

Chapter Five: Airport Development Alternatives



La Grande / Union County Airport

Airport Master Plan Update

FINAL – March 2018

Introduction

The preceding chapter identified deficiencies of the La Grande / Union County Airport (Airport) with respect to existing and anticipated aeronautical demand, which are consistent with current Federal Aviation Administration (FAA) design standards and State of Oregon development guidelines. This chapter presents several development alternatives that focus on meeting the Airport's facility needs for the long-term future (2034 and beyond).

While the development alternatives focus on meeting aeronautical demand projected through 2034, it is prudent to consider the ultimate potential of airport property. By doing so, the planning documents remain flexible and functional, considering the possibility that unforeseen events or increases in user demand occur. Consequently, the alternatives highlight possible airfield and landside uses that could meet facility needs project to occur after the current planning period.

The alternatives will be evaluated using the Master Plan Goals and Issues identified in Chapter 1, which were produced with Planning Advisory Committee (PAC) input, along with established FAA standards and policies.

Summary of Facility Requirements

The following section summarizes the development recommendations given in Chapter 4, *Facility Requirements*, needed to accommodate forecasted aeronautical activity.

Airfield Requirements

- If the Airport upgrades to an instrument approach with lower minimums, improvements would be required for several design standards, including runway protection zone (RPZ), runway safety area (RSA), object free area (OFA), and possibly others depending on the approach.
 - It is recommended that the County request an approach feasibility review from the FAA, once the ongoing Airports Geographic Information System (AGIS) study is completed to determine what approaches are attainable at the Airport. For reference, all three approach levels are shown in the alternatives to highlight the various on-airport impacts.
 - Depending on instrumentation, pavement markings may need to be upgraded, as well as implementation of an approach lighting system.
- Runway 12-30 width (100 feet) does not meet the design standard (150 feet). A Modification to Standards will be requested by the County to the FAA. If not approved, an alternative should reflect the increased runway width.
- Runway 16-34 width should be increased to 75 feet for Runway Design Code (RDC) B-II.
- The RPZ for Runway 16-34 should be increased as a result of the RDC upgrade.
- Taxiway A is located farther away from Runway 16-34 than necessary. An alternative should show relocating the taxiway to the standard distance, which would allow additional development along the flightline. Other alternatives should show extension of the taxiway to a full parallel, with direct access to Runway 16.

- A new parallel taxiway on the northeast side of Runway 12-30 would improve circulation for aircraft taxiing on Taxiway C during periods of increased activity. Additionally, once the Airport has fully developed the western flightline, it could expand to the area northeast of the new taxiway¹.
- A blast pad off the end of Runway 30 would prevent erosion due to jet and large turboprop activity.
- Install guidance and location signage on the taxiway system.
- Relocate the Airport's rotating beacon.
- Install a visual approach aid Precision Approach Path Indicator (PAPI) on Runway 34.
- Install lights on Runway 16-34, as well as edge lighting on taxiways and taxilanes.
- Install runway end identifier lights (REILs) on Runway ends 12, 16, and 34.
- Identify an area for helicopter operations that is segregated from fixed wing operations.
- Place supplemental wind indicators near the runway ends.
- Upgrade the existing Automated Weather Observing System (AWOS) to an AWOS-III or Automated Surface Observing System (ASOS) to provide enhanced precipitation reporting.

Landside Requirements

- Construct four additional T-hangar units and nine conventional hangars, which may include redevelopment of existing hangar facilities, which are beyond their useful life.
- Expand and/or construct a tiedown apron to incorporate at least three additional tiedown locations.
- Construct an apron area for the exclusive use of cargo aircraft.
- Construct aircraft maintenance facility and/or aircraft storage hangar.
- Additional vehicle parking will be needed, as other development occurs.
- Additional parking, and crew support areas, for helicopter operations should be constructed.

Support Facility Requirements

- Upgrade existing fencing to chainlink security fence, for safety, security, and wildlife abatement. Many areas are not fenced along Pierce Road – these areas should be fenced and gates installed, as appropriate.
- Utilities should be upgraded, particularly water and septic, as development occurs.

Development Alternatives

Four alternatives for the long-term development of the Airport are presented in this chapter. The alternatives are described below:

- The No Build Alternative assumes maintenance of existing facilities and no expansion of airfield or landside facilities.

¹ Actual development alternatives for that area are not defined, as it is outside of the 20 year forecast period.

- Development Alternative 1 includes relocation of Taxiway A, widening of Runway 16-34, redevelopment of existing facilities, and improved instrument approach with lower minima for Runway 12-30. This alternative assumes continued approval of the existing Modification to FAA Design Standards for Runway 12-30 width.
- Development Alternative 2 incorporates the addition of a full parallel taxiway north of Runway 12-30, improved instrument approach minima for all runway ends, widening of Runway 16-34, redevelopment of the existing facilities along Pierce Road. It also assumes continued approval of the existing Modification to Standards for Runway 12-30 width.
- Development Alternative 3 shows Runway 12-30 widened to 150 feet to meet RDC C-IV and C-III design standards. Also included is helicopter operations north of Runway 12-30, improved instrument approach minima to Runway 16-34, and redevelopment of existing facilities located along the flightline.

In addition to these components, the three development alternatives depict additional conventional hangar and T-hangar development, tiedown apron expansions, and expanded areas for helicopter operations. Development, with one exception, is contained to County-owned lands.

Following is a discussion of each alternative.

No Build Alternative

Exhibit 5A illustrates the No Build Alternative, which assumes maintenance of existing facilities and no expansion of airfield or landside facilities. By showing the consequence of not developing the Airport, the County can assess the advantage and disadvantages of development alternatives.

In Chapter 3, the *Aeronautical Activity Forecasts* that the Airport is expected to experience increased demand. If no development were to occur, the Airport would not be able to support forecasted aeronautical uses and demand, nor would it optimize the Airport's potential.

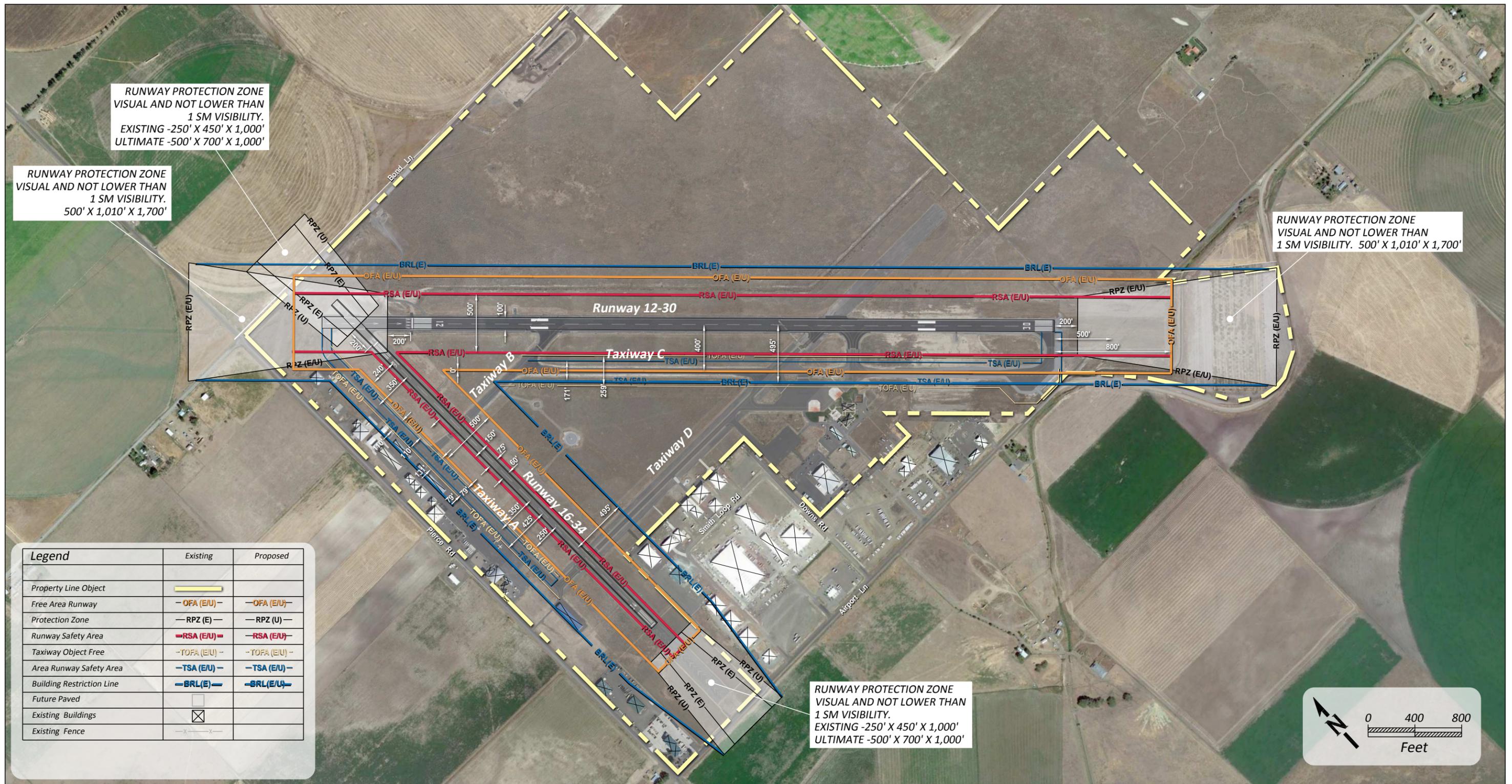
While the No Build Alternative is essentially a do nothing option, it does have a negative financial impact. Revenue producing development would not be undertaken reducing the ability of the airport to maintain existing pavements and facilities.

Development Alternative 1

Development Alternative 1 is shown on **Exhibit 5B**. Alternative 1 assumes continued FAA approval of the existing Modification to Standards for Runway 12-30 width, and meets all other FAA design standards. Generally, all development is concentrated near the existing flightline on the west side of the Airport.

Alternative 1 allows for greater development along the flightline, as a result of relocating the Taxiway A centerline and runway centerline separation to the current standard of 240 feet, rather than the existing 350 feet. This would allow expansion of the tiedown area by approximately 125 feet. Additionally, Taxiway A would be constructed as a full parallel taxiway, which eliminates the need to back taxi for departure improving safety and making ground operations more efficient.

With regards to instrumentation, the approach minima for Runway 16-34 does not change, although the RPZ dimensions increase as a result of RDC B-II designation. Runway 12-30 shows implementation of the



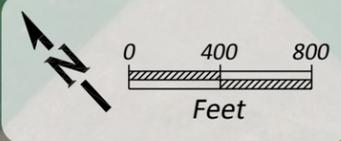
RUNWAY PROTECTION ZONE
VISUAL AND NOT LOWER THAN
1 SM VISIBILITY.
EXISTING -250' X 450' X 1,000'
ULTIMATE -500' X 700' X 1,000'

RUNWAY PROTECTION ZONE
VISUAL AND NOT LOWER THAN
1 SM VISIBILITY.
500' X 1,010' X 1,700'

RUNWAY PROTECTION ZONE
VISUAL AND NOT LOWER THAN
1 SM VISIBILITY. 500' X 1,010' X 1,700'

RUNWAY PROTECTION ZONE
VISUAL AND NOT LOWER THAN
1 SM VISIBILITY.
EXISTING -250' X 450' X 1,000'
ULTIMATE -500' X 700' X 1,000'

Legend	Existing	Proposed
Property Line Object		
Free Area Runway	-OFA (E/U)-	-OFA (E/U)-
Protection Zone	-RPZ (E)-	-RPZ (U)-
Runway Safety Area	-RSA (E/U)-	-RSA (E/U)-
Taxiway Object Free	-TOFA (E/U)-	-TOFA (E/U)-
Area Runway Safety Area	-TSA (E/U)-	-TSA (E/U)-
Building Restriction Line	-BRL (E)-	-BRL (E/U)-
Future Paved		
Existing Buildings		
Existing Fence		

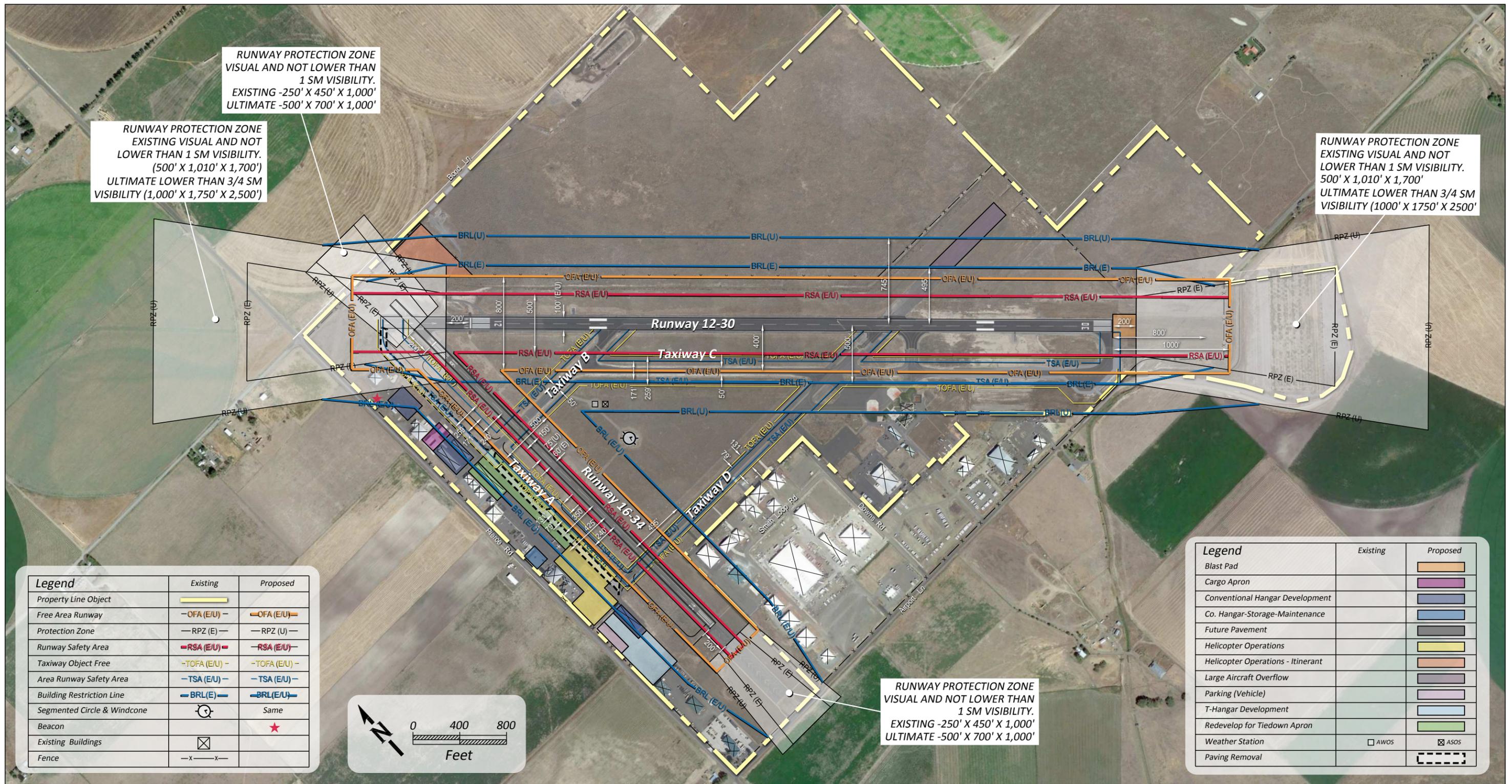


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No Build
Alternative
EXHIBIT 5A



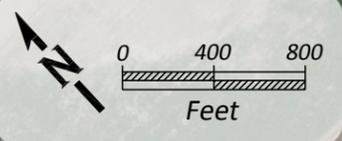
RUNWAY PROTECTION ZONE
VISUAL AND NOT LOWER THAN
1 SM VISIBILITY.
EXISTING -250' X 450' X 1,000'
ULTIMATE -500' X 700' X 1,000'

RUNWAY PROTECTION ZONE
EXISTING VISUAL AND NOT
LOWER THAN 1 SM VISIBILITY.
(500' X 1,010' X 1,700')
ULTIMATE LOWER THAN 3/4 SM
VISIBILITY (1,000' X 1,750' X 2,500')

RUNWAY PROTECTION ZONE
EXISTING VISUAL AND NOT
LOWER THAN 1 SM VISIBILITY.
500' X 1,010' X 1,700'
ULTIMATE LOWER THAN 3/4 SM
VISIBILITY (1000' X 1750' X 2500')

RUNWAY PROTECTION ZONE
VISUAL AND NOT LOWER THAN
1 SM VISIBILITY.
EXISTING -250' X 450' X 1,000'
ULTIMATE -500' X 700' X 1,000'

Legend	Existing	Proposed
Property Line Object	— —	— —
Free Area Runway	-OFA (E/U) -	-OFA (E/U) -
Protection Zone	—RPZ (E) —	—RPZ (U) —
Runway Safety Area	-RSA (E/U) -	-RSA (E/U) -
Taxiway Object Free	-TOFA (E/U) -	-TOFA (E/U) -
Area Runway Safety Area	-TSA (E/U) -	-TSA (E/U) -
Building Restriction Line	-BRL (E) -	-BRL (E/U) -
Segmented Circle & Windcone	☉	☉
Beacon		★
Existing Buildings	☒	
Fence	-x-x-	



Legend	Existing	Proposed
Blast Pad		■
Cargo Apron		■
Conventional Hangar Development		■
Co. Hangar-Storage-Maintenance		■
Future Pavement		■
Helicopter Operations		■
Helicopter Operations - Itinerant		■
Large Aircraft Overflow		■
Parking (Vehicle)		■
T-Hangar Development		■
Redevelop for Tiedown Apron		■
Weather Station	☐ AWOS	☒ ASOS
Paving Removal		--- ---

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Development
Alternative 1
EXHIBIT 5B

lowest approach minima (lower than $\frac{3}{4}$ statute miles), which impacts the 35-foot building restriction line (BRL) and the RPZ.

Other development items included in Alternative 1 are shown below.

Airfield.

- Widening of Runway 16-34 from 60 feet to 75 feet.
- Relocation of Taxiway A.
- Increased RPZ areas for all runway ends, consistent with the various approach minima.
- Increased BRL limitations near Runway 12-30 due to instrument approach improvements.
- Construction of Runway 30 blast pad.
- Relocation of the rotating beacon to the existing electrical building.
- Installation of lighting on Runway 16-34 and taxiway edge lighting.
- Installation of Runway 34 PAPI and REILs on Runway ends 12, 16, and 34.
- Upgraded weather reporting system.
- Installation of guidance and location signs and supplemental wind indicators.
- Development of helicopter operations area near the existing rappel base, with overflow/itinerant helicopter operations area at the staging area north of Runway 12.
- Preservation of the extended Taxiway D for large aircraft overflow parking.

Landside.

- Construction of T-hangars at the south end of the flightline.
- Conversion of existing T-hangars to tiedown apron and conventional hangars.
- Cargo apron located south the existing FedEx facility.
- Conventional hangar development area at north end of the flightline.
- Construction of a County hangar and/or maintenance facility south of the fuel farm.

Development Alternative 2

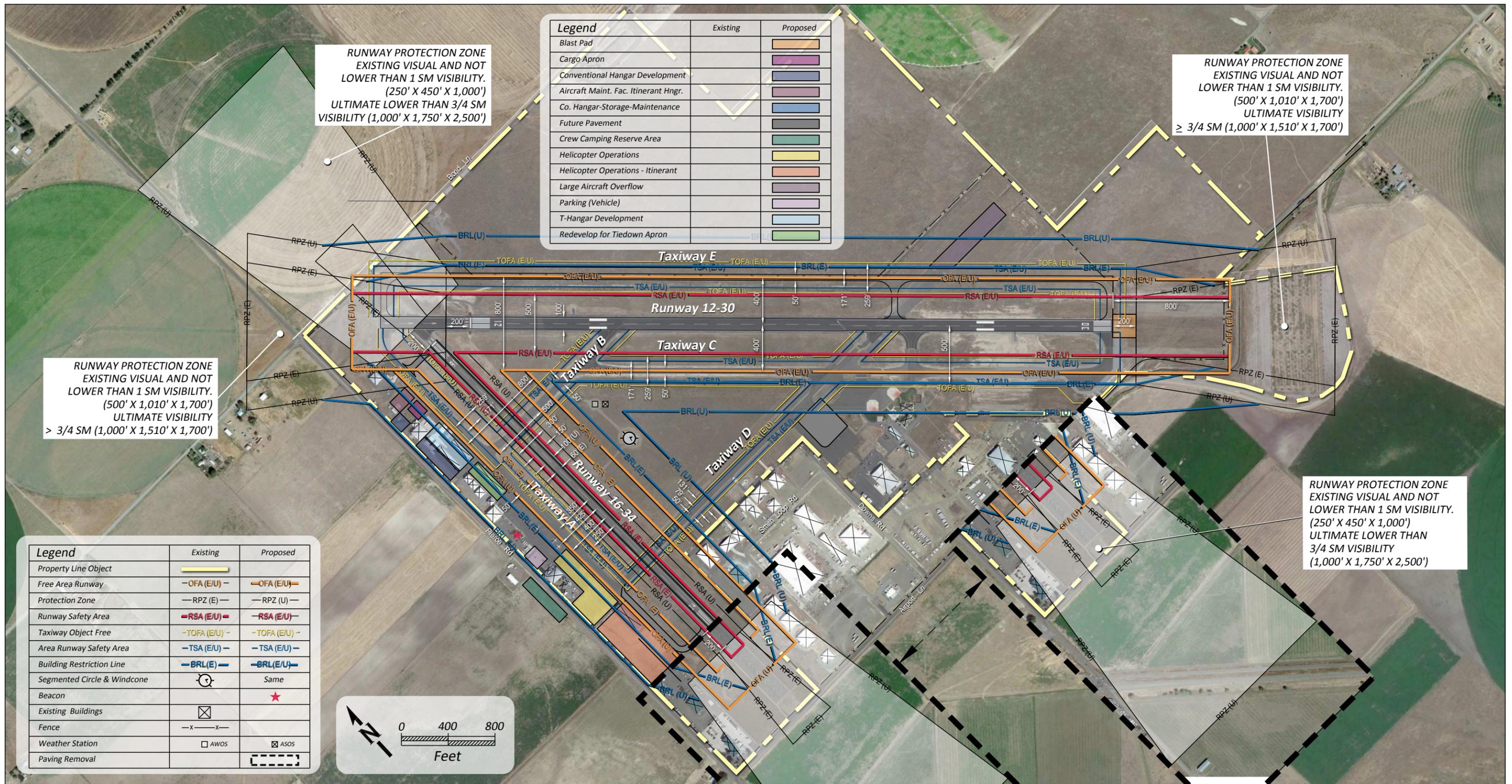
Development Alternative 2 is shown in **Exhibit 5C**. A prominent feature of this alternative is the approach minima, which are shown as greater than or equal to $\frac{3}{4}$ statute mile for Runway 12-30 and lower than $\frac{3}{4}$ statute mile for Runway 16-34. Without a feasibility study it is not known if the Airport can accommodate these low visibility approaches; nonetheless they are shown for planning purposes.

A full parallel taxiway to the north of Runway 12-30, Taxiway E, is included in Alternative 2 to alleviate congestion during peak operations. Construction of this taxiway would also enable future development to occur on the north side of the Airport property in the long-term.

Similar to Alternative 1, this alternative assumes approval of Modification to Standards for Runway 12-30 width. Other items outlined in Alternative 2 are:

Airfield.

- Widening of Runway 16-34 from 60 feet to 100 feet, per approach requirements for visibility lower than $\frac{3}{4}$ statute mile.
- Increased RPZ areas for all runway ends, consistent with the approach minima.



Legend	Existing	Proposed
Blast Pad		[Orange Box]
Cargo Apron		[Purple Box]
Conventional Hangar Development		[Blue Box]
Aircraft Maint. Fac. Itinerant Hngr.		[Light Blue Box]
Co. Hangar-Storage-Maintenance		[Light Green Box]
Future Pavement		[Dark Green Box]
Crew Camping Reserve Area		[Light Yellow Box]
Helicopter Operations		[Yellow Box]
Helicopter Operations - Itinerant		[Light Orange Box]
Large Aircraft Overflow		[Light Purple Box]
Parking (Vehicle)		[Light Blue Box]
T-Hangar Development		[Light Green Box]
Redevelop for Tiedown Apron		[Light Green Box]

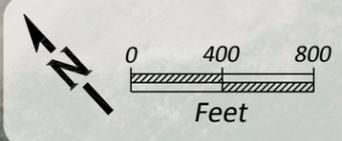
RUNWAY PROTECTION ZONE
EXISTING VISUAL AND NOT
LOWER THAN 1 SM VISIBILITY.
(250' X 450' X 1,000')
ULTIMATE LOWER THAN 3/4 SM
VISIBILITY (1,000' X 1,750' X 2,500')

RUNWAY PROTECTION ZONE
EXISTING VISUAL AND NOT
LOWER THAN 1 SM VISIBILITY.
(500' X 1,010' X 1,700')
ULTIMATE VISIBILITY
≥ 3/4 SM (1,000' X 1,510' X 1,700')

RUNWAY PROTECTION ZONE
EXISTING VISUAL AND NOT
LOWER THAN 1 SM VISIBILITY.
(500' X 1,010' X 1,700')
ULTIMATE VISIBILITY
> 3/4 SM (1,000' X 1,510' X 1,700')

RUNWAY PROTECTION ZONE
EXISTING VISUAL AND NOT
LOWER THAN 1 SM VISIBILITY.
(250' X 450' X 1,000')
ULTIMATE LOWER THAN
3/4 SM VISIBILITY
(1,000' X 1,750' X 2,500')

Legend	Existing	Proposed
Property Line Object	[Yellow Line]	[Orange Line]
Free Area Runway	[Orange Line]	[Orange Line]
Protection Zone	[Red Line]	[Red Line]
Runway Safety Area	[Red Line]	[Red Line]
Taxiway Object Free	[Blue Line]	[Blue Line]
Area Runway Safety Area	[Blue Line]	[Blue Line]
Building Restriction Line	[Blue Line]	[Blue Line]
Segmented Circle & Windcone	[Circle]	[Circle]
Beacon	[Star]	[Star]
Existing Buildings	[Box]	[Box]
Fence	[X Line]	[X Line]
Weather Station	[Square]	[Square]
Paving Removal	[Dashed Box]	[Dashed Box]



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Development
Alternative 2
EXHIBIT 5C

- The building restriction line (BRL) moves from 495 feet to 745 feet from the runway due to instrument approach improvements.
- Construction of new Taxiway E on the north side of Runway 16-34.
- Extension of Taxiway A to Runway 34 end, as well as connector at the Runway 16 end.
- Construction of Runway 30 blast pad.
- Relocation of the rotating beacon to the existing fixed base operator building.
- Installation of lighting on Runway 16-34 and taxiway edge lighting.
- Installation of a PAPI on Runway 34 and REILs on Runway ends 12, 16, and 34.
- Upgraded weather reporting system.
- Installation of guidance and location signs and supplemental wind indicators.
- Development of helicopter operations area near the existing rappel base, extending south to the National Guard base. Would include the demolition of existing hangars in that area.
- Preservation of the extended Taxiway D for large aircraft overflow parking.
- Expansion of fixed wing apron near the US Forest Service Tanker base.

Landside.

- Conversion of existing silver T-hangars to tiedown apron.
- Cargo apron located north of the existing FedEx facility.
- Conventional and T-hangar development concentrated at the north end of the flightline.
- Construction of a County hangar and/or maintenance facility north of the cargo apron.
- Construction of crew camping (RV hookups, vehicle parking, etc.) to be located off-Airport in the industrial park across Pierce Road.

Development Alternative 3

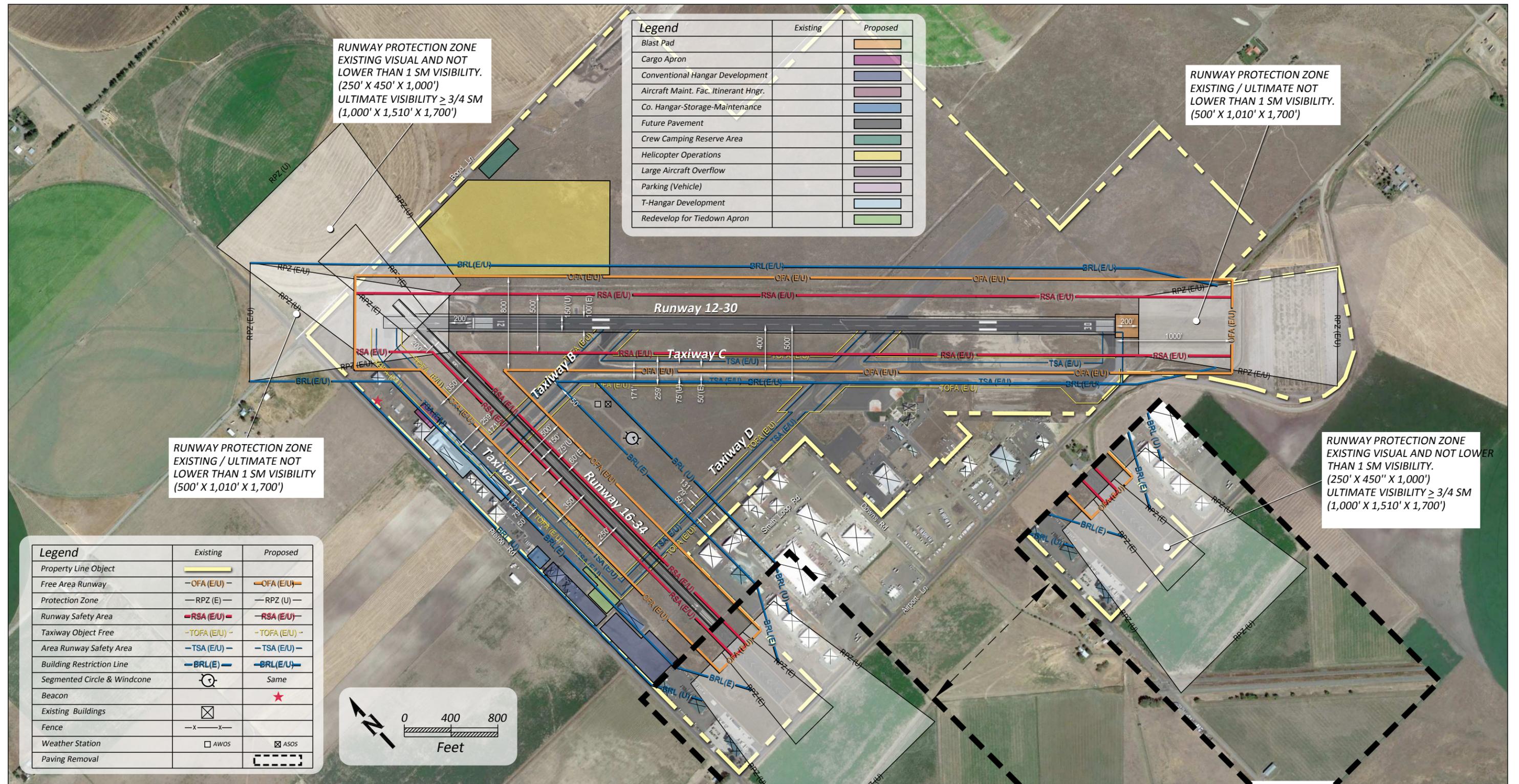
Development Alternative 3 is most distinguished by the complete relocation of helicopter operations to the north end of the Airport, as depicted in **Exhibit 5D**. Under this alternative, helicopter activity would be located north of Runway 12-30, along with crew camping. Approach visibility for Runway 12-30 would remain at its current level, while Runway 16-34 would be reduced to greater than $\frac{3}{4}$ statute mile.

The runway width for Runway 12-30 is increased to 150 to meet both RDC C-IV and C-III design standards.

Additional components of Alternative 3 are:

Airfield.

- Widening of Runway 12-30 from 100 feet to 150 feet.
- Widening of Runway 16-34 from 60 feet to 75 feet.
- Increased RPZ areas for Runway 16-34, consistent with the approach minima.
- Increased BRL limitations due to instrument approach improvements on Runway 16-34 from 495 feet to 745 feet from.
- Construction of Runway 30 blast pad.
- Relocation of the rotating beacon to the existing electrical building.
- Installation of lights on Runway 16-34 and taxiway edge lighting.
- Installation of a PAPI on Runway 34 and REILs on Runway ends 12, 16, and 34.
- Upgraded weather reporting system.



Legend	Existing	Proposed
Blast Pad		
Cargo Apron		
Conventional Hangar Development		
Aircraft Maint. Fac. Itinerant Hngr.		
Co. Hangar-Storage-Maintenance		
Future Pavement		
Crew Camping Reserve Area		
Helicopter Operations		
Large Aircraft Overflow		
Parking (Vehicle)		
T-Hangar Development		
Redevelop for Tiedown Apron		

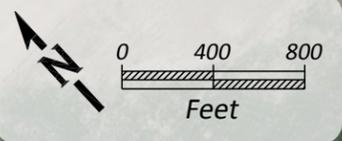
RUNWAY PROTECTION ZONE
EXISTING VISUAL AND NOT
LOWER THAN 1 SM VISIBILITY.
(250' X 450' X 1,000')
ULTIMATE VISIBILITY ≥ 3/4 SM
(1,000' X 1,510' X 1,700')

RUNWAY PROTECTION ZONE
EXISTING / ULTIMATE NOT
LOWER THAN 1 SM VISIBILITY.
(500' X 1,010' X 1,700')

RUNWAY PROTECTION ZONE
EXISTING / ULTIMATE NOT
LOWER THAN 1 SM VISIBILITY
(500' X 1,010' X 1,700')

RUNWAY PROTECTION ZONE
EXISTING VISUAL AND NOT LOWER
THAN 1 SM VISIBILITY.
(250' X 450' X 1,000')
ULTIMATE VISIBILITY ≥ 3/4 SM
(1,000' X 1,510' X 1,700')

Legend	Existing	Proposed
Property Line Object		
Free Area Runway	-OFA (E/U)-	-OFA (E/U)-
Protection Zone	-RPZ (E)-	-RPZ (U)-
Runway Safety Area	-RSA (E/U)-	-RSA (E/U)-
Taxiway Object Free	-TOFA (E/U)-	-TOFA (E/U)-
Area Runway Safety Area	-TSA (E/U)-	-TSA (E/U)-
Building Restriction Line	-BRL (E)-	-BRL (E/U)-
Segmented Circle & Windcone		Same
Beacon		★
Existing Buildings	☒	
Fence	-x-x-	
Weather Station	☐ AWOS	☒ ASOS
Paving Removal		----



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Development
Alternative 3
EXHIBIT 5D

- Installation of guidance and location signs and supplemental wind indicators.
- Development of helicopter operations area north of Runway 12-30.
- Preservation of the extended Taxiway D for large aircraft overflow parking.

Landside.

- Expand existing tiedown apron to the south.
- Reconstruction and expansion of existing T-hangars, including the four hangars currently located between the FedEx facility and T-hangars.
- Expanded cargo apron near the existing FedEx facility.
- Conventional hangar development concentrated at the south end of the flightline.
- Construction of a County hangar and/or maintenance facility south of the fuel farm.
- Construction of crew camping (RV hookups, vehicle parking, etc.) to be located adjacent to the relocated helicopter operations area.

Comparison of Alternatives

The no build and three build alternatives will be reviewed by the County, Planning Advisory Committee (PAC), and the FAA. The following discussion provides a comparison of the alternatives to facilitate that review process. Evaluation criteria for the comparison should be based on the stated Goals and Issues for this planning project (reference Chapter 1), the alternative's functionality, the ability to meet FAA design standards, ease of implementation, potential environmental impacts, and development cost.

Consistency with Stated Goals and Issues

The main themes of this project's goals were: enhance safety and security, preserve the investment, support growth, and comply with FAA grant assurances. The following chapter takes a closer look at compliance with FAA grant assurances, so this discussion will be limited to the other goals. In regards to stated issues, they ranged from all-weather accessibility, continued partnership with agencies, to day-to-day facility maintenance.

With the exception of the No Build alternative, the Development Alternatives strive to meet the identified goals and address issues. They all include improved weather reporting, full perimeter fencing, runway and taxiway lighting, to name a few items. Where they differ are: instrument approach minima, operational layout, and whether or not they require continued Modification to Standards for Runway 12-30 width. Development Alternatives 1 and 2 reduce the need to back taxi for Runway 34 departure, as well as the need to taxi on Runway 12 to depart Runway 16, which is a safety improvement the other alternatives do not address.

Functionality

In regards to function, the development alternatives vary most significantly in two ways: 1) location of helicopter operations, and 2) aircraft taxi routes.

Helicopter operations, as they occur today, more closely reflect those presented in Development Alternatives 1 and 2. Both show helicopter operations concentrated near the existing rappel base. Alternative 1 shows an overflow area for itinerant helicopters located near Runway 12 in the staging area,

and the County has used this area for this purpose. Alternative 2 uses all the land south of the rappel base and designates it solely for helicopter use. Alternative 3 would relocate all operations north of Runway 12-30, which would not take advantage of the investment already taken place at the rappel base and the adjacent apron area.

Aircraft taxi routes are detailed on **Exhibit 5E**, which highlights the area most commonly used by large aircraft. The taxiway safety areas (TSAs) and taxiway object free areas (TOFAs) shown on the alternative exhibits directly correlate with these highlighted areas. For taxiways with large aircraft activity, the TSA is 171 feet and the TOFA is 259 feet. All other taxiways have a TSA and TOFA of 79 feet and 131 feet, respectively. Alternative 1 would alter aircraft ground movement slightly by relocation of Taxiway A, but it would not have any negative impacts to operations. Alternative 2 would re-route many of the large aircraft to Taxiway E, freeing up Taxiway A for non-fire suppression operations, which would also have direct access to the Runway 16-34 ends. For large aircraft to access the US Forest Service Tanker Base, however, aircraft would have to cross Runway 12-30 from Taxiway E, which is an operational concern. Alternative 3 would not alter ground movement patterns.

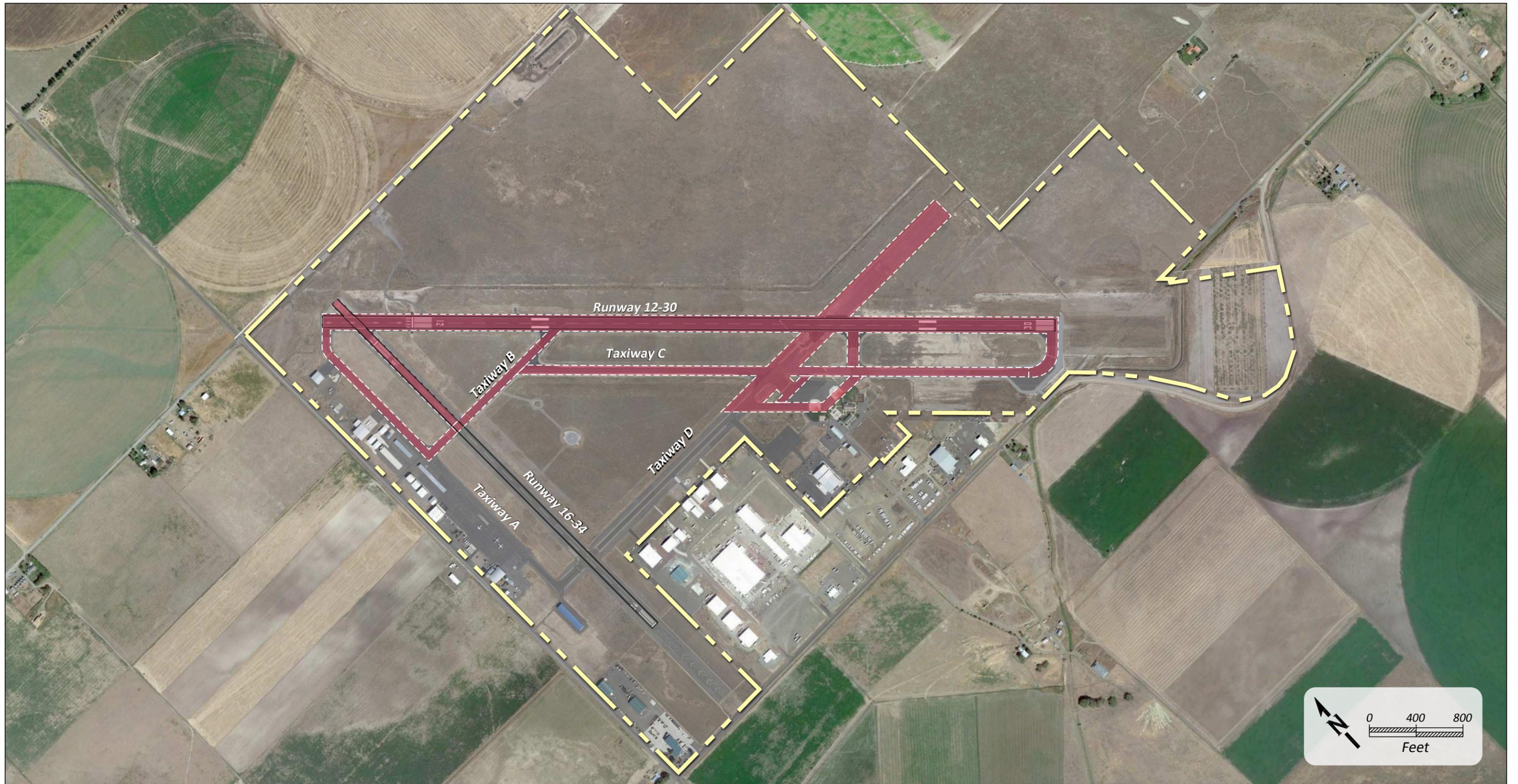
Ease of Implementation

Implementation for any of the development alternatives would be dependent upon funding availability, and for items not related to design standards they would also be contingent upon actual demand. The projects could be phased in a manner to reduce the impacts to users and aircraft operations. All three of the development alternatives call for the redevelopment of hangars. Demolition and construction of the hangars would need to occur in a timely fashion, so based aircraft are not left out in the elements for long.

The most demanding component to development at the Airport would likely be the availability of utilities, and their ability to meet the additional demand. Of the development alternatives, Alternative 3 would most likely be the most challenging to implement as the relocated helicopter base is not near existing water or septic utilities.

Environmental Considerations

Each alternative was reviewed to assess its relative environmental impact, as well as identify any environmental constraints that may require special consideration as part of a proposed development. **Table 5A** displays the impact categories and how they apply to each development alternative. Where potential impacts are identified, a brief narrative will follow the table to outline possible mitigation strategies. These assumptions are based on planning-level information. When specific projects are defined and scoped, the actual level of environmental permitting and review will be identified. Based on the environmental review process, impacts that are not currently expected may be encountered.



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Large Aircraft
 Movement Areas

EXHIBIT 5E

Table 5A. Development Alternatives – Environmental Constraints & Impacts

Impact Categories	No Build Alternative	Development Alternative 1	Development Alternative 2	Development Alternative 3
Air Quality	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Biotic Resources	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Land Use Impacts	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Construction Impacts	No apparent issues.	Potential for air quality issues.	Potential for air quality issues.	Potential for air quality issues.
Section 4(f) Resources	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Threatened and Endangered Species	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Energy Supplies, Natural Resources and Sustainability	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Environmental Justice	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Farmlands	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Hazardous Material	No apparent issues.	Risk of spill during construction and equipment operation.	Risk of spill during construction and equipment operation.	Risk of spill during construction and equipment operation.
Historical, Archeological and Cultural Resources	No apparent issues.	Section 106 consultation likely.	Section 106 consultation likely.	Section 106 consultation likely.
Induced Socioeconomic Impacts	No apparent issues.	New construction and development provides jobs and economic stimulation.	New construction and development provides jobs and economic stimulation.	New construction and development provides jobs and economic stimulation.
Light emissions and visual effects	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Energy Supply and Natural Resources	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Noise	No apparent issues.	Expansion of runways, potential helicopter operations, and relocation of taxiway expands and changes the shape of the noise footprint.	Expansion of runway, taxiway and addition of connections, expands and changes the shape of the noise footprint.	Expansion of helicopter operations, runways, and the potential for new aircraft types expands noise footprint.
Social Impacts	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Solid Waste	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.

Impact Categories	No Build Alternative	Development Alternative 1	Development Alternative 2	Development Alternative 3
Water Quality	No apparent issues.	Increase in storm water collection from impervious surfaces.	Increase in storm water collection from impervious surfaces.	Increase in storm water collection from impervious surfaces.
Coastal Barrier	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Flood Zone	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Wild & Scenic River	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Wetlands	No apparent issues.	No apparent issues. Any impacts would need mitigation.	No apparent issues. Any impacts would need mitigation.	No apparent issues. Any impacts would need mitigation.
Cumulative Impact	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.
Controversy	No apparent issues.	No apparent issues.	No apparent issues.	No apparent issues.

Comparison of the Alternatives.

The No Build Alternative will have the fewest impacts on the environment but will stifle needed improvements to support the safe operation and growth of the airport. In reviewing potential impacts, the more extensive redevelopment and complex alternatives will have a greater impact, but none were found to have impacts that could not be reasonably and economically mitigated by standard construction and environmental practices. A brief discussion of identified impact areas from the Table above are listed below along with potential mitigation strategies. At the time any construction project is implemented, a more detailed environmental assessment will be made and mitigation strategies specific to the project will be developed where needed as part of the project.

Construction Impacts. Where disturbance of the ground has the potential to cause dust, water trucks can be used to keep soil moistened to reduce creation of dust by construction vehicles.

Hazardous Materials. Spill containment and mitigation plans are typical of any construction project where the potential exists for spills or accidental releases of hazardous materials.

Historical, Archeological, and Cultural Resources. During project design, it may be determined that Section 106 consultation with the Tribes and Oregon State Historic Preservation Office (SHPO) is required and a Cultural Resources Inventory will be prepared. Additionally, Tribes will be notified during construction and construction crews trained to identify potential cultural resources that may be disturbed during construction. Workers will be instructed to stop immediately should any potential resources be unearthed so that they may be properly investigated.

Induced Socioeconomic Impacts. Job creation and support will be viewed positively in this community.

Noise. As the existing and forecasted levels of activity at the Airport do not support the need for noise study, it is unlikely any of these projects would require additional study. Any noise annoyance would likely be temporary and construction-related.

Water Quality. Some of the projects will result in greater impervious surface and incrementally more runoff. An analysis will be conducted once specific projects are defined to determine if existing storm water conveyances have adequate capacity or if they will need expansion or replacement. With the current alternatives, the total increase in impervious surface is not thought to pose any significant increase.

Wetland. During project scoping, a wetlands report may be required. If wetlands are found to be in a project area avoidance or mitigation will be taken to avoid negative impacts on the environment.

Development Costs

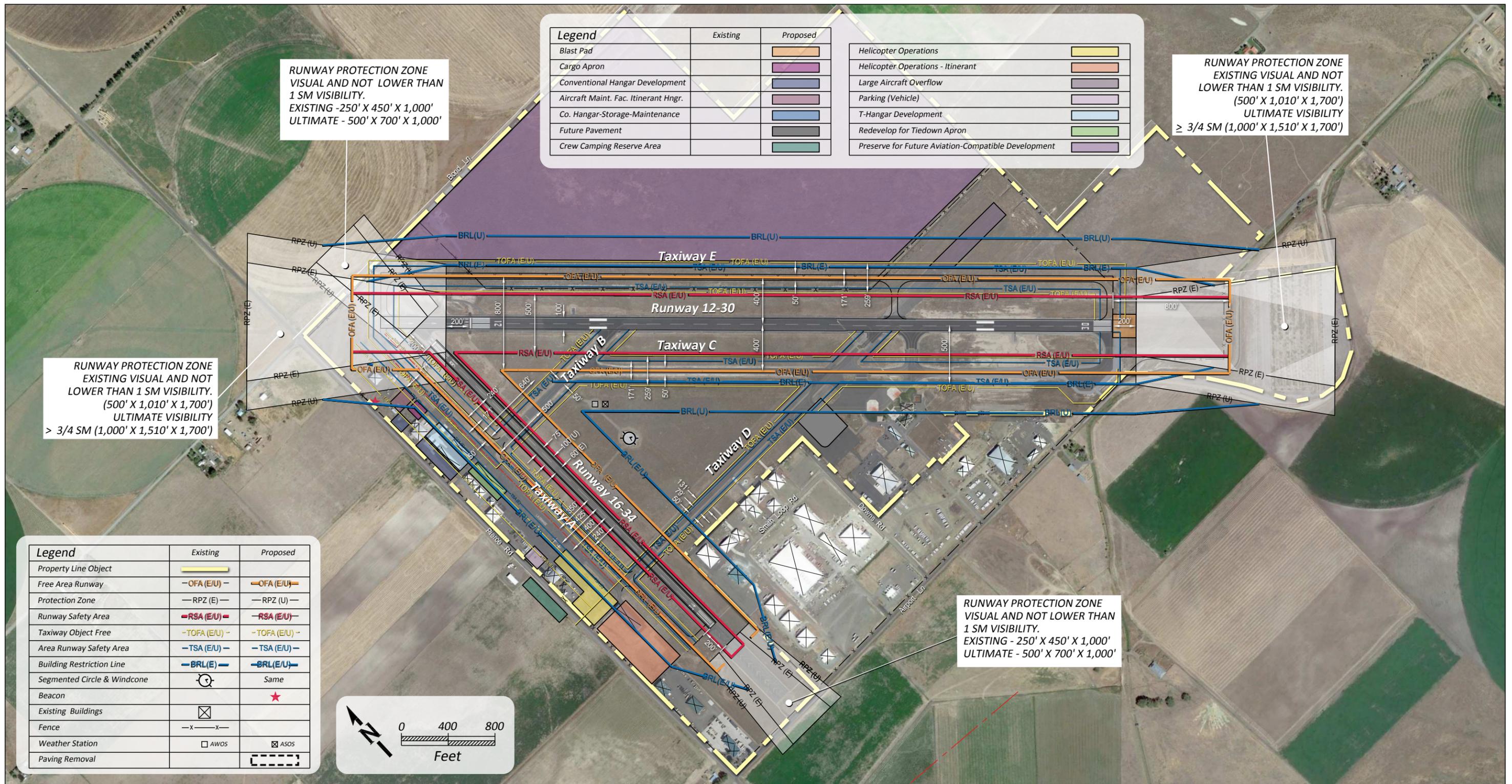
Detailed cost estimates were not prepared for each alternative; however, the alternatives are compared in order of magnitude costs. The No Build Alternative has the least cost associated with it, as costs only represent maintenance of existing facilities. Of the development alternatives, Alternative 3 would likely be the most costly, as both runways would be widened and there would be extensive development at the helicopter operations area to meet the user's needs. Development Alternative 2 would be a close second in terms of financial cost, due to widening of Runway 16-34 and the construction of Taxiway E. Development Alternative 3 would also be a significant investment, but with widening of Runway 16-34 and relocation of Taxiway A, it would likely have the least cost of the development alternatives.

Master Plan Concept

The alternatives were presented to the PAC on September 29, 2015. A large cross-section of airport interests were represented at the meeting, and their input on the alternatives are summarized below.

- The preferred alternative should look forward and remain flexible to accommodate unforeseen changes.
- In regards to instrumentation and approach minima – is the impact (particularly to the BRL) worth the benefit? Approach minima did not rank high in priority of needs.
- Fuel availability needs to be addressed, particularly during busy fire seasons.
- Self-service AvGas should be explored by the County.
- Additional hangar space is needed.
- Crew camping should be near the helicopter operations area for security purposes.
- Utilities, particularly water, need to be addressed. The current water system needs to be looped, rather than dead end at the Airport.
- Fixed wing and helicopter operations need to be separated.
- A fire retardant loading area for Single Engine Air Tankers (SEATs) should be explored.
- The US Forest Service is an important component at the Airport and the region.
- Preserve undeveloped land for aviation-related development.

Based on input from the PAC, and further discussions with the County, a Preferred Alternative was prepared and is depicted in **Exhibit 5F**. It does not include improved instrumentation on Runway 16-34, but does show the improved (lower) instrument approach minima for Runway 12-30 in an effort to remain flexible for future demand. Runway 16-34 is widened to 75 feet, and the current Modification to Standard is assumed to continue for Runway 12-30. All development is concentrated on the existing flightline, with



Legend	Existing	Proposed
Blast Pad		
Cargo Apron		
Conventional Hangar Development		
Aircraft Maint. Fac. Itinerant Hngr.		
Co. Hangar-Storage-Maintenance		
Future Pavement		
Crew Camping Reserve Area		

Helicopter Operations	
Helicopter Operations - Itinerant	
Large Aircraft Overflow	
Parking (Vehicle)	
T-Hangar Development	
Redevelop for Tiedown Apron	
Preserve for Future Aviation-Compatible Development	

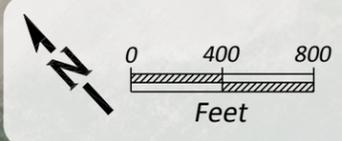
RUNWAY PROTECTION ZONE
 VISUAL AND NOT LOWER THAN
 1 SM VISIBILITY.
 EXISTING - 250' X 450' X 1,000'
 ULTIMATE - 500' X 700' X 1,000'

RUNWAY PROTECTION ZONE
 EXISTING VISUAL AND NOT
 LOWER THAN 1 SM VISIBILITY.
 (500' X 1,010' X 1,700')
 ULTIMATE VISIBILITY
 ≥ 3/4 SM (1,000' X 1,510' X 1,700')

RUNWAY PROTECTION ZONE
 EXISTING VISUAL AND NOT
 LOWER THAN 1 SM VISIBILITY.
 (500' X 1,010' X 1,700')
 ULTIMATE VISIBILITY
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RUNWAY PROTECTION ZONE
 VISUAL AND NOT LOWER THAN
 1 SM VISIBILITY.
 EXISTING - 250' X 450' X 1,000'
 ULTIMATE - 500' X 700' X 1,000'

Legend	Existing	Proposed
Property Line Object		
Free Area Runway	-OFA (E/U)-	-OFA (E/U)-
Protection Zone	-RPZ (E)-	-RPZ (U)-
Runway Safety Area	-RSA (E/U)-	-RSA (E/U)-
Taxiway Object Free	-TOFA (E/U)-	-TOFA (E/U)-
Area Runway Safety Area	-TSA (E/U)-	-TSA (E/U)-
Building Restriction Line	-BRL (E)-	-BRL (E/U)-
Segmented Circle & Windcone		Same
Beacon		★
Existing Buildings		
Fence	-x-x-	
Weather Station	□ AWOS	☒ ASOS
Paving Removal		



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 9755 SW Barnes Rd, Suite 300
 Portland, OR 97225
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LA GRANDE / UNION COUNTY AIRPORT AIRPORT MASTER PLAN UPDATE

Working Draft
 Preferred Alternative

EXHIBIT 5F

reconfiguration of the hangar area. Taxiway A is also relocated closer to Runway 16-34 to meet the design standard and open up more flightline area for future development. All fixed wing and helicopter operations are separated near the existing Rappel Base.

The Preferred Alternative was presented to the Union County Board of Commissioners on December 16, 2015. The Commissioners unanimously voted to accept the Preferred Alternative as the working basis of the upcoming Airport Layout Plan drawings.