

**MULINO STATE AIRPORT
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY
DESIGN FOR AIRPORT IMPROVEMENTS**

Prepared for:



Oregon Department of Aviation
3040 25th St. SE
Salem, Oregon 97302

Prepared by:



5331 SW Macadam Ave, #287
Portland, OR 97239
Phone: 503.419.2130

June 2019

**MULINO STATE AIRPORT
ENVIRONMENTAL ASSESSMENT AND PRELIMINARY DESIGN FOR
AIRPORT IMPROVEMENTS
MULINO, OR**

This environmental assessment becomes a Federal document when evaluated, signed, and dated by the responsible FAA official.

Responsible FAA Official

Date

DRAFT

Table of Contents

Chapter 1 - Purpose and Need for Proposed Action	1
1.1 Mulino State Airport Background	1
1.2 Airport Existing Conditions.....	2
1.3 FAA Design Standards	4
1.4 Description of Proposed Action.....	10
1.5 Purpose and Need for the Proposed Action	13
Chapter 2 - Alternatives	1
2.1 Alternative 1 – No Action.....	1
2.2 Alternative 2 – Remove Obstructions, Perform RSA Grading Improvements, and Replace Existing Perimeter Fencing.....	1
2.3 Preferred Alternative.....	5
2.4 Discretionary Actions and Permits	5
Chapter 3 – Affected Environment and Environmental Consequences	1
3.1 Air Quality.....	1
3.2 Biological Resources.....	2
3.3 Climate/Greenhouse Gas Emissions	8
3.4 Coastal Resources	9
3.5 Department of Transportation Act, Section 4(f)	10
3.6 Farmlands.....	10
3.7 Hazardous Materials, Solid Waste, and Pollution Prevention	11
3.8 Historical and Archaeological Resources	12
3.9 Compatible Land Use.....	14
3.10 Natural Resources and Energy Supply	15
3.11 Noise and Noise-Compatible Land Use	15
3.12 Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risk	16
3.13 Visual Effects	21
3.14 Water Resources	22
3.15 Cumulative Impacts.....	26
Chapter 4 – Public Review Process	1

APPENDICES

APPENDIX A: AIR QUALITY TECHNICAL MEMO

APPENDIX B: ENVIRONMENTAL SCREENING MEMO

APPENDIX C: COMPATIBLE LAND USE DOCUMENTATION

C-1 ZONING MAP

C-2 CLACKAMS COUNTY ZONING AND DEVELOPMENT ORDINANCE CH. 713

APPENDIX D: CULTURAL RESOURCES STUDY

APPENDIX E: WETLAND RECONNAISSANCE MEMO

APPENDIX F: FEMA FLOODPLAIN MAPPING

APPENDIX G: PUBLIC REVIEW DOCUMENTATION

DRAFT

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 Mulino State Airport.

1.1 Mulino State Airport Background

The Oregon Department of Aviation (ODA) owns and operates Mulino State Airport (referred to as the Airport or Mulino). The Port of Portland previously owned and operated the Airport until 2007. It has been in continuous aviation use since its initial construction as a small private airstrip in 1949. The Airport is located adjacent to the hamlet of Mulino within Clackamas County. The Airport was identified as a reliever airport to other Port of Portland airports in the 1981 *Clackamas County Reliever Airport Study*. The Port of Portland constructed new airfield facilities including a paved runway, taxiways, taxilanes, apron, lighting, site improvements, drainage, storm water, and utilities over a four-year period from 1988 to 1992. The Airport is located north of the Molalla River, 260 feet above mean sea level (MSL). As of 12/7/17, the Airport has 64 based aircraft with an estimated 21,300 total annual operations.¹ The airports fleet mix includes single-engine piston aircraft, gliders, and helicopters.

The Airport is classified as general aviation in the National Plan of Integrated Airport Systems (NPIAS) defined by the Federal Aviation Administration (FAA). These types of airports are typically near larger population centers and provide communities with access to local and regional markets.²

A location and vicinity map for the Airport is provided in **Figure 1-1**

¹ FAA 5010-1 Airport Master Record Form: FAA Airport/Facility Directory (A/FD) Northwest U.S.

² Report to Congress, National Plan of Integrated Airport Systems (NPIAS) 2017-2021

1.2 Airport Existing Conditions

The Airport is categorized as an FAA Airport Reference Code (ARC) B-II.

- Aircraft Approach Category (AAC) “B” refers to aircraft approach speeds up to 121 knots (139 miles per hour)
- Airplane Design Group (ADG) “II” refers to aircraft with wingspans between 49 feet and 79 feet, with a tail height between 20 feet and 30 feet

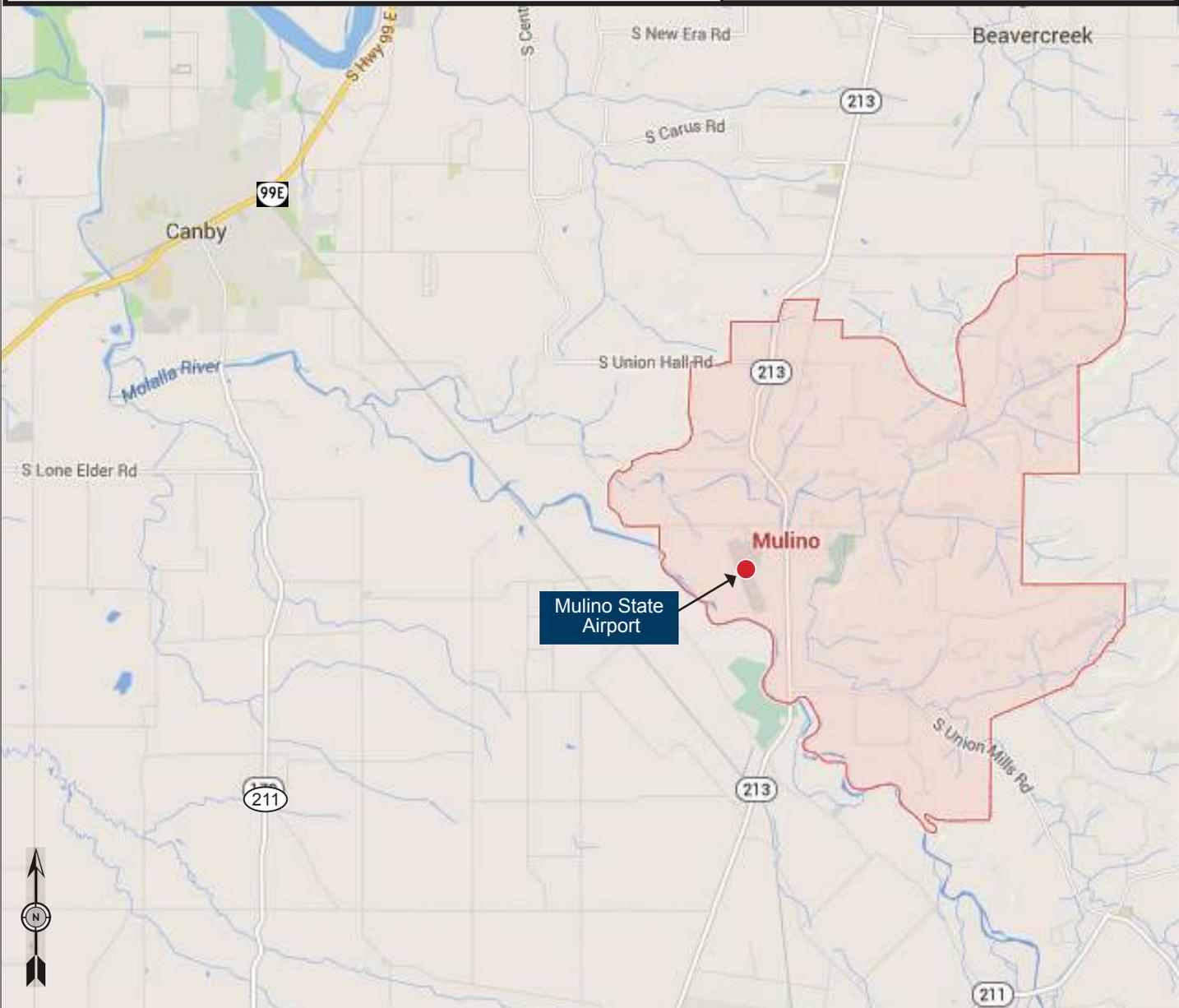
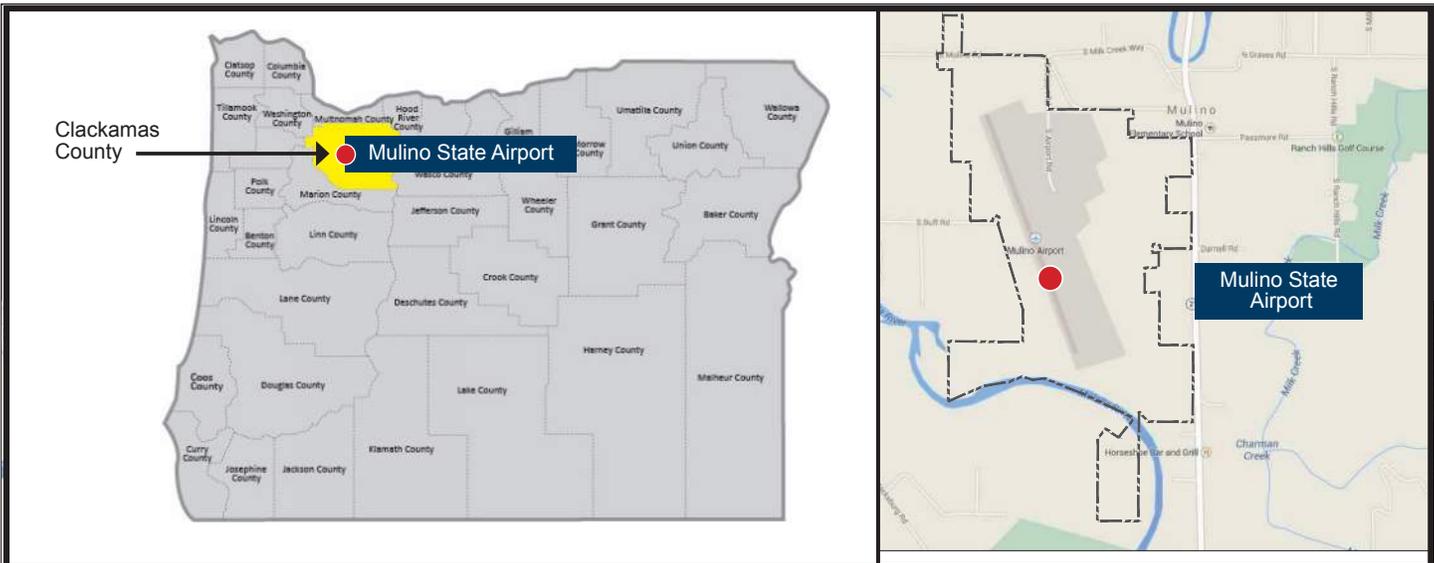
The Airport has one runway (Runway 14-32) that is oriented in an approximate north/south direction (140-320 degree magnetic heading). Runway 14-32 is 3,425 feet long and 100 feet wide with an asphalt surface. The published weight bearing capacity is 12,000 pounds for aircraft equipped with a single wheel landing gear configuration. The 2015 pavement inspection gave the runway a PCI rating of 86. The runway is equipped with medium intensity runway lights (MIRL) and precision approach path indicator (PAPI) lights. The runway has basic (visual) markings on both ends, consistent with current visual approach capabilities.

The Airport has one full-length parallel taxiway (Taxiway A) on the east side of the runway, which is 40 feet wide with a runway-taxiway separation of 400 feet and is equipped with medium intensity taxiway edge lights (MITL). There are three, 90-degree, runway exit taxiways (Taxiway A1, A2, and A3) that vary from 40 feet to 50 feet wide. The taxiway system provides access to all existing landside development on the east side of the airport. The 2015 pavement inspection rated the parallel taxiway with a PCI between 79 and 89 (based on five locations). The runway exit taxiways have minimum PCI ratings of 81 and 83.

The Airport has one apron area, east of the existing Fixed Base Operator (FBO) with approximately 16 small airplane tiedowns.³

The Airport does not have an air traffic control tower. The traffic pattern for both runway end directs all aircraft to the west side of the runway, right traffic for Runway 14 and left traffic for Runway 32. The traffic pattern altitude for fixed-wing aircraft is 1,000 feet above ground level (1,260 feet MSL). The Airport does not have any published instrument approach procedures.

³ Mulino State Airport 2016 Airport Master Plan, Chapter 2 Airport Inventory



There are no ground based navigational aids located on the airport. However, numerous ground based navigation aids are located within 30 nautical miles of the airport. The nearest facilities include the Newberg VOR/DME (Very High Frequency Omni-Directional Range and Distance Measuring Equipment) located 18 miles northwest of the airport and the LAKER NDB (non-directional beacon), located 20 nautical miles north.

The Airport does not have an automated weather observation system (AWOS) located on the airport. The nearest weather observation is located at Aurora State Airport eight miles to the west.

Figure 1-2 depicts the existing airfield facilities.

1.3 FAA Design Standards

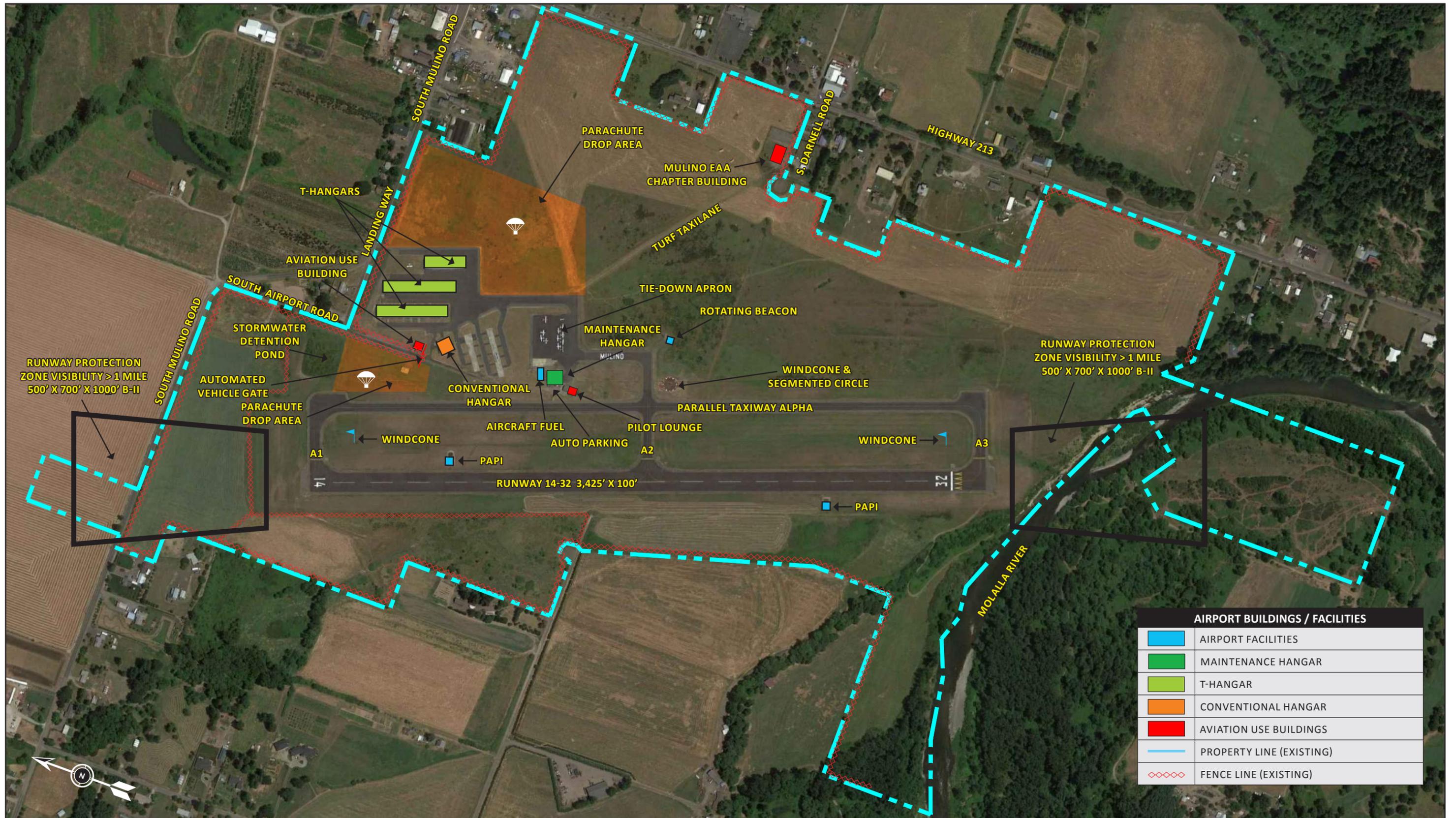
Table 1-1 provides a summary of Airport runway dimensional standards, which can be found in the FAA Advisory Circular 150/5300-13A, Airport Design.

TABLE 1-1: FAA RUNWAY REQUIRED DIMENSIONAL STANDARDS

	EXISTING RUNWAY 14-32	FUTURE RUNWAY 15-33*
Aircraft Approach Category (AAC)	B	B
Airplane Design Group	I	II
Runway Width**	60 feet	75 feet
Runway Safety Area (RSA) Width	150 feet	150 feet
Runway Object Free Area Width	500 feet	500 feet
RSA Length beyond RW end	240 feet	300 feet
* Due to Earth's shifting magnetic field, runway numbers must periodically be updated.		
** Existing runway width (100 feet) exceeds FAA minimum width		

1.3.1 Runway Safety Area

The FAA defines Runway Safety Area (RSA) as “A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.” Runway safety areas are most commonly used by aircraft that inadvertently leave (or miss) the runway environment during landing or takeoff.



By FAA design standard, the Runway Safety Area shall be:

- (1) cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;
- (2) drained by grading or storm sewers to prevent water accumulation⁴;
- (3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and
- (4) free of objects, except for objects that need to be located in the runway safety area because of their function. Objects higher than 3 inches above grade should be mounted with frangible couplings of the lowest practical height with the frangible point no higher than 3 inches. Other objects such as manholes, should be constructed at grade. In no case should their height exceed 3 inches.

The RSA for Runway 14-32 is 150 feet wide and extends 300 feet beyond runway end. The existing RSA meets the FAA dimensional and surface condition standards along the sides and Runway 32 end; however, the RSA beyond the Runway 14 end does not meet current grading standards as identified by a FAA site compliance inspection and will require improvements as discussed within this environmental assessment.

The grading standards of the RSA beyond the runway end for an AAC “B” airport are:

- For the first 200 feet beyond the runway end, the longitudinal grade must be 0 to 3 percent sloping downward from the runway end
- Beyond the 200 feet from the runway end, the allowable longitudinal grade is +/- 5 percent as long as no portion of the RSA ground level penetrates the approach surface, and
- Transverse grades are +/- 5 percent

1.3.2 Fencing

The FAA indicates that “perimeter fencing could be installed to preclude inadvertent entry of people or animals on the Airport.”

The Airport currently has three-foot tall wire field fencing surrounding the airport perimeter with an automated vehicle gate located on the main access road and padlocked swing gates located in various locations around the airport perimeter. Fencing is recommended

⁴ Note: It would follow that wetlands should not be allowed in the runway safety area.

to increase security and protect the airfield from potential wildlife conflicts. Typical airport fencing consists of six- to eight-foot high chain link topped with three-strand barbed wire.

1.3.3 Part 77 Surface

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 surface includes a primary surface, a transitional surface, and approach surfaces. These three components are described in further detail below. A summary of all FAR Part 77 airspace surfaces surrounding the Mulino State Airport is shown in **Table 1-2**.

1.3.3.1 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 for paved runway 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 14-32 currently meets the requirements of FAR Part 77.25

1.3.3.2 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 horizontal surface and the sides of the runway approach surfaces at common elevations. For Runway 14-32, the transitional surface begins 500 feet from the runway centerline, in both directions.

1.3.3.2 Approach Surface

The approach surface extends longitudinally along the runway centerline, beginning at the end of the primary surface. The existing approach surfaces of both Runway 14 and Runway 32 are visual approaches. 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 1,500 feet at a distance of 5,000 feet from the end of the primary surface. As identified in the 2017 AGIS survey, the approach surfaces of Runway 14-32 are obstructed by trees that are proposed for removal.

A visual approach is flying by sight alone without any assistance from lateral guidance equipment. The pilot needs to have at least 3 miles of visibility, the bottom of the clouds shall be no lower than 1000 feet and the path of the plane is free of any clouds.

A non-precision approach is an approach that uses instruments that provide lateral guidance, but not vertical guidance. Non-precision approaches make use of ground beacons, which transmit the relative location of the beacon to the aircraft receiver that the pilot uses to determine the lateral location of the aircraft to the beacon.

A non-precision instrument approach is planned for Runway 32 in the future. This approach surface would have a slope of 34 to 1 beginning at the end of the primary surface, and would flare to a width of 4,000 feet at a distance of 10,000 feet.

Figure 1-3 depicts draft 2018 Airport Master Plan Update Approach Plan and Profile

Figure 1-4 depicts the proposed study areas covered by the EA.

A summary of the FAR Part 77 airspace surfaces surrounding the Mulino State Airport is shown in **Table 1-2**.

TABLE 1-2: FAR PART 77 AIRSPACE SURFACES⁵

AIRSPACE ITEM	RUNWAY 14/32 OTHER THAN UTILITY NON-PRECISION INSTRUMENT RUNWAY APPROACH VISIBILITY MINIMUMS AS LOW AS 3/4-MILE	OBSTRUCTION
Width/Length of Primary Surface	1,000 feet*/200 feet beyond both ends of runway * <i>Width based on approach visibility minimums as low as 3/4-mile. Existing primary surface is 500' wide.</i>	No
Transitional Surface	7:1 Slope to 150 feet above runway	Yes, trees*
Horizontal Surface Elevation/Radius	150 feet above airport elevation/10,000 foot radius centered on each runway end	Yes, trees & terrain
Approach Surface Length	Existing- 5,000 feet (Rwy 32 & Rwy 14) Future- 10,000 feet (Rwy 32 Future);	Yes, trees
Approach Surface Slope	Existing- 20:1 (Rwy 32 & Rwy 14 – Visual) Future- 34:1 (Rwy 32 – NPI Vis. \geq 3/4 mile)	Yes, trees
Approach Surface Width at End	Existing- 1,500 feet (Rwy 32 & Rwy 14 – Visual) Future- 4,000 feet (Rwy 32 – NPI Vis. \geq 3/4 mile)	No

* Trees in the Transitional Surface were not addressed in this Environmental Assessment

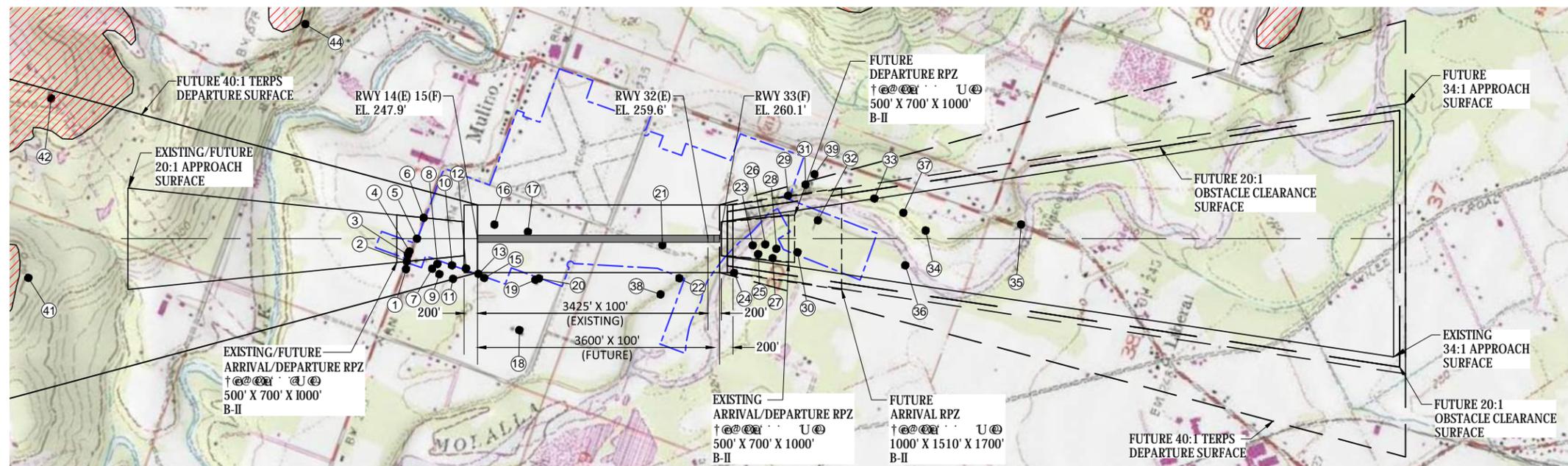
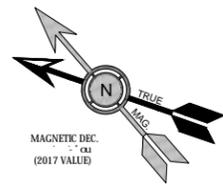
⁵ 2016 Mulino State Airport Master Plan, Chapter 4 Airport Facility Requirements and Chapter 7 Airport Airspace Plan (Part 77)

1.4 Description of Proposed Action

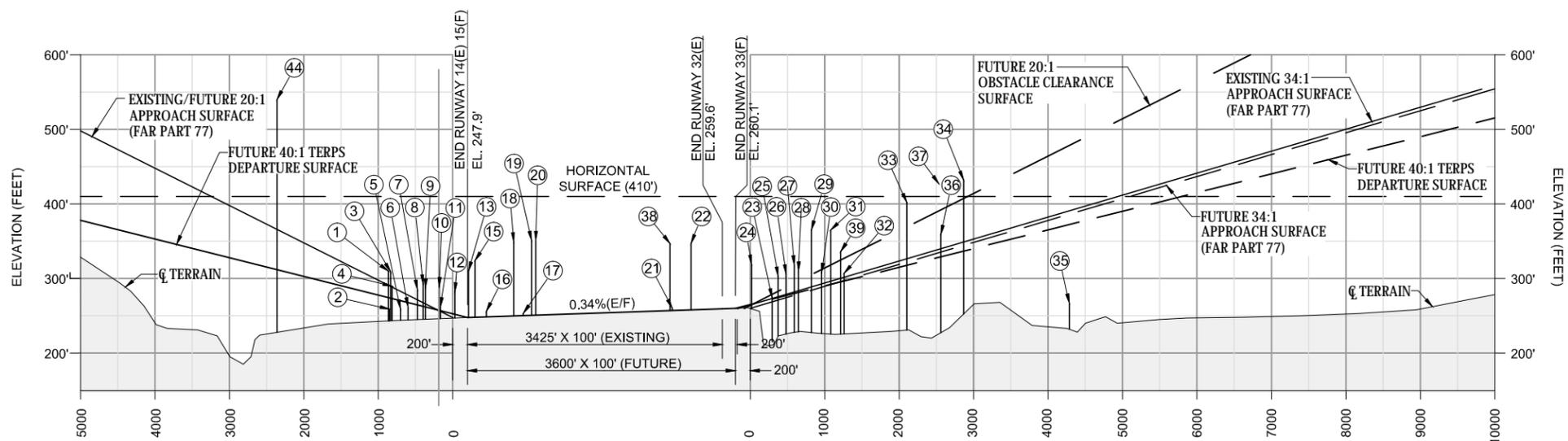
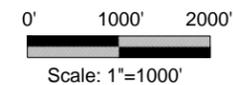
The Oregon Department of Aviation, owner and operator of the Mulino State Airport, proposes to implement various safety improvements and eliminate existing deficiencies regarding the runway safety area, obstructions, and fencing. The proposed action/s has been identified as:

- Perform grading improvements to correct non-standard RSA conditions associated with the Runway 14 end (2019 construction);
- Remove obstructions (trees) in the Runway 14-32 approach and transitional surfaces (2019 construction); and
- Install fencing (2020 construction).

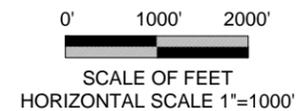
DRAFT



RUNWAY 14-32(E) 15-33(F) PLAN VIEW



RUNWAY 14-32(E) 15-33(F) PROFILE VIEW



THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION (PROJECT NUMBER 3-41-0072-012) AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY 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 TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

NOTES:

1. COMPLETE OBSTRUCTION CHART IS LOCATED ON SHEET 5, AIRPORT AIRSPACE PLAN (FAR PART 77).
2. DISTANCES FOR NOTED OBSTRUCTIONS ARE BASED ON THE ULTIMATE RUNWAY CONFIGURATION. DIMENSIONS INCLUDE 200' DISTANCE FROM RUNWAY END TO BEGINNING OF APPROACH.

FIGURE 1-3

NO.	DATE	BY	APPR	REVISIONS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. 0" IF NOT ONE INCH ON THIS SHEET. ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL
APPROVAL DATE: _____
SIGNATURE: _____

OREGON DEPARTMENT OF AVIATION APPROVAL
APPROVAL DATE: _____
SIGNATURE: _____

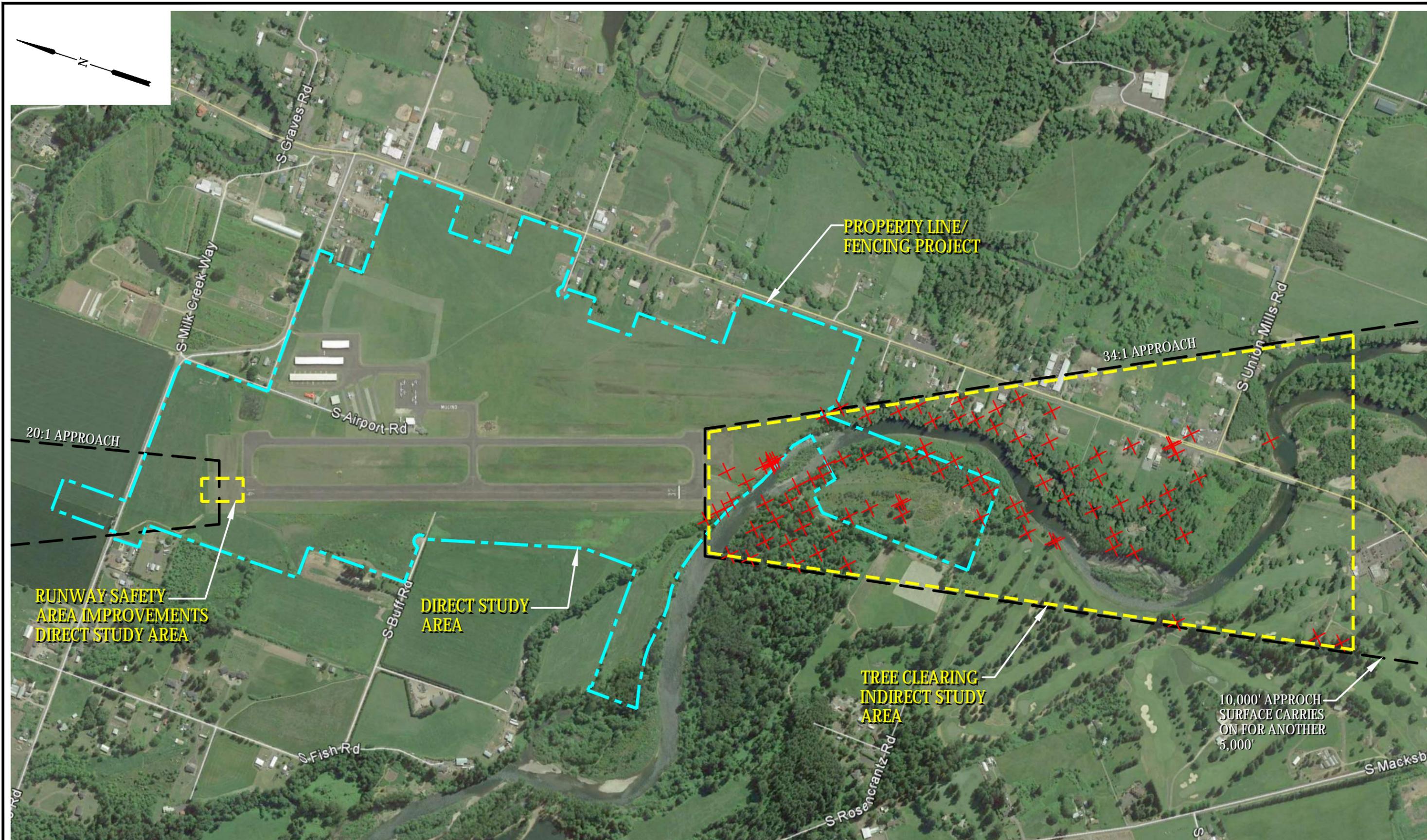


BEND OFFICE
1020 SW EMKAY DRIVE, #100
BEND, OR 97702
541.322.8962
541.382.2423 FAX

DESIGNED BY: DM DRAWN BY: JLS CHECKED BY: WMR SCALE: AS SHOWN
DATE: APRIL 2017 PROJECT NO: 4009705501

MULINO STATE AIRPORT
AIRPORT AIRSPACE PLAN (FAR PART 77)

FIGURE NO. -
SHEET NO. 6 OF 10



ENVIRONMENTAL ASSESSMENT
FIGURE 1-4

MULINO STATE AIRPORT
STUDY AREAS



1.5 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to eliminate existing safety deficiencies and non-standard conditions at the Airport. The Runway 14 RSA requires earthwork grading to meet current RSA standards for Airplane Design Group (ADG) II. The trees will be removed to eliminate airspace penetrations. Fencing is recommended to increase security and protect the airfield from potential wildlife conflicts.

Runway 14 RSA Grading - The grades beyond the Runway 14 threshold do not currently meet RSA grading standards. The Runway 14 RSA requires earthwork grading to meet current RSA standards for Airplane Design Group (ADG) II. This project will include earthmoving, grading, drainage structure removal and installation, as well as seeding.

PART 77 Obstruction Mitigation - The 2008 Airport Master Plan and the most recent AGIS survey performed for the Airport identified obstructions (trees) in the approach and transitional surfaces for Runway 14-32. Included in these obstructions are trees that are located outside of Airport property and adjacent the Molalla River. The trees in the approach surface will be removed to eliminate airspace penetrations.

Airport Fencing - The Airport currently has three-foot wire field fencing surrounding the airport with an automated vehicle gate located on the main access road and padlocked swing gates located in various locations around the airport. Fencing is recommended to increase security and protect the airfield from potential wildlife conflicts. The proposed airport fencing will be a six- to eight-foot high chain link with three-strand barbed wire.

DRAFT

Chapter 2 - Alternatives

This chapter provides an overview of each alternative considered to address the Purpose and Need of the airport improvements. The two alternatives considered as part of the Environmental Assessment are:

- **Alternative 1** – No action (maintains existing conditions)
- **Alternative 2** – Remove approach surface obstructions, perform runway safety area grading improvements, and install new perimeter fencing along existing Airport boundary.

A detailed 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 facility improvements to address safety concerns related to obstructions in the approach surfaces, non-standard runway safety area grades, and inadequate security fencing. The existing airfield conditions would remain unchanged from the present conditions, and the airport would essentially be operated in a “maintenance-only” mode.

The primary result of this no-action alternative would be the inability of the airport to provide needed safety improvements including correcting non-standard runway safety area grades, removing obstructions in the Runway 14-32 approaches, and providing secure perimeter fencing. Future aviation activity in this area would eventually be constrained by the safety and operational limits of the existing airport facilities and obstructions.

Alternative 1 can be visualized in the Existing Conditions depicted in Figure 1-2.

2.2 Alternative 2 – Remove Obstructions, Perform RSA Grading Improvements, and Replace Existing Perimeter Fencing

Alternative 2 includes various safety improvements and eliminates existing deficiencies to the runway safety area (RSA), approach obstructions, and fencing. The elements included in Alternative 2 are as follows:

- Perform grading improvements of the Runway 14 RSA (2019 construction);

- Remove obstructions (trees) in the Runway 14-32 approaches (2019 construction, see figure 2-2); and
- Install perimeter fence (2020 construction).

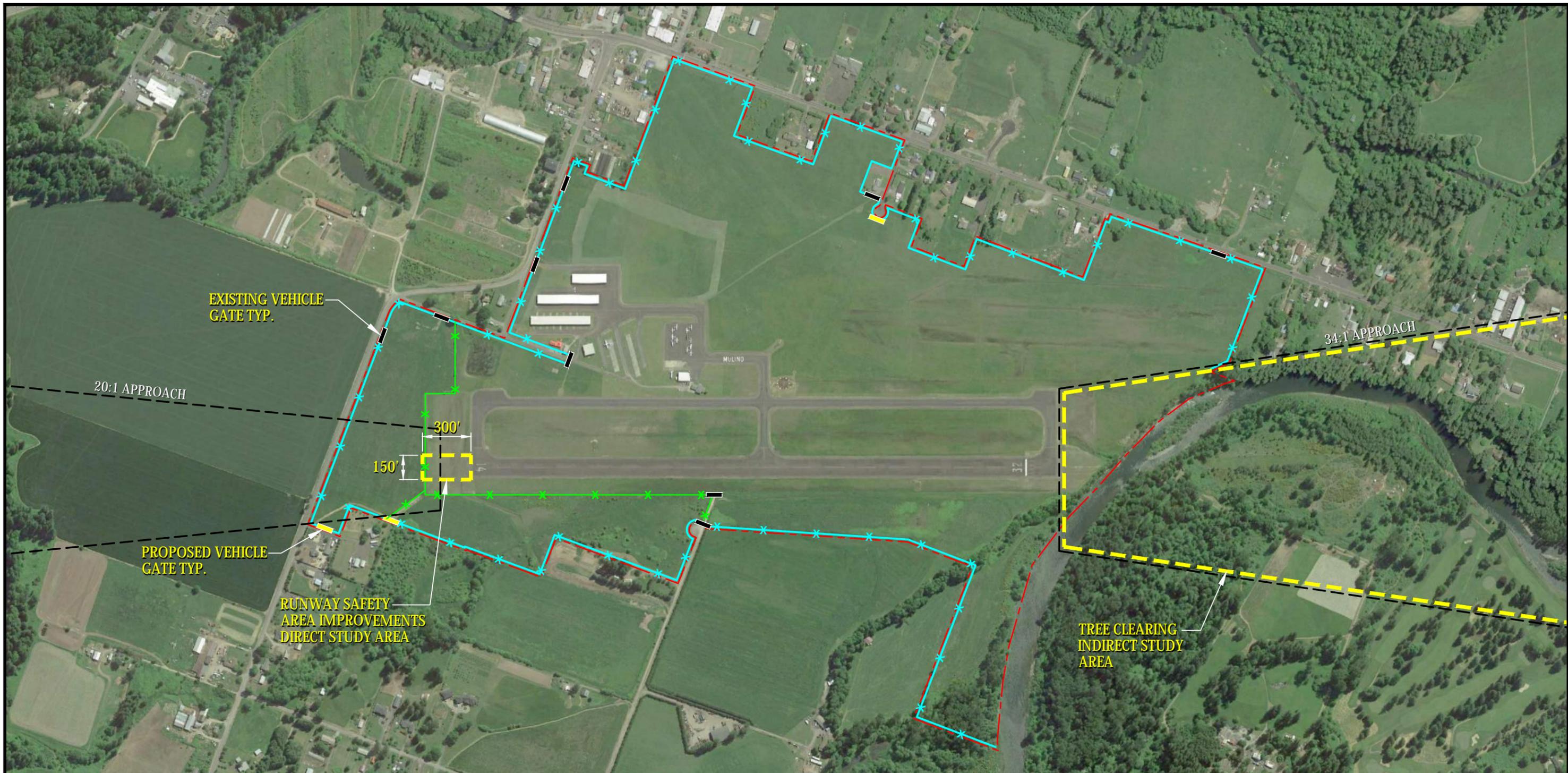
The grades beyond the Runway 14 threshold do not currently meet RSA grading standards. The RSA was not constructed correctly and now holds water and has created a wetland, which the FAA does not allow in RSAs and could pose a danger to aircraft that fail to stay on the pavement. Alternative 2 includes earthwork to bring the RSA into compliance with current RSA standards for Airplane Design Group (ADG) B-II. In conjunction with the earthwork and grading, the RSA improvements would also include improvements to the drainage system.

The recent AGIS survey identified many trees that obstruct the Runway 14-32 approach surfaces and the PAPI obstacle clearance surfaces (OCS). The proposed obstruction mitigation would remove these trees to eliminate airspace penetrations to the following surfaces: Runway 14 20:1 approach (close-in obstructions), Runway 14 PAPI OCS (close-in), Runway 32 existing 20:1 approach, Runway 32 future 34:1 approach, and Runway 32 PAPI OCS.

Alternative 2 also includes improvements/upgrades to the airport perimeter fencing. The airport currently has four-foot wire field fencing with an automated vehicle gate located on the main access road and padlocked swing gates located in various locations around the airport perimeter. The proposed fencing would be a six- to eight-foot high chain link with one-foot tall barbed wire to replace the existing field fencing in its current location. The fence would provide a security upgrade and serve as a deterrent to wildlife accessing the airport,

The primary results of this alternative would be an improved runway safety area that meets current grading standards, as well as improved safety for aircraft during the approach phase of flight. Additionally, the mitigation of obstructions within the approach surfaces would ensure the Sponsor complies with FAR Part 77 requirements. The proposed perimeter fencing would also improve safety on the airfield.

Alternative 2 is depicted in Figure 2-1.



LEGEND

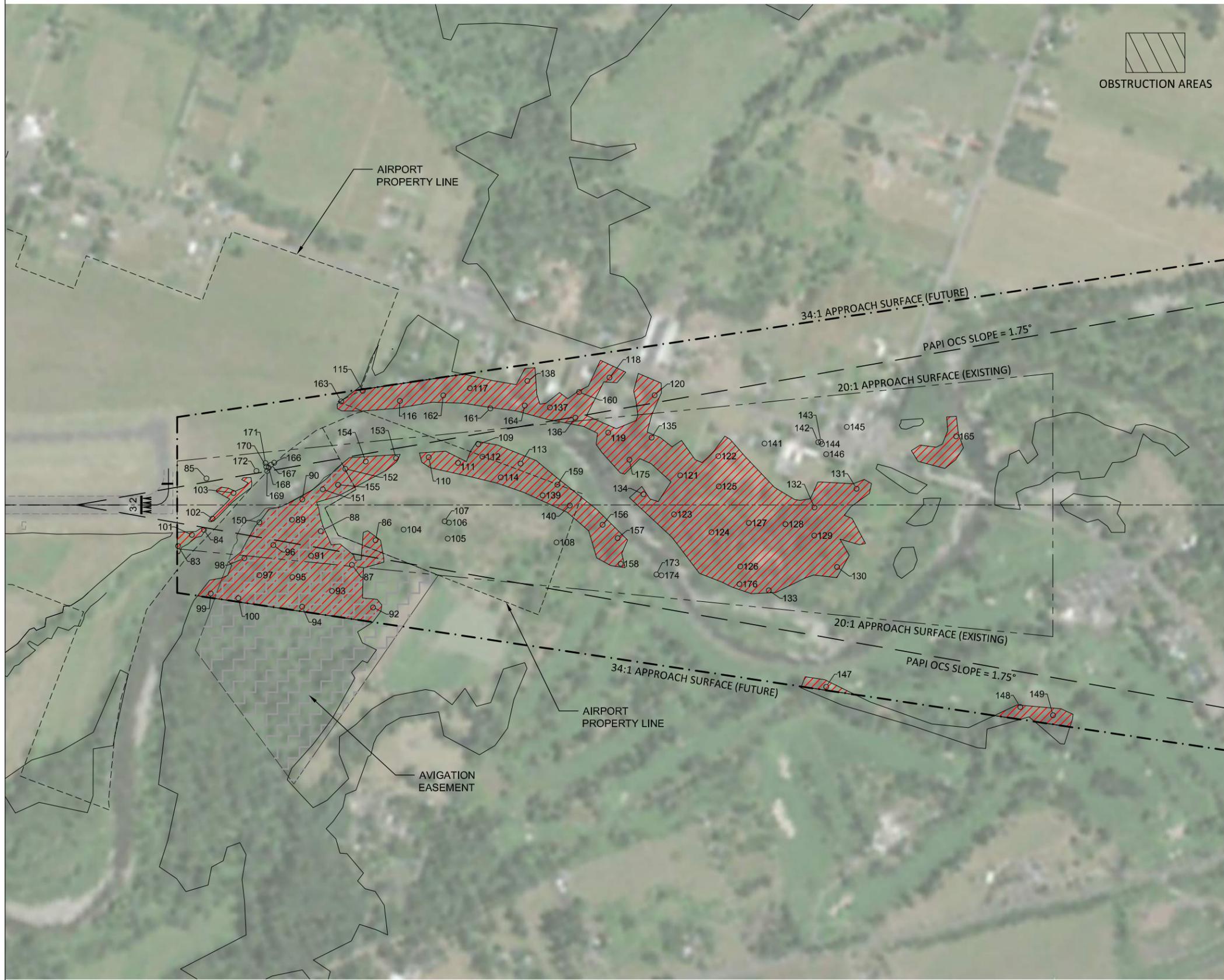
- - - AIRPORT PROPERTY LINE
- x x PROPOSED 6' TALL CHAIN LINK SECURITY FENCE WITH 1' TALL BARBED WIRE STRANDS.
- x x EXISTING 3 STRAND FENCE
- EXISTING VEHICLE GATE
- PROPOSED VEHICLE GATE

DRAFT

ALTERNATIVE 2
FIGURE 2-1

**MULINO STATE AIRPORT
AIRPORT SECURITY IMPROVEMENTS**

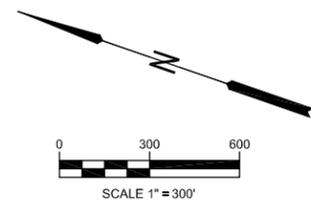





OBSTRUCTION AREAS

NOTES:

1. PAPI OBSTACLE CLEARANCE SURFACE (OCS): THE OCS BEGINS 300 FEET IN FRONT OF THE PAPI SYSTEM AND IS 2 LINES EXTENDING OUT 4 STATUTE MILES AND EACH LINE DIVERGING FROM CENTERLINE BY 10 DEGREES. THE OCS IS PROJECTED INTO THE APPROACH ZONE ONE DEGREE LESS THAN THE AIMING ANGLE OF THE LIGHT UNIT FURTHEST FROM THE RUNWAY FOR AN L-881 SYSTEM.
2. 20:1 APPROACH: SURFACE BEGINS 200' AWAY FROM THE THRESHOLD, ON THE APPROACH SIDE, AT THE SAME ELEVATION AS THE RUNWAY END. THE SURFACE IS A TRAPEZOID WITH THE SIDE CLOSEST TO BE THRESHOLD BEING 500 FEET WIDE AND AN OUTER WIDTH OF 1,500 FEET, SEPARATED BY 5,000 FEET. THE SURFACE IS ANGLED AT A 20:1 SLOPE.
3. 34:1 APPROACH: SURFACE BEGINS 200' AWAY FROM THE THRESHOLD, ON THE APPROACH SIDE, AT THE SAME ELEVATION AS THE RUNWAY END. THE SURFACE IS A TRAPEZOID WITH THE SIDE CLOSEST TO BE THRESHOLD BEING 1,000 FEET WIDE AND AN OUTER WIDTH OF 4,000 FEET, SEPARATED BY 10,000 FEET. THE SURFACE IS ANGLED AT A 34:1 SLOPE.
4. OBSTRUCTION AREAS MAY CONTAIN MORE OBSTRUCTIONS THAN THE POINTS SHOWN. FURTHER SURVEY WILL BE REQUIRED TO DETERMINE THE EXTENT OF THE REMOVAL IN THESE AREAS.
5. OBSTRUCTIONS BASED ON DATA OBTAINED FROM AGIS SURVEY PERFORMED BY MILLER CREEK FOR WHPACIFIC.
6. SEE SHEET 3 FOR OBSTRUCTION TABLES.



PORTLAND OFFICE
5331 S.W. MACADAM AVE., #207
PORTLAND, OR 97239
503.419.2130 OFFICE
503.639.2710 FAX

**MULINO STATE AIRPORT - OBSTRUCTION EVALUATION
RUNWAY 32 END APPROACH OBSTRUCTIONS**

FIGURE NO.

2-2

2.3 Preferred Alternative

Alternative 2 was selected as the preferred alternative by ODA to ensure the RSA and approach surfaces are appropriately maintained to meet State and Federal standards and adequate security fencing is provided for airfield facilities.

2.4 Discretionary Actions and Permits

The Preferred Alternative may require the following:

- Negotiate access and remediation for tree removal with surrounding property owners



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

Environmental Science Associates (ESA) in their *Mulino State Airport Air Quality and Greenhouse Gas Emissions (Task 4.1)* technical memorandum dated June 13, 2018 provided information on Air Quality. The document is included in **Appendix A**.

3.1.1 Affected Environment

The project area for air quality is defined as the air basin that includes the Hamlet of Mulino and the Airport. The Oregon Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA) regulates air quality in Mulino. The EPA has established the National Ambient Air Quality Standards (NAAQS) for six common air pollutants: carbon monoxide (CO), ozone (O₃), particulate matter, lead (Pb), sulfur dioxide (SO₂), and nitrogen dioxide (NO₂), and regulates permissible levels of the pollutants in the air for human health and safety. DEQ has adopted the standards set by EPA.⁶

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. The Mulino Airport and the surrounding areas are not located within a NAAQS Non-Attainment or Maintenance area. Because the project is not located within an Non-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

⁶ EPA 2018. Criteria Air Pollutants. NAAQA Table. Available at <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

Runway Safety Area (RSA) Grading may include excavators, graders, 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.

Implementation of the preferred alternative will not increase the operational capacity of the Airport 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 therefore 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, *No Effect Letter: Mulino Airport Improvement Projects* dated February 12, 2019, by ESA. The full memo can be found in **Appendix B**.

3.2.1 *Affected Environment*

The existing Airport consists of a north-south runway (Runway 14-32), parallel taxiway, aircraft parking, fuel facilities, navigational aids, airplane hangars, airport businesses, and vehicle parking areas. Current land use surrounding the airport consists of transportation corridors, commercial and residential development, a golf course, and agricultural fields.

The Airport is situated on a high terrace north of the Molalla River with elevations ranging from 245 feet above sea level (asl) at the north end to 265 feet at the south end. The Molalla River, a tributary of the Willamette River, bisects Airport property into northern and southern study parcels. The project area also includes the Arrowhead Golf Course and several privately owned lots along the Molalla River. Cover types in the project area include mowed grassland adjacent to the runway and taxiways, grazed pastures, row crops, floodplain forests, upland forests, landscaped areas at the golf course and residential lots, and emergent, scrub-shrub and forested wetlands.

Habitat types found in the project areas, relevant to the list of species, may occur in the action area include: upland grassland, palustrine emergent wetlands and scrub-shrub/forested wetlands; floodplain forests and upland forests. Grassland consists primarily of non-native pasture and turf grasses and was found in airport infields, adjacent agricultural parcels and residential properties to the south. Emergent wetlands on Airport property consisted primarily of hydrophytic pasture grasses and weedy forbs. Forested/scrub-shrub wetlands in the action area consist of reed canarygrass, Himalayan blackberry, black cottonwood, and Oregon Ash. The upland forests located on the Molalla River terrace are a mix of native conifers, cottonwood, and western red cedar. Red alder, immature black cottonwood, shrubby willows, and several exotic species in the groundcover dominate the forests within the Molalla River floodplain. Many of the shrubs and trees throughout the action area are native, but the groundcover generally consists of weedy forbs and grasses with the exception of portions of the forested floodplain along the Molalla River.

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 3-1: ESA-Listed Species with the Potential to Occur in Project Vicinity

Species Common Name (Scientific Name)	Federal ESA Listing Status	State ESA Listing Status
Northern spotted owl (<i>Strix occidentalis caurina</i>)	Listed Threatened	Threatened
Streaked-horn lark (<i>Eremophila alpestris strigata</i>)	Listed Threatened	None.
Oregon Chub (<i>Oregonichthys crameri</i>)	None	Sensitive-Critical
Chinook Salmon: Upper Willamette River ESU, spring run (<i>Oncorhynchus tshawytscha</i>)	Listed Threatened	Sensitive-Critical
Steelhead: Upper Willamette River ESU, winter run (<i>O. mykiss brevivostris</i>)	Listed Threatened	Sensitive
Pacific Lamprey (<i>Lampetra tridentata</i>)	Species of Concern	Sensitive
Fender's Blue Butterfly (<i>Icaricia icarioides fender</i>)	Endangered	Endangered
Bradshaw's Desert-parsley (<i>Lomatium bradshawii</i>)	Endangered	Endangered
Kincaid's Lupine (<i>Lupinus oreganus</i>)	Threatened	Threatened
Nelson's Checker-mallow (<i>Sidalcea nelsoniana</i>)	Threatened	Threatened
Water howellia (<i>Howellia aquatilis</i>)	Threatened	Threatened
Willamette Daisy (<i>Erigeron decumbens</i>)	Endangered	Endangered

ESU - Evolutionary Sensitive Unit

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 regrading of the RSA, would regrade the RSA to conform to FAA standards for longitudinal and transverse grading. The obstruction removal portion would remove existing trees mostly on private property and would include some ground disturbances associated with the obstruction removal work. The fencing portion will temporarily disturb the area where the fence is installed. However, the fence will become a permanent travel barrier to land animals for the safety of the flying public.

3.2.2.1 NORTHERN SPOTTED OWL

Northern spotted owls require extensive old growth and mature forests for nesting, roosting, foraging and dispersal. The nearest suitable habitat, which is also designated critical habitat, for northern spotted owls is located over 17 miles to the southeast of the airport in the Cascade Mountain Range (IPaC, 2019). The Airport and immediate vicinity do not contain suitable habitat for the northern spotted owl.

3.2.2.2 STREAKED-HORN LARK

Streaked horned larks (SHLA) are birds of wide-open spaces that lack trees and contain few or no shrubs (USFWS, 2004; USFWS, 2013a). Streaked horned larks are found at several airports in the Willamette Valley and Puget Sound, although no documented occurrences of streaked horned larks are known for the action area. Designated critical habitat for the streaked horned lark excludes all airports (USFWS, 2013b). No streaked horned larks were detected at the Airport during presence/absence surveys in 2018.

Refer to the attached presence/absence memo for more information on methods and timing of the SHLA surveys located in **Appendix B**.

3.2.2.3 OREGON CHUB

Oregon chub is a state listed Sensitive-Critical species with current distribution in the upper Willamette River watershed. This species uses side channel and off-channel habitats within its potential range for all stages of a life cycle.

3.2.2.4 CHINOOK SALMON: UPPER WILLAMETTE RIVER ESU, SPRING RUN

The federally listed upper Willamette River (UWR) chinook salmon are documented as occurring and have designated critical habitat in the Molalla River (StreamNet, 2019; NMFS, 2016). This species uses the Molalla River in the project vicinity primarily for migration to and from their upstream spawning grounds.

3.2.2.5 STEELHEAD: UPPER WILLAMETTE RIVER ESU, WINTER RUN

The federally listed UWR steelhead are documented as occurring and have designated critical habitat in the Molalla River (StreamNet, 2019; NMFS, 2016). This species uses

the Molalla River in the project vicinity primarily for migration to and from their upstream spawning grounds.

3.2.2.6 PACIFIC LAMPREY

The Pacific Lamprey is a Species of Special Concern and uses the Molalla River in the project vicinity primarily for migration to and from their upstream spawning grounds.

3.2.2.7 FENDER'S BLUE BUTTERFLY

Fender's blue butterfly occurs in native prairie habitats where three specific lupine species occur, one of which is Kincaid's lupine. A historical observation of one of these three species, Abram's lupine (*Lupinus albicaulis*), is mapped five miles south of the action area, however, was recorded in 1953 (Oregon Flora Project, 2019). There are no other recorded observations of these three species within 15 miles of the action area. Grasslands in the action area have been disturbed from airport, agricultural and residential development and no native prairie is found on-site.

3.2.2.7 BRADSHAW'S DESERT-PARSLEY

Bradshaw's desert parsley historically occurred on seasonally saturated or flooded prairies, adjacent to creeks and small rivers in the southern Willamette Valley (USFWS, 2018). This species is known to occur in three distinct NRCS mapped soil series, none of which are in the action area. The nearest known observation is approximately 18 miles south of the action area (Oregon Flora Project, 2019). No suitable habitat is located within the project vicinity.

3.2.2.8 KINCAID'S LUPINE

The distribution of Kincaid's lupine species has a close association with native upland prairie and oak savanna sites that are characterized by heavier soils and mesic to slightly xeric soil moisture levels (USFWS, 2018). The nearest known observation of this species is approximately 30 miles west of the action area (Oregon Flora, 2019). No suitable habitat is located within the project vicinity.

3.2.2.9 NELSON'S CHECKER-MALLOW

Nelson's checker mallow primarily occurs in open areas with little or no shade and will not tolerate encroachment of woody species. This species grows in remnant prairie grasslands and some populations occur along roadsides where non-native plants are also present (USFWS, 2018). Field investigations conducted at the action area during spring, summer, and fall 2018 did not identify any individuals in the study area. The nearest known populations are found in Salem, Oregon.

3.2.2.10 WATER HOWELLIA

Water howellia historically occurred within the floodplains of the lower Willamette River and its tributaries and in seasonally inundated areas with organic soils at low elevation (USFWS, 2018). Approximately 6.5 acres of wetlands were identified in the study area, but these aquatic habitats do not provide suitable habitat for water howellia due to past disturbances from grading and introduction of non-native grasses and forbs. Water howellia grows in association with duckweed (*Lemna* spp.), water starworts (*Callitriche* spp.), water buttercup (*Ranunculus aquatilis*), yellow water-lily (*Nuphar polysepalum*), bladderwort (*Utricularia vulgaris*), and pondweeds (*Potamogeton* spp.). Three riverine and depressional wetlands within the Molalla River floodplain totaling 0.65 acres of riverine were mapped in the action area, but no suitable ponded habitat was present in these wetlands. Additionally, no species typically associated with water howellia were observed in the floodplain wetlands. The nearest known observation (Oregon Flora Project, 2019) is at Molalla River State Park in the Willamette River floodplain, approximately 8 miles northwest of the action area.

3.2.2.11 WILLAMETTE DAISY

Willamette Daisy historically occurred in seasonally flooded bottomland and well-drained upland prairies. This is species known to occur in three distinct NRCS mapped alluvial soil series, none of which are in the action area. The nearest known observation is approximately 18 miles south of the action area (Oregon Flora Project, 2019). No suitable habitat is located within the project vicinity.

3.2.2.12 ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). The Pacific Fisheries Management Council (PFMC) has designated EFH for the Pacific salmon fishery, federally managed groundfish, and coastal pelagic fisheries. Designated EFH for the Pacific salmon fishery occurs in the Molalla River within the proposed project vicinity.

Ground disturbing activities associated with construction would increase the short-term potential for erosion from the site. To minimize the potential for sediment inputs to leave the site, an erosion and sediment control plan (ESCP) would be prepared and implemented as required by Oregon Department of Environmental Quality (DEQ). The ESCP would document erosion prevention and pollution control BMPs to be employed during construction to prevent the discharge of sediment to surface waters, dispose of construction waste, and prevent and respond to hazardous material releases. It is highly unlikely that erosion-generated sediment from construction activities would reach the

Molalla River. No work would occur below the ordinary high water line of fish-bearing water bodies. Vegetated areas that are temporarily disturbed would be stabilized and groundcover would be reestablished upon completion of construction.

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. The projects would also have no effect on critical habitat designated for these species due to the lack of in-water and near-water work in the Molalla River, which is designated critical habitat within the action area. The following measures will be implemented to reduce impacts to biological resources:

- For the obstruction removal area, clearing and grading activities resulting in vegetation removal start before the breeding window of March 15th or after August 1st. 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 Molalla River be employed during tree removal, such as avoiding stump removal or ground disturbing activities within 150 feet of the Molalla River.

3.3 *Climate/Greenhouse Gas Emissions*

Information on Climate/Greenhouse Gas Emissions was provided by ESA in their technical memorandum dated June 13, 2018, with subject *Mulino State Airport Air Quality and Greenhouse Gas Emissions (Task 4.1)*. The document is included 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.

- Mulino Elementary School, 0.1 mile east
- Wagonwheel Park, 0.9 mile southeast

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 32 approach surface of the Airport. There are areas zoned EFU farmlands located on Airport

property. The private properties located within the Runway 32 approach surface, where trees are to be removed, contains property that is zoned Exclusive Farm Use (EFU) and Rural Residential Farm Forest 5 Acre (RRFF-5). The land designated EFU is mostly the Arrowwood Golf Course. The proposed obstruction removal will not alter or effect the existing use of the land. A Zoning Map of the Airport is included in **Appendix C**.

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 are no nearby EPA current clean-up areas within 1 mile of the Airport.

Solid waste from Clackamas County is handled at the Metro South Facility transfer station located in Oregon City. The Metro South Facility is located approximately 6 miles north 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 RSA grading 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 will not remove any trees in any clean-up sites. All of the work associated with the fencing project will occur on the Airport property line. The waste associated with this portion of the Preferred Alternative will be steel metal scrap and may be recycled at a local metal recycler.

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 Metro South Transfer Station.

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 *Cultural Resource Survey of the Mulino State Airport Environment Assessment, Clackamas County, Oregon* provided by Archaeological Investigations Northwest, Inc. (AINW), dated February 27, 2018. The document is included in **Appendix D**.

AINW completed cultural resource study of the project's Areas of Potential Effect (APEs). AINW conducted a pedestrian survey of the project's Area of Potential Effects (APE). The 240-acre APE encompasses the location of planned airport improvements (Figure 2) as well as locations identified for obstruction removal (Figure 2). The APE is primarily located on state-owned land. However, a small portion of the APE along the bank of the Molalla River is located on privately owned land. This privately owned area was not surveyed for archaeological or historic resources due to landowner access issues.

AINW reviewed archaeological site and survey records in the Oregon Archaeological Records Remote Access (OARRA) system maintained by the Oregon State Historic Preservation Office (SHPO), and materials in the AINW library to determine if cultural resources have been identified in or near the project APE and to determine whether cultural resource surveys have been previously conducted in or near the APE.

3.8.2 *Environmental Consequences*

Pedestrian survey was conducted for the Preferred Alternative APE, on November 27 and December 4, 2017.

One archaeological resource (17/2634-1) was identified during the pedestrian survey. The resource consisting of remnants of the Willamette Valley Southern Railway, an electric railroad line for passenger service, which extended on a north-south alignment

through Mulino on its route between Oregon City and Mt. Angel between 1915 and 1933; freight service along the railroad line continued until 1938. The railroad line remnants include a downgrading trench cut into the landscape on the north side of the Molalla River at the location of the former railroad trestle approach on the former railroad alignment. This downward grade appears to have been created to better coincide with the substantially lower elevation of the south side of the Molalla River in comparison to the north side of the river. Other observed features associated with the railroad line include two concrete remnants of the former trestle within the Molalla River, a remnant of the railroad grade now used as a gravel road on the south side of the Molalla River, and a remnant cobble-covered levee segment on the south side of the Molalla River adjacent to the railroad alignment likely used for the protection of the grade from flood waters. A remnant pole was also found adjacent to the railroad grade on the south side of the river that may have been used to support the overhead electrical cables for the railroad line. This site may be a candidate for listing in the Nation Report of Historical Places (NRHP).

In addition to site 17/2634-1, three areas were identified where additional archaeological investigations may be needed within the surveyed APE. The areas include terrace landforms on the north and south sides of the Molalla River (Areas 1 and 2) (Figure 3). These terrace landforms are characteristic of the type of setting where many pre-contact archaeological sites have been identified in the general vicinity of the APE. A third identified area consists of the eastern portion of the cow pasture at the north end of the APE. The cow pasture is to the west of a previously identified pre-contact site that was observed during a 1980 survey for the Molalla airport but was never formally recorded on a site form (Woodward 1980) (Figure 3). The eastern portion of the cow pasture has a higher probability of containing artifacts given its proximity to this site and the fact that it has been impacted by airport development to a lesser degree than other nearby portions of the APE.

In addition to the three identified areas, there is an area on the eastern bank of the Molalla River that will need to be surveyed once landowner access is granted or during construction.

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 RSA regrading.

The removal area south of the river is considered to have a high probability for previously undocumented archeological resources along the Molalla 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 in the area of the Molalla River or around the recorded boundaries of previously documented sites.

In the areas associated with the railway line, the areas of the railway line should be marked with enough flagging or construction fencing to demarcate the area. Trees in the area should be surveyed and marked. Any trees within the demarcation should be cut at the base and felled to minimize impacts to the site. Roots shall remain in the ground intact. The fallen trees shall be cut and fallen on site. Picking and loading of the trees shall be done in such a way that the equipment and the methods of removal minimize the disturbance of the ground.

3.9 Compatible Land Use

3.9.1 *Affected Environment*

The Airport property is zoned Rural Area Residential (RA-1), Rural Residential Farm Forest 5 Acre (RRFF-5), and Exclusive Farm Use (EFU) by the County. The County zoning includes provisions for a Public Use Airport and Safety Overlay Zone as defined in Chapter 713 of the Clackamas County Zoning and Development Ordinance. This chapter serves to restrict the intrusion of buildings, rooftop appurtenances, and trees within the approach surfaces and other navigable airspace. The restricted surfaces correspond to Visual/Utility Airports. There is no demarcated Airport Overlay Zone on the Clackamas County zoning map.

County zoning designations surrounding the Airport includes EFU, RRFF-5, RA-1, Rural Area Residential 2 Acre (RA-2), Agricultural Forest District (AGF), Rural Commercial (RC), and Timber District (TBR). Additional land uses in the airport's vicinity include the public rights-of-way of OR Highway 213, Landing Way, Airport Road, and South Mulino Road.

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. Portland General Electric provides electricity to the Airport. The Mulino Water District provides water. Northwest Natural Gas provides natural gas. There is one 12,000-gallon AvGas aircraft fuel facility 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

No mitigation associated with Natural Resources and Energy Supply would be necessary.

3.11 Noise and Noise-Compatible Land Use

3.11.1 Affected Environment

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, 04/25/2019 effective date, Mulino State Airport had 21,300 operations for the 12 months ending 07/08/2018.

3.11.2 Environmental Consequences

The No Action Alternative would not change the noise levels or the compatibility of the local Land Use.

The Preferred Alternative will not increase aircraft traffic and therefore noise levels will not increase due to this action. There will be no long-term noise impacts of the Preferred Alternative on the local area.

3.11.3 *Mitigation Measures*

No mitigation associated with Noise and Noise-Compatible Land Use would be necessary. The current airport operations do not exceed 90,000 operations and the forecast operations according to the FAA Airport Master Record, 04/25/2019 effective date, Mulino State Airport had 21,300 operations for the 12 months ending 07/08/2018.

3.12 Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risk

3.12.1 *Affected Environment*

3.12.1.1 SOCIOECONOMIC ENVIRONMENT

Table 3-2 below shows the population of Clackamas County and the Census County Division (CCD) of Mulino based on each census from 1990 to 2010. Based on this data, Clackamas County and the CCD of Mulino experienced growth over the last two decades. The population of Clackamas County experienced growth of nearly 34.8% and the CCD of Mulino experienced growth of nearly 3.1% during the 1990 to 2010 period. 2010 was the first year that the Census Bureau listed the population of Mulino as a Census Designated Place (CDP). Most recent data factors list the data for Mulino per the CDP. In Table 3-2, the CCD and the CDP are both listed to show the correlation between the data.

Table 3-2: Historical Population Trends

Year	Clackamas County	% Change	Mulino, CCD	% Change	Mulino, CDP
2010	375,992	+11.1	4,637	+2.6	2,103
2000	338,391	+21.4	4,521	+0.5	N/A
1990	278,850		4,499		N/A

Source: Oregon: 2010 Population and Housing Unit Counts, US Census Bureau

Table 3-3 below shows a more detailed breakdown of annual population within the Clackamas County between 2012 and 2017. Population data for the CDP of Mulino is also shown in Table 3-3 between 2011 and 2013. The Clackamas County has seen steadily increasing population as the population of Portland metropolitan area steadily increases. The data shows a robust increase in the County population, which indicates a positive long term growth forecast.

Table 3-3: Recent Population Trends

Year	Clackamas County	% Change	Mulino, CDP	% Change
2017	413,000	+2.0	2,744	-1.9*
2016	404,980	+1.9	2,797	+5.1
2015	397,385	+1.5	2,661	+15.0
2014	391,525	+1.4	2,314	+6.4
2013	386,080	+1.2	2,175	-12.0
2012	381,680	-	2,472	-

* Population Data for Mulino, CCD from 2011-2016 could not be found

Source: Portland State University Population Research Center

Based on this data, the Mulino area has experienced growth since 1990. The population in Clackamas County experienced approximately 11.1% growth between 2000 and 2010, and the CCD of Mulino population grew 2.6% over the same time-period.

Data from the 2013-2017 American Community Survey 5-Year Estimates from the US Census Bureau were analyzed to determine other socioeconomic factors including housing supply, range of incomes, and economic activity in the CDP of Mulino (US Census Bureau 2010). In 2010, the CDP of Mulino had an estimated 810 total housing units with a 4.7% vacancy rate. Approximately 85.4% of housing units were owner-occupied, and 14.6% of housing units were rented. According to the 2006-2010 American Community Survey, 5-Year Estimates, the median household income in 2010 was \$71,546, and the mean household income was \$81,971. Approximately 0.3% of the population had a total household income less than \$10,000, and approximately 3.7% of the population had a total household income greater than \$200,000. The employed population “16 years and over” of the Mulino CDP was 1,012 in 2010. Of the employed population, approximately 66.6% worked in the private sector, 19.0% worked in the government sector, and 14.4% were self-employed.

The work associated with the Preferred Alternative 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 two categories: Clackamas County and CDP of Mulino. The Airport is within the CDP of Mulino.

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

Geographic Area	Race						Hispanic or Latino (of any race)
	African American	Asian	AIAN	NHPI	Other	2 or More	
Clackamas County	0.8%	3.7%	0.8%	0.2%	3.1%	3.2%	7.7%
CDP of Mulino 50450	0.2%	0.4%	1.0%	0.0%	0.5%	1.8%	2.8%

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 6.6 percent of the overall population.

Table 3-5: Population in Poverty

Geographic Area	Population Poverty Estimate
State of Oregon	11.6%
Clackamas County	6.6%

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 school to the airport is: Mulino Elementary School (0.1 miles east).

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 Mulino 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 regrading of the RSA would take place entirely within the airport property and is 0.54 miles from Mulino Elementary; the fencing project will occur on the Airport property line and at one point will be 0.03 miles from Mulino Elementary; and the obstruction removal areas will be at least 0.75 miles from Mulino Elementary.

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 memorandums prepared by ESA titled *Mulino State Airport Improvements; Water Resource Delineation Report* dated February 2018, *Mulino State Airport Runway Protection Zone Wetland Reconnaissance* dated January 19, 2019, and *Mulino State Airport; Wetland Impacts and Mitigation* dated January 31, 2019. The documents are included in **Appendix E**.

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.

A combination of a water resources delineation and a windshield survey of the North and South study areas, dependent on site access, was conducted. The North and South areas were separated by the Molalla River. For the properties where access was allowed,

a water resources delineation was conducted. For sites where access was not allowed or not accessible, a windshield survey was conducted. Portions of South study areas were not surveyed during the field investigation nor the windshield survey due to either no permission to access, posted no trespassing signs, or locked gates at time of survey. The study areas accessed were evaluated for signs of wetland conditions including swales or low spots, hydrophytic vegetation, or indicators of wetland hydrology such as saturation or ponding.

A total of 6.23 acres of wetland was delineated in the field using routine delineation methods. Additionally, 13.9 acres of a perennial river (Molalla River) was delineated, along with 1.07 acres of a potentially jurisdictional stormwater pond. The majority of these potential jurisdictional features are located in the north study area (6.94 acres). The majority of the water resources mapped by this delineation extend well outside of the survey area.

All wetland documentation is included in **Appendix E**.

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 RSA regrading site. In the obstruction removal area near the Molalla River, the 100-year floodplain is present along the river. The flood insurance rate map (FIRM) showing the flood risk of the project area is included in **Appendix F**.

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 Clackamas County regulates groundwater through local ordinances.

Most water used in the watershed comes from wells drilled into aquifers in Willamette Silt and alluvial deposits, which are on top of less permeable volcanic and sedimentary rock. There are 3 drinking water wells listed on the Department of Water Quality "Oregon Drinking Water Protection Program." The nearest groundwater well is the Mulino Water District Well #3, which is located 0.4 miles southeast of Runway 14.

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 RSA grading will be constructed with approximately 50 cy of cut and 750 cy of fill material. The two wetlands (Wetland 5a and 5b) in the immediate vicinity of the proposed RSA have a total area of 0.192 acre.

The proposed obstruction removal involves tree removal within or in close proximity to three freshwater wetlands and the Molalla River. Tree removal in wetland areas and adjacent to the Molalla River is expected to involve cutting trees at ground level and leaving the stumps in place.

The fencing improvements would require installing zinc coated steel fence with posts set in concrete every 10 feet. The concrete post blocks would have an approximate surface area of 3 square feet (sf) and 3-foot depth. The fence centerline would be cleared to a minimum width of five feet on each side and would be installed one foot off the property line. The temporary impact area from trucks, a tracked mini excavator, and manual labor would be a 12 feet wide offset from the property line. All holes and disturbance remaining after post and stump removal would be refilled with native substrate, compacted with tampers, and restored with a grass seed mix similar to existing conditions.

3.14.2.2 FLOODPLAINS

There are floodplain areas designated by FEMA within the southern obstruction removal area, adjacent to the Molalla River. There is a small area of obstructing trees within the floodplain, The Obstruction Removal in the southern obstruction removal area will not have impacts to floodplains.

The other areas of the Preferred Alternative will not be performed within floodplains.

3.14.2.3 GROUNDWATER

There are three (3) ground water drinking water sources near the airport. The closest is 0.4 miles southeast of the airport and the others are 0.8 miles to the northeast and 0.95 miles to the southeast of the airport. 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

The proposed RSA grading would be constructed with approximately 50 cy of cut and 750 cy of fill material. The two wetlands (Wetland 5a and 5b) in the immediate vicinity of the proposed RSA have a total area of 0.192 acre. The conversion of approximately 0.005 acres of palustrine emergent (PEM) wetlands to a vegetated RSA that sheds stormwater runoff would likely not adversely affect function of these two wetlands or adjacent water resources at the Airport.

In the 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 grading permits from Clackamas County.

The proposed concrete blocks for the fence post footings would result in a small increase of impervious surface area; however, the 3 square foot blocks would be spaced at a minimum of 10 feet and stormwater runoff would be infiltrated on-site. The additional impervious surfaces would likely not adversely affect function of wetlands at or adjacent to the Airport.

3.14.3.2 FLOODPLAINS

The RSA grading area would not impact any floodplains. No mitigation is necessary.

The obstruction removal area will have a portion of the obstruction removal within the floodplain associated with the Molalla 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 fence construction 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 in the last ten years at the Airport.

Table 3-6: Past Projects List

Year	Project Description
2014	Airport Master Plan
2013	Obstruction Removal

3.15.2 Summary of Concurrent Projects

One Airport project that is expected to occur concurrent with the Preferred Alternative. ODA is planning on installing and upgrading the Airport water supply. The NEPA investigation will be performed during the design of the water line.

3.15.3 Summary of Future Projects

Table 3-7 below list projects that are planned in the reasonably foreseeable future.

Table 3-7: Future Project List

Year	Project Description
2019	Obstruction Removal Project and RSA grading
2021	Wildlife/Security Fencing Construction
2022	Taxiway rehabilitation

In addition to the projects shown in the table above, hangars may be developed along the existing 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 (CO₂) 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 June 26, 2019 through July 26, 2019. Notices were published in the Molalla Pioneer requesting public comment on the Draft EA, and informing the public of the project. The published notices are included in Appendix G 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.

APPENDIX A

AIR QUALITY TECHNICAL MEMO



memorandum

date June 13, 2018

to Peter Murphy, P.E., Century West Engineering

cc Project file

from Luke Johnson and Susan Cunningham, Environmental Science Associates

subject Mulino State Airport Air Quality and Greenhouse Gas Emissions (Task 4.1)

The Mulino State Airport (“the Airport”), owned and operated by the Oregon Department of Aviation (ODA), proposes three improvements at the north end of Runway 14, the property perimeter, and along the Runway approaches. These projects will be funded by the Federal Aviation Administration (FAA) and therefore must comply with the requirements of the National Environmental Policy Act (NEPA). The proposed improvements include:

- **Work Item 1-2018** – Grading improvements of the Runway 14 (north) Runway Safety Area (RSA) and removal of obstructions (i.e. trees) near the north detention pond.
- **Work Item 2-2019** – Removal of obstructions (i.e. trees) in the Runway 14-32 approach and transitional surfaces.
- **Work Item 3-2020** – Replacement and installation of fencing along the perimeter of the Airport property.

The purpose of this memorandum is to review regional air quality regulations by Oregon Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA) and to identify potential air quality concerns and mitigation options.

STUDY AREA

The Airport is located within the unincorporated community and Hamlet of Mulino in Clackamas County; south of the Interstate-205 (I-205) / State Highway 213 junction. The site is approximately 20 miles south of Portland in Section 20, Township 4, Range 2, of the Willamette Meridian. The Airport is designated as a “Community General Aviation” airport, accommodating small aircraft from Mulino and communities throughout eastern Clackamas County. Current land use adjacent to both survey areas consists of a mix of transportation corridors, agriculture fields, and commercial and residential development.

CONTEXT

Exhibit 4-1 of FAA Order 1050.1F provides the FAA’s significance thresholds for Air Quality: 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 (EPA) under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations. The Clean Air Act is a federal law designed to control air pollution and is implemented by the EPA on a national level. Oregon DEQ implements these air quality standards on a statewide level.

FINDINGS

AIR QUALITY

The Airport and surrounding areas are not located within a NAAQS Non-Attainment or Maintenance area for the State. In addition, the EPA Air Quality Index (AQI) rates the average air quality within the Airport vicinity as “good”.

The three proposed projects may involve an increase in short-term emissions for construction, but would not have a long-term impact on air quality. Grading improvements, obstruction removal, and fence replacement may result in a localized, short-term reduction in air quality due to emissions from vehicles and equipment used to pour concrete and remove the tree obstructions. Work Item 1 would involve equipment typical of that used for grading, such as graders, rollers, and compactors. Work Item 2 would involve equipment that is typical for cutting and removing trees from a site, such as chainsaws, masticators, grinders, forwarders/skidders, harvester-processors, and log trucks. Work Item 3 would involve hauling trucks, concrete tucks, compact loaders, excavators, and manual labor. Air quality impacts from construction activities would be temporary in nature and limited in duration to periods when equipment/vehicles are operating. Such impacts are not expected to be significant with respect to DEQ criteria for pollutants, based on the existing good air quality conditions of the area.

On May 23, 2018 DEQ Air Quality Program Northwest Region contact, Tina Leppaluoto, was consulted for comments on the proposed projects at the Airport. DEQ determined the only air concerns would likely be airborne dust traveling off site from the removal of trees, if chipped on site. These projects would not exceed any of the NAAQS, as established by EPA. The Airport and surrounding areas are not located within a National Ambient Air Quality Standards Non-Attainment or Maintenance area for the State. Per DEQ recommendations, Best Management Practices (BMPs) to manage fugitive dust should be implemented during the excavation, construction, and concrete pouring processes.

CLIMATE

Obstruction removal and rehabilitation of the taxiways would cause short-term, localized increases in Greenhouse Gas (GHG) emissions from vehicles and equipment used in the tree obstruction removal. The proposed 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, it is not expected that there would be an increase in GHG emissions in the long-term and climate is not further addressed in this memo.

APPENDIX B

ENVIRONMENTAL SCREENING MEMO

February 12, 2019

Sean Callahan, Environmental Protection Specialist
 Seattle Airports District Office
 Northwest Mountain Region
 Federal Aviation Administration
 2200 S. 216th Street
 Des Moines, WA 98198

Subject: No Effect Letter: Mulino Airport Improvement Projects

Dear Mr. Callahan:

The Oregon Department of Aviation (ODA) proposes three separate airport improvement projects at the Mulino State Airport (Airport) located 20 miles south of Portland in Clackamas County, Oregon (Figure 1). The projects are intended to meet Federal Aviation Administration’s (FAA’s) safety regulations and include: grading improvements for the Runway Safety Area (RSA); removal of obstructions (i.e., trees); and replacement and installation of perimeter fencing.

Environmental Science Associates (ESA) prepared this no effect letter on behalf of Century West Engineering, ODA, and FAA as part of compliance with Section 7 of the Endangered Species Act. The projects are funded through the FAA, which provides the federal nexus for these projects. Another purpose of this memo is to document potential project effects to state sensitive species. USFWS and NMFS species lists indicate the potential presence of the species and critical habitat(s) shown in Table 1.

Table 1. Federal and State Listed Species Potentially Present in the Project Vicinity

Species Name (<i>Scientific Name</i>)	Federal Status*	State Status*
Northern spotted owl (<i>Strix occidentalis caurina</i>)	LT, CH	T
Streaked-horned lark (<i>Eremophila alpestris strigata</i>)	LT, CH	--
Oregon Chub (<i>Oregonichthys crameri</i>)	--	SC
Chinook salmon (<i>Oncorhynchus tshawytscha</i>); Upper Willamette River ESU, spring run	LT, CH	SC
Steelhead (<i>O. mykiss</i>), Upper Willamette River ESU, winter run	LT, CH	S
Pacific Lamprey (<i>Lampetra tridentata</i>)	SOC	S
Fender's Blue Butterfly (<i>Icaricia icarioides fenderi</i>)	LE, CH	E
Bradshaw's Desert-parsley (<i>Lomatium bradshawii</i>)	LE	E
Kincaid's Lupine (<i>Lupinus oreganus</i>)	LT	T
Nelson's Checker-mallow (<i>Sidalcea nelsoniana</i>)	LT	T
Water howellia (<i>Howellia aquatilis</i>)	LT	T
Willamette Daisy (<i>Erigeron decumbens</i>)	LE	E

*LT-Listed Threatened; CH - Critical Habitat has been designated for this species; S - State of Oregon Sensitive Species; SC - State of Oregon Sensitive-Critical Species; State of Oregon Threatened; State of Oregon Endangered

Mr. Sean Callahan
February 12, 2019
Page 2

Based on a desktop analysis, field surveys, and an evaluation of potential environmental effects of the proposed action, the projects are determined to have no effect on ESA listed and proposed species and associated designated or proposed critical habitat.

Project Location

The Airport is located within the unincorporated community of Mulino in Clackamas County; south of the Interstate-205 (I-205) / State Highway 213 junction (Figure 1). The Airport is within Section 20, Township 4, Range 2, of the Willamette Meridian. The Airport is classified as a General Aviation airport in the National Plan of Integrated Airport Systems, as defined by the FAA. It consists of a north-south runway (Runway 14-32) and parallel taxiway, aircraft parking, fuel facilities, navigational aids, airplane hangars, airport businesses, and vehicle parking areas. Current land use surrounding the airport consists of transportation corridors, commercial and residential development, a golf course, and agricultural fields.

The Airport is situated on a high terrace north of the Molalla River with elevations ranging from 245 feet above sea level (asl) at the north end to 265 feet at the south end. The Molalla River, a tributary of the Willamette River, bisects Airport property into northern and southern study parcels. The project area also includes the Arrowhead Golf Course and several privately owned lots along the Molalla River. Cover types in the project area include mowed grassland adjacent to the runway and taxiways, grazed pastures, row crops, floodplain forests, upland forests, landscaped areas at the golf course and residential lots, and emergent, scrub-shrub and forested wetlands.

Project Description

The proposed improvements include:

North Runway Safety Area (RSA) Grading Improvements (Work Item 1-2018)

The RSA grading improvements would meet grading requirements, as described in FAA Advisory Circular 150/5300-13, for the approximate 300 feet by 150 feet area that extends past Runway 14 (north). FAA recommends that this area be graded to at least a two-percent slope away from the centerline of the RSA and a five-percent slope from that point to the edge of the RSA to provide rapid drainage. The RSA would also be compacted to the same FAA standards as the paved runway. This work would be completed using excavators, compacters, and rollers.

Removal of Obstructions in Runway 14-32 Approach (Work Item 2-2019)

A recent obstruction evaluation, as described in FAA Advisory Circular 150/5300-13, identified several areas on private property and at the Arrowhead Golf Course within the Runway 14-32 (south) approach that do not comply with FAA obstruction clearing standards. The proposed obstruction removal would involve removal of trees that have been identified as obstructions. The proposed method of tree removal is to cut trunks just above ground level and to leave stumps in place. Logs would be removed from the site.

Mr. Sean Callahan
February 12, 2019
Page 3

Perimeter Fence Replacement and Construction (Work Item 3-2020)

According to FAA Advisory Circular 150/5370-10, fencing improvements would require installing zinc coated steel fence with posts set in concrete every 10 feet. To minimize wetland impacts, there may be segments of fence that would include posts every 25 feet. The concrete post blocks would have a 2-foot diameter, 3-foot depth, and an approximate surface area of 3 square feet. The fence centerline would be cleared to a minimum width of five feet on each side and would be installed one foot off the property line. The temporary impact area from trucks, a tracked mini-excavator, and manual labor would be a 12 feet wide offset from the property line.

Approximately 1,400 linear feet of the fence replacement action area borders the 100-foot buffer of the Molalla River. Reinforced and redundant construction Best Management Practices (BMPs) would be installed along this sensitive portion of the project area. All holes and disturbance remaining after post and stump removal would be refilled with native substrate, compacted with tampers, and restored with a grass seed mix similar to existing conditions. The proposed concrete blocks for the fence post footings would result in a small increase of impervious surface area; however, the 3 square foot blocks would be spaced at a minimum of 10 feet and stormwater runoff would be infiltrated on-site. The additional impervious surfaces would not adversely affect aquatic resources at or adjacent to the Airport.

Methods

ESA conducted background research and reviewed the lists of species from U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the Federal Register to determine which species could potentially occur within or near the action area (Table 1; Attachment A). The potential presence of listed species within the action area was further evaluated by reviewing the rare species list managed by the Oregon Biodiversity Information Center (ORBIC, 2019). After review of species lists, ESA biologists visited the airport in the spring and summer of 2018 to survey for the streaked horned lark according to protocol. Biologists also visited the site in December 2017 and September 2018 to delineate wetlands and assess baseline habitat conditions.

Action Area

The action area encompasses all areas affected directly or indirectly by the proposed projects. The action area generally includes a terrestrial zone of effect and an aquatic zone of effect. For the three proposed projects, the action area includes the project footprints (including construction access and staging areas) and areas within an approximately 1,000-foot radius of project activity (Figure 2). This represents a conservative estimate of the area in which increased noise and human presence during construction may cause disturbance, within and adjacent to an active airport. The action area encompasses any downstream water quality impacts resulting from construction stormwater, which are expected to be limited to sections of the stormwater system (pipes, ditches, ponds) upstream of the discharges to the Molalla River.

Mr. Sean Callahan
February 12, 2019
Page 4

Environmental Conditions in the Action Area

Habitat types found in the project areas relevant to the list of species that may occur in the action area include: upland grassland, palustrine emergent wetlands and scrub-shrub/forested wetlands; floodplain forests and upland forests. Grassland consists primarily of non-native pasture and turf grasses and was found in airport infields, adjacent agricultural parcels and residential properties to the south. Emergent wetlands on Airport property consisted primarily of hydrophytic pasture grasses and weedy forbs. Forested/scrub-shrub wetlands in the action area consist of reed canarygrass, Himalayan blackberry, black cottonwood, and Oregon Ash. The upland forests located on the Molalla River terrace are a mix of native conifers, cottonwood, and western red cedar. The forests within the Molalla River floodplain are dominated by red alder, immature black cottonwood, shrubby willows, and several exotic species in the groundcover. Many of the shrubs and trees throughout the action area are native, but the groundcover generally consists of weedy forbs and grasses with the exception of portions of the forested floodplain along the Molalla River.

Listed Species/Critical Habitat Occurrence

Wildlife Species

Streaked horned larks (SHLA) are birds of wide-open spaces that lack trees and contain few or no shrubs (USFWS, 2004; USFWS, 2013a). Streaked horned larks are found at several airports in the Willamette Valley and Puget Sound, although no documented occurrences of streaked horned larks are known for the action area. Designated critical habitat for the streaked horned lark excludes all airports (USFWS, 2013b). No streaked horned larks were detected at the Airport during presence/absence surveys in 2018. Refer to the attached presence/absence memo for more information on methods and timing of the SHLA surveys.

Northern spotted owls require extensive old growth and mature forests for nesting, roosting, foraging and dispersal. The nearest suitable habitat, which is also designated critical habitat, for northern spotted owls is located over 17 miles to the southeast of the airport in the Cascade Mountain Range (IPaC, 2019). The Airport and immediate vicinity do not contain suitable habitat for the northern spotted owl.

Fender's blue butterfly occurs in native prairie habitats where three specific lupine species occur, one of which is Kincaid's lupine. A historical observation of one of these three species, Abram's lupine (*Lupinus albicaulis*), is mapped five miles south of the action area, however, was recorded in 1953 (Oregon Flora Project, 2019). There are no other recorded observations of these three species within 15 miles of the action area. Grasslands in the action area have been disturbed from airport, agricultural and residential development and no native prairie is found on-site.

Plant Species

Bradshaw's desert parsley historically occurred on seasonally saturated or flooded prairies, adjacent to creeks and small rivers in the southern Willamette Valley (USFWS, 2018). This species is known to occur in three distinct NRCS mapped soil series, none of which are in the action area. The nearest known observation is approximately

Mr. Sean Callahan
February 12, 2019
Page 5

18 miles south of the action area (Oregon Flora Project, 2019). No suitable habitat is located within the project vicinity.

The distribution of Kincaid's lupine species has a close association with native upland prairie and oak savanna sites that are characterized by heavier soils and mesic to slightly xeric soil moisture levels (USFWS, 2018). The nearest known observation of this species is approximately 30 miles west of the action area (Oregon Flora, 2019). No suitable habitat is located within the project vicinity.

Nelson's checker mallow primarily occurs in open areas with little or no shade and will not tolerate encroachment of woody species. This species grows in remnant prairie grasslands and some populations occur along roadsides where non-native plants are also present (USFWS, 2018). Field investigations conducted at the action area during spring, summer, and fall 2018 did not identify any individuals in the study area. The nearest known populations are found in Salem, Oregon.

Water howellia historically occurred within the floodplains of the lower Willamette River and its tributaries and in seasonally inundated areas with organic soils at low elevation (USFWS, 2018). Approximately 6.5 acres of wetlands were identified in the study area, but these aquatic habitats do not provide suitable habitat for water howellia due to past disturbances from grading and introduction of non-native grasses and forbs. Water howellia grows in association with duckweed (*Lemna spp.*), water starworts (*Callitriche spp.*), water buttercup (*Ranunculus aquaticus*), yellow water-lily (*Nuphar polysepalum*), bladderwort (*Utricularia vulgaris*), and pondweeds (*Potamogeton spp.*). Three riverine and depressional wetlands within the Molalla River floodplain totaling 0.65 acres of riverine were mapped in the action area, but no suitable ponded habitat was present in these wetlands. Additionally, no species typically associated with water howellia were observed in the floodplain wetlands. The nearest known observation (Oregon Flora Project, 2019) is at Molalla River State Park in the Willamette River floodplain, approximately 8 miles northwest of the action area.

Willamette Daisy historically occurred in seasonally flooded bottomland and well-drained upland prairies. This is species known to occur in three distinct NRCS mapped alluvial soil series, none of which are in the action area. The nearest known observation is approximately 18 miles south of the action area (Oregon Flora Project, 2019). No suitable habitat is located within the project vicinity.

Fish Species

The Airport southern property boundary borders river mile (RM) 15 of the Molalla River. Two federally listed fish evolutionary significant units (ESU), upper Willamette River (UWR) chinook salmon and UWR steelhead are documented as occurring and have designated critical habitat in the Molalla River (StreamNet, 2019; NMFS, 2016). These species use the Molalla River in the project vicinity primarily for migration to and from their upstream spawning grounds.

Oregon chub is a state listed Sensitive-Critical species with current distribution in the upper Willamette River watershed. This species is uses side channel and off-channel habitats within its potential range for all stages of a life cycle.

Mr. Sean Callahan
February 12, 2019
Page 6

Impact Assessment

The action area is located on or near a working airport and is adjacent to agricultural fields and State Highway 213. Existing ambient noise levels are moderate due to airplane and highway traffic. The proposed projects are consistent with existing land use patterns and would not add transportation or induce growth in the project vicinity. No construction or improvement of taxiways, runways, or roads are planned as part of these projects. The projects have independent utility and no other development plans or projects depend upon these projects as a requirement for completion. Therefore, based on the scope and scale of the proposed projects, there are no anticipated changes in noise, land use, transportation concurrency, or induced growth that have the potential to negatively affect ESA-listed species.

Ground disturbing activities associated with construction would increase the short-term potential for erosion from the site. To minimize the potential for sediment inputs to leave the site, an erosion and sediment control plan (ESCP) would be prepared and implemented as required by Oregon Department of Environmental Quality (DEQ). The ESCP would document erosion prevention and pollution control BMPs to be employed during construction to prevent the discharge of sediment to surface waters, dispose of construction waste, and prevent and respond to hazardous material releases. It is highly unlikely that erosion-generated sediment from construction activities would reach the Molalla River. No work would occur below the ordinary high water line of fish-bearing water bodies. Vegetated areas that are temporarily disturbed would be stabilized and groundcover would be reestablished upon completion of construction. Therefore, no direct or indirect effects on federally listed or state sensitive fish species due to sedimentation would occur.

The RSA grading (Work Item 1-2018) involves excavating and grading of potential suitable streaked horned lark habitat. No effects to streaked horned larks are anticipated because no larks were detected during spring/summer 2018 SHLA surveys (see Attachment B for a summary report of the surveys).

Effects Determinations

Based on the information provided above, the proposed Mulino Airport Improvement projects would have *no effect* on the northern spotted owl, streaked horned lark, Kincaid's lupine, Nelson's checker mallow, water howelia, Willamette daisy, Oregon chub, chinook salmon, steelhead, and Pacific lamprey. The projects would also have *no effect* on critical habitat designated for these species due to the lack of in-water and near-water work in the Molalla River, which is designated critical habitat within the action area. The reasons for these effects determination are outlined in Table 2:

- Although the projects would occur in the vicinity of the Molalla River which supports listed fish species, no in-water work would be required as part of the projects.
- The action area and immediate vicinity is developed and generally does not contain freshwater streams or riverine habitat for aquatic species.
- The fence replacement and construction project would add additional minimal pollution generating impervious surface area and stormwater runoff would be infiltrated on-site.

- Sedimentation from project runoff would not enter fish-bearing surface waters, based on the action area location, seasonal construction limits and implementation of a project ESCP.
- Noise from construction activities would be at or near background levels at the action area, as it is directly adjacent to an airport runway, a state highway, and commercial/agricultural land uses.

Table 2. Rationale of “No Effect” Determination

Type	Species Name (<i>Scientific Name</i>)	Federal Status*	State Status*	Suitable Habitat Evaluation	Rationale for ESA “No Effect” Determination
Birds	Northern spotted owl (<i>Strix occidentalis caurina</i>)	LT, CH	T	No suitable mature or old growth forests exists within 20 miles of study area. Nearest CH is 17 miles east of action area.	No suitable habitat or documented occurrences in action area.
	Streaked-horned lark (<i>Eremophila alpestris strigata</i>)	LT, CH	--	Potential suitable habitat is found at airports in the Willamette Valley; Nearest CH is 35 miles west of action area.	Species not present in action area based on presence/absence surveys conducted in 2018.
Fish	Oregon Chub (<i>Oregonichthys crameri</i>)	--	SC	Suitable habitat for migration exists in the Molalla River in the project vicinity.	Projects do not include in-water work or degradation of water quality.
	Chinook salmon (<i>Oncorhynchus tshawytscha</i>); Upper Willamette River ESU, spring run	LT, CH	SC	Suitable habitat for migration exists in the Molalla River in the project vicinity.	Projects do not include in-water work or degradation of water quality.
	Steelhead (<i>O. mykiss</i>), Upper Willamette River ESU, winter run	LT, CH	S	Suitable habitat for migration exists in the Molalla River in the project vicinity.	Projects do not include in-water work or degradation of water quality.
	Pacific Lamprey (<i>Lampetra tridentata</i>)	SOC	S	Projects do not include in-water work or degradation of water quality.	Projects do not include in-water work or degradation of water quality.
Insect	Fender’s Blue Butterfly (<i>Icaricia icarioides fenderi</i>)	LE, CH	E	Requires Kincaid’s lupine, upland prairie, and oak savanna; nearest CH is 30 miles southwest of action area.	No suitable habitat or documented occurrences in action area.
Plants	Bradshaw’s Desert-parsley (<i>Lomatium bradshawii</i>)	LE	E	Requires native wet prairies; nearest population is in Marion County, Oregon.	No suitable habitat or documented occurrences in action area.
	Kincaid’s Lupine (<i>Lupinus oregonus</i>)	LT	T	Requires upland grasslands and prairies; nearest population is in Marion County, Oregon.	No suitable habitat or documented occurrences in action area.
	Nelson’s Checker-mallow (<i>Sidalcea nelsoniana</i>)	LT	T	No individuals were detected during site visits and no records for this species is known for the area.	Species not present in action area based on field visits during spring, summer, and fall 2018.
	Water howellia (<i>Howellia aquatilis</i>)	LT	T	Requires seasonally flooded, native wetlands without competition from exotic plants. No known records in the project vicinity.	No suitable habitat or documented occurrences in action area.
	Willamette Daisy (<i>Erigeron decumbens</i>)	LE	E	Requires native wet prairies; nearest population is 17 miles south of action area.	No suitable habitat or documented occurrences in action area.

Mr. Sean Callahan
February 12, 2019
Page 8

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). The Pacific Fisheries Management Council (PFMC) has designated EFH for the Pacific salmon fishery, federally managed groundfish, and coastal pelagic fisheries. Designated EFH for the Pacific salmon fishery occurs in the Molalla River within the proposed project vicinity. Potential effects to Pacific salmon EFH, including Chinook and Coho salmon habitat in the Molalla River, is similar to that discussed in the body of this letter. It was determined that the projects would not have *no adverse effect* on EFH for any of the managed fisheries due to the limited nature of these projects and the fact that the projects would not require in-water work or contribute to degradation of water quality.

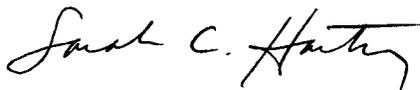
Conclusions

Based on the above analysis, Environmental Science Associates recommends that the proposed projects would have *no effect* on all species discussed above. Additionally, the proposed projects would have *no effect* on designated critical habitat for these species. In compliance with the MSA, EFH was assessed for the proposed projects and determined that the projects would have *no adverse effect* on EFH for Pacific Salmon.

We understand that this evaluation satisfies FAA's responsibility under Section 7(c) of the Endangered Species Act at this time. We are prepared to reevaluate potential project impacts if new species are listed or if the project descriptions change resulting in project-related affects that were not previously described in this document.

Please contact me at 971.295.5004 if you have any questions or concerns about the proposed projects.

Sincerely,

A handwritten signature in black ink that reads 'Sarah C. Hartung'. The signature is written in a cursive, flowing style.

Sarah Hartung, Sr. Biologist

Attachments: Figures 1 and 2; Species List; and SHLA Presence/Absence Memo

Mr. Sean Callahan
February 12, 2019
Page 9

References

- ESA. 2018. Mulino Airport – Wetland Delineation Report. Prepared for Century West Engineering, December 2018.
- National Marine Fisheries Service (NMFS). 2016. 5-Year Review: Summary & Evaluation of UWR Steelhead and UWR Chinook. 2016. Portland, OR. Available at:
https://www.westcoast.fisheries.noaa.gov/publications/status_reviews/salmon_steelhead/2016/2016_upper-willamette.pdf
- Oregon Department of Agriculture. Kincaid’s lupine Fact Sheet. Available at:
<https://www.oregon.gov/oda/shared/Documents/Publications/PlantConservation/LupinusOregonusProfile.pdf>
Accessed January 16, 2019.
- Oregon Department of Agriculture. Willamette Daisy Fact Sheet. Available at:
<https://www.oregon.gov/oda/shared/Documents/Publications/PlantConservation/ErigeronDecumbensProfile.pdf>
Accessed January 16, 2019.
- Oregon Flora Project. The Oregon Plant Atlas. Available at: <http://www.oregonflora.org/atlas.php> Accessed January 16, 2019
- Oregon Natural Heritage Information Center. Oregon Biodiversity Information Center (ORBIC). January, 2019. Biotics, Element Occurrence Record Digital Data Set.
- StreamNet. 2019. Fish Distribution Query for Lower Columbia River, January 16, 2019. Available at:
<https://www.streamnet.org/data/interactive-maps-and-gis-data/>
- USFWS (United States Fish and Wildlife Service). 1994. Endangered and Threatened Wildlife and Plants; The Plant, Water *Howellia (Howellia aquatilis)*, Determination to be a Threatened Species. 59 FR 35860 (July 14, 1994).
- USFWS. 2004. Species Assessment and Listing Priority Assignment Form, Streaked Horned Lark (*Eremophila alpestris strigata*). U.S. Fish and Wildlife Service, Region 1, Portland, OR.
- USFWS (United States Fish and Wildlife Service). 2013a. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Taylor’s Checkerspot Butterfly and Threatened Status for the Streaked Horned Lark; Final Rule. October 3, 2013. Federal Register 78(192):61492–61503.
- USFWS (United States Fish and Wildlife Service). 2013b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Taylor’s Checkerspot and Streaked Horned Lark, Final Rule. 78 FR 61506 (October 3, 2013).



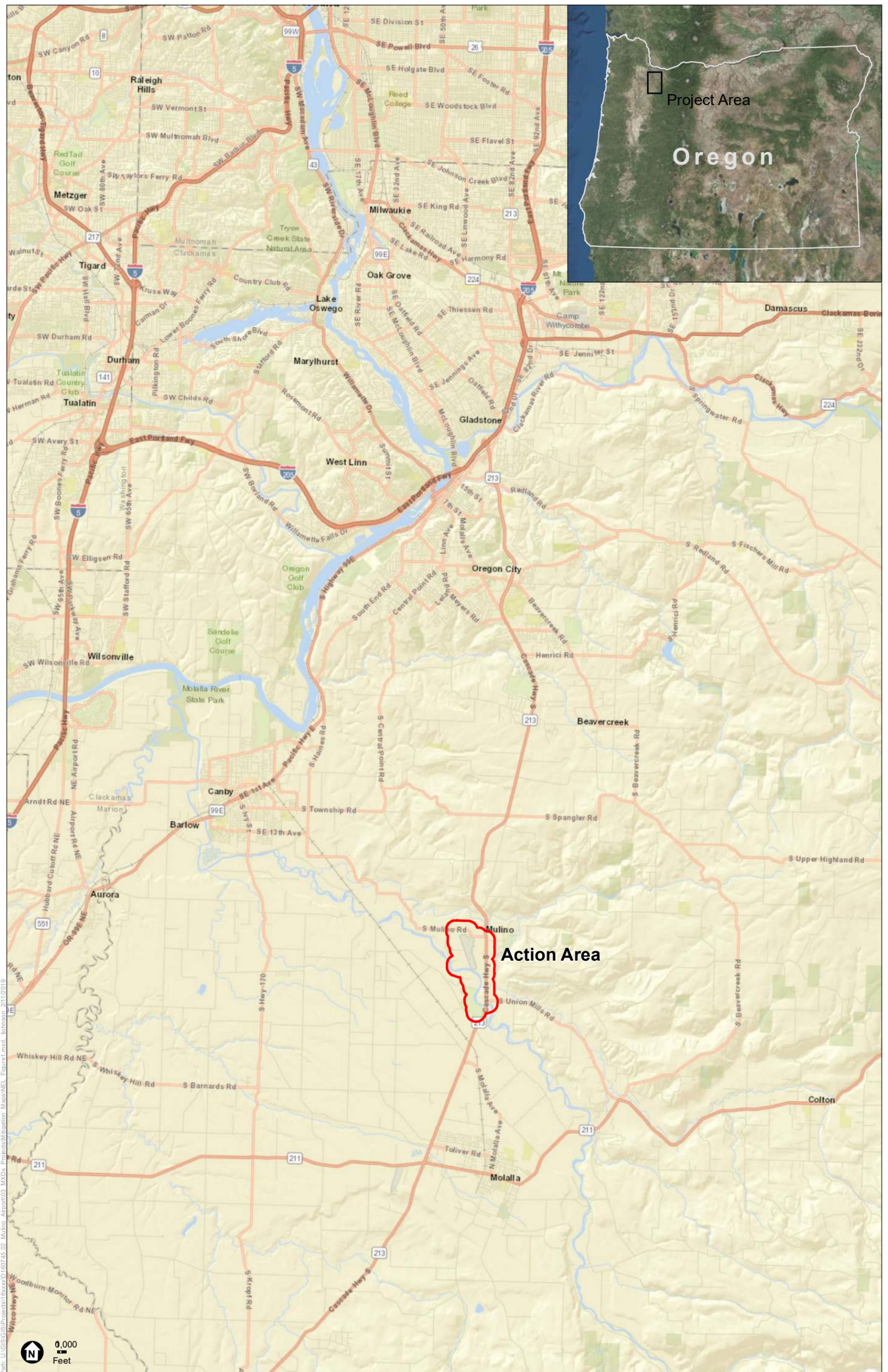
Mr. Sean Callahan
February 12, 2019
Page 10

USFWS (United States Fish and Wildlife Service). IPaC Trust Resource Report of proposed, candidate, endangered and threatened species and critical habitat in the vicinity of Pearson Airfield. Accessed online on January 16, 2019 at: <https://ecos.fws.gov/ipac/>

U.S. Fish and Wildlife Service (USFWS). Oregon Fish and Wildlife Office (OFWO). Bradshaw's desert parsley Species Fact Sheet. Available at: <https://www.fws.gov/oregonfwo/species/data/bradshawsLomatium/> Accessed January 16, 2019

U.S. Fish and Wildlife Service (USFWS). Oregon Fish and Wildlife Office (OFWO). Nelson's checker mallow Species Fact Sheet. Available at: <https://www.fws.gov/oregonfwo/articles.cfm?id=149489518> Accessed January 16, 2019

U.S. Fish and Wildlife Service (USFWS). Oregon Fish and Wildlife Office (OFWO). Water Howelia Species Fact Sheet. Available at: https://www.fws.gov/wafwo/species/Fact%20sheets/Waterhowellia_factsheet.pdf Accessed January 16, 2019.



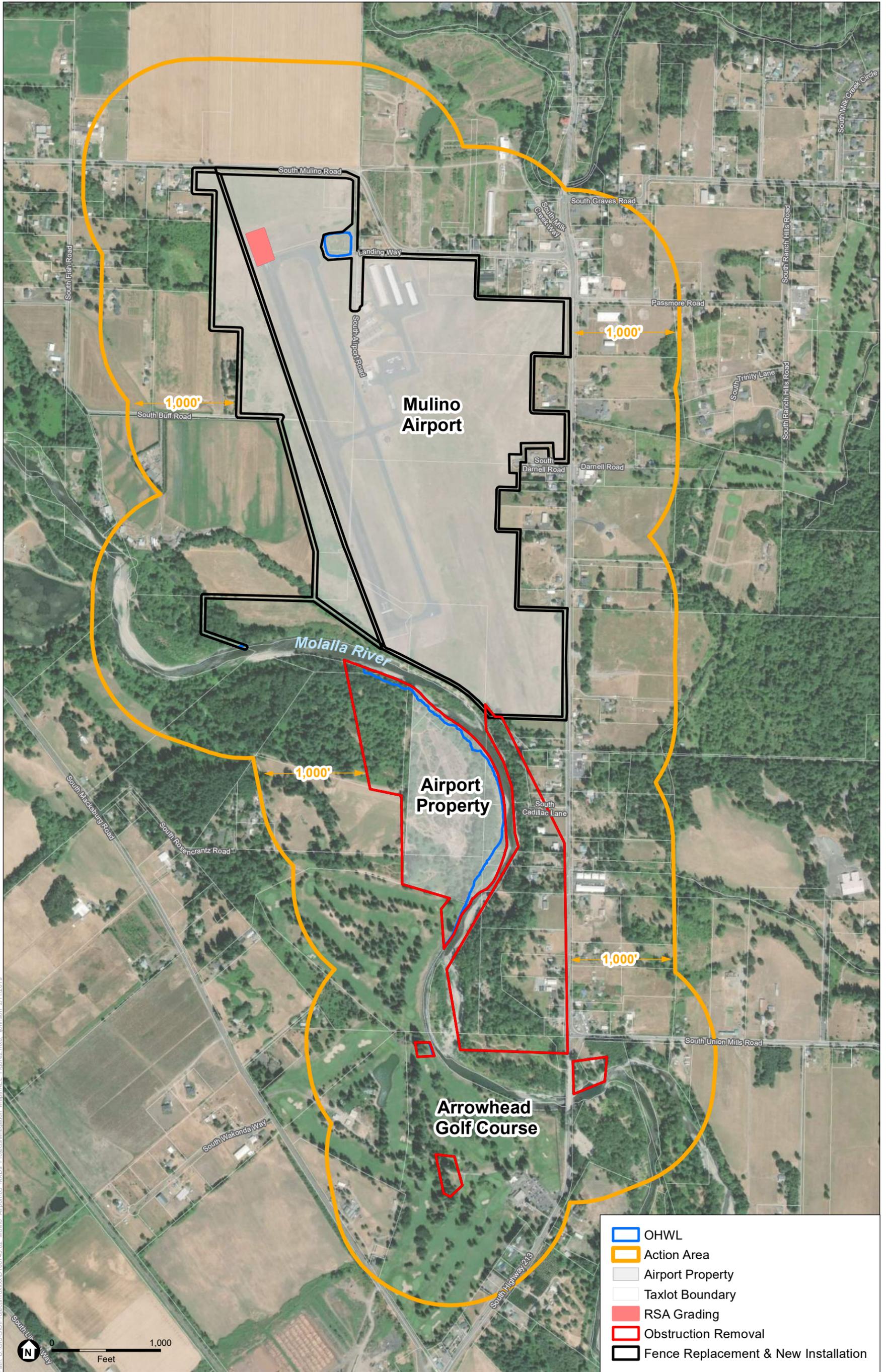
Path: U:\GIS\GIS\Projects\160745.02_Mulino_Airport\03_MXD\Projects\Utilization_Maps\NEL_Figure1.mxd, Johnson, 2/11/2019

SOURCE: ESA, 2017; ESRI, 2017

160745.02 Mulino Airport

Figure 1
Project Area Location Map
Clackamas Co, OR





Path: U:\GIS\GIS\Projects\160745.02_Mulino_Airport\03_MXDs\Projects\Mitigation_Maps\NEL_Figure2.mxd Johnson 2/11/2019

SOURCE: ESA, 2018; USDA NAIP, 2016; Open Street Maps, 2016; RLIS, 2017

160745.02 Mulino Airport

Figure 2
Action Area
Clackamas Co, OR



IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Clackamas County, Oregon



Local office

Oregon Fish And Wildlife Office

☎ (503) 231-6179

📅 (503) 231-6195

2600 Southeast 98th Avenue, Suite 100
Portland, OR 97266-1398

<https://www.fws.gov/oregonfwo/articles.cfm?id=149489416>

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME

STATUS

Northern Spotted Owl *Strix occidentalis caurina* Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
<https://ecos.fws.gov/ecp/species/1123>

Streaked Horned Lark *Eremophila alpestris strigata* Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
<https://ecos.fws.gov/ecp/species/7268>

Insects

NAME	STATUS
Fender's Blue Butterfly <i>Icaricia icarioides fenderi</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6659	Endangered

Flowering Plants

NAME	STATUS
Bradshaw's Desert-parsley <i>Lomatium bradshawii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5743	Endangered
Kincaid's Lupine <i>Lupinus sulphureus</i> ssp. <i>kincaidii</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3747	Threatened
Nelson's Checker-mallow <i>Sidalcea nelsoniana</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7340	Threatened
Water Howellia <i>Howellia aquatilis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7090	Threatened
Willamette Daisy <i>Erigeron decumbens</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6270	Endangered

Critical habitats

Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead

PUGET SOUND DOMAIN

- Puget Sound Chinook (T) [FCH 9/2/05]
- Hood Canal Summer Chum (T) [FCH 9/2/05]
- Ozette Lake Sockeye (T) [FCH 9/2/05]
- Puget Sound Steelhead (T) [CH under dev.; ANPR 1/10/11]

WILLAMETTE/LOWER COLUMBIA DOMAIN

- Columbia River Chum (T) [FCH 9/2/05]
- Lower Columbia River Coho (T) [CH Under dev.; ANPR 1/10/11]
- Lower Columbia River Chinook (T) [FCH 9/2/05]
- Lower Columbia River Steelhead (T) [FCH 9/2/05]
- Upper Willamette River Chinook (T) [FCH 9/2/05]
- Upper Willamette River Steelhead (T) [FCH 9/2/05]

OREGON COAST DOMAIN

- Oregon Coast Coho (T) [FCH 2/11/08]

SOUTHERN OREGON/NORTHERN CALIFORNIA COAST DOMAIN

- Southern Oregon/Northern California Coast Coho (T) [FCH 5/5/99]

CENTRAL VALLEY DOMAIN

- Sacramento River Winter Chinook (E) [FCH 6/16/93]
- Central Valley Spring Chinook (T) [FCH 9/2/05]
- Central Valley Steelhead (T) [FCH 9/2/05]

NORTH-CENTRAL CALIFORNIA COAST DOMAIN

- Central California Coast Coho (E) [FCH 5/5/99]
- California Coastal Chinook (T) [FCH 9/2/05]
- Northern California Steelhead (T) [FCH 9/2/05]
- Central California Coast Steelhead (T) [FCH 9/2/05]

SOUTH-CENTRAL/SOUTHERN CALIFORNIA COAST DOMAIN

- South-Central California Coast Steelhead (T) [FCH 9/2/05]
- Southern California Coast Steelhead (E) [FCH 9/2/05]

INTERIOR COLUMBIA DOMAIN

- Snake River Sockeye (E) [FCH 12/28/93]
- Snake River Fall Chinook (T) [FCH 12/28/93]
- Snake River Spring/Summer Chinook (T) [FCH 12/28/93; 10/25/99]
- Snake River Steelhead (T) [FCH 9/2/05]
- Upper Columbia River Spring Chinook (E) [FCH 9/2/05]
- Upper Columbia River Steelhead (T) [FCH 9/2/05]
- Middle Columbia River Steelhead (T) [FCH 9/2/05]

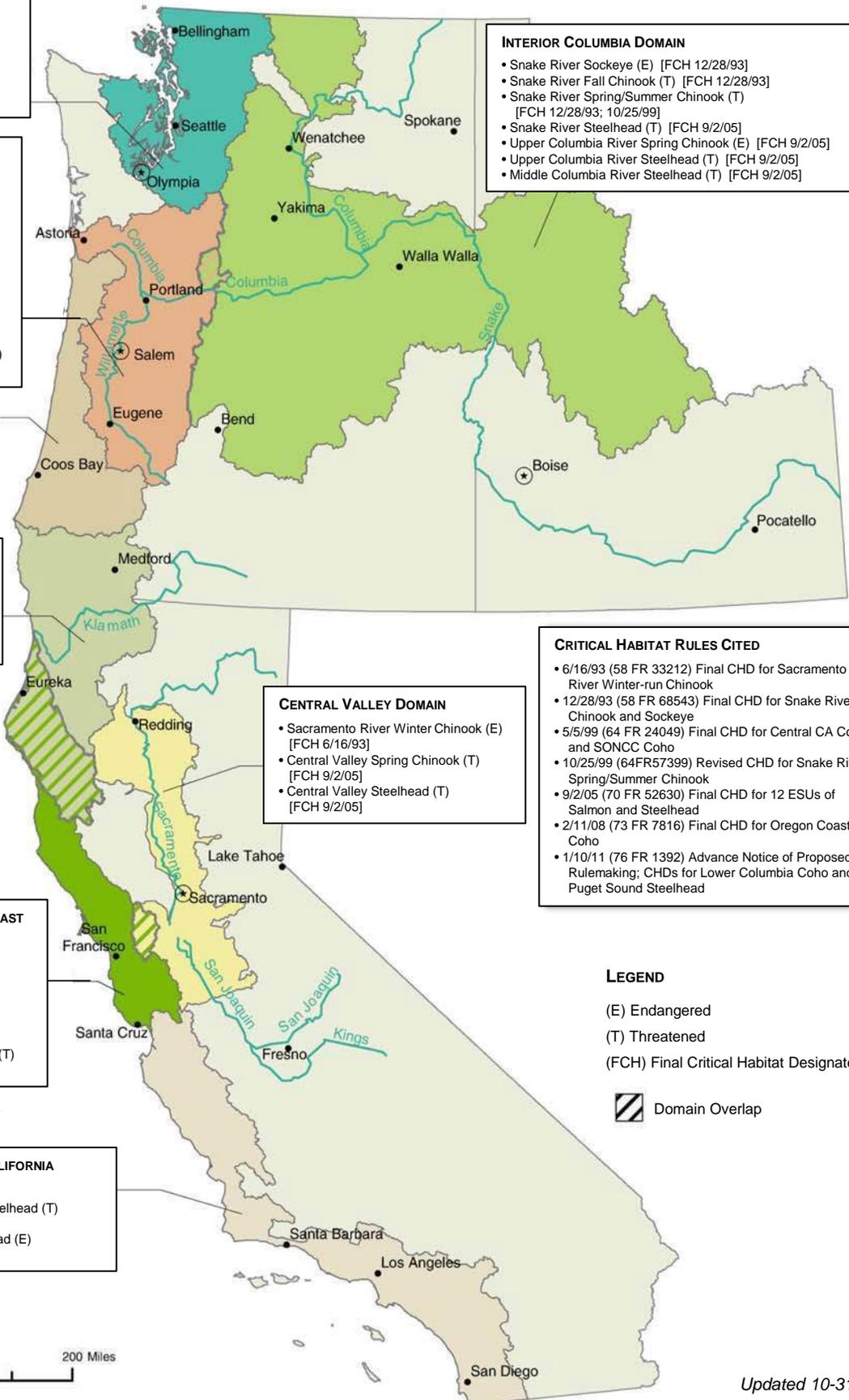
CRITICAL HABITAT RULES CITED

- 6/16/93 (58 FR 33212) Final CHD for Sacramento River Winter-run Chinook
- 12/28/93 (58 FR 68543) Final CHD for Snake River Chinook and Sockeye
- 5/5/99 (64 FR 24049) Final CHD for Central CA Coast and SONCC Coho
- 10/25/99 (64FR57399) Revised CHD for Snake River Spring/Summer Chinook
- 9/2/05 (70 FR 52630) Final CHD for 12 ESUs of Salmon and Steelhead
- 2/11/08 (73 FR 7816) Final CHD for Oregon Coast Coho
- 1/10/11 (76 FR 1392) Advance Notice of Proposed Rulemaking; CHDs for Lower Columbia Coho and Puget Sound Steelhead

LEGEND

- (E) Endangered
- (T) Threatened
- (FCH) Final Critical Habitat Designated

 Domain Overlap





819 SE Morrison Street
Suite 310
Portland, OR 97214
503.274.2010 pho
503.274.2024 fa

ww esas .co

memorandum

date August 20, 2018

to Peter Murphy, PE, Century West Engineering

cc Project file

from Sarah Hartung and Luke Johnson, Environmental Science Associates

subject Airport Improvements at Mulino State Airport; Streaked Horned Lark Presence/Absence Survey

BACKGROUND

This streaked horned lark (*Eremophila alpestris strigata*) (SHLA) presence/absence survey is intended to support the Environmental Assessment for proposed airport improvements at the Mulino State Airport (Airport). These improvement projects will be funded by the Federal Aviation Administration (FAA), and therefore must comply with the requirements of the National Environmental Policy Act.

The SHLA is a federally threatened species protected under the Endangered Species Act (78 FR 61451 61503). The surveys are required for Section 7 of Endangered Species Act consultation with the U.S. Fish and Wildlife Service by FAA. Critical habitat has been designated for this species (78 FR 61505 61589) but is not present in the survey area.

The Oregon Department of Aviation owns and operates the Airport, which is located on 205 acres within the unincorporated community and Hamlet of Mulino, in Clackamas County; south of the Interstate-205 / State Highway 213 junction (Attachment 1, Figure 1). The legal location of the Airport is Section 20, Township 4, Range 2, of the Willamette Meridian. Current land use adjacent to the Airport consists of a mix of transportation corridors, agriculture fields, and commercial and residential development.

The survey area includes the 205-acre Airport property, with a primary focus on herbaceous habitat adjacent to Runway 14-32, four supporting taxiways, and the runway safety areas on either end of the runway (Attachment 1, Figure 1). Formal transects were established at the edges of paved areas (Attachment 1, Figure 1). The hangers and other structures at the Airport were also surveyed.

Potential suitable habitat for SHLA includes open terrain with few to no shrubs, trees, or other tall structures such as buildings (78 FR 61505 61589). This species is known to nest on airport infields, or other sparsely vegetated

areas in the Willamette Valley and near the Puget Sound, Washington, and on dredge-spoils islands in the Lower Columbia River. Preferred nesting sites have sparse vegetation cover – generally no more than 80% –and short clump-grasses and/or forbs (generally less than 13 inches in height) that provide cover for nest sites (78 FR 61505 61589). The nearest breeding population of SHLA is the McMinnville Municipal Airport, approximately 25 miles west of the survey area (Streaked Horned Lark Working Group, 2017). The nearest offsite designated critical habitat is at the Basket Slough National Wildlife Refuge, approximately 35 miles to the southwest of the survey area.

METHODS

Surveys were conducted in accordance with *Survey Protocols and Strategies for Assessing Streaked Horned Lark Site Occupancy Status, Population Abundance, and Trends* (protocol) (Pearson et al. 2016). All areas of potential suitable habitat were surveyed using the protocol.

Three surveys were conducted during the 2018 breeding season on April 26, June 18, and July 2. Surveys were conducted by ESA biologists experienced with SHLA habitat and biology: Sarah Hartung, Ilon Logan, and Luke Johnson. Surveys were conducted in the morning, within one half-hour of sunrise. Conditions for each survey were conducive to bird activity and detection. Surveys consisted of walking each longitudinal transect and stopping at point stations for five-minute intervals while scanning with binoculars (10x42 magnification) and listening for vocalizations.

Using ArcGIS prior to field surveys, longitudinal transects were established at the edges of pavement to avoid the potential for flushing birds that may have been breeding in the adjacent habitat (Attachment 1, Figure 1). The longitudinal transects were walked, with point stations positioned every 575 feet (approximately every 3rd runway light). Areas in close proximity to buildings that are not typically considered potential suitable habitat were also informally examined. Potential suitable habitat was present near Runway 17-35, the six supporting taxiways, and the runway safety areas on either end of the runway. Vegetation in these areas consisted of short, dense grasses and forbs with occasional patches of bare ground or gravel. Grasses and forbs along the runway and taxiways are mowed two to three times during the breeding season. Typical vegetation characteristics of the infield between the taxiway and runway are shown in Attachment 3.

RESULTS AND CONCLUSIONS

No SHLA were detected during any of the three presence/absence surveys performed at Mulino State Airport. Field data sheets from these surveys are provided as an attachment to this memo (Attachment 2).

Breeding SHLA are known to prefer sparsely vegetated areas (less than 80% vegetation cover) of bunched or tufted vegetation that they use as nest cover. Nest sites are typically surrounded by flat, obstacle-free ground that allows unobstructed flight-paths between breeding territories and feeding or socializing patches. These habitat characteristics are often available at airports, particularly where gravel shoulders are located between paved portions of runways and taxiways.

Although the Airport is flat and obstacle free, there are several habitat variables that likely influence the absence of SHLA. The vegetation at the edge of runways and taxiways forms dense and near complete cover. The gravel shoulders do not provide patchy tufts of grasses and forbs like at other airports known to support the species. Additionally, the Airport is in the northeast corner of the Willamette Valley near the foothills of the central Cascades and may be just outside of the current range of SHLA. Numerous species that are competitors or predators of SHLA were observed during all three surveys, including American kestrel (*Falco sparverius*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), western meadowlark (*Sturnella neglecta*), and red-tailed hawk (*Buteo jamaicensis*) (Attachment 2).

LITERATURE CITED

- Pearson, S.F., M. Linders, I. Keren, H. Anderson, R. Moore, G. Slater, and A. Kreager. 2016. Survey Protocols and Strategies for Assessing Streaked Horned Lark Site Occupancy Status, Population Abundance, and Trends. Wildlife Science Division, Washington Department of Fish and Wildlife, Olympia, Washington.
- Streaked Horned Lark Working Group. 2017. Annual Meeting, October 16 & 17, Portland Oregon. Available at: https://cascadiaprairieoak.org/wp-content/uploads/2018/06/2017SHLAWorkingGroupMinutes_Final.pdf

ATTACHMENT 1

Figure 1



Path: U:\GIS\GIS\Projects\16xxxx\0160745.02_Mulino_Airport\03_MXD\Projects\SHL_Memo_Figure1.mxd, Johnson, 8/20/2018

SOURCE: ESA, 2017; Open Street Maps, 2016; RLIS, 2017

160745.02 Mulino State Airport SHLA Survey

Figure 1
2018 SHLA Survey Area
Clackamas County, OR



ATTACHMENT 2

Field Survey Datasheets

Streaked Horned Lark Bird Detection Form (20 March 2015)

Site: MULINO AIRPORT Date (DD-Mon-YYYY): 18-JUN-2018 OBSERVER: S. HARTUNG
 Start time (24 hr): 5:50 AM End time (24hr): 9:05 AM OBSERVER (2): I. LOGAN
 Ave. temp (°F): 55 Ave. wind (mph): <1 - no wind skill trees

Predators/competitors (tally number)	
WEME	
AMCR	
CORA	
CORVID	
NOHA	1 (hunting)
KILL	(3 juveniles)
VESP	
AMKE	
Other	

Data Codes
 Age: A = Adult, YOY = young of the year, U = unknown
 Sex: M = Male, F = Female, U = unknown
Initial Detection (choose only one):
 If audio: If initial detection was audio pick Song or Call
Other Behavior (circle all that apply): S= Song, FD = flight display, MF = male within few meters of female, CO = copulation, NM = nest material, FC = food carry

OTHER SP
 SASP - nesting
 COYE
 RTHA
 WETA
 SWALLOWS
 Bank Barn
 cliff
 SWTH
 BHGR
 LABU
 WIFL
 BRBL?
 AMGO
 RWBB
 COHA

Bird#	Time	Age	Sex	Initial Detctn	If AUDIO Pick 1		Other Behavior Circle all that apply						Notes - If banded record color.
					S	C	S	FD	MF	CO	NM	FC	
1				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	No LARKS
2				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	OBSERVED
3				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
4				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
5				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
6				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
7				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
8				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
9				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
10				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
11				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
12				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
13				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
14				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
15				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	
16				VIS / AUD	S	C	S	FD	MF	CO	NM	FC	

*Record color for left leg first, right leg second; record color top to bottom for each leg.
 Bold is color code: Aqua, Blue, Green, Black, Brown, Lime, Orange, Pink, Red, Silver, Violet, White, Yellow

ATTACHMENT 3

Photos of conditions at Mulino State Airport during SHLA survey on June 18, 2018



Photo 1: Looking southeast from the east edge of taxiway.



Photo 2: Looking west from the east edge of taxiway.



819 SE Morrison Street
Suite 310
Portland, OR 97214
503.274.2010 pho
503.274.2024 fa

ww esas .co

memorandum

date August 20, 2018

to Peter Murphy, PE, Century West Engineering

cc Project file

from Sarah Hartung and Luke Johnson, Environmental Science Associates

subject Airport Improvements at Mulino State Airport; Streaked Horned Lark Presence/Absence Survey

BACKGROUND

This streaked horned lark (*Eremophila alpestris strigata*) (SHLA) presence/absence survey is intended to support the Environmental Assessment for proposed airport improvements at the Mulino State Airport (Airport). These improvement projects will be funded by the Federal Aviation Administration (FAA), and therefore must comply with the requirements of the National Environmental Policy Act.

The SHLA is a federally threatened species protected under the Endangered Species Act (78 FR 61451 61503). The surveys are required for Section 7 of Endangered Species Act consultation with the U.S. Fish and Wildlife Service by FAA. Critical habitat has been designated for this species (78 FR 61505 61589) but is not present in the survey area.

The Oregon Department of Aviation owns and operates the Airport, which is located on 205 acres within the unincorporated community and Hamlet of Mulino, in Clackamas County; south of the Interstate-205 / State Highway 213 junction (Attachment 1, Figure 1). The legal location of the Airport is Section 20, Township 4, Range 2, of the Willamette Meridian. Current land use adjacent to the Airport consists of a mix of transportation corridors, agriculture fields, and commercial and residential development.

The survey area includes the 205-acre Airport property, with a primary focus on herbaceous habitat adjacent to Runway 14-32, four supporting taxiways, and the runway safety areas on either end of the runway (Attachment 1, Figure 1). Formal transects were established at the edges of paved areas (Attachment 1, Figure 1). The hangers and other structures at the Airport were also surveyed.

Potential suitable habitat for SHLA includes open terrain with few to no shrubs, trees, or other tall structures such as buildings (78 FR 61505 61589). This species is known to nest on airport infields, or other sparsely vegetated

areas in the Willamette Valley and near the Puget Sound, Washington, and on dredge-spoils islands in the Lower Columbia River. Preferred nesting sites have sparse vegetation cover – generally no more than 80% –and short clump-grasses and/or forbs (generally less than 13 inches in height) that provide cover for nest sites (78 FR 61505 61589). The nearest breeding population of SHLA is the McMinnville Municipal Airport, approximately 25 miles west of the survey area (Streaked Horned Lark Working Group, 2017). The nearest offsite designated critical habitat is at the Basket Slough National Wildlife Refuge, approximately 35 miles to the southwest of the survey area.

METHODS

Surveys were conducted in accordance with *Survey Protocols and Strategies for Assessing Streaked Horned Lark Site Occupancy Status, Population Abundance, and Trends* (protocol) (Pearson et al. 2016). All areas of potential suitable habitat were surveyed using the protocol.

Three surveys were conducted during the 2018 breeding season on April 26, June 18, and July 2. Surveys were conducted by ESA biologists experienced with SHLA habitat and biology: Sarah Hartung, Ilon Logan, and Luke Johnson. Surveys were conducted in the morning, within one half-hour of sunrise. Conditions for each survey were conducive to bird activity and detection. Surveys consisted of walking each longitudinal transect and stopping at point stations for five-minute intervals while scanning with binoculars (10x42 magnification) and listening for vocalizations.

Using ArcGIS prior to field surveys, longitudinal transects were established at the edges of pavement to avoid the potential for flushing birds that may have been breeding in the adjacent habitat (Attachment 1, Figure 1). The longitudinal transects were walked, with point stations positioned every 575 feet (approximately every 3rd runway light). Areas in close proximity to buildings that are not typically considered potential suitable habitat were also informally examined. Potential suitable habitat was present near Runway 17-35, the six supporting taxiways, and the runway safety areas on either end of the runway. Vegetation in these areas consisted of short, dense grasses and forbs with occasional patches of bare ground or gravel. Grasses and forbs along the runway and taxiways are mowed two to three times during the breeding season. Typical vegetation characteristics of the infield between the taxiway and runway are shown in Attachment 3.

RESULTS AND CONCLUSIONS

No SHLA were detected during any of the three presence/absence surveys performed at Mulino State Airport. Field data sheets from these surveys are provided as an attachment to this memo (Attachment 2).

Breeding SHLA are known to prefer sparsely vegetated areas (less than 80% vegetation cover) of bunched or tufted vegetation that they use as nest cover. Nest sites are typically surrounded by flat, obstacle-free ground that allows unobstructed flight-paths between breeding territories and feeding or socializing patches. These habitat characteristics are often available at airports, particularly where gravel shoulders are located between paved portions of runways and taxiways.

Although the Airport is flat and obstacle free, there are several habitat variables that likely influence the absence of SHLA. The vegetation at the edge of runways and taxiways forms dense and near complete cover. The gravel shoulders do not provide patchy tufts of grasses and forbs like at other airports known to support the species. Additionally, the Airport is in the northeast corner of the Willamette Valley near the foothills of the central Cascades and may be just outside of the current range of SHLA. Numerous species that are competitors or predators of SHLA were observed during all three surveys, including American kestrel (*Falco sparverius*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), western meadowlark (*Sturnella neglecta*), and red-tailed hawk (*Buteo jamaicensis*) (Attachment 2).

LITERATURE CITED

- Pearson, S.F., M. Linders, I. Keren, H. Anderson, R. Moore, G. Slater, and A. Kreager. 2016. Survey Protocols and Strategies for Assessing Streaked Horned Lark Site Occupancy Status, Population Abundance, and Trends. Wildlife Science Division, Washington Department of Fish and Wildlife, Olympia, Washington.
- Streaked Horned Lark Working Group. 2017. Annual Meeting, October 16 & 17, Portland Oregon. Available at: https://cascadiaprairieoak.org/wp-content/uploads/2018/06/2017SHLAWorkingGroupMinutes_Final.pdf

ATTACHMENT 1

Figure 1



Path: U:\GIS\GIS\Projects\16xxxx\0160745.02_Mulino_Airport\03_MXD\Projects\SHL_Memo_Figure1.mxd, Johnson, 8/20/2018

SOURCE: ESA, 2017; Open Street Maps, 2016; RLIS, 2017

160745.02 Mulino State Airport SHLA Survey

Figure 1
2018 SHLA Survey Area
Clackamas County, OR



ATTACHMENT 2

Field Survey Datasheets

Streaked Horned Lark Bird Detection Form (20 March 2015)

SH 14

Bird #	Time	Age	Sex	Initial Detcn	If AUDIO S	Other Behavior					Notes - If banded record color
						FD	MF	CO	NM	FC	

SH 15

SH 16

SH 17

SH 18

SH 19

SH 20

SH 21

SH 22

SH 23

SH 24

SH 25

SH 26

SH 27

SH 28

SH 29

SH 30

||

f

Streaked Horned Lark Bird Detection Form (20 March 2015)

IEL 14

Bird #	Time	Age	Sex	Initial Detcn	If AUDIO S	Other Behavior					Notes - If banded record color
						FD	MF	CO	NM	FC	

IEL 15

IEL 16

IEL 17

IEL 18

IEL 19

IEL 20

IEL 21

IEL 22

IEL 23

IEL 24

IEL 25

IEL 26

IEL 27

IEL 28

IEL 29

IEL 30

Streaked Horned Lark Bird Detection Form (20 March 2015)

SH 14

Bird #	Time	Age	Sex	Initial Detcn	If AUDIO S	Other Behavior					Notes - If banded record color
						FD	MF	CO	NM	FC	

SH 15

SH 16

SH 17

SH 18

SH 19

SH 20

SH 21

SH 22

SH 23

SH 24

SH 25

SH 26

SH 27

SH 28

SH 29

SH 30

ATTACHMENT 3

Photos of conditions at Mulino State Airport during SHLA survey on June 18, 2018



Photo 1: Looking southeast from the east edge of taxiway.



Photo 2: Looking west from the east edge of taxiway.

APPENDIX C

COMPATIBLE LAND USE

LEGEND

- ZONING BOUNDARY
- RUNWAY PROTECTION ZONE (EXISTING)
- RUNWAY PROTECTION ZONE (FUTURE)
- APPROACH SURFACE (EXISTING)
- APPROACH SURFACE (FUTURE)
- AIRPORT PROPERTY LINE (EXISTING)
- AIRPORT PROPERTY LINE (FUTURE)
- FLIGHT TRACKS
- SKYDIVE DROP ZONE

CLACKAMAS COUNTY ZONING

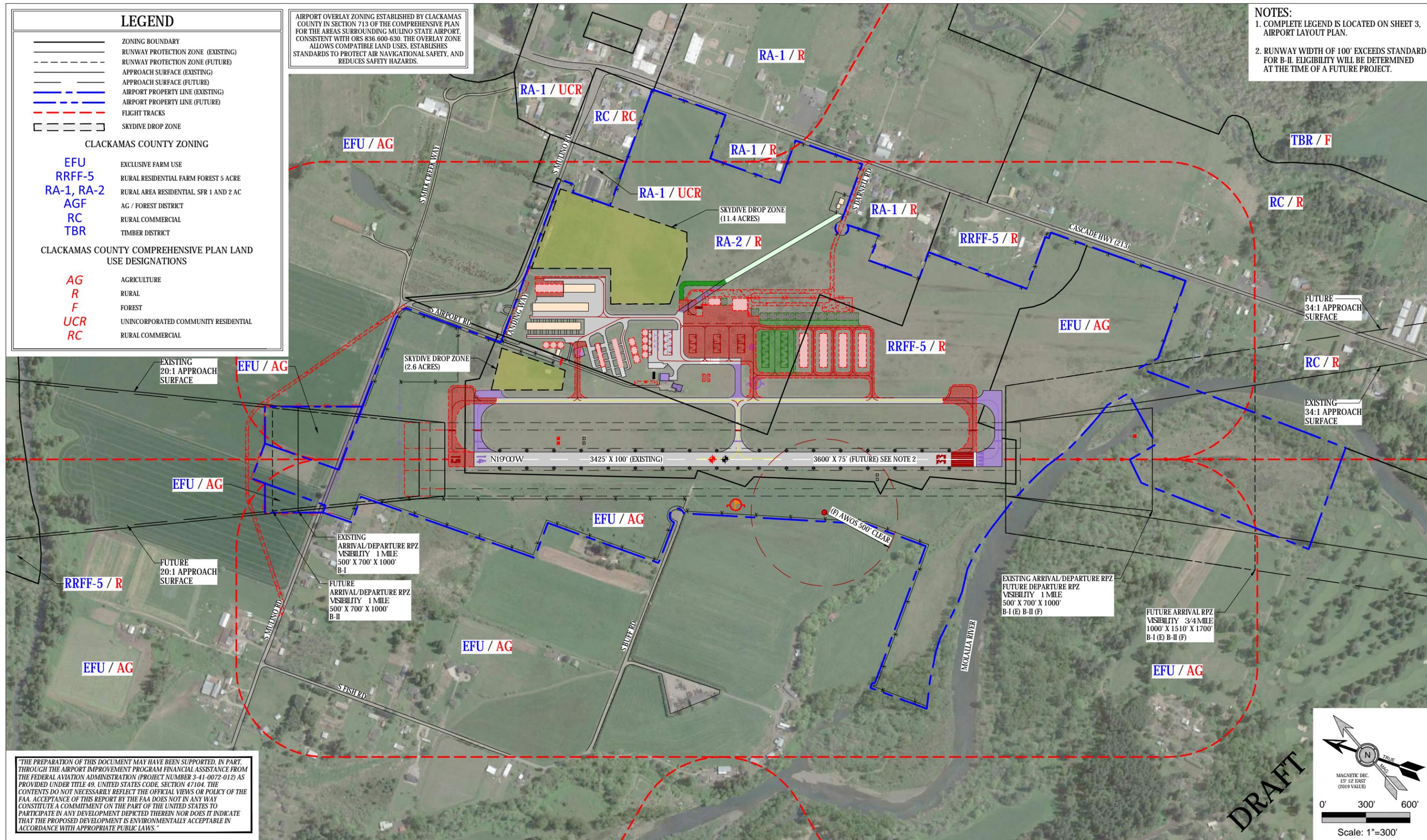
- EFU** EXCLUSIVE FARM USE
- RRFF-5** RURAL RESIDENTIAL FARM FOREST 5 ACRE
- RA-1, RA-2** RURAL AREA RESIDENTIAL, SFR 1 AND 2 AC
- AGF** AG / FOREST DISTRICT
- RC** RURAL COMMERCIAL
- TBR** TIMBER DISTRICT

CLACKAMAS COUNTY COMPREHENSIVE PLAN LAND USE DESIGNATIONS

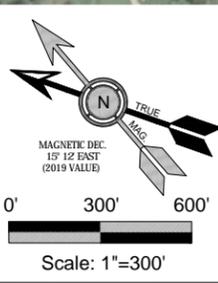
- AG** AGRICULTURE
- R** RURAL
- F** FOREST
- UCR** UNINCORPORATED COMMUNITY RESIDENTIAL
- RC** RURAL COMMERCIAL

AIRPORT OVERLAY ZONING ESTABLISHED BY CLACKAMAS COUNTY IN SECTION 713 OF THE COMPREHENSIVE PLAN FOR THE AREAS SURROUNDING MULINO STATE AIRPORT, CONSISTENT WITH ORS 836.600-630. THE OVERLAY ZONE ALLOWS COMPATIBLE LAND USES, ESTABLISHES STANDARDS TO PROTECT AIR NAVIGATIONAL SAFETY, AND REDUCES SAFETY HAZARDS.

- NOTES:**
1. COMPLETE LEGEND IS LOCATED ON SHEET 3, AIRPORT LAYOUT PLAN.
 2. RUNWAY WIDTH OF 100' EXCEEDS STANDARD FOR B-II. ELIGIBILITY WILL BE DETERMINED AT THE TIME OF A FUTURE PROJECT.



"THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION (PROJECT NUMBER 3-41-0072-012) AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY 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 TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."



NO.	DATE	BY	APPR	REVISIONS

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL
 APPROVAL DATE: _____
 SIGNATURE _____

OREGON DEPARTMENT OF AVIATION APPROVAL
 APPROVAL DATE: _____
 SIGNATURE _____

CENTURY WEST ENGINEERING
 BEND OFFICE: 1020 SW EMKAY DRIVE, #100, BEND, OR 97702, 541.322.8962 OFFICE, 541.382.2423 FAX
 DESIGNED BY: DM, DRAWN BY: JLS, CHECKED BY: WMR, SCALE: AS SHOWN
 DATE: APRIL 2019, PROJECT NO: 4009705501

MULINO STATE AIRPORT
OFF-AIRPORT LAND USE PLAN

FIGURE NO. -
 SHEET NO. 8 OF 10

713 PUBLIC USE AIRPORT AND SAFETY OVERLAY ZONES

713.01 PURPOSE

Section 713 is adopted to implement Oregon Revised Statutes 836.600 through 836.630 and policies of the Comprehensive Plan as they relate to public use airports. When applied, it provides for their continued operation and vitality consistent with state law by allowing certain compatible airport related commercial and recreational uses. It also provides for safety standards to promote air navigational safety at such public use airports and to reduce the potential for safety hazards for property and for persons living, working, or recreating on lands near such airports.

713.02 APPLICATION

This special use zoning district may be applied to publicly owned airports that are shown in the records of the Oregon Department of Aviation (ODA) on December 31, 1994. It also may be applied to those privately owned, public use airports identified pursuant to Oregon Revised Statutes (ORS) 836.610(3) by the ODA as providing important links in air traffic in Oregon, providing essential safety or emergency services, or are of economic importance to the County.

The boundaries of this special use district are coterminous with airport boundaries as described in Oregon Administrative Rules (OAR) 660-013-0040. The boundaries of safety overlay zones radiate from points at the ends of the airport's primary surface as described in OAR 660-013-0070(1)(a) and Exhibits 1 and 4 that accompany that rule. The definitions in Subsection 713.03 are consistent with ORS Chapter 836, OAR 660-013, and Exhibits 1 and 4 of that rule.

If an airport that had this special use zoning district applied is removed from the State's list of airports in a manner described in ORS 836.610, the application of this special use zoning district is automatically terminated.

713.03 DEFINITIONS

- A. Aircraft. Means airplanes and helicopters, but not hot air balloons or ultralights.
- B. Airport. The strip of land used for taking off and landing aircraft, together with all adjacent land used in connection with the aircraft landing or taking off from the strip of land, including but not limited to land used for existing airport uses.
- C. Airport Elevation. The highest point of an airport's usable runway, measured in feet above mean sea level.
- D. Airport Imaginary Surfaces. Imaginary areas in space and on the ground that are established in relation to the airport and its runways. Imaginary surfaces are defined by the primary surface, runway protection zone, approach surface, horizontal surface, conical surface and transitional surface.

- E. Airport Noise Impact Boundary. Areas located within 1,500 feet of an airport runway or within established noise contour boundaries exceeding 55 Ldn.
- F. Airport Sponsor. The owner, manager, or other person or entity designated to represent the interests of an airport.
- G. Approach Surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface.
 - 1. The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:
 - a. 1,250 feet for a utility runway having only visual approaches;
 - b. 1,500 feet for a runway other than a utility runway with only visual approaches;
 - c. 2,000 feet for a runway with a non-precision instrument approach;
 - d. 3,500 feet for a non-precision instrument runway other than utility, having visibility minimums greater than three-fourths statute mile;
 - e. 4,000 feet for a non-precision instrument runway, other than utility, having a non-precision approach with visibility minimums as low as three-fourths statute mile; and
 - f. 16,000 feet for precision instrument runways.
 - 2. The approach surface extends for a horizontal distance of:
 - a. 5,000 feet at a slope of 20 feet outward for each foot upward for all utility and visual runways;
 - b. 10,000 feet at a slope of 34 feet outward for each foot upward for all non-precision instrument runways, other than utility; and
 - c. 10,000 feet at a slope of 50 feet outward for each one foot upward, with an additional 40,000 feet at a slope of 40 feet outward for each one foot upward, for precision instrument runways.
 - 3. The outer width of an approach surface will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.
- H. Conical Surface. A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to one for a horizontal distance of 4,000 feet.

- I. Hazard. All hazards within and around airports shall be as determined by the Oregon Department of Aviation or Federal Aviation Administration (FAA).
- J. Heliports. A heliport is an area of land, water, or structure designated for the landing and take-off of helicopters or other rotorcraft. The heliport overlay zone applies the following imaginary surfaces. The heliport approach surfaces begin at each end of the heliport primary surface and have the same width as the primary surface. They extend outward and upward for a horizontal distance of 4,000 feet where their width is 500 feet. The slope of the approach surfaces is eight to one for civilian heliports and 10 to one for military heliports. The heliport primary surface coincides in size and shape with the designated takeoff and landing area of a heliport. The heliport primary surface is a horizontal plane at the established heliport elevation. The heliport transitional surfaces extend outward and upward from the lateral boundaries of the heliport primary surface and from the approach surfaces at a slope of two to one for a distance of 250 feet measured horizontally from the centerline of the primary and approach surfaces.
- K. Horizontal Surface. A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:
1. 5,000 feet for all runways designated as utility or visual.
 2. 10,000 feet for all other runways.
 3. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000 foot arc is encompassed by tangents connecting two adjacent 10,000 foot arcs, the 5,000 foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.
- L. Non-Precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach has been approved, or planned, and for which no precision approach facilities are planned or indicated on an FAA-approved airport layout plan or other FAA planning document.
- M. Other than Utility Runway. A runway that is constructed for and intended to be used by turbine-driven aircraft or by propeller-driven aircraft exceeding 12,500 pounds gross weight.

- N. Precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities that provide both horizontal and vertical guidance, such as an Instrument Landing System (ILS) or Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA-approved airport layout plan or other FAA planning document.
- O. Primary Surface. A surface longitudinally centered on a runway. When a runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway. When a runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is:
1. 250 feet for utility runways having only visual approaches;
 2. 500 feet for utility runways having non-precision instrument approaches;
 3. For other than utility runways the width is:
 - a. 500 feet for visual runways having only visual approaches;
 - b. 500 feet for non-precision instrument runways having visibility minimums greater than three-fourths statute mile;
 - c. 1,000 feet for a non-precision instrument runway having a non-precision instrument approach with a visibility minimum as low as three-fourths statute mile, and for precision instrument runways.
- P. Public Assembly Facility. A permanent or temporary structure or facility, place or activity where concentrations of people gather in reasonably close quarters for purposes such as deliberation, education, worship, shopping, employment, entertainment, recreation, sporting events, or similar activities. Public assembly facilities include, but are not limited to, schools, places of worship, conference or convention facilities, employment and shopping centers, arenas, athletic fields, stadiums, clubhouses, museums, and similar facilities and places, but do not include parks, golf courses or similar facilities unless used in a manner where people are concentrated in reasonably close quarters. Public assembly facilities also do not include air shows, structures or uses approved by the FAA in an adopted airport master plan, or places where people congregate for short periods of time such as parking lots or bus stops.
- Q. Runway. A defined area on an airport prepared for landing and takeoff of aircraft along its length.

- R. Runway Protection Zone (RPZ). An area off the runway end used to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The inner width of the RPZ is the same as the width of the primary surface. The outer width of the RPZ is a function of the type of aircraft and specified approach visibility minimum associated with the runway end. The RPZ extends from each end of the primary surface for a horizontal distance of:
1. 1,000 feet for utility runways.
 2. 1,700 feet for other than utility runways having non-precision instrument approaches.
 3. 2,500 feet for precision instrument runways.
- S. Structure. Any constructed or erected object which requires location on the ground or is attached to something located on the ground. Structures include but are not limited to buildings, decks, fences, signs, towers, cranes, flagpoles, antennas, smokestacks, earthen formations and overhead transmission lines. Structures do not include paved areas.
- T. Transitional Surface. Those surfaces that extend upward and outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven feet horizontally for each foot vertically from the sides of the primary and approach surfaces to the point of intersection with the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at a 90 degree angle to the extended runway centerline.
- U. Utility Runway. A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight or less.
- V. Visual Runway. A runway intended solely for the operation of aircraft using visual approach procedures, where no straight-in instrument approach procedures or instrument designations have been approved or planned, or are indicated on an FAA-approved airport layout plan or any other FAA planning document.
- W. Water Impoundment. Includes wastewater treatment settling ponds, surface mining ponds, detention and retention ponds, artificial lakes and ponds, and similar water features. A new water impoundment includes an expansion of an existing water impoundment except where such expansion was previously authorized by land use action approved prior to the effective date of Section 713.

713.04 USES PERMITTED OUTRIGHT

The following uses and activities are permitted outright in the Public Use Airport special use zoning district:

CLACKAMAS COUNTY ZONING AND DEVELOPMENT ORDINANCE

- A. Customary and usual aviation-related activities, including but not limited to takeoffs and landings; aircraft hangars and tie-downs; construction and maintenance of airport facilities; fixed-base operator facilities; one single-family dwelling in conjunction with an airport (if there is not one there already) for an airport manager, caretaker, or security officer; and other activities incidental to the normal operation of an airport. Except as provided in this ordinance, "customary and usual aviation-related activities" do not include residential, commercial, industrial, manufacturing, and other uses.
- B. Air passenger and air freight services and facilities, at levels consistent with the classification and needs identified in the Oregon Department of Aviation Airport System Plan.
- C. Emergency medical flight services, including activities, aircraft, accessory structures, and other facilities necessary to support emergency transportation for medical purposes. Emergency medical flight services do not include hospitals, medical offices, medical labs, medical equipment sales, and other similar uses.
- D. Law enforcement, military, and firefighting activities, including aircraft and ground-based activities, facilities and accessory structures necessary to support federal, state or local law enforcement or land management agencies engaged in law enforcement or firefighting activities. Law enforcement and firefighting activities include transport of personnel, aerial observation, and transport of equipment, water, fire retardant and supplies.
- E. Search and rescue operations, including aircraft and ground based activities that support the orderly and efficient conduct of search or rescue related activities.
- F. Flight instruction, including activities, facilities, and accessory structures located at airport sites that provide education and training directly related to aeronautical activities. Flight instruction includes ground training and aeronautic skills training, but does not include schools for flight attendants, ticket agents or similar personnel.
- G. Aircraft service, maintenance and training, including activities, facilities and accessory structures provided to teach aircraft service and maintenance skills and to maintain, service, refuel or repair aircraft and aircraft components. "Aircraft service, maintenance and training" includes the construction and assembly of aircraft and aircraft components for personal use, but does not include activities, structures or facilities for the manufacturing of aircraft, aircraft components or other aircraft-related products for sale to the public.
- H. Aircraft rental, including activities, facilities and accessory structures that support the provision of aircraft for rent or lease to the public.

- I. Aircraft sales and the sale of aeronautic equipment and supplies, including activities, facilities and accessory structures for the storage, display, demonstration and sales of aircraft and aeronautic equipment and supplies to the public but not including activities, facilities or structures for the manufacturing of aircraft, aircraft components or other aircraft-related products for sale to the public.
- J. Crop dusting activities, including activities, facilities and structures accessory to crop dusting operations. Crop dusting activities include, but are not limited to, aerial application of chemicals, seed, fertilizer, defoliant and other chemicals or products used in a commercial agricultural, forestry or rangeland management setting.
- K. Agricultural and Forestry Activities, including activities, facilities and accessory structures that qualify as a "farm use" as defined in ORS 215.203 or "farming practice" as defined in ORS 30.930.
- L. Aeronautic recreational and sporting activities, including activities, facilities and accessory structures at airports that support recreational usage of aircraft and sporting activities that require the use of aircraft or other devices used and intended for use in flight. Aeronautic recreation and sporting activities authorized under this paragraph include, but are not limited to, fly-ins; glider flights; hot air ballooning; ultralight aircraft flights; displays of aircraft; aeronautic flight skills contests; and gyrocopter flights, but do not include flights carrying parachutists or parachute drops (including all forms of skydiving).
- M. Flights carrying parachutists, and parachute drops (including all forms of skydiving) onto an airport, but only upon demonstration that the parachutist business has secured approval to use a drop zone that is at least 10 contiguous acres in size. The configuration of the drop zone shall roughly approximate a square or a circle and may contain structures, trees, or other obstacles only if the remainder of the drop zone provides adequate areas for parachutists to land safely.
- N. Uses not identified in Subsection 713.04, but permitted in the underlying zoning district, may be permitted if they do not conflict with permitted uses in Subsection 713.04, safety, or the continued operation and vitality of the airport.

713.05 USES PERMITTED SUBJECT TO REVIEW

Uses not identified in Subsection 713.04 and contained in an Airport Expansion Plan approved by the County as part of the Comprehensive Plan shall require review as a Type III application pursuant to Section 1307 and shall be subject to the following standards and criteria:

- A. The use is, or will be, supported by adequate types and levels of public facilities, services, and transportation systems authorized by applicable statewide land use planning goals;

- B. The use does not seriously interfere with existing land uses in areas surrounding the airport; and
- C. For airports where the underlying zoning district is EFU, the use shall comply with the standards described in ORS 215.296.
- D. The development standards in Section 1000 shall be applied appropriate to the type of use permitted.
- E. An applicant may demonstrate that these standards will be satisfied through the imposition of clear and objective conditions.

713.06 IMAGINARY SURFACE AND NOISE IMPACT BOUNDARY DELINEATION

The airport elevation, the airport noise impact boundary, and the location and dimensions of the runway, primary surface, runway protection zone, approach surface, horizontal surface, conical surface and transitional surface, direct and secondary impact boundaries shall be delineated for each public use airport where this district is applied and shall be made part of the zoning maps adopted pursuant to Subsection 103.02. All lands, waters, and airspace, or portions thereof, that are located within these boundaries or surfaces shall be subject to the requirements of this zone.

713.07 LAND USE COMPATIBILITY REQUIREMENTS

Applications for land use or building permits for properties within the boundaries of these safety overlay zones shall comply with the requirements of this Section as provided herein.

713.08 WATER IMPOUNDMENTS WITHIN SAFETY OVERLAY ZONES

Any use or activity that would result in the establishment or expansion of a water impoundment shall comply with the requirements of this section.

713.09 NONCONFORMING USES

Section 713 shall not be construed to require the removal, lowering, or alteration of any existing structure or vegetation not conforming to Section 713. Section 713 shall not require any change in the construction, or alteration of the intended use of any structure, the construction or alteration of which was begun or completed prior to the effective date of this safety overlay zone.

[Amended by Ord. ZDO-248, 10/13/14; Amended by Ord. ZDO-268, 10/2/18]

APPENDIX D

CULTURAL RESOURCES

