | \$850,000 |
| Total | | \$7,885,500 | \$1,091,500 | \$3,599,667 | \$12,576,667 |

Notes:

- Quantities rounded to the nearest thousandth.
- Land acquisition estimate based on \$400,000/acre.
- COAR grants are for projects less than \$150,000.
- Connect Oregon grants are for projects more than \$150,000.
- All cost estimates include environmental review and engineering services.

Source: Ardurra.

10.3. Airport Funding Sources

Funding sources for airport projects typically include federal, state, local, and private sources. Most often, federal grants from the FAA are used to fund federally eligible projects. This section identifies some of the more common funding sources used for airport projects.

10.3.1. Airport Improvement Program

The Airport Improvement Program provides grants for eligible planning and development projects at National Plan of Integrated Airport System (NPIAS) airports. Eligible projects include those related to airport safety, capacity, security, and environmental. Airport Improvement Program grants may come in the form of nonprimary entitlements, which is currently set at \$150,000 per year for BKE; discretionary, which BKE competes with other airports for in the FAA's Northwest Mountain Region; and state apportionment, which is money set aside for the state through the Airport Improvement Program. Some of the eligible projects may not compete well enough to receive discretionary funding which leaves the airport to seek alternative funding sources or self-fund the projects.

10.3.2. Other Federal Funding Programs

The Infrastructure Investment and Jobs Act (IIJA), also referred to as the Bipartisan Infrastructure Law (BIL), was signed into law by President Biden on November 15, 2021. This legislation included funding for transportation and infrastructure modernization projects. These funds are paid from the general treasury, and the local match for airport infrastructure grants is the same as the sponsor's Airport Improvement Program grant match. This funding is included in the federal funding amounts shown in [Table 10.1](#), [Table 10.2](#), and [Table 10.3](#).

Other sources of funding can be applied for through the United States Department of Agriculture (USDA), and the United States Economic Development Administration (USEDA). The USDA Rural Development program provides financial assistance to communities with a population less than 20,000 people. The program's mission is to create economic prosperity and improve the quality of life in rural areas where access to financing is more challenging. Rural Development funding can be used for projects that enhance community infrastructure and spur economic growth by providing quality jobs and attracting new businesses.

The Community Facilities Program, which is part of the USDA Rural Development program, is specifically for transportation infrastructure projects. This funding can be used for terminals, hangars, runways, parking areas, roadway, curbside, and administrative facilities. USDA Community Facilities loans may also be used as the local match for FAA funding. The average direct loan size is \$4 million, but much larger loans are available. The Community Facilities Program has funded projects costing more than \$100 million dollars. The interest rate may be fixed or variable and are determined quarterly and posted publicly. The repayment period is limited to the useful life of the facility or any statutory limitation on the applicant's borrowing authority.

10.3.3. Local Funding

Local funds are those derived from income generated from the operation of the airport through leases and user fees or contributions by the sponsoring agency from general or other funds. Local funds are used to match grants that do not cover 100% of project costs and to fund operating and maintenance costs and administration of the airport.

10.3.4. Bond Proceeds

Airports can also obtain financing for airport infrastructure projects by issuing bonds. Airport bonds entail leveraging future funding to pay for projects. This financing mechanism enables airport authorities to borrow money to finance infrastructure projects. That money can then be paid back with interest over a longer time period. Airports may qualify for tax-exempt bonds to support airport projects for federal tax purposes because most airports are owned by government agencies. The tax-exempt status enables airports to issue bonds at lower interest rates than taxable bonds which reduces the cost to finance a project.

10.3.5. Oregon State Grant Programs

Nearly all states provide financial assistance to airports which is primarily in the form of grants used as matching funds for federal Airport Improvement Program grants or as separate grants. States fund their grant programs through a variety of sources that can include aviation fuel and aircraft sales taxes, highway taxes, bonds, and general fund appropriations.

Connect Oregon

Connect Oregon is a competitive grant program that invests in air, rail, marine, and bicycle and pedestrian infrastructure to ensure Oregon's transportation system is strong, diverse, and efficient. Connect Oregon projects are eligible for grants that cover up to 70% of project costs. A minimum of 30% cash match is required from the recipient for grant funded projects. Projects eligible for funding from state fuel tax revenues (section 3a, Article IX of the Oregon Constitution, the Highway Trust Fund), are not eligible for Connect Oregon funding.¹

Aviation System Action Program

The Aviation System Action Program (ASAP) was created by the Oregon State Legislature in HB 2075 (2015) to invest in Oregon's public use airports. The legislature made the program permanent in 2021 (HB 2434) through a two cents per gallon fuel tax.

Critical Oregon Airport Relief

The Critical Oregon Airport Relief (COAR) program provides grants to assist airports with match requirements for FAA Airport Improvement Program grants, for emergency preparedness and infrastructure projects in accordance with the Oregon Resilience Plan, and for aviation related economic development. Public use airport owners and airport sponsors may be eligible to apply for Critical Oregon Airport Relief grants. The maximum grant request is \$150,000 per application. According to the current Oregon Aviation Plan, grant match requirements are determined by category of airport.²

State Owned Airports Reserve

The State Owned Airports Reserve (SOAR) program receives 25% of the Aviation System Action Program fuel tax funds to be used for safety improvements recommended by the State Aviation Board.

10.3.6. Private Funding

Private funding for airport improvements typically comes in the form of investors that are intending to make extensive use of the airport through development of hangars or an airport business. Such endeavors may require substantial infrastructure improvements that ultimately benefit the public use portions of the airport but obligate the investor with a large financial commitment. Financial commitments of this magnitude require long-term agreements between the private entity and airport sponsor to make it attractive to investors.

10.4. Revenue Enhancement

FAA Grant Assurance 24, Fee and Rental Structure, requires airports to maintain a fee and rental structure for the facilities and services at the airport that will make the airport as self sustaining as possible under existing circumstances.³ According to FAA Order 5190.6B, *Airport Compliance Manual*, fees for aeronautical uses should be fair and reasonable while fees for nonaeronautical uses should be at fair market value. Any land used by the sponsor for nonaeronautical purposes should be rented at fair market value. Rental of land to the sponsor for nonaeronautical purposes at less than fair market value is considered a subsidy of local government and is a prohibited use of airport revenue in violation of Grant Assurance 25, Airport Revenue.⁴ The FAA expects airport sponsors to charge police or fire fighting units that operate aircraft at the airport reasonable fees for their aeronautical use. However, airports may offset the value of those services against airport fees (in-kind services). Airport sponsors may reduce rental rates for military tenants, aviation museums, Civil Air Patrol units that operate an aircraft at the airport and for aeronautical education programs, if they are provided by an accredited institution, to the extent they provide benefits to civil aviation.

The development projects at BKE will upgrade existing facilities and establish the infrastructure for hangar development.

10.5. Financial Feasibility

The purpose of the financial feasibility analysis is to demonstrate the airport sponsor's ability to fund the projects described in this airport master plan. A large portion of the funding will come from the federal Airport Improvement Program. Internal revenue goes to the operating and maintenance budget, which includes personnel, supplies, equipment and maintenance repair, and other incidental costs. Financial and administrative management are key functions of airport management. Airports should strive to be as self-sustaining as possible through revenue generation and good fiscal management of expenditures through budgeting. Appropriate lease documents, establishment of rates and charges, maximizing grant funding, and minimizing risk through insurance are also important fiscal management tools.

10.5.1. Rates and Charges

The current airport fees are listed in [Table 10.4](#). These fees were set by City of Baker City Resolution No. 3899 and became effective as of July 2, 2022.⁵ Airport fees and charges should be reviewed annually to determine if adjustments are needed.

Table 10.4: Airport Fees

| Fee | Authority | Amount |
|---|-----------------|------------------------|
| Airport ground lease (private) | Ordinance 3297 | \$0.12 per square foot |
| Airport ground lease (aviation oriented commercial use) | Ordinance 3297 | \$0.16 per square foot |
| Hangar lease (T-hangars) | Lease Agreement | \$250 monthly |
| Hangar lease (quad hangars) | Lease Agreement | \$150 monthly |
| Fuel license tax | Ordinance 3297 | \$0.10 per gallon |
| Agricultural spray permit | Ordinance 3297 | \$100.00 per year |

Source: City of Baker City.

10.5.2. Airport Revenue and Expense

Baker City annual budgets for 2020 to 2025 were reviewed to evaluate revenue and expense trends. As shown in Table 9.4, expenses grew at an annual rate of 5.3%, and revenue increased at an annual rate of 2.1%. The greatest operating and maintenance expense was materials and services, and the greatest operating and maintenance revenue generator was from hangar rent. Revenue from grants was primarily from FAA Airport Improvement Program entitlement and discretionary grants or other federal programs.

Table 10.5: Airport Revenue and Expenses

| Budget Item | 2020–2021 (Actual) | 2021–2022 (Actual) | 2022–2023 (Actual) | 2023–2024 (Adopted) | 2024–2025 (Approved) |
|---|-----------------------|-----------------------|-----------------------|------------------------|-------------------------|
| O&M Expenses (101-General Fund/106-Airport Department) | | | | | |
| Personnel | \$15,765 | \$16,981 | \$8,283 | \$15,400 | \$15,871 |
| Materials & Services | \$54,160 | \$63,812 | \$62,652 | \$95,856 | \$99,921 |
| Capital Outlay | \$19,437 | \$0 | \$0 | \$0 | \$0 |
| Total O&M Expenses | \$89,362 | \$80,793 | \$70,935 | \$111,256 | \$115,792 |
| O&M Revenue (101-General Fund/101-Revenue) | | | | | |
| Gas Tax | \$9,512 | \$5,886 | \$7,897 | \$9,000 | \$9,000 |
| CARES ACT grants | \$19,963 | \$23,037 | \$0 | \$0 | \$23,100 |
| Hangar Rent | \$27,035 | \$34,599 | \$15,655 | \$27,000 | \$30,600 |
| Total O&M Revenue | \$56,510 | \$64,422 | \$23,552 | \$36,000 | \$62,700 |
| Grant Fund (621-Revenue) | | | | | |
| Begin Working Capital | (\$26,607) | \$3,667 | (\$3,933) | \$0 | \$9,096 |
| FAA | \$32,020 | \$288,973 | \$289,230 | \$415,000 | \$1,055,114 |
| COAR | \$0 | \$0 | \$0 | \$30,000 | \$99,887 |
| Trans from GF-162 FAA Match | \$0 | \$0 | \$10,000 | \$10,000 | \$10,000 |
| Total Grant Revenue | \$5,413 | \$292,640 | \$299,230 | \$455,000 | \$1,165,001 |
| Grant Fund (162-Expenses) | | | | | |
| Contracted Services | \$23,064 | \$300,363 | \$321,367 | \$455,555 | \$1,174,097 |
| Total Grant Expenses | \$23,064 | \$300,363 | \$321,367 | \$455,555 | \$1,174,097 |

Source: City of Baker City.

10.6. Summary

The development plan for BKE is appropriate to satisfy the existing needs and forecasted growth. Alternative funding sources, along with enhanced revenue-generating capacity at the airport will be key to the successful implementation of this airport master plan. It is important to note that the projects included in the development plan are for planning purposes and do not commit the airport sponsor or FAA to carry out or fund the projects. If a project is not financially feasible or justified, it will not be pursued.

Endnotes

- 1 State of Oregon. Oregon.gov. "Local Government Funding Overview." Accessed February 15, 2024. <https://www.oregon.gov/odot/localgov/pages/funding.aspx>.
- 2 State of Oregon. Oregon.gov. "CRITICAL OREGON AIRPORT RELIEF (COAR)" Accessed February 15, 2024. <https://www.oregon.gov/aviation/plans-and-programs/asap/pages/coar.aspx#:~:text=Public%20use%20airport%20owners%20and,the%20current%20Oregon%20Aviation%20Plan>.
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PLANNING FOR COMPLIANCE



- Grant Agreements and Sources of Obligations..... 11-2**
- Federal Grant Assurances 11-2**
 - Grant Assurance 5: Preserving Rights and Powers 11-3
 - Grant Assurance 19: Operations and Maintenance 11-3
 - Grant Assurance 20: Hazard Removal and Mitigation..... 11-3
 - Grant Assurance 21: Compatible Land Use 11-3
 - Grant Assurance 22: Economic Nondiscrimination..... 11-3
 - Grant Assurance 23: Exclusive Rights 11-3
 - Grant Assurance 24: Fee and Rental Structure 11-3
 - Grant Assurance 25: Airport Revenue 11-4
 - Grant Assurance 29: Airport Layout Plan..... 11-4
 - Grant Assurance 31: Disposal of Land 11-4
 - Other Obligations..... 11-4
- Complaint Resolution 11-5**
- Compatible Land Use 11-5**
 - Improper and Noncompliant Land Uses..... 11-6
- Compliance at Baker City Municipal Airport 11-6**
 - Hangar Use Policy 11-6
- Summary 11-6**

CHAPTER ELEVEN

COMPLIANCE

Airport sponsors that accept federal grants or federal property must also agree to certain obligations known as grant assurances. FAA Order 5190.6B, *Airport Compliance Manual*, provides guidance in interpreting and implementing these commitments, and the FAA's airport compliance program helps airport sponsors meet their obligations. In general, these grant assurances remain in effect for the useful life of the project but do not last longer than 20 years. An exception is for land acquisition grants which last for as long as the airport is owned and operated as an airport. The duration and applicability of each grant assurance for airport sponsors are summarized in FAA Order 5100.38D, *Airport Improvement Program Handbook*, Table 2-5, Duration and Applicability of Grant Assurances (Airport Sponsors).¹



11.1. Grant Agreements and Sources of Obligations

Each grant agreement and deed of property conveyance includes the obligations an airport sponsor must agree to as a condition of accepting grant funding or property from the federal government. FAA-administered airport financial assistance programs include:

- Grant agreements issued through airport development grant programs such as the Federal Aid to Airports Program (**FAAP**), Airport Development Aid Program (**ADAP**), and Airport Improvement Program (**AIP**).
- Grant agreements and instruments of non-surplus conveyance issued under the 1946 Airport Act, 1970 Airport Act, or the Airport and Airway Improvement Act of 1982 (**AAIA**).
- Surplus property instruments of transfers issued under the provisions of Section 13(g) of the Surplus Property Act of 1944.
- Deeds of conveyance issued under Section 16 of the 1946 Airport Act, Section 23 of the 1970 Airport Act, and Section 516 of the Airport and Airway Improvement Act.
- AP-4 agreements authorized by various acts between 1939 and 1944.
- Exclusive Rights under Section 303 of the Civil Aeronautics Act of 1938 and Section 308(a) of the FAA Act.
- Commitments included in environmental documents prepared in accordance with FAA requirements related to the National Environmental Policy Act of 1969 (**NEPA**) and the Airport and Airway Improvement Act.
- Written agreements between the sponsor and the FAA that include settlement agreements resulting from litigation.

11.2. Federal Grant Assurances

There are 39 Grant Assurances that federally obligated airport sponsors must comply with in the performance of grant agreements for airport development, planning, and noise compatibility programs.² The FAA has published *Airport Sponsor and Airport User Rights and Responsibilities* to provide airport sponsors with guidance in understanding and fulfilling these grant assurances by explaining some of the more complex grant assurances (Grant Assurances 5, 22, 23, 24, and 25) in simple terms.³

Most violations of grant assurances occur unintentionally rather than in a deliberate attempt to avoid federal obligations because many airport sponsors do not fully understand every requirement or how they apply in a specific circumstance. The FAA's Airport Compliance Program is designed to help ensure airport sponsors are fully informed of their federal obligations and understand how to comply with each grant assurance given the circumstances at a particular airport. The Airport Cooperative Research Program (**ACRP**) Report 184, *Understanding FAA Grant Assurance Obligations*, has also been published by the Transportation Research Board (**TRB**) to provide additional guidance in interpreting and meeting these obligations. According to this report, the majority of compliance complaints made against airports were related to the following grant assurances.⁴

11.2.1. Grant Assurance 5: Preserving Rights and Powers

Grant Assurance 5, Preserving Rights and Powers, prohibits an airport sponsor from taking or permitting any action which would operate to deprive it of any of the rights and powers necessary to perform any or all of the terms, conditions, and assurances in the grant agreement without FAA approval. It also requires airport sponsors to act promptly to acquire, extinguish, or modify any outstanding rights or claims of right of others that would interfere with the sponsor's ability to comply with all of its obligations. In other words, airport sponsors can't take any action or enter into any agreement that could prevent it from complying with its grant obligations. This means most real estate transactions require prior FAA approval.

11.2.2. Grant Assurance 19: Operations and Maintenance

Grant Assurance 19, Operation and Maintenance, applies to airports subject to Federal Aid to Airports Program, Airport Development Aid Program, and Airport Improvement Program agreements; surplus property; and conveyances as well as deeds of conveyance issued under Section 16, Section 23, and 516. It requires an airport to preserve, operate, and maintain airport facilities in a safe and serviceable condition for the benefit of the public and in a manner that will eliminate aviation hazards. This applies to all facilities shown on the approved airport layout plan which are dedicated for aviation use, and includes facilities conveyed under the Surplus Property Act.

11.2.3. Grant Assurance 20: Hazard Removal and Mitigation

Grant Assurance 20, Hazard Removal and Mitigation, requires airports to prevent, as much as reasonably possible, the growth or establishment of obstructions in the aerial approaches to the airport. As defined in Part 77, *Safe, Efficient Use and Preservation of the Navigable Airspace*, the term obstruction refers to natural or man-made objects that penetrate the imaginary surfaces. (Previously discussed in [Section 6.3. Airport Airspace](#).)

11.2.4. Grant Assurance 21: Compatible Land Use

Grant Assurance 21, Compatible Land Use, requires an airport to take appropriate action, to the extent reasonably possible, to restrict the use of lands in the vicinity of the airport to activities and purposes compatible with normal airport operations.

11.2.5. Grant Assurance 22: Economic Nondiscrimination

Grant Assurance 22, Economic Nondiscrimination, requires an airport to be operated for the use and benefit of the public, and to make it available to all types, kinds, and classes of aeronautical activity on fair and reasonable terms and without unjust discrimination.

11.2.6. Grant Assurance 23: Exclusive Rights

Grant Assurance 23, Exclusive Rights, requires an airport to be operated without granting or permitting any exclusive right to conduct any aeronautical activity at the airport. Aeronautical activity is defined as any activity that involves or is related to the operation of an aircraft or contributes to the safety of such operations (e.g., air taxi and charter operations, aircraft storage, sale of aviation fuel).

11.2.7. Grant Assurance 24: Fee and Rental Structure

Grant Assurance 24, Fee and Rental Structure, requires an airport to maintain a fee and rental structure for the facilities and services that will make the airport as self-sustaining as possible. (Note: Fair and reasonable for aeronautical activities and fair market value for nonaeronautical activities.)

112.8. Grant Assurance 25: Airport Revenue

Grant Assurance 25, Airport Revenue, requires airports to use all airport revenues for the capital or operating costs of the airport, the local airport system, or other local facilities that are owned or operated by the owner or operator of the airport and directly relate to the actual air transportation of passengers or property.

a. Special Conditions Affecting Noise Land and Future Aeronautical Use Land

An airport must apply interim revenue derived from noise land or future aeronautical use land to projects eligible for grants under the Airport Improvement Program. This income may not be used for the matching share of any grant.

112.9. Grant Assurance 29: Airport Layout Plan

Grant Assurance 29, Airport Layout Plan, requires an airport to develop, operate, and maintain the airport in accordance with its most recently approved airport layout plan. Airport land depicted on the latest property map included in Exhibit A of this document cannot be disposed of or otherwise encumbered without prior FAA approval.

112.10. Grant Assurance 31: Disposal of Land

Grant Assurance 31, Disposal of Land, requires an airport to obtain FAA approval for the sale or other disposal of property acquired under the Federal Aid to Airports Program, Airport Development Aid Program, or Airport Improvement Program and for the use of any net proceeds.

112.11. Other Obligations

Grants agreements can also include obligations relating to:

- Use of Government Aircraft
- Land for Federal Facilities
- Standard Accounting Systems
- Reports and Inspections
- Consultation with Users
- Terminal Development Prerequisites
- Construction Inspection and Approval
- Minimum Wage Rates
- Veterans Preference
- Audits, Audit Reports and Record Keeping Requirement
- Local Approval
- Civil Rights
- Construction Accomplishment
- Planning Projects
- Good Title
- Sponsor Fund Availability

11.3. Complaint Resolution

Under Title 14 of the Code of Federal Regulations 13.1, *Reports of Violations*, any person who knows of a violation of federal aviation laws, regulations, rules, policies, or orders may informally report the violation to the FAA. Under this section, airport users may make an informal complaint to report allegations of grant assurance violations to the FAA. Individuals seeking to file informal complaints are encouraged to do so in writing. Alleged violations are then investigated by the FAA's Airports District Office or Regional Airports Division.

Title 14 CFR Part 16, *Rules of Practice for Federally-Assisted Airport Enforcement Proceedings*, which is commonly referred to as Part 16, outlines the formal complaint process. To file a formal complaint under Part 16, complainants must be directly and substantially affected by any alleged noncompliance. Part 16 includes regulatory time frames and detailed procedures associated with the process. This includes engaging in a good faith effort to resolve the matter informally as this is the preferred course of action when it comes to addressing violations. The FAA maintains a Part 16 Decision Database that contains copies of all the final determinations of these complaints. For airports facing a formal complaint, it may be helpful to review previous decisions made in similar cases.⁵

11.4. Compatible Land Use

Land use compatibility is attained when property located on and near an airport is used in ways that don't adversely affect flight operations and is itself not adversely affected by airport operations. According to FAA Order 5190.6B, *Airport Compliance Manual*, land use planning and zoning are important tools to help to protect airport investments from incompatible land uses, protect airport approaches, and ensure land uses on and near airport property are compatible with normal airport operations while also meeting federal obligations relating to Grant Assurance 21.

This includes restricting uses that create or contribute to flight hazards such as tall structures or have features that block the line of sight from the control tower to the airfield, inhibit pilot visibility (e.g., glaring lights or smoke), interfere with navigational guidance systems, or attract birds. Likewise, the development of public facilities (e.g., schools, churches, concert halls) and residential areas should also be avoided near the airport due to noise and safety concerns. This includes airpark developments, which allow aircraft owners to reside and park their aircraft on the same property with immediate access to an airfield, because aircraft owners are entitled to the same protection from airport impacts as any other residents of the community.

A "through-the-fence" agreement is one in which the airport allows owners of property located adjacent to the airport to access the airfield. While the FAA does not support these types of agreements under any circumstances when they are associated with residential use (e.g., airpark developments), exceptions may be granted on a case-by-case basis for off-airport aeronautical businesses providing the sponsor makes sure the agreement does not violate any grant assurances.⁶

11.4.1 Improper and Noncompliant Land Uses

The most common improper and noncompliant land use is when property that has been designated for aeronautical use, or on property not released by the FAA for nonaeronautical use, is used or leased for nonaeronautical uses (i.e., not shown on the airport layout plan). This includes using hangars to store automobiles, using property and buildings for animal control facilities, non-airport vehicle and maintenance equipment storage, aircraft museums, and municipal administrative offices.

Failure to take adequate steps to prevent hazardous wildlife on airport property is another common area of noncompliance. This can stem from allowing incompatible land uses that are hazardous wildlife attractants such as wastewater ponds, municipal flood control channels and drainage basins, sanitary landfills, solid waste transfer stations, electrical power substations, water storage tanks, public parks, or golf courses. Additionally, towers or buildings that penetrate Part 77 surfaces or are located within a runway protection zone, runway obstacle free zone, or obstacle free zone are also incompatible land uses.⁷

11.5. Compliance at Baker City Municipal Airport

The following conditions at Baker City Municipal Airport should be closely monitored to ensure the airport is complying with required grant assurances.

11.5.1 Hangar Use Policy

According to the FAA's policy on the nonaeronautical use of airport hangars, an airport sponsor may permit nonaeronautical items to be stored in hangars provided the hangar is primarily used for aeronautical purposes, and the items do not interfere with the aeronautical use of the hangar. As with other aeronautical facilities at airports subject to federal grant assurances, the FAA must approve the nonaeronautical use of hangars, and airport sponsors must receive at least fair market value for any nonaeronautical uses of the airport. Aeronautical uses include storage of active aircraft, final assembly of aircraft under construction, noncommercial construction of amateur-built or kit-built aircraft, and storage of aircraft handling equipment as well as the maintenance, repair, or refurbishment of aircraft but not the indefinite storage of nonoperational aircraft. Additionally, sponsors should have a program to monitor use of hangars and take measures to prevent unapproved non-aeronautical use of hangars.

Airport sponsors may adopt more restrictive rules for use of hangars via airport rules and regulations, minimum standards, lease provisions, building codes, or local ordinances. The airport is in the process of updating its rules and regulations and minimum standards.⁸

11.6. Summary

According to FAA Order 5190.6B, the FAA's airport compliance program is contractually based and does not attempt to control or direct the operation of airports. Rather, the program is designed to monitor and enforce obligations agreed to by airport sponsors in exchange for valuable benefits and rights granted by the federal government in return for substantial direct grants of funds and for conveyances of federal property for airport purposes. The airport compliance program is designed to protect the public interest in civil aviation. Grants and property conveyances are made in exchange for binding commitments (i.e., grant assurances) designed to ensure the public interest in civil aviation will be served. The FAA bears the responsibility of seeing that these commitments are met. The FAA considers all federal airport obligations important. However, the most important objective in the FAA's oversight of the compliance program is to ensure and preserve safety at all federally obligated airports.

Endnotes

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- 8 U.S. Department of Transportation. Federal Aviation Administration. "Policy on the Non-Aeronautical Use of Airport Hangars." Federal Register Volume 81, No. 115. Pages 38906–38911. June 15, 2016. <https://www.govinfo.gov/content/pkg/FR-2016-06-15/pdf/2016-14133.pdf>.

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SUSTAINABILITY AND RECYCLING

12

| | |
|---|-------------|
| Sustainability | 12-1 |
| Defining Sustainability | 12-1 |
| Reasons for Sustainability | 12-2 |
| How Sustainability Relates to Baker City Municipal Airport | 12-2 |
| Legislative Background | 12-2 |
| Types of Waste and Landfill Regulations | 12-3 |
| Types of Airport Waste..... | 12-3 |
| Sources and Pathways of Airport Waste..... | 12-3 |
| Airport Recycling, Reuse, and Waste Reduction Plan | 12-4 |
| Scope..... | 12-4 |
| Recycling Feasibility | 12-4 |
| Plan to Minimize Solid Waste Generation at Baker City Airport | 12-5 |
| Airport Operations and Maintenance Requirements..... | 12-6 |
| Review of Waste Management Contracts..... | 12-6 |
| Potential for Cost Savings or Revenue Generation | 12-6 |
| Summary | 12-7 |

TABLES

Table 12.1: Effective Airport Recycling and Waste Minimization Programs 12-5

FIGURES

Figure 12.1: Waste Management Hierarchy..... 12-5

CHAPTER TWELVE

SUSTAINABILITY

The purpose of this section is to provide a general overview of sustainability and define the Airport Recycling, Reuse, and Waste Reduction Plan for Baker City Municipal Airport. This plan is intended to enhance airport recycling and waste minimization efforts and to comply with FAA requirements.

12.1. Sustainability

12.1.1. Defining Sustainability

The United Nations established the Brundtland Commission to address the growing concern about the deterioration of natural resources. In its 1987 report, the commission defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

The Airports Council International-North America (**ACI-NA**) took this approach one step further by stating that sustainability means taking “a holistic approach to managing an airport so as to ensure the integrity of the economic viability, operational efficiency, natural resource conservation, and social responsibility (**EONS**) of the airport.”



12.1.2. Reasons for Sustainability

Based on these definitions, airports should evaluate how programs and initiatives impact airport users, the surrounding community, and the natural environment and then identify how to best integrate sustainable practices as part of the airport master planning process.

This process will require each airport to consider its particular circumstances and its role in the community as it relates to sustainability in order to set the groundwork for future planning and implementation. Along with improving the community and the natural environment, sustainability makes good business sense. Airports that have adopted sustainable practices have reported tangible benefits that include:

- Greater use of assets.
- Reduced operating and maintenance costs.
- Improved work environment for employees.
- Reduced energy consumption, waste, and emissions.
- Improved water quality.
- Positive community relationships.

12.1.3. How Sustainability Relates to Baker City Municipal Airport

The City of Baker City does not have a formal recycling policy in place. However, the 2021 Baker City Comprehensive Plan does include a policy stating, “The City shall strive to maximize the recycling of solid waste generated by its operations and shall advocate voluntary recycling by the public.” The implementation plan for this policy calls for city employees to strive to implement solid waste recycling efforts within their respective departments.¹ Additionally, the Public Works Department uses Baker Sanitary Service to recycle household hazardous waste and B&K Auto Salvage + Metal Recycling to recycle scrap metal.

12.2. Legislative Background

The FAA Modernization and Reform Act of 2012 (FMRA) amended Title 49 of United States Code (USC) to include several changes to the Airport Improvement Program (AIP). The two changes related to recycling, reuse, and waste reduction at airports are as follows:

- FMRA Section 132(b) expanded the definition of airport planning to include “developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit.”
- FRMA Section 133 added a provision requiring airports that have a master plan, and receive Airport Improvement Program funding, to ensure that the master plan addresses solid waste recycling at the airport. This includes addressing the following issues:
 - The feasibility of solid waste recycling at the airport.
 - Minimizing the generation of solid waste at the airport.
 - Operation and maintenance requirements.
 - Review of waste management contracts.
 - The potential for cost savings or the generation of revenue.

12.2.1. Types of Waste and Landfill Regulations

Landfills and waste are regulated under the Resource Conservation and Recovery Act (RCRA) which defines two main types of waste: solid waste (Subtitle D) and hazardous waste (Subtitle C).²

Subtitle D landfills are typically permitted by state and local governments to allow for the management of nonhazardous solid waste such as garbage, refuse, and discarded materials resulting from household and community activities or industrial and commercial operations while Subtitle C landfills are specifically designed to handle hazardous waste.

12.3. Types of Airport Waste

In general, solid waste from airports can be divided into the following categories:

Municipal Solid Waste

Municipal solid waste (MSW) consists of everyday items that are used and then discarded. It includes product packaging, furniture, clothing, bottles, newspapers, and similar items.

Construction and Demolition Waste

Construction and demolition waste (C&D) is any non-hazardous materials generated by excavation, construction, demolition, renovation, or repair of structures, roads, and utilities. This kind of waste commonly includes salvaged building components (e.g., concrete, wood, metal, drywall). In some instances, construction and demolition waste may be subject to special requirements (e.g., materials containing asbestos).

Compostable Waste

Compostable waste includes both green waste and food waste. Green waste is also referred to as yard waste and generally consists of trees, shrubs, grass clippings, leaves, weeds, seeds, and similar debris generated by landscaping activities. Food waste is any food that is not consumed and includes food scraps discarded during meal preparation.

Deplaned Waste

Deplaned waste is trash removed from passenger aircraft and can include bottles, cans, newspapers, magazines, plastic cups and utensils, food waste, and paper towels.

12.3.1. Sources and Pathways of Airport Waste

Each activity has its own set of waste streams that must be considered when implementing a sustainability and recycling program. The following waste streams are typically associated with smaller commercial and general aviation airports like Baker City Municipal Airport.³

Aircraft

Maintenance of aircraft and ground support equipment produces a variety of waste products that can include grease, oil, universal waste (e.g., batteries), wastewater, plastics, and vehicle waste such as tires and fluids (e.g., brake, transmission, coolant).

Airfield

The airfield, which includes the runways, taxiways, and the infields, generally only produces a few types of waste products. They can include waste produced from aircraft operations, such as rubber from aircraft tires, and green waste from mowing as well as miscellaneous debris from sweeping and plowing.

Airport Construction

Construction activities have the potential to create a large amount of waste. The types of waste products produced typically include concrete, asphalt, building materials, wood, soil, construction equipment waste, miscellaneous debris, and regular trash.

Airport Offices and Pilot Lounges

The types of waste products generated can include paper, toner cartridges, universal waste (e.g., electronics), food, paper, plastics, aluminum cans, and general trash.

Cargo Facilities

Cargo being transported by air is typically loaded and offloaded at the air cargo facility and is often stored temporarily in the warehouse. Waste can include tires, fluids from equipment, universal waste, wooden pallets, plastics, and packing materials.

Terminals

As the heart of any airport complex, the terminal normally has the largest concentration of people, and this usually translates into the biggest concentration of waste. The terminal houses ticket counters, gates, and car rental counters as well as restaurants and restrooms that are frequented by both passengers and people employed at the airport. In addition, the terminal also houses office space and break areas for airline and airport personnel. The types of waste produced at a terminal are just as varied as the types of activities that take place there. Waste products can include food, paper, plastics, bottles and cans, restaurant grease and oil, universal wastes (e.g., batteries and fluorescent bulbs), green waste (e.g., landscaping), general trash, and deplaned waste.

12.4. Airport Recycling, Reuse, and Waste Reduction Plan

12.4.1. Scope

The content and scope of an airport recycling, reuse, and waste reduction plan varies depending on the unique conditions at each airport. For airports that already have recycling programs, certain tasks (such as a new waste audit) may not be needed.

Document scope is governed by the extent and accuracy of available information. This includes information on the airport's current recycling program, the types and amounts of airport waste, and factors that influence the scope of the program. Plans for small, low activity airports may also be less detailed. Though certain tasks may not need to be completed to prepare a plan, review and documentation of each of the five elements listed in the FMRA is required in airport master plans and master plan updates (including sustainability master plans) (see also 49 U.S.C. § 47106(a) (6)).

This plan only addresses municipal solid waste, construction and demolition materials, and other waste materials that can be legally disposed of in a Subtitle D landfill. It does not address hazardous waste or universal waste (e.g., batteries, fluorescent bulbs, pesticides) because these materials are often subject to federal, state, and local laws with specific disposal and recycling requirements.

In this plan, recycling refers to reducing the amount of solid waste disposed of in a landfill through sustainable practices that include source reduction, reusing materials, or converting waste into reusable material (e.g., mulching, or composting).

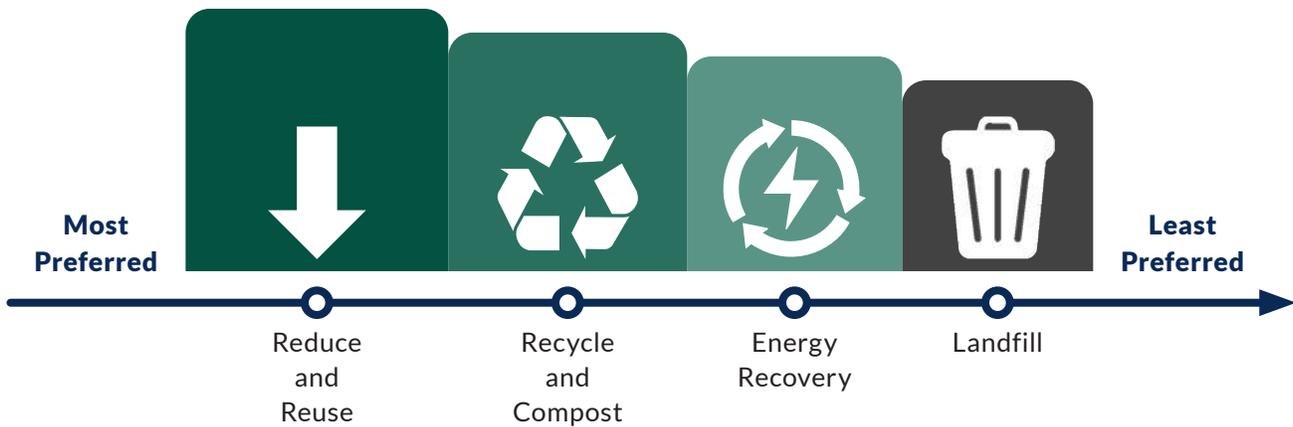
12.4.2. Recycling Feasibility

Baker City Municipal Airport currently does not generate enough recyclable materials to justify a standalone recycling program. Baker Sanitary Service in Baker City offers solid waste collection and recycling services within Baker County. The types of materials it accepts include aluminum cans and foil, tin and steel cans, cardboard, glass, magazines, newspapers, HDPE plastic, motor oil, batteries, and electronic waste. Solid waste is taken to a landfill south of the city.⁴

12.4.3. Plan to Minimize Solid Waste Generation at Baker City Airport

The U.S. Environmental Protection Agency (EPA) developed a non-hazardous materials and waste management hierarchy to recognize that no single waste management approach is suitable for managing all materials and waste streams in all circumstances. This hierarchy ranks the various management strategies from most to least environmentally preferred and places an emphasis on reducing, reusing, recycling, and composting as being vital for sustainable materials management (Figure 12.1). These strategies reduce greenhouse gas emissions that contribute to climate change.⁵

Figure 12.1: Waste Management Hierarchy



Source: Ardurra

While effective recycling and waste minimization is a problem faced by every airport, each airport has a unique set of conditions that must be considered as part of its individual recycling and waste minimization program. With this in mind, the FAA compiled a list of ten steps airports can take to design and implement an effective airport recycling and waste minimization program (Table 12.1).

Table 12.1: Effective Airport Recycling and Waste Minimization Programs

| Step | Description |
|------|-----------------------------------|
| 1 | Commitment from Management |
| 2 | Program Leadership |
| 3 | Waste Identification |
| 4 | Waste Collection and Hauler |
| 5 | Waste Management Plan Development |
| 6 | Education and Outreach |
| 7 | Monitor and Refine |
| 8 | Performance Monitoring |
| 9 | Promote Success |
| 10 | Continuous Improvement |

Source: FAA, *Recycling, Reuse and Waste Reduction at Airports: A Synthesis Document*.

Baker City Municipal Airport will explore the following steps to help minimize solid waste generation:

1. Establish a commitment from management to support a recycling and waste minimization program.
2. Include lease and contract language that supports recycling and waste minimization.
3. Provide containers and space for recycling.
4. Educate airport staff and users about the importance of recycling and waste minimization.

12.4.4. Airport Operations and Maintenance Requirements

The airport's operations and maintenance requirements were examined in relation to sustainability and how waste is handled at the airport.

Aircraft

The amount of aircraft waste usually correlates with the number of operations at the airport. The person responsible for aircraft and ground support equipment waste varies depending on the owner and who performs the maintenance. At BKE, the FBO is responsible for aircraft maintenance waste. Some waste associated with maintenance is considered hazardous waste and is handled accordingly.

Airfield

The infields are mowed weekly for wildlife hazard mitigation and the clippings are burned. Sweeping of airfield pavements occurs annually. Debris from sweeping is taken to a Public Works storage yard and then taken to the landfill by Baker Sanitary Service. When snow is plowed from airfield pavements, some dirt and grit are also removed as part of this process. The snow, along with any accompanying dirt and grit, is pushed, swept, or blown to the infield and other undeveloped areas of the airport and left to melt.

Airport Construction

This waste stream increases during warmer months when construction usually occurs. The contractor is contractually responsible for waste associated with airport construction. Contractors are encouraged to reuse materials when possible.

Airport Offices and Pilot Lounges

These waste streams usually consist of solid waste or compostables and are steady throughout the year.

12.4.5. Review of Waste Management Contracts

There are several trash bins located at BKE. Waste is collected from the bins and consolidated into a large bin where it is picked up weekly by Baker Sanitary Service and taken to the landfill.

12.4.6. Potential for Cost Savings or Revenue Generation

Currently, there is not enough recyclable material generated at the airport to produce any significant revenue generation or cost savings. There are two recycling bins at the airport for cans, which are picked up monthly by a local church. The proceeds from the recycled material are used by the church for their scholarship program.

12.5. Summary

Baker City Municipal Airport has opportunities to enhance airport sustainability, recycling, and waste minimization at the airport by establishing formal policies and procedures. One opportunity to enhance sustainability is to reuse construction and demolition materials as much as possible and use locally sourced materials for construction projects.

Any program established at the airport should include a commitment from management to support sustainability, recycling, education and outreach, setting performance targets, monitoring progress, and seeking continuous improvement. Benefits gained from establishing a recycling and waste minimization program include reduced operating costs, prolonged use of limited landfill space, reduced environmental liability, and improved public perception of the airport.

Endnotes

- 1 City of Baker City. "City of Baker City Comprehensive Plan." August 10, 2021. <https://www.bakercity.com/DocumentCenter/View/2498/2021-Baker-City-Comp-Plan-Amended-by-Ord-3382>.
- 2 U.S. Environmental Protection Agency. "Basic Information about Landfills." April 4, 2022. <https://www.epa.gov/landfills/basic-information-about-landfills#whattypes>.
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- 4 Baker Sanitary Service. "Baker Sanitary Service New Start Guide." <https://static1.squarespace.com/static/587e782229687f6a55a47fcd/t/62a8c6e665342e745522c6d8/1655228155527/New+Start+Brochure.pdf>.
- 5 U.S. Environmental Protection Agency. "Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy." July 5, 2022. <https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy>.

GLOSSARY OF TERMS



Common Terms, Abbreviations, Acronyms, and Initialisms 13-1

CHAPTER THIRTEEN

GLOSSARY

13.1. Common Terms, Abbreviations, Acronyms, and Initialisms

This glossary was compiled using a variety of sources such as the *Pilot/Controller Glossary*, the *Pilot's Handbook of Aeronautical Knowledge*, and several advisory circulars published by the FAA as well as relevant laws and regulations. It is intended to provide the public with a general understanding of these common aviation terms and is not meant to include the exact technical or legal definition.

A

AAC see aircraft approach category

AAGR average annual growth rate

AATF Airport and Airway Trust Fund

above ground level (AGL) The elevation of a point or surface above the underlying surface.

AC see advisory circular

access road Small airport roads typically used for maintenance, delivery, rescue, and aircraft service vehicles.

ACHP Advisory Council on Historic Preservation

ACIP see Airports Capital Improvement Plan

ACR see aircraft classification rating

ACS see American Community Survey

active aircraft An aircraft registered with the FAA that has been flown at least one hour during the year.

ADAP Airport Development Aid Program

ADG see airplane design group

ADO see airports district office

ADS-B see automatic dependent surveillance–broadcast

advisory circular (AC) Publications issued by the FAA to help explain regulations, best practices, or other information useful to the aviation community.

AEDT see Aviation Environmental Design Tool

AGL see above ground level

AIP see Airport Improvement Program

air taxi On-demand, unscheduled flights typically offered for sightseeing purposes or on a chartered basis as well as mail or cargo delivery. (see Part 135)

air traffic control (ATC) A service provided by ground-based personnel to help guide pilots and provide for the safe and orderly flow of aircraft in congested airspace.

aircraft Any device intended to be used for flight such as an airplane, drone, glider, or helicopter.

aircraft approach category (AAC) A method of grouping aircraft based on the speed they travel when configured for landing. (Typically 1.3 times the stall speed.) The AAC of the critical aircraft is often used to determine design standards. In general, aircraft with slower approach speeds require smaller facilities and those with faster approach speeds require larger facilities.

aircraft classification rating (ACR) A number that expresses the effect an aircraft has on a given configuration of pavement and the underlying components based on its weight and configuration (e.g., tire pressure and type of landing gear).

aircraft operation A landing, takeoff, or touch-and-go procedure conducted on a runway.

aircraft rescue and fire fighting (ARFF) A special category of fire fighting that involves incident response, hazard mitigation, evacuation, and rescue of passengers and crew of an aircraft involved in aviation accidents and incidents.

airfield The portion of an airport that contains the facilities necessary for aircraft operations such as runways and taxiways.

airline transport pilot (ATP) The type of certification required to fly chartered and commercial flights.

airplane design group (ADG) A method of classifying aircraft based on wingspan and tail height.

airport beacon A lighted navigation aid indicating the location of the airport. Also referred to as a rotating beacon.

airport elevation The highest point of an airport's usable runways. Typically measured in feet above mean sea level (MSL).

Airport Improvement Program (AIP) The program used by the FAA to provide grants for the planning and development of public-use airports included in the National Plan of Integrated Airport Systems (NPIAS).

airport layout plan (ALP) A scaled drawing or set of drawings of both current and planned airport facilities.

airport master plan A comprehensive study of an airport that usually describes the short-term, medium-term, and long-term development plans for meeting future aviation demand.

airport obstruction chart (AOC) A scaled drawing showing airport obstruction information, Federal Aviation Regulation (FAR) Part 77 surfaces, runways, taxiways, navigation facilities, buildings, roads, and other details in the vicinity of an airport. It provides data necessary for computing maximum takeoff and landing weights, establishing instrument approach and departure procedures, and planning airport facility improvements.

airport operations area (AOA) All areas of the airport located inside the airport security perimeter fence.

airport reference code (ARC) A designation that indicates the preferred design criteria based on the approach speed and wingspan or tail height of the critical design aircraft. It is essentially a combination of two components. The first component is the aircraft approach category (AAC) which is depicted by a letter. The second component is the airplane design group (ADG) which is depicted by a Roman numeral.

airport reference point (ARP) The approximate center of all usable runways at an airport.

airport sponsor The entity that is legally and financially responsible for the management and operation of an airport. An airport sponsor is typically a public agency such as a city or county.

airport traffic control tower (ATCT) The facility used by air traffic control personnel to provide air traffic control services to aircraft operating in the vicinity of the airport and to aircraft operating within the airport's movement area.

Airports Capital Improvement Plan (ACIP)

The primary planning tool used by the FAA for identifying and prioritizing critical airport development for the National Airspace System. It also serves as the basis for distributing grant funds under the Airport Improvement Program (AIP).

airports district office (ADO) The local office of the FAA that coordinates planning and construction projects.

airside Facilities and areas located at an airport that support aircraft activities (e.g., runways, hangars, NAVAIDS).

ALP see airport layout plan

ALS see approach light system

American Community Survey (ACS) An ongoing survey conducted by the U.S. Census Bureau that includes a variety of socioeconomic data.

annual service volume (ASV) The maximum number of annual operations an airport could reasonably accommodate with an acceptable level of delay.

AOA see airport operations area

AOC see airport obstruction chart

approach light system (ALS) A type of visual navigation aid that help pilots locate the runway as they transition from instrument flight to visual flight. The sophistication and configuration of the approach light system varies based on the type of runway and approach available.

approach surface An imaginary three dimensional surface, which is longitudinally centered on the extended runway centerline, that begins 200 feet from the approach-end of the runway and extends outward and upward. The slope and size vary based on the type of runway and approach available. (see Part 77)

apron An area at an airport intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance. Also referred to as a ramp.

ARC see airport reference code

area navigation (RNAV) A method of navigation that permits aircraft operations on any flight path within the coverage area of ground-based or space-based navigation aids or within the limits of self-contained navigation aids.

ARFF see aircraft rescue and fire fighting

ARP see airport reference point

ARPA American Rescue Plan Act

ASOS see automated surface/weather observing system

ASV see annual service volume

ATC see air traffic control

ATCT airport traffic control tower

ATP see airline transport pilot

automated surface/weather observing system (ASOS/AWOS) Weather reporting system that provides surface weather observations every minute via digitized voice broadcasts and printed reports.

automatic dependent surveillance-broadcast (ADS-B) Equipment on an aircraft that determines its position via satellite navigation or other sensors and periodically broadcasts it so can be tracked by air traffic control.

avgas see aviation gasoline

Aviation Environmental Design Tool (AEDT)

A software system used by the FAA to estimate aircraft fuel consumption, emissions, noise, and impacts to air quality.

aviation gasoline (avgas) The type of fuel used in small aircraft within the general aviation community. The two main types are avgas 100 and a low-lead version called avgas 100LL.

avigation easement An easement that permits the operation of aircraft in the airspace above a property and restricts the height of structures, trees, and other objects that could affect the safe movement of aircraft above the easement area.

AWOS see automated surface/weather observing system

B

based aircraft Operational and airworthy aircraft based at an airport for the majority of the year.

BGEPA Bald and Golden Eagle Protection Act

BLM U.S. Bureau of Land Management

BLS U.S. Bureau of Labor Statistics

BMP best management practices

building restriction line (BRL) A line on the airport layout plan identifying suitable building area locations at airports.

BVLOS beyond visual line of sight

C

C & D construction and demolition

CAA Clean Air Act

CAGR compound annual growth rate

capital improvement plan (CIP) A community planning and fiscal management tool used to coordinate the timing and financing of capital improvement projects for a multi-year period.

CARES Coronavirus Aid, Relief, and Economic Security Act

categorical exclusion (CATEX) Documents when a proposed action can be categorically excluded from a detailed environmental analysis because it meets certain criteria that a federal agency has previously determined as normally having no significant environmental impact. (see NEPA)

CEQ Council on Environmental Quality

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CFI certified flight instructor

CFR Code of Federal Regulations

CIP see capital improvement plan

cockpit to main gear distance (CMG) The distance from the pilot's eye to the main gear turn center.

commercial service airport Publicly owned airports with scheduled passenger service that have at least 2,500 passenger enplanements per calendar year.

common traffic advisory frequency (CTAF) The VHF radio frequency used for air-to-air communications at non-towered airports or at airports when the control tower is not operating.

commuter operations Typically shorter flights provided by small, boutique airlines offered on a limited schedule basis. Commuter airlines operate according to published flight schedules with at least five round trips per week.

compound annual growth rate (CAGR) The average rate of annual growth for a given period of time.

conical surface An imaginary three dimensional surface that encircles the horizontal surface and extends outward for 4,000 feet and upward at a slope of 20 to 1. (see Part 77)

controlled airspace The area in which some or all aircraft may be subject to air traffic control to promote safe and expeditious flow of air traffic.

CPI Consumer Price Index

critical design aircraft The most demanding type of aircraft (or group of aircraft with similar characteristics) that make regular use of the airport. Regular use is defined as 500 annual operations.

crosswind A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

crosswind component A wind component that is at a right angle to the longitudinal axis of the runway or the flight path of the aircraft.

crosswind runway An additional runway built parallel to the direction of the prevailing crosswinds to make it safer for small aircraft to land when strong crosswinds made landing on the primary runway difficult.

CRRSAA Coronavirus Response and Relief Supplemental Appropriation Act

CTAF see common traffic advisory frequency

CWA Clean Water Act

D

day-night average sound level (DNL)

The standard metric used to reflect a person's cumulative exposure to sound for an average 24-hour period based on an airport's annual aircraft operations. To account for a higher sensitivity to noise exposure at night, DNL calculations add a penalty of ten decibels for flights occurring between 10 p.m. and 7 a.m.

DBE disadvantaged business enterprise

decibel (dB) Sound is measured in units called decibels. The higher the decibel level, the louder the noise.

DEQ U.S. Department of Environmental Quality

distance measuring equipment (DME) An electronic navigation system that indicates the number of nautical miles between an aircraft and a ground station or waypoint.

DNL day-night equivalent sound level

DOT U.S. Department of Transportation

DW dual wheel type landing gear (see landing gear)

E

EAS see Essential Air Service

effective runway gradient The difference between the highest and lowest elevations of the runway centerline divided by the runway length.

environmental assessment (EA) Determines whether or not a federal action has the potential to cause significant environmental effects. (see NEPA)

environmental impact statement (EIS)

Determines if a major federal action will significantly affect the quality of the human environment. The regulatory requirements for an EIS are more detailed and rigorous than the requirements for an EA. (see NEPA)

EPA Environmental Protection Agency

ESA Endangered Species Act

Essential Air Service (EAS) A program overseen by the U.S. Department of Transportation (USDOT) that provides subsidies to airlines that serve small communities that otherwise would not receive scheduled air service.

F

FAA see Federal Aviation Administration

FAAP Federal-Aid Airport Program

FAR Federal Aviation Regulation

FBO see fixed base operator

FCT federal contract tower

Federal Aviation Administration (FAA) The branch of the U.S. Department of Transportation responsible for the development of airports and the National Airspace System.

FEMA Federal Emergency Management Agency

Finding of No Significant Impact (FONSI) A public decision document that briefly describes why the project will not have any significant environmental effect and will not require the preparation of an environmental impact statement. (see NEPA)

FIRM flood insurance rate map

fixed base operator (FBO) A business that operates at an airport and provides a wide range of services. These services are typically aimed at general aviation customers and can include aircraft fueling, parking, servicing, charter flights, aircraft rentals, maintenance, hangar rentals, flight instruction, pilot lounge, conference room facilities, car rental arrangements, and more.

fleet mix The types of aircraft that frequent an airport and that need to be considered when planning airport facilities.

flight plan Information relating to the intended flight of an aircraft that is filed electronically, orally, or in writing with air traffic control.

FONSI see Finding of No Significant Impact

FPPA Farmland Protection Policy Act

fuel flowage fee The fee charged by an airport for each gallon of fuel sold or dispensed on airport property to help recover the cost of operating and managing the airport.

FY fiscal year

G

GA see general aviation

GAMA General Aviation Manufacturers Association

GDP gross domestic product

general aviation (GA) The segment of aviation that encompasses all aspects of civil aviation except certified air carriers and other commercial operators such as airfreight carriers.

general aviation airport A public airport that has less than 2,500 passenger enplanements per calendar year. These airports typically support personal and business aircraft, medical flights, aerial fire fighting, law enforcement, disaster relief, provide access to remote communities, and more.

geographic information system (GIS) A computer system for developing maps connected to all types of data and are used to manage, analyze, and visualize that data in relation to its location. At airports, these types of smart maps are often used to help manage airport infrastructure such as runway pavements, signage, or utilities.

GHG greenhouse gas

GIS see geographic information system

glideslope (GS) Part of the instrument landing system that provides vertical guidance to aircraft by projecting a radio beam upward at an angle of approximately three degrees from the approach end of a runway.

global positioning system (GPS) A navigation system that uses satellites rather than ground-based transmitters to determine location information.

ground support equipment Vehicles and equipment used to service aircraft between flights. This can include services such as refueling, loading luggage and freight, transporting passengers, refreshing lavatories, and deicing.

GS see glideslope

GSE see ground support equipment

H

hangar A building used to store aircraft.

HIRL high-intensity runway lights (see runway edge lighting system)

horizontal surface An imaginary surface located 150 feet above the established airport elevation that encircles the primary surface. The size of the horizontal surface is based on the type of runway and approach available. (see Part 77)

I

IA-OFA inner-approach object free area (see object free area)

IAP see instrument approach procedure

IFR conditions When weather conditions have significantly reduced visibility making it unsafe to pilot an aircraft under flight visual flight rules.

IFR see instrument flight rules

IJA Infrastructure Investment and Jobs Act (Also known as the bipartisan infrastructure law or BIL.)

ILS see instrument landing system

IMC see instrument meteorological conditions

Information for Planning and Consultation (IPaC) A digital project planning tool that provides information to help determine whether a project will affect federally-listed species, habitat that has been designated as critical, or other sensitive resources managed by the U.S. Fish and Wildlife Service.

instrument approach procedure (IAP) A series of predetermined maneuvers pilots use to align their aircraft with the runway when flying under IFR in low visibility conditions.

instrument flight rules (IFR) Rules and regulations established by the Federal Aviation Administration to govern flight using electronic navigation during conditions in which flight by visual reference is not safe.

instrument landing system (ILS) An electronic system used by pilots when conducting a precision instrument approach procedure that provides both horizontal and vertical guidance to a specific runway. The system is often comprised of multiple components with guidance information provided by a localizer or glideslope, distance information provided by a marker beacon or distance measuring equipment, and visual information provided by approach lights, touchdown and centerline lights, or runway lights.

instrument meteorological conditions (IMC) Weather conditions that require pilots to fly under instrument flight rules rather than visual flight rules.

IPaC see Information for Planning and Consultation

itinerant operations Flights that originate or terminate at different airports.

IT-OFZ inner-transitional obstacle free zone (see obstacle free zone)

K

KIAS knots of indicated airspeed

knot A unit of speed equal to one nautical mile per hour.

L

landing gear Any part of an aircraft used for landing. Typical landing gear configurations include single wheel (SW), dual wheel (DW), triple wheel (TW), and quadruple wheel (QW) configurations which can also be repeated in tandem.

large aircraft Any aircraft with a maximum takeoff weight (MTOW) of more than 12,500 pounds.

lateral navigation (LNAV) Azimuth (i.e., directional) navigation without vertical navigation.

light sport aircraft (LSA) A small, lightweight aircraft that is relatively simple to fly with a maximum gross takeoff weight of 1,320 pounds and a maximum of two seats.

LIRL see low-intensity runway lights (see runway edge lighting system)

LNAV see lateral navigation

LOC see localizer

local operations Flights taking place within the local traffic pattern, the airport line of sight, the local practice area, or those that execute simulated instrument approaches or low passes at the airport.

localizer (LOC) A navigational aid that is one component of instrument landing systems. It transmits signals that aircraft interpret and display on the cockpit indicator to guide the pilot until the runway is in sight.

localizer performance with vertical guidance (LPV) A type of approach that takes advantage of the refined accuracy of wide area augmentation system (WAAS) lateral and vertical guidance.

LSA see light sport aircraft

M

main gear width The distance from outer edge to outer edge of the widest set of main gear tires.

MALSR medium-intensity approach lighting system with runway alignment indicator lights

markings Paint applied to runways, taxiways, holding positions, and other airport surfaces to help pilots and operators of ground support equipment while maneuvering within the movement area.

master plan see airport master plan

maximum takeoff weight (MTOW) The maximum weight for an aircraft at which the pilot is allowed to attempt to take off due to structural or other limits.

MBTA Migratory Bird Treaty Act

MDA see minimum descent altitude

mean sea level (MSL) The average height of the surface of the sea for all stages of tide.

MGW see main gear width

minimum descent altitude (MDA) The minimum altitude a pilot is authorized to descend to on a non-precision approach.

MIRL medium-intensity runway lights (see runway edge lighting system)

MITL medium-intensity taxiway lights

movement area The runways, taxiways, and other areas of an airport used by aircraft for taxiing, takeoff, and landing that are under the control of an air traffic control tower. It does not include non-movement areas such as those used for loading, refueling, parking, or maintenance.

MSA metropolitan statistical area

MSL see mean sea level

MSW municipal solid waste

MTOW see maximum takeoff weight

N

NAAQS national ambient air quality standards

National Airspace System (NAS) The common network of U.S. airspace. It consists of air navigation facilities, equipment and services, airports or landing areas; aeronautical charts and technical information; and rules, regulations, and procedures.

National Environmental Policy Act (NEPA)

Federal legislation requiring federal agencies to assess and document the environmental effects of their proposed actions prior to making decisions. Depending on the severity of the impact, these documents are referred to as a categorical exclusion, an environmental assessment, or an environmental impact statement.

National Plan of Integrated Airport Systems (NPIAS)

An inventory of all existing and proposed commercial service airports, reliever airports, and selected public-owned general aviation airports. In addition to discussing the roles these airports currently serve, the NPIAS is used by the FAA in administering the Airport Improvement Program (AIP). It is updated by the FAA every two years.

nautical mile (NM) The most common measurement used for distance in aviation. A nautical mile is slightly longer than a land-measured mile (i.e., statute mile) and is equal to approximately 1.151 statute miles or 6,076 feet.

nautical mile per hour The most common measurement for aircraft speed. One knot is approximately 1.151 miles per hour.

NAVAID see navigation aid

navigable airspace The airspace at or above minimum altitudes of flight that includes the airspace needed to ensure safety in the takeoff and landing of aircraft.

navigational aid (NAVAID) Any facility used for the purpose of guiding or controlling flight such as lighting systems; signaling, radio direction-finding, or other electronic communication devices; or any other facility with a similar purpose.

NEPA see National Environmental Policy Act

NHPA National Historic Preservation Act

NOAA National Oceanic and Atmospheric Administration

noise contour A map showing how noise exposure can vary over extended areas. They are useful for identifying areas exposed to significant aircraft noise surrounding an airport.

nonprecision approach A standard instrument approach procedure in which only horizontal guidance is provided.

notice to air missions (NOTAM) A notice containing information essential to pilots or other personnel concerned with flight operations that is not known far enough in advance to be publicized by other means.

NPDES National Pollutant Discharge Elimination System

NPIAS see National Plan of Integrated Airport Systems

NPS National Park Service

NRCS Natural Resources Conservation Service

NRHP National Register of Historic Places

NTSB National Transportation Safety Board

NWI national wetlands inventory

NWS National Weather Service

O

O & M operations and maintenance

OAP Oregon Aviation Plan

object free area (OFA) An area centered on a runway, taxiway, or taxilane centerline that is free of objects except those required for air navigation or aircraft ground maneuvering purposes.

obstacle free zone (OFZ) The airspace below 150 feet located along the runway and extended runway centerline that is required to be clear of all objects except those required for air navigation or aircraft ground maneuvering purposes.

obstruction An object that penetrates any imaginary surface described in Federal Aviation Regulation Part 77. Obstructions are presumed to be hazards to air navigation until an FAA study has determined otherwise. (see Part 77)

ODA Oregon Department of Aviation

OFA see object free area

OFZ see obstacle free zone

OPBA operations per based aircraft

operation see aircraft operation

Operations Network (OPSNET) The official FAA source for air traffic operations and delay data.

ORS Oregon Revised Statutes

P

PAPI see precision approach path indicator

parallel taxiway A taxiway that runs parallel to a runway.

Part 135 The FAA grants the authority to operate on-demand, unscheduled air service in the form of Part 135 certificates. Air carriers authorized to operate with a 135 certificate provide a critical service to passengers and often provide a lifeline to remote populations. Part 135 is the term most people use when referring to Title 14 of the Code of Federal Regulations (CFR), Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft*.

Part 139 Airports that meet certain requirements must have an airport operating certificate issued by the FAA. It is commonly associated with commercial service airports. Part 139 is the term most people use when referring to Title 14 of the Code of Federal Regulations (CFR), Part 139, *Certification of Airports*.

Part 77 Establishes standards and requirements for objects affecting navigable airspace. Objects are considered to be obstructions when they exceed certain heights or penetrate the imaginary surfaces described within Part 77 including the approach surface, conical surface, horizontal surface, primary surface, and the transitional surface. Part 77 is the term most people use when referring to Title 14 of the Code of Federal Regulations (CFR), Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*.

pavement classification rating (PCR) A number that expresses the carrying capacity of a pavement for unrestricted operations.

PCI pavement condition index

PCR pavement classification rating

peak hour The busiest hour in a day. It is also known as the design hour because this information is used to determine if airport facilities are capable of accommodate existing and forecasted demand.

PMP pavement management program

POFZ precision obstacle free zone (see obstacle free zone)

precision approach A standard instrument approach procedure in which both vertical and horizontal guidance is provided.

precision approach path indicator (PAPI) A row of lights normally installed on the left side of a runway that provides visual guidance during an approach to the runway. A pilot on the correct glideslope path will see two white and two red lights.

primary surface An imaginary surface longitudinally centered on a runway. The specific dimensions of the primary surface is dependent on the type of runway. (see Part 77)

R

ramp see apron

RCRA Resource Conservation Recovery Act

RDC see runway design code

regional jet A commercial jet that typically carries fewer than 100 passengers.

REIL see runway end identifier lights

RNAV see area navigation

ROFA runway object free area (see object free area)

ROFZ runway obstacle free zone (see obstacle free zone)

rotating beacon see airport beacon

RPZ see runway protection zone

RSA see runway safety area

runway (RW) A defined rectangular area at an airport designated for landing and takeoff.

runway design code (RDC) The design standards that apply to a particular runway based on the type of aircraft that will be using the runway.

runway direction number A number indicating the orientation of the runway centerline when measured clockwise from magnetic north.

runway edge lighting system A visual navigation aid used to outline the edges of a runway during periods of darkness or reduced visibility. These systems are classified according to the intensity or brightness they are capable of producing which include high-intensity runway lights (HIRL), medium-intensity runway lights (MIRL), and the low-intensity runway lights (LIRL). HIRL and MIRL systems typically have variable intensity controls while LIRL systems normally have only one intensity setting.

runway end identifier lights (REIL) A pair of synchronized flashing lights located on each side of the runway threshold to aid pilots in identifying the approach end of a runway.

runway incursion Any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the runway.

runway orientation The magnetic bearing of the runway centerline.

runway protection zone (RPZ) A trapezoidal area located at the end of a runway that is centered on the extended runway centerline. It should be kept clear of incompatible uses and activities to enhance the protection of people and property. The dimensions of the RPZ varies based on the type of runway and approach available.

runway safety area (RSA) A defined surface surrounding the runway that is typically 500 feet wide and extending 1,000 feet beyond each runway end that should be kept cleared, graded, free of potential hazards or objects except those required to be located within the RSA.

runway threshold The designated beginning of a runway. The term threshold always refers to landing rather than takeoff.

RVR runway visual range

RW see runway

S

segmented circle A system of markers used by pilots to identify the aerial traffic pattern when flying under visual flight rules (VFR).

SHPO state historical preservation office

SIDA security identification display area

small aircraft Any aircraft with a maximum takeoff weight (MTOW) of 12,500 pounds or less.

socioeconomic Information relating to the interaction of social and economic factors.

SRE snow removal equipment

statute mile The formal or legal name given to the land-measured mile to distinguish it from a nautical mile. A statute mile is equal to 5,280 feet.

SW single wheel type landing gear (see landing gear)

T

2D two dual wheels in tandem type landing gear (see landing gear)

T-hangar An aircraft hangar in which aircraft are parked tail to tail in the T-shaped space left by the other aircraft.

TAC technical advisory committee

TAF see terminal area forecast

taxilane Areas intended for low speed and precise movement of aircraft that allow aircraft to safely access taxiways and taxiway connectors from non-movement areas.

taxiway design group (TDG) A method of classifying aircraft based on the dimensions of the main gear width (MGW) and cockpit to main gear distance (CMG).

taxiway edge safety margin (TESM) The distance between the outer edge of an airplane's landing gear and the edge of the taxiway pavement when its nose gear is on the taxiway centerline.

taxiway / taxilane safety area (TSA) A defined surface located alongside the taxiway prepared and suitable for reducing the risk of damage to an aircraft unintentionally departing the taxiway.

taxiway / taxiway connector Defined paths that allow aircraft to safely and efficiently get to and from the runway without interfering with takeoffs or landings.

TDG see taxiway design group

Terminal Area Forecast (TAF) The official FAA forecast of aviation activity for all U.S. airports included in the National Plan of Integrated Airport Systems (NPIAS).

TESM see taxiway edge safety margin

TFMSC see Traffic Flow Management System Counts

THPO tribal historical preservation office

threshold lights A series of lights located at a runway threshold that emit green light outward from the runway and emit red light toward the runway to mark the ends of the runway.

tiedowns Aircraft parking positions with fixed anchor points for securing aircraft.

TODA takeoff distance available

TOFA taxiway / taxilane object free area (see object free area)

TORA takeoff run available

touch-and-go A maneuver in which a pilot lands the aircraft and then departs without coming to a complete stop or exiting the runway. These are typically performed to build piloting skills and expertise.

touchdown The point at which an aircraft first makes contact with the landing surface.

touchdown zone The first 3,000 feet of a runway intended to be where a landing aircraft first makes contact with the landing surface.

Traffic Flow Management System Counts (TFMSC) An FAA database that provides information on traffic counts for flights operated under instrument flight rules (IFR) and flights detected by the National Airspace System.

transient operations Flights performed by aircraft not based at the airport.

transitional surface An imaginary surface that extends outward and upward from the primary and approach surfaces at right angles to each of the runway centerlines at a slope of seven feet horizontally for each foot vertically. The transitional surface ends where it meets the horizontal surface at an elevation of 883 feet. (see Part 77)

Transportation Security Administration (TSA) The federal agency that regulates aviation security and operates airport screening checkpoints.

TSA see taxiway / taxilane safety area

TW see taxiway / taxiway connector

U

USACE U.S. Army Corps of Engineers

USC United States Code

USDA U.S. Department of Agriculture

USFS U.S. Forest Service

USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

utility runway A runway that is intended to be used by aircraft with a maximum gross weight of 12,500 pounds or less.

V

VASI see visual approach slope indicator

very high frequency omnidirectional range (VOR) A ground-based NAVAID aligned with magnetic north that transmits azimuth information for high and low altitude routes and airport approaches.

very high frequency omnidirectional range/tactical air navigation (VORTAC) A navigation aid consisting of both a very high frequency omnidirectional range (VOR) and tactical air navigation (TACAN) that transmits both azimuth and distance information to aircraft.

VFR see visual flight rules

VHF very high frequency

visual approach An air traffic control authorization for an aircraft on an IFR flight plan to proceed to the airport and make an approach using visual references rather than an instrument approach.

visual approach slope indicator (VASI) A type of approach light system normally installed on the left side of a runway that provides visual guidance during an approach to the runway. A pilot on the correct glideslope path will see a set of red lights over a set of white lights.

visual flight rules (VFR) Rules and regulations established by the Federal Aviation Administration to govern flight using visual reference.

visual meteorological conditions (VMC)

Weather conditions expressed in terms of visibility, distance from clouds, and ceiling equal to or better than specified minimum during which flight under visual flight rules (VFR) is permitted.

VMC see visual meteorological conditions

VNAV vertical navigation

VOR see very high frequency omnidirectional range

VOR-DME When the very high frequency omnidirectional range (VOR) is located alongside distance measuring equipment (DME), it is referred to as a VOR-DME. Together, they transmit both azimuth and distance information to aircraft.

VORTAC see very high frequency omnidirectional range/tactical air navigation

W

wide area augmentation system (WAAS) An extremely accurate navigation system developed for civil aviation.

wind cone or windsock A fabric cone tube resembling a giant sock that is used as a basic indicator of wind direction and strength.

wind rose A diagram showing wind direction, strength, and frequency for a particular location.

Endnotes

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- 2 U.S. Department of Transportation. Federal Aviation Administration. Airman Testing Standards Branch. "FAA-H-8083-25B, Pilot's Handbook of Aeronautical Knowledge, Glossary." Oklahoma City, Oklahoma. 2016. https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak.
- 3 U.S. Department of Transportation. Federal Aviation Administration. "Advisory Circular No: 150/5300-13B, Airport Design." March 22, 2022. https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5300-13B-Airport-Design.pdf.
- 4 U.S. Department of Transportation. Federal Aviation Administration. "FAA Aerospace Forecast Fiscal Years 2021-2041." Accessed April 28, 2022. https://www.faa.gov/sites/faa.gov/files/data_research/aviation/aerospace_forecasts/FY2021-41_FAA_Aerospace_Forecast.pdf.
- 5 U.S. Department of Transportation. Federal Aviation Administration. "Pilot/Controller Glossary." May 19, 2022. https://www.faa.gov/air_traffic/publications/media/pgc_basic_with_chg_1_2_dtd_5-19-22.pdf.
- 6 U.S. Environmental Protection Agency. "National Environmental Policy Act Review Process." October 25, 2021. <https://www.epa.gov/nepa/national-environmental-policy-act-review-process>.

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APPENDIX A

Community Engagement Summary

Baker City Municipal Airport
2024 Airport Master Plan

June 2024





CONTENTS

Community Engagement Summary

01 Public Information Meetings

02 Technical Advisory Committee Meetings

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APPENDIX A

COMMUNITY ENGAGEMENT

Community involvement and coordination is a critical component of the airport master planning process. Airport staff and the project team used several methods to engage the public and held several public meetings where members of the community were encouraged to share their ideas and provide feedback on key elements of the airport master plan.

Public Information Meetings

Airport staff and the project team hosted several public information meetings at key milestones in the planning process to share relevant and timely information with the public and invite feedback. These meetings were advertised in the local newspaper, on social media, and the city and project websites. Mailings and press releases were also sent out to increase awareness and participation. Meeting attendees were asked to sign in and provided with informational handouts and comment forms. All attendees were also made aware of future opportunities to be involved in the planning process. Members of the public could also view plan documents and submit comments via the project website.

Technical Advisory Committee

The airport staff and project team relied heavily on members of the technical advisory committee (TAC) to help guide development of the plan. This committee is comprised of members who have a deep understanding of the airport, its role in the community, and its opportunities in the future. Committee members included city representatives, airport tenants, and local residents who interact with the airport for work or pleasure on a regular basis. The technical advisory committee provided the aviation planning team with valuable feedback and insight into the needs of the local aviation community and kept the team informed of local issues throughout the planning process.

01 Public Information Meetings

01.1. Public Meeting #1

a. Meeting Time and Location

Date: September 29, 2022

Time: 5 p.m.

Place: Baker City City Hall
1655 First Street, Baker City, Oregon 97814

b. Meeting Handout

**Baker City Municipal Airport
Airport Master Plan**



Baker City Municipal Airport (BKE) is owned and operated by the city and serves the general aviation needs of Baker City and the surrounding community.

DID YOU KNOW?

- The majority of the airport's capital improvements are funded through state and federal grants.
- According to the 2018 Oregon Aviation Plan, nearly \$1 million in annual sales is attributed to Baker City Municipal Airport visitors.

What is an Airport Master Plan?
An airport master plan is the process of establishing an airport's blueprint for long-term development. It is a comprehensive study of the airport to determine an effective plan for future airport development. It ensures that the airport will continue to meet the needs of its customers in the future and that development is consistent with local, state, and national goals. This includes identifying potential environmental and socioeconomic impacts of future airport projects. An airport master plan is an important step in helping the airport become more efficient as well as financially and socially responsible.

Why Does the Airport Need One?
The last airport master plan was completed for Baker City Municipal Airport in 2010. An airport master plan is typically updated every five to ten years. This helps the airport respond to updated design requirements, changes in the economy, and industry changes.

Who Determines This Process?
The elements of an airport master plan are outlined by the Federal Aviation Administration (FAA), but the process is tailored to meet the needs of the airport and the community. An airport's size, as well as the number and type of aircraft using the airport, will determine the complexity and level of detail required.

What is the Purpose of This Plan?
The purpose of the Baker City Municipal Airport master plan is to develop a long-term plan for the airport that meets the following goals:

- Identifies the condition and capacity of existing airport infrastructure.
- Identifies existing airport issues, opportunities, and constraints.
- Determines if improvements are needed to meet current safety standards or future aviation activity.
- Ensures the airport is able to continue to safely and efficiently meet the needs of its customers.
- Allows the community to provide input on the development of the plan.
- Develops a financially responsible plan for airport development.
- Determines the potential environmental and socioeconomic impact of airport development.
- Establishes a realistic schedule for project implementation.
- Identifies potential funding sources.
- Keeps the community informed.

The Airport Master Plan Process
The FAA provides airports with guidance in the preparation of airport master plans. According to FAA Advisory Circular (AC) 150/5070-6B, Airport Master Plans, each master plan should include the following steps:

- Research the history of the airport.
- Inventory the existing conditions.
- Develop a forecast of future aviation activity.
- Assess the airport's ability to accommodate the forecasted activity.
- Identify potential improvements or new facilities needed so the airport can accommodate forecasted activity safely and efficiently.
- Evaluate each option to determine the most environmentally, socially, and financially responsible plan.
- Prepare a financial plan for the airport that describes how the airport will finance each project.
- Prepare an implementation plan that includes a preliminary schedule and estimated project costs.
- Prepare a set of drawings called an airport layout plan (ALP) that illustrates the airport's long-term development plan.

Project Sponsor and Plan Oversight
As the owner of the airport, the City of Baker City is the airport sponsor. The airport master plan will be directed by the city, the airport director, and the airport commission.

Project Funding
The FAA provides airports with financial assistance in developing an airport master plan. Ninety percent (90%) of the funding is provided by the FAA. While the FAA does provide the majority of the funding to complete the study, it does not direct the process.

Who Approves a Master Plan?
The airport sponsor approves the airport master plan. FAA approval is required for the forecast and the airport layout plan (ALP) because the agency uses these elements to help determine the airport's eligibility for grant funding of proposed development.

Plan Guidance
The technical advisory committee (TAC) will help guide the development of the plan. The TAC is comprised of local residents, airport tenants, and stakeholders as well as representatives from the city. The TAC provides the aviation planning team with valuable feedback and insight into the needs of the local aviation community and keeps the team informed of local issues.

Community Outreach
Public meetings are an important component in the development of this plan. These meetings provide airport planners with the opportunity to learn about your concerns and questions about the future of the airport. They also provide the community with access to the planning team, airport management, and city officials.

The planning team will hold several meetings where they will update the community as they reach major milestones in the development of the airport master plan. **The whole community is invited to attend these public meetings. We encourage you to share your thoughts and ideas and help shape the future of Baker City Municipal Airport.**

Plan Information and Updates
Project information and updates will also be posted online throughout the airport master plan process. This includes a project schedule, meeting announcements, and copies of plan documents, as well as a comment page where you can submit your questions, concerns, and comments.

Please visit us online:
<https://www.to-engineers.com/projects/1946/details/baker-city-airport-master-plan>

Or please contact:
Michelle Owen, Public Works Director
pawdirector@bakercitygov
(503) 524-2031
Kevin Bissell, Project Manager
kbissell@to-engineers.com
(208) 453-1900
Wayne Reiter, Aviation Planner
WRreiter@to-engineers.com
(208) 762-3644

**Baker City Municipal Airport
2022 Airport Master Plan**

c. Presentation

**BAKER CITY MUNICIPAL AIRPORT
Airport Master Plan
Kickoff Meeting
September 29, 2022**

**Welcome!
Please Sign In**

Michelle Owen, Public Works Director
Kevin Bissell, T-O Engineers
Rick Patton, T-O Engineers
Wayne Reiter, T-O Engineers

Agenda

- Master Plan Overview
- Funding Airport Capital Projects
- Roles and Responsibilities
- Public Involvement
- Key Issues
- Next Steps
- Comments and Questions

Master Plan Overview

- 20-year plan to meet aviation demand at an airport
- Based on FAA guidance from Advisory Circular 150-5070-6B, Airport Master Plans
- Normally a 2-year process
- \$442,737 FAA grant
- \$32,000 ODOT grant
- \$17,193 in local funds
- \$491,930 total project

Master Plan Elements

- Public Involvement
- Existing Conditions/Inventory/Environmental Overview
- Aviation Forecast and Critical Aircraft Determination*
- Facility Requirements
- Alternatives Development
- Implementation Plan/Financial Feasibility
- Airport Layout Plan (ALP)*
- Airport Geographic Information System (AGIS)

Funding Airport Projects

- Airport Improvement Program (AIP) provides most of the funding for eligible airport projects. Normally 90%
- AIP funds come from a trust fund called the Airport and Airway Trust Fund (AATF)
- AATF supported by passenger ticket, fuel, cargo taxes. Not general fund \$
- COVID relief funding comes from general fund \$
- Since 2005, BKE has received \$5.2 million in AIP and \$75k in COVID relief funds

Roles and Responsibilities

- City – Sponsor, funding agency, organizes the community, adopts the Master Plan
- FAA – Funding agency, regulator, technical guidance, approval of forecast and ALP
- State – Funding agency, updates the state aviation system plan
- Consultant – Conducts research, produces technical documents, facilitates meetings
- Community – Shares ideas and offers recommendations

Public Involvement

- Five meetings are planned, including this kickoff
- Technical Advisory Committee (TAC) – special knowledge and expertise related to BKE
- Project website – <https://www.to-engineers.com/projects/1946/details/baker-city-airport-master-plan>
- We encourage information sharing and collaboration among all stakeholders

Key Issues

- Previous master plan is from 2010 – standards have changed
- Runway justification – length and number, displaced threshold, how to fund continuing maintenance
- Environmental reviews
- Hangar development and additional FBO space
- Grass landing area
- Water and sewer service

Next Steps

- Complete the existing conditions
- Complete and submit the forecast
- Receive FAA approval of the forecast
- Hold another public meeting

Comments and Questions

- Please fill out a comment sheet – what are your concerns and desires of this master plan?
- You may email comments to
- Wayne Reiter, T-O Engineers, wreiter@to-engineers.com
- Michelle Owen, Public Works Director, pawdirector@bakercitygov

d. News Release**NEWS RELEASE**

For Immediate Release: September 20, 2022

Information Contact: Michelle Owen, Public Works Director, (541) 524-2031

Baker City Municipal Airport Kicks Off Master Plan Process

Baker City, Oregon – Baker City Municipal Airport announced the launch of its 2022 Airport Master Plan which will help guide the next 20 years of growth at the airport. The community is encouraged to attend the kick-off meeting which will take place Thursday, Sept. 29 at 5 p.m. The meeting will be held at City Hall, 1655 First Street.

The planning process, which is expected to take two years to complete, will examine the airport's role within the community, airport assets and facilities, aviation activity forecasts, and future development as well as options for ongoing public engagement on airport matters.

"Baker City Municipal Airport has been an important community resource for nearly 80 years," said Greg Sackos, airport commissioner. "We look forward learning how we can continue to meet the needs of our community for the next 20 years."

The Federal Aviation Administration (FAA) requires airports to develop a 20-year airport master plan to ensure thoughtful and strategic planning of future facilities and airport infrastructure. The airport master plan will help guide the airport's future with the goal of ensuring the airport continues to operate in a safe, efficient, and effective manner while also reflecting our community values.

Updates and additional information will be made available at the online project portal: <https://www.to-engineersprojectinfo.com/jobs/1946/details/baker-city-airport-master-plan>.

---end---

e. Social Media Post

YOU'RE INVITED

Baker City Municipal Airport (BKE) is holding a public meeting to kick off its 2022 Airport Master Plan. The purpose of this meeting is to educate, inform, and seek out public comment on the planning process. Come learn how you can help shape the future of our airport.

**THURSDAY, SEPT. 29 • 5 P.M.
CITY HALL, 1655 1ST STREET**

- THE FAA REQUIRES MASTER PLANS BE COMPLETED REGULARLY.
- IT'S BEEN 12 YEARS SINCE THE LAST MASTER PLAN WAS COMPLETED.

DID YOU KNOW?

f. News Coverage

ELKHORN MEDIA GROUP

HOME COLUMBIA BASIN NORTHEAST OREGON EAST/SE OREGON VIDEOS **PLANNING**

Baker City Municipal Airport Kicks Off Master Plan Process

By [Lorelei Christensen](#) on Thursday, September 22nd, 2022 in [Baker City News](#) [Northwestern Oregon](#) [Local Stories](#)

BAKER CITY - (Release from Baker City Public Works) Baker City Municipal Airport announced the launch of its 2022 Airport Master Plan which will help guide the next 20 years of growth at the airport. The community is encouraged to attend the kick-off meeting, which will take place Thursday, Sept. 29, at 5 p.m. The meeting will be held at City Hall, 1655 1st Street.

The planning process, which is expected to take two years to complete, will examine the airport's role within the community, airport assets and facilities, aviation activity forecasts, and future development as well as options for ongoing public engagement on airport matters.

"Baker City Municipal Airport has been an important community resource for nearly 80 years," said Greg Sackos, airport commissioner. "We look forward learning how we can continue to meet the needs of our community for the next 20 years."

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<http://www.to-engineersprojectinfo.com/jobs/1946/details/baker-city-airport-master-plan>

Baker City Herald
Monday, June 13, 2022

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Local Briefing

Sep 21, 2022 Updated Sep 21, 2022

Meeting set Sept. 29 to kick off Baker City Airport master plan update process

Baker City officials are preparing to update the master plan for the city-owned airport, which will guide the next 20 years of operations at the airport, about 3 miles north of town on the east side of Interstate 84.

The city has scheduled a public meeting for Thursday, Sept. 29 at 5 p.m. at City Hall, 1655 First St.

The planning process, which will take about two years, will examine the airport's role in the community, its assets and facilities, aviation activity forecasts, and future potential developments.

"Baker City Municipal Airport has been an important community resource for nearly 80 years," said Greg Sackos, a member of the city's airport commission. "We look forward to learning how we can continue to meet the needs of our community for the next 20 years."

The Federal Aviation Administration requires airports to write 20-year master plans. Updates and more information will be available online at www.to-engineersprojectinfo.com/jobs/1946/details/baker-city-airport-master-plan.

g. Sign-in Sheet

Baker City Municipal Airport - Airport Master Plan
 Meeting 1 - Kickoff
 September 29, 2022
 5:00 PM



T-O ENGINEERS

| Name | Company/Representing | Address | Contact Number(s) | Email Address |
|------------------------|----------------------------------|---------|-------------------|---------------|
| Michelle Owen | Public Works | | | |
| Tom & Kylee Price | private owner | | | |
| Steve & Debbie Pidd | Private Owner | | | |
| Charlie Tracy | private owner | | | |
| GREG SACKS | Airport Commission Chair | | | |
| Troy Woychik | Airport comm Baker Airport | | | |
| Shane Alderson | Baker city | | | |
| MATTHEW KOPPELHAFER | Community Member | | | |

01.2. Public Meeting #2

a. Meeting Time and Location

Date: June 7, 2023

Time: 4:30–6:30 p.m.

Place: Baker City City Hall
1655 First Street, Baker City, Oregon 97814

b. Meeting Handout



**Baker City Municipal Airport
Airport Master Plan
June 7, 2023
4:30 - 6:30 pm**

Meeting Topics

1. Master Plan Overview
2. Existing Conditions
3. Forecast
4. Facility Requirements
5. Next Steps

Contact Information:

| | |
|---|---|
| Joyce Bornstedt Public Works Director pwtechadmin@bakercity.gov 541-524-2046 | Wayne Reiter Aviation Planner wreiter@ardurra.com 208-762-3644 |
| Kevin Bissell, P.E. Project Manager kbissell@ardurra.com 208-433-1900 | Rick Patton Aviation Planner rpattson@ardurra.com 208-433-1900 |
| Jessica Krueger Aviation Planner jkrueger@ardurra.com 208-433-1900 | |

Airport Master Plan Overview and Project Update

An airport master plan is a 20-year plan to safely and efficiently meet aviation demand at an airport.

- Project start: August 2022
- Kickoff Meeting: September 2022
- Project Duration: 2 years
- Current Status: 50% of technical portion complete
- Current Chapters Completed: Introduction, Existing Conditions (Socioeconomic Overview, Background, and Inventory), Forecast of Aviation Demand, Facility Requirements, Recycling Plan, and Survey
- Next Steps: Development of alternatives to meet the facility requirements and a public workshop
- Project Website: <https://www.ardurraprojectinfo.com/jobs/1946/details/baker-city-airport-master-plan>

Forecast Summary and Critical Aircraft

Total operations are forecast to increase at an annual growth rate of 1.08%.

Based aircraft are forecast to increase at an annual growth rate of 2.1%.

The future critical aircraft is the Beechcraft King Air 260



| | Base Year | Forecast Years | | |
|-------------------------|---------------|----------------|---------------|---------------|
| | 2021 | 2026 | 2031 | 2041 |
| Air Taxi | 3,600 | 3,784 | 3,977 | 4,393 |
| Itinerant GA | 10,057 | 10,647 | 11,271 | 12,631 |
| Local GA | 3,143 | 3,303 | 3,472 | 3,835 |
| GA Operations | 16,800 | 17,734 | 18,719 | 20,859 |
| Itinerant Military | 100 | 100 | 100 | 100 |
| Local Military | 0 | 0 | 0 | 0 |
| Military Operations | 100 | 100 | 100 | 100 |
| Total Operations | 16,900 | 17,834 | 18,819 | 20,959 |
| Based Aircraft | 43 | 48 | 53 | 65 |

Facility Requirements Summary

Airfield - Runways and Taxiways

- Runway 13/31 meets 95% wind coverage for all weather conditions.
- Runways 8/26 and 17/35 are not justified for FAA funding based on wind coverage and capacity.
- Runway 8/26 pavement is in serious condition and requires immediate reconstruction.
- Runways 8, 17, and 26 turnarounds do not meet current design standards.
- Runway 8/26 markings are faded.
- Declared distances should be used to provide adequate safety clearance for aircraft taking off and landing.
- Taxiway shoulder widths do not meet standard and need to be expanded.
- Taxiways B and A-2 provide direct access to a runway, which increases risk of runway incursions.
- Taxiway B at Runways 8/26 and 17/35 allows more than 3 directions to pilots, which creates confusion.
- The signage on Taxiway B at Runways 8/26 and 17/35 is confusing.
- The hold position marking on Taxiway A at Runway 8/26 is confusing.
- Taxiway A-3 at Runway 13 is not at a right angle to the runway.
- Taxiway B pavement needs to be rehabilitated.

Landside - Terminal Area and Hangars

- Hangar Area A apron needs complete reconstruction.
- Fencing needs to be added to reduce inadvertent entry to the airfield by people and wildlife.
- 16 hangars are required by 2041.
- Water and sewer service needs to be expanded at the airport.

Recommendations

- Approach and departure corridors should be protected.
- Electrical service capacity should be evaluated to accommodate future development.
- City and county land use policies should be updated following the airport master plan.
- Incompatible land uses and wildlife attractants (such as fresh water ponds) should be avoided or eliminated.
- The City's strategic vision should be updated following the airport master plan.
- Accessibility enhancements should be incorporated into future development.
- Consideration should be given to the creation of management and compliance documents for the airport.



c. Presentation

BAKER CITY MUNICIPAL AIRPORT
 Airport Master Plan
 Public Meeting 2
 June 7, 2023

Welcome!

Joyce Bornstedt, Public Works Director
 Wayne Reiter, Ardurra
 Kwade Rickett, Ardurra
 Jess Knepper, Ardurra
 Rick Patton, Ardurra

Agenda

- Master Plan Overview
- Existing Conditions
- Forecast
- Facility Requirements
- Next Steps
- Questions with Team Members

Master Plan Overview

- 20-year plan to safely and efficiently meet aviation demand at an airport
- Began in August of 2022
- Kickoff meeting in September of 2022
- Normally a two-year process
- Completed so far – Introduction, Existing Conditions, Forecast, Facility Requirements, Recycling Plan, and Survey
- We are about at the halfway point

Existing Conditions

- Baker City Municipal Airport is a General Aviation airport
- 16,900 total operations and 43 based aircraft in 2021
- Field elevation is 3,373 feet above sea level
- Three paved runways, three instrument approach procedures
- Four hangar areas with a total of 33 hangar spaces
- No municipal water or sewer service
- Baker Aircraft – FBO provides various aviation services

BKE Economic Impact

- 42 jobs
- \$1.1 million in earnings
- \$5.2 million in economic output
- Oregon Department of Aviation, Oregon Aviation Plan v6.0

Aviation Forecast

- Projections of aviation activity from 2021 – 2041
- This is the first major milestone in the master plan process
- General Aviation – based aircraft, operations, aircraft type
- No airlines, passengers, or cargo
- Air taxi and military are included in this forecast

Forecast Data Sources

- Socioeconomic – Woods and Poole Economics
- Flight Plan Data – Traffic Flow Management System Counts (TFMSC)
- FAA Terminal Area Forecast (TAF) – Airport specific
- FAA Aerospace Forecast – National budgeting & planning
- FAA Registered Aircraft Database – Based Aircraft in Baker County
- Airport Management
- This Master Plan Forecast is compared to the TAF (<10% difference 5-year, <15% 10-year)

General Aviation Forecast

- Includes air taxi and military
- Based aircraft
- Local operations
- Itinerant operations
- Airport's service area is Baker County

General Aviation Forecast

- Based aircraft – 43 to 65
- Fleet mix percentages favor more growth of turbines and helicopters

| Aircraft Type | 2021 | 2029 | 2031 | 2041 |
|---------------|------|------|------|------|
| Single Engine | 33 | 36 | 40 | 47 |
| Multi-Engine | 3 | 4 | 4 | 5 |
| Jet | 1 | 1 | 2 | 3 |
| Helicopter | 6 | 7 | 7 | 10 |
| Total | 43 | 48 | 53 | 65 |

General Aviation Forecast

- Local operations – 3,143 to 3,835
- Itinerant operations – 10,057 to 12,631
- Air taxi operations – 3,600 to 4,393
- Military – Constant at 100
- Total operations – 16,900 to 20,959

General Aviation Forecast

- Critical aircraft – Determined using TFMSC
- Existing – Cessna Citation CJ1 (B-I small)
- Future – Beech King Air 260 (B-II small)

General Aviation Forecast

General Aviation Forecast Summary

| | Base Year | Forecast Years | | |
|---------------------|-----------|----------------|--------|--------|
| | 2021 | 2029 | 2031 | 2041 |
| All Taxi | 4,000 | 3,794 | 3,977 | 4,251 |
| Remnant GA | 10,057 | 10,547 | 11,271 | 12,011 |
| Local GA | 3,143 | 3,303 | 3,472 | 3,835 |
| GA Operations | 16,800 | 17,734 | 18,719 | 20,059 |
| Commercial Military | 100 | 100 | 100 | 100 |
| Local Military | 0 | 0 | 0 | 0 |
| Military Operations | 100 | 100 | 100 | 100 |
| Total Operations | 16,900 | 17,834 | 18,819 | 20,959 |
| Based Aircraft | 43 | 48 | 53 | 65 |

General Aviation Forecast

- Master Plan Forecast versus FAA TAF

| | 2025 | 2031 | 2041 |
|------------------|--------|--------|--------|
| Total Operations | 17,234 | 18,348 | 20,337 |
| FAA Forecast | 17,834 | 18,819 | 20,959 |
| % Difference | 3.42% | 3.57% | 3.64% |

| | 2025 | 2031 | 2041 |
|----------------|--------|--------|--------|
| Based Aircraft | 38 | 38 | 38 |
| FAA Forecast | 48 | 53 | 65 |
| % Difference | 20.80% | 28.36% | 41.53% |

Facility Requirements

- Gap analysis between forecast and existing conditions
- Based mainly on FAA design standards – AC 150/5300-13B, Airport Design, released 3/31/2022
- Additional sources –
 - Other advisory circulars (runway length, capacity, wildlife)
 - DAP (hangars, tie-downs, GA terminal, parking, services)
 - NCAA (land and destination)
 - Part 77 (airspace)
 - FAA Orders and engineering briefs (NAVAIDS)

Facility Requirements - Airfield

- Capacity – Annual service volume (ASV)
- Runway length – recommendation, not a design standard
- Runway and taxiway dimensional standards & safety buffers
- Airspace – as defined by Part 77
- Approach and departure surfaces
- Navigational aids
- Instrument approaches

Facility Requirements - Airfield

- ASV = 230,000 operations (20,959 forecast or 9%)
- Runway lengths are adequate for the aircraft using them
- Runways 13/31 & 8/26 exceed standard widths
- Declared distances should be used for performance calculations
- Runway/taxiway intersections – Twy B/Rwy 17-35/Rwy 8-26, Twy A/Rwy 8-26, Twy A2/Rwy 13-31
- Runway 8-26 pavement condition is serious and needs immediate attention

Facility Requirements - Airfield

- Taxiway shoulder widths do not meet standards
- There are known penetrations to Part 77 and approach/departure surfaces

Wind Coverage

| Runway/Taxiway | Direction | Frequency | Speed | Direction | Frequency | Speed | Direction | Frequency | Speed |
|----------------|-----------|-----------|-------|-----------|-----------|-------|-----------|-----------|-------|
| RWY 13-31 | 0-90 | 17.0% | 10-20 | 180-270 | 12.0% | 10-20 | 0-90 | 14.0% | 10-20 |
| | 90-180 | 18.0% | 10-20 | 270-360 | 12.0% | 10-20 | 180-270 | 14.0% | 10-20 |
| | 180-270 | 18.0% | 10-20 | 360-450 | 12.0% | 10-20 | 0-90 | 14.0% | 10-20 |
| RWY 8-26 | 0-90 | 18.0% | 10-20 | 180-270 | 12.0% | 10-20 | 270-360 | 12.0% | 10-20 |
| | 90-180 | 18.0% | 10-20 | 360-450 | 12.0% | 10-20 | 0-90 | 14.0% | 10-20 |
| | 180-270 | 18.0% | 10-20 | 450-540 | 12.0% | 10-20 | 180-270 | 14.0% | 10-20 |

- Per FAA AIP Handbook, crosswind runways are eligible for funding if the wind coverage on the primary runway is less than 95%

Facility Requirements - Landside

- 16 hangars needed by 2041
- Fencing is needed to close gaps
- Water and sewer service needed
- Baker County Overlay Zone map is from 1975
- New wildlife attractants should be avoided

Next Steps

- Begin developing alternatives to address the needs
- Complete the environmental considerations
- Continue building the Airport Layout Plan and Exhibit A
- Hold a TAC/public meeting to present draft alternatives
- City selects a preferred alternative based on public feedback
- Develop an implementation plan and complete the ALP

Closing

Thank you for your support, we appreciate your participation!

d. Posters



Baker City Municipal Airport Master Plan

What is an Airport Master Plan?

An airport master plan is the process of establishing an airport's blueprint for long-term development to meet future aviation demand. It helps to ensure the airport will continue to meet the needs of its customers and that future development is consistent with local, state, and national goals. This includes identifying potential environmental and socioeconomic impacts of future airport projects.

The Airport Master Plan Process

Research

- Research the airport's history.
- Inventory existing conditions.
- Develop a forecast of future activity levels.
- Identify critical aircraft.
- Forecast approval.

Requirements

- Identify improvements required due to updated standards or to accommodate forecasted activity.
- Evaluate each option to determine the most responsible plan.

Implementation

- Prepare an implementation plan with a preliminary schedule and estimated costs.
- Prepare a capital improvement plan.
- Prepare an airport layout plan (ALP).

What Is the Purpose of the Plan?

- Identify the condition and capacity of existing airport infrastructure.
- Identify existing problems, opportunities, and constraints.
- Determine if improvements are needed to meet current safety standards or future activity levels.
- Identify industry trends and their potential impact to the airport.
- Ensure the airport is able to continue to safely and efficiently meet the needs of customers.
- Allow the community to provide input on the plan.
- Develop a financially responsible plan for airport development.
- Establish a realistic schedule for project implementation.
- Identify potential funding sources.
- Keep the community informed.

Why Does the Airport Need One?

An airport master plan is typically updated every five to ten years. This helps the airport respond to updated design requirements as well as industry trends and changes in the economy. The last airport master plan was completed in 2010.

Who Determines This Process?

The elements of an airport master plan are outlined by the Federal Aviation Administration (FAA), but the process is tailored to meet the needs of the airport.

Who Approves the Plan?

The City of Baker City approves the plan. However, FAA approval is required for the forecast and the airport layout plan (ALP) these are used to determine grant funding.



Baker City Municipal Airport Overview and Forecast

Baker City Municipal Airport

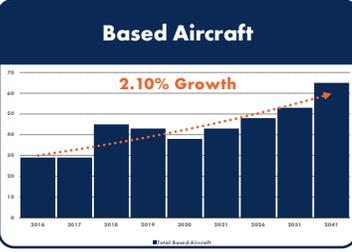
Aircraft Operations

An aircraft operation is when an aircraft lands, takes off, or conducts a touch-and-go procedure.



Based Aircraft

A based aircraft is any operational and airworthy aircraft that is based at the airport for the majority of the year.



Critical Aircraft

The critical aircraft is used to determine design standards for many areas of the airport.

Critical Aircraft

| Beechcraft King Air 260 | |
|----------------------------|---------------|
| Aircraft Approach Category | B |
| Airport Design Group | II |
| Taxiway Design Group | 2A |
| Maximum Takeoff Weight | 12,500 Pounds |
| Approach Speed | 98 Knots |
| Wingspan | 57.00 Feet |
| Length | 43.75 Feet |



Baker City Municipal Airport Facility Requirements

Airfield Requirements 

- Determine the final disposition of Runways 8/26 and 17/35, as they are not justified for FAA funding for wind coverage or capacity
- Reconstruct Runway 8/26, if kept
- Use declared distances to enhance safety
- Eliminate direct access points from aprons to runways
- Widen the taxiway shoulders
- Address confusing taxiway intersections
- Address Taxiway A-3 at Runway 13 geometry
- Rehabilitate Taxiway B pavement

Landside Requirements 

- Construct 16 hangars by 2041
- Add fencing in the terminal area
- Expand water and sewer services at the airport
- Reconstruct Hangar Area A pavement

Recommendations 

- Protect the approach and departure corridors
- Evaluate electrical service capacity
- Update land use policies and strategic plan
- Avoid or eliminate incompatible land uses
- Incorporate accessibility enhancements
- Create management & compliance documents

>>> Next Steps

| | | | | | |
|--|--|---|---|--|--|
| <p>1 Identify potential alternatives to meet facility requirements.</p> | <p>2 Evaluate each alternative to determine the most environmentally, socially, and financially responsible plan.</p> | <p>3 Present each alternative to the public and seek feedback from the community. </p> | <p>4 Prepare an implementation plan with a preliminary schedule and estimated costs.</p> | <p>5 Conduct a financial analysis and prepare a capital improvement plan.</p> | <p>6 Prepare the airport layout plan (ALP).</p> |
|--|--|---|---|--|--|

e. **News Release**



BAKER CITY, OREGON
P.O. Box 650, Baker City, OR 97814-0650
541-523-6541 Voice/TDD
www.bakercity.com

PRESS RELEASE -

Baker City Municipal Airport Master Plan Public Meeting

Baker City has begun the process of updating its long-range master plan for the Baker City Municipal Airport. Members of the public are invited to a public meeting to learn more about the process and provide input.

Public Meeting: Baker City Municipal Airport Master Plan
Wednesday, June 7th, 2023, from 4:30 – 6:30 pm.
Baker City, City Hall, 1655 First Street, Baker City, OR 97814

The master plan will define the type and extent of development required to accommodate short-term and long-term aviation demand for the Baker City, the Baker City Municipal Airport, and the surrounding area. The process will include several opportunities for public involvement.

To receive project notifications or additional information, please contact Joyce Bornstedt, Public Works Director, at 541-524-2031 or pwdirector@bakercity.gov

f. Social Media Posts



- THE FAA REQUIRES MASTER PLANS BE COMPLETED REGULARLY.
- IT'S BEEN 13 YEARS SINCE THE LAST MASTER PLAN WAS COMPLETED.



g. Sign-in Sheet

Baker City Municipal Airport - Airport Master Plan
 Meeting 2 - Forecast and Facility Requirements
 June 7, 2023
 4:30 PM



| Name | Company/Representing | Address | Contact Number(s) | Email Address |
|---------------------------|------------------------------|---------|-------------------|---------------|
| MARK BERTHESEN | Airport Committee | | | |
| Joyce Bornstedt | Baker City | | | |
| Matt Diaz | Baker City | | | |
| Wayne Reiter | Ardurra | | | |
| Kevin Bissell | Ardurra | | | |
| Rick Patton | Ardurra | | | |
| Jess Krueger | Ardurra | | | |
| | | | | |

01.3. Public Meeting #3

a. Meeting Time and Location

Date: December 6, 2023

Time: 4–6 p.m.

Place: Baker City City Hall
1655 First Street, Baker City, Oregon 97814

b. Meeting Handout



Baker City Municipal Airport Master Plan
December 6, 2023
4:00 - 6:00 pm

Meeting Topics

1. Project Update
2. Facility Requirements Summary
3. Draft Alternatives
4. Next Steps

Project Team:

Joyce Bornstedt
 Public Works Director
 jbornstedt@bakercity.gov
 541.524.2031

Wayne Reller
 Aviation Planner
 wreller@ardurra.com
 208.762.3444

Kevin Bissell, PE
 Project Manager
 kbissell@ardurra.com
 208.433.1900

Rick Patton
 Aviation Planner
 rpattor@ardurra.com
 208.433.1900

Airport Master Plan Overview and Project Update

- An airport master plan is a 20-year plan to safely and efficiently meet aviation demand at an airport.
- Project start: August 2022
 - Kickoff Meeting: September 2022
 - Forecast and Facility Requirements Meeting: June 2023
 - Project Duration: 2 years
 - Current Status: 75% of technical portion complete
 - Completed: Introduction, Existing Conditions (Socioeconomic Overview, Background, and Inventory), Forecast of Aviation Demand, Facility Requirements, Environmental Overview, Recycling Plan, and Survey
 - Next: Development of alternatives to meet the facility requirements
 - Next: Selection of Preferred Alternative and development of an Implementation Plan
 - Project Website: <https://www.ardurraprojects.com/files/1946/details/baker-city-airport-master-plan>

Forecast Summary and Critical Aircraft

Total operations are forecast to increase at an annual growth rate of 1.08%.
 Based aircraft are forecast to increase at a rate of 2.1%.
 The future critical aircraft is the Beechcraft King Air 260 - sets the design criteria applied to the airfield



| | Base Year | Forecast Years | | |
|---------------------|-----------|----------------|--------|--------|
| | 2021 | 2026 | 2031 | 2041 |
| Air Taxi | 3,600 | 3,784 | 3,977 | 4,393 |
| itinerant GA | 10,057 | 10,647 | 11,271 | 12,631 |
| Local GA | 3,143 | 3,303 | 3,472 | 3,835 |
| GA Operations | 16,800 | 17,734 | 18,719 | 20,859 |
| General Military | 100 | 100 | 100 | 100 |
| Local Military | 0 | 0 | 0 | 0 |
| Military Operations | 100 | 100 | 100 | 100 |
| Total Operations | 16,900 | 17,834 | 18,819 | 20,959 |
| Based Aircraft | 43 | 48 | 53 | 65 |

Facility Requirements Summary

- Airfield - Runways and Taxiways**
- Runway 13/31 meets 95% wind coverage for all weather conditions.
 - Runways 8/26 and 17/35 are not justified for FAA funding based on wind coverage and capacity.
 - Runway 8/26 pavement is in serious condition and requires immediate reconstruction.
 - Runways 8, 17 and 26 turnarounds do not meet current design standards.
 - Runway 8/26 markings are faded.
 - Declared distances should be considered to provide adequate safety clearance for aircraft taking off and landing.
 - Taxiway shoulder widths do not meet standard and need to be expanded.
 - Taxiways B and A2 provide direct access to a runway, which increases risk of runway incursions.
 - Taxiway B at Runways 8/26 and 17/35 allows more than 3 directions to pilots, which creates confusion.
 - The signage on taxiway B at Runways 8/26 and 17/35 is confusing.
 - The hold position marking on Taxiway A at Runway 8/26 is confusing.
 - Taxiway A-3 at Runway 13 is not at a right angle to the runway.
 - Taxiway B pavement needs to be rehabilitated.
- Landside - Terminal Area and Hangars**
- Hangar Area A apron needs complete reconstruction.
 - Fencing needs to be added to reduce inadvertent entry to the airfield by people and wildlife.
 - 16 hangars are required by 2041.
 - Water and sewer service needs to be expanded at the airport.
- Recommendations**
- Approach and departure corridors should be protected.
 - Electrical service capacity should be evaluated to accommodate future development.
 - City and county land use policies should be updated following the airport master plan.
 - Incompatible land uses and wildlife attractants (such as fresh water ponds) should be avoided or eliminated.
 - The City's strategic vision should be updated following the airport master plan.
 - Accessibility enhancements should be incorporated into future development.
 - Consideration should be given to the creation of management and compliance documents for the airport.

Baker City Airport Master Plan



Baker City Airport Master Plan



Baker City Airport Master Plan



Draft Alternatives Summary

- Alternative 1 - Keep All Three Runways Open**
- Shorten and narrow Runway 8/26 to meet standards and deconflict with Runway 17/35
 - Expand the parking apron for more tie-downs, hangars, and shade hangars
 - Add aviation development areas with taxiways and service roads
 - Realign Taxiway B
 - Add placemarkers for treatment/drain fields and wells
 - Acquire land parcel next to Runway 13
 - Add grass landing area and grass tie-downs
 - Clean up taxiway geometry
 - This alternative does not account for low maintenance for Runways 8/26 and 17/35 will be funded
- Alternative 2 - Close Runway 8/26 and turn it into a taxiway**
- Same as Alternative 1 except close Runway 8/26 and turn into a taxiway making it eligible for FAA funding
 - Expand the taxiway network northeast of Runway 13/31 to connect aviation development areas
 - Local funds that would have been used for Runway 8/26 can be used to maintain Runway 17/35
- Alternative 3 - Close Runway 8/26 (short term) and Runway 17/35 (long term) and turn into taxiways**
- Convert both runways into taxiways making them eligible for FAA funding
 - Clearing both runways allows more space for aviation development and revenue generation
 - Terminal area expansion the same as Alternative 1

Alternative Performance Objectives

1. Does the alternative meet one or more of the facility requirements?
2. Does the alternative maximize FAA and state funding eligibility?
3. Does the alternative maintain the integrity of the airport lock and field?
4. Does the alternative maximize economic development opportunities?

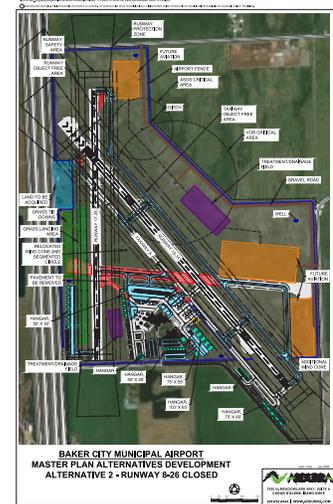
Alternative 1 - Keep All Three Runways Open



Baker City Airport Master Plan



Alternative 2 - Close Runway 8/26



c. Presentation

d. Social Media Post

- THE FAA REQUIRES MASTER PLANS BE COMPLETED REGULARLY.
- IT'S BEEN 13 YEARS SINCE THE LAST MASTER PLAN WAS COMPLETED.





City of Baker City, Oregon

1K followers • 5 following

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- Photos
- Videos
- Following



Intro

Welcome to the official local government Facebook page for Baker City, Oregon.

- Page** · Government organization
- 1655 1st St, Baker City, OR, United States, Oregon
- (541) 523-6541
- admin@bakercity.gov
- bakercity.com
- Closed now

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Posts

Filters



City of Baker City, Oregon

23h · 🌐

** The Airport Commission will have a meeting on December 6th at 4:00pm to 6:00pm in the City Hall Council Chambers ** This meeting is open to public.



DID YOU KNOW?

- THE FAA REQUIRES MASTER PLANS BE COMPLETED REGULARLY.
- IT'S BEEN 13 YEARS SINCE THE LAST MASTER PLAN WAS COMPLETED.



2

1

Like

Comment

e. News Release**PRESS RELEASE or LEGAL NOTICE****Baker City Municipal Airport Master Plan Public Meeting**

Baker City is in the process of updating its long-range master plan for the Baker City Municipal Airport. Members of the public are invited to a public meeting to learn more about the process and provide input.

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Wednesday, December 6th, 2023, from 4:00 – 6:00 pm.
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Newspaper Advertisement

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Wednesday, December 6th, 2023, from 4:00 – 6:00 pm.
Baker City, City Hall, 1655 First Street, Baker City, OR 97814

Baker City is updating its long-range Airport Master Plan for the Baker City Municipal Airport. You are invited to participate in the third of a series of public meetings to receive information and provide input. For more information, you may contact Joyce Bornstedt, Public Works Director, at 541-524-2031 or bcpwddirector@bakercity.gov

f. Posters



Baker City Municipal Airport Master Plan

What is an Airport Master Plan?

An airport master plan is the process of establishing an airport's blueprint for long-term development to meet future aviation demand. It helps to ensure the airport will continue to meet the needs of its customers and that future development is consistent with local, state, and national goals. This includes identifying potential environmental and socioeconomic impacts of future airport projects.

The Airport Master Plan Process

Research

- Research the airport's history.
- Inventory existing conditions.
- Develop a forecast of future activity levels.
- Identify critical aircraft.
- Forecast approval.

Requirements

- Identify improvements required due to updated standards or to accommodate forecasted activity.
- Evaluate each option to determine the most responsible plan.

Implementation

- Prepare an implementation plan with a preliminary schedule and estimated costs.
- Prepare a capital improvement plan.
- Prepare an airport layout plan (ALP).

What is the Purpose of the Plan?

- Identify the condition and capacity of existing airport infrastructure.
- Identify existing problems, opportunities, and constraints.
- Determine if improvements are needed to meet current safety standards or future activity levels.
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Why Does the Airport Need One?

An airport master plan is typically updated every five to ten years. This helps the airport respond to updated design requirements as well as industry trends and changes in the economy. The last airport master plan was completed in 2010.

Who Determines This Process?

The elements of an airport master plan are outlined by the Federal Aviation Administration (FAA), but the process is tailored to meet the needs of the airport.

Who Approves the Plan?

The City of Baker City approves the plan. However, FAA approval is required for the forecast and the airport layout plan (ALP) these are used to determine grant funding.



Baker City Municipal Airport Overview and Forecast

Baker City Municipal Airport

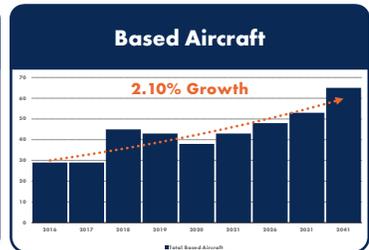
Aircraft Operations

An aircraft operation is when an aircraft lands, takes off, or conducts a touch-and-go procedure.



Based Aircraft

A based aircraft is any operational and airworthy aircraft that is based at the airport for the majority of the year.



Critical Aircraft

The critical aircraft is used to determine design standards for many areas of the airport.

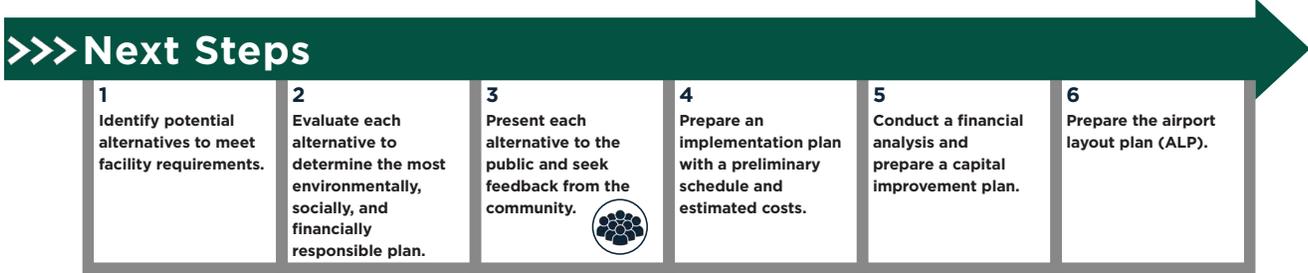
Critical Aircraft

| Beechcraft King Air 260 | |
|----------------------------|---------------|
| Aircraft Approach Category | B |
| Airport Design Group | II |
| Taxiway Design Group | 2A |
| Maximum Takeoff Weight | 12,500 Pounds |
| Approach Speed | 98 Knots |
| Wingspan | 57.00 Feet |
| Length | 43.75 Feet |

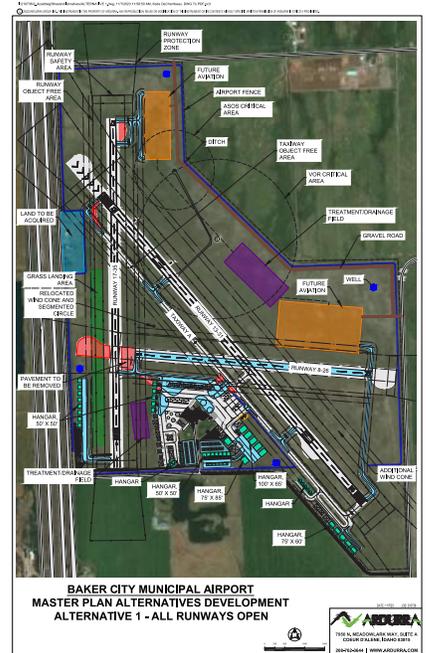
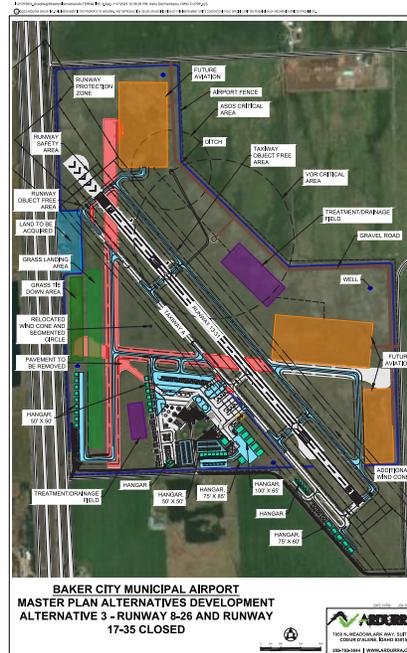
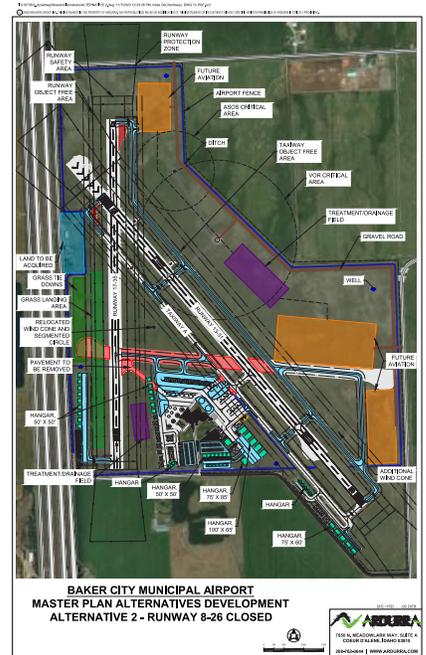
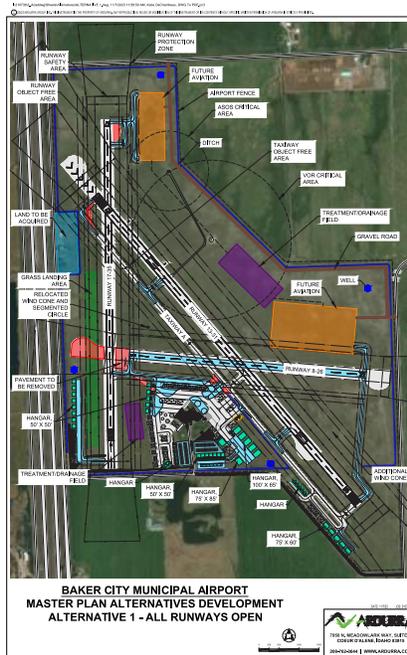


Baker City Municipal Airport Facility Requirements

| Airfield Requirements  | Landside Requirements  | Recommendations  |
|---|--|--|
| <ul style="list-style-type: none"> ■ Determine the final disposition of Runways 8/26 and 17/35, as they are not justified for FAA funding for wind coverage or capacity ■ Reconstruct Runway 8/26, if kept ■ Use declared distances to enhance safety ■ Eliminate direct access points from aprons to runways ■ Widen the taxiway shoulders ■ Address confusing taxiway intersections ■ Address Taxiway A-3 at Runway 13 geometry ■ Rehabilitate Taxiway B pavement | <ul style="list-style-type: none"> ■ Construct 16 hangars by 2041 ■ Add fencing in the terminal area ■ Expand water and sewer services at the airport ■ Reconstruct Hangar Area A pavement | <ul style="list-style-type: none"> ■ Protect the approach and departure corridors ■ Evaluate electrical service capacity ■ Update land use policies and strategic plan ■ Avoid or eliminate incompatible land uses ■ Incorporate accessibility enhancements ■ Create management & compliance documents |



g. Exhibits



h. Sign-in Sheets

Baker City Municipal Airport – Airport Master Plan
 Meeting 3 – Draft Alternatives
 December 6, 2023
 4:00 PM



| Name | Company/Representing | Address | Contact Number(s) | Email Address |
|------------------|----------------------|---------|-------------------|---------------|
| Charlie Tracy | | | | |
| Chuck Lissman | | | | |
| Kevin Bissell | ARDURRA | | | |
| Tom Van Piper | | | | |
| Erik Andersen | | | | |
| Michelle Owen | | | | |
| Erik Owen | | | | |
| PG Tracy | | | | |

Baker City Municipal Airport – Airport Master Plan
 Meeting 3 – Draft Alternatives
 December 6, 2023
 4:00 PM



| Name | Company/Representing | Address | Contact Number(s) | Email Address |
|----------------------------|----------------------|---------|-------------------|---------------|
| Stan Beckstold | | | | |
| Greg Sackos | | | | |
| Joyce Bornstedt Baker City | | | | |
| Wayne Reiter | Ardorra | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

02 Technical Advisory Committee Meetings

02.1. Technical Advisory Committee Meeting #1

a. Principles of Participation

**City of Baker City
Baker City Municipal Airport Master Plan
Technical Advisory Committee**



Principles of Participation

Mission

The Baker City Municipal Airport Master Plan Technical Advisory Committee (Committee) will advise the Baker City Municipal Airport Master Plan project team and City of Baker City as a representative voice of airport stakeholders.

Responsibilities of Committee Members

To accomplish the mission described above, Committee members are being asked to:

- Become familiar with existing planning and policy documents related to the airport.
- Become familiar with land uses, facilities, and environmental resources in the project area.
- Provide informed feedback to the project team (Airport staff and Consultant team) at the milestones in the planning process (see Meetings and Discussion Process below).
- Read all agenda and background materials distributed prior to the meetings by the project team.
- Publicize opportunities for members of their respective organizations, other organizations, and the general public to participate in the planning process, including the public workshops and website engagement activities.
- Listen carefully to others; the Committee will function best when we understand and value one another's views and experiences.
- Help create a respectful and productive working climate.

Representation

Committee members will be chosen by identifying organizations and agencies that represent the various elements that will be considered in the Airport Master Plan. Identified organizations will then be asked to choose individuals to represent them on the Committee.

Each Committee member is encouraged to report back to his or her respective constituency to inform them about the Committee's discussions and the progress of plan preparation. Meeting summaries will be prepared to facilitate this effort. Project team staff will be available to assist in this communication process, if desired.

If an invited Committee member declines participation in the Committee, or at any point becomes unable to serve, he or she will inform the project team, and the project team will find a replacement.

Discussion Process

Committee members agree to abide by the following discussion process during the meetings:

- All participants are welcome to speak freely.
- All comments will be brief and constructive so that others can also speak.
- All perspectives are valued.
- One person speaks at a time.
- The preferred deliberation process is collaborative problem solving. In cases of mixed opinions, alternative perspectives will be documented.
- Committee members treat each other with respect.
- A neutral third-party will facilitate the meetings.

Attendance

In order for the process to work effectively, full participation of representatives is essential. Committee members are asked to consistently attend meetings, as well as attend public outreach events to directly hear and gather input from the community. Meetings will be generally held during the late afternoon on a weekday.

Support

A neutral third-party facilitator from the Consultant team will facilitate all Committee meetings. The role of the facilitator is to ensure all perspectives are heard through a collaborative discussion process. The project team will provide technical and logistical support, including making presentations, answering questions, coordinating meetings, and documenting meeting content.

Meeting Agendas

The project team will be responsible for preparing the agendas, with consideration of input from Committee members. Agendas and assigned reference materials will be distributed by email in advance of each meeting.

Information Sharing

Committee members may want to share information and documents with other Committee members during the planning process. To ensure that all members have the same information available to them, all documents are to be distributed through the established point of contact:

Wayne Reiter
Aviation Planner
T-O Engineers
wreiter@to-engineers.com

02.2. Technical Advisory Committee Meeting #2

a. Meeting Summary

Date: April 26, 2023

Time: 10 a.m.

Attendees:

- Michelle Owen; Citizen with Special Airport Knowledge
 - Greg Sackos; Airport Commission Chair
 - Tara Micka; Planner, Baker City-County Planning Department
 - Matt Diaz; Baker City Councilor
 - Joyce Bornstedt; Baker City Interim Public Works Director
 - Wayne Reiter; Planner, Ardurra
 - Meg Jones; Planner, Ardurra
 - Jessica Kreuger; Planner, Ardurra
 - Rick Patton; Planner, Ardurra
 - Kevin Bissell; Engineer, Ardurra
-
- Welcome and self-introductions of each participant were made.
 - Wayne Reiter provided an update of the project - a Master Plan overview, existing conditions, forecast, facility requirements, recycling plan and a survey was conducted. The first five chapters have been completed. Chapter 7, Development Alternatives is the next step in the master plan process.
 - Wayne Reiter provided a summary of the existing conditions, results of the forecast and critical aircraft-the King Air 260 (B-II small), and facility requirements. Facility requirements are those items that are required to meet aviation demand or address airport design changes that have occurred since the previous master plan. (See the accompanying PDF of the Power Point presentation for the specific findings).
 - Wayne Reiter covered the next steps of the master plan through the end of 2023.
 - Hold a public meeting to present these findings.
 - Begin developing alternatives to address proposed airport improvements.
 - Complete the cultural survey of the terminal area (in progress at the time of the meeting).
 - Hold a TAC/public meeting to present the draft alternatives.
 - The city selects a preferred alternative based on public feedback. The city will need to select the preferred alternatives before the master plan and ALP can be completed.
 - Ardurra staff have been working on the existing portion of the ALP drawing set, and once the alternatives for runway and apron develop have been selected, the ALP will be finalized along with the Airport Exhibit A property map.
 - Hold a draft document(s) public meeting.
 - Complete and approve the ALP and Master Plan documents and transmit to the FAA for acceptance (may occur early in 2024).

Discussion

- Greg Sackos: It doesn't appear there will be much growth in based aircraft and operational activity unless we work on infrastructure; certainly not the growth or potential the TAC and Airport Commission hope for.
- Wayne Reiter: Infrastructure (water and sewer) have long been an impediment to development at the airport. Should that challenge be overcome, then it is reasonable to believe more growth may occur.
- Matt Diaz: Requested a new forecast with a higher growth rate.
- Wayne Reiter: The growth is realistic given the current conditions. The based aircraft growth rate is aggressive but manageable if we can get past the infrastructure impediments (water and sewer).
- Rick Patton: We are looking at eligibility for funding and the master plan forecast sets that baseline. If infrastructure is brought into the airport and growth happens, the forecast can be revised to account for more growth, which may lead to a higher eligibility for FAA grant funding.
- Wayne Reiter: The forecast does not set a cap on aviation activity and actual growth can exceed the forecast.
- Michelle Owen: Another airport nearby added infrastructure to the airport and they saw a decent amount of growth. Wind coverage for 17/35 is used often, and if BKE no longer has funding for the crosswind, that is a huge deal to the airport. Will need to be aware that the city or state will need to find funding for maintenance of the runway in the future. There may be pushback from the pilot community to decommission 8/26 because it has a training benefit for crosswind operations.
- Wayne Reiter: Responded to a question on the source of the wind data, Wayne clarified the wind observations were from 2013-2022 and were taken from the weather station at the airport. Alternatives will be the next phase, and we will look at other funding options during the implementation chapter. It may be an option to decommission Runway 8/26 to allow local and state funding sources to go toward maintaining Runway 17/35 and have FAA funding go toward 13/31. The pavement for the runway could be used for aircraft parking. Closing 8/26 would allow more opportunities for development and eliminate some of the existing runway-taxiway intersection discrepancies.
- Rick Patton: The alternatives chapter will need to address cash flow and cost versus benefit of development options including the ultimate disposition of 8/26.
- Matt Diaz: It would be nice to have cargo operations at the airport. Matt also mentioned it might be more practical to decommission 8/26 and keep 17/35 usable.
- Wayne Reiter thanked everyone for attending and closed the meeting.

b. Presentation

BAKER CITY MUNICIPAL AIRPORT
 Airport Master Plan
 TAC Meeting 2
 April 26, 2023

Welcome!

Joyce Bornstedt, Interim Public Works Director
 Wayne Reller, Ardurra
 Kevin Bissell, Ardurra
 Rick Patton, Ardurra
 Meg Jones, Ardurra
 Jess Krueger, Ardurra

Agenda

- Master Plan Overview
- Existing Conditions
- Forecast
- Facility Requirements
- Next Steps
- Roundtable Discussion

Master Plan Overview

- 20-year plan to safely and efficiently meet aviation demand at an airport
- Began in August of 2022
- Kickoff meeting in September of 2022
- Normally a two-year process
- Completed so far – Introduction, Existing Conditions, Forecast, Facility Requirements, Recycling Plan, and Survey
- We are about at the halfway point

Existing Conditions

- Baker City Municipal Airport is a General Aviation airport
- 16,900 total operations and 43 based aircraft in 2021
- Field elevation is 3,373 feet above sea level
- Three paved runways, three instrument approach procedures
- Four hangar areas with a total of 33 hangar spaces
- No municipal water or sewer service
- Baker Aircraft – FBO provides various aviation services

BKE Economic Impact

- 42 jobs
- \$1.1 million in earnings
- \$5.2 million in economic output
- Oregon Department of Aviation, Oregon Aviation Plan v6.0

Aviation Forecast

- Projections of aviation activity from 2021 – 2041
- General Aviation – based aircraft, operations, aircraft type
- No airlines, passengers, or cargo
- Air tax and military are included in this forecast

General Aviation Forecast

- Critical aircraft – Determined using TFMSC
- Existing – Cessna Citation CJ1 (B-I small)
- Future – Beech King Air 260 (B-II small)

General Aviation Forecast

General Aviation Forecast Summary

| | Base Year | Forecast Years | | | |
|---------------------|-----------|----------------|--------|--------|--|
| | 2021 | 2026 | 2031 | 2041 | |
| Air Feet | 3,600 | 3,784 | 3,917 | 4,393 | |
| Terminal GA | 10,057 | 10,647 | 11,271 | 12,633 | |
| Local GA | 3,143 | 3,303 | 3,472 | 3,815 | |
| GA Operations | 16,800 | 17,734 | 18,719 | 20,809 | |
| General Military | 100 | 100 | 100 | 100 | |
| Local Military | 0 | 0 | 0 | 0 | |
| Military Operations | 100 | 100 | 100 | 100 | |
| Total Operations | 16,900 | 17,834 | 18,819 | 20,909 | |
| Based Aircraft | 43 | 48 | 53 | 65 | |

General Aviation Forecast

Master Plan Forecast versus FAA TAF

| | 2021 | 2031 | 2041 |
|-------------------|--------|--------|--------|
| Total Operations | 16,900 | 18,819 | 20,909 |
| TAF | 23,226 | 18,448 | 20,919 |
| Forecast Forecast | 17,834 | 18,819 | 20,909 |
| % Difference | 3.42% | 3.57% | 3.64% |

Facility Requirements

- Gap analysis between forecast and existing conditions
- Based mainly on FAA design standards – AC 150/5300-13B, Airport Design, released 3/31/2022
- Additional sources –
 - Other advisory circulars (runway length, capacity, wildlife)
 - CAIP (hangars, taxiways, GA terminal, parking, services)
 - NCAA (wind and declination)
 - Part 77 (airports)
 - FAA Orders and engineering briefs (NAVAIDS)

Forecast Data Sources

- Socioeconomic – Woods and Poole Economics
- Flight Plan Data – Traffic Flow Management System Counts (TFMSC)
- FAA Terminal Area Forecast (TAF) – Airport specific
- FAA Aerospace Forecast – National budgeting & planning
- FAA Registered Aircraft Database – Based Aircraft in Baker County
- Airport Management
- This Master Plan Forecast is compared to the TAF (<10% difference 5-year, <15% 10-year)

General Aviation Forecast

- Includes air taxi and military
- Based aircraft
- Local operations
- Itinerant operations
- Airport's service area is Baker County

General Aviation Forecast

- Based aircraft – 43 to 65
- Fleet mix percentages favor more growth of turboprops and helicopters

| Aircraft Type | 2021 | 2026 | 2031 | 2041 |
|---------------|------|------|------|------|
| Turboprop | 3 | 4 | 4 | 5 |
| Multi-Engine | 3 | 4 | 4 | 5 |
| SE | 1 | 1 | 1 | 1 |
| Helicopter | 6 | 7 | 7 | 10 |
| Total | 43 | 48 | 53 | 65 |

General Aviation Forecast

- Local operations – 3,143 to 3,835
- Itinerant operations – 10,057 to 12,631
- Air taxi operations – 3,600 to 4,393
- Military – Constant at 100
- Total operations – 16,900 to 20,909

Facility Requirements - Airfield

- Capacity – Annual service volume (ASV)
- Runway length – recommendation, not a design standard
- Runway and taxiway dimensional standards & safety buffers
- Airspace – as defined by Part 77
- Approach and departure surfaces
- Navigational aids
- Instrument approaches

Facility Requirements - Airfield

- ASV = 230,000 operations (20,959 forecast or 9%)
- Runway lengths are adequate for the aircraft using them
- Runways 13/31 & 8/26 exceed standard widths
- Declared distances should be used for performance calculations
- Runway/taxiway intersections – Twy B/Rwy 17-35/Rwy 8-26, Twy A/Rwy 8-26, Twy A2/Rwy 13-31
- Runway 8-26 pavement condition is serious and needs immediate attention

Facility Requirements - Airfield

- Taxiway shoulder widths do not meet standards
- There are known penetrations to Part 77 and approach/departure surfaces

Wind Coverage

| Runway | ASV | |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Runway | 2021 | 2026 | 2031 | 2041 | 2021 | 2026 | 2031 | 2041 |
| Runway 8-26 | 16,800 | 17,734 | 18,719 | 20,809 | 16,800 | 17,734 | 18,719 | 20,809 |
| Runway 13-31 | 10,057 | 10,647 | 11,271 | 12,633 | 10,057 | 10,647 | 11,271 | 12,633 |
| Runway 17-35 | 3,143 | 3,303 | 3,472 | 3,815 | 3,143 | 3,303 | 3,472 | 3,815 |
| Runway 26-38 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Total | 20,909 | 21,984 | 23,562 | 27,457 | 20,909 | 21,984 | 23,562 | 27,457 |

- Per FAA AIP Handbook, crosswind runways are eligible for funding if the wind coverage on the primary runway is less than 95%

Facility Requirements - Landside

- 16 hangars needed by 2041
- Fencing is needed to close gaps
- Water and sewer service needed
- Baker County Overlay Zone map is from 1975
- New wildlife attractants should be avoided

Next Steps

- Hold a public meeting to present these findings
- Begin developing alternatives to address the needs
- Conduct a cultural survey of the terminal area
- Continue building the Airport Layout Plan and Exhibit A
- Hold a TAC/public meeting to present draft alternatives
- City selects a preferred alternative based on public feedback
- Develop an implementation plan and complete the ALP

Roundtable Discussion

Do you think the forecast is realistic?

| | Base Year | Forecast Years | | | |
|---------------------|-----------|----------------|--------|--------|--|
| | 2021 | 2026 | 2031 | 2041 | |
| Air Feet | 3,600 | 3,784 | 3,917 | 4,393 | |
| Terminal GA | 10,057 | 10,647 | 11,271 | 12,633 | |
| Local GA | 3,143 | 3,303 | 3,472 | 3,815 | |
| GA Operations | 16,800 | 17,734 | 18,719 | 20,809 | |
| General Military | 100 | 100 | 100 | 100 | |
| Local Military | 0 | 0 | 0 | 0 | |
| Military Operations | 100 | 100 | 100 | 100 | |
| Total Operations | 16,900 | 17,834 | 18,819 | 20,909 | |
| Based Aircraft | 43 | 48 | 53 | 65 | |

Conclusion

Thank you for your support, we appreciate your participation!

02.3. Technical Advisory Committee Meeting #2

a. Meeting Summary



BKE Master Plan TAC Meeting #3 Notes

Date: October 31, 2023

Time: 10:00 am PT

Location: Teleconference via Teams

Attendees:

| | |
|-----------------|--|
| Michelle Owen | Citizen with Special Airport Knowledge |
| Greg Sackos | Airport Commission Chair |
| Tara Micka | Planner, Baker City-County Planning Department |
| Jon France | Interim City Manager |
| Joyce Bornstedt | Baker City Public Works Director |
| Troy Woydziak | Baker Aircraft |
| Charlie Tracy | Airport Commission, OTEC Engineer |
| Wayne Reiter | Planner, Ardurra |
| Rick Patton | Planner, Ardurra |
| Kevin Bissell | Engineer, Ardurra |

Wayne Reiter provided an update of the project - Introduction, existing conditions, forecast, facility requirements, draft alternatives, environmental overview, recycling plan, and AGIS survey are complete. Survey related to the Exhibit A to be scheduled soon. Project is about 70% complete.

Wayne Reiter provided a summary of the facility requirements:

- Runway 8/26 pavement needs to be replaced by a complete reconstruction.
- Runways 8/26 and 17/35 are not eligible for FAA funding as a crosswind or secondary runway – primary runway provides greater than 95% wind coverage and the operations are forecast to be well below airport capacity.
- There are runway/taxiway geometry issues due to the airport configuration. Runway/taxiway intersections should be at 90 degrees to each other to meet design standards.
- There are known Part 77 penetrations, mainly due to the runway ends being close to the airport property boundary and surrounding roads.
- There is no municipal water or sewer service, which has historically been an impediment to development.
- 16 hangars are needed to meet demand over the next 20 years.

Wayne Reiter gave an overview of the purpose of alternatives:

- Alternatives are intended to address the shortcomings identified by the facility requirements.
- This is the creative part of the planning process. Up until this point, findings were the result of data research, calculations, and measurements.
- The final alternative can be a combination of alternative elements, as long as they fit together.
- Alternatives were attempting to meet four objectives:
 1. Does it meet one or more of the facility requirements?
 2. Does it maximize FAA and state funding eligibility?
 3. Does it maintain the integrity of the airport look and feel?
 4. Does it maximize economic development opportunities?



BKE Master Plan TAC Meeting #3 Notes

Alternative Drawing Presentation and Discussion

All alternatives expand the terminal area, add placeholders for treatment/drain fields and wells, add a grass landing area adjacent to Runway 17/35, clean up taxiway geometry, relocate the segmented circle and wind cone, add a secondary wind cone, add aviation development areas, add service roads, and acquire the parcel next to Runway 13 for taxiway development.

Alternative 1: Keep all three runways open.

- Despite the lack of funding sources, keep all runways open but narrow and shorten Runway 8/26 to meet design standards.
- Michelle Owen added this has been a topic of consideration going back to the 1995 master plan.
- Wayne Reiter stated if the runway is to be kept open, it needs to meet standards and be operated safely, regardless of FAA funding eligibility. FAA or state will not force the closure of the runway.
- General consensus is that Runway 8/26 needs to be closed for funding, safety, and liability purposes.

Alternative 2: Close Runway 8/26.

- Closing the runway and turn it into a taxiway, making it eligible for FAA funding. This creates more aviation development area on the east side of the airport.
- East taxiway complex would likely be phased, but would provide access between new development areas, reducing the need to cross the runway for services.
- General consensus is this is a good alternative.

Alternative 3: Close Runway 8/26 and relocate the west side hangars to the main terminal area.

- This assumes there is no funding available to create an apron and connector to Runway 35.
- General consensus is the west side operators would not be in favor of this due to infrastructure already installed. Plus, they do not necessarily need a paved connector to the runway.

Alternative 4: Phased closure of Runway 8/26 then Runway 17/35.

- This assumes Runway 17/35 can be maintained for approximately 15 years before it will require a major rehabilitation or reconstruction – similar to where Runway 8/26 stands today.
- Runway 17/35 would be converted into a taxiway making it eligible for FAA funding.
- Troy Woydziak stated Runway 17/35 should be kept for as long as possible, as it is used regularly.

Terminal Area Comments

- The two port a ports should be moved behind the existing hangar along the FBO apron, and not moved to Area D.
- The hangar south of the City Quad should be made a T-Hangar opening in each direction.
- T-Shades are desired.
- Try to maximize vehicle parking area.
- See if the FAA would fund a paved parking lot to keep gravel from being tracked onto the apron – not likely to be eligible.

Wayne Reiter went over the next steps:

- Hold a public meeting to present the draft alternatives.
- Allow a 30-day comment period.
- The City selects a preferred alternative – required to move forward.



BKE Master Plan TAC Meeting #3 Notes

- Develop an implementation plan and complete the Airport Layout Plan (ALP) sheets.
- Hold another TAC/public meeting to present the full draft master plan document and ALP set.
- Submit the ALP to the FAA for review and comment.
- Incorporate FAA comments, then present the final master plan and ALP to City Council for adoption.

The TAC suggested having comment forms with an alternative summary available at the FBO in addition to the public meeting, and providing adequate notice of the public meeting.

Wayne Reiter concluded the meeting.

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APPENDIX B

FAA Forecast Approval

Baker City Municipal Airport
2024 Airport Master Plan

August 30, 2023





CONTENTS

FAA Forecast Approval

01 Federal Aviation Administration
Forecast Approval

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U.S. Department
of Transportation
Federal Aviation
Administration

Northwest Mountain Region
Colorado · Idaho · Montana · Oregon · Utah Washington ·
Wyoming

Seattle Airports District Office
2200 S 216th Street, Rm 1W-422
Des Moines, WA 98198

August 30, 2023

Joyce Bornstedt
Public Works Director
Baker City Airport
1655 First Street
Baker City, OR 97814

Federal Aviation Administration (FAA)
BAKER CITY (BKE) Aviation Activity Forecast Approval
Airport Improvement Program Grant Number 3-41-0005-021-2022

The FAA Airports District Office has reviewed the aviation forecast for the BAKER CITY (BKE) Airport Master Plan dated March 1, 2023. The FAA approves these forecasts for airport planning purposes, including Airport Layout Plan (ALP) development, in addition to the existing and future critical aircraft.

Our approval is based on the following:

- The forecast is supported by reasonable planning assumptions and current data
- The forecast appears to be developed using acceptable forecasting methodologies
- The difference between the FAA Terminal Area Forecast (TAF) and the Airport’s forecast for total operations is within the 10 percent and 15 percent allowance for the 5 and 10 year planning horizons.

Table 5.14 Preferred Forecast for BKE

| | Base Year | Forecast Years | | | CAGR | | |
|---------------------|-----------|----------------|--------|--------|--------|---------|---------|
| | 2021 | 2026 | 2031 | 2041 | 5-Year | 10-Year | 20-Year |
| Air Taxi | 3,600 | 3,784 | 3,977 | 4,393 | 1.00% | 1.00% | 1.00% |
| Itinerant GA | 10,057 | 10,647 | 11,271 | 12,631 | 1.15% | 1.15% | 1.15% |
| Local GA | 3,143 | 3,303 | 3,472 | 3,835 | 1.00% | 1.00% | 1.00% |
| GA Operations | 16,800 | 17,734 | 18,719 | 20,859 | 1.09% | 1.09% | 1.09% |
| Itinerant Military | 100 | 100 | 100 | 100 | 0.00% | 0.00% | 0.00% |
| Local Military | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% |
| Military Operations | 100 | 100 | 100 | 100 | 0.00% | 0.00% | 0.00% |
| Total Operations | 16,900 | 17,834 | 18,819 | 20,959 | 1.08% | 1.08% | 1.08% |
| Based Aircraft | 43 | 48 | 53 | 65 | 2.22% | 2.11% | 2.09% |

Table 5.18 Total Operations Forecast Versus TAF

| | | | |
|--------------------|--------|--------|--------|
| Total Operations | 2026 | 2031 | 2041 |
| TAF | 17,224 | 18,148 | 20,197 |
| Preferred Forecast | 17,834 | 18,819 | 20,959 |
| % Difference | 3.54% | 3.70% | 3.77% |

Table 5.21 Cessna Citation CJ1 Specifications (Existing Critical Aircraft)

| Characteristic | Specification |
|--------------------------------------|-------------------|
| Aircraft Approach Category (AAC) | B |
| Airplane Design Group (ADG) | I |
| Taxiway Design Group (TDG) | 1A |
| Approach Speed | 108 knots |
| Wingspan | 46.92 feet |
| Length | 42.58 feet |
| Tail Height | 13.77 feet |
| Cockpit to Main Gear (CMG) | 15.33 feet |
| Outer to Outer Main Gear Width (MGW) | 13 feet |
| Main Gear Configuration | Single Wheel (SW) |
| Maximum Takeoff Weight (MTOW) | 10,600 pounds |

Source: FAA Aircraft Database, AC 150/5300-13B

Table 5.22 Beech King Air 260 Specifications (Future Critical Aircraft)

| Characteristic | Specification |
|--------------------------------------|-----------------|
| Aircraft Approach Category (AAC) | B |
| Airplane Design Group (ADG) | II |
| Taxiway Design Group (TDG) | 2A |
| Approach Speed | 98 knots |
| Wingspan | 57.9 feet |
| Length | 43.75 feet |
| Tail Height | 15 feet |
| Cockpit to Main Gear (CMG) | 14.75 feet |
| Outer to Outer Main Gear Width (MGW) | 17.17 feet |
| Main Gear Configuration | Dual Wheel (DW) |
| Maximum Takeoff Weight (MTOW) | 12,500 pounds |

Source: <https://beechcraft.txtav.com/en/king-air-260#specs>

Approval of this forecast does not automatically justify any of the capital improvements shown on the ALP or recommended in the master plan. All future projects will need to be justified by current activity levels at the time of proposed implementation. Lastly, the approved forecasts may be subject to additional analysis, or the FAA may request a sensitivity analysis if this data is to be used for environmental or Part 150 noise planning purposes.

This forecast was prepared at the same time as the evolving impacts of the COVID-19 public health emergency. Forecast approval is based on the methodology, data, and conclusions at the time the document was prepared. However, consideration of the impacts of the COVID-19 public health emergency on aviation activity is warranted to acknowledge the reduced confidence in growth projections using currently-available data.

Accordingly, FAA approval of this forecast does not constitute justification for future projects. Justification for future projects will be made based on activity levels at the time the project is requested for development. Documentation of actual activity levels meeting planning activity levels will be necessary to justify AIP funding for eligible projects.

If you have any questions about this forecast approval, please call me at (206) 231-4248.

Sincerely,

Tim House
Lead Planner,
Seattle Airports District Office

cc: Wayne Reiter

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APPENDIX C

Cultural Resources Survey

Baker City Municipal Airport
2024 Airport Master Plan

August 29, 2023



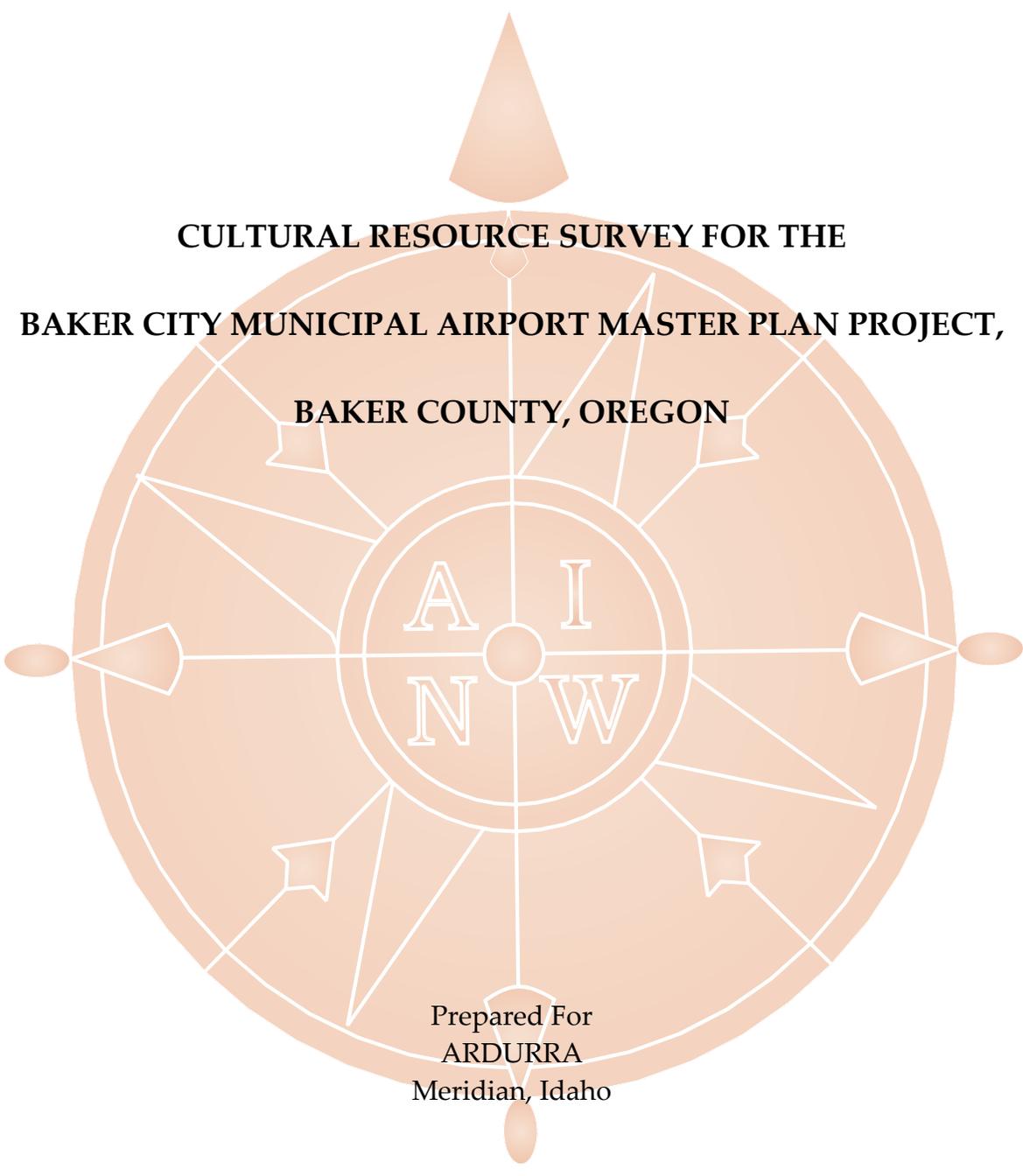


CONTENTS

Cultural Resources Survey

01 Cultural Resources Survey

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BAKER CITY MUNICIPAL AIRPORT MASTER PLAN PROJECT,
BAKER COUNTY, OREGON**

Prepared For
ARDURRA
Meridian, Idaho

August 29, 2023

REPORT NO. 5019

Archaeological Investigations Northwest, Inc.

**CULTURAL RESOURCE SURVEY FOR THE
BAKER CITY MUNICIPAL AIRPORT MASTER PLAN PROJECT,
BAKER COUNTY, OREGON**

PROJECT: Planning for future improvements at the Baker City Municipal Airport

SURVEY: Cultural resources survey

LOCATION: Sections, 27, 28, 33, and 34, Township 8 South, Range 40 East,
Willamette Meridian

USGS QUAD: Baker, OR, 7.5-minute, 2017

COUNTY: Baker County

PROJECT APE: 45.5 acres

AREA SURVEYED: 45.5 acres

RESULTS: **Archaeological Resources:**

- One archaeological site (22/3302-1) and one archaeological isolate (22/3202-2) were identified.
- The archaeological resources are recommended to be not eligible for listing in the National Register of Historic Places (NRHP).

Historic Resources:

- Twenty-one historic resources are within the Area of Potential Effects (APE).
- Heilner Hangar (HR-1) is recommended to be eligible for listing in the NRHP.
- The Baker Municipal Airport (HR-21) has the potential to be eligible for listing in the NRHP as a historic district; however, an additional survey should be completed for areas outside of the APE established for this study to refine and supplement AINW's recommendations.
- The Small Hangar (HR-2), the Administration Building (HR-3), Ancillary Buildings 1 and 2 (HR-12 and HR-13), the Radio Facility (HR-14), and runoff ditches constructed by laborers of the Works Progress Administration (HR-20) contribute to the potential Baker City Municipal Airport Historic District, but they do not meet requirements to be individually listed in the NRHP.
- The remaining thirteen resources are recommended to be not eligible for listing in the NRHP and do not contribute to the potential Baker City Municipal Airport Historic District.

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INTRODUCTION



Photo 1. Aerial view of the Baker City Airport captured in 2007. Photograph courtesy of Baker County Library Archives.

The Baker City Municipal Airport is located north of Baker City in Baker County, Oregon (Figure 1; Photo 1). An update of the Baker City Municipal Airport Master Plan (Master Plan) is underway that outlines future projects and will prepare the airport to respond to aviation trends in the years ahead. The Master Plan for Baker City Municipal Airport was last updated in 2010. The Federal Aviation Administration (FAA) will review the updated Master Plan, and implemented projects must comply with Section 106 of the National Historic Preservation Act (NHPA), as amended, and its implementing regulations (36 CFR 800).

Archaeological Investigations Northwest, Inc. (AINW), was asked to conduct a cultural resources survey of a 45.5-acre portion of the airport where planning efforts will be concentrated. This Area of Potential Effects (APE) encompasses potential locations of ground disturbance within the airport property (Figure 1; Photos 2 and 3). The project APE is bound by Runway 8-26 to the north, Runway 13-31 to the east, S Airport Lane to the south, and Runway 17-35 to the west.

AINW's cultural resources survey included a background review, archaeological pedestrian survey, and an inventory of historic built environment resources. The study was completed and directed by AINW personnel meeting the professional qualifications of the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation and was completed according to the guidelines set by the Oregon State Historic Preservation Office (SHPO).

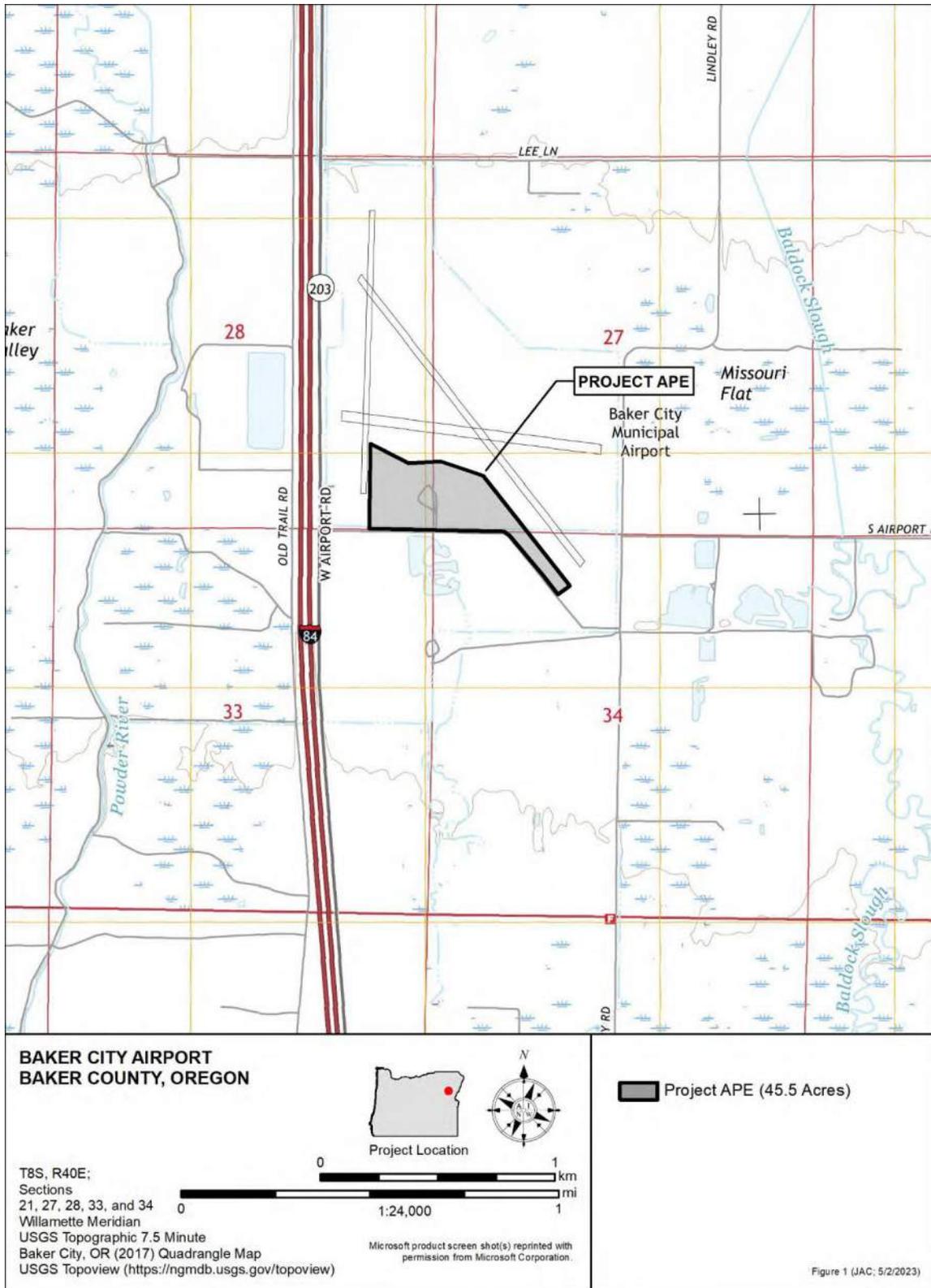


Figure 1. The project APE is limited to a 45.5-acre section of the Baker City Municipal Airport in Baker County, Oregon.



Photo 2. Overview of the western portion of the project APE from the airport entrance at Heilner Drive. Note the Elkhorn mountains to the west. The view is facing northwest.

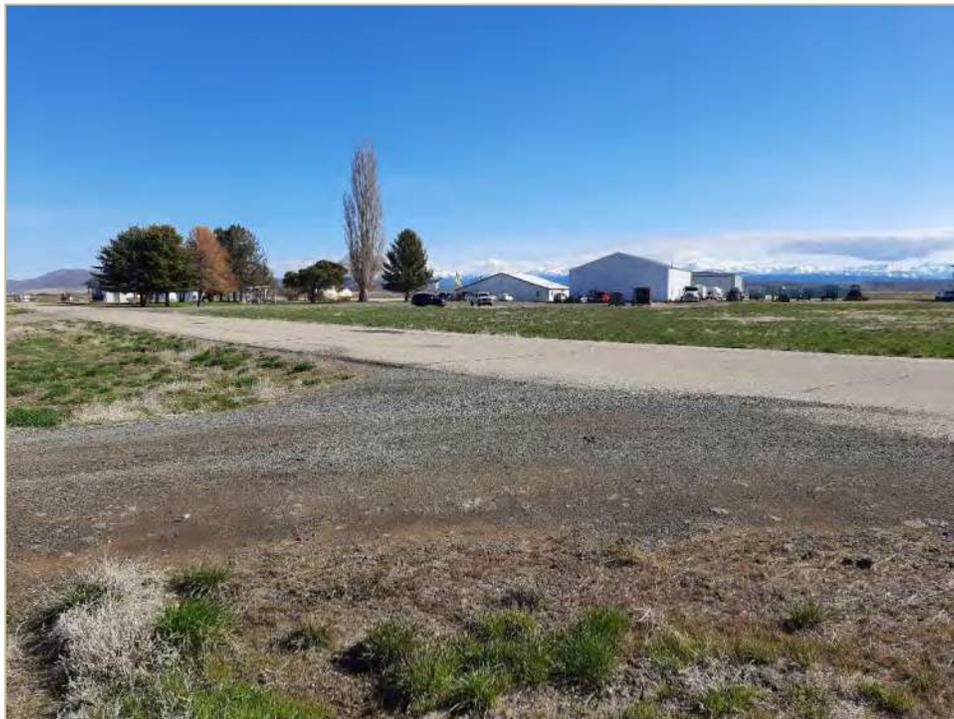


Photo 3. Overview of the eastern portion of the project APE, the center of Baker City Municipal Airport, and Heilner Drive. Note the Wallowa Mountains to the east. The view is facing northeast.

LOCATION AND ENVIRONMENTAL SETTING



Photo 4. Taxiway within the western portion of Baker City Municipal Airport. The view is facing west.

The project APE is within Sections, 27, 28, 33, and 34, Township 8 South, Range 40 East, Willamette Meridian, in Baker County, Oregon (Figure 1). The 45.5-acre project APE is within Baker City Municipal Airport property, a flat, open area bounded by airplane runways on three sides. The central portion of the airport features taxiways, hangars, and open fields (Photos 2, 3, and 4).

The project APE lies within the southeast Columbia Plateau and the eastern portion of the Blue Mountain range of northeast Oregon. Two mountain ranges surround the project APE: the Elkhorns to the west and the Wallowas to the east (Photos 2 and 3). The project APE is about 1.6 kilometers (km) (1 mile [mi]) east of Powder River, 4 km (2.5 mi) east of Mink Creek, 1.6 km (1 mi) west of the Baldock Slough, and 64 km (40 mi) west of the Snake River.

The topography in this region was formed during the Miocene epoch. The Blue Mountains are underlain by Columbia River Basalt Group lava flows. The area surrounding Baker City is part of a volcanic island arc. The Blue Mountains uplifted in response to the weight of the basalt flows, tectonic stresses, erosion, sedimentary deposition, and other metamorphic changes (Hooper and Swanson 1990).

The project APE is within the *Abies grandis* vegetation zone, an extensive forest zone in the Blue Mountains of eastern Oregon. Environments in the *Abies grandis* vegetation zone typically consist of fir woodlands, volcanic ash soils, and non-forest communities. Grand-firs, white-firs, ponderosa pines, lodgepole pines, western larch, and Douglas-fir are common in the overstory, while dwarf roses, prickly currants, Oregon boxleaf, huckleberries, grassy herbs, broadleaf lupine, blackberries, and hawkweed are common understory species. Non-forest communities are successional to forests and others are climax shrub or grassland communities (Franklin and Dyrness 1973:193-201). Soils within the *Abies grandis* vegetation zone are relatively deep, due to accumulations of volcanic ash (Franklin and Dyrness 1973:194).

CULTURAL SETTING

NATIVES PEOPLES – PRE-CONTACT PERIOD

As ice retreated from the Pacific coast about 16,000 years ago during the late Pleistocene, coastal migration became possible, followed by rapid population expansion (Llamas et al. 2016; Skoglund and Reich 2016). Evidence for early occupation of the southern plateau is limited. This is partly due to Missoula Floods scouring away much of the evidence of early occupation along the Columbia River and its tributaries and partly because people in the Early Holocene were highly mobile and did not often leave behind large accumulations of materials in one location. The earliest documented sites in the Columbia Plateau date to 13,000 years before present, including Marmes Rockshelter (274 km [170 mi] northwest of the project APE) and Sentinel Gap (405 km [252 mi] northeast of the project APE) (Kirk and Daugherty 2007:18-27). Other Paleoindian sites closer to the project APE, such as Pilcher Creek (site 35UN147, 72 km [45 mi] northwest of the project APE) suggest that people were in the uplands even as early as they were along portions of the Columbia River (Kirk and Daugherty 2007:160).

In the middle Holocene, a socioeconomic shift occurred. Population growth intensified and sedentism increased along with year-round settlements, as evidenced by the Stockhoff site (35UN52) and Marshmeadow site (35UN95), approximately 74 km (46 mi) north of the project APE (Kirk and Daugherty 2007:168). Nearby sites like those in Hells Canyon (Kirkwood Bar [10IH699], Deep Gully [10IH1892], and Bernard Rockshelter [10IH483]) approximately 72 km (45 mi) northwest of the project area, show that seasonal camps were used to supplement resources stored at the more permanent camps.

ETHNOGRAPHIC CONTEXT

The project APE is within the traditional homelands of multiple interconnected Indigenous groups whose boundaries were fluid and pervious; these groups include the *Weyíletpu* (Cayuse), *Nimiipuu* (Nez Perce), *Pelúucpu*, and *Imatalamláma* (Umatilla), and *Walúulapam* (Walla Walla). Spoken languages of the region include Northern Paiute, Sahaptin, and *Waiilatpuan* (Stern 1998:395; Suphan 1974; Walker 1998:420). Today these groups are members of several federally and non-federally recognized tribes including the Confederated Tribes of the Colville Reservation (CTCR), Confederated Tribes of the Yakama Nation, and The Confederated Tribes of the Umatilla Indian Reservation (Boxberger 2000; CTCR 2021; Ruby et al. 2010; Stern 1998:395; Walker 1998:420).

With permission from the host tribe, traditional areas were co-utilized and villages along the shores of the Columbia and Snake Rivers were often occupied by multiple cultural groups (CTCR 2021; Stern 1998). Through socialization, feasting, intergroup cooperation, and intermarriage, Indigenous groups developed cultural parallels while retaining distinct ethnic identities (Boxberger 2000). Inland areas similar to the project APE were used for hunting and gathering, travel, summer encampments, and ceremonies (Hunn et al. 2015:158; Stern 1998).

Within the Powder Valley near the present location of Baker City, and possibly encompassing the project APE, is *Hiúumepińwees*. Utilized by the Cayuse, Nez Perce, and others, *Hiúumepińwees* is a seasonal camp and hunting area, translated as “grizzly bear coming out” (Hunn et al. 2015:158). Close by

at the confluence of Poker Creek and Powder River (24 km [15 mi] southwest of the project APE) is *Tayat Kimolikan*, translated as “high country,” a hunting and root-digging ground of the Cayuse and Umatilla (Hunn et al. 2015:159).

Residential patterns were influenced by seasonal access to resources across diverse environments. In the winter people lived in semi-permanent villages along major water ways, consisting of 5 to 50 mat-covered longhouses and pithouses set over shallow depressions (Boxberger 2000; Stern 1998:396). In the summer people would disperse into smaller groups, residing in tule mat-covered tipis within bountiful resource gathering locations (Boxberger 2000). Other structures within the villages may have included fish drying racks, food storage pits, mud-baths, or sweathouses (Stern 1998:396).

Indigenous groups would subsist on fish and plant resources, dried or fresh. Seasonal roots and tubers were particularly important, including camas, bitterroot, biscuitroot, and yampah (Boxberger 2000; Hunn 1990). Other plant resources such as huckleberry, chokecherry, wild celery, and plants within the *Lomatium* genus (which also had various medicinal uses) were utilized (Moore 2011; Hunn 1990). Animal resources were used to supplement diets, including antelope, badger, deer, elk, grouse, pronghorn, rabbit, waterfowl, (Stern 1998:396-400).

European-introduced pestilent epidemics are estimated to have started in the Pacific Northwest around 1770, before the physical presence of non-Indigenous people. For decades afterwards, population loss occurred continually throughout the region (Boyd 1999:263). In the early nineteenth century, Indigenous groups of the Columbia Plateau came into physical contact with non-Indigenous explorers and fur traders, resulting in a catastrophic upheaval of traditional society (Boyd 1999:263). Mobility and trade networks are thought to have increased in the protohistoric period with the arrival of European domestic horses (Walker and Sprague 1998:138). However, many Indigenous communities assert they have always had horses, long before colonization, and there is increasing evidence supporting this assertion (Collin 2017; Johnston 2023; Jones 2012).

HISTORICAL BACKGROUND

Non-Indigenous groups began to travel near the project APE in 1805-1806 with the arrival of the Lewis and Clark expedition (Kershner 2008). Trappers and traders followed as multiple Forts (such as Fort Boise, Fort Hall, and Fort Walla Walla) were established along the Columbia and Snake Rivers.

An 1864 General Land Office (GLO) map of Township 8 South, Range 40 East, notes an “Emigrant Road,” part of the Oregon Trail, as extending northwest to southeast approximately 2 km (1.2 mi) east of the airport property (GLO 1864). About 0.4 km (0.25 mi) east of the airport, a single large pine tree nicknamed the “Lone Tree” was once an important landmark and resting place to travelers on the Oregon Trail (Evans 1991:Map 3-9). Traveler accounts report the tree was gone by 1843 (Evans 1991). Soil in this area was labeled as second rate and covered with sagebrush, not an ideal location for farm settlements (GLO 1864). In 1868 and 1870, land in the APE was granted to the State of Oregon under the authority of the Preemption Act of 1841 (Bureau of Land Management 1868, 1870).

Most travelers passed through the Baker City area as they continued west toward the Willamette Valley (Hiatt 1893). This changed in 1861 when four miners discovered gold a few miles south of

present-day Baker City; after this discovery the area experienced a population boom (Dielman 2022). In 1862, Baker County was created from a part of Wasco County (State of Oregon 2023). That same year, attorney Royal A. Pierce platted the town that would become Baker City (Dielman 2020). Baker City was named as the seat of Baker County in 1866 and the city incorporated in 1874 (Dielman 2022).

The arrival of railroad lines in eastern Oregon in the late nineteenth century spurred interest in Baker City's agricultural and ranching potential (Dielman 2022). During this time the Carey Act of 1894 aided in the irrigation of arid lands, encouraging further settlement of such lands in the western United States. In 1889, the Oregon Lumber Company was founded on the south side of Baker City, and it harvested pine forests around Baker City (Dielman 2022). The combination of lumber and railway development contributed to Baker City being Oregon's third largest city by 1900. However, development throughout the project APE remained limited until the early to mid-twentieth century, when the airport was first constructed (U.S. Geological Survey [USGS] 1901; 1955; 1959). A 1901 map shows the project APE as open and undeveloped land (USGS 1901).

The Baker City Municipal Airport originated as an unimproved landing field, primarily for biplanes, at the end of World War I (*La Grande Observer* 1919; *Statesman Journal* 1930). Transcontinental airmail carrier service was inaugurated by the United States Postal Service between 1918 and 1920, marking the first serious use of the airport (Millbrooke et al. 1998). In 1925, the passage of the Kelly Air Mail Act turned postal service over to commercial air carriers. As a result, new feeder routes developed, leading to a national increase in airport construction after 1927 (Harris 1986; Millbrooke 1998). In 1928, the 80-acre Baker airfield was established as part of the lighted airmail route between feeder stops in Boise, Idaho, and Pasco, Washington (*La Grande Observer* 1929; *Statesman Journal* 1933; *The Idaho Statesman* 1928; United States Postal Service 2023). That same year, Baker City requested the Baker airfield be studied for a possible conversion to a municipal project (*The Idaho Statesman* 1928).

The initial phase of municipal airport operation began in 1930 when the first landing strip and hanger at Baker City Airport were completed. Baker City attorney and aviation enthusiast Joseph J. Heilner and the local Kiwanis club led the effort (*Morning Oregonian* 1930). The Baker City Municipal airport, located four miles north of Baker City, was dedicated on June 28, 1931. The dedication celebration included the arrival of 40 airplanes with the Pacific Northwest Air Tour and a four-hour stunt show sponsored by the Baker Aviation Committee (*La Grande Observer* 1931).

During the Great Depression of the 1930s, the federal government began providing airport aid to create jobs, stimulate the economy, and improve national defense through the Civil Works Administration and the Department of Air Commerce (Carmody 1941; FAA 2023; Smith 1936). In 1934, when the Civil Works Administration ended, the airport development program was turned over to the Federal Emergency Relief Administration, later renamed the Works Progress Administration (WPA) (Livingnewdeal.org 2023).

Between 1934 and 1941, local and national interests merged when the WPA, and Baker City spent over \$400,000 to improve the Baker City Municipal Airport (*Corvallis Gazette-Times* 1941; *La Grande Observer* 1936). In 1934, the local American Legion 41 in Baker raised \$1,050 to expand the footprint of the airport (*The News-Review* 1934). In 1937, the city bonded an additional 70-acres of land to the east and north of the existing airfield for WPA improvements (Melton 1936; *La Grande Observer* 1937). By 1941, the original airport runway was extended, new runways were constructed and improved, field drainage was

completed around the airport property, and a radio beacon station, radio towers, radio building, and a watch house were constructed (*Corvallis-Gazette Times* 1938; *La Grande Observer* 1934a, 1934b, 1936; *Medford Mail Tribune* 1934, 1941; Melton 1936; *The News-Review* 1934; U.S. Army Corps of Engineers 1941).

During World War II, the Baker City Municipal Airport was used for emergency landings by pilots training with Colonel Jimmy Dolittle for their bombing missions over Tokyo (Ferguson 2019). The airport also served as a civilian flying school in coordination with the U.S. Government (*La Grande Observer* 1943). In 1945, all of the pre-World War II-era buildings and several private airplanes used by the flying school were destroyed in a fire (*La Grande Observer* 1945a).

Postwar prosperity expanded the mobility of Pacific Northwest residents, and passenger travel surged (National Air and Space Museum 2023). Airline advertisements promoted travel as a leisure activity, selling the exclusivity of the ride, experience, and destination (Aviation Oil Outlet 2016). The first regularly scheduled commercial airline flights to Baker City Municipal Airport were Empire Airlines on Boeing 247Ds and DC-3s in 1946 when domestic service routes were opened to smaller, less prosperous cities such as Baker City by the Civil Aeronautics Board (Airline Timetable Images 2023; González 2022; *La Grande Observer* 1945b). In the late 1940s, meals were served at the Baker City Municipal Airport, and the 1949 Oregon Airport directory framed Baker City as a recreation destination for its proximity to the Anthony Lakes region and its big game hunting (Oregon State Board of Aeronautics 1949).

Between 1954 and 1984, the airport was the home of Don Doyle's Flying Service (Baker County Library Digital Archive 2023; *The Idaho Statesman* 2016). Don and Helen Doyle moved to Baker City after their marriage in 1954 to run the Fixed Base Operation at Baker City Municipal Airport. In addition to working as airport manager, Doyle's flying service company provided charter flights, air ambulance service, student instruction, scenic tours, fire patrol, fish and game flights, fire and timber spraying, and aviation fueling (*The Idaho Statesman* 2016).

In 1962, the FAA provided \$47,426 to fund several airport improvements, including acquiring land for clear zones, construction of taxiways to the primary runway, constructing a terminal apron and entrance road, and the installation of new lighting cable (*The Oregonian* 1962). It is likely that the primary runway was also resurfaced or otherwise improved with the funding allocated by FAA (*The Oregonian* 1962). In 1976 the Baker Garden Club erected a stone monument in recognition of the Oregon Trail and planted a ponderosa pine tree on the airport property to represent the Lone Tree that had once stood approximately 0.4 km (0.25 mi) east of the airport. The tree and monument are presently located near the Baker Aircraft Office building (Photos 5 and 6). Between circa 1970 and 2012, 15 hangars were erected at the airport. A 1994 USGS map shows the extension of Runway 13-31 and the re-route of S Airport Lane (USGS 1981; 1994).



Photo 5. The replanted "Lone Tree" at Baker City Municipal Airport. The view is facing northwest.



Photo 6. The "Lone Tree" sign at Baker City Municipal Airport.

PREVIOUS CULTURAL RESOURCE STUDIES

Prior to conducting the field survey, AINW reviewed records to determine whether cultural resource surveys have been previously conducted and if previously recorded archaeological resources were present in or near the project area. AINW reviewed records in the Oregon State Historic Preservation Office's Oregon Archaeological Records Remote Access (OARRA) online database, Oregon Parks and Recreation Department maps, materials in the AINW library, and other historic maps and documents.

ARCHAEOLOGICAL RESOURCES

A review of OARRA records found that seven surveys have been previously conducted within 3.2 km (2 mi) of the project APE. These surveys identified one archaeological isolate and no archaeological sites. The surveys were conducted along highways, roads, and within open, semi-developed landscapes similar to the project APE. Part of the current project APE has been previously surveyed, and no archaeological resources were identified in that area (Womack 2006). The seven cultural resource surveys and one archaeological isolate recorded within 3.2 km (2 mi) of the project APE are discussed below.

- A cultural resource survey of 5 acres was within the project APE, centered around the developed portion (Womack 2006). The study consisted of a pedestrian survey. No pre-contact or historic-period archaeological resources were identified.
- A cultural resource survey of 64.1 acres was 0.23 km (0.14 mi) to the west along W Airport Road, 1.3 km (0.8 mi) to the north of the project APE along Lee Lane, and 1.1 km (0.7 mi) to the southwest of the project APE within an open field (Frierson and Costigan 2020). The study consisted of a pedestrian survey and 105 shovel tests. Shovel tests were dug to a depth of 50 to 100 centimeters (cm) (20 to 39 inches [in]). One pre-contact isolate, 781-57-ISO-AP01, was identified within 3.2 km (2 mi) of the current project APE.
- Two cultural resource surveys were 0.3 km (0.2 mi) west of the current project APE, along Interstate 84 (Boehm et al. 2018; McAlister 2009). Both studies were pedestrian surveys. No pre-contact or historic-period archaeological resources were identified within 3.2 km (2 mi) of the current project APE.
- A cultural resource survey of 0.1 acres was 1.8 km (1.1 mi) northwest of the current project APE, closer to Baldock Slough (Goslin and Shindruk 2022). The study consisted of a pedestrian survey. No pre-contact or historic-period archaeological resources were identified.
- A cultural resource survey of 12 acres was 2.4 km (1.5 mi) southwest of the current project APE, along Powder River (Hatz 2000). The study consisted of a pedestrian survey. No pre-contact or historic-period archaeological resources were identified.
- An archaeological survey is located 3.2 km (2 mi) south of the current project APE, along 12.2 km (7.6 mi) of I-86 (Cheatham 1993). The study consisted of a pedestrian survey. No pre-contact or historic-period archaeological resources were identified.

One archaeological resource, isolate 781-57-ISO-AP01, was identified 2.5 km (1.6 mi) northeast of the current project APE (Frierson and Costigan 2020). Isolate 781-57-ISO-AP01 consists of one piece of black obsidian flake identified between 20 and 30 cm (8 and 12 in) below the surface. Radial tests around the isolate were negative. The flake is thought to be manufactured from Dooley Mountain obsidian, approximately 26 km (17 mi) southwest from the isolate. The isolate was recommended to be not eligible for listing in the National Register of Historic Places (NRHP).

In summary, despite a moderate number of archaeological investigations, only one archaeological resource has been identified in the vicinity of the project APE (though only one of the seven surveys conducted subsurface testing [Frierson and Costigan 2020]). For this reason, and because the project APE is not close to water, there may be a low probability for surface or buried archaeological deposits.

HISTORIC RESOURCES

No historic resources have been previously documented within the project APE. The closest NRHP-eligible or NRHP-listed resource is the Baker Municipal Natatorium in downtown Baker City, which is 6.4 km (4 mi) south of the APE. The Natatorium, constructed in 1920, was listed in the NRHP in 1977 for its significance under Criterion A (Kuhl 1977).

ARCHAEOLOGICAL FIELD SURVEY METHODS AND FINDINGS

From April 24 to 25, 2023, AINW Supervising Archaeologist Khrystyne Tschinkel, Ph.D., R.P.A., and Staff Archaeologist Trenton Bradshaw, B.S. conducted the archaeological pedestrian survey, and Tara Seaver, M.S., conducted the historic resources inventory. AINW Senior Archaeologist John Fagan, Ph.D., R.P.A., managed the project. No pre-contact archaeological resources were encountered during the pedestrian survey; however, historic-period resources were encountered.

PEDESTRIAN SURVEY

The pedestrian survey was conducted by archaeologists walking parallel transects spaced no more than 15 meters (m) (49 feet [ft]) apart. In the wider portion of the project APE, 41 transects were walked north to south; in the narrow eastern section of the project APE, five transects were walked northwest to southeast. The ground surface was inspected for archaeological resources and to assess the potential for buried archaeological deposits or features. Vegetation throughout the project APE was limited to cut grasses, native desert shrubs like sand golden-heather and winter sage, and invasive summer cypress and tumbleweed (Photo 7). Other vegetation within the project APE was concentrated around the Baker Aircraft Office building, including Lombardy poplar, ponderosa pine, and Norway spruce (Photo 3). A small, linear patch of eastern cottonwood and Siberian elm trees was also near the southeast corner of the project APE, along S Airport Lane (Photo 8).



Photo 7. Overview of the western field. Note the cut grasses, low lying desert shrubs, and exposed soils. The view is facing north.



Photo 8. Overview of the eastern field. Note the runoff ditch (indicated by the red arrow) running northwest to southeast. The view is facing south.

In the center of the project APE is Baker City Municipal Airport and Heilner Drive, the main access road into the airport (Photo 3). Surrounding Heilner Drive is the Baker Aircraft Office building, a fueling station, multiple hangars, a helicopter landing pad, taxiways, paved parking lots, and paved roads (Photos 4, 5, and 9). Surrounding the centralized portion of the airport are the western field (Photo 7) and the eastern field (Figure 2; Photo 8).

Mineral soil visibility throughout the project APE ranged from 0% to 100%. Soil visibility was 0% in the developed portion; these areas had paved roads, gravel roads, airport hangars, and airport maintenance buildings (Photo 3, 4, and 9). Some buildings were lined with imported crushed gravels. Mineral soil visibility increased in the undeveloped portions, ranging from 50% to 100%, specifically in the western and eastern fields; here, short, cut grasses were interspersed with patches of exposed soil (Photos 7 and 8). The survey identified one archaeological site and one isolate within the APE. The locations of these resources are mapped on Figure 2.

Site 22/3302-1

Site 22/3302-1 is located within the eastern field, approximately 42 m (138 ft) northeast of Airport Lane, 258 m (846 ft) east of Heilner Drive, and 136 m (446 ft) southwest of runway 13-31 (Photo 10). The site is a surface scatter consisting of household debris, likely representing a trash dump. The 69 pieces of debris were widely dispersed over an area of 606 m² (1,988 ft²). Debris found includes 2 pieces of milk glass, 1 shard of cobalt glass, 1 shard of amber glass, 5 shards of aqua glass, 2 shards of amethyst glass, 39 shards of colorless glass, 1 shard of green glass, 2 brick fragments, 12 pieces of whiteware, 1 piece of leather, 1 piece of non-diagnostic metal, 1 metal watch fragment, and 1 large piece of ironstone (Photos 11 through 15). Some of the glass pieces had been melted. Pieces of modern plastic pipe and food wrappers were also noted.

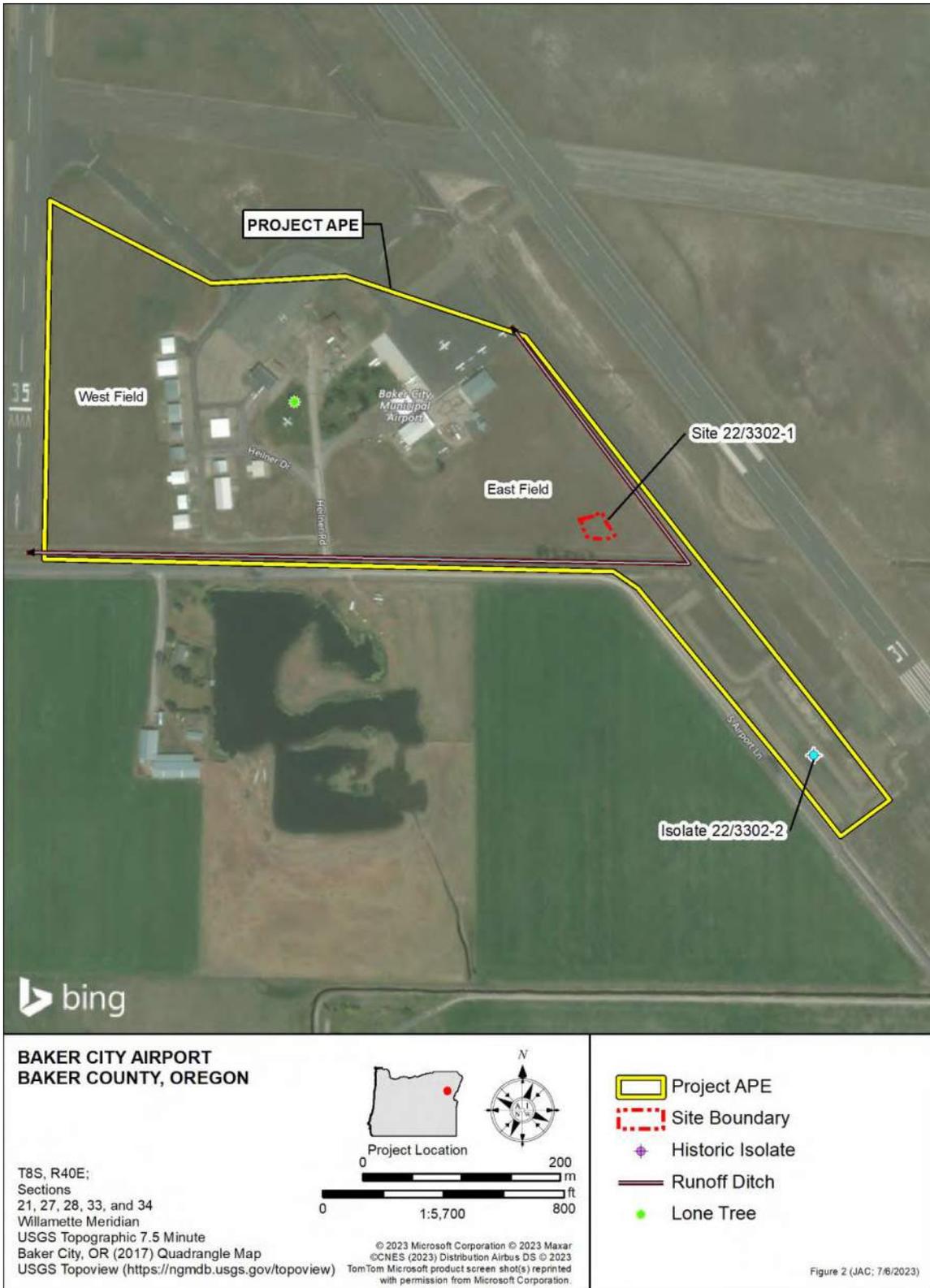


Figure 2. One archaeological site and one isolate were identified in the project APE.



Photo 9. Overview of runways and airplane hangars at Baker City Municipal Airport. The view is facing south.



Photo 10. Overview of site 22/3302-1, located in the eastern field. Note the orange flags representing surface finds. The view is facing south.

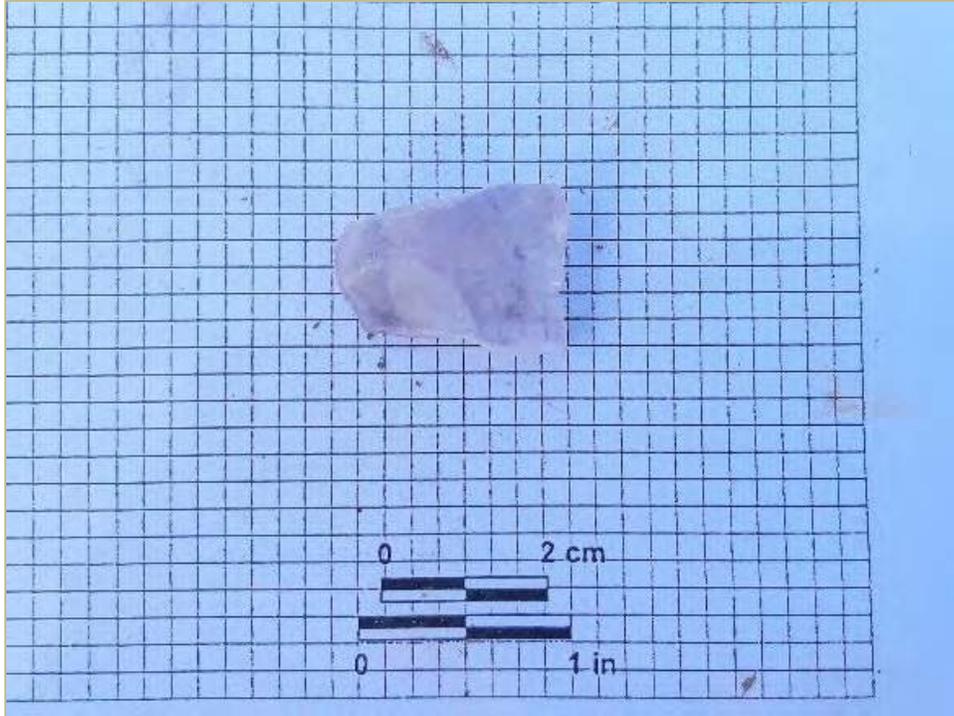


Photo 11. Amethyst glass shard found at site 22/3302-1.



Photo 12. Ironstone fragment with TEPECO maker's mark found at site 22/3302-1.

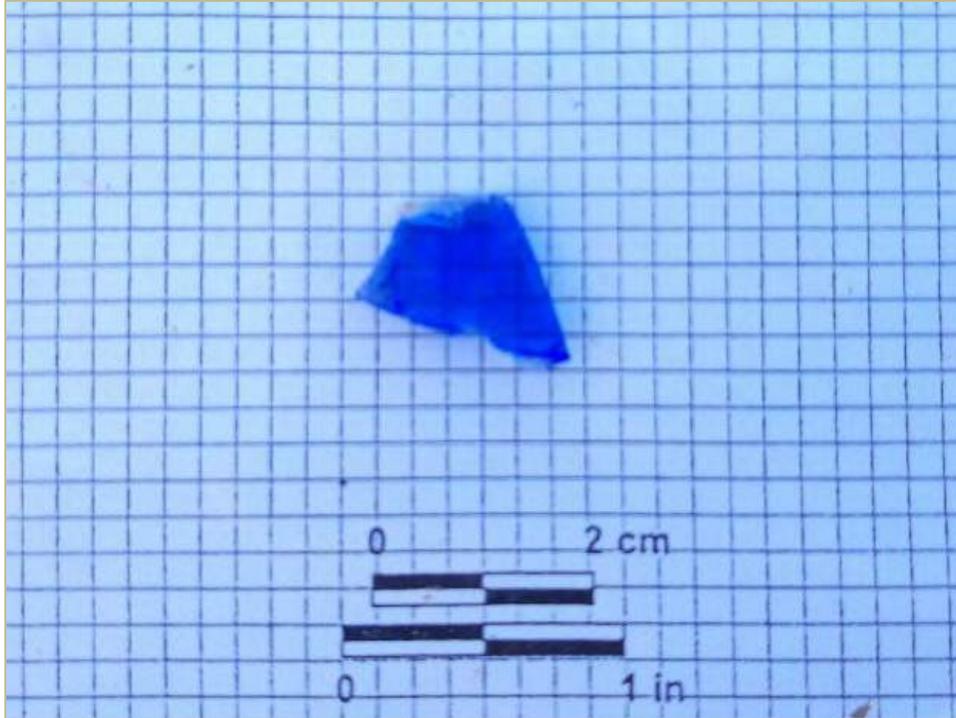


Photo 13. Cobalt glass shard found at site 22/3302-1.

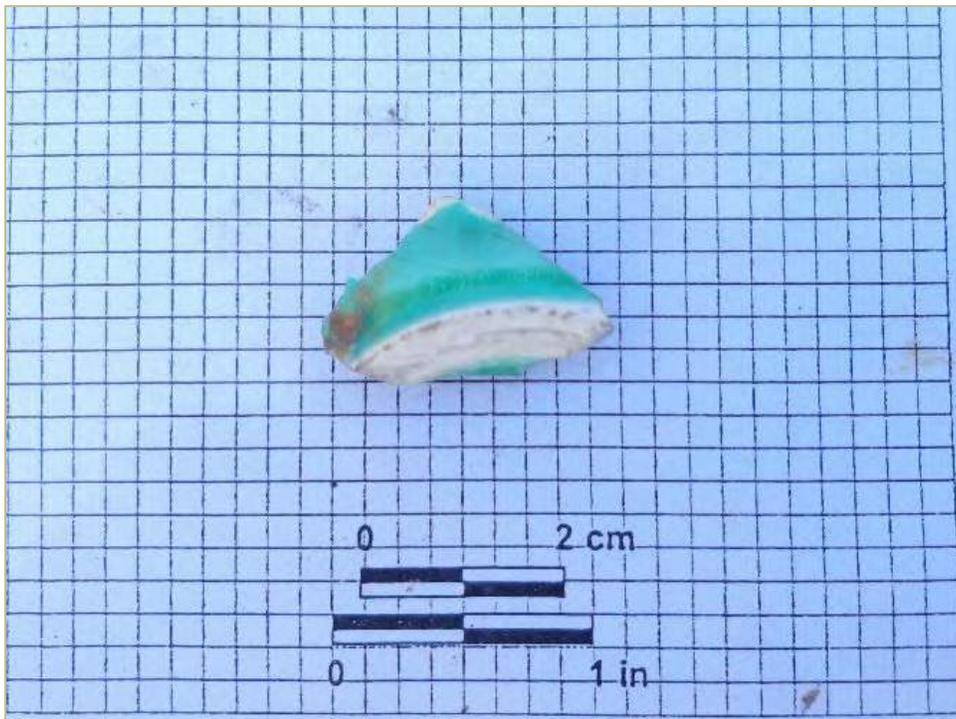


Photo 14. Decorated green ceramic sherd found at site 22/3302-1.



Photo 15. Possible watch fragment found at site 22/3302-1.

The amethyst glass and ironstone were the most diagnostic of the artifacts, and they were used to date the surface scatter (Photos 11 and 12). The amethyst tinting indicates the presence of manganese in the glass; this type of glass was colorless when manufactured, but turns light purple (amethyst) when exposed to the sun (Lockhart 2006). Mass-produced glass objects with amethyst tinting are dated to between approximately 1880 and 1917; the particular manufacturing technique ended in circa 1920 (Lockhart 2006). The ironstone fragment had a Trenton Potteries Company maker's mark. Trenton Potteries Company was located in Trenton, New Jersey (Lehner 1988:473-474; Potteries of Trenton Society 2023). Trenton Potteries Company dominated the ceramic market from 1880 to 1920, but production dwindled after the Great Depression and World War II (Potteries of Trenton Society 2023). From 1922 to 1969, Trenton Potteries Company manufactured mostly sanitary ware, such as bathtubs and toilets, and electrical porcelain (Lehner 1988:473; Potteries of Trenton Society 2023). Six locations produced Trenton Pottery. The maker's mark from the ironstone found at the project APE is marked with a number "6," indicating it was made at the Ideal Pottery location, which manufactured only sanitary ware and from 1902 to 1918 (Lehner 1988:473).

Site 22/3302-1 consists of a late nineteenth to early twentieth century historic debris surface scatter with some modern inclusions. It is possible these materials were dumped later than their manufacture date, especially the ironstone fragment, as these materials could have been used for a while after acquisition. Therefore, the estimated date range of 1880 to 1920 should be regarded as an upper limit for the date of the site; the lower limit is unknown because the site lacks historic integrity. It is likely that during airport construction and grading activities between 1930 and 1961, site 22/3302-1 was disturbed and spread over its current 606-m² (1,988-ft²) area (*Corvallis-Gazette Times* 1938; *La Grande Observer* 1934a, 1934b, 1936; *Medford Mail Tribune* 1934, 1941; Melton 1936; *The Oregonian* 1962; *The News-Review* 1934; U.S. Army Corps of Engineers 1941). The recorded 1945 fire may have disturbed the artifacts and could explain why many of the glass pieces had been melted (*La Grande Observer* 1945a).

Persistent modern mowing and brush hogging of the area during airport maintenance likely continued to disturb and further spread out the artifacts.

AINW recommends site 22/3302-1 to be not eligible for listing in the NRHP. The site does not appear to be from an intact archaeological deposit, where its association with other artifacts or structures would provide contextual information. The site has no known associations with significant events or people; therefore, it is not eligible for listing under Criteria A or B. The site is not a distinctive example of style or construction; therefore, it is not eligible for listing under Criterion C. The artifacts from the site do not reveal information about the context of the scatter or why this site was chosen to dump the materials; therefore, the site is recommended to be not eligible for listing under Criterion D. A site form is in Appendix A.

Isolate 22/3302-2

One sherd of amethyst glass (isolate 22/3302-2) measuring 2.5x2 cm (1x0.8 in) was discovered in the southeastern portion of the project APE, in the narrow section parallel to runway 13-31 (Photos 16 and 17). The isolate is located approximately 39 m (128 ft) northeast of Airport Lane and 115 m (377 ft) southwest of runway 13-31. The sherd was discovered about 350 m (1,148 ft) southeast of site 22/3302-1. This area shows recent ground disturbances related to the construction of two metal airplane hangars, including the deposited imported gravels (Photo 18). As previously mentioned, the amethyst tinting indicates an approximate date from 1880 to 1920 (Lockhart 2006). However, considering the recent construction in the area and lack of other archaeological finds, it is unlikely that the sherd represents an intact deposit from the late nineteenth century to early twentieth centuries.

AINW recommends isolate 22/3302-2 to be not eligible for listing in the NRHP. The isolate does not appear to be from an intact archaeological deposit, where its association with other artifacts would provide contextual information. The isolate has no known associations with significant events or people; therefore, it is not eligible for listing under Criteria A or B. The isolate is not a distinctive example of style or construction; therefore, it is not eligible for listing under Criterion C. The small sherd does not reveal information about the type of glass artifact the sherd was once a part of, or about the techniques used to make the artifact, and it does not retain its historic integrity; therefore, the isolate is recommended to be not eligible for listing under Criterion D. An isolate form is in Appendix A.



Photo 16. Overview of isolate 22/3302-2 in the southeast narrow strip of the project APE. Note the recent ground disturbances related to the hangar construction. The view is facing northwest.

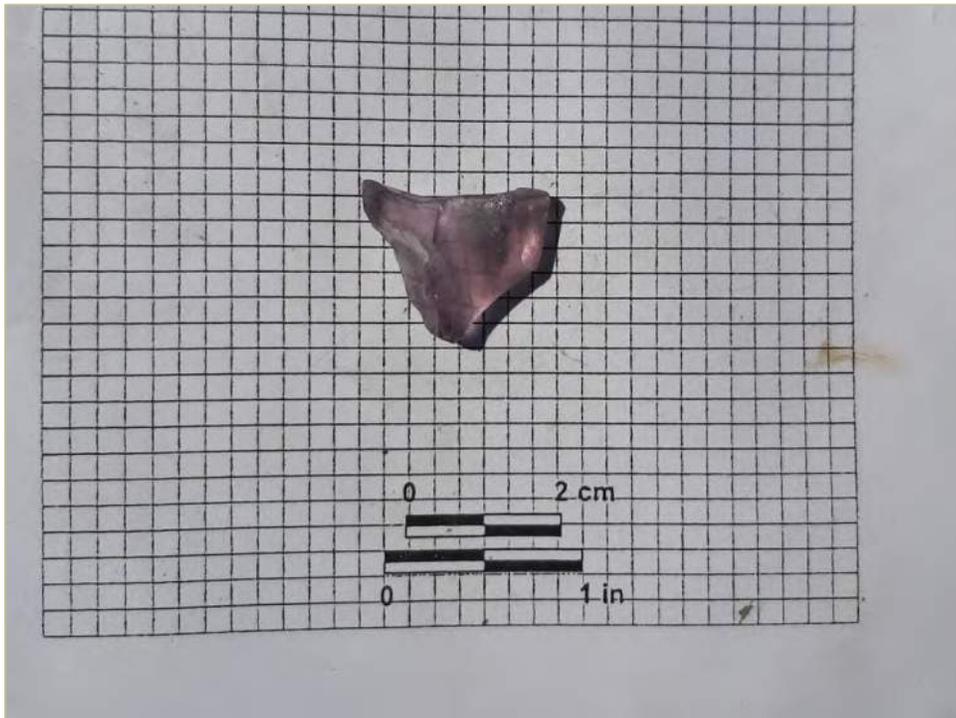


Photo 17. Isolate 22/3302-2, an amethyst glass shard found on the surface.



Photo 18. Recent ground disturbances around the new hangars in the southeast narrow strip of the project APE, close to isolate 22/3302-2. The view is facing southeast.

HISTORIC RESOURCES SURVEY METHODS AND FINDINGS

SURVEY METHODOLOGY

A historic resources survey of the 45.5-acre project APE was conducted on April 24 and 25, 2023, by AINW Architectural Historian Tara Seaver, M.S. For this survey, historic resources are defined as buildings, structures, sites, objects, and districts constructed at least 45 years before the survey date (i.e., in or before 1978) and are located within the project APE. Although a resource must generally reach 50 years in age before it is considered to be potentially eligible for listing in the NRHP, this survey held to a 45-year minimum age requirement to ensure that the resulting data would remain relevant for five years.

Each historic resource was photographed to capture its current context and character-defining features. Notes were taken to document physical characteristics and integrity. Historic resources that are outside of the APE but within airport property were observed to assist the AINW architectural historian in recommending whether a historic district overlaps the APE that meets minimum eligibility requirements for listing in the NRHP.

SURVEY RESULTS

Twenty-one historic resources are located within the project APE. The historic resources identified are detailed in Table 1, and mapped on Figures 3 and 4. One of the resources is the potential Baker City Municipal Airport Historic District, for which all other documented historic resources within the APE were evaluated for eligibility to contribute to the potential historic district. Only one other historic resource, Heilner Hangar (HR-1), is recommended as individually eligible for listing in the NRHP. Section 106 Documentation forms have been prepared for Heilner Hangar (HR-1) and the potential Baker City Municipal Airport Historic District (HR-21) (Appendix B). A summary discussion of each of the two recommended eligible historic resources are in the following pages.

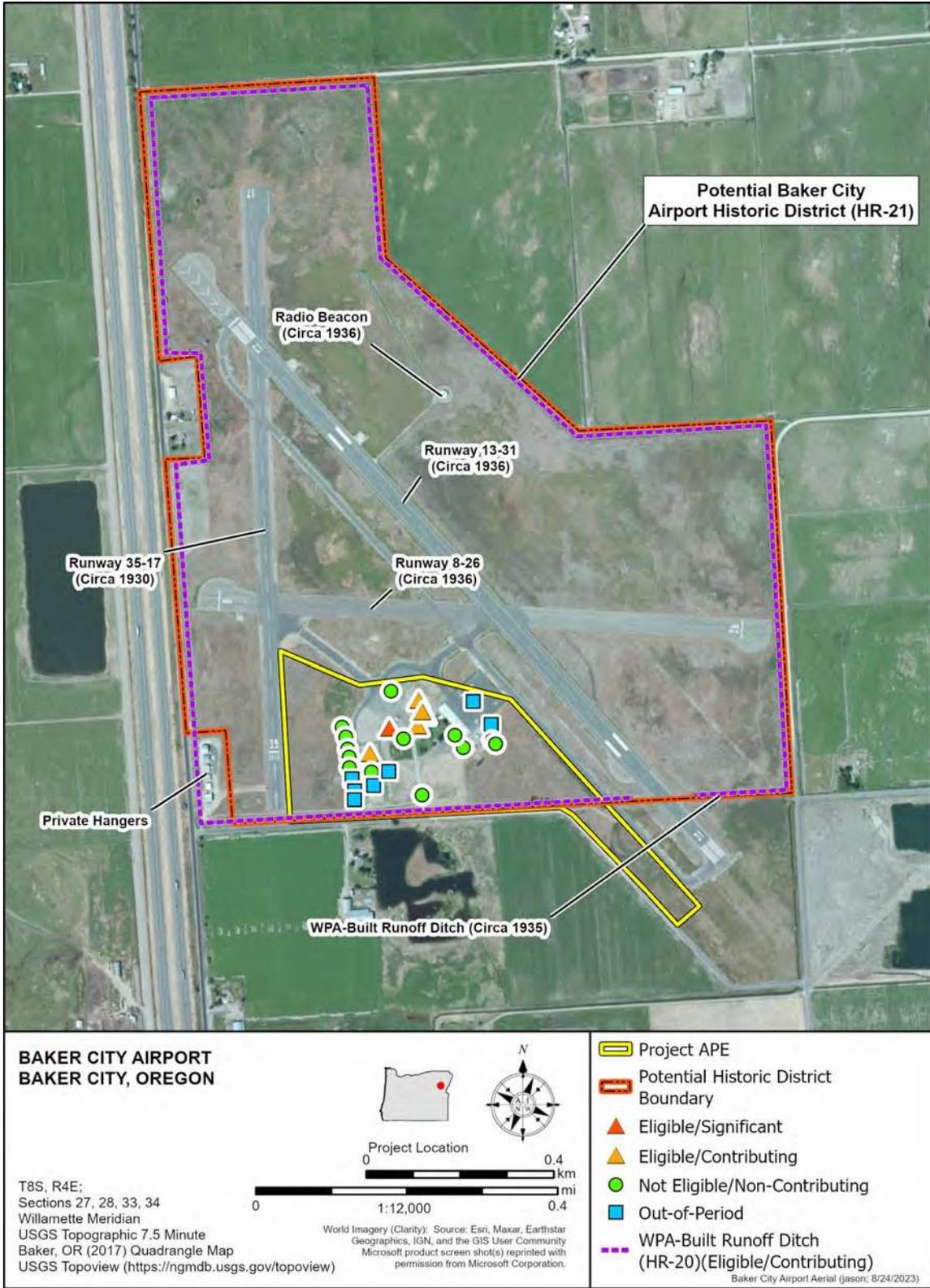


Figure 3. The potential Baker City Municipal Airport Historic District overlaps the project APE and is recommended eligible for listing in the NRHP under Criteria A and C.

| HR-# | Name | Built | Eligibility | HR-# | Name | Built | Eligibility |
|------|-------------------------|------------|-------------|------|---|------------|-------------|
| 1 | Heilner Hanger | 1946 | ES | 12 | Ancillary Building 1 | Circa 1949 | EC |
| 2 | Small Hanger | Circa 1946 | EC | 13 | Ancillary Building 2 | Circa 1949 | EC |
| 3 | Administration Building | Circa 1946 | EC | 14 | Radio Facility | Circa 1946 | EC |
| 4 | Pilot Duty Building | Circa 1971 | NC | 15 | T-Hanger 1 | Circa 1978 | NC |
| 5 | B5 Hanger | Circa 1971 | NC | 16 | T-Hanger 2 | Circa 1978 | NC |
| 6 | B6 Hanger | Circa 1971 | NC | 17 | Apron and Taxiway | 1962 | NC |
| 7 | Hanley Engineering | Circa 1971 | NC | 18 | Lone Pine Tree | 1976 | NC |
| 8 | Hanger | Circa 1977 | NC | 19 | Access Road | 1962 | NC |
| 9 | C5 Building | Circa 1970 | NC | 20 | WPA-Built Runoff Ditch | Circa 1935 | EC |
| 10 | Cessna Pilot Center | Circa 1978 | NC | 21 | Baker Airport Potential Historic District | 1930-1949 | ES |
| 11 | Baker Aircraft Office | 1970 | NC | | | | |

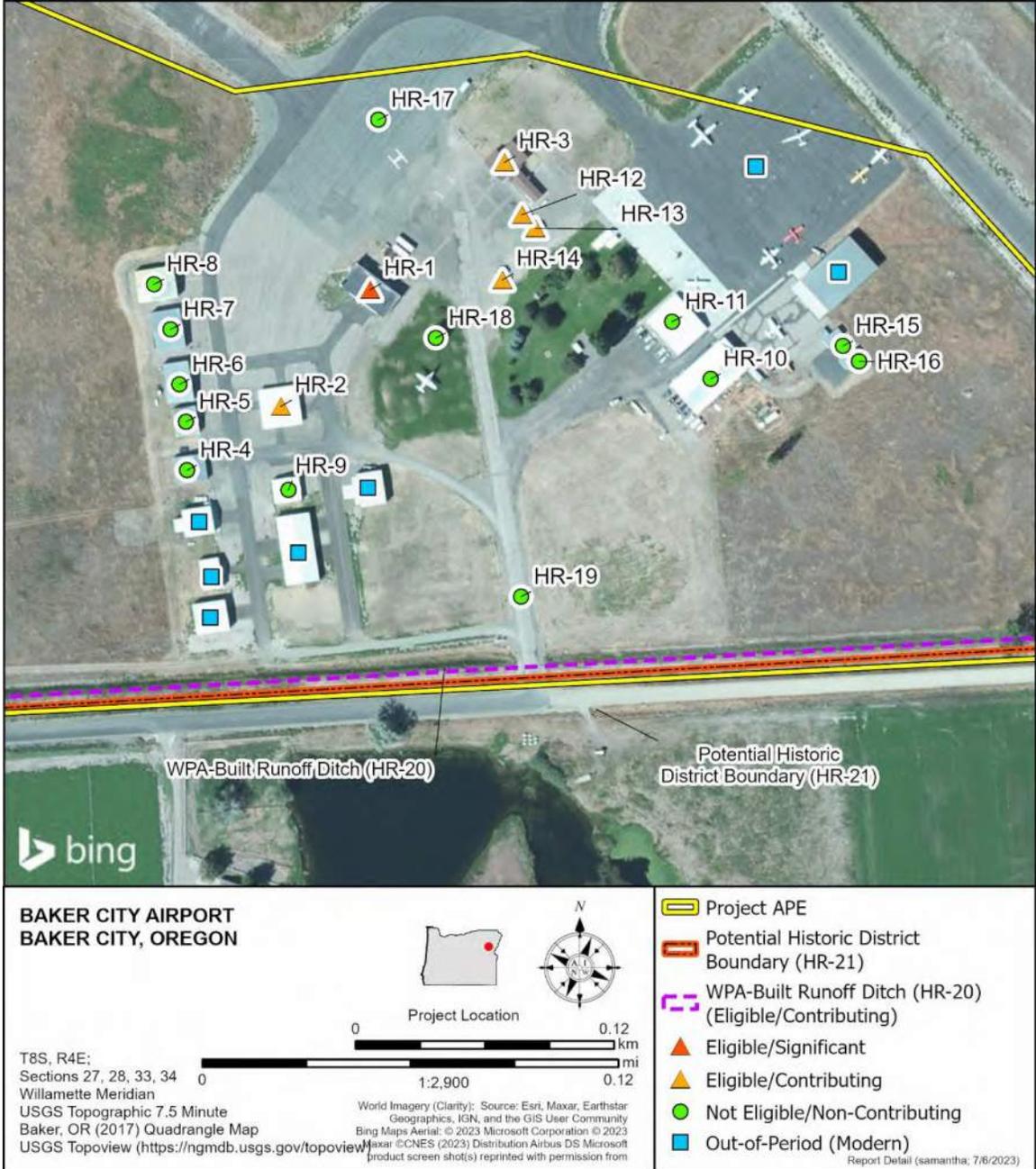


Figure 4. Historic resource locations in the project APE.

TABLE 1
HISTORIC BUILT ENVIRONMENT RESOURCES IDENTIFIED WITHIN THE PROJECT APE

| AINW Resource Number | Name/ Resource Type | Year Built | NRHP Eligibility | Photograph |
|----------------------|-------------------------|------------|--|--|
| HR-1 | Heilner Hangar | 1946 | Eligible/Significant under Criteria A, B, C Contributes to Potential Baker City Municipal Airport Historic District |  |
| HR-2 | Small Hangar | Circa 1946 | Eligible/Contributing Contributes to Potential Baker City Municipal Airport Historic District |  |
| HR-3 | Administration Building | Circa 1946 | Eligible/Contributing Contributes to Potential Baker City Municipal Airport Historic District |  |
| HR-4 | Pilot Duty Building | Circa 1971 | Not Eligible/ Non-Contributing |  |

TABLE 1, continued

| AINW Resource Number | Name/ Resource Type | Year Built | NRHP Eligibility | Photograph |
|----------------------|---------------------|------------|-----------------------------------|--|
| HR-5 | B5 Hangar | Circa 1971 | Not Eligible/ Non-Contributing |  |
| HR-6 | B6 Hangar | Circa 1971 | Not Eligible/ Non-Contributing |  |
| HR-7 | Hanley Engineering | Circa 1971 | Not Eligible/ Non-Contributing |  |
| HR-8 | Hangar | Circa 1977 | Not Eligible/ Non-Contributing |  |

TABLE 1, continued

| AINW Resource Number | Name/ Resource Type | Year Built | NRHP Eligibility | Photograph |
|----------------------|-----------------------|------------|--|--|
| HR-9 | C5 Hangar | Circa 1970 | Not Eligible/ Non-Contributing |  |
| HR-10 | Cessna Pilot Center | Circa 1978 | Not Eligible/ Non-Contributing |  |
| HR-11 | Baker Aircraft Office | 1970 | Not Eligible/ Non-Contributing |  |
| HR-12 | Ancillary Building 1 | Circa 1949 | Eligible/Contributing Contributes to Potential Baker City Municipal Airport Historic District |  |

TABLE 1, continued

| AINW Resource Number | Name/ Resource Type | Year Built | NRHP Eligibility | Photograph |
|----------------------|---------------------------|------------|--|--|
| HR-13 | Ancillary Building 2 | Circa 1949 | Eligible/Contributing Contributes to Potential Baker City Municipal Airport Historic District |  |
| HR-14 | Radio Facility | Circa 1946 | Eligible/Contributing Contributes to Potential Baker City Municipal Airport Historic District |  |
| HR-15 & 16 | T-Hangar 1 and T-Hangar 2 | Circa 1978 | Not Eligible/ Non-Contributing |  |
| HR-17 | Apron and taxiway | 1962 | Not Eligible/ Non-Contributing |  |

TABLE 1, continued

| AINW Resource Number | Name/ Resource Type | Year Built | NRHP Eligibility | Photograph |
|----------------------|---|--|---|--|
| HR-18 | Lone Tree | 1976 | Not Eligible/ Non-Contributing |  |
| HR-19 | Access Road | 1962 | Not Eligible/ Non-Contributing |  |
| HR-20 | WPA-Built Runoff Ditches | Circa 1935 | Eligible/Contributing Contributes to Potential Baker City Municipal Airport Historic District |  |
| HR-21 | Potential Baker City Municipal Airport Historic District | 1930-1949 Period of Significance | Eligible/Significant under Criteria A and C |  |

HR-1: Heilner Hangar

Heilner Hangar was constructed in 1946 and was designed by Annand & Kennedy architects of Portland, Oregon (Photos 19 and 20). It currently serves as aircraft storage. The Hangar is two stories tall with a rectangular footprint. The exterior walls and foundation of the building are constructed of poured concrete. The low-profile wood truss roof is clad with built-up and features a metal parapet.

Concrete projections are present on the southwest and northeast elevations where the hangar doors are located. The fenestration consists of sliding metal doors on the southwest elevation and a multi-leaf wood door with three-light windows on the northeast elevation. Five steel windows with 18 lights and a central awning or hopper section characterize the southeast elevation of the building, and they provide natural light in the main hangar area. The northwest side of the building has steel windows of various configurations on the first floor and a mixture of steel, wood, and vinyl windows on the second floor.

Determination of Eligibility

Heilner Hangar is significant for its contributions in the area of air transportation in Baker City, Oregon, is associated with significant persons in the past, and it embodies distinctive characteristics of its type and period of construction. It is recommended to be eligible for the NRHP at the local level under Criteria A, B, and C.

Heilner Hangar was constructed at the Baker City Municipal Airport in 1946, after a 1945 fire destroyed all airport buildings (*La Grande Observer* 1945a). It was first used as a combined office for the airport manager and a maintenance building for airmail, commercial, and privately owned planes flying in and out of the Baker City Municipal Airport (Oregon State Board of Aeronautics 1947, 1949). Heilner Hangar may have also been used to house or repair agricultural aircraft (*The News-Review* 1955).

Between 1954 and 1984, Heilner Hangar played a key role as the base of operations for the municipal airport's manager, Don Doyle. Doyle's air transport business, "Don Doyle's Flying Service," supported backcountry firefighting efforts, provided remote search-ambulance service, and assisted in aerial timber spraying of invasive species throughout Northeastern Oregon (Gilmand 1973; *The Idaho Statesman* 2016; *The News-Review* 1955). Doyle also provided charter flight services to and from the Baker City Municipal Airport.

In addition to its association with significant patterns of events regarding the development of air transportation services in Baker City during the mid-twentieth century (Criterion A), the building retains the majority of its original features and embodies distinctive characteristics of its type and period of construction (Criterion C). Such characteristics include multi-leaf hangar doors, steel sash windows, and its utilitarian multi-purpose design that offers office space within the hangar footprint. Although these design features were common in airplane hangars constructed after 1930 and were often included in standardized plans after World War II, the hangar, which was designed by Annand & Kennedy of Portland, retains all aspects of integrity and is a good local example of its type and period of construction (Aaron 2011:4-12, 5-7, 5-8). Based on a review of other projects completed by architects Annand & Kennedy, both during and outside of their partnership, it is recommended that the hangar is not an important example of the work of Master architects.



Photo 19. Southwest elevation of Heilner Hangar. The view is facing northeast.



Photo 20. Northwest and northeast elevations of Heilner Hangar. The view is facing south.

Under Criterion B, the hangar is broadly associated with Joseph J. Heilner, a Baker County resident who spearheaded the development of Baker Airport in 1930 and is the hangar's namesake. However, the hangar has no individual significance with Heilner. Alternately, Heilner Hangar may meet minimum eligibility requirements to be eligible for the NRHP under Criterion B for its association with Don Doyle, the former airport manager from 1954 to 1984. Don "Gene" Doyle is featured in Oregon newspapers and some Washington and Idaho newspapers as a locally significant person in Baker City for the rescue and operations work of his company, "Don Doyle's Flying Service," which he operated out of Heilner Hangar. Under Criterion D, because of its common design and use of period-typical materials, the building is unlikely to be a principal source of important information about the past.

Heilner Hangar retains integrity of location, design, workmanship, feeling, association, and to a lesser degree, integrity of materials. The hangar has not been moved from its original location, it retains its original footprint, and it has consistently been used as a maintenance and/or storage building for aircraft since 1946. Some of the original steel windows have been replaced with vinyl sashes; this impacts but does not diminish the hangar's integrity of materials. The hanger doors, if not original, date to the historic period. Integrity of setting is impacted but not entirely diminished by the construction of surrounding historic-period and modern hangars on the Baker Airport property.

HR-21: Baker City Municipal Airport Historic District

The Baker City Municipal Airport, or Baker Airport, is located at 43769 Heilner Drive north of Baker City, Oregon. In the late 1920s, the airport operated as an unimproved airfield. In 1930, the airfield was developed for municipal use, and the first airplane hangar was constructed. In the mid-1930s and early 1940s, the airport's existing runways and drainage ditches were completed by federal relief program workers under the Roosevelt administration. The existing buildings within the project APE date to between 1946 and circa 2012, as all pre-World War II era buildings burned down in a fire (Croghan 2007; Gambs 1946; *La Grande Observer* 1945a; USGS 1953, 1982). Clear zones, a terminal apron, taxiway, and the main access road were completed in 1962 (*The Oregonian* 1962).

Determination of Eligibility

The Baker City Municipal Airport represents a potential historic district that is recommended eligible for listing in the NRHP under Criteria A and C (Photos 21 through 24). Under Criterion A, the airport has an important local association with broad themes of development regarding the increasing popularity and necessity of air transport during the mid-twentieth century. The airport's initial construction and operation in 1930-1931 as a municipal airfield introduced commercial aviation to Baker City during the "Golden Age of Aviation," a period which saw the rapid development of the aviation industry. This twenty-year period lasted from the end of World War I to the start of World War II, and was succeeded by the "Jet Age," characterized by the advent of commercial jet travel. Large-scale airport improvements that took place at the airport during the late 1930s and early 1940s make the airport a tangible reminder of the projects completed by the Civil Works Administration and its successor, the WPA in Oregon. After World War II, as air transport became increasingly affordable to the public, the airport functioned as a destination and a feeder stop linking Eastern Oregon to other cities within the Pacific Northwest.



Photo 21. Overview of the Baker City Municipal Airport Historic District. Pictured from left to right are the Administration building (circa 1946), ancillary buildings located behind the trailer (circa 1949), radio facility (circa 1946), Heilner Hangar (1946), and the small hangar (circa 1946). The view is facing southeast.



Photo 22. Overview (from left to right) of Heilner Hangar, the Administration building, radio building, the two ancillary buildings, and the radio facility. The small hangar is not pictured. The view is facing northeast.



Photo 23. Overview of the radio building (foreground), and the two ancillary buildings and the Administration building (background). The view is facing north.



Photo 24. Overview of Heilner Hangar and the small hangar. Private hangars are on either side of the small hangar. The view is facing south.

Under Criterion C, although most individual buildings of the airport lack individual distinction, they nonetheless form a distinguishable entity that is observable through linkages in design, materials, and spatial orientation of airport elements constructed during the period of significance. Within the APE there are seven contributing resources and 13 non-contributing resources in the historic district.

- One historic resource of the project APE, runoff ditches (HR-20), contribute to the NRHP eligibility of the historic district and are estimated to have been constructed by WPA workers circa 1935.
- Six post-World War II resources (listed below), which are estimated as having been constructed between 1946 and 1949, contribute to the NRHP eligibility of the historic district. They were constructed to replace buildings lost to fire in 1945.
 - Heilner Hangar (HR-1)
 - Small Hangar (HR-2)
 - Administration Building (HR-3)
 - Ancillary Building 1 (HR-12)
 - Ancillary Building 2 (HR-13)
 - Radio Facility (HR-14)

The period of significance is recommended as 1930 to 1949, beginning with the establishment of the airfield as a municipal airport and ending with the postwar completion of several buildings that replaced those that burned in a 1945 fire. Major features that define the character of the Baker City Municipal Airport historic district and support its NRHP eligibility under Criteria A and C include the relief-era improvements (the runoff ditches, radio beacon station, and runways) that are situated both within and outside of the APE and remain in use on airport property; the spatial orientation of airport elements from the period of significance; and the continued use of the airport for commercial and private air travel. Additionally, the materials, techniques, and/or designs used to construct the aviation buildings are important character-defining features that reflect the postwar built environment.

The historic property boundary encompasses most of the airport, which is situated on tax lot no. 4500. The southwest and southeast corners of the taxlot have been excluded from the proposed historic property boundary as they contain private hangars constructed between circa 1971 and 2021 as well as a new taxi lane that fall outside of the period of significance for the historic district. The proposed historic property boundary extends outside of the APE to encompass airport features that were built during the period of significance and would likely contribute to the potential historic district if evaluated for eligibility to be listed in the NRHP. These features include the airport runways, a radio beacon station, and portions of circa 1935 runoff ditches that were completed by federal relief workers.

As currently defined, the historic property boundary includes more non-contributing than contributing features. This is due to the presence of several historic and modern buildings, most of which are utilitarian buildings clad with corrugated metal, that were built near the airport entrance after the period of significance defined for the district. With additional study of airport features outside of the current APE a full evaluation of the district would be possible, and the property boundary would likely be refined to exclude most of these buildings.

The presence of non-contributing buildings within the current district boundary has an impact on integrity of setting and design of the potential district. However, it does not entirely diminish these aspects of integrity. The buildings are of a utilitarian nature, are finished with materials that blend with other buildings of the airport, and the buildings support the continued use of the historic-period airport. The presence of these non-contributing buildings within the district boundary as currently defined does not override other aspects of the district, such as the attributes of contributing buildings, that support the district's integrity of materials, design, workmanship, feeling, and association.

Individually and collectively, the buildings and structures that contribute to the Baker City Municipal Airport historic district retain most aspects of historic integrity. Although modifications were made to the property outside of the period of significance to maintain use as an air facility, the potential district retains integrity of location, materials, workmanship, feeling, association, and to a lesser degree, integrity of design. These aspects of integrity are supported by retention of original building materials, continued use of historic buildings for airport operations, and the spatial orientation of airport features. Integrity of setting is impacted but not entirely diminished by the construction of later historic-period airplane hangars and the construction of Interstate 84 to the west of the project area.

SUMMARY AND RECOMMENDATIONS

AINW has completed a cultural resource survey of the Baker City Airport Project in Baker City, Oregon. This investigation included a records review, pedestrian survey, and a historic resources inventory to determine if cultural resources or high probability areas are within the project APE.

For the archaeological survey, one historic-period site (22/3302-1) and historic-period isolate (22/3303-2) were discovered. No pre-contact archaeological resources or high probability areas were discovered. The materials found at site 22/3302-1 and isolate 22/3302-2 pre-date construction of the existing airport buildings starting in 1946. It is likely that during airport construction and grading activities site 22/3302-1 was disturbed and spread over the large 606-m² (1,988-ft²) area. As the site lacks integrity and appears to have modern inclusions, AINW recommends that shovel testing at site 22/3302-1 is not necessary.

AINW recommends that an inadvertent discovery plan (IDP) be put in place for construction. An IDP is in Appendix C. If archaeological resources are inadvertently encountered during construction, all ground-disturbing activity near the find should be halted, the area should be secured, and the IDP should be followed.

There are 21 historic resources within the project APE. It is AINW's opinion that Heilner Hangar (HR-1) is eligible for listing in the NRHP, and a subset of the Baker Municipal Airport (HR-21) is eligible for listing in the NRHP as a historic district. Within the potential historic district there are six historic buildings and structures that contribute to the eligibility of the district, and the Heilner Hangar, which is individually eligible for listing in the NRHP, also contributes to the potential historic district. The remaining 13 historic resources of the APE have diminished aspects of integrity and/or no identified historical associations of significance and are recommended to be not eligible for listing in the NRHP and non-contributing resources of the historic district. The historic district likely extends outside of the APE studied by AINW. An additional survey should be completed for those areas outside of the APE to refine AINW's current recommendations regarding the potential historic district boundaries, character-defining features, aspects of integrity, period of significance, and contributing resources.

If the FAA determines that the Heilner Hangar is eligible for listing in the NRHP, planned projects at the Baker City Municipal Airport that have potential to affect the hangar should be assessed to determine whether the effect would be adverse through application of the Criteria of Adverse Effect as outlined in 36 CFR 800.5. Adverse effects identified for federal undertakings subject to Section 106 of the NHPA require avoidance, minimization, or mitigation. This process should also be carried out if a Baker City Municipal Airport Historic District is determined eligible for listing in the NRHP.

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APPENDICES

APPENDIX A

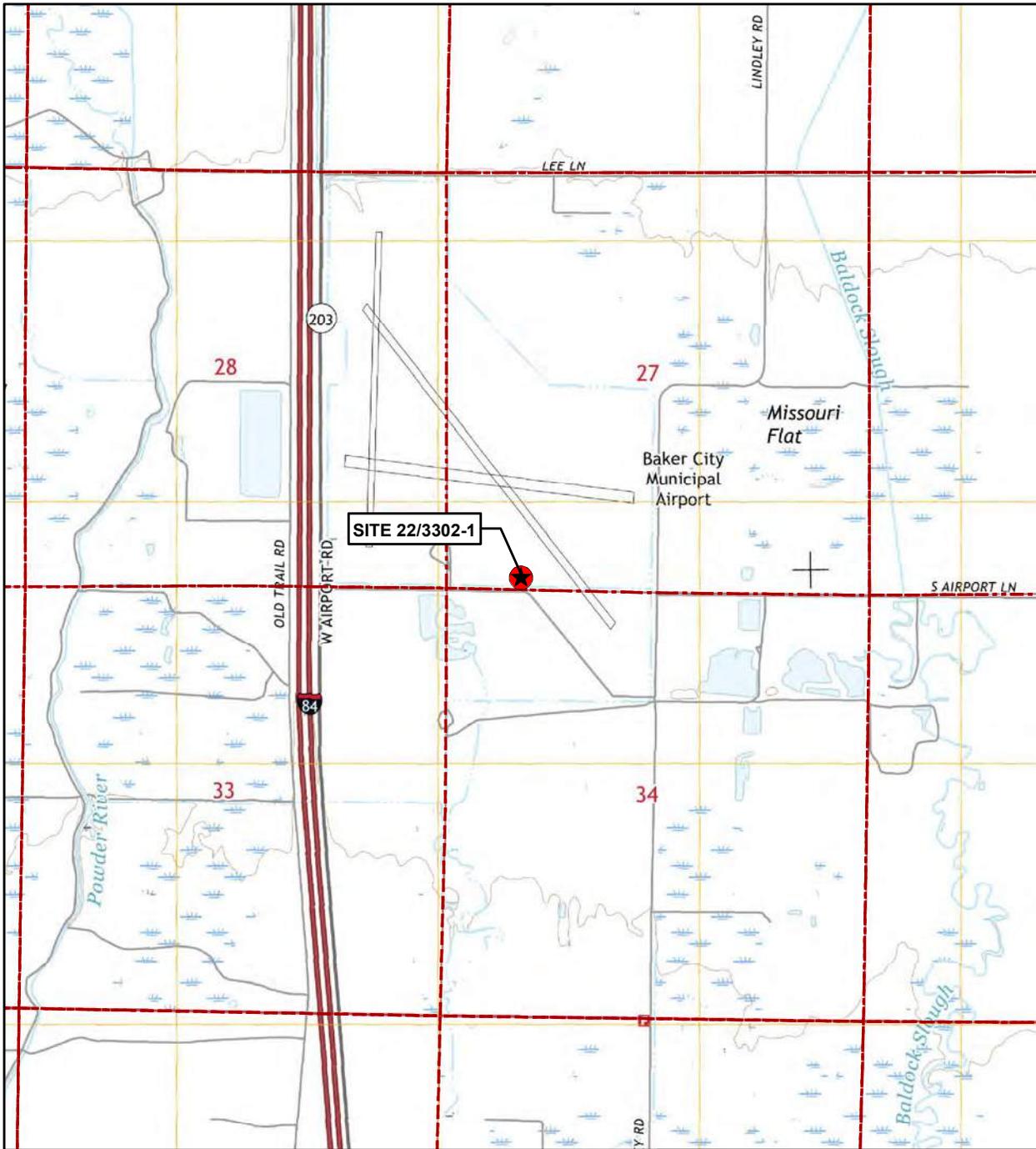
SITE FORMS

State of Oregon Archaeological Site Record

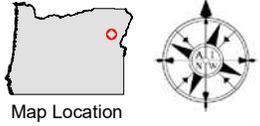
| Administrative Data | | | | | | | | | |
|--|---|-------------|-----------------------------|--|---------------|----------------|-----------------------|------------|--|
| Smithsonian Number: | | | | | | | Alt Site Nbrs: | 22/3302-1 | |
| Site Name: | | | | | | | Form Type: | New | |
| Managing Office*: | Municipal (describe) | | | | | County: | Baker | | |
| Owners(s): | Municipal (describe) | | | | | | | | |
| Ownership/Management Notes: | Baker City Airport | | | | | | | | |
| National Register Status: | Status | Role | Date | Author | | | | | |
| | Not Eligible | Fieldworker | 04/25/2003 | Khrystyne Tschinkel | | | | | |
| Site Identification | | | | | | | | | |
| Site Type | • Other | | | | | | | | |
| Features*: | • Other • Refuse scatter | | Cultural Period(s)*: | • 19th Century • Early 20th Century (1900-1930) | | | | | |
| Dimensions: | Length | 25 | Width | 24 | Units | Meters | Area | 600 Sq m | |
| Depth of Cultural Deposits | 0 cm | | | | | | | | |
| General Age | Prehistoric and Historic | | | | | | | | |
| Location Data | | | | | | | | | |
| Legal Description: | Township | Range | Section | ¼ | ¼ | ¼ | DLC | Meridian | |
| | 8 S | 40 E | 27 | SE | SW | SW | | Willamette | |
| UTM Coordinates | Type | East | North | Method | | Zone | Datum | | |
| | Unknown | 436318 | 4964712 | GPS < 1m | | 11 | 83 | | |
| Map References | Map Name/Year | | | | Revision Year | | | | |
| | BAKER 7' | | | | 2017 | | | | |
| Access Description | From Baker City, drive north on I-84 for 3.2 km (kilometers) (2 miles [mi]). Take exit 302 for OR-86 E towards Richland/ Hells Canyon. Turn right on OR-86 E and immediately take a left on to State Highway 203. Travel north for 3.2 km (2 mi) then turn right on S Airport Lane. In 0.6 km (0.4 mi) park turn left on Heilner Drive and park in the airport parking lot. Walk 170 m (128 ft) southeast into the field east of the central portion of Baker City Municipal Airport where site 22/3303-1 is located. | | | | | | | | |
| Environmental Data | | | | | | | | | |
| Province | Blue Mountains | | | | | | | | |
| Basin | Powder | | | | | | | | |
| Subbasin | POWDER | | | | | | | | |
| Drainage Name | | | | | | | | | |
| Elevation | From 3371 To 3371 ft | | | | | | | | |
| Aspect | Aspect: ALL | | | | | | | | |
| Depositional Environment | • Alluvial | | | | | | | | |
| Soil Description | | | | | | | | | |
| Vegetation Description | | | | | | | | | |
| Culturally Significant Vegetation | | | | | | | | | |
| Water Sources | | | | | | | | | |
| Site Setting | Mineral soil visibility ranged from good to excellent (75% to 100%) short cut grasses and desert shrubs were interspersed with patches of exposed soil. Native desert shrubs included sand golden-heather and winter sage; invasive shrubs were summer cypress and tumbleweed. A small linear patch of eastern cottonwood and Siberian elm trees was also near the southeast corner of the site 22/3302-1 along S Airport Lane | | | | | | | | |
| Site Description | | | | | | | | | |

| Site Description | <p>Site 22/3302-1 is located within the eastern field, approximately 42 meters (m) (138 feet [ft]) northeast of Airport Lane, 258 m (846 ft) east of Heilner Drive, and 136 m (446 ft) southwest of runway 13-31. The site is a surface scatter and consists of household debris and likely represents a trash dump. The 69 pieces of debris were widely dispersed over an area of 606 m². Debris found include, two pieces of milk glass, one shard of cobalt glass, one shard of amber glass, five shards of aqua glass, two shards of amethyst glass, 39 shards of colorless glass, one shard of green glass, two brick fragments, twelve pieces of whiteware, one piece of leather, one piece of non-diagnostic metal, one metal watch fragment, and one large piece of ironstone. Some of the glass pieces were melted. Pieces of modern plastic pipe and food wrappers were also noted. The trait of amethyst tinting indicates the presence of manganese in the glass; the glass was produced to be colorless however, the glass turns light purple in color (amethyst) when exposed to the sun (Lockhart 2006). Mass-produced glass objects with amethyst tinting are dated to between approximately 1880 and 1917, the technique ended in about 1920 (Lockhart 2006). The ironstone fragment had a Trenton Potteries Company makers mark, located in Trenton, New Jersey (Lehner 1988:473-474; Potteries of Trenton Society 2023). Trenton Potteries dominated the ceramic market from 1880 to 1920, production dwindled after the Great Depression and World War II (Potteries of Trenton Society 2023). From 1922 to 1969 Trenton Potteries Company manufactured mostly sanitary ware, such as bathtubs and toilets, and electrical porcelain (Lehner 1988:473; Potteries of Trenton Society 2023). Six properties produced Trenton Pottery, the makers mark from the ironstone found at the project APE is marked with a number 6, indicating it was made at Ideal Pottery which manufactured only sanitary ware and was in production from 1902 to 1918 (Lehner 1988:473). The infrastructure development of canals and railroads played a large part in shipping products out to consumer markets across the United States, including Oregon (Potteries of Trenton Society 2023). Site 22/3302-1 consists of a late nineteenth to early twentieth century historic debris surface scatter with some modern inclusions. It is possible these materials were dumped later than their manufacture date, especially the ironstone fragment, as materials could have been continually used. Therefore, the estimated late nineteenth to early twentieth century date (1880 to 1920) should be used as an upper limit, the lower limit is unknown because the site lacks historic integrity. It is likely that during airport construction and grading activities, between 1930 and 1961, site 22/3302-1 was disturbed and spread over the large 606 m² area where it currently sits. The recorded 1945 fire may have disturbed the artifacts and might explain why many of the pieces were melted (La Grande Observer 1945). Persistent modern mowing and brush hogging of the area, during airport maintenance, likely continue to disturb and further spread out the artifacts. AINW recommends site 22/3302-1 to be not eligible for listing in the NRHP. The site does not appear to be from an intact archaeological deposit, where its association with other artifacts or structures would provide contextual information. The site has no known associations with significant events or people, and it is not eligible for listing under Criteria A or B, nor is it a distinctive example of style or construction under Criterion C. The artifacts from the scatter do not reveal information about the context of the scatter or why this site was chosen to dump the materials. For these reasons, the site is recommended to be not eligible for listing under Criterion D.</p> | | | | | | | | | | | | | | | |
|------------------------------|--|------------|----------------|-----------------------------|---------|----------|-------|---|-------|----|-------|---|----------|----|-------------|---|
| Dates of Use | From 1880 | To 1920 | BP/AD/BC AD | Method Historic Artifact | | | | | | | | | | | | |
| Site Observations | <table border="1"> <thead> <tr> <th>Present</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>Other</td> <td>1</td> </tr> <tr> <td>Glass</td> <td>51</td> </tr> <tr> <td>Brick</td> <td>2</td> </tr> <tr> <td>Ceramics</td> <td>13</td> </tr> <tr> <td>Metal Other</td> <td>2</td> </tr> </tbody> </table> | | | | Present | Quantity | Other | 1 | Glass | 51 | Brick | 2 | Ceramics | 13 | Metal Other | 2 |
| Present | Quantity | | | | | | | | | | | | | | | |
| Other | 1 | | | | | | | | | | | | | | | |
| Glass | 51 | | | | | | | | | | | | | | | |
| Brick | 2 | | | | | | | | | | | | | | | |
| Ceramics | 13 | | | | | | | | | | | | | | | |
| Metal Other | 2 | | | | | | | | | | | | | | | |
| Estimated Counts | Prehistoric: Historic: 69 | | | | | | | | | | | | | | | |
| Rock Art | | | | | | | | | | | | | | | | |
| No Rock Art Specified | | | | | | | | | | | | | | | | |
| Site Condition | | | | | | | | | | | | | | | | |
| Visit Date | 04/25/2023 | | | | | | | | | | | | | | | |
| Site Condition | Poor- Site Damage between 60% and 95% | | | | | | | | | | | | | | | |
| Field Recorder | Khristyne Tschinkel at AINW | | | | | | | | | | | | | | | |
| Artifacts Collected? | No | | | | | | | | | | | | | | | |

| Activities/Work Performed | | Arcnaeological survey consisting or background research, a pedestrian walkover of the project APE, and historic resources inventory. | | | |
|---|------------------|--|--|-------------------|-------------|
| Impacts/Impact Agents | | • Other | | | |
| Protective Measures Recommended | | | | | |
| Bibliographic References | | | | | |
| Author | Publication Year | Title | Agency/Organization | Primary Reference | User Agency |
| La Grande Observer | 1945 | Buildings, Seven Planes Burn at Airport in Baker | | No | |
| Khrystyne Tschinkel Tara Seaver and John Fagan | 2023 | Cultural Resource Survey for the Baker City Airport Project, Baker County, Oregon | Archaeological Investigations Northwest, Inc. Report No. 5014. | Yes | |
| Lois Lehner | 1988 | Lehner's Encyclopedia of U.S. Marks on Pottery, Porcelain and Clay. | Collector Books, Paducah, Kentucky. | No | |
| Bill Lockhart | 2006 | The Color Purple: Dating Solarized Amethyst Container Glass. | Historical Archaeology 40(2):45-56. | No | |
| Files Uploads | | | | | |
| <ul style="list-style-type: none"> • OR Site form Photos 22.3302.1.pdf • Site 223302_1 Topo.pdf • Site 223302_1 Aerial.pdf | | | | | |
| Form Entry Recorder: | | Khrystyne Tschinkel | | Date: 04/25/2023 | |



**SITE 22/3302-1
BAKER CITY AIRPORT
BAKER COUNTY, OREGON**



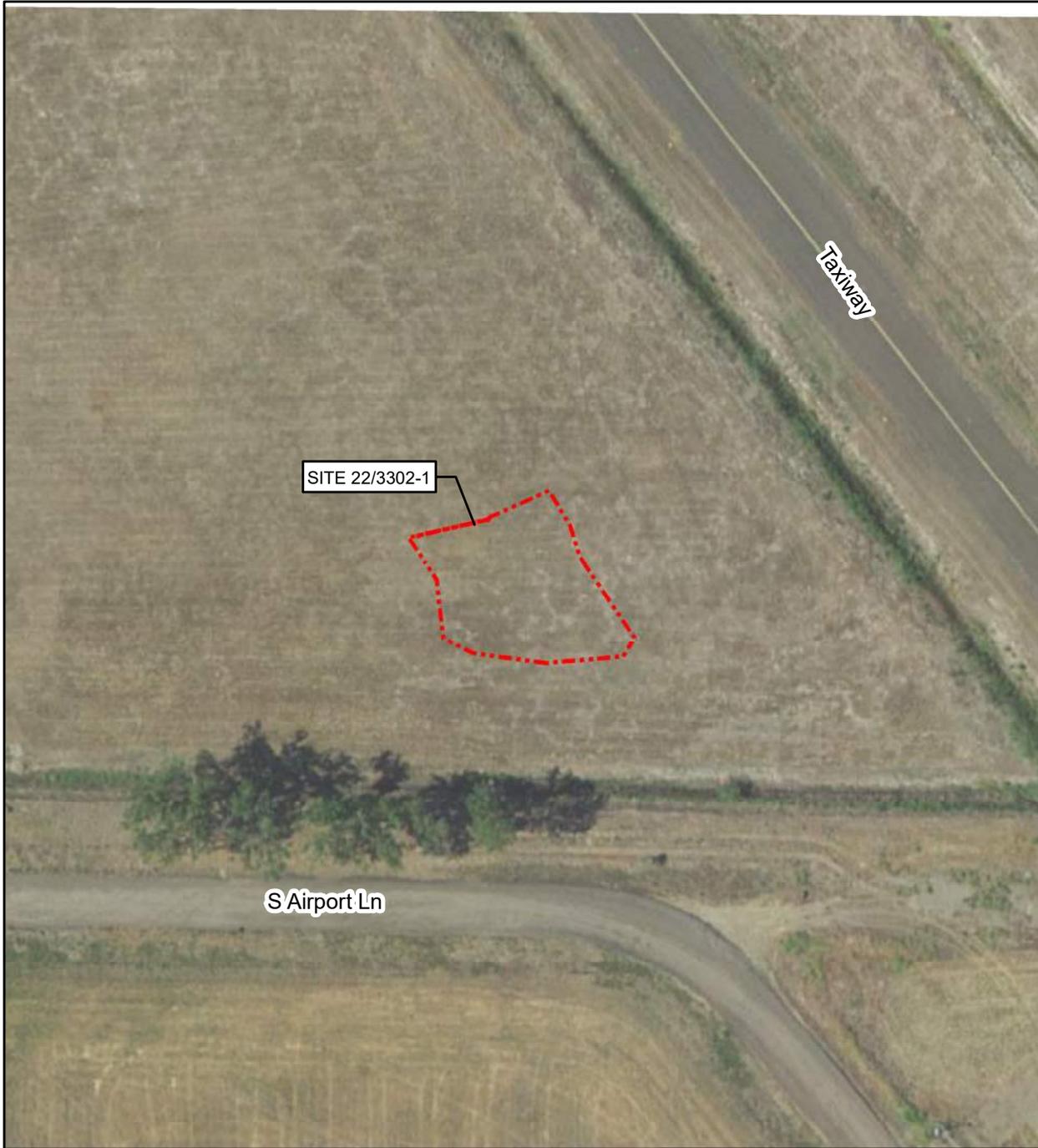
 Site 22/3302-1

T8S, R40E;
Section 27
SE of SW of SW
Willamette Meridian
USGS Topographic 7.5 Minute
Baker City, OR (2017) Quadrangle Map
USGS Topoview (<https://ngmdb.usgs.gov/topoview>)



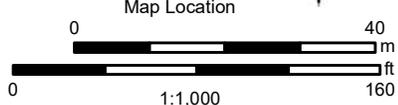
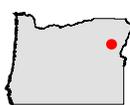
NAD 83 UTM Zone 11N
436318 E 4964712 N
Elevation: 1027.5 m (3371 ft)

Site 223302_1 Topo (JAC; 5/2/2023)



SITE 22/3302-1
 BAKER CITY AIRPORT
 BAKER COUNTY, OREGON

T8S, R40E;
 Section 27
 SE of SW of SW
 Willamette Meridian
 USGS Topographic 7.5 Minute
 Baker City, OR (2017) Quadrangle Map
 USGS Topoview (<https://ngmdb.usgs.gov/topoview>)



NAD 83 UTM Zone 11N
 436318 E 4964712 N
 Elevation: 1027.5 m (3371 ft)

 Site 22/3302-1

Site 223302_1 Aerial (JAC; 5/2/2023)

State of Oregon Archaeological Site Record

Site Form

Photos

Smithsonian Number:

Alt Site Numbers: Site 23/3302-1



Overview of site 22/3302-1, located in the eastern field of Baker City Municipal Airport. Note the orange flags representing surface finds. The view is towards the east.



Overview of site 22/3302-1, located in the eastern field of Baker City Municipal Airport. Note the orange flags representing surface finds. The view is towards the south.

State of Oregon Archaeological Site Record

Site Form

Photos, continued

Smithsonian Number:

Alt Site Numbers: Site 23/3302-1



Overview of site 22/3302-1, located in the eastern field of Baker City Municipal Airport. Note the orange flags representing surface finds. The view is towards the north.



The eastern dam debris of the non-functional diversion dam. The view is facing west. Overview of site 22/3302-1, located in the eastern field of Baker City Municipal Airport. Note the orange flags representing surface finds. The view is towards the west.

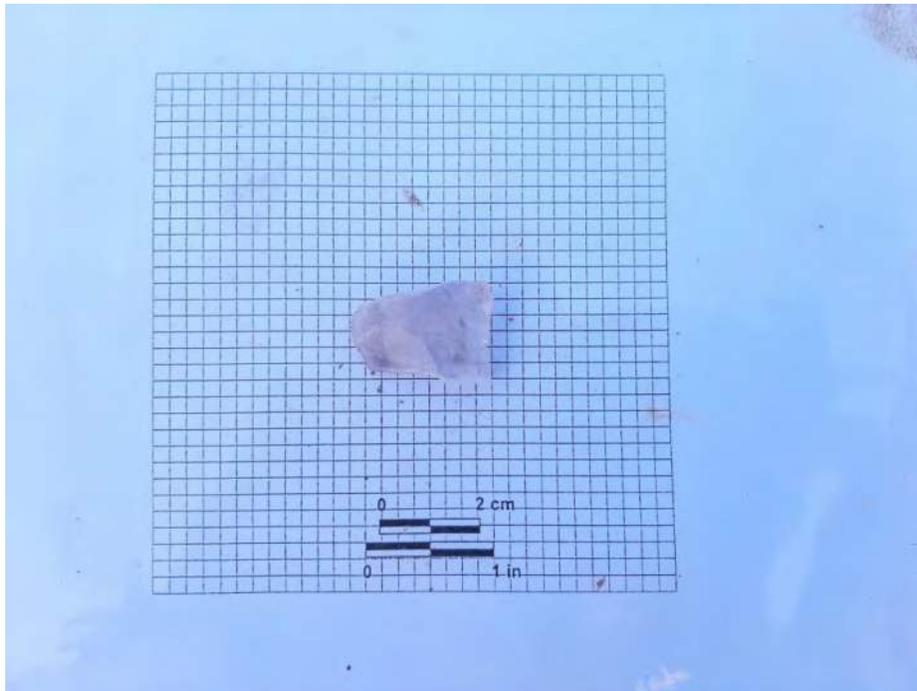
State of Oregon Archaeological Site Record

Site Form

Photos, continued

Smithsonian Number:

Alt Site Numbers: Site 23/3302-1



Amethyst glass shard found at site 22/3302-1.



Ironstone fragment with TEPECO makers mark found at site 22/3302-1.

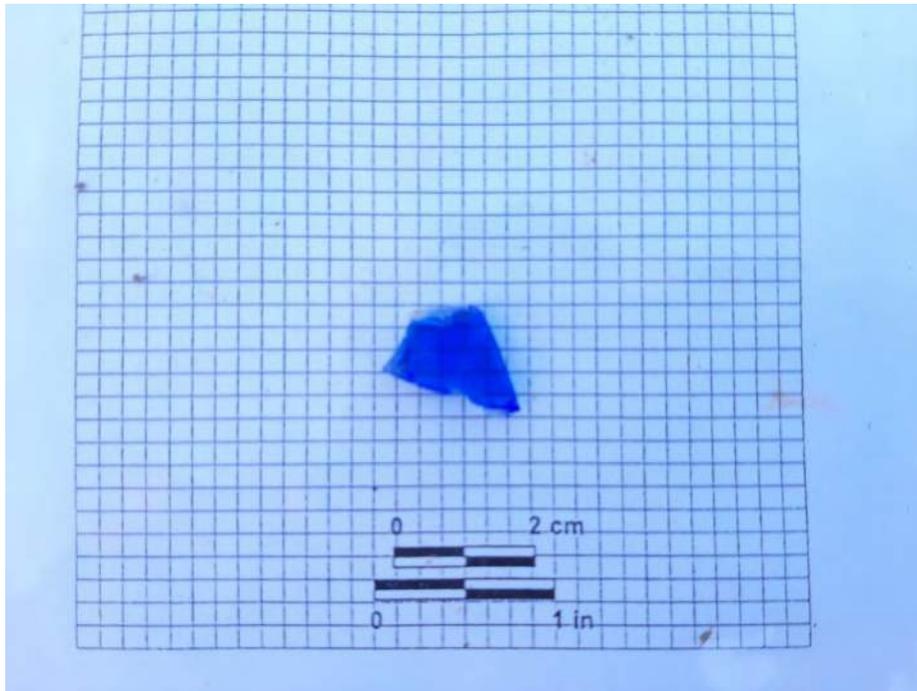
State of Oregon Archaeological Site Record

Site Form

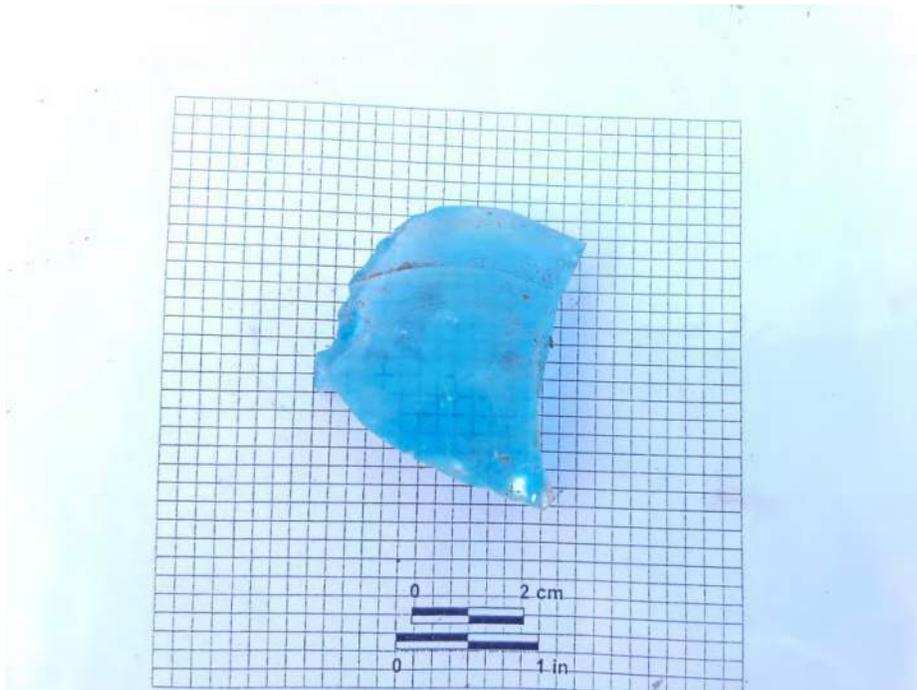
Photos, continued

Smithsonian Number:

Alt Site Numbers: Site 23/3302-1



Cobalt glass shard found at site 22/3302-1.



Aqua glass shard found at site 22/3302-1.

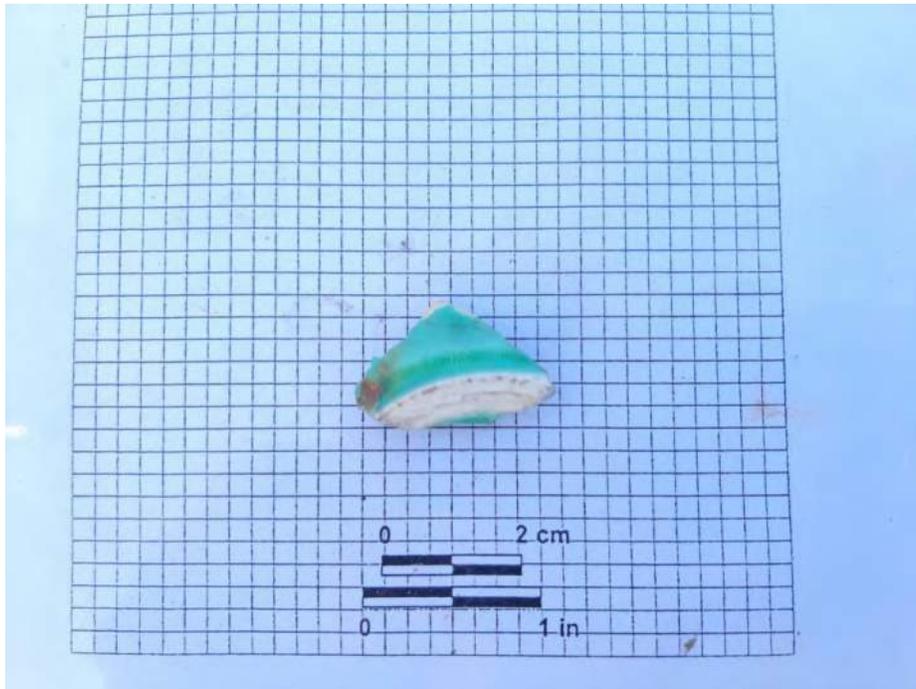
State of Oregon Archaeological Site Record

Site Form

Photos, continued

Smithsonian Number:

Alt Site Numbers: Site 23/3302-1



Decorated green ceramic sherd found at site 22/3302-1.



Possible watch fragment found at site 22/3302-1.

State of Oregon Archaeological Site Record

Summary of Isolate Form#: 33461

| Form Type/Identification | |
|--------------------------|----------------------------------|
| Field Id: | 22/3302-2 |
| Isolate Description: | A single shard of amethyst glass |
| Form Type: | Isolate |
| Recording Date: | 05/02/2023 |

| Location | |
|---------------------|--|
| County | Baker |
| Cadastral Locations | Township Range Section ¼ ¼ ¼ DLC Meridian 8 S 40 E 34 NW NE NW Willamette |
| Map References | Baker, OR 2017 |
| Elevation | From 3372 To 3372 ft |
| UTM Coordinates | Type East North Method Zone Datum Unknown 436537 4964482 GPS < 1m 11 83 |

| Files Uploads |
|--|
| <ul style="list-style-type: none">• Isolate 22.3302-2 Description.pdf• Isolate 223302_2 Topo.pdf• Isolate 223302_2 Aerial.pdf• OR Isolate form Photos 22.3302.2.pdf |

From Baker City, drive north on I-84 for 3.2 km (kilometers) (2 miles [mi]). Take exit 302 for OR-86 E towards Richland/ Hells Canyon. Turn right on OR-86 E and immediately take a left on to State Highway 203. Travel north for 3.2 km (2 mi) then turn right on S Airport Lane. In 1.1 km (0.7 mi) park on S Airport Lane. Walk 39 m (128 ft) northwest from S Airport Lane, where isolate 22/3302-2 was discovered.

On April 25, 2023, isolate 22/3302-2 was identified in Baker City, Baker County, during a cultural resource survey of the Baker City Municipal Airport. Isolate 22/3302-2 consists of one fragment of amethyst glass measuring 2.5x2 cm (1x0.8 in).

Isolate 22/3303-2 was discovered near the airport taxiway that runs parallel to runway 13-31. The isolate is located approximately 39 m (128 ft) northeast of Airport Lane and 115 m (377 ft) southwest of runway 13-31. This area shows recent ground disturbances related to the construction of two metal airplane hangars, including the deposited imported gravel.

The trait of amethyst tinting indicates the presence of manganese in the glass; the glass was produced to be colorless however, the glass turns light purple in color (amethyst) when exposed to the sun (Lockhart 2006). Mass-produced glass objects with amethyst tinting are dated to between approximately 1880 and 1917, the technique ended in about 1920 (Lockhart 2006).

Amethyst tinting indicates an approximate date from 1880 to 1920 (Lockhart 2006). However, considering the recent construction in the area and a lack of other archaeological finds it is unlikely that the sherd represents an intact deposit from the late nineteenth century to early twentieth centuries.

AINW recommends isolate 22/3302-2 to be not eligible for listing in the NRHP. The isolate does not appear to be from an intact archaeological deposit, where its association with other artifacts would provide contextual information. The isolate has no known associations with significant events or people, and it is not eligible for listing under Criteria A or B, nor is it a distinctive example of style or construction under Criterion C. The small sherd does not reveal information about the type of glass artifact the sherd was once a part of, or about the techniques used to make the artifact. It does not retain its historic integrity. For these reasons, the isolate is recommended to be not eligible for listing under Criterion D. An isolate form is in the Appendix.

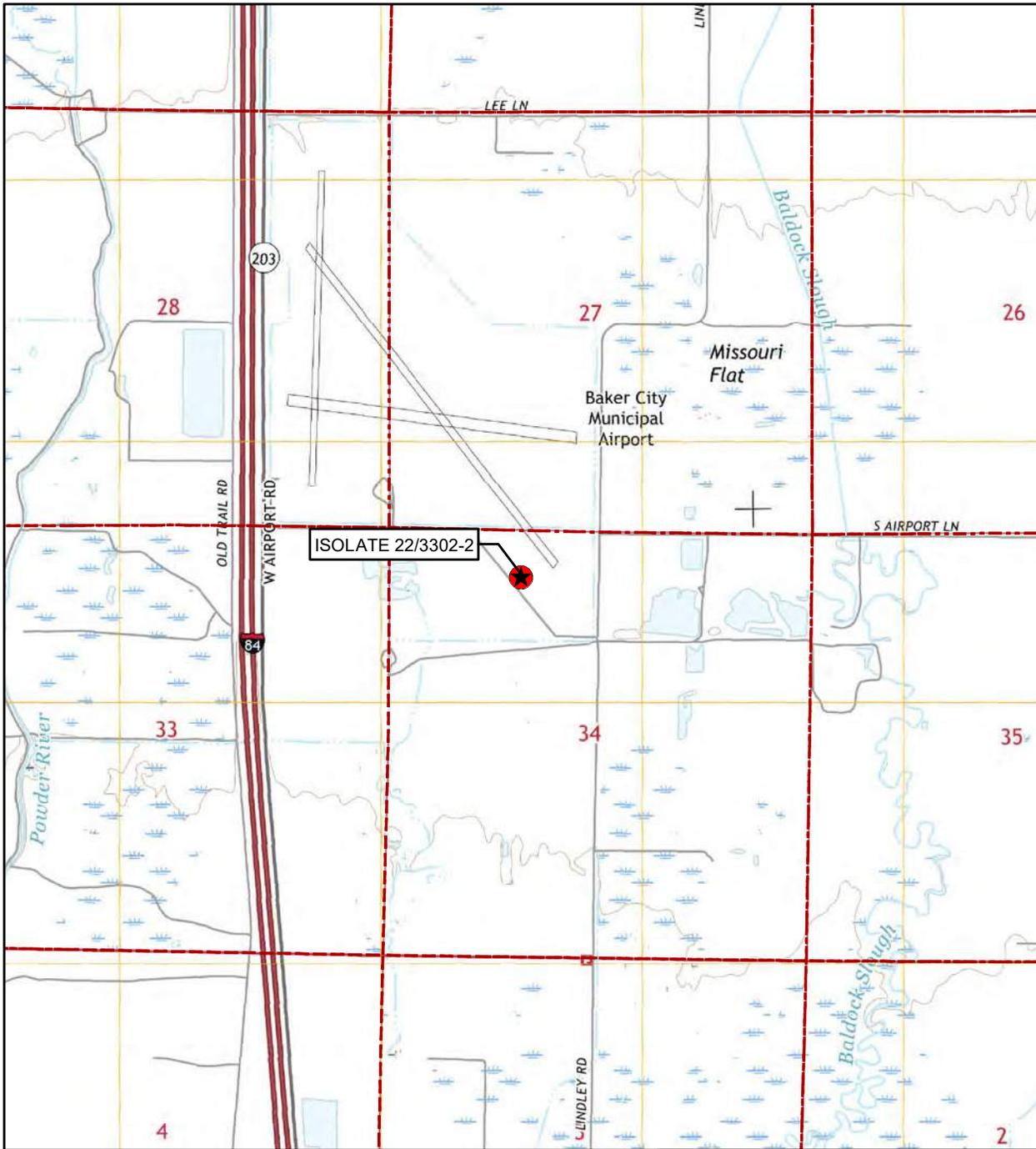
References:

Lockhart, Bill

2006 The Color Purple: Dating Solarized Amethyst Container Glass. *Historical Archaeology* 40(2):45-56.

Tschinkel, Khrystyne, Tara Seaver, and John Fagan

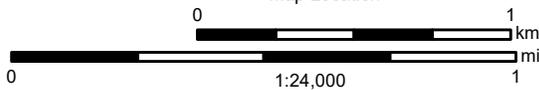
2023 Cultural Resource Survey for the Baker City Airport Project, Baker County, Oregon. Archaeological Investigations Northwest, Portland, Oregon. Prepared for Baker City Airport.



ISOLATE 22/3302-2
 BAKER CITY AIRPORT
 BAKER COUNTY, OREGON



Map Location

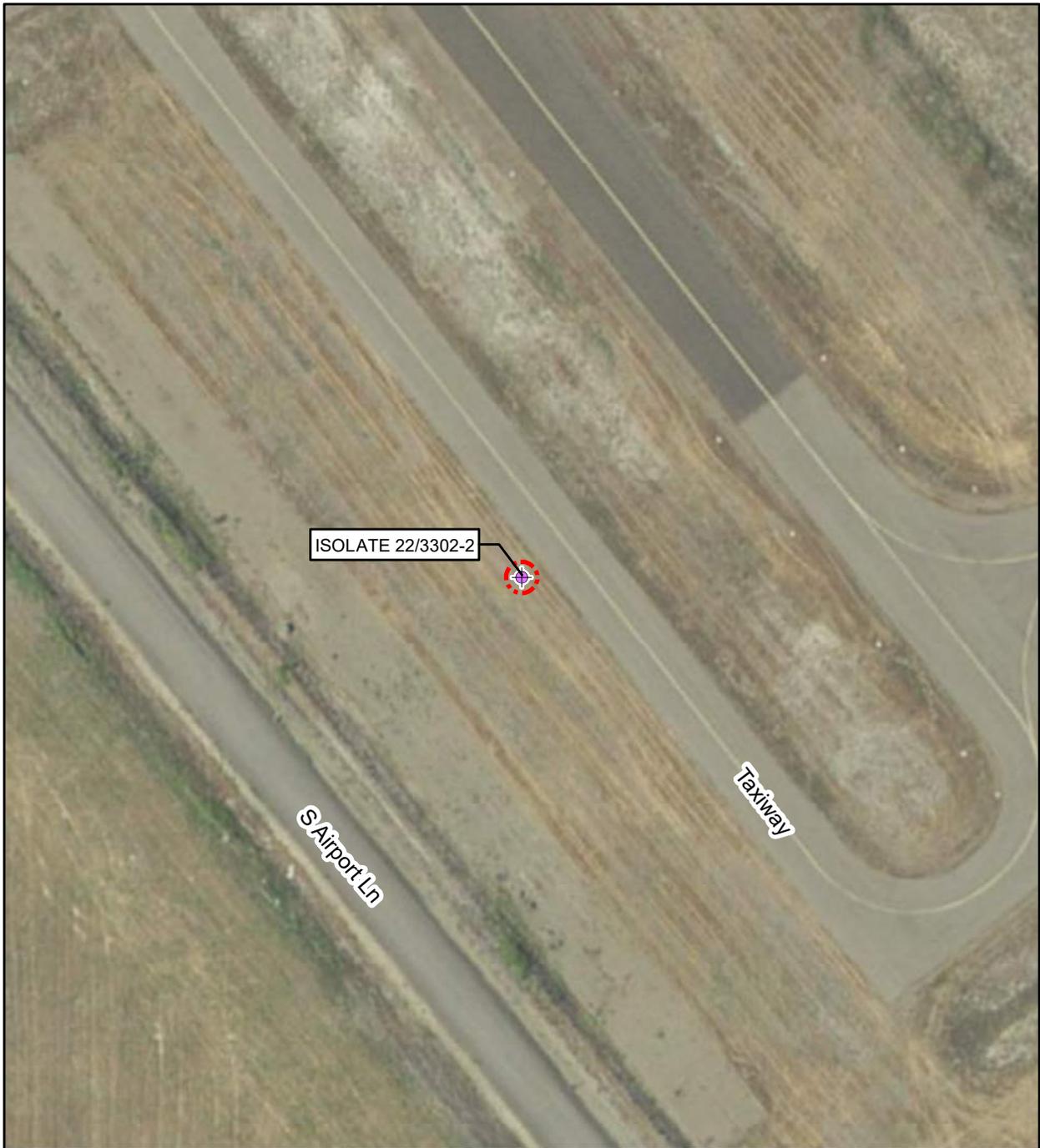


T8S, R40E;
 Section 34
 NWofNEofNW
 Willamette Meridian
 USGS Topographic 7.5 Minute
 Baker City, OR (2017) Quadrangle Map
 USGS Topoview (<https://ngmdb.usgs.gov/topoview>)

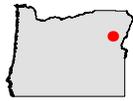
NAD 83 UTM Zone 11N
 436537 E 4964482 N
 Elevation: 1027.8 m (3372 ft)

 Isolate 22/3302-2

Site 223302_2 Topo (JAC; 5/2/2023)



ISOLATE 22/3302-2
 BAKER CITY AIRPORT
 BAKER COUNTY, OREGON



Map Location



T8S, R40E;
 Section 34
 NWofNEofNW
 Willamette Meridian
 USGS Topographic 7.5 Minute
 Baker City, OR (2017) Quadrangle Map
 USGS Topoview (<https://ngmdb.usgs.gov/topoview>)

NAD 83 UTM Zone 11N
 436537 E 4964482 N
 Elevation: 1027.8 m (3372 ft)

 Isolate 22/3302-2

 Historic-Period
 Surface Artifact

Site 223302_2 Aerial (JAC; 5/2/2023)

State of Oregon Archaeological Isolate Record

Isolate Form

Photos

Smithsonian Number:

Alt Site Numbers: Field No. 22/3302-2



Overview of the location of isolate 22/3302-2. The view is towards the southwest.



Overview of the location of isolate 22/3302-2. The view is towards the east.

State of Oregon Archaeological Isolate Record

Isolate Form

Photos, continued

Smithsonian Number:

Alt Site Numbers: Field No. 22/3202-2



Overview of the location of isolate 22/3302-2. The view is towards the west.



Overview of the location of isolate 22/3302-2. The view is towards the northwest.

State of Oregon Archaeological Isolate Record

Isolate Form

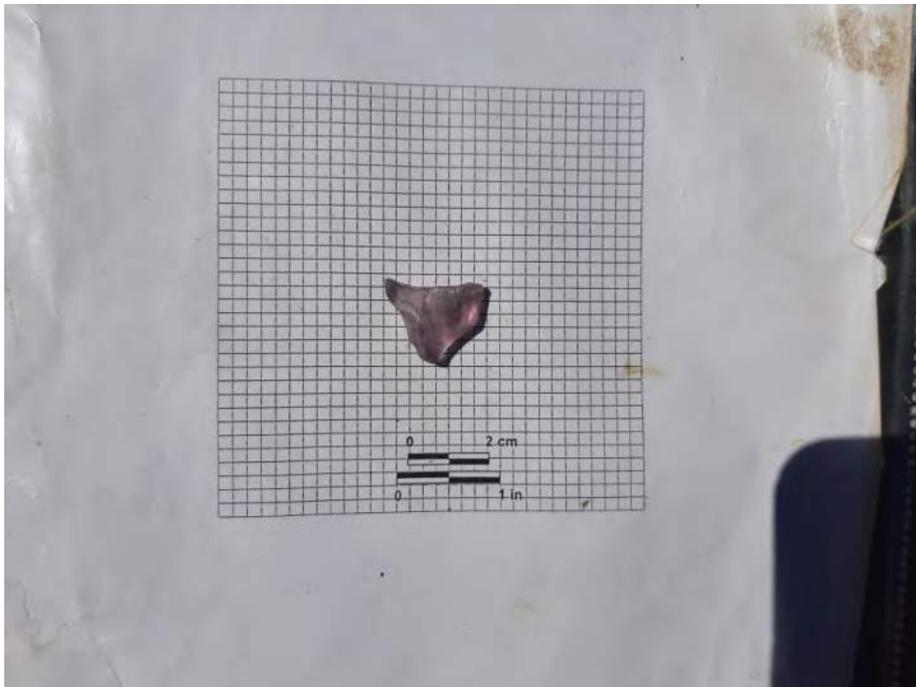
Photos, continued

Smithsonian Number:

Alt Site Numbers: Field No. 22/3302-2



Isolate 22/3302-2, amethyst glass shard found on the surface, dorsal view.



Isolate 22/3302-2, amethyst glass shard found on the surface, ventral view.

APPENDIX B

SECTION 106 FORMS

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties**

| | | |
|---|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
| Project Name: Baker City Municipal Airport Master Plan | | Agency project #: |
| Agency: Federal Aviation Administration | | SHPO Case#: |
| Location coordinates (to sixth decimal place): Latitude: 44.50041 Longitude: -117.48562 | | Is the property listed in the National Register of Historic Places? <input type="checkbox"/> YES – Individually <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES – In a district |



**Aerial photograph captured in 2007 of the Baker City Municipal Airport. The view is towards the west-northwest.
Photograph courtesy of Baker County Library Archives.**

| | |
|-----------------------------|------------------------|
| Surveyor: Tara Seaver, M.S. | Date Recorded: 4/25/23 |
|-----------------------------|------------------------|

| | |
|--|--|
| National Register Findings: <input checked="" type="checkbox"/> Eligible: <input checked="" type="checkbox"/> Individually <input type="checkbox"/> As part of a District NR Criteria: <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> Not Eligible: <input type="checkbox"/> Irretrievable integrity loss <input type="checkbox"/> Not 50 Years <input type="checkbox"/> Fails to meet NR Criteria | Finding of Effect: <input type="checkbox"/> No Effect <input type="checkbox"/> No Adverse Effect <input type="checkbox"/> Adverse Effect |
|--|--|

State Historic Preservation Office Comments – Official Use Only:

Eligibility: Concur Do Not Concur:

Effect: Concur Do Not Concur:

RECEIVED STAMP

Signed _____ Date _____

CONTACT INFORMATION STAMP

Comments:

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties**

| | | |
|--|---|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
| Original Use: Air Facility | Number of Associated Resources: 21 | |
| Architectural Classification / Resource Type: -select style- District | Owner: <input checked="" type="checkbox"/> Private <input type="checkbox"/> Local Government <input type="checkbox"/> State <input type="checkbox"/> Federal | |
| Window type and Materials: N/A | Exterior Surface Materials: Primary: -select materials- | |
| Roof Type and Materials: N/A | Secondary: -select materials- | |
| Integrity: <input type="checkbox"/> Excellent <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor | Construction Date: 1930 <input type="checkbox"/> Circa | |
| | Architect/Builder (if known): Annand and Kennedy (Heilner Hangar) | |
| Description of Property (including previous alterations & approximate dates): | | |
| <p>The Baker City Municipal Airport or, Baker Airport, is a grouping of airport hangars, ancillary buildings, runways, taxiways, aprons, drainage ditches, a radio facility, and one former administration building located at 43769 Heilner Drive north of Baker City, Oregon. The airport originally operated as an unimproved airfield. In the mid-1930s and early 1940s, the existing runways and drainage ditches were completed by federal relief program workers under the Roosevelt administration. The existing buildings within the Area of Potential Effects (APE) date between 1946 and circa 2012 as all pre-World War II era buildings burned down in a fire (Croghan 2007; Gambs 1946; <i>La Grande Observer</i> 1945a; U.S. Geological Survey [USGS] 1953, 1982). Clear zones, a terminal apron, taxiway, and the main access road were completed in 1962 (<i>The Oregonian</i> 1962).</p> <p style="text-align: right;"><i>(Continued on page 13)</i></p> | | |
| Determination of Eligibility, Justification, and Sources (Use continuation sheets if necessary): | | |
| <p>The Baker City Municipal Airport represents a potential historic district that is eligible for listing in the National Register of Historic Places under Criteria A and C. Its initial construction and operation in 1930-1931 as a municipal airfield introduced the field of commercial aviation to Baker City during the "Golden Age of Aviation" a period which saw the rapid development of the aviation industry. The twenty-year period lasted from the end of World War I to the start of World War II and was succeeded by the "Jet Age," characterized by the advent of commercial jet travel. Large-scale airport improvements to the airport that took place during the late 1930s and early 1940s make the airport a tangible reminder of the projects completed by the Civil Works Administration and its successor, the Works Progress Administration (WPA) in Oregon. Runoff ditches constructed circa 1935 by WPA laborers are within the APE and contribute to the National Register of Historic Places (NRHP) eligibility of the historic district.</p> <p>After World War II, as air transport became increasingly affordable to the public, the airport functioned as a destination and a feeder stop linking Eastern Oregon to other cities within the Pacific Northwest. Within the current project, six post-World War II resources (Heilner Hangar, Small Hangar, Administration Building, Ancillary Buildings 1 and 2, and the Radio Facility) are contributing resources of the potential historic district.</p> <p>The period of significance is recommended as 1930 to 1949, beginning with the establishment of the airfield as a municipal airport and ending with the post-war completion of several buildings that replaced those that burned in a 1945 fire. The potential district retains integrity of location, materials, workmanship, feeling, association, and to a lesser degree integrity of design due to modifications that have been made to the property outside of the period of significance to maintain use as an air facility. Integrity of setting is impacted by the construction of later historic-period airplane hangars and the construction of Interstate 84 to the west of the project area.</p> <p>Major features that define the character of the Baker City Municipal Airport historic district and support its NRHP eligibility under Criteria A and C include the relief-era improvements that remain in use on airport property; the spatial orientation of airport elements from the period of significance; and the continued use of the airport for commercial and private air travel. Additionally, the materials, techniques, and/or designs used to construct the aviation buildings are important character-defining features that reflect the post-war built environment.</p> <p style="text-align: right;"><i>(Continued on page 18)</i></p> | | |

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

Description of project scope, and nature and extent of impacts:

The Master Plan for the Baker City Municipal Airport is being updated for the first time since 2010. The Master Plan will facilitate phased upgrades to the airport that will likely be concentrated within the APE delineated for the cultural resources study. The Master Plan will be reviewed by the Federal Aviation Administration. Recommendations provided at this stage for cultural resources will be considered when individual projects or undertakings are initiated.

Finding of Effect and justification:

As no action is proposed at this time. For future undertakings, potential effects on the contributing resources, character-defining features, and aspects of integrity that support the Baker City Municipal Airport Historic District's eligibility for listing in the NRHP should be assessed to determine whether an adverse effect would occur on a historic property.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|



View: Circa 1946 photo of the Baker Airport showing Heilner Hangar (center), the smaller Hangar, the administration "Baker" building, runways, and runoff ditches. Photo courtesy of the Baker County Library Archives.



View: Overview of "Baker" building, Heilner Hangar, radio building, and the two ancillary buildings constructed between 1946 and circa 1949. A modern hangar constructed circa 2012 is to the west of Heilner Hangar. The view is towards the southeast.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|



View: South elevation of circa 1946 hangar. The view is towards the north.



View: Northeast elevation of the "Baker" building constructed circa 1946. The view is towards the southwest.

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|



View: From left to right, overview of Heilner Hangar, the small hangar, and a grouping of private hangars constructed between circa 1971 and circa 2008. The view is towards the southwest.



View: Northeast elevations of Ancillary Buildings 1 and 1, constructed circa 1949. The view is towards the southwest.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|



View: South and east elevations of the circa 1946 radio facility. The view is towards the northwest.



View: Northeast and southeast elevations of Heilner Hangar. The view is towards the west.

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|



View: The airport property is bound by drainage ditches constructed by federal relief program workers. The view is towards the southwest.



View: Private hangars constructed in the 1970s and 1980s are located at the eastern portion of Baker Municipal Airport next to the Baker Aircraft Office (1970) (also referred to as the FBO building). The view is towards the west.

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties**

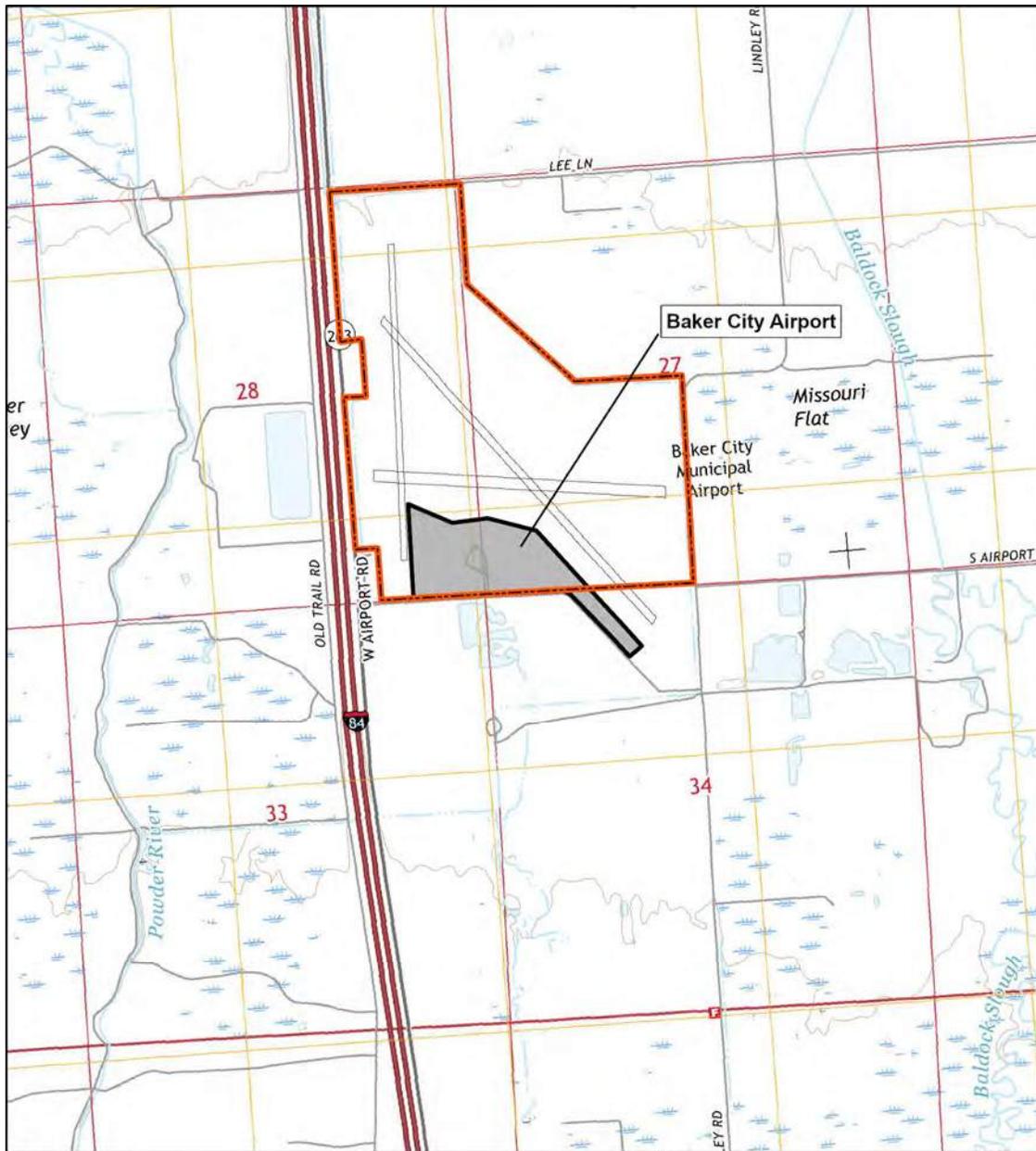
| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|



View: An overview of the circa 1936 radio beacon station that is outside of the APE. The view is towards the southeast.

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|



**BAKER CITY AIRPORT
BAKER CITY, OREGON**

T8S, R4E;
Sections 27, 28, 33, 34
Willamette Meridian
USGS Topographic 7.5 Minute
Baker, OR (2017) Quadrangle Map
USGS Topview (<https://ngmdb.usgs.gov/topview/>)

Project Location

Scale: 1:24,000

Microsoft product screen shots) reported with permission from Microsoft Corporation.

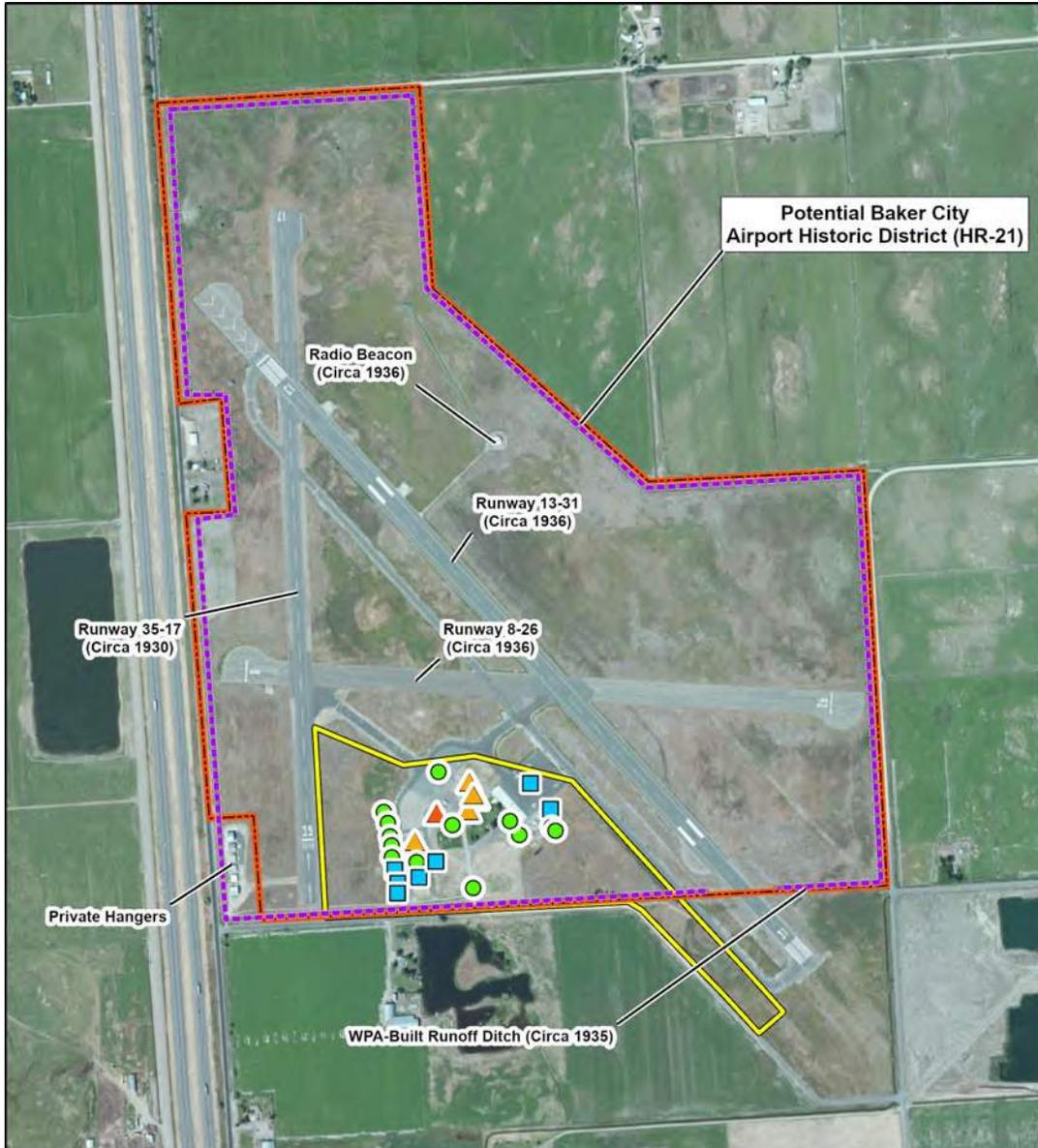
Legend:
 Project APE
 Potential Historic District Boundary

Baker City Airport Topo (jason, 6/24/2023)

Figure 1. The Baker City Municipal Airport is located north of Baker City, Oregon.

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|



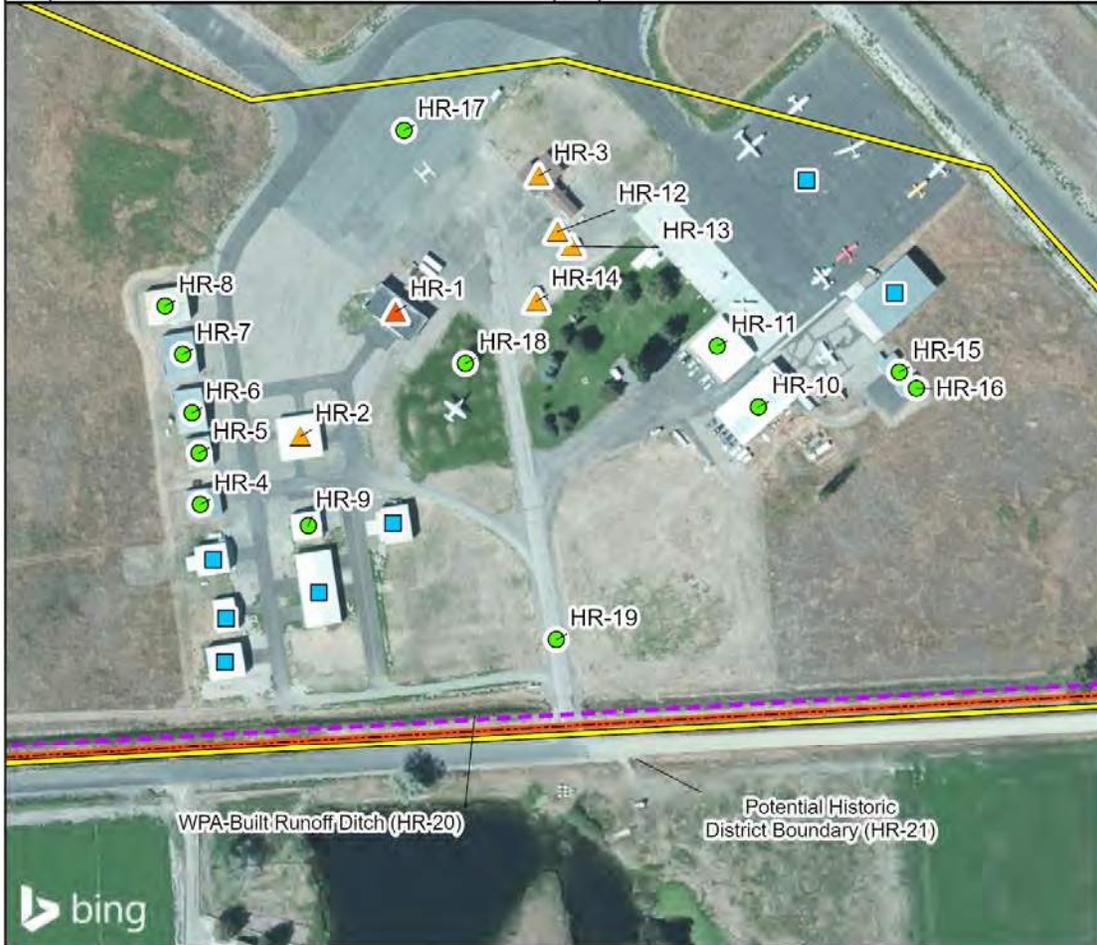
| | | | |
|--|------------------------------|---|--|
| <p>BAKER CITY AIRPORT BAKER CITY, OREGON</p> <p>T8S, R4E: Sections 27, 28, 33, 34 Willamette Meridian USGS Topographic 7.5 Minute Baker, OR (2017) Quadrangle Map USGS Topoview (https://ngmdb.usgs.gov/topoview)</p> | Project Location | | <ul style="list-style-type: none"> Project APE Potential Historic District Boundary Eligible/Significant Eligible/Contributing Not Eligible/Non-Contributing Out-of-Period WPA-Built Runoff Ditch (HR-20)(Eligible/Contributing) |
| | 0 1:12,000 0.4 km 0.4 mi | <small>World Imagery (Civiva). Source: Esri, Maxar, Earthstar, GeoAnalytics, IGN, and the GIS User Community. Microsoft provides a screen shot(s) reprinted with permission from Microsoft Corporation.</small> <small>Baker City Airport Aerial (user: 8/24/2023)</small> | |

Figure 2. The potential Baker City Municipal Airport Historic District is recommended eligible for the NRHP. The radio beacon, triangle runways, and portions of the runoff ditches are entirely or partially outside of the APE. Although these resources are outside of the APE and were not documented for the Baker City Municipal Airport Master Plan, they likely contribute to the potential historic district as they were constructed within the period of significance.

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

| HR-# | Name | Built | Eligibility | HR-# | Name | Built | Eligibility |
|------|-------------------------|------------|-------------|------|---|------------|-------------|
| 1 | Heilner Hanger | 1946 | ES | 12 | Ancillary Building 1 | Circa 1949 | EC |
| 2 | Small Hanger | Circa 1946 | EC | 13 | Ancillary Building 2 | Circa 1949 | EC |
| 3 | Administration Building | Circa 1946 | EC | 14 | Radio Facility | Circa 1946 | EC |
| 4 | Pilot Duty Building | Circa 1971 | NC | 15 | T-Hanger 1 | Circa 1978 | NC |
| 5 | B5 Hanger | Circa 1971 | NC | 16 | T-Hanger 2 | Circa 1978 | NC |
| 6 | B6 Hanger | Circa 1971 | NC | 17 | Apron and Taxiway | 1962 | NC |
| 7 | Hanley Engineering | Circa 1971 | NC | 18 | Lone Pine Tree | 1976 | NC |
| 8 | Hanger | Circa 1977 | NC | 19 | Access Road | 1962 | NC |
| 9 | C5 Building | Circa 1970 | NC | 20 | WPA-Built Runoff Ditch | Circa 1935 | EC |
| 10 | Cessna Pilot Center | Circa 1978 | NC | 21 | Baker Airport Potential Historic District | 1930-1949 | ES |
| 11 | Baker Aircraft Office | 1970 | NC | | | | |



**BAKER CITY AIRPORT
BAKER CITY, OREGON**

T8S, R4E;
Sections 27, 28, 33, 34
Willamette Meridian
USGS Topographic 7.5 Minute
Baker, OR (2017) Quadrangle Map
USGS Topoview (<https://ngmdb.usgs.gov/topoview/>)

Project Location

1:2,900

World Imagery (Clarity): Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community
Bing Maps Aerial: © 2023 Microsoft Corporation © 2023
Maxar © CNES (2023) Distribution Airbus DS Microsoft product screen shot(s) reprinted with permission from

- Project APE
- Potential Historic District Boundary (HR-21)
- WPA-Built Runoff Ditch (HR-20) (Eligible/Contributing)
- ▲ Eligible/Significant
- ▲ Eligible/Contributing
- Not Eligible/Non-Contributing
- Out-of-Period (Modern)

Report Detail (samantha, 7/6/2023)

Figure 3. Seven historic resources within the APE are recommended eligible for listing in the NRHP and contribute to the eligibility of the Baker City Municipal Airport Historic District.

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

Description of property (continued from Page 2)

Twenty individual historic resources were identified within the APE. Of the 20, 7 were built prior to 1950 and are recommended to contribute to the NRHP eligibility of the Baker City Municipal Airport Historic District.

Within the APE, there are seven contributing resources and 13 non-contributing resources. Non-contributing resources are predominately hangars that were introduced to the property starting in the 1970s. Hangars that were constructed over 45 years ago but are outside of the period of significance have no individual associations of significance within the context of airport development. Most of the metal hangars appear to be mass-manufactured items, and they are not distinctive of a type, period, or method of construction. Furthermore, modifications made to individual hangars, including additions and the replacement of some original materials, diminish the resources' historic integrity of design, materials, and workmanship.

**Historic Buildings, Structures, and Objects Identified in the APE and
Baker City Municipal Airport Historic District (HR-21)**

| Name | Date of Construction | NRHP Eligibility | HR-# |
|--------------------------------|----------------------|-------------------------------|--------------|
| Heilner Hangar | 1946 | Eligible/Significant | HR-1 |
| Small Hangar | Circa 1946 | Eligible/Contributing | HR-2 |
| Administration Building | Circa 1946 | Eligible/Contributing | HR-3 |
| Ancillary Building 1 | Circa 1949 | Eligible/Contributing | HR-12 |
| Ancillary Building 2 | Circa 1949 | Eligible/Contributing | HR-13 |
| Radio Facility | Circa 1946 | Eligible/Contributing | HR-14 |
| WPA-Built Runoff Ditch | Circa 1935 | Eligible/Contributing | HR-20 |
| Pilot Duty Building | Circa 1971 | Not Eligible/Non-Contributing | HR-4 |
| B5 Hangar | Circa 1971 | Not Eligible/Non-Contributing | HR-5 |
| B6 Hangar | Circa 1971 | Not Eligible/Non-Contributing | HR-6 |
| Hanley Engineering | Circa 1971 | Not Eligible/Non-Contributing | HR-7 |
| Hangar | Circa 1977 | Not Eligible/Non-Contributing | HR-8 |
| C5 Building | Circa 1970 | Not Eligible/Non-Contributing | HR-9 |
| Cessna Pilot Center | Circa 1978 | Not Eligible/Non-Contributing | HR-10 |
| Baker Aircraft Office | 1970 | Not Eligible/Non-Contributing | HR-11 |
| T-Hangar 1 | Circa 1978 | Not Eligible/Non-Contributing | HR-15 |
| T-Hangar 2 | Circa 1978 | Not Eligible/Non-Contributing | HR-16 |
| Apron and Taxiway | 1962 | Not Eligible/Non-Contributing | HR-17 |
| Lone Pine Tree and Marker | 1976 | Not Eligible/Non-Contributing | HR-18 |
| Access Road | 1962 | Not Eligible/Non-Contributing | HR-19 |

(Continued on Page 14)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

Description of property (continued from Page 13)

Heilner Hangar (1946) – Eligible/Significant

Heilner Hangar is recommended as being individually eligible for listing in the NRHP under Criteria A, B, and C. It has been documented as part of the potential airport historic district and as an individual resource. The two-story building was constructed in 1946 as an aircraft hangar, office, and shop building designed by Portland architects Annand & Kennedy. It continues to serve as an aircraft hangar. It has a rectangular footprint, and it is constructed from poured concrete. The building rests on a poured concrete foundation. It is capped with a flat roof with built-up and a metal parapet. Concrete projections are present on the northwest and southwest elevations where the hangar doors are located. The hangar doors on the southwest elevation of Heilner Hangar consist of six bays of rolling metal doors. The northeast elevation features four wood bay sliding doors with three-light windows. On the north and west corners of the buildings are chimneys or furnaces.

Windows in the office space on the northwest elevation of the building are steel and vinyl slider replacement windows. The vinyl replacements are only on the second story of the northwest elevation. In the aircraft hangar/storage area there are steel multi-light windows with a central awning. The doors are single-entry metal doors and one door on the northwest elevation has been covered by wood board.

Heilner Hangar retains integrity of location, design, workmanship, feeling, association, and to a lesser degree, integrity of materials. The hangar has not been moved from its original location, retains its original footprint, and has consistently been used as a maintenance and/or storage building for aircraft since 1946. Some of the original steel windows have been replaced with vinyl sashes; this impacts but does not diminish the hangar's integrity of materials. The hanger doors, if not original, date to the historic period. Integrity of setting is impacted but not entirely diminished by the construction of surrounding historic-period and modern hangars on the Baker Airport property.

Small Hangar (Circa 1946) – Eligible/Contributing

The circa 1946 hangar building is to the southwest of Heilner Hangar and was constructed circa 1946. It is one story tall and has a rectangular footprint. The structural system is brick that is painted white. It has a flat roof clad with built-up and features a wood parapet. The circa 1946 hangar retains its original openings, but the sliding doors have been replaced with wood board and standing seam metal.

The small hangar retains integrity of location, design, workmanship, feeling, and association. Integrity of materials is impacted but not entirely diminished by the placement of wood board and standing seam metal over original openings. Integrity of setting is impacted but not diminished by the construction of surrounding historic-period and modern private hangars.

The circa 1946 building contributes to the historic district. It retains adequate integrity, was constructed within the period of significance, and is associated with the development of the Baker City Municipal Airport after World War II, when new buildings were constructed to replace earlier buildings that burned in a 1945 fire. Individually, the building has no known associations with significant events (Criterion A) or historical figures of the past (Criterion B). While it retains most of its original features, the building is a common type of aviation building and does not embody distinctive characteristics of a type, period, or method of construction (Criterion C). Under Criterion D, the building is unlikely to be a principal source of important information about the past.

(Continued on Page 15)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

Description of Property, continued from Page 14

Administration Building (Circa 1946) – Eligible/Contributing

The Former Administration/Empire Airlines Office/"Baker" Building was constructed circa 1946. The original portion of the building is long with a rectangular footprint. Circa 1959, an office or watch house was constructed on the west side of the building, giving the building its current T-shaped footprint (Historic Aerials 2023a; Oregon State Board of Aeronautics 1949; USGS 1953). The foundation of the building is poured concrete. The exterior cladding is a mixture of scored concrete block and T1-11 siding at the circa 1959 addition, and plywood panels atop poured concrete at the circa 1946 portion of the building. Enclosed shed roof porches are present over the original building entrances on the northwest and southwest elevations. The circa 1946 building retains its original steel casement windows. The circa 1959 addition has aluminum slider windows. The windows at the north corner of the building, facing the runway, have been replaced with vinyl. The entire building is capped with a cross-gable roof clad in modern composition shingles. Currently, the building is vacant.

The 1959 addition and the replacement of original windows with modern vinyl windows diminishes integrity of design, materials, and workmanship. Integrity of location, feeling, and association are retained when viewed within the context of the historic district.

The Administration Building contributes to the historic district. It retains adequate integrity, was constructed within the period of significance, and is associated with the development of the Baker City Municipal Airport after World War II, when new buildings were constructed to replace earlier buildings that burned in a 1945 fire. Individually, the building has no known associations with significant events (Criterion A) or historical figures of the past (Criterion B). Modifications and diminished integrity of design, materials, and workmanship limit the building's eligibility under (Criterion C). Under Criterion D, the building is unlikely to be a principal source of important information about the past.

Ancillary Buildings 1 and 2 (circa 1949) – Eligible/Contributing

The two ancillary buildings are located to the southwest of the administration building. The historic use of these buildings is not known. Both buildings have a square footprint and sit upon poured concrete foundations. The exterior cladding of the westernmost building, Ancillary Building 1, is standing seam metal. It features six-light wood windows with metal awnings above. The windows may be historic-period replacements, due to sheet metal which appears to have been infilled below one of the windows. A single-entry metal door faces the administration building on the east elevation. The building is capped with a side gabled roof, also of standing seam metal.

The exterior cladding of the easternmost building, Ancillary Building 2, is a mixture of standing seam metal and wood panel. It has no windows but features large metal ventilation ducts on the north and south elevations indicating it likely served some type of utility purpose. There is one metal door on the south elevation. The building is capped with a side-gable roof clad with standing seam metal.

The ancillary buildings generally retain integrity of location, materials, workmanship, and feeling. Although the historic use of the buildings is unknown, they do appear to have been used during the period of significance so they can be assumed to also retain integrity of association. The possible replacement and infill of original windows on at least one of the buildings as well as the construction of private hangars constructed in the 1970s-2000s, have impacted but not diminished the buildings' integrity of materials and setting.

(Continued on Page 16)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

Description of Property, continued from Page 15

The ancillary buildings contribute to the historic district. They retain adequate integrity, were constructed within the period of significance, and are associated with the development of the Baker City Municipal Airport after World War II, when new buildings were constructed to replace earlier buildings that burned in a 1945 fire. Individually, the buildings have no known associations with significant events (Criterion A) or historical figures of the past (Criterion B). While they retain most original features, the buildings are of utilitarian design and do not embody distinctive characteristics of a type, period, or method of construction (Criterion C). Under Criterion D, the buildings are unlikely to be a principal source of important information about the past.

Radio Facility (circa 1946) – Eligible/Contributing

The circa 1946 radio building is to the southeast of Heilner Hangar. It has a rectangular footprint and a poured concrete foundation. The building is capped with a flat roof with a concrete parapet and its exterior cladding is scored concrete. Fenestration is comprised of wood doors on the north and south elevations and wood awning windows on the east and west elevations. An antenna and meter box are affixed to the east elevation and high voltage and routing boxes are located in front the building. The radio facility retains integrity of location, design, materials, workmanship, feeling, and association. Integrity of setting is impacted but not diminished by changes to the airport occurring during the historic and modern periods.

The radio facility contributes to the historic district. It retains adequate integrity, was constructed within the period of significance, and is associated with the development of the Baker City Municipal Airport after World War II, when new buildings were constructed to replace earlier buildings that burned in a 1945 fire. Individually, the building has no known associations with significant events (Criterion A) or historical figures of the past (Criterion B). While it retains most of its original features, the building is a common type of aviation building and does not embody distinctive characteristics of a type, period, or method of construction (Criterion C). Under Criterion D, the building is unlikely to be a principal source of important information about the past.

WPA-Built Runoff Ditches (circa 1935) – Eligible/Contributing

Excavation of the runoff ditches and field grading at Baker Airport was completed between 1930 and 1941. Most of the work was done by Civil Works Administration and WPA laborers under the Roosevelt Administration. The ditches are earth-lined and approximately 15 feet wide. The ditches encompass most of the airport boundary. As the ditches are interconnected, they have been documented as one historic structure.

The ditches appear to retain all seven aspects of historical integrity. Because they retain integrity and date from the period of significance, they contribute to the identified historic district. Individually, the ditches do not convey an association with significant events or people of the past (Criteria A and B), nor do they embody distinctive characteristics of a type, period, or method of construction (Criterion C). They are unlikely to be a principal source of important information about the past (Criterion D).

Access Road, Terminal Apron, and Taxiway (1962) – Not Eligible/Non-Contributing

The paved access road facilitates access to the Baker City Municipal Airport from W. Airport Road and was constructed in 1962. As it enters the airport grounds, the road forks off to the private hangars to the west, the circa 1940s buildings to the north, and the Baker Aircraft Office to the east. The terminal apron is located between Heilner Hangar and the Administration Building. It was constructed in 1962. The apron measures 392 feet by 150 feet. The surfacing material is asphalt. The 1962 taxiway is west of the circa 1936 runway that is oriented to the northeast/southwest (Historical Aerials 2023b; USGS 1977). It has a paved asphalt surface and connects to the runway to the east. These circulation feature post-date the historic district, and despite retaining all seven aspects of integrity they do not meet NRHP eligibility Criteria (A through D) as an individual resource.

(Continued on Page 17)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

Description of Property, continued from Page 16

Lone Tree and Marker (1976) – Not Eligible/Non-Contributing

In 1976 the Baker Garden Club erected a stone monument in recognition of the Oregon Trail and planted a ponderosa pine tree on the airport property to represent the “Lone Pine Tree.” The “Lone Tree” was a single large pine tree located about one quarter mile east of the airport; it was once an important landmark and resting place to travelers on the Oregon Trail (Evans 1991). Traveler accounts report the tree was gone by 1843 (Evans 1991). The tree and monument are presently located east of Heilner Hangar.

Between Heilner Hangar and the Baker Aircraft Office is a modern seating or reflective area. It features a wood trellis constructed on top of a paved brick pad and two metal benches. A stone monument next to the benches is dedicated to Spc. Mabry James Anders. A second monument featuring a U.S. Air Force TR 653 plane and picnic seating in a grassy area to the south of Heilner Hangar was erected in 2007. The monument post-dates the historic district and does not meet NRHP eligibility Criteria (A through D) as an individual resource.

Hangars (Circa 1971 to Circa 1978) – Not Eligible/Non-Contributing

Ten hangars were constructed within the project APE between circa 1971 and circa 1978. Six hangars in the APE are modern, having been constructed between circa 1988 and circa 2007. The hangars are located in two clusters to the east of Runway 35 and to the east-southeast of the Baker Aircraft Office. Two of the hangars are city owned, and nine are privately owned.

The design of the hangars is consistent and includes a mixture of manufactured box and tee-hangars. They are typically wood-framed, one-story tall, and have a rectangular footprint. Their foundations are poured concrete. The exterior cladding is typically modern standing seam metal or corrugated metal. The hangars are capped with gable roofs. The windows observed were either aluminum slider windows or vinyl replacement slider windows, although some of the hangars had no windows. Doors were single-entry metal or wood doors that were consistently located on the north, south, or sometimes west elevations. Each hangar has a large roll-up metal door oriented towards one of the two aprons. Six additional box hangars constructed between circa 1971 and circa 1988 are located outside of the APE to the west of Runway 35. The hangars post-date the historic district and despite most retaining all seven aspects of integrity, they do not meet NRHP eligibility Criteria (A through D) as individual resources.

Baker Aircraft Office (1970) – Not Eligible/Non-Contributing

The Baker Aircraft Office (also referred to as the FBO building) was constructed in 1970. It is one story tall and has a rectangular footprint. The foundation is likely poured concrete. The metal building is clad in standing seam metal on the northeast, southeast, and southwest elevations. An addition on the northwest elevation is clad in T1-11 siding. The addition has three fixed aluminum windows and one fixed vinyl window. Vinyl sliders are located on the southwest elevation. On the northeast elevation are metal roll-up doors that face the circa 1979 apron. The doors appear to be modern. The building is capped with a wide gabled roof clad in corrugated metal. The building has diminished integrity of design, materials, workmanship, and feeling. It post-dates the historic district and does not meet NRHP eligibility Criteria (A through D) as an individual resource.

Potentially Contributing Resources Outside of the APE

There are at least five historic built environment resources outside of the APE that are within the airport boundary and likely contribute to the NRHP eligibility of the Baker City Municipal Airport Historic District. These resources include the existing triangle-shaped airport runways constructed between 1930 and 1936, the circa 1936 radio beacon station, and the portions of the circa 1935 runoff ditches that extend outside of the project APE. The NRHP eligibility of the historic district has been evaluated, and the boundary and period of significance defined, based on the likelihood of other resources that are outside of the APE but within the airport property would contribute to the potential Baker City Municipal Airport Historic District.

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

Determination of Eligibility (continued from page 2)

The historic property boundary encompasses most of the airport, which is situated on tax lot #4500. The southwest corner of the taxlot has been excluded from the proposed historic property boundary as it contains private hangars constructed between circa 1971 and circa 1988 that fall outside of the period of significance for the historic district. The proposed historic property boundary extends outside of the APE to encompass airport features that were built during the period of significance and would likely contribute to the potential historic district if evaluated for eligibility to be listed in the NRHP. These features include the airport runways, a radio beacon station, and portions of circa 1935 runoff ditches were completed by federal relief workers.

The historic district is recommended to be eligible for listing in the NRHP under Criteria A and C. Under Criterion A, the airport has an important local association with broad themes of development regarding the increasing popularity and necessity of air transport during the mid-twentieth century. Under Criterion C, although most individual buildings of the airport lack individual distinction, they nonetheless form a distinguishable entity that is observable through linkages in design, materials, and spatial orientation of airport elements constructed during the period of significance.

Under Criterion B, Don Doyle has been identified as a locally significant individual whose productive life is closely associated with the Heilner Hangar (HR-1). However, Doyle's significant association is specific to the hangar building and does not extend to the overall airport property, for which no association with a significant person of the past was identified under Criterion B. The built environment of the airport is unlikely to be a source of new or important information about the past as it was constructed using period typical materials and the site has subsequently been modified and added to in order to accommodate airport needs (Criterion D).

Historical Context

The Baker City Municipal Airport originated as an unimproved landing field, primarily for biplanes, at the end of World War I (*La Grande Observer* 1919; *Statesman Journal* 1930). Transcontinental airmail carrier service was inaugurated by the United States Postal Service between 1918 and 1920, and this marked the first serious use of the airport (Millbrooke et al. 1998). In 1925, the passage of the Kelly Air Mail Act turned postal service over to commercial air carriers, and new feeder routes developed leading to a national increase in airport construction after 1927 (Harris 1986; Millbrooke 1998). In 1928, the 80-acre Baker airfield was established as part of the lighted airmail route between feeder stops in Boise, Idaho, and Pasco, Washington (*La Grande Observer* 1929; *The Idaho Statesman* 1928; *Statesman Journal* 1933; United States Postal Service 2023). That same year, Baker City requested the Baker airfield be studied for a possible conversion to a municipal project (*The Idaho Statesman* 1928).

The initial phase of municipal airport operation began in 1930 when the first landing strip and hanger at the Baker City Municipal Airport were completed. Baker City attorney and aviation enthusiast Joseph J. Heilner, and the local Kiwanis club, led the effort (*Morning Oregonian* 1930). The Baker City Municipal airport, located four miles north of Baker City, was dedicated on June 28, 1931. The dedication celebration included the arrival of 40 airplanes with the Pacific Northwest Air Tour and a four-hour stunt show sponsored by the Baker Aviation Committee (*La Grande Observer* 1931).

During the Depression of the 1930s, the federal government began providing airport aid to create jobs, stimulate the economy, and improve national defense through the Civil Works Administration and the Department of Air Commerce (Carmody 1941; Federal Aviation Administration 2023; Smith 1936). In 1934, when the Civil Works Administration ended, the airport development program was turned over to the Federal Emergency Relief Administration, later renamed the Works Progress Administration (Livingnewdeal.org 2023).

(Continued on Page 19)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
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Historical Context, continued from Page 18

Between 1934 and 1941, local and national interests merged when the Civil Works Administration, the WPA, and Baker City spent over \$400,000 to improve the Baker City Municipal Airport (*Corvallis Gazette-Times* 1941; *La Grande Observer* 1936). In 1934, the local American Legion 41 in Baker raised \$1,050 to expand the footprint of the airport (*The News-Review* 1934). In 1937, the city bonded an additional 70 acres of land to the east and north of the existing airfield for WPA improvements (Melton 1936; *La Grande Observer* 1937). By 1941, the original airport runway was extended, new runways were constructed and improved, field drainage was completed around the airport property, and a radio beacon station, radio towers, radio building, and a watch house were constructed (*Corvallis-Gazette Times* 1938; *La Grande Observer* 1934a, 1934b, 1936; *Medford Mail Tribune* 1934, 1941; Melton 1936; *The News-Review* 1934; U.S. Army Corps of Engineers 1941).

During World War II, the Baker City Municipal Airport was used for emergency landings by pilots training with Colonel Jimmy Dolittle for their bombing missions over Tokyo (Ferguson 2019). The airport also served as a civilian flying school in coordination with U.S. Government (*La Grande Observer* 1943). However, in 1945, all of the pre-World War II-era buildings and several private airplanes used by the flying school were destroyed in a fire (*La Grande Observer* 1945a).

The Heilner Hangar office and shop were constructed in 1946. The airfield was also dedicated as Heilner field in honor of Joseph Heilner. A circa 1946 aerial photograph in the Baker City Library Archives shows Heilner Hangar and the three airport buildings including a smaller hangar, radio building, and a rectangular office or administration building with "Baker" painted on the roof, with triangle-shaped runways, grassy apron, and unimproved roads and taxiways (Gambis 1946). The hangar was designed by Portland architects Annand and Kennedy, who also constructed the hangar at a naval airport at Astoria (*The Eugene Guard* 1944).

Post-war prosperity expanded the mobility of Pacific Northwest residents, and passenger travel surged (National Air and Space Museum 2023). Airline advertisements promoted travel as a leisure activity, selling the exclusivity of the ride, the experience, and the destination (Aviation Oil Outlet 2016). The first regularly scheduled commercial airline flights to Baker City Municipal Airport were Empire Airlines on Boeing 247Ds and DC-3s in 1946 when domestic service routes were opened to smaller, less prosperous cities such as Baker City by the Civil Aeronautics Board (Airline Timetable Images 2023; González 2022; *La Grande Observer* 1945b).

In the late 1940s, meals were served at the Baker City Municipal Airport, and the 1949 directory framed Baker City as a recreation destination for its proximity to the Anthony Lakes region and its big game hunting (Oregon State Board of Aeronautics 1949). Circa 1949, two ancillary facilities buildings were constructed to the south of the office (Oregon State Board of Aeronautics 1949; USGS 1953). Circa 1959 a gabled addition or watch building was constructed on the northwest side of the Baker building (Baker County Library 2023a; Historic Aerials 2023a; Oregon State Board of Aeronautics 1949, USGS 1953).

Between 1954 and 1984, the airport was the home of Don Doyle's Flying Service (Baker County Library Digital Archive 2023b; *The Idaho Statesman* 2016). Don and Helen Doyle moved to Baker City after their marriage in 1954 to run the Fixed Base Operation at Baker City Municipal Airport. In addition to working as airport manager, Doyle's flying service company provided charter flights, air ambulance service, student instruction, scenic tours, fire patrol, fish, and game flights, fire and timber spraying, and aviation fueling (*The Idaho Statesman* 2016).

(Continued of Page 20)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

Historical Context, continued from Page 19

Over time, the Baker Municipal Airport has been steadily improved and expanded. In 1962, FAA provided \$47,426 to fund several airport improvements, including acquiring land for clear zones, construction of taxiways to the primary runway, constructing a terminal apron and entrance road, and the installation of new lighting cable (*The Oregonian* 1962). It is likely that the primary runway was also resurfaced or otherwise improved with the funding

allocated by FAA (*The Oregonian* 1962). In 1976 the Baker Garden Club erected a stone monument in recognition of the Oregon Trail and planted a ponderosa pine tree on the airport property to represent the "Lone Tree" that once stood about 0.4 km (0.25 mi) east of the airport. Between circa 1970 and 2012, 15 hangars were erected at the Baker City Municipal Airport. A 1994 USGS map shows the extension of Runway 13-31 in the southeastern corner in section 34 and the re-route of S Airport Lane (USGS 1981; 1994). Between 2007 and 2012, two memorials to local citizens were erected on the Baker Airport grounds.

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(Continued on Page 21)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|--|--|---|

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(Continued on Page 22)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
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(Continued on Page 23)

**OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet**

| | | |
|--|--|---|
| Property Name: Baker City Municipal Airport | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
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OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

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|---|--|---|
| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity Baker |
| Project Name: Baker City Municipal Airport Master Plan | | Agency project #: |
| Agency: Federal Aviation Administration | | SHPO Case#: |
| Location coordinates (to sixth decimal place): Latitude: 44.50058 Longitude: -117.48592 | | Is the property listed in the National Register of Historic Places? <input type="checkbox"/> YES – Individually <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES – In a district |



The southeast and northeast elevations of Heilner Hangar. The view is towards the west.

| | |
|-----------------------------|------------------------|
| Surveyor: Tara Seaver, M.S. | Date Recorded: 4/24/23 |
|-----------------------------|------------------------|

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| National Register Findings: <input checked="" type="checkbox"/> Eligible: <input checked="" type="checkbox"/> Individually <input type="checkbox"/> As part of a District NR Criteria: <input checked="" type="checkbox"/> A <input checked="" type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> Not Eligible: <input type="checkbox"/> Irretrievable integrity loss <input type="checkbox"/> Not 50 Years <input type="checkbox"/> Fails to meet NR Criteria | Finding of Effect: <input type="checkbox"/> No Effect <input type="checkbox"/> No Adverse Effect <input type="checkbox"/> Adverse Effect |
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|---|------------|
| State Historic Preservation Office Comments – Official Use Only: Eligibility: <input type="checkbox"/> Concur <input type="checkbox"/> Do Not Concur: Effect: <input type="checkbox"/> Concur <input type="checkbox"/> Do Not Concur: | |
| Signed _____ | Date _____ |
| RECEIVED STAMP | |
| CONTACT INFORMATION STAMP | |
| Comments: | |

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

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| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity Baker |
| Original Use: Air Facility | | Number of Associated Resources: NA |
| Architectural Classification / Resource Type: Utilitarian Building | | Owner: <input type="checkbox"/> Private <input checked="" type="checkbox"/> Local Government <input type="checkbox"/> State <input type="checkbox"/> Federal |
| Window type and Materials: Awning and fixed steel sashes, vinyl slider, and wood fixed sashes | | Exterior Surface Materials: Primary: Poured Concrete Secondary: Metal: Other/undefined Decorative -select materials- |
| Roof Type and Materials: Wood truss with built-up | | |
| Integrity: <input type="checkbox"/> Excellent <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor | | Construction Date: 1946 (<input type="checkbox"/> Circa) Architect/Builder (if known): Annand & Kennedy (architects) |
| Description of Property (including previous alterations & approximate dates): | | |
| <p>Heilner Hangar is located on the grounds of the Baker City Municipal Airport at 43769 Heiler Drive, approximately 4 miles north of Baker City, Oregon. The hangar was constructed in 1946 and was designed by Annand & Kennedy architects of Portland, Oregon. It currently serves as aircraft storage.</p> <p>Heilner Hangar is two stories tall with a rectangular footprint. The exterior walls and the foundation of the building are constructed of poured concrete. The building is capped with a low-profile wood truss roof that is clad with built-up and features a metal parapet. Two chimneys are present on the north and west corners of the building. Concrete projections are present on the southwest and northeast elevations where the hangar doors are located.</p> <p>The fenestration consists of sliding metal doors on the southwest elevation and multi-leaf wood door with three-light windows on the northeast elevation. Five steel windows with 18 lights and a central awning or hopper section characterize the southeast elevation of the building and provide light to the main hangar area. The northwest side of the building has steel windows of various configurations on the first floor and a mixture of steel, wood, and vinyl windows on the second floor.</p> | | |
| Determination of Eligibility, Justification, and Sources (Use continuation sheets if necessary): | | |
| <p>Heilner Hangar, which retains most aspects of historic integrity, is significant for its contributions in the area of air transportation in Baker City, Oregon, and it embodies distinctive characteristics of its type and period of construction. It is recommended to be eligible for the National Register of Historic Places (NRHP) at the local level under Criteria A, B, and C.</p> <p>Heilner Hanger was constructed at the Baker City Municipal Airport in 1946, after a 1945 fire destroyed all airport buildings (La Grande Observer 1945a). It was first used as a combined office for the airport manager and a maintenance building for airmail, commercial, and privately owned planes flying in and out of the Baker City Municipal Airport (Oregon State Board of Aeronautics 1947, 1949). Heilner Hangar may have also been used to house or repair agricultural aircraft (The News Review 1955). Between 1954 and 1984, Heilner Hangar played a key role as the base of operations for the municipal airport's manager, Don Doyle. Doyle's air transport business, "Don Doyle's Flying Service," supported backcountry firefighting efforts, provided remote search-ambulance service, and assisted in aerial timber spraying of invasive species throughout Northeastern Oregon (Gilmand 1973; The Idaho Statesman 2016; The News-Review 1955). Doyle also provided charter flight services to and from the Baker City Municipal Airport.</p> | | |
| (Continued on page 8) | | |

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

| | | |
|----------------------------------|--|---|
| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
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Description of project scope, and nature and extent of impacts:

The Master Plan for the Baker City Municipal Airport is being updated for the first time since 2010. The Master Plan will facilitate phased upgrades to the airport that will likely be concentrated within the Area of Potential Effects (APE) delineated for the cultural resources study. The Master Plan will be reviewed by the Federal Aviation Administration. Recommendations provided at this stage for cultural resources will be considered when individual projects or undertakings are initiated.

Finding of Effect and justification:

No specific action is proposed at this time. For future undertakings, potential effects that would impact the character-defining features and aspects of integrity that support Heilner Hangar's eligibility for listing in the NRHP under Criteria A, B, and C should be assessed to determine whether an adverse effect would occur on a historic property.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

| | | |
|----------------------------------|--|---|
| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
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View: Overview of Heilner Hangar at Baker Municipal Airport taken between 1970 and 1995. Photograph courtesy of Baker County Library Archive.



View: Southwest and northwest elevations of Heilner Hangar. The view is towards the northeast.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

| | | |
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| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
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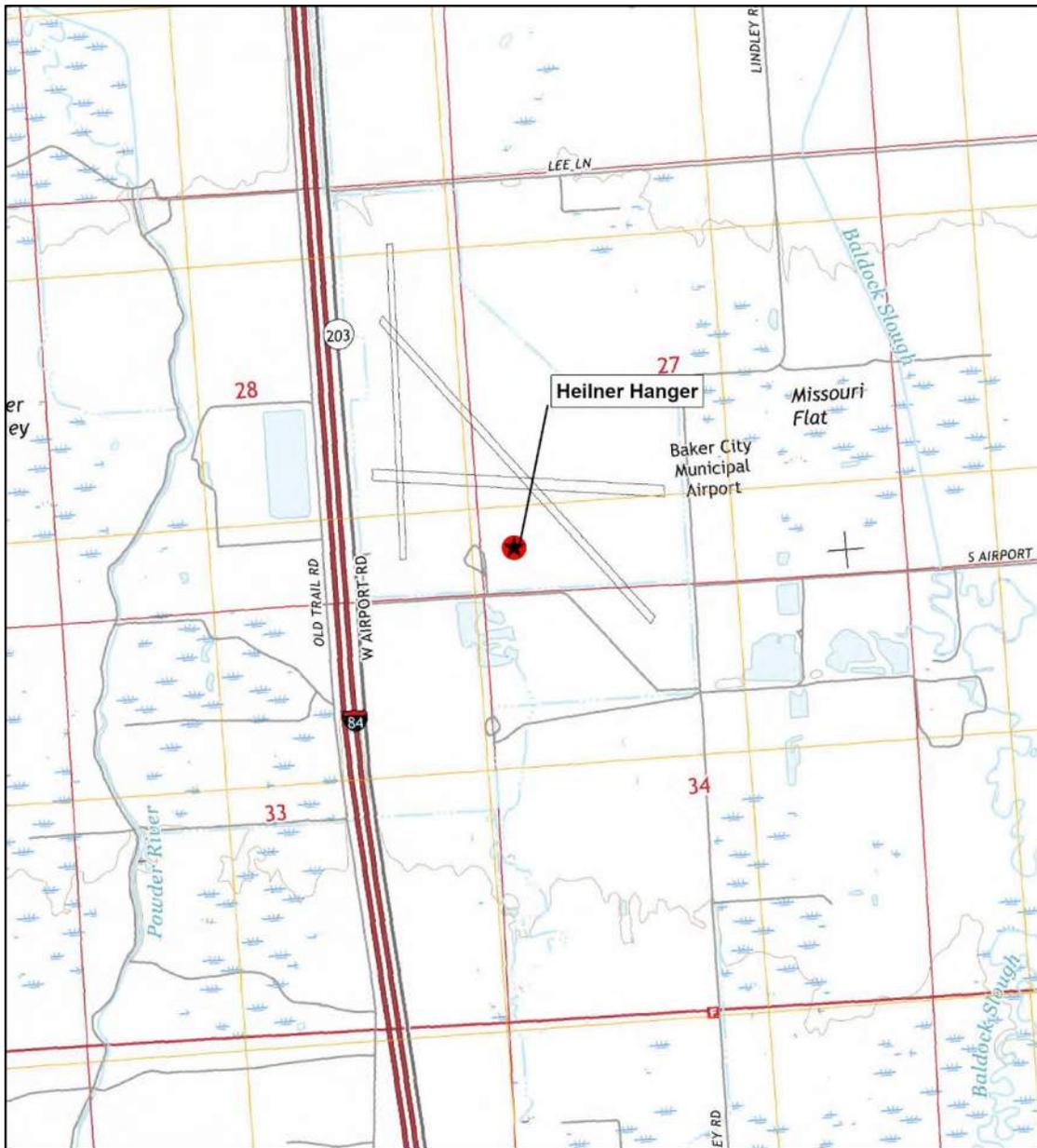
View: Northwest elevation of Heilner Hangar. The view is towards the southeast.



View: Northeast and southeast elevations of Heilner Hangar. The view is to the west.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

| | | |
|----------------------------------|--|---|
| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
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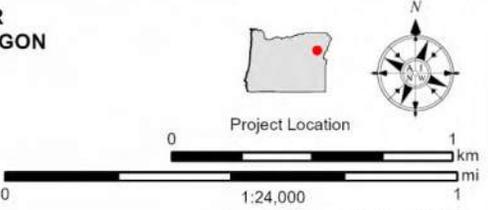
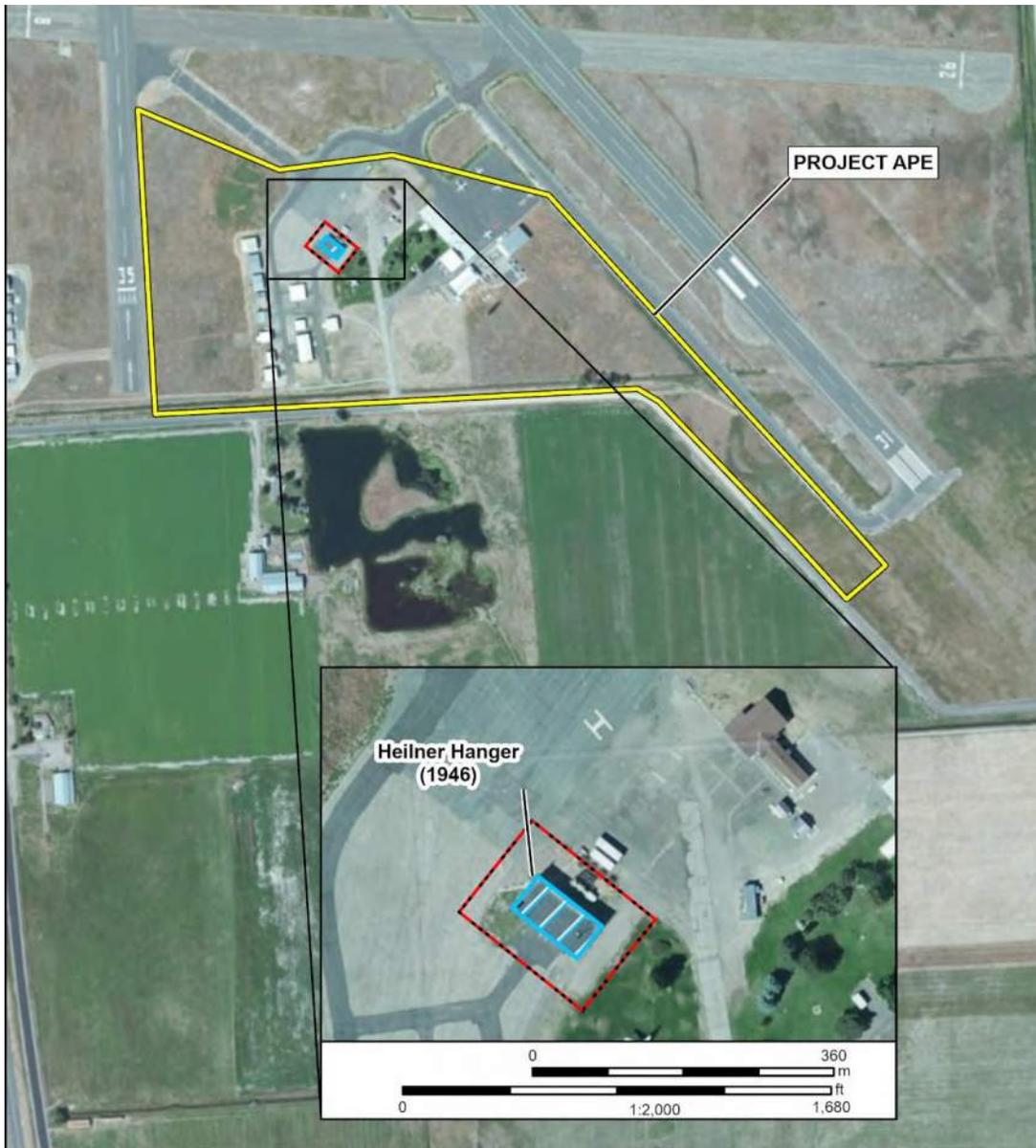
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|---|---|---|
| <p>HEILNER HANGER BAKER CITY, OREGON</p> <p>T8S, R4E; Sections 27, 28, 33, 34 Willamette Meridian USGS Topographic 7.5 Minute Baker, OR (2017) Quadrangle Map USGS Topview (https://ngmdb.usgs.gov/topview/)</p> |  Project Location  1:24,000 <small>Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.</small> | <p> Historic Resource Location</p> <p style="text-align: right; font-size: small;">Heilner Hangar Topo (Allison; 5/26/2023)</p> |
|---|---|---|

Figure 1. Heilner Hangar is located on the grounds of the Baker City Municipal Airport north of Baker City, Oregon.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties

| | | |
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| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City, Baker |
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|---|--|---|
| <p>BAKER CITY AIRPORT BAKER CITY, OREGON</p> <p>Heilner Hangar</p> <p>T8S, R4E; Sections 27, 28, 33, 34 Willamette Meridian USGS Topographic 7.5 Minute Baker, OR (2017) Quadrangle Map USGS Topoview (https://ngmdb.usgs.gov/topoview/)</p> |  <p>Project Location</p>  | <ul style="list-style-type: none"> Project APE Historic Property Boundary Heilner Hangar (Eligible/Significant) |
|  <p style="text-align: center;">1:7,500</p> | <p style="font-size: small; text-align: center;">World Imagery (Clarity): Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.</p> <p style="text-align: right; font-size: x-small;">Heilner Hangar Aerial (samantha; 7/10/2023)</p> | |

Figure 2. Heilner Hangar is eligible for listing in the NRHP under Criteria A, B, and C. The historic property boundary encompasses the building and extends 40 feet from the building's footprint.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet

| | | |
|----------------------------------|--|---|
| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|----------------------------------|--|---|

Determination of Eligibility (continued from Page 2)

In addition to its association with significant patterns of events regarding the development of air transportation services in Baker City during the mid-twentieth century (Criterion A), the building retains the majority of its original features and embodies distinctive characteristics of its type and period of construction (Criterion C). Such characteristics include multi-leaf hangar doors, steel sash windows, and its utilitarian multi-purpose design that offers both airplane storage and office space within the hangar footprint. Although these design features were common in airplane hangars constructed after 1930 and were often included in standardized plans after World War II, the hangar, which was designed by Annand & Kennedy of Portland, retains all aspects of integrity and is a good local example of its type and period of construction (Aaron 2011:4-12, 5-7, 5-8). Based on a review of other projects completed by architects Annand & Kennedy, both during and outside of their partnership, it is recommended that the hangar is not an important example of the work of Master architects.

Under Criterion B, the hangar is broadly associated with Joseph J. Heilner, a Baker County resident who spearheaded the development of Baker Airport in 1930 and who is the hangar's namesake. However, the hangar has no individual significance with Heilner. Alternately, Heilner Hangar may meet minimum eligibility requirements to be eligible for the NRHP under Criterion B for its association with Don Doyle, the former airport manager from 1954 to 1984. Don "Gene" Doyle is featured in Oregon newspapers as well as some Washington and Idaho newspapers as a locally significant person in Baker for the rescue and operations work of his company, "Don Doyle's Flying Service," which operated out of Heilner Hangar. Under Criterion D, because of its common design and use of period-typical materials, the building is unlikely to be a principal source of important information about the past.

Heilner Hangar retains integrity of location, design, workmanship, feeling, association, and to a lesser degree, integrity of materials. The hangar has not been moved from its original location, retains its original footprint, and has consistently been used as a maintenance and/or storage building for aircraft since 1946. Some of the original steel windows have been replaced with vinyl sashes; this impacts but does not diminish the hangar's integrity of materials. The hangar doors, if not original, date to the historic period. Integrity of setting is impacted but not entirely diminished by the construction of surrounding historic-period and modern hangars on the Baker Airport property.

The period of significance for the Hangar begins in 1946, the year the hangar was constructed, and extends to 1970, the estimated date when the Baker Aircraft Office building was constructed. This period encompasses the years when the hangar achieved its significance under Criteria A, B, and C. It is assumed that after circa 1970 airport management operations were relocated from Heilner Hangar to the Baker Aircraft Office building, which continues to house the primary office spaces for personnel at Baker City Municipal Airport.

The proposed historic property boundary includes the footprint of Heilner Hangar and a 40-foot buffer around the hangar. This boundary encompasses the hangar's primary openings and adjacent areas that facilitate the entrance and exit of airplanes to and from the hangar, as the hangar's use in association with air transport is a character-defining feature of the building. Landscaping located within the historic property boundary, including paved pathways and vegetation, are in areas that historically facilitated access to the hangar. However, the landscaping was added less than 50 years ago, is not character-defining, and does not contribute to the NRHP eligibility of Heilner Hangar. The historic property boundary does not include nearby aprons or taxiways, as they have been reconfigured over time according to airport needs and no longer align with historic-period access routes to and from the hangar.

Heilner Hangar would also contribute to the eligibility of a potential Baker City Municipal Airport Historic District. The Baker City Municipal Airport was developed during a period when expanded air infrastructure at the local, state, and national level facilitated new methods of commerce, improved national defense, and provided new means of transportation.

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet

| | | |
|----------------------------------|--|---|
| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|----------------------------------|--|---|

Historical Context

The Heilner Hangar office and shop were constructed in 1946. A circa 1946 aerial photograph in the Baker City Library Archives shows Heilner Hangar and the three airport buildings including a smaller hangar, radio building, and a rectangular administration building with “Baker” painted on the roof, with triangle runways, grassy apron, and unimproved roads and taxiways (Gambis 1946). The hangar was designed by Portland-based architects Annand & Kennedy, who were also involved with rebuilding a hangar destroyed by fire at a naval airport at Astoria (The Eugene Guard 1944). The architects were partnered from about 1942 to 1950, when Harold B. Boone was added to the partnership to form Annand, Kennedy & Boone (Ritz 2002). John Davis Annand, Sr., practiced architecture for over 50 years, and he was active in the Oregon Chapter of the American Institute of Architects (Ritz 2002:12-13). Rowe Davis Kennedy practiced architecture in the Portland area for 45 years, and he designed the NRHP-listed Dorchester House (1929) in Lincoln City (Ritz 2002:225).

Postwar prosperity expanded the mobility of Pacific Northwest residents, and passenger travel surged as more people could afford to travel via air (National Air and Space Museum 2023). The first regularly scheduled commercial airline flights to Baker were Empire Airlines on Boeing 247Ds and DC-3s in 1946 when domestic service routes were opened to smaller, less prosperous cities such as Baker City by the Civil Aeronautics Board (Airline Timetable Images 2023; González 2022; La Grande Observer 1945b). Airline advertisements from the period promoted travel as a leisure activity, selling the exclusivity of the ride, the experience, and the destination (Aviation Oil Outlet 2016). The 1949 Oregon State Board of Aeronautics Directory framed Baker as a recreation destination for its proximity to the Anthony Lakes region and its big game hunting (Oregon State Board of Aeronautics 1949).

Historical records seem to indicate that the Baker City Municipal Airport was historically managed by a single airport manager and/or a fixed base operator who worked out of the hangar office. Lionel Shurtliff is believed to have been the airport manager in 1946 when Heilner Hangar was built, but no information was found linking Shurtliff with the construction of the Hangar (Ancestry.com 2023). Louis Coffey is listed as the airport manager in 1950 (U.S. Bureau of the Census 1950).

Between 1954 and 1984, Heilner Hangar housed Don Doyle’s Flying Service (Baker County Library Digital Archive 2023; The Idaho Statesman 2016). Don and Helen Doyle moved to Baker after their marriage in 1954 to run the Fixed Base Operation at Baker City Airport after Coffey’s death in a plane accident (La Grande Observer 1954). In addition to working as airport manager, Doyle’s flying service company provided charter flying, air ambulance, student instruction, scenic tours, fire patrol, fish and game flying, fire and timber spraying, and aviation fueling (The Idaho Statesman 2016). In 1970, the Baker Aircraft building was constructed. The Baker Aircraft building houses the current airport management office.

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(Continued on Page 10)

OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet

| | | |
|----------------------------------|--|---|
| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
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OREGON INVENTORY OF HISTORIC PROPERTIES
SECTION 106 DOCUMENTATION FORM
Individual Properties
Continuation Sheet

| | | |
|----------------------------------|--|---|
| Property Name: Heilner Hangar | Street Address: 43769 Heilner Drive | City, County: Baker City vicinity, Baker |
|----------------------------------|--|---|

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APPENDIX C

INADVERTENT DISCOVERY PLAN

Inadvertent Discovery Plan for Baker City Municipal Airport Master Plan Project, Baker County, Oregon

This inadvertent discovery plan (IDP) has been prepared for the Baker City Airport Project, Oregon. The Baker City Airport Works Department is updating the Baker City Municipal Airport Master Plan to address the needs and opportunities for airport improvement (Figures 1 and 2). In the event that ground-disturbing activities or other project activities related to demolition uncover cultural material (see below for definitions), the following actions will be taken.

1. When an unanticipated discovery of **cultural material** (see definitions below) occurs, the contractor will completely secure the location and contact:

- a) FAA (XXXXX, XXX-XXX-XXXX [office], XXX-XXX-XXXX [cell])
- b) Archaeological Investigations Northwest, Inc. (AINW) (Jo Reese, 971-409-6979 [cell], 503-761-6605 [office]).

If AINW confirms that the discovery is archaeological, the following agencies will be notified:

- c) The Oregon State Historic Preservation Office (John Pouley, 503-480-9164)
- d) Consult with appropriate Native American Tribes for finds of Native American origin. The Legislative Commission on Indian Services (LCIS) will designate the appropriate Tribes; contact Patrick Flanagan, Executive Director (503-986-1067).

2. If the discovery consists of **human remains**, the contractor will stop work in and adjacent to the discovery, will completely secure the work area from further disturbance, and will immediately contact:

- a) FAA (XXXXX, XXX-XXX-XXXX [office], XXX-XXX-XXXX [cell])
- b) AINW (Jo Reese, 971-409-6979 [cell], 503-761-6605 [office])
- c) Oregon State Police (Lieutenant Craig Heuberger, 503-731-3030 [office], 503-508-0779 [cell])
- d) LCIS (Patrick Flanagan, 503-986-1067)
- e) Stare Physical Anthropologist (Dr. Elissa Bullion, 971-707-1392)
- f) Appropriate Native American Tribes, as designated by LCIS
- g) The Oregon State Historic Preservation Office (John Pouley, 503-480-9164).

NOTE: If you discover bones but are unsure if they are human, contact AINW.

Cultural material that may be protected by law could include but not be limited to:

- Buried layers of black soil with layers of shell, charcoal, and fish and mammal bones
- Buried cobbles that may indicate a hearth feature
- Non-natural sediment or stone deposits that may be related to activity areas of people
- Stone, bone, shell, horn, or antler tools that may include projectile points (arrowheads), stone flakes, wood working wedges or axes, and grinding stones (Figure 3)
- Wet areas may preserve remnants of wood and other plant fibers; in these locations there may be remains including fragments of basketry, weaving, wood tools, or carved pieces
- Concentrations of historic-period artifacts (glass, ceramic, or metal items over 50 years old) (Figure 4)
- Human remains

Proceeding with Work

- Ground-disturbing activities can proceed *after* the proper archaeological inspections have occurred and environmental clearances are obtained.
- After an inadvertent discovery, some areas may be designated as close monitoring or “no work” zones.

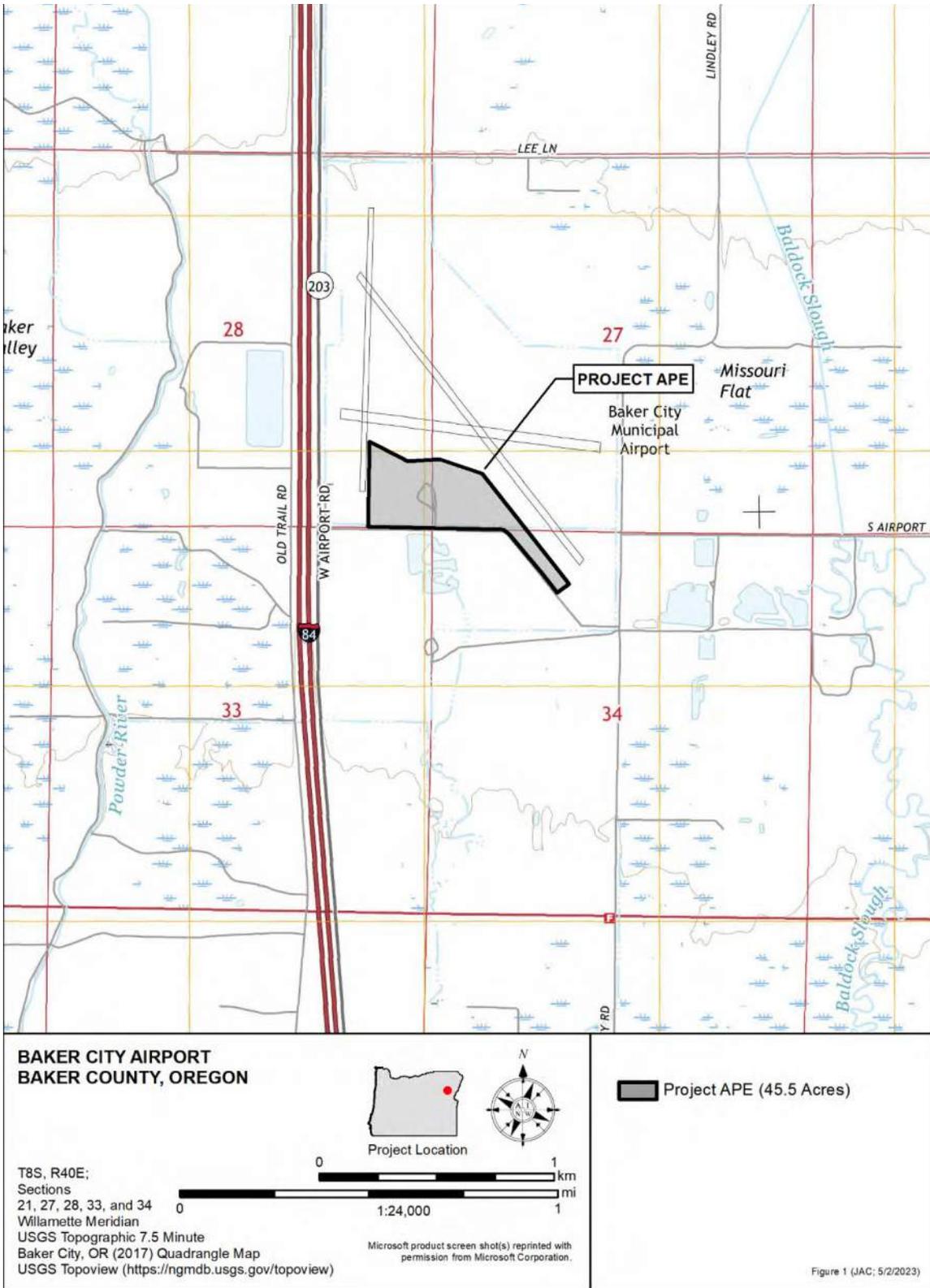


Figure 1. Location of the Baker City Airport project, in Baker City, Oregon.



Figure 2. Location of ground disturbances within Baker City Airport property.



Figure 3. Examples of stone tools, lithic debitage, and a bone awl.



Figure 4. Examples of historic-period artifacts, including ceramic fragments, bottle glass fragments, and square nails.



APPENDIX D

Airport Layout Plan

Baker City Municipal Airport
2024 Airport Master Plan

2024





CONTENTS

Airport Layout Plan

01 Airport Layout Plan

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01 Airport Layout Plan