CHILOQUIN STATE AIRPORT
OBSTRUCTION REMOVAL AND TAXILANES IMPROVEMENTS—
DRAFT ENVIRONMENTAL ASSESSMENT

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**MARCH 2019**

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Chapter 1 - Purpose and Need for Proposed Action

This Environmental Assessment (EA) is prepared in accordance with Federal Aviation Administration (FAA) Order 1050.1F, Environmental Impacts: Policies and Procedures, and FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions. The documents prescribe policies and procedures for the FAA for Implementing the NEPA of 1969, as amended, and the regulations of the Council on Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) Parts 1500-1508. The EA is an informational document intended for use by decision makers and the public. As such, it represents a disclosure of relevant environmental information regarding the proposed action.

The Federal Aviation Administration FAA is requesting that an Environmental Assessment (EA) be conducted to evaluate the potential impacts of the proposed airport improvements that have been included in the most recent five-year capital improvement program for the Chiloquin State Airport.

1.1 Chiloquin State Airport Background

The Oregon Department of Aviation (ODA) owns and operates Chiloquin State Airport (referred to as the Airport or Chiloquin). The City of Chiloquin operated the airport until 1960 when 28.6 acres of property, which included the airport, was transferred to the Oregon Board of Aeronautics, which was the predecessor to ODA. It has been in continuous aviation use since its initial construction in 1946.

The Airport is located just west of the Town of Chiloquin in the middle of Klamath County approximately 25 miles north of the City of Klamath Falls, north of the Sprague River, and west of the Williamson River at 4,221 feet above mean sea level (MSL). The Airport is bounded by a triangle of highways including US Route 97 to the west and Oregon State Route 422 on the northeast and southeast. The Chiloquin Rodeo Grounds are located immediately southwest of the Airport.

The Airport plays a significant role in the community from an economic standpoint and provides access and geographic coverage to the State's airport system in South Central Oregon. Figure 1-1 depicts the location of the Airport. The airport is sometimes used by aircraft trying to land at Klamath Falls International Airport but are unable to do so due to dense fog; these aircraft include express small package carriers.
The Airport consists of a single runway with turnaround holding bays on both ends. The Airport also has eastside and westside aprons with associated taxiway connectors. In 2012, Runway 17-35 was reconstructed in coordination with the Westside taxiway and itinerant aircraft apron. As of March 29, 2018, the Airport had 6 based aircraft with an estimated 3,500 total annual operations.\(^1\) The airport’s fleet mix of based aircraft includes single-engine piston aircraft only.

The Airport is classified as a general aviation airport in the National Plan of Integrated Airport Systems (NPIAS) defined by the Federal Aviation Administration (FAA). The Airport is categorized as a non-primary local airport. Local airports are a critical component of the general aviation system, providing communities with access to local and regional markets. Typically, local airports are located near larger population centers but not necessarily in metropolitan areas.

### 1.2 Airport Existing Conditions

The Airport is categorized as an FAA Airport Reference Code (ARC) B-I(small) airport. The ARC is comprised of two components; the Aircraft Approach Category (AAC), and the Airplane Design Group (ADG). The ‘B’ in the ARC refers an AAC which categorizes an aircraft approach speed between 91 to 121 knots (105 to 139 mph). The ‘I’ in the ARC refer to aircraft that has a tail height less than 20 feet and a wingspan less than 49 feet. The Airport has one runway (Runway 17-35) that is oriented in an approximate north/south direction. Runway 17-35 is 3,749 feet long and 60 feet wide with an asphalt surface. The published weight bearing capacity is 10,000 pounds for aircraft equipped with a single wheel gear configuration. The runway, north and south turnarounds, west itinerant apron with three tiedowns, and the entire west taxiway were reconstructed in 2012. A small portion of the east taxiway was improved in 2012, but only the western most 45 feet between Runway 17-35 and the runway hold line. Table 1-1 provides a summary of Airport runway dimensional standards, which can be found in the FAA Advisory Circular 150/5300-13A, Airport Design.

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\(^1\) Basedaircraft.com and FAA 5010-1 Airport Master Record Form: FAA Airport/Facility Directory (A/FD) Northwest U.S.
TABLE 1-1: FAA RUNWAY DIMENSIONAL STANDARDS

<table>
<thead>
<tr>
<th></th>
<th>RUNWAY 17-35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft Approach Category (AAC)</td>
<td>B</td>
</tr>
<tr>
<td>Airplane Design Group (ADG)</td>
<td>I</td>
</tr>
<tr>
<td>Runway Width</td>
<td>60 feet</td>
</tr>
<tr>
<td>Runway Safety Area Width</td>
<td>120 feet</td>
</tr>
<tr>
<td>Runway Object Free Area Width</td>
<td>250 feet</td>
</tr>
<tr>
<td>Holding Position</td>
<td>125 feet</td>
</tr>
<tr>
<td>Parallel Taxiway/Taxilane</td>
<td></td>
</tr>
<tr>
<td>Separation Centerline</td>
<td>150 feet</td>
</tr>
<tr>
<td>Aircraft Parking Area</td>
<td>125 feet</td>
</tr>
</tbody>
</table>

Access to the Airport is provided off Oregon Highway 422 on the southeast side of the Airport and from the east by Applegate Road (unimproved roadway). Access to the west side apron is from Highway 97 via a pedestrian gate. The runway is equipped with pilot controlled medium intensity runway lights (MIRL), threshold lights, and a lighted rotating beacon that operates from sunset to sunrise. The runway has basic (visual) markings on both ends, consistent with current visual approach capabilities. There is also a lighted wind direction indicator and segmented circle. The west taxiway and apron has reflective markers.

Currently there is limited perimeter fencing at the Airport, which consists of a three-strand wire fence along State Highway 97. The airport does not have secured gates.

The traffic pattern for Runway 17-35 is standard left-hand patterns. The traffic pattern altitude for fixed-wing aircraft is 1,000 feet above ground level (AGL). There is a 420 foot displaced threshold on the Runway 17 end to provide additional separation between landing aircraft and ground based obstacles.

There are no ground based navigational aids located on the Airport, however, the Klamath Falls VORTAC (Very High Frequency Omni-Directional Range beacon with Tactical Air Navigation system), which is a radio based navigational aid, is located 26 nautical miles south of the Airport but is unusable below 12,000 MSL (Mean Sea Level) when over the Chiloquin State Airport. The Airport does not have any published instrument approach procedures.

The Airport does not have an AWOS (Automated Weather Observation System) and no fuel service is provided.

**Figure 1-2** depicts the existing airfield facilities.
ENVIROMENTAL ASSESSMENT
FIGURE 1-2

CHILOQUIN STATE AIRPORT
AIRPORT FACILITIES

CHILOQUIN HWY (OR 422)

HOLD LINE

WEST ITINERANT APRON

420' DISPLACED THRESHOLD

EAST HANGAR AREA

FUTURE GATE

FUTURE GATE

ROTATING BEACON

CHILOQUIN BLVD (OR 422)

HOLD LINE

CHILOQUIN

US 97

SEGMENTED CIRCLE AND LIGHTED WIND CONE

420' DISPLACED THRESHOLD

CHILOQUIN HWY (OR 422)

HOLD LINE

WEST ITINERANT APRON

EAST HANGAR AREA

FUTURE GATE

FUTURE GATE

ROTATING BEACON

CHILOQUIN BLVD (OR 422)

HOLD LINE

CHILOQUIN

US 97

SEGMENTED CIRCLE AND LIGHTED WIND CONE
Part 77 Surfaces
Federal Air Regulation (FAR) Part 77.25, Objects Affecting Navigable Airspace, defines airport imaginary surfaces, which are established to protect the airspace immediately surrounding airports, associated runways, and designated helicopter landing areas. The airspace and ground areas surrounding a runway should be free of obstructions (i.e., structures, parked aircraft, trees, etc.) to the greatest extent possible to provide a safe operating environment for aircraft. A portion of the Part 77 surfaces includes a primary surface, a transitional surface, and approach surfaces. These three components are described in further detail below. A summary of FAR Part 77 airspace surfaces relevant to this project and surrounding the Chiloquin State Airport is shown in Table 1-2.

Primary Surface
The primary surface is a rectangular, flat plane of airspace longitudinally centered on the runway, with the same elevation as the nearest point on the runway centerline. The primary surface extends 200 feet beyond each runway end, where it connects to the inner portion of the runway approach surfaces. The primary surface should be free of any penetrations, except items with locations fixed by function, in which case they shall be mounted on frangible couplings. The primary surface of Runway 17-35 is clear of obstructions therefore it currently meets the requirements of FAR Part 77.25

Transitional Surface
The transitional surface is located at the outer edge of the primary surface and is represented by a plane rising perpendicularly at a slope of 7 to 1 to an elevation 150 feet above the airport elevation. The transitional surface connects to the sides of the runway approach surfaces at common elevations. For Runway 17-35, the transitional surface begins 500 feet from the runway centerline, in both directions.

Approach Surface
The approach surface extends longitudinally along the extended runway centerline, beginning at the end of the primary surface. The existing approach surfaces of both Runway 17 and Runway 35 are visual approach surfaces. The visual approach surface rises at a slope of 20 to 1 and is 500 feet wide where it begins at the end of the primary surface and flares to a width of 1,250 feet at a distance of 5,000 feet from the end of the primary surface. As identified in the 2018 aerial and field reconnaissance surveys performed under this contract, the approach surfaces of Runway 17-35 are obstructed by trees that are proposed for removal. Several man-made structures also penetrate the approach surface but they are not planned for removal.

**Figure 1-3** depicts the existing approach surfaces and the obstructions to the approach surfaces as depicted in the 2003 ALP.
### TABLE 1-2: FAR PART 77 AIRSPACE SURFACES

<table>
<thead>
<tr>
<th>AIRSPACE ITEM</th>
<th>RUNWAY 17/35 VISUAL UTILITY RUNWAY</th>
<th>OBSTRUCTION</th>
</tr>
</thead>
</table>
| Width/Length of Primary Surface | 500 feet*/200 feet beyond both ends of runway  
* Width based on approach visibility minimums of Visual.                  | No          |
| Transitional Surface         | 7:1 Slope to 150 feet above runway                                                             | No          |
| Approach Surface Length      | Existing/Future - 5,000 feet (Rwy 35 & Rwy 17 – Visual)                                        | Yes, trees  |
| Approach Surface Slope       | Existing/Future - 20:1 (Rwy 35 & Rwy 17 – Visual)                                              | Yes, trees  |
| Approach Surface Width at End| Existing/Future - 1,250 feet (Rwy 35 & Rwy 17 – Visual)                                       | Yes, trees  |

**Airfield Pavements**

As part of the ODA Pavement Evaluation/Maintenance Management Program (PMP), Airport pavement facilities are inspected on regular three year intervals and were last inspected in 2016. The majority of airfield pavements were evaluated with Pavement Condition Ratings (PCI) of “Good” condition while eastside hangar taxilanes were evaluated as “Fair” to “Satisfactory.” By the year 2026, the eastside hangar taxilanes are predicted to fall into the lower end of the “Fair” category and will need to be rehabilitated.
1.3 Description of Proposed Action

ODA, the owner and operator of the Airport, proposes to identify and remove the 20:1 approach obstructions and improve existing airfield pavement deficiencies on the eastside taxilanes. The proposed action has been identified as:

- The identification and removal of obstructions in the north and south 20:1 approach surfaces to Runway 17-35. (2019 construction)
- The rehabilitation of the east Taxilanes. (2020 construction)

Figure 1-4 depicts the proposed airport improvements to be covered by the EA.

1.4 Purpose and Need for the Proposed Action

20:1 Approach Obstruction Removal
The purpose and need of the proposed action is to maintain a safe operating environment for current and future users of the Airport by mitigating existing FAR Part 77 20:1 visual approach surface obstructions, thereby improving the safety of aircraft operations, and to bring the airport into compliance with FAR Part 77 Airspace requirements.

The most recent ALP Update Report (2003) identified proposed airport improvements that included obstruction removal within the visual 20:1 approach surfaces of Runway 17-35, which are depicted in Figure 1-3. In 2018, additional aerial and field reconnaissance surveys, performed under this contract, identified and analyzed obstructions to further develop the obstruction mitigation plan are depicted in Figures 1-5A and 1-5B.

Figure 1-3 depicts 2003 ALP Update Approach Plan and Profile.

Figure 1-5A and 1-5B depict the Runway Obstruction Analysis for each runway end conducted as part of this project.

Taxilane Pavement Rehabilitation
The purpose and need of the proposed action is to rehabilitate existing pavement deficiencies at the Airport on the eastside taxilanes to prevent future failure of the underlying subgrade.

Pavement failure occurs when a pavement surface is no longer holding its original shape and has been stressed to the point where it presents signs of pavement failure. Pavement failure issues include cracking, potholes, depressions, rutting, shoving, upheavals, and raveling. The structural integrity will be compromised and the composition of the pavement will no longer hold together. The failures, although not catastrophic, nor requiring the pavement to be deemed out of service, will pose a possible threat to aircraft. These threats include handling problems, debris striking the aircraft or personnel, and possible propeller impacts on the ground surface from travelling over deep ruts, depressions, or potholes.
Forecast PCIs for 2021 for the three sections of the hangar taxi lanes were listed as a range from 58-67 which equates to a pavement condition rating of Fair. Standard practice is to plan for rehabilitation of pavements with PCI values between 40 and 60. The higher in the PCI scale a rehabilitation occurs the greater the level of protection is given to the underlying subgrade, which delays more serious failure conditions in the future.

<table>
<thead>
<tr>
<th>Branch</th>
<th>Section</th>
<th>2009</th>
<th>2013</th>
<th>2016</th>
<th>2021</th>
<th>2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>AO1CH</td>
<td>1</td>
<td>70</td>
<td>100</td>
<td>100</td>
<td>85</td>
<td>75</td>
</tr>
<tr>
<td>ANHOLCH</td>
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<td>98</td>
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<td>ASHOLCH</td>
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<td>---</td>
<td>89</td>
<td>78</td>
<td>71</td>
</tr>
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<td>26</td>
<td>100</td>
<td>96</td>
<td>82</td>
<td>68</td>
</tr>
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<td>100</td>
<td>97</td>
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<td>69</td>
</tr>
<tr>
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<td>72</td>
<td>100</td>
<td>95</td>
<td>75</td>
<td>64</td>
</tr>
<tr>
<td>TH01CH</td>
<td>3</td>
<td>82</td>
<td>74</td>
<td>55</td>
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<td>58</td>
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<tr>
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<td>98</td>
<td>84</td>
<td>80</td>
<td>77</td>
<td>60</td>
</tr>
</tbody>
</table>

Pavement Condition Figure and Table retrieved from:
http://www.oregon.gov/aviation/Pages/Pavement_Evaluation_Program_2016.aspx
ENVIRONMENTAL ASSESSMENT

FIGURE 1-4

CHILOQUIN STATE AIRPORT
STUDY AREAS
20:1 APPROACH
SURFACE

NOTE
1. PROFILE DIAGRAM FOR ILLUSTRATION
   OF SURFACES AND IS NOT TO SCALE.

Legend:
- TREE GROUPING
- TREE OBSTRUCTION POINT
NOTE
1. PROFILE DIAGRAM FOR ILLUSTRATION OF SURFACES AND IS NOT TO SCALE.
Chapter 2 - Alternatives

This chapter provides an overview of each alternative that was considered to address the Purpose and Need of the airport improvements. Two alternatives were considered as part of the Environmental Assessment.

The two alternatives are:

- **Alternative 1** – No action (maintains existing conditions)
- **Alternative 2** – Remove approach surface obstructions and rehabilitate identified taxilane pavements

A description of each alternative is provided within this chapter and a description of the necessary improvements required to develop each alternative.

### 2.1 Alternative 1 – No Action

The no action alternative maintains the existing facilities and capabilities, without investing in pavement facility improvements to increase safety for aircraft or to improve or reduce potential foreign object debris (FOD) resulting from crumbling and deteriorating airfield pavements. Obstructions due to trees, in the runway approach surfaces, will remain. The trees will continue to grow and will remain hazards to aircraft departing or approaching the airport by not providing the adequate safety clearances required by the FAA. Aircraft operations to and from the airport may be restricted due to the obstructions that remain. The existing airfield conditions would remain unchanged from the present conditions and the Airport would essentially be operated in a “minimum maintenance-only” mode.

The primary result of this no-action alternative would be the continued deterioration, from the current PCI rating of Satisfactory/Fair to a PCI rating of Fair/low Fair by the year 2021, of eastside taxilane pavements and the sustained existence of approach surface obstructions. Future aviation activity could eventually be constrained by the safety and operational limits of the existing facilities and obstructions.

Alternative 1 is provided in Figure 2-1

### 2.2 Alternative 2 – Remove 20:1 Approach Surface Obstructions and Rehabilitate Eastside Taxilane Pavements

The elements of Alternative 2 include:

- Survey, identify, and remove 20:1 approach surface obstructions
- Rehabilitate eastside taxilane pavements
The proposed approach obstruction mitigation project would require the survey, identification, and removal of 20:1 approach surface obstructions from both the north and south sides of the Airport.

**Figure 2-2** Runway 17 Approach (Looking North)

**Figure 2-3** Runway 35 Approach (Looking South)

**Figures 2-4 A and 2-4 B** depict the obstructions to the runway end in a plan and profile format.
CHILOQUIN STATE AIRPORT
RUNWAY 17 APPROACH
OBSTRUCTION ANALYSIS

NOTE
1. PROFILE DIAGRAM FOR ILLUSTRATION OF SURFACES AND IS NOT TO SCALE.

LEGEND

TREE GROUPING

TREE OBSTRUCTION POINT
20:1 APPROACH

NOTE
1. PROFILE DIAGRAM FOR ILLUSTRATION OF SURFACES AND IS NOT TO SCALE.
The proposed taxilane pavement rehabilitation project includes an area of approximately 2,800 square yards of asphalt pavement that provides direct access to the six hangars located on the Chiloquin State Airport.

**Figure 2-5** Eastside Taxilane/Hangar Area

The primary results of this alternative would be improved eastside taxilane pavements, which will improve the taxilanes from the current PCI rating of Satisfactory/Fair to a condition rating of Excellent and that could potentially see another 20 years or more of useful life with proper ongoing pavement maintenance. Additionally, and the mitigation of obstructions within the 20:1 approach surfaces would improve safety, by removing hazardous obstacles to aircraft during the approach phase of flight and also ensure the Sponsor is in compliance with grant assurances.

Alternative 2 is provided in **Figure 2-6**.
2.3 Preferred Alternative

Alternative 2 was selected by the Oregon Department of Aviation to ensure the Chiloquin State Airport pavements and approach surfaces are appropriately maintained to State and Federal standards.

2.4 Discretionary Actions and Permits

The Preferred Alternative may require the following:

- Coordination with Klamath County, for tree removal and compliance per Article 58.4 – Airstrip Safety Overlay Zone
- Negotiate access and remediation for tree removal with surrounding property owners.
- Airport Improvement Program (AIP) funding for the Proposed Action
- National Pollutant Discharge Elimination System general permit #1200-C from the Oregon Department of Environmental Control (ODEQ) for clearing, grading, excavation, and erosion control.
FIGURE 2-6

CHILQUIN STATE AIRPORT
ALTERNATIVE 2

ENVIRONMENTAL ASSESSMENT

TAXI LANE REHABILITATION

20:1 APPROACH SURFACE OBSTRUCTION MITIGATION
Chapter 3 – Affected Environment and Environmental Consequences

This chapter analyzes the environmental impacts of the Preferred Alternative and the No Action Alternative. Each of the resource categories were analyzed by the affected environment, environmental consequence, and mitigation measure, if applicable, to determine if the No Action Alternative or Preferred Alternative have any impacts.

3.1 Air Quality

Information on Air Quality was provided by Environmental Science Associates (ESA) in their Chiloquin State Airport Air Quality and Greenhouse Gas Emissions (Task 4.1) technical memorandum dated June 13, 2018. The document can be found in Appendix A.

3.1.1 Affected Environment

The project area for air quality is defined as the air basin that includes the City of Chiloquin. The Oregon Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA) regulates air quality in Chiloquin. The EPA has established the National Ambient Air Quality Standards (NAAQS) for six common air pollutants: carbon monoxide (CO), ozone ($O_3$), particulate matter, lead (Pb), sulfur dioxide ($SO_2$), and nitrogen dioxide ($NO_2$), and regulates permissible levels of the pollutants in the air for human health and safety. DEQ has adopted the standards set by EPA.²

For each of the six criteria pollutants, NAAQS are defined as a maximum concentration above which adverse effects on human health may occur. When air quality in an area exceeds NAAQS, it is designated as a nonattainment area. Chiloquin State Airport area does not exceed NAAQS and is in attainment for air quality analysis. Because the project is located within an attainment area for NAAQS, the No Action or Preferred Alternative are not subject to requirements addressing the State Implementation Plan or the General Conformity provisions under the Clean Air Act.

3.1.2 Environmental Consequences

Implementation of the Preferred Alternative would result in temporary and localized air emissions from activities that are typically associated with construction. These emissions would originate from the operation of equipment for construction of the projects found in the Preferred Alternative. The work associated with tree removal may include chainsaws, masticators, grinders, skid steer loaders, and log trucks. The work associated with the taxilane rehabilitation may include excavators, graders, asphalt pavers, roller compactors, and haul trucks. Heavy construction equipment used at the site would emit exhaust containing carbon monoxide (CO), nitrous oxide ($NO_x$), volatile organic compounds (VOCs), and particulate matter. Operation of this equipment could also result in increased dispersion of dust and particulate matter during tree removal and hauling of materials. In addition, temporary odors will occur during paving operations.

² EPA 2018. Criteria Air Pollutants. NAAQS Table. Available at https://www.epa.gov/criteria-air-pollutants/naaqs-table
Implementation of the preferred alternative will not increase the operational capacity of the airfield in such a way as to increase air emission above de minimis thresholds, therefore the potentially affected environment will be limited to the immediate vicinity and the effects will only be temporary during construction and are not expected to significantly impact or alter air quality.

3.1.3 Mitigation Measures
With the No Action Alternative, the construction of the proposed improvements at the airport would not occur, and no impacts to air quality over existing conditions would occur.

For construction of the Preferred Alternative projects, Best Management Practices (BMPs) would be used during construction to minimize any air quality impacts. The BMPs would include seeding disturbed soils, maintaining construction vehicles appropriately, using reduced speeds on unpaved roads, providing a construction access area, using water trucks to control dust, suspending certain construction activities during high wind conditions, and covering disturbed areas with stabilizing materials as needed, dependent on ambient meteorological conditions. These BMPs would help ensure the Preferred Alternative would not cause significant, construction-related air quality effects.

No significant impacts to air quality as a result of operations would occur with the Preferred Alternative. Therefore, no mitigation measures are necessary.

3.2 Biological Resources

Information on Biological Resources is from the technical memorandum, Chiloquin State Airport Environmental Screening (Task 3.3) dated March 14, 2018, by ESA. The full memo can be found in Appendix B.

3.2.1 Affected Environment
The existing airport consists primarily of impervious apron and taxilane surfaces, with existing hangars, and adjacent maintained lawn areas. Major land cover types at the Airport with potential to provide habitat for wildlife include: an herbaceous plant dominated land cover (herb cover), woody plant-dominated land cover (woody plant cover), and the built environment. Herb and woody plant covers have been substantially altered from their native state and are generally of low-quality for native wildlife. The herb cover and the built environment are located within the perimeter security fence of the Airport, while the woody plant cover is located outside of the fence. This arrangement allows differing accessibility to medium and large wildlife who cannot pass through the fence.

The area north of the airport consists mostly of rural residential development that has a mixture of developed, undeveloped, native forested area, and landscaped yards. The remnant native forested areas are a mix of decisions and evergreen vegetation.

The area immediately south of Chiloquin Road is a wayside fishing area that has a few lodgepole pine trees and Ponderosa pine trees along Chiloquin Road and a grassy area dominated by Reed
canarygrass (Phalaris arundinacea). The confluence of the Williamson and Sprague rivers is about 0.25 southeast of the airport. The habitat south of the river is agricultural along the river and appears to be second growth ponderosa pine forest above the valley floor.

Multiple species protected under the Migratory Bird Treaty Act (MBTA) are found in the vicinity of the Chiloquin State Airport throughout the year, but the period of highest use is the avian breeding season extending from early spring to late summer. Nest sites would primarily be located in woody plant-dominated land cover (in trees and shrubs), but also in herbaceous plant-dominated land cover (on the ground) and the built environment (under eves and on shelving and other flat surfaces). Other MBTA-protected species found at the Airport during other seasons would only be present as fully flighted individuals.

Table 3-1 below shows species listed under the Endangered Species Act (ESA) that do occur, or may occur, within the area surrounding the project site.

<table>
<thead>
<tr>
<th>Species Common Name (Scientific Name)</th>
<th>Federal ESA/State ESA Listing Status</th>
<th>Actual Occurrence in Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray wolf (Canis lupus)</td>
<td>Endangered/--</td>
<td>None. No critical habitat.</td>
</tr>
<tr>
<td>North American Wolverine (Gulo gulo luscus)</td>
<td>Proposed Threatened/Threatened</td>
<td>None. Outside of species range.</td>
</tr>
<tr>
<td>Kit fox (Volpes macrotis)</td>
<td>--/Threatened</td>
<td>None. No potential habitat.</td>
</tr>
<tr>
<td>Northern Spotted Owl (Strix occidentalis caurina)</td>
<td>Threatened/Threatened</td>
<td>None. No potential habitat in project area.</td>
</tr>
<tr>
<td>Yellow-billed cuckoo (Coccyzus americus)</td>
<td>Threatened/Candidate</td>
<td>None. No potential habitat.</td>
</tr>
<tr>
<td>Oregon spotted frog (Rana pretiosa)</td>
<td>Threatened/Candidate</td>
<td>None. No potential habitat in project area.</td>
</tr>
<tr>
<td>Lost river sucker (Deltistes luxatus)</td>
<td>Endangered/Endangered</td>
<td>Documented spawning area. No critical habitat within project area.</td>
</tr>
<tr>
<td>Shortnose sucker (Chasmistes brevivostris)</td>
<td>Endangered/Endangered</td>
<td>Documented spawning area. No critical habitat within project area.</td>
</tr>
<tr>
<td>Bull Trout (Salvelinus confluentus)</td>
<td>Threatened/Candidate</td>
<td>None. No potential habitat.</td>
</tr>
<tr>
<td>Applegate’s milk vetch (Astragalus applegatei)</td>
<td>Endangered/Endangered</td>
<td>None. No potential habitat.</td>
</tr>
<tr>
<td>White-bark Pine (Pinus albicaulis)</td>
<td>Candidate/--</td>
<td>None. No potential habitat.</td>
</tr>
<tr>
<td>Peck’s milk vetch (Astragalus peckii)</td>
<td>--/Threatened</td>
<td>None. No potential habitat.</td>
</tr>
<tr>
<td>Pumice grape-fern (Botrychium pumicola)</td>
<td>--/Threatened</td>
<td>None. No potential habitat.</td>
</tr>
<tr>
<td>Boggs Lake hedge-hyssop (Gratiola hetersepaia)</td>
<td>--/Threatened</td>
<td>None. No potential habitat.</td>
</tr>
</tbody>
</table>
3.2.2 Environmental Consequences
Under the No Action Alternative, the existing environment and operational conditions within the study are would remain unchanged. Any impacts to biological resources would be related to normal operation and maintenance of the existing airport configuration.

Under the Preferred Alternative, the rehabilitation of the existing taxilanes, would replace existing failing pavement and not substantially alter the impervious surface geometry. The obstruction removal portion would remove existing trees on private property and would include some ground disturbances associated with the obstruction removal work.

The presence of birds protected under the MBTA does not affect the operations of an Airport. However, harming or destroying MBTA protected birds or their active nests is prohibited. To avoid impacts to migratory birds, construction activities need to avoid destruction of an active nest;

3.2.2.1 Grey wolf
The proposed project occurs within the Western Wolf Management Zone (ODFW 2010) and within the potential range of the western population of the gray wolf. The gray wolf is a keystone predator adapted to a variety of habitats including mountains, temperate forests, and grasslands. Wolves prey on a variety of medium to large animals including elk, deer, moose, beaver and occasionally livestock. It is possible members of wolf pack OR 25 maybe be sighted in the vicinity of the Chiloquin. The taxilane study area does not have suitable habitat for the gray wolf. Gray wolfs are very adaptable to changes in habitat conditions and rely more on prey availability. Removal of trees in the obstruction removal study area would not change the availability of prey. Therefore, both projects would have no effect to gray wolfs.

3.2.2.2 North American wolverine
North American wolverine populations in Oregon are low. In Oregon, the wolverine typically is found in open forests at higher elevations and in alpine areas. Neither study area contains the forest requisite for wolverine habitat. There are no recent or historic sights of wolverines within a 2-mile radius of the airport. The proposed the taxilanes rehabilitation project and the obstruction removal project would have no effect on North American wolverine.

3.2.2.3 Kit foxes
Kit foxes inhabit desert and semiarid regions, and are closely associated with salt desert scrub. There is no suitable habitat in either study area. The proposed projects would have no effect on kit foxes.

3.2.2.4 Northern Spotted owl
Northern spotted owls are known to occur in the North Cascades bioregion, but require old growth forests for nesting, roosting, foraging and dispersal. The airport site and surrounding areas do not contain suitable habitat. There are no recent or historic sights of northern spotted owls within
a 2-mile radius of the airport. The proposed projects would have no effect on northern spotted owl.

### 3.2.2.5 Yellow billed cuckoo

The study area is within the range of the yellow-billed cuckoo, but they are not considered an active breeding species in either Oregon or Washington. They live mainly among the canopies of cottonwood-dominated forests that line larger rivers running through arid country, and require large blocks (> 200 ac) of riparian forest. There are no large blocks of riparian habitat in either study area. The proposed projects would have no effect on yellow-billed cuckoo.

### 3.2.2.6 Oregon spotted frog

Oregon spotted frog inhabits waters and associated vegetated shorelines of ponds, springs, marshes, and slow-flowing streams. There is no suitable habitat for the spotted frog in the taxilane study area; therefore taxilane rehabilitation project would have no effect on the Oregon spotted frog. The closest known population and designated Critical Habitat is the Klamath Marsh, which the Williamson River flows through, about 30 miles upstream from Chiloquin. Although the Williamson and Sprague rivers within the obstruction removal study area are not suitable habitat for the Oregon spotted frogs, frogs could be in transported downstream in the rivers. Removal of trees could cause erosion or sedimentation to enter the rivers, which could be harmful to the frogs. It is recommended the Best Management Practices (BMP) to control sedimentation from entering the rivers be employed during tree removal, such as avoiding stump removal or ground disturbing activities (i.e., yarding) within 150 feet of the Williamson and Sprague rivers to avoid impacts to Oregon spotted frog. There would be no effect to Oregon spotted frog with the proper employment of BMPs to control sedimentation from reaching the rivers.

### 3.2.2.7 Lost River sucker, short nose sucker, and bull trout

Both Lost River sucker and short nose suckers are documented to spawn in both the Williamson and Sprague rivers in the vicinity of the obstruction removal study area. No drainage from the airport goes into either river and no other creeks cross the airport site; therefore taxilanes rehabilitation project would have no effect to Lost River sucker, short nose sucker or bull trout. Removal of trees could cause erosion or sedimentation to enter the rivers, which could be harmful to fish. It is recommended the BMP to control sedimentation from entering the rivers be employed during tree removal, such as avoiding stump removal or ground disturbing activities within 150 feet of the Williamson or Sprague Rivers, to avoid impacts to listed fish. There would be no effect to Lost River sucker, short nose sucker or bull trout with the proper employment of BMPs to control sedimentation from reaching the rivers.

### 3.2.2.7 Applegate’s milk-vetch

Applegate’s milk-vetch is currently known to occur at only three sites, collectively supporting an estimated 12,000 individuals. The species is known only from the Lower Klamath Basin (i.e., the plain containing Lower Klamath Lake) near the city of Klamath Falls. Applegate’s milk-vetch is restricted to flat-lying, seasonally moist, strongly alkaline soils. Based on a review of the Klamath County Soil Survey, these soils do not exist in either study area. There are no recent or historic
sights of Applegate’s milk-vetch within a 2-mile radius of the airport. Field verification of the
taxilane study area indicated that there is no suitable habitat for Applegate’s milk-vetch and there
are no documented occurrences of this species occurring on the direct study area; therefore, the
taxilanes rehabilitation project would have no effect on Applegate’s milk-vetch. The indirect study
area does not meet the suitable habitat characteristics for the milk-vetch and there are no
documented populations in the vicinity of the obstruction removal area. It is highly unlikely that
Applegate’s milk-vetch occurs in the study area; therefore, it is presumed that the obstruction
removal would have no effect on Applegate’s milk-vetch. The only way to verify the absence of
applegate’s milkvetch would be to perform plant surveys during the blooming season.

3.2.2.8 Whitebark pine
The project is located within the range of the whitebark pine. Isolated stands of whitebark pine
are known from the Blue and Wallowa mountains in northeastern Oregon and the subalpine and
montane zones of mountains in northeastern California, south-central Oregon, and northern
Nevada. Whitebark pine may occur as a climax species, early successional species, or seral
(midsuccesional stage) co-dominant associated with other tree species. Although it occurs in
pure or nearly pure stands at high elevations, it typically occurs in stands of mixed species in a
variety of forest community types and is commonly associated in the Cascade Mountain range
with lodgepole pine (P. contorta var. murrayana). In Oregon, whitebark pine occurs from 3,600
to 9,500 feet in elevation. Chiloquin is located at approximately 4,180 feet in elevation. No
whitebark pine were found on the airport property; therefore, there the proposed taxilanes
rehabilitation would have no impact on whitebark pine. There are no recent or historic sights of
white pine trees within a 2-mile radius of the airport. However, there is suitable habitat for
whitebark pine in the obstruction removal study area south of the airport. Before impacts to
whitebark pine can be determined for the tree removal project, it is recommended that the specific
trees to be removed be identified and inventoried to see if any of them are whitebark pine trees.

3.2.2.9 Peck’s milkvetch
Peck’s milkvetch grows in natural openings of sagebrush-juniper woodlands, lodgepole pine
forests, and ponderosa pine forests. Soils in preferred sites are sandy with little organic matter
and varying amounts of pumice deposition from the eruption of Mt. Mazama. Peck’s milkvetch
occurs east of the Cascades from Cline Buttes south to a few miles south of Chiloquin.
Populations can be broadly grouped into three population centers, with the largest concentration
occurring along Highway 97 between Sisters and Bend. A second grouping inhabits the barren
pumice flats near Chemult, and a southern group occurs in openings in ponderosa pine stands
east of Chiloquin. The Chiloquin population of the Peck’s milkvetch is over 2 miles from the
airport. There is potential suitable habitat for Peck’s milkvetch in the obstruction removal study
area, but there are no documented sightings. There is no suitable habitat for Peck’s milkvetch in
the taxilane study area. The only way to verify the absence of Peck’s milkvetch would be to
perform plant surveys during the blooming season.
3.2.2.10 Pumice grape-fern
Pumice grape-fern is restricted to alpine sites at Crater Lake, Newberry Crater, Broken Top, and Mt. Bachelor. The proposed projects would have no effect on pumice grape-fern.

3.2.2.11 Boggs Lake hedge hyssop
Boggs Lake hedge hyssop is known from only one occurrence in Oregon, in southern Lake County near the California border. The proposed projects would have no effect on Boggs Lake hedge hyssop.

3.2.2.12 Essential Fish Habitat
There is no essential fish habitat on the airport property. The confluence of the Williamson and Sprague rivers is about 0.25 southeast of the airport. No drainage from the airport goes into either river and no other creeks cross the airport site.

Removal of trees could cause erosion or sedimentation to enter the rivers, which could be harmful to fish. It is recommended that BMPs to control sedimentation from entering the rivers be employed during tree removal, such as avoiding stump removal or ground disturbing activities (i.e., yarding) within 150 feet of the Williamson or Sprague Rivers.

3.2.3 Mitigation Measures
The No Action Alternative would not affect any federally-listed endangered or threatened species.

The Preferred Alternative would not affect any federally-listed endangered or threatened species or biological resources as long as the following measures were implemented to reduce impacts to biological resources:

- For the obstruction removal area, to avoid impacts to migratory birds under the MBTA, construction activities need to avoid destruction of an active nest; therefore it is recommended that clearing and grading activities resulting in vegetation removal start before the breeding window of March 15th or after August 1st. Birds are likely to avoid building nests in active construction sites. If construction activities are to take place in areas with potential bird nesting habitat (i.e., in all three land cover types) during the breeding season, the affected areas should be surveyed for nesting activity prior to the removal action. This is to avoid impacting active nests or fledglings that may not yet have the ability to fly.
- BMP to control sedimentation from entering the rivers be employed during tree removal, such as avoiding stump removal or ground disturbing activities within 150 feet of the Williamson or Sprague Rivers.
- Specific trees to be removed be identified and inventoried to see if any of them are whitebark pine trees. The whitebark pine tree is a candidate species and has no special protection status.
- There is potential suitable habitat for Peck’s milkvetch in the obstruction removal study area, but there are no documented sightings. Removal of the trees in areas that would have the vetch would be cut by hand at ground level and performed during the period of...
dormancy between August and April. Otherwise trees could be felled into areas away from the patchy vetch. The only way to verify the absence of Peck’s milkvetch would be to perform plant surveys during the blooming season.

3.3 Climate/Greenhouse Gas Emissions

Information on Climate was provided by ESA in their technical memorandum dated June 3, 2018, with subject *Chiloquin State Airport Air Quality and Greenhouse Gas Emissions (Task 4.1)*. The document can be found in Appendix A.

3.3.1 Affected Environment

On January 12, 2012, FAA issued a memo on how to consider and evaluate greenhouse gases (GHG) and climate in a NEPA document (FAA 2012). FAA did so after the Council on Environmental Quality (CEQ) affirmed that NEPA and its implementing regulations (40 CFR 1500 et. seq.) apply to GHGs and climate. GHGs include carbon dioxide (CO₂), methane (CH₄), NO₂, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆) (EPA 2017).

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the General Accounting Office (GAO) reports that “domestic aviation contributes about 3 percent of total carbon dioxide emissions, according to EPA data,” compared with other industrial sources including the remainder of the transportation sector (20 percent) and power generation (41 percent) (GAO 2009). The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly 3 percent of all anthropogenic GHG emissions globally (Melrose 2010). Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate (EPA 2009).

3.3.2 Environmental Consequences

Although there are no federal standards for aviation-related GHG emissions, it is well-established that GHG emissions can affect climate (Massachusetts vs EPA 2007). The CEQ has indicated that climate should be considered in NEPA analyses.

Under the No Action Alternative, the described project activities would not occur and no impacts over existing conditions would occur.

The Preferred Alternative is anticipated to have minimal changes regarding airport-related GHG emissions over what is currently forecasted under the No Action Alternative. Construction related activities would result in some GHG emissions including CO, CO₂ and NO₂. However, these GHG emissions would be temporary and localized in nature. Under the Preferred Alternative, the projects would neither change the airport layout or aircraft circulation patterns on the airport, nor increase aircraft traffic or emissions from aircraft, ground support equipment/vehicles, or stationary sources. Therefore, the Preferred Alternative would have no significant impact related to GHG emissions.

3.3.3 Mitigation Measures

No mitigation associated with GHG emissions would be necessary.
3.4 Coastal Resources

The Airport is not within a coastal zone management area or coastal barrier zone. As such, coastal zone management and coast barriers are not applicable to the No Action and Preferred Alternatives and were not analyzed.

3.5 Department of Transportation Act, Section 4(f)

3.5.1 Affected Environment

Section 4(f) of the Department of Transportation (DOT) Act of 1966 (49 U.S.C. Section 303) describes that lands which are publicly owned lands, used for public parks, recreational areas, wilderness area, or historic site are protected from development.

An approximate one (1) mile radius surrounding the airport was defined as a study area to investigate any other potential Section 4(f) lands within the vicinity of the Airport.

The following 4(f) lands have been identified within one (1) mile of the Airport. No other parks, recreation areas, or wilderness areas are within a one-mile radius of the Airport. Potential historic and cultural resources are discussed further in section 3.8 of this report.

- Winema National Forest, .3 mile west
- Chiloquin Jr. and Senior High School Athletic Facilities, 0.7 mile northwest

3.5.2 Environmental Consequences

Under the No Action Alternative, there would be no changes to the airport and therefore no impacts to any sites that may be afforded protection under Section 4(f) would occur.

Proposed development would not affect the use of properties afforded protection under Section 4(f). There is no anticipated direct or indirect impact to any public parks, recreation areas, wilderness areas, or historic sites.

3.5.3 Mitigation Measures

The No Action Alternative and the Preferred Alternative would not affect any Section 4(f) properties. No mitigation is necessary.

3.6 Farmlands

The Farmland Protection Policy Act (FPPA) was passed under the Agriculture and Food Act of 1981 to minimize the impact that federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. According to the FPPA, farmland is classified as either “prime farmland, unique farmland, or farmland of statewide or local importance.”

The study area involves ODA owned land and private lands beneath the Runway approach surface of the Airport. There are no farmlands located either on Airport property or on the private
lands located within the northern runway approach surfaces. The private properties located within the southern runway approach surface contains property that is zoned Exclusive Farm Use – General Commercial (EFU-GC). The proposed obstruction removal will not alter or effect the existing use of the land.

3.7 Hazardous Materials, Solid Waste, and Pollution Prevention

3.7.1 Affected Environment
Hazardous materials are regulated under the Resource Conservation and Recovery Act (RCRA) and various other federal and state regulations. In the state of Oregon, hazardous materials are regulated by the Oregon Department of Environmental Quality (DEQ).

There is a nearby EPA clean-up area 1 mile southeast of the Airport. The Chiloquin Lumber and Box Company clean-up site is located on the east side of the confluence of the Sprague and Williamson rivers. The site clean-up was completed in July 2007.

Klamath County operates the landfills in the area of the Airport. Solid waste is handled at 8 transfer facilities located throughout the County. The Chiloquin Transfer facility is located approximately 1.7 miles east of the airport.

3.7.2 Environmental Consequences
Under the No Action Alternative, the action would not produce any additional hazardous material, solid waste, and/or pollution.

All of the work associated with the construction of the taxilanes project is contained entirely within the existing airport property. As there are no identified hazardous material sites located within the airport property, this portion of the Preferred Alternative will not generate any new or impact any existing hazardous materials. All of the work for the obstruction removal project will generate wood waste associated with the removal of trees. The waste may be minimized by grinding and mulching of the woody material like stumps and branches that is not a useful wood products. The obstruction removal to the south will not remove any trees in the Chiloquin Lumber and Box clean-up site.

Solid waste would be generated by removal, demolition and construction activities related to the Preferred Alternative. Material unsuitable for construction that cannot be recycled, including organics, would be hauled to the Chiloquin transfer facility.

3.7.3 Mitigation Measures
The No Action Alternative would not impact any hazardous material sites, solid waste and pollution.

The Preferred Alternative would not require any measures to mitigate impacts related to hazardous materials. If any soil contamination and/or a spill results from construction or is found during construction, remediation will occur prior to resuming construction.
The Preferred Alternative would not have any impacts on solid waste. No mitigation is necessary.

3.8 Historical and Archaeological Resources

3.8.1 Affected Environment
Information on the original historical and archaeological resource is from the Archaeological Survey for Proposed Chiloquin State Airport Improvements, Chiloquin, Oregon provided by Willamette Cultural Resources Associates, Ltd. (WCRA), dated October 18, 2018. The document can be found in Appendix C.

WCRA completed cultural resource study of the project’s Areas of Potential Effect (APEs). This study consisted of a systematic pedestrian survey of the airport grounds, which included the taxi lane rehabilitation area, which included approximately 95 acres. Background file review and windshield survey was conducted for the approximate 150-200 acres of obstruction removal area, because access to private property was not received. Including a records search of archaeological and historical resources within 1 mile of the APE to identify recorded resources and likely high-probability areas. The on-site surveys were conducted in June 2018.

3.8.2 Environmental Consequences
Pedestrian survey was conducted for the East Taxiway Rehabilitation Project APE, and for the portions of the North and South Runway Approach Obstruction Removal areas that are within ODA managed land at the Chiloquin State Airport. Intensive pedestrian survey of the East Taxiway Rehabilitation Project did not identify any evidence of archaeological or historic resources or features. One new archaeological resource (17-139-1), a historic-period refuse scatter, was identified during pedestrian survey of the indirect impact area with the Chiloquin State Airport grounds. Site 17-139-1 is a low density scatter of historic-period refuse that is only broadly temporally diagnostic. The site is recommended not eligible for NRHP listing and the Oregon State Site Record form for the site should be considered sufficient documentation.

The South Runway Approach Obstruction Removal Area mostly made up of agricultural and forested land along the Williamson River and is sparsely populated. Two previously recorded archaeological sites, including the ethnographically identified precontact village site, Bezuksewas (35KL778), have been documented in this portion of the indirect impact area. The majority of the South Runway Approach Obstruction Removal Area is within 80 m (200 ft.) of the Williamson River shoreline and either within or adjacent to previously documented archaeological site and thus should be considered to have a high probability for previously undocumented archaeological resources.

The North Runway Approach Obstruction Removal Area is composed mostly of light residential development among a mixed conifer forest. Portions of this area have been the subject of previous archaeological investigations and no cultural resources have been identified in this part of the indirect impact area.
3.8.3 Mitigation Measures
The No Action Alternative would not have any impact on historical or archaeological resources.

The Preferred Alternative may have impacts on historical or archaeological resources. There is no resources in the area of the taxilane reconstruction. The North Obstruction Removal Area is lightly developed, have had no previous resources found and is not likely to have any resources and no mitigation in these areas would be required.

The South Runway Approach Obstruction Removal Area is considered to have a high probability for previously undocumented archeological resources along the Williamson River shoreline. It is recommended that an Inadvertent Discovery Plan (IDP) be developed and followed by construction personnel during all ground-disturbing activities. The IDP would provide a protocol and contact list in the event that an unanticipated discovery is made. A qualified archeological monitor should be present during any project-related ground disturbing activity that takes place within 200 feet of the Williamson River or around the recorded boundaries of previously documented sites.

3.9 Compatible Land Use

3.9.1 Affected Environment
The Airport property is zoned Industrial (I) and the taxilane area is zoned Heavy Industrial (IH) by the County. Allowed uses within the IH zone include Essential Services, which cover transportation-related improvements and activities that pertain to the normal operation, maintenance, repair, and preservation activities of transportation facilities, which would therefore include airport maintenance and rehabilitation. The zoning also includes an Airport Safety Overlay which provides height restrictions in the 20:1 Approach Surface as described in Article 58.410 of the Klamath County Land Development Code. This serves to restrict the intrusion of buildings, rooftop appurtenances, and trees within the approach surfaces and other navigable airspace.

County zoning designations surrounding the Airport include: forest (F), exclusive farm use – general commercial (EFU-CG), general commercial (CG) to the south; forest (F), commercial (C), and commercial residential (CR) to the west; residential (R), forest (F), and light industrial (IL) to the north; and general commercial (CG), light industrial (IL), heavy industrial (IH), commercial (C), industrial (I), rural residential 2-acre (R2), residential (R), to the west. Additional land uses in the airport’s vicinity include the public rights-of-way of Chiloquin Blvd., W. Chocktoot St., S. Applegate Ave., and State Highway OR 97.

3.9.2 Environmental Consequences
The Preferred Alternative will not impact any land use zones.

3.9.3 Mitigation Measures
The No Action Alternative would not have any impact and would not require mitigation.
No mitigation is anticipated for the Preferred Alternative because all proposed improvements meet existing zoning and airport overlay requirements.

### 3.10 Natural Resources and Energy Supply

#### 3.10.1 Affected Environment

The Airport uses fuel to power aircrafts, natural gas for heating, and electricity to power buildings and runway and taxiway lighting. Electricity is provided to the Airport by Pacific Power. Water is provided by the City of Chiloquin. Natural gas is provided by Cascade Natural Gas. There are no aircraft fuel facilities on the airport.

#### 3.10.2 Environmental Consequences

The No Action Alternative would not change the consumption of fuel, natural gas, or electricity.

The short-term impacts of the Preferred Alternative will require the consumption of fuel and electricity to power construction equipment. Materials for construction: such as water, aggregate, concrete, hot mix asphalt, steel, and other related resources will be consumed by construction activities. Fuel for construction activities will be purchased off-site.

There will be no long-term impacts of the Preferred Alternative on local natural resource and energy supplies.

#### 3.10.3 Mitigation Measures

The long-term increase in energy and natural resource consumption would be mitigated by installing energy efficient lighting and water fixtures in the new facilities.

### 3.11 Noise and Noise-Compatible Land Use

A noise study will not be conducted for the airport as it has an Airport Reference Code of B-I. The FAA guidance contained in Order 1050.1F says that "no noise analysis is needed for projects involving Design Group I and II airplanes (wingspan less than 79 feet) in Approach Categories A through D (landing speed less than 166 knots) operating at airports whose forecast operations in the period covered by the NEPA document do not exceed 90,000 annual propeller operations (247 average daily operations) or 700 annual jet operations (2 average daily operations)."

The current airport operations do not exceed 90,000 operations and the forecast operations according to the FAA Airport Master Record, 11/08/2018 effective date, Chiloquin State Airport had 3,500 operations for the year ending 09/09/2016.
3.12 Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risk

3.12.1 Socioeconomics

3.12.1.1 Socioeconomic Environment

Table 3-2 below shows the population of Klamath County and the City of Chiloquin based on each census from 1990 to 2010. Based on this data, Klamath County and the City of Chiloquin experienced growth over the last two decades. The population of Klamath County experienced growth of nearly 11.2% and the City of Chiloquin experienced growth of nearly 15.0% during the 1990 to 2010 time period.

<table>
<thead>
<tr>
<th>Year</th>
<th>Klamath County</th>
<th>% Change</th>
<th>City of Chiloquin</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>66,380</td>
<td>+4.1</td>
<td>734</td>
<td>+2.5</td>
</tr>
<tr>
<td>2000</td>
<td>63,775</td>
<td>+10.5</td>
<td>716</td>
<td>+8.5</td>
</tr>
<tr>
<td>1990</td>
<td>57,702</td>
<td></td>
<td>660</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Portland State University Population Research Center, US Census Bureau*

Table 3-3 below shows a more detailed breakdown of annual population within the Klamath County and City of Chiloquin between 2012 and 2017. The majority of growth for the City of Chiloquin has occurred during 2016 to 2017. The data shows a slight increase in the percentage of the population, which indicates a somewhat positive long term growth forecast.

<table>
<thead>
<tr>
<th>Year</th>
<th>Klamath County</th>
<th>% Change</th>
<th>City of Chiloquin</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>67,690</td>
<td>+0.4</td>
<td>740</td>
<td>+0.6</td>
</tr>
<tr>
<td>2016</td>
<td>67,410</td>
<td>+0.4</td>
<td>735</td>
<td>+0.0</td>
</tr>
<tr>
<td>2015</td>
<td>67,110</td>
<td>+0.3</td>
<td>735</td>
<td>+0.0</td>
</tr>
<tr>
<td>2014</td>
<td>66,910</td>
<td>+0.1</td>
<td>735</td>
<td>+0.0</td>
</tr>
<tr>
<td>2013</td>
<td>66,810</td>
<td>+0.1</td>
<td>735</td>
<td>+0.0</td>
</tr>
<tr>
<td>2012</td>
<td>66,740</td>
<td></td>
<td>735</td>
<td>-</td>
</tr>
</tbody>
</table>

*Source: Portland State University Population Research Center*

Based on these data, Chiloquin has experienced growth since 1990. The population in Klamath County experienced approximately 4.1% growth between 2000 and 2010, and the City of Chiloquin’s population grew nearly 2.5% over the same time-period with a continuing upward trend.

Data from the US Census Bureau were analyzed to determine other socioeconomic factors including housing supply, range of incomes, and economic activity in the City of Chiloquin (US Census Bureau 2010). In 2010, the City of Chiloquin had an estimated 356 total housing units with a 21.1% vacancy rate. Approximately 56.2% of housing units were owner-occupied, and 43.8% of housing units were rented. According to the 2006-2010 American Community Survey,
5-Year Estimates, the median household income in 2010 was $25,417, and the mean household income was $32,569. Approximately 5.4% of the population had a total household income less than $10,000, and approximately 0.0% of the population had a total household income greater than $200,000. The City of Chiloquin’s employed population 16 years and over was 260 in 2010. Of the employed population, approximately 60.8% worked in the private sector, 33.1% worked in the government sector, and 4.6% were self-employed.

Because all of the work associated with the Preferred Alternative will occur on Airport property and the removal of the obstructions will not cause significant disruption to the community, no significant impacts to socioeconomic activities are anticipated.

### 3.12.1.2 Environmental Justice

The Environmental Justice analysis is intended to consider the potential for Federal actions to have a disproportionate and adverse impact on low-income and minority populations and is required to comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR7629, February 11, 1994). The analysis requires that low-income and minority populations be identified to assess whether adverse human health or environmental impacts would result from the Preferred Alternative and are disproportionately borne by these groups. This analysis complies with Executive Order 12898 previously listed and the Department of Transportation (DOT) Order 5610.2, *Order to Address Environmental Justice in Minority Populations and Low-Income Populations*.

Order 5610.2(a) defines that a disproportionately high and adverse effect on minority and low-income populations occur when the adverse effect is predominately borne by a minority population and/or low-income population or is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population. It requires Federal agencies to avoid any disproportionate impacts to achieve environmental justice to the greatest extent practicable.

An evaluation of the population and ethnic distributions in the project area and community was conducted. 2010 US Census data were analyzed to identify minority populations in the vicinity of the proposed project area. The data were broken down into four categories: Klamath County, City of Chiloquin, and Census Tract. The Airport is within the City of Chiloquin city limits.

The Department of Transportation Order 5610.2(a) defines minority as any individual who is:

- Black
- Hispanic or Latino
- Asian American
- American Indian and Alaskan Native (AIAN)
- Native Hawaiian and other Pacific Islander (NHPI)

Table 3-4 below shows the percentage of each race by geographic area.
### Table 3-4: 2010 Minority Population Data

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>African American</th>
<th>Asian</th>
<th>AIAN</th>
<th>NHPI</th>
<th>Other</th>
<th>2 or More</th>
<th>Hispanic or Latino (of any race)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klamath County</td>
<td>0.7%</td>
<td>0.9%</td>
<td>4.1%</td>
<td>0.1%</td>
<td>4.1%</td>
<td>4.1%</td>
<td>9.4%</td>
</tr>
<tr>
<td>City of Chiloquin</td>
<td>0.1%</td>
<td>0.4%</td>
<td>49.2%</td>
<td>0.0%</td>
<td>0.5%</td>
<td>9.0%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Klamath Census Tract 41035</td>
<td>1.0%</td>
<td>1.2%</td>
<td>4.9%</td>
<td>0.2%</td>
<td>--%</td>
<td>4.2%</td>
<td>13.1%</td>
</tr>
</tbody>
</table>

Source: US Census Bureau 2010 Interactive Map

### Low-Income Population

The Department of Transportation Order 5610.2(a) defines low-income as an individual or family whose median household income is at or below the Department of Health and Human Services poverty guidelines. US Census 2010 data were analyzed to identify the percentage of the population living in poverty in the area. As noted in Table 3-5, low income population in the county accounts for 16.8 percent of the overall population.

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>Population Estimate</th>
<th>Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of Oregon</td>
<td>11.6%</td>
<td></td>
</tr>
<tr>
<td>Klamath County</td>
<td>16.8%</td>
<td></td>
</tr>
</tbody>
</table>

Source: US Census Bureau 2010 Poverty Status in 1999 of Individuals

### 3.12.1.3 Children’s Environmental Health and Safety Risk

According to the Department of Transportation Order 1050.1F and Executive Order 13045, the FAA is directed to identify and assess environmental health risks and safety risks that the agency has reason to believe could disproportionately affect children. Environmental health risks and safety risks include risks to health or to safety that are attributable to products or substances that a child is likely to come into contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

The closest schools to the airport are: Head Start – Chiloquin (0.75 miles east); Chiloquin Junior/Senior High School (1.0 miles southeast).

### 3.12.2 Environmental Consequences

No changes in population patterns or growth, disruption of existing communities or neighborhoods, displacement of existing populations, or relocation of residents or businesses is associated with either the No Action Alternative or the Preferred Alternative. No impacts are anticipated to the income or economic activity in the greater Chiloquin area. As a result, no socioeconomic impacts are expected with either phase of the Preferred Alternative.
The Environmental Justice review is intended to assess if the proposed project causes impacts that are disproportionately high and adversely affect minority and low income populations. Impacts are significant if they are predominately borne by a minority population or low income population and is more severe or of greater magnitude than the adverse effect suffered by the population as a whole. Further, the analysis requires the consideration of risks to children related to environmental health and safety risks.

3.12.2.1 No Action Alternative
The No Action Alternative would not cause any adverse human health or environmental effects to the general population or specifically defined population segments including minority, low-income, or children.

3.12.2.2 Preferred Alternative
The Preferred Alternative would not result in a disproportionate impact on any minority or low-income population. The Preferred Alternative would not result in a disproportionate impact on children. The construction of the taxi lanes would take place entirely within the airport property and the obstruction removal areas will be at least 0.75 miles from the nearest school.

3.12.3 Mitigation Measures
The No Action Alternative would not result in a disproportionate impact to minority or low-income individuals or children. Based on the analysis conducted, the Preferred Alternative is not anticipated to result in disproportionate impacts to minority or low-income individuals or children. Subsequently no mitigation measures related to environmental justice are needed.

3.13 Visual Effects

3.13.1 Affected Environment
Lighting on the airfield includes a rotating beacon, medium intensity runway edge and threshold lights. Existing buildings have exterior lighting.

3.13.2 Environmental Consequences
The No Action Alternative will not have any effect on light emissions or changes to views. The improvements proposed in the Preferred Alternative will provide similar uses to current structures at the Airport. No additional lighting is proposed.

3.13.3 Mitigation Measures
No mitigation measures would be required with the No Action Alternative. The Preferred Alternative will use building materials and colors which are similar to existing structures in order to provide a blending effect with the existing views of the airport.
3.14 Water Resources

Information regarding water resources is from the technical memorandum prepared by ESA titled *Chiloquin State Airport Wetland Reconnaissance* (Task 3.5) and dated March 14, 2018. The document is included in Appendix D.

### 3.14.1 Affected Environment

According to the Federal Aviation Administration’s (FAA) 1050.1F Desk Reference, Chapter 14, water resources include surface water, groundwater, floodplains, and wetlands, which are vital to society and important for providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems.

#### 3.14.1.1 Surface Waters and Wetlands

Wetlands and waters of the United States are regulated by the federal government under Section 404 of the Clean Water Act (Act) of 1977. The Act requires consideration of the impacts of dredge and fill activities on wetlands, as well as on their functions and values. Other impact considerations include habitat fragmentation, drainage, the effects of runoff (erosion, flooding, sedimentation, etc.), hydrologic modifications, and temporary disturbances incurred during construction activities. The Act created a federal regulatory plan to control the discharge of dredged or fill materials into wetlands and other waters of the United States. If the potential development projects affect waterways or wetlands the projects will require permits from the U.S. Army Corps of Engineers (USACE) as well as the Oregon Department of State Lands (DSL), under Section 404 of the Act, with the USACE handling the day-to-day activities.

In addition, Section 401 of the Act requires any applicant for a federal license or permit to conduct any activity that may result in any discharge into the navigable waters to obtain a 401 water quality certification from the Oregon Department of Environmental Quality (DEQ) prior to federal permit being issued.

The National Wetland Inventory (NWI) has mapped several wetlands within the study area. All of the mapped NWI wetland in the study area occur in the south obstruction removal area, except for one 0.3-acre freshwater forested/shrub wetland that is mapped in the southwest corner of the Airport property, which is depicted in Figure 2 in Appendix D.

In the taxilane rehabilitation area, there were no NWI wetlands and no wetlands and no wetland indicators were found.

A windshield survey of the north obstruction removal area identified potential areas that showed indicators of wetland hydrology and hydrophilic vegetation. The windshield survey was conducted because access to private property was not received.

 Portions of the south obstruction removal areas that are within the floodplain or riparian zone of the Williamson River and are mapped as NWI wetlands and have a high potential to be wetland.
These areas are located off of Airport property and were not surveyed because access to private property was not received.

All wetland documentation is included in Appendix D.

3.14.1.2 Floodplains
Based on flood insurance rate maps developed by the Federal Emergency Management Agency (FEMA), no 100-year floodplain is mapped within the taxilane rehabilitation site. In the south obstruction removal area, the 100-year floodplain is present along the Williamson River. The flood insurance rate map (FIRM) showing the flood risk of the project area is included in Appendix E.

3.14.1.3 Groundwater
Protection of groundwater in Oregon occurs at the federal, state, and local levels through various agencies. Oregon administers many federal programs, including the Clean Water Act, Safe Drinking Water Act, and Resource Conservation and Recovery Act among others. In addition to federal laws, Oregon has its own state laws and regulations relating to groundwater protection, and Klamath County regulates groundwater through local ordinances.

Most water used in the watershed comes from wells drilled into aquifers in highly permeable basalt that is capped by a layer of fluvial deposits made up of tuff, shale, agglomerate, sandstone, and volcanic ash. The nearest groundwater well is located 1.5 miles southwest of the Airport.

3.14.1.4 Wild and Scenic Rivers
No wild and scenic rivers are designated within the study area.

3.14.2 Environmental Consequences

3.14.2.1 Surface Waters and Wetlands
The proposed project will not permanently impact any wetlands or waterbodies. Any impacts to wetlands must comply with the local, state, and federal permit regulations, implement compensatory mitigation measures, and, ultimately, meet the standard of no net loss of wetlands and waterbodies. Small areas of trees, which are within the northern and the southern obstruction areas are located within NWI and potential wetland areas. No fill will be placed within the regulated wetland or below the ordinary high water mark, therefore no wetland or fill permits will be required.

There will be no impacts to wetlands in the taxilane rehabilitation area.

3.14.2.2 Floodplains
There are floodplain areas designated by FEMA within the southern obstruction removal area, adjacent to the Williamson River. There are a small area of obstructing trees within the floodplain, The Obstruction Removal in the southern obstruction removal area may have impacts to floodplains.
There are no impacts to the floodplains in the northern obstruction removal area nor impacts in the taxilane rehabilitation area.

**3.14.2.3 Groundwater**
The nearest groundwater well is 1.5 miles to the southeast of the study site. However, there are no construction activities that will affect the groundwater. Appropriate BMPs during construction will be in place.

**3.14.2.4 Wild and Scenic Rivers**
Because there are no wild and scenic rivers within the study site, the Preferred Alternative would have no impacts to wild and scenic rivers.

**3.14.3 Mitigation Measures**

**3.14.3.1 Surface Waters and Wetlands**
In the north obstruction removal area, trees will be removed in potential wetland areas. Prior to removal, those potential areas must be delineated to confirm the presence of wetlands. If wetlands are present, the trees are to be removed with hand tools and either cut and left fallen in place or cut and dragged out of the wetland area. No vehicular traffic is to be permitted in the delineated wetland areas. Stumps are to remain in place and no further ground disturbance is to take place. Appropriate construction BMPs will be placed to restrict sediment migration during the obstruction removal. This action does not require action or permits from DSL or USACE. The action may require permits from Klamath County and/or City of Chiloquin.

In the south obstruction removal area, trees will be removed in NWI mapped wetlands and potential wetland areas. Prior to removal, those potential areas must be delineated to confirm the presence of wetlands. If wetlands are present, the trees are to be removed with hand tools and either cut and left fallen in place or cut and dragged out of the wetland area. No vehicular traffic is to be permitted in the delineated wetland areas. Stumps are to remain in place and no further ground disturbance is to take place. Appropriate construction BMPs will be placed to restrict sediment migration during the obstruction removal. This action does not require permits from DSL or the USACE. The action may require permits from Klamath County and/or City of Chiloquin.

There are no wetlands in the taxilane rehabilitation area and therefore, no mitigation is required.

**3.14.3.2 Floodplains**
The south area obstruction removal area will have a portion of the obstruction removal within the floodplain associated with the Williamson River. Appropriate BMPs must be placed prior to any removal to stop the any sediment migration during obstruction removal. The trees are to be cut flush to the ground and the stumps are to remain. There is no permanent structures to be constructed within the floodplain, therefore no mitigation is required.

The north area obstruction removal area would not impact ant floodplains. No mitigation is necessary.
The taxilane reconstruction would not impact any floodplains. No mitigation is necessary.

3.14.3.3 Groundwater
The Preferred Alternative will not result in a direct impact to groundwater.

3.14.3.4 Wild and Scenic Rivers
The Preferred Alternative would not impact any Wild or Scenic River. No mitigation is necessary.

3.15 Cumulative Impacts

3.15.1 Summary of Past Projects
Table 3-6 below lists major projects that have occurred within the last seven years at the Airport.

<table>
<thead>
<tr>
<th>Year</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Runway Reconstruction and Electrical</td>
</tr>
<tr>
<td>2017</td>
<td>South Parallel Taxiway and Apron</td>
</tr>
<tr>
<td></td>
<td>Rehabilitation Construction</td>
</tr>
</tbody>
</table>

3.15.2 Summary of Concurrent Projects
There are no Airport projects that are expected to occur concurrent with the Preferred Alternative.

3.15.3 Summary of Future Projects
Table 3-7 below list projects that are planned in the reasonably foreseeable future.

<table>
<thead>
<tr>
<th>Year</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>Obstruction Removal Project</td>
</tr>
<tr>
<td>2021</td>
<td>Taxilanes Reconstruction – Design &amp; PMP</td>
</tr>
<tr>
<td>2022</td>
<td>Master Plan</td>
</tr>
<tr>
<td>2024</td>
<td>Pavement Maintenance Project</td>
</tr>
</tbody>
</table>

In addition to the projects shown in the table above, hangars may be developed along the Taxilanes as demand warrants. These hangars will be constructed in areas that were investigated for this Environmental Assessment. There will be no impacts to wetlands, threatened or endangered species, or cultural resources and therefore no foreseeable cumulative impacts to the direct or indirect study areas. The 2019 and the 2021 projects are part of the Proposed Action in this Environmental Assessment.

3.15.4 Summary of Resource Category Impacts
Resource category impacts are only analyzed for significant impacts associated with the Preferred Alternative and its cumulative impact with past, concurrent, and reasonably foreseeable projects at the Airport. Because the Preferred Alternative has the potential for temporary impacts due to construction and air quality/green-house gases, the potential for cumulative impacts is summarized below.
Construction Impacts
The Preferred Alternative, when considered with other past, present, and reasonably foreseeable future projects, may have a cumulative impact if construction activities were to occur concurrently. Potential impacts caused by construction activities include impacts from dust, noise, GHG, air pollution, and water pollution. However, the impacts are assumed to be minor and temporary in nature, and will be mitigated with appropriate construction BMPs. The combination of concurrent projects and the Preferred Alternative would likely still result in minor impacts if construction BMPs are implemented.

Air Quality/Green House Gas
The cumulative impact of the Preferred Alternative on the global climate when added to other past, present, and reasonably foreseeable future actions is not currently scientifically predictable. Aviation has been calculated to contribute approximately 3 percent of global carbon dioxide (CO$_2$) emissions; this contribution may grow to 5 percent by 2050.

Wetlands
The Preferred Alternative will not have wetland impacts from grading and fill material. When considered with other past, present, and reasonably foreseeable future projects, there will not be potential wetland impacts resulting from future development on the airfield as well. The impacts from the preferred alternative from obstruction removal will be negligible, since the trees will be removed by hand tools and no ground disturbance will occur and there will be no net loss of wetlands.
Chapter 4 – Public Review Process

The Oregon Department of Aviation (ODA) solicited written public comments on the Draft Environmental Assessment of Airport Improvements pursuant to FAA Order 1050.1F. The public review period was conducted from March 27, 2019 through April 26, 2019. Notices were published in the Herald and News requesting public comment on the Draft EA, and informing the public of the extension. The published notices are included in Appendix H of this report.

The Draft EA was available for viewing through multiple outlets. Hard copies of the Draft EA were available for viewing during normal business hours at the ODA Office and the FAA Seattle Airports District Office. An electronic copy of the Draft EA was posted on the ODA website.