

Chapter 5

Alternatives Analysis

The evaluation of future development alternatives represents a critical step in the airport master planning process. The primary goal is to define a path for future development that provides an efficient use of resources and is capable of accommodating the forecast demand and facility needs defined in the master plan. Preliminary alternatives will be reviewed by the local master plan Planning Advisory Committee (PAC), assembled by the Oregon Department of Aviation (ODA), the Airport owner. Refined alternatives will be developed based on input provided by the PAC, airport users, and the general public. All project elements are consistent with the requirements of the Federal Aviation Administration (FAA).



Photo Credit: Cindy Sloan

Introduction

As noted in the facility requirements evaluation, current and long-term planning for Joseph State Airport is based on maintaining and improving the Airport’s ability to serve a range of general aviation aircraft. Existing facilities accommodate a wide variety of aircraft types including conventional fixed-wing and rotary-wing aircraft. This unique mix of aircraft activity requires facility improvements capable of accommodating demand, while maintaining safety for all users. Existing airfield facilities generally meet or exceed FAA Airplane Design Group (ADG) I and Taxiway Design Group (TDG) 1 standards. Minor non-conforming items identified in the facility requirements assessment will be addressed in the appropriate airside or landside development alternatives.

It was also noted in the facility requirements chapter (see Figure 4-6) that the remaining developable land within the current Airport boundary is limited. All existing landside development (aircraft fueling, parking, hangars, etc.) is located in the southwest corner of the Airport. The narrow configuration of the Airport site does not allow significant new landside development directly adjacent to the runway or parallel taxiway. As a result, future landside development options within the current airport property boundary will be limited to in-fill or redevelopment of existing uses. The remaining on-airport building capacity is not adequate to accommodate forecast demand significantly beyond the current twenty-year planning period.

Options for locating landside development outside current airport property will be presented as functional concepts for consideration only. Property owner contact has not been initiated at this stage of evaluation. If the off-airport development concepts are supported for further evaluation by the PAC, ODA will initiate contact with affected property owners to begin assessing the feasibility of development.

Table 5-1 summarizes the primary demand factors and corresponding facility needs that will be evaluated in the alternatives analysis. Individual facility development reserves are defined as 100 percent of the net forecast to account for uncertainty in predicting demand for new hangars and aircraft parking.

TABLE 5-1: SUMMARY OF DEMAND FACTORS AND FACILITY DEVELOPMENT NEEDS – JOSEPH STATE AIRPORT

Item	Defined Facility Needs in Current 20-year Planning Period
Forecast Increase in Based Aircraft	<ul style="list-style-type: none"> • Facility Planning Metric: +12 Aircraft (requiring hangar and apron storage) <ul style="list-style-type: none"> » +6 Aircraft (20-year forecast – net increase above current total) » +6 Aircraft (development reserve – 100% of forecast increase)
Runway-Taxiway System	<ul style="list-style-type: none"> • FAR Part 77 Airspace (Visual or Non-Precision Instrument Runway Designation) <ul style="list-style-type: none"> » Dependent on preferred instrument approach procedure » Both designations can accommodate a non-precision instrument approach, but will support different procedure types (straight-in or circling) » A change in runway designation may affect existing runway-taxiway facilities and adjacent landside facilities • No change in runway width or length recommended
Aircraft Storage Hangars	<ul style="list-style-type: none"> • 20-year demand (forecast and reserve): 12 Hangar Units (New Construction)
Commercial Hangars	<ul style="list-style-type: none"> • Identify development space within landside areas (market driven, not reflected in storage hangar demand projection)
Pilot / Mixed Use Building	<ul style="list-style-type: none"> • Identify building development space within landside areas (replacement of existing structure) and consider options for adding public mixed use functions
Transient Large Airplane Parking	<ul style="list-style-type: none"> • 1 Position +1 Reserve
Transient Helicopter Parking	<ul style="list-style-type: none"> • 1 Position +1 Reserve
Aircraft Fueling Facilities	<ul style="list-style-type: none"> • Existing fueling apron access to Taxiway A and A1 requires modification; fuel apron relocation may be required if runway designation changes to Non-Precision Instrument (NPI)

Development Alternatives Analysis Process

The preliminary alternatives will focus primarily on the improvements needed to obtain an instrument approach for the airport; accommodate future development of aircraft hangars, aircraft parking, and support facilities; and maintain compliance with all applicable FAA standards. Options include reconfiguration or expansion of existing on-airport development areas and identifying proposed new off-airport development areas.

Airport development challenges to be resolved include:

1. Determine the best instrument approach option available that balances landside facilities development with the approach capabilities and airspace requirements for the runway.
2. Identify the highest and best use of available on-airport landside capacity.
3. Consider if future development of off-airport landside facilities is feasible or desirable.

PRIMARY ELEMENTS

The primary elements required to meet the facility requirements and goals include:

- Runway 15/33
 - » New Instrument Approach - Feasibility Analysis: developing a Non-Precision Instrument (NPI) approach appears to be feasible, if close-in obstructions can be mitigated. Two NPI options are identified (see below). (Preliminary analysis by FAA)
 - » FAR Part 77 Runway Designation Options:
 - **Maintain Visual Runway Designation**, which will support an NPI approach with a circling procedure to the Airport (with higher approach minimums)
 - **Upgrade Runway Designation to Non-Precision Instrument**, which will support an NPI approach with a straight-in procedure to Runway 15 (with lower approach minimums)
 - » Define FAR Part 77 NPI airspace surface dimensions
 - » Evaluate NPI impact on development setbacks for runway (will affect existing and future items)
- Parallel Taxiway
 - » Evaluate airspace-driven and design standards items:
 - Primary surface obstruction mitigation (NPI runway designation only)
 - Object Free Area (TOFA) obstruction removal

SECONDARY ELEMENTS

The secondary elements required to meet the facilities and goals have further narrowed secondary landside evaluation elements. They include:

- Hangar and Aircraft Parking Apron Development & Reconfiguration
 - » Evaluate development setback constraints for existing and future development (built item and parked aircraft airspace clearances)
 - » Aircraft parking/tiedown apron reconfiguration (based on different aircraft types and adjacent hangar development)
 - » New hangar sites (infill and expansion in existing areas; consider new development areas)
 - » Pilot building replacement (maintain or expand existing function to include mixed use)
 - » Utility extensions to support development
 - » Vehicle parking
 - » Access roads (on and off airport)
 - » On/Off airport development issues

Developing effective alternatives for evaluation represents the first step in a multi-step process that leads to the selection of a preferred alternative. It is important to note that the current FAA-approved Airport Layout Plan (ALP) identifies future improvements recommended in the last master planning process.

FAA PLANNING GUIDANCE

The evaluation process utilized in this study is based on guidance provided in Advisory Circular (AC) 150/5070-6B Airport Master Planning. Evaluation criteria categories selected to support the evaluation of development alternatives include:

Operational Capability – Includes criteria that evaluate how well the airport functions as a system and is able to satisfy future activity levels, meet functional objectives such as accommodating the design aircraft, and provide for the most efficient taxiway system or aircraft parking layout.

FAA Design Standards – Includes an analysis of existing FAA design standards and various requirements or areas of focus currently identified by Advisory Circulars.

Airspace Compatibility – Includes the identification and analysis of the impacts that proposed changes to the airport environment would have on the local and regional airspace systems.

Land Use, Transportation, and Environmental Compatibility – The preliminary alternatives are reviewed to identify potential issues that may affect comparison and implementation of the development concepts. The environmental review memo and the site conditions described in the Inventory Chapter are referenced in the applicable sections. A more detailed review will be performed for the development concepts that move to the next level of evaluation. This ‘best planning practices’ evaluation will expand on the earlier inventory work and is intended to provide a cursory analysis/identification of potential environmental effects, as defined in FAA Order 1050.1 Environmental Impacts Policies and Procedures and FAA Order 5050.4 FAA Airports Guidance for complying with the National Environmental Policy Act (NEPA).

By analyzing the development alternatives against the evaluation criteria presented above, and subsequently discussed with local stakeholders and interested airport users, an interactive process of identifying and selecting elements of a preferred alternative will emerge that can best accommodate all required facility improvements. Throughout this process, ODA will seek public input and coordination with the PAC and FAA to shape the preferred alternative.

Once the preferred alternative is selected by ODA, a detailed capital improvement program will be created that identifies and prioritizes specific projects to be implemented. The elements of the preferred alternative will be integrated into the updated ALP drawings that will guide future improvements at the airport.

Development Alternative Summaries

The development alternatives are intended to facilitate a discussion about the most effective way to meet the facility needs of the airport. The facility needs identified in the previous chapter and depicted accordingly within each development alternative include a variety of airside and landside needs. Items such as lighting improvements, minor roadway extensions and pavement maintenance do not typically require an alternatives analysis and will be incorporated into the preferred development alternative and the ALP. The development alternatives have been organized accordingly:

- No-Build Alternative
- Airside Alternatives (Improvement Options – Figures 5-3 to 5-5)
 - » Instrument Approach Options
 - » Runway and Taxiway Improvements
- Landside Alternatives:
 - » Alternatives 1A/1B – South Apron Alternatives (Figure 5-6)
 - » Alternatives 2A/2B – West Hangar Development (Figure 5-7, 5-8)
 - » Alternatives 3A/3B – East Hangar Development (Figure 5-9, 5-10)
 - » Alternatives 4A/4B – Fuel Apron (Figure 5-11)

The preliminary development alternatives described below and illustrated in **Figures 5-3 through 5-11** are intended to illustrate the key elements of each proposed concept. It is important to note that the eventual preferred alternative selected by ODA may come from one of the alternatives, a combination or hybrid of the alternatives, or a new concept that evolves through the evaluation and discussion of the alternatives. As noted earlier, ODA has the option of limiting future facility improvements based on financial considerations or development limitations.

It is recognized that the West and East Hangar Development options locate proposed facilities beyond current airport boundaries. At this stage of the evaluation, the concepts are presented to demonstrate basic feasibility based on terrain or other site features, and compatibility with airfield geometry. No assumptions have been made about the feasibility of using these land parcels. If the off-airport development concepts are recommended for further evaluation, ODA will initiate contact with the property owners to discuss the viability of accommodating future airport development.

NO BUILD ALTERNATIVE

A No-Build Alternative is included to represent the maintenance of existing facilities and capabilities. Unlike the active development alternatives that are intended to respond to future demand for facility needs, the No-Build Alternative represents a “no-action” option. The existing airfield would remain unchanged from its present configuration and the Airport would be operated in a “maintenance-only” mode.

No improvement in public use facilities would be planned, although construction of private hangars or related facilities could be accommodated within currently developed areas.

The primary result of this alternative would be the inability of the airport to accommodate aviation demand beyond current facility capabilities, including the addition of instrument approach capabilities. Future aviation activity would be constrained by the capacity, safety, and operational limits of the existing airport facilities. In addition, the absence of new facility development effectively limits the airport sponsor’s ability to increase airport revenues and operate the airport on a financially sustainable basis over the long term.

The no-action alternative establishes a baseline from which the other alternatives can be developed and compared. The purpose and need for the alternatives are defined by the findings of the forecasts and facilities requirements analyses. The need to safely accommodate access and use of the public transportation facility provides the underlying rationale for making facility improvements. The timing of public investment in facilities is driven by safety, capacity, and the ability to operate an airport on a financially sustainable basis, whereas market factors generally determine the level and pace of private investment in hangars or other facilities at an airport.

Based on the factors noted above, the No-Build Alternative is inconsistent with the management and development policies established by ODA and its commitment to provide a safe and efficient air transportation facility to serve the surrounding areas that is socially, environmentally, and economically sustainable.

Based on the factors noted above, the no-action alternative is inconsistent with the management and development policies established by ODA and its commitment to provide a safe and efficient air transportation facility to serve the surrounding areas that is socially, environmentally, and economically sustainable.

AIRSIDE DEVELOPMENT ALTERNATIVES

Overview

Airside facilities include runway, taxiway, lighting, etc. The airside planning evaluations at Joseph State Airport are primarily focused on items related to the proposed addition of an instrument approach. The addition of instrument capabilities at the Airport is identified as a high priority need, considered essential to accommodate medical evacuation (medevac) flights in all-weather conditions. These operations are currently limited to visual flight rules (VFR) conditions.

The addition of instrument approach capabilities at the Airport may affect the FAR Part 77 airspace requirements for Runway 15/33. A change from the current “visual” runway designation to “non-precision instrument (NPI)” will increase the dimensions of some airspace surfaces, which may trigger runway or parallel taxiway improvements. In addition, the required airspace protections for the runway may affect existing and future landside development (hangars, aircraft parking, etc.) at the Airport. These issues are addressed in the following sections for airside facilities, and later in the chapter for landside facilities.

Instrument Approach Development

At the outset of this project, ODA contacted the FAA and requested an assessment of instrument approach feasibility for Joseph State Airport to be conducted in conjunction with the Airport Master Plan. The FAA’s Western Flight Procedures Team (TWSE) Operations Support Group evaluated the “rough feasibility” of available approach procedures for the Airport. **The TWSE study established basic feasibility for a non-precision instrument (NPI) approach¹ at Joseph State Airport using the Global Positioning System (GPS) platform.**

The FAA identified two different options for developing a non-precision instrument (NPI) approach for Joseph State Airport:

- **Option 1** creates a circling approach to the airport environment
- **Option 2** creates a straight-in approach to a fixed point near the north end of the runway (Runway 15) that is closely aligned with the runway centerline

Option 1 provides an approach to the airport environment (referred to as a circling procedure). Option 2 provides an approach to Runway 15 (referred to as a straight-in procedure). Based on area terrain and airport site conditions, the most feasible inbound/outbound paths for instrument procedures at Joseph State Airport are located north of the Airport and Runway 15/33. The preliminary analysis indicates that both instrument approach options are feasible for the Airport, assuming that identified close-in penetrating obstacles are adequately mitigated.

The TWSE procedure analyst provided the following information:

“The following is a very rough estimate on what straight in minimums may be able to achieve. Though, as a precaution during your decision making process on whether to pursue, I would expect that the straight-in minimums will be effected by the terrain directly south of the airport. Due to the terrain, either a non-standard missed approach climb gradient will be required, an increase in the straight-in minimums, movement of the missed approach point, or a combination of all three.” Airspace Planning And Development – Far Part 77

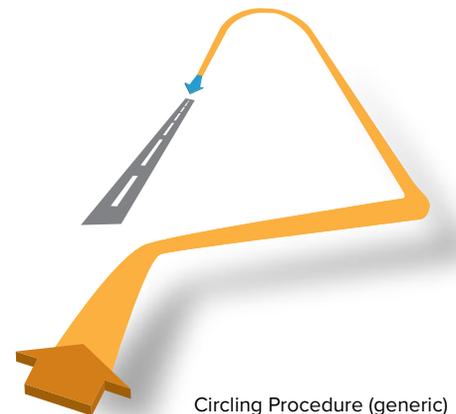
TABLE 5-2: JSY NON-PRECISION INSTRUMENT APPROACH MINIMUMS (ESTIMATED BY FAA)

RNAV (GPS) 15	CAT A	CAT B
LNAV	4720-1 615 (700-1)	4720-1 615 (700-1)
Circling	5140-1 ¼ 1019 (1100- 1 ¼)	5660-1 ½ 1539 (1600- 1 ½)

Note: Table 5-2 presents the same sequence of numbers for each approach type/category. LNAV procedure used as example: the first number listed [4720-1 615 (700-1)] is the minimum descent altitude for the aircraft in feet above mean sea level (MSL). The second number listed [4720-1 615 (700-1)] is the minimum visibility required for the procedure to be authorized (data from on-airport weather observation system) measured in statute miles. The third number listed [4720-1 615 (700-1)] is the aircraft height above the runway end or airport, at the missed approach point, measured in feet above ground level (agl). These numbers correspond to the Joseph State Airport elevation (4,121 feet msl) or the Runway 15 end elevation (4,063 feet msl). The final numbers listed [4720-1 615 (700-1)] are descent altitude and visibility requirements for military use only

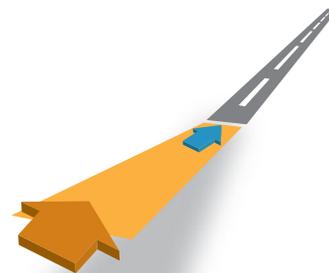
The example LNAV (Lateral Navigation) approach listed in **Table 5-2** represents two options for a new non-precision instrument (NPI) approach: a straight-in procedure to Runway 15 and a circling procedure to the Airport.

A circling NPI procedure directs aircraft electronically toward the airport environment, where the pilot must establish and maintain visual contact and choose a runway end for landing. Since the final segment of the approach to the runway end is not electronically guided, only a visual approach surface is required. Circling procedures typically require higher approach minimums to accommodate aircraft maneuvering to the available runway ends for landing. No changes to the current ‘visual’ airspace defined for Runway 15/33 are required to support an NPI circling instrument approach procedure.



Circling Procedure (generic)

A straight-in NPI procedure directs the aircraft electronically toward the designated runway end, where the pilot must establish and maintain visual contact with the runway for landing. Straight-in procedures generally permit aircraft to descend lower to the ground near a specific runway end, but require larger areas of protected airspace near the runway to maintain adequate aircraft separation from obstacles. A straight-in NPI approach requires non-precision instrument (NPI) airspace (FAR Part 77) and markings be established for the runway.



Straight-In Procedure (generic)

Source : Century West Engineering

Although each type of approach has its advantages, both meet the basic goal of establishing a functional instrument approach for the Airport. Therefore, both of the approach options represent an improvement over the Airport’s current visual approach capabilities. While lower approach minimums are always desirable, it is important to note that more demanding instrument procedures require larger FAR Part 77 airspace surfaces immediately surrounding the runway. The tradeoff between lower approach minimums and the impact on airport facilities presents a significant challenge for any airport owner.

Life Flight Network, the primary medevac provider serving Wallowa County, was contacted by ODA to provide input on the potential instrument approach options identified by FAA. The general opinion is that both the straight-in and the circling instrument procedures will meet their operational requirements. Based on their operating experience in the valley, Life Flight indicates that the weather and visibility² conditions in the vicinity of Enterprise will be a primary factor affecting their ability to land at Joseph State Airport, given either approach would likely route traffic from the north. Perhaps more important than obtaining lower approach minimums is the ability to access the Airport during both daytime and night time conditions. Either procedure must be capable of supporting night time use to provide the required 24-hour emergency access to the Airport. As indicated by the FAA, the ability to support night operations is dependent on meeting the obstacle clearance requirements defined for the specific procedure.

Additional technical information related to instrument approach development and the associated impacts on airport facilities is provided in **Appendix C**.

Master Plan Evaluation

A two-fold evaluation is needed to fully understand benefits and tradeoffs of available instrument approach options within the overall airport master plan. A side-by-side comparison of the options shows a significant difference in approach capabilities (how low the aircraft can descend when approaching the airport) and minimum visibility required for the approach. Lower is better, but it usually comes at a cost in terms of development restrictions surrounding runways. This is the case at Joseph State Airport, which is currently developed to operate exclusively in visual conditions.

The second consideration is how each approach type would impact facilities on the ground. As noted above, the instrument approach option that provides the best approach minimums also requires larger protected airspace surrounding the runway. The expanded airspace surfaces may impact the runway/taxiway system itself, and existing/planned landside facilities. Alternatively, the instrument approach option that provides higher minimums can be accommodated with the existing airspace defined for Runway 15/33. This option does not impact existing facilities or planned facility development differently than the visual development setbacks currently defined for the runway.

The airspace-related factors are evaluated for specific airside facilities, and for each of the preliminary landside alternatives. These and other related elements are described below.

² In addition to meteorological conditions, Life Flight Network indicates reduced visibility during the summer months as a result of wildfire smoke.

Instrument Approach Development – Impacts On Airport Facility Development

Table 5-3 summarizes several features and development issues related to the development of both the straight-in and circling non-precision instrument (NPI) approaches being considered for Joseph State Airport.

TABLE 5-3: RUNWAY 15/33 – COMPARISON - NPI APPROACH OPTIONS BENEFITS/DEVELOPMENT ISSUES

Item	NPI – Circling Procedure Option 1	NPI – Straight-in Procedure Option 2
Instrument Approach Minimums (Estimated)	1 ¼ to 1 ½ miles visibility required; 1019 to 1539 feet minimum descent altitude (above airport)	1 mile visibility required; 615 feet minimum descent altitude (above runway end)
Primary Surface Width	No change in existing dimension (250 feet)	Increases primary surface width to 500 feet (the wider surface would capture the existing parallel taxiway penetrations noted below)
Primary Surface Penetrations	No change No existing or future primary surface penetrations. The existing taxiway/ taxilane are located outside of the 250-foot wide primary surface.	Approximately 75% of the existing parallel taxiway and 200 feet of the south access taxilane sit higher than the adjacent runway and would penetrate the wider primary surface. FAA indicates that this would need to be addressed to meet standards. Mitigation options include reconstruction of the parallel taxiway (lowering) or the runway (raising) to mitigate the primary surface obstruction.
Transitional Surface Penetrations	No change No existing or future transitional surface penetrations	3 of 8 existing hangars would penetrate the shifted transitional surface and require mitigation. Obstruction lighting would be proposed for near-term mitigation. Removal of a penetrating structure would be assumed at the end of the useful life. Any replacement hangars would not be permitted to penetrate the transitional surface. The existing aviation fuel storage tank would penetrate the shifted transitional surface and require mitigation. Obstruction lighting would be proposed for near-term mitigation. Removal/relocation of the tank would be assumed at the end of its useful life.
South Apron Buildout to Capacity (See Alternatives 1A and 1B)	No impact to 8 existing hangars No impact to 8 existing hangars (see South Apron Alternative 1A) +7 hangars (new) +1 Pilot/Mixed Use Building (new) +1 Large AC parking position	3 existing hangar sites (decommissioned at end of useful life) (see South Apron Alternative 1B) for conflicts +5 hangars (new) +1 FBO /Pilot Building (new) +0 Large AC/Helicopter parking positions Fuel tank relocation and fueling apron required
Horizontal and Conical Surface Outer Dimensions and Penetrations	No change	No change

Figure 5-1 illustrates the FAR Part 77 primary surface widths (250 feet and 500 feet) that would be applied to Runway 15/33 for the visual and non-precision instrument runway designations. The current Runway 15/33 primary surface is 250 feet wide. This horizontal plane of airspace is level with the runway centerline at its nearest point and cannot be penetrated by terrain or built items.

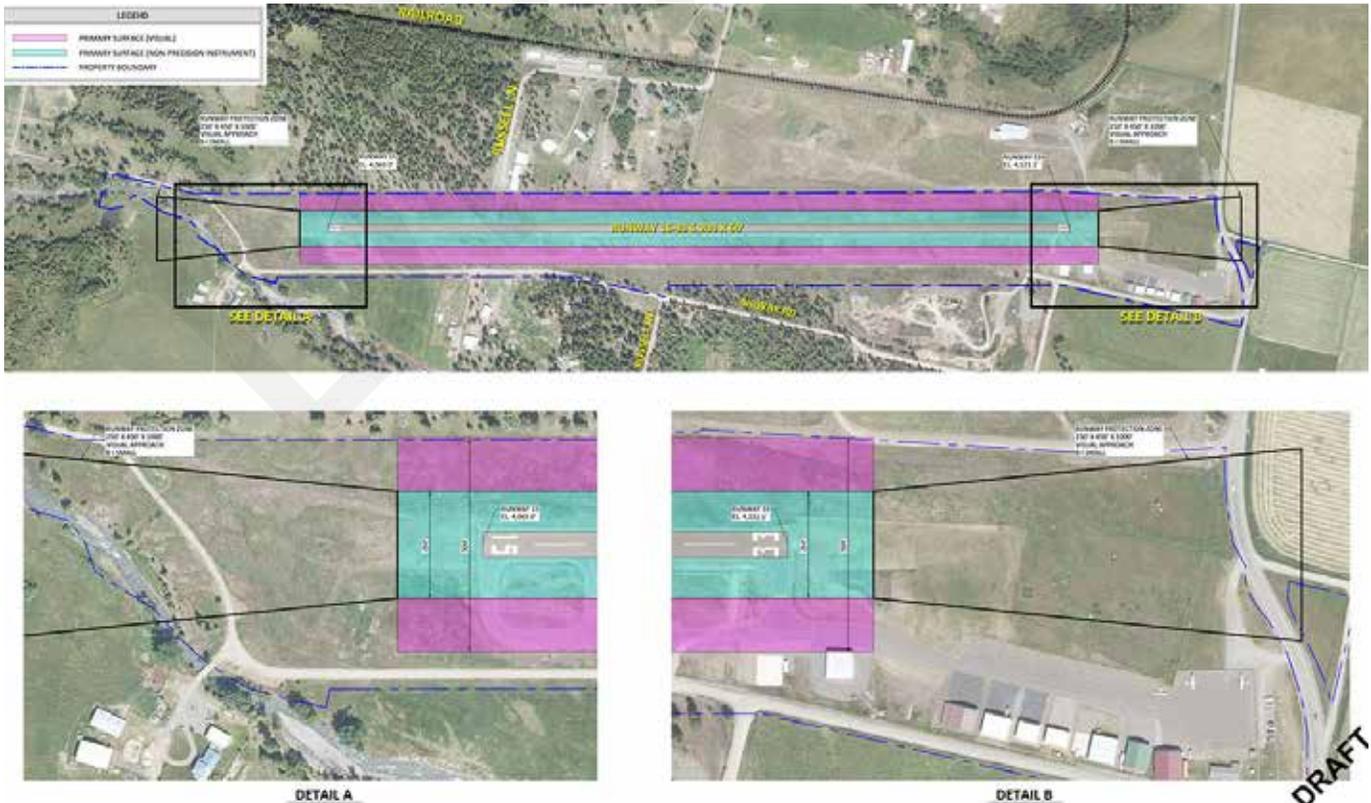
An increase in primary surface width also shifts the starting point of the adjacent 7:1 transitional surface that slopes outward and upward from the primary surface. Shifting the transitional surface outward from the runway will affect the obstruction clearance for objects to the sides and beyond the ends of the runway, including structures, parked aircraft, etc.

A comparison of visual and non-precision instrument airspace constraints will be provided for each of the preliminary landside alternatives presented later in the chapter. Although conditions vary by location, an expansion of Part 77 surfaces for Runway 15/33 will generally reduce the landside development capacity within the existing airport boundary and require additional setbacks for any potential off-airport development.

While existing facilities such as hangars are often permitted to remain if the obstruction is lighted, the FAA generally expects the structure to be removed at the end of its lease or useful life. The FAA encourages roadways that penetrate Part 77 airspace (obstructions caused by traveling vehicles) to be relocated to eliminate the obstruction. New hangars would need to be sited to avoid airspace penetrations.

A 125-foot lateral shift of the 7:1 transitional surface slope created by the wider primary surface will reduce vertical clearance by 17.86 feet at any point within the transitional surface. For example, the quad hangar located near the north end of the airport’s hangar area (building visible in Detail B near corner of the primary surface) does not penetrate the existing transitional surface, but would penetrate the expanded NPI runway transitional surface by nearly 18 feet.

FIGURE 5-1: VISUAL AND NPI PRIMARY SURFACE FOOTPRINTS FOR RUNWAY 15/33



RUNWAY-TAXIWAY IMPROVEMENT OPTIONS

All existing runway and taxiway dimensions meet or exceed the Airplane Design Group I (ADG I) standards. The existing 5,200-foot runway length meets the FAA standard for small aircraft with fewer than 10 seats for local site conditions (airfield elevation and mean maximum temperature in hottest month).

The parallel taxiway object free area (TOFA) obstruction clearance issue identified in the Facility Requirements Chapter will be addressed as a maintenance item and is not expected to require an alternatives evaluation. The direct runway access identified for the existing fuel apron and Taxiway A1 will be addressed in the evaluation of landside development alternatives.

As noted earlier, the straight-in approach option requires increasing the runway primary surface width to 500 feet. The parallel taxiway (Taxiway A) is outside the current visual runway primary surface, but would be located within the expanded NPI runway primary surface. Taxiways are permitted within the primary surface footprint, although they are not permitted to penetrate the surface itself. A review of AGIS survey data indicates that about 75 percent of Taxiway A is elevated above the runway, with a maximum excess elevation of 3.59 feet near its south end. Figure 5-2 depicts the areas of the taxiway (shown in red) that would penetrate the NPI primary surface. The FAA confirms that a taxiway penetration to a runway primary surface would need to be addressed to meet standards. Similar impacts affecting existing and future landside developments are addressed in the preliminary landside alternatives evaluations, later in the chapter.

FIGURE 5-2: NPI RUNWAY PRIMARY SURFACE PENETRATION (EXISTING PARALLEL TAXIWAY)



Two runway-taxiway mitigation options are available to address the potential NPI runway primary surface obstruction:

1. Lower the parallel taxiway to eliminate the primary surface penetration
2. Raise the runway to elevate the primary surface above the parallel taxiway

No runway-taxiway mitigation is required if the current Visual runway primary surface is maintained to support development of a circling NPI approach procedure.

Figure 5-3 depicts the reconstruction of Taxiway A and the northern section of the south apron taxilane. The amount of primary surface penetration varies along the length of the runway, but is 3.59 feet at its maximum. The taxiway mitigation option would require excavation and full pavement reconstruction to effectively lower the taxiway below the corresponding runway elevation. Changing the parallel taxiway elevation will also require reconstruction of the exit taxiway connections to maintain FAA design gradient standards.

Figure 5-4 depicts the reconstruction of Runway 15/33 and its five exit taxiways. This alternative reconstructs the runway to elevate it above the parallel taxiway. The exit taxiway connections would also be reconstructed with this alternative.

The impacts of expanded FAR Part 77 airspace surfaces on adjacent facilities (hangars, aircraft parking, etc.) are addressed in the landside development alternatives, presented later in the chapter.

Weighing the tradeoffs between lower approach minimums and the cost of reconfiguring existing and future airfield facilities presents a significant challenge for ODA. These factors will be carefully considered when ODA ultimately selects its master plan preferred development alternative.

FIGURE 5-3: RECONSTRUCTION TAXIWAY OPTION A

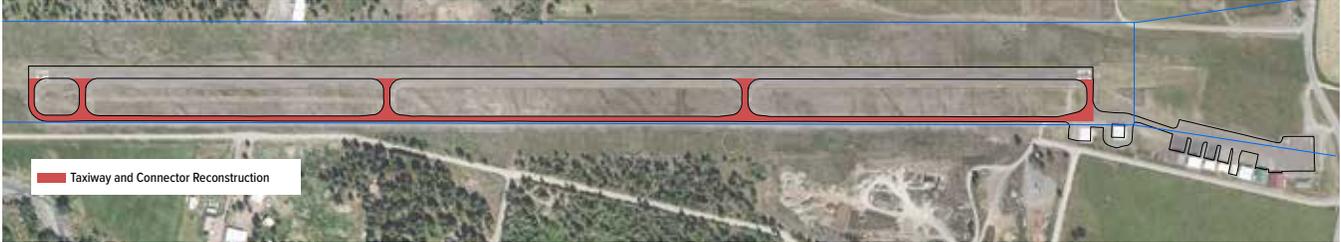
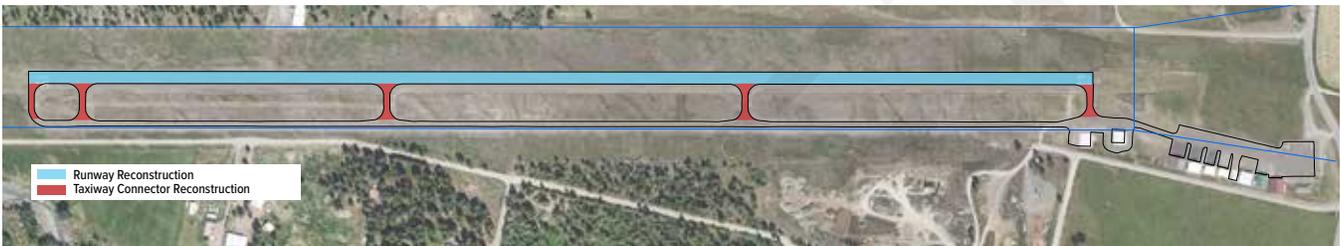


FIGURE 5-4: RECONSTRUCTION RUNWAY OPTION B



East Parallel Taxiway Reserve

The development of a parallel taxiway on the east side of Runway 15/33 has been identified as a potential long term need, if future aeronautical development is pursued on the east side of the runway. For planning purposes, a taxiway development reserve has been included in the preliminary east landside development options presented later in the chapter. During preliminary discussions on the concept, the FAA indicated that the development of a second parallel taxiway on Runway 15/33 would be unlikely based on current and forecast air traffic. Depicting a taxiway reserve is recommended to define the required facility development setbacks for any planned or proposed development east of the runway. **Figure 5-5** depicts the east parallel taxiway reserve, utilizing the existing 225-foot runway separation that exists for Taxiway A. The exit taxiway connections located near mid-runway are designed to avoid “high energy” runway crossings in the middle third of the runway, per FAA design guidance.

FIGURE 5-5: EAST PARALLEL TAXIWAY (DEVELOPMENT RESERVE)



Alternative Turf Landing Area

Based on recent direction provided by FAA, an evaluation to formally establish an alternate turf landing area at the Airport will not be performed. FAA indicates that internal discussions related to developing a policy for alternate operating areas (AOA) are ongoing. In the absence of formal FAA policy, the FAA has requested that the issue not be included in the master plan alternatives analysis and any such area not be depicted on the Airport Layout Plan. The FAA will not comment on the existing informal use of the grass-surfaced area between Runway 15/33 and Taxiway A.

LANDSIDE DEVELOPMENT ALTERNATIVES

Overview

The landside planning evaluations are intended to identify options for meeting the net twenty-year demand forecast for based aircraft and projected transient aircraft parking demand, plus development reserves equal to roughly 100 percent of the forecast demand. The primary new landside facility needs include aircraft hangars and aircraft parking for larger fixed wing aircraft and helicopters. The 19 existing small airplane tiedowns exceeds long-term forecast parking demand for locally-based and transient aircraft and may be modified or reduced in some options to accommodate other aircraft needs.

Based on forecast demand, it appears that available on-airport landside capacity will be exhausted near the end of the current planning period, or shortly thereafter. Once existing capacity is exhausted, the Airport will be unable to accommodate new landside development without additional land area. Based on this assessment, the evaluation of landside alternatives includes both an evaluation of on-airport areas and the potential development of facilities outside current airport property ownership.

Four preliminary landside development options are presented:

- Alternative 1 (Figure 5-6) focuses on the south apron and hangar area;
- Alternative 2 (Figure 5-7 and 5-8) focuses on an adjacent parcel of property currently in City of Joseph ownership;
- Alternative 3 (Figure 5-9 and 5-10) focuses on an adjacent parcel of property currently in private ownership; and
- Alternative 4 (Figure 5-11) focuses on proposed modifications to the existing aircraft fueling apron.

The impacts associated with the potential change in airspace described in the airside development alternatives section are applied to the landside alternatives as sub-options. Alternatives 1-3 (A and B) depict proposed facility layouts compatible with both the current visual and the alternate non-precision instrument (NPI) airspace surfaces. As noted earlier, both airspace categories will support NPI approach procedures, although the approach minimum differ. Alternative 4 proposes modifications to the existing fuel apron to address FAA design standards and is compatible with the current visual airspace only; the fuel apron and storage tank would need to be relocated if the runway is upgraded to NPI.

The alternatives address both improvements to existing on-airport facilities and potential development of new facilities beyond airport property. Options for locating landside development outside current airport property present functional concepts for consideration only. Property owner contact has not been initiated at this stage of evaluation. If the off-airport development concepts are supported for further evaluation by the master plan PAC, ODA will initiate contact with affected property owners to assess the feasibility of development.

The FAA recommends that airport master plans be initially developed in an “unconstrained” manner, rather than establishing pre-defined limits that drive the planning process. The evaluation of development alternatives for the Airport is unconstrained, consistent with FAA guidance, forecast demand, and the defined facility requirements. Determinations of feasibility for accommodating future airport development beyond existing airport boundaries will be evaluated as the preliminary alternatives are refined.

LANDSIDE ALTERNATIVE 1 – SOUTH APRON DEVELOPMENT

The **South Apron Development - Alternatives 1A and 1B (Figure 5-6)** maximize the development of new hangar sites within the existing south apron area. All proposed development is clear of the adjacent Runway Protection Zone (RPZ) and is contained entirely on airport property.

Alternative 1A provides an optimized layout that is fully compatible with the current visual airspace defined for Runway 15/33. The layout provides space for seven additional conventional hangars, a new pilot building, parking for transient large aircraft and helicopters, and auto parking. The existing pilot building is assumed to be replaced and relocated. The site will accommodate an expanded building that could incorporate multi-function (mixed use) community space. The proposed site is also compatible with a 2-story building.

Reconfiguration of the apron to better accommodate parking for large transient fixed-wing aircraft (including medevac aircraft) and helicopters is also proposed. The proposed reconfiguration reduces the number of existing small airplane tiedowns (to be phased out as new development occurs). However, the remaining number of small airplane tiedowns exceeds future demand projection.

Alternative 1B retains the same layout as Alternative 1A, for the purpose of illustrating the elements that are not compatible with the more demanding NPI airspace. Due to the narrow configuration of the south apron area, a second NPI-compatible layout was not created. Alternative 1B assumes the NPI airspace will eliminate the ability to develop two hangars sites and new large aircraft parking (shown in red) at the north end of the development area. The northern three small airplane tiedowns would also be eliminated due to airspace penetration. Unrelated to apron redevelopment, but related to NPI airspace clearances, is a realignment of a section of Airway and Juniper Roads to eliminate a penetration that would be caused by vehicles traveling on the public roadway. It is noted that the vehicle/roadway penetration will exist if NPI airspace is applied to the runway, regardless of proposed hangar development.

Alternative 1A, as presented, is capable of accommodating the twenty-year forecast demand for hangar space, although the area does not provide enough space for the defined development reserve. The new development capacity in Alternative 1B is limited by the more-restrictive NPI airspace for Runway 15/33. In addition, several existing facilities may be identified for eventual removal, including existing hangars and tiedowns, further reducing aircraft storage capacity on the airport.

Table 5-4 summarizes the key features of Landside Alternatives 1A and 1B.

TABLE 5-4: ALTERNATIVE 1A/1B FEATURES

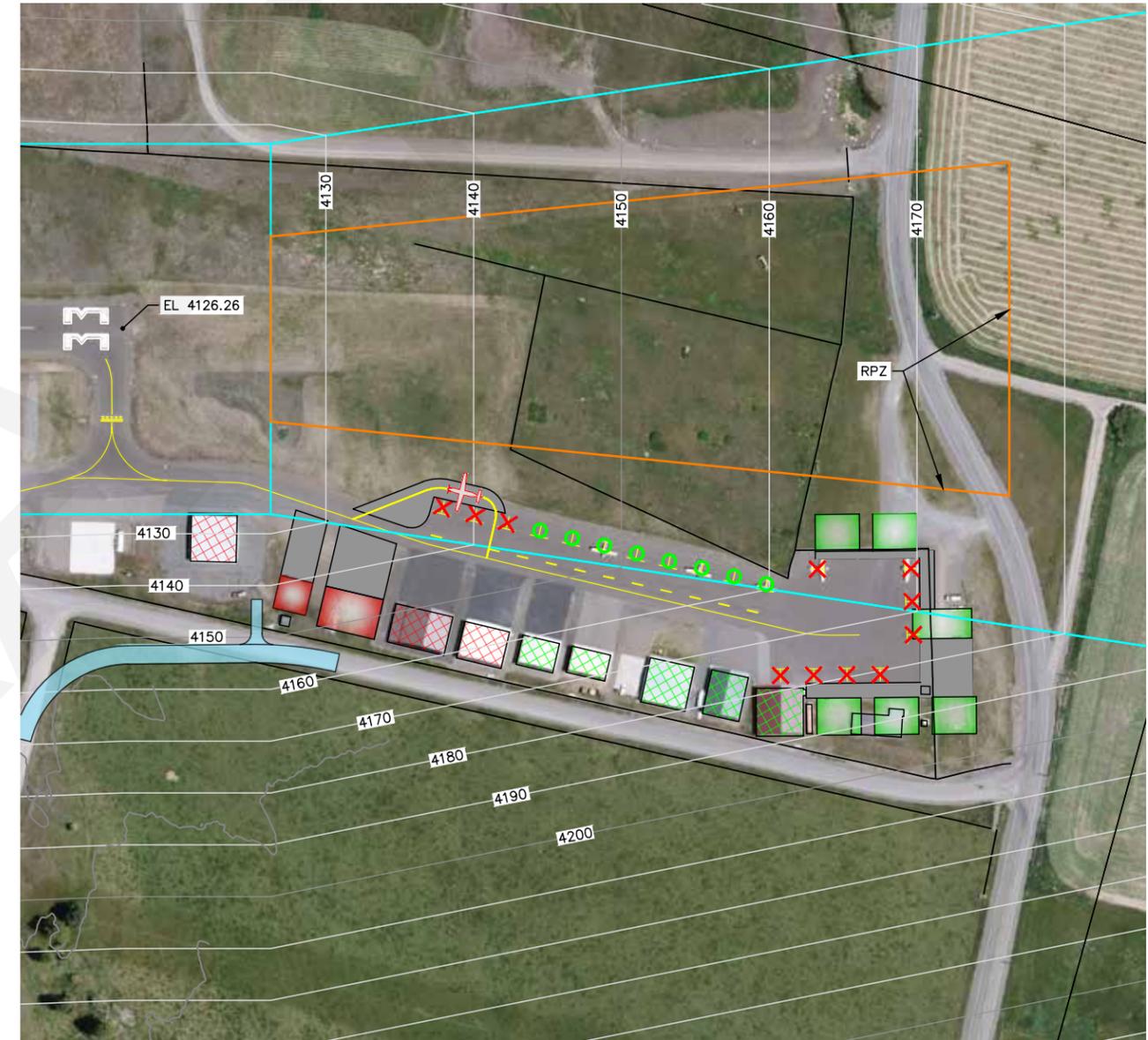
Development Features	Alternative 1A	Alternative 1B
Transient Aircraft Parking (large aircraft and helicopters)	Expanded area at north end of apron with taxilane clearances for 1 or 2 drive-through parking positions in order to accommodate multiple transient large aircraft, such as the Pilatus PC12 (ADG II); apron also accommodates transient helicopter loading/unloading	Locate short term loading/unloading position at south end of main apron North expansion of apron not compatible with airspace
Small Airplane Tiedowns (19 existing)	8 (-11 to provide access to new hangars or expanded aircraft parking)	8 (-3 due to transitional surface penetration with or without apron redevelopment; -8 to provide access to new hangars or expanded aircraft parking)
New Conventional Hangar Sites	7	5
T-Hangar Sites	0	0
Existing Hangars / Hangar Units with Airspace Conflicts (including multi-unit hangar) Requiring Mitigation	0 hangars / 0 units ¹	3 hangars / ≈6 units ¹
Pilot Building Replacement	Yes (relocated to south end of main apron)	Same
Vehicle Parking and South Gate Replacement	Yes (relocated to south end of main apron)	Same
Hangar Capacity: New Hangar Units / Forecast Net Demand (20 years)	7/6 (117%)	5/6 (83%)
Hangar Capacity: New Hangar Units / Forecast Net Demand + 100% Development Reserve (20 years)	7/12 (58%)	5/12 (42%)

1. Assumes one aircraft stored per conventional hangar

LEGEND			
	PROPOSED HANGAR (CONFLICT)		TIEDOWN (REMOVE)
	PROPOSED HANGAR (NO CONFLICT)		TIEDOWN (NO CONFLICT, TO REMAIN)
	PROPOSED ASPHALT PAVEMENT		RUNWAY PROTECTION ZONE
	PROPOSED ROAD REALIGNMENT		PART 77 AIRSPACE
	EXISTING HANGAR (CONFLICT)		PILATUS PC-12 (NO CONFLICT)
	EXISTING HANGAR (NO CONFLICT)		PILATUS PC-12 (CONFLICT)



ALTERNATIVE 1A - EXISTING, VISUAL AIRSPACE



ALTERNATIVE 1B - PROPOSED NON-PRECISION INSTRUMENT AIRSPACE

LANDSIDE ALTERNATIVE 2 – WEST SIDE HANGAR DEVELOPMENT

The **West Side Hangar Development - Alternatives 2A and 2B (Figures 5-7 and 5-8)** provide additional hangar development capacity on a land parcel immediately adjacent to the airport. The proposed development site is located adjacent to Taxiway A near the south end of the runway. Alternatives 2A and 2B provide the same hangar layout with three conventional hangar sites and one 8-unit T-hangar, for a total of 11 hangar units. New access taxilanes connect the hangar development area to Taxiway A, north of the existing fuel apron. The overall development area is approximately 3 acres.

Alternative 2A is based on the current visual airspace designation for Runway 15/33; Alternative 2B incorporates the more demanding NPI airspace for Runway 15/33. No changes to the hangar layout are required in Alternative 2B. However, the corner of Airway and Juniper Roads is realigned to eliminate an airspace penetration that would be caused by vehicles traveling on the public roadway. It is noted that the vehicle/roadway penetration will exist regardless of the proposed hangar development if NPI airspace is required for the runway.

A new west vehicle gate is located south of the existing Quad hangar to replace an existing vehicle gate. A second gate is recommended near the west end of the proposed hangar area. The new gates are intended to provide access to existing and planned landside facilities and eliminate the existing direct vehicle access to Taxiway A.

Apron expansion is depicted north of the existing fuel apron, which accommodates additional large aircraft or helicopter parking (Alternative 2A) or a relocated fuel apron (Alternative 2B). Alternative 2B illustrates the items (existing fuel storage tank and three existing hangars) that would penetrate the NPI transitional surface for Runway 15/33. The proposed relocation of the fuel tank would mitigate that obstruction; mitigation for the existing hangars would be determined in consultation with FAA.

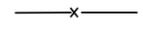
The parcel is owned by the City of Joseph and it currently accommodates a solid waste recycling station and an active extraction operation in the adjacent gravel pit. The proposed aeronautical development is similar to the future hangar development depicted on the current FAA-approved Airport Layout Plan (ALP). The updated concept reorients the hangar rows to parallel Juniper Road and shifts the development south to abut the road. This configuration avoids the sloping terrain to the north leading to the entrance to the gravel pit. All existing land use functions at the south end of the parcel are maintained with the proposed addition of aeronautical facilities. The recycling station is shifted to the parcel's southwest corner.

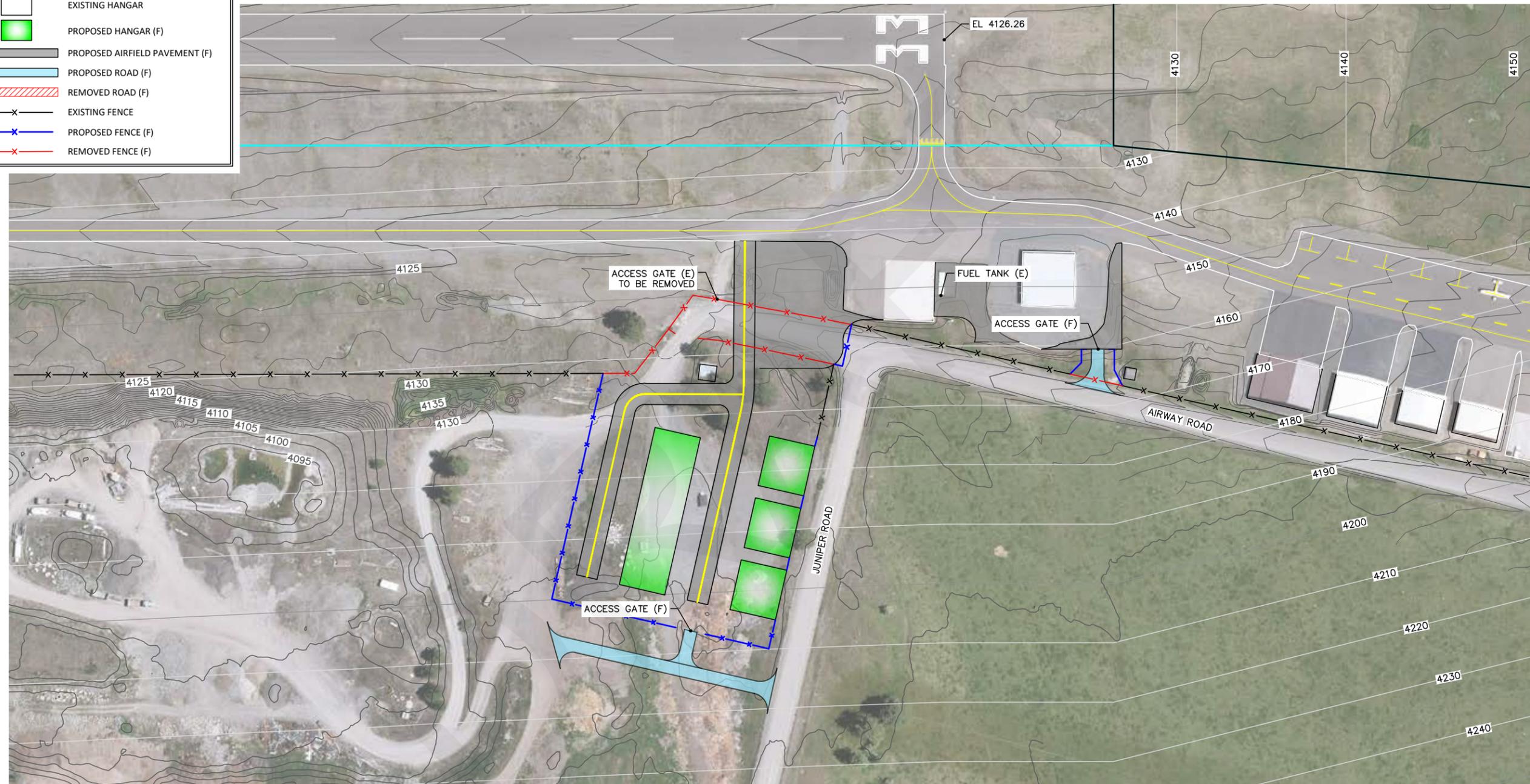
New surface access is proposed beyond the west end of the hangar rows to replace the existing access at the southeast corner of the parcel. The new access is intended to connect to existing south/east pit access and also serve a relocated recycling station.

Table 5-5 summarizes the key features of Landside Alternatives 2A and 2B.

TABLE 5-5: ALTERNATIVE 2A/2B FEATURES

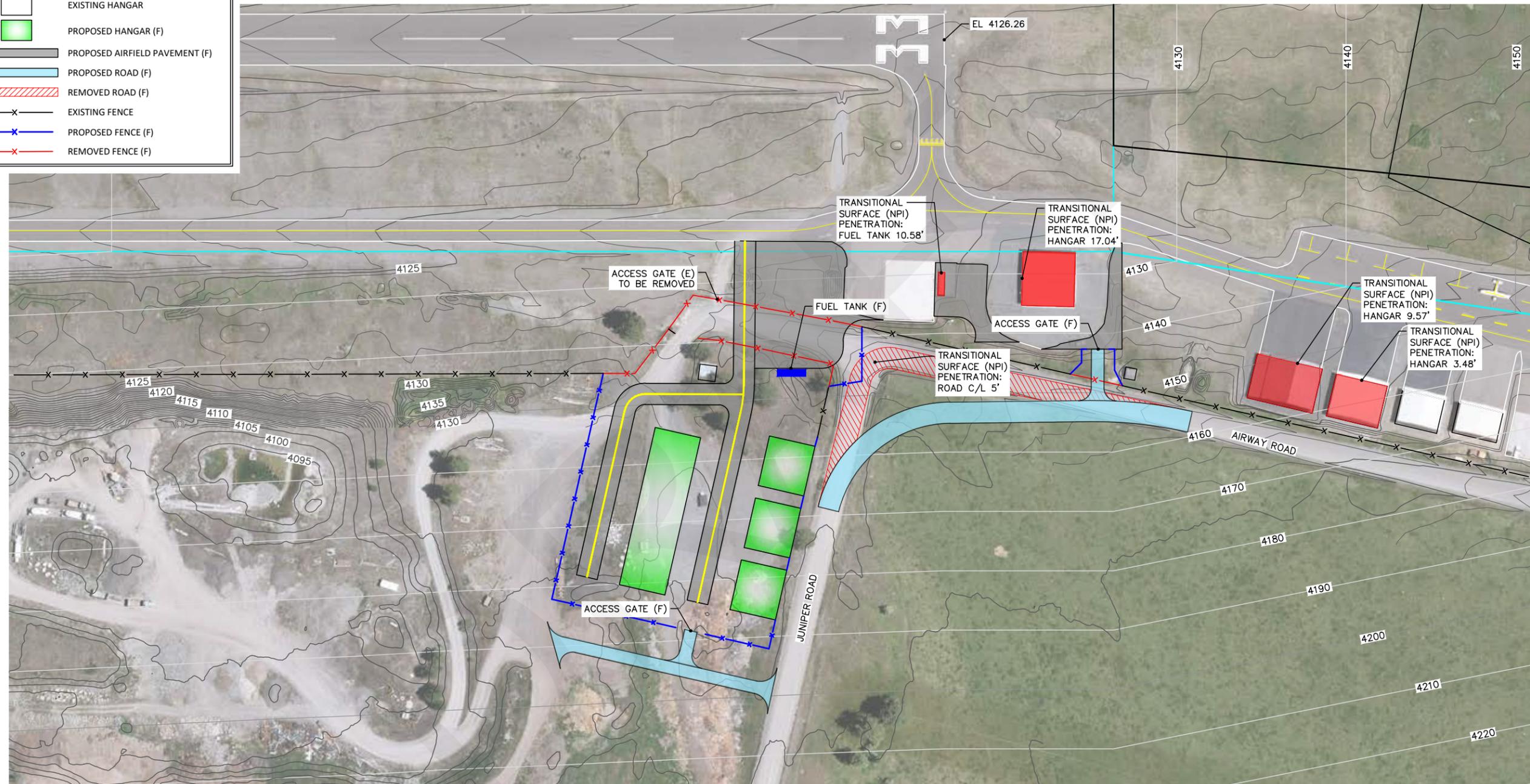
Development Features	Alternative 2A	Alternative 2B
New Conventional Hangar Sites	3	Same
T-Hangar Units	8	Same
Fuel Apron	Maintain existing apron	Relocate fuel tank, construct new fuel apron
Taxilanes	Hangar access taxilane connection to Taxiway A with 2 stub taxiways	Same
Airport Gates	Relocation and replacement of existing west vehicle gate; second west gate (new hangar access) * Eliminates direct access road connection to parallel taxiway	Same
Airport Roads	New access roads (relocated vehicle gate and replacement access to parcel)	Same
Public Roads Impacts	None	Realignment of public roadway section to mitigate NPI transitional surface penetration (corner of Airway Road and Juniper Road)
Site Development Issues	Grading and drainage	Same
Off-Airport Site Requirements	Approximately 3 acres	Same + ROW for public road realignment

LEGEND	
	EXISTING HANGAR
	PROPOSED HANGAR (F)
	PROPOSED AIRFIELD PAVEMENT (F)
	PROPOSED ROAD (F)
	REMOVED ROAD (F)
	EXISTING FENCE
	PROPOSED FENCE (F)
	REMOVED FENCE (F)



ALTERNATIVE 2A - WEST SIDE HANGAR DEVELOPMENT AREA - FAR PART 77 (VIS) AIRSPACE

LEGEND	
	EXISTING HANGAR
	PROPOSED HANGAR (F)
	PROPOSED AIRFIELD PAVEMENT (F)
	PROPOSED ROAD (F)
	REMOVED ROAD (F)
	EXISTING FENCE
	PROPOSED FENCE (F)
	REMOVED FENCE (F)



ALTERNATIVE 2B - WEST SIDE HANGAR DEVELOPMENT AREA - FAR PART 77 (NPI) AIRSPACE

LANDSIDE ALTERNATIVE 3 – EAST SIDE HANGAR DEVELOPMENT

The **East Side Hangar Development - Alternatives 3A and 3B (Figures 5-9 and 5-10)** provide additional hangar development capacity on a portion of the former mill site located immediately adjacent to the airport. The proposed hangar development site is located on the east side of the runway, near its south end. The aviation-related development area is approximately 10-12 acres, which is a portion of overall site. The parcel is privately owned and is currently for sale. The current owner has completed a series of industrial site remediation projects in coordination with the Oregon Department of Environmental Quality (DEQ) and has indicated that there are no known unresolved environmental issues.

The conceptual development includes adequate setbacks to develop an east parallel taxiway (see East Parallel Taxiway Reserve - Figure 5-5). Developing a second parallel taxiway on Runway 15/33 would be a low priority based on current and forecast air traffic levels. It is also recognized that development of the northern section of the parallel taxiway would involve significant environmental challenges associated with adjacent resource lands. However, establishing the appropriate development setbacks preserves the ability to add full or partial-length sections of taxiway, as needed.

The parallel taxiway development setback also ensures that the proposed hangars do not penetrate either the visual or NPI airspace, as depicted in Alternatives 3A and 3B. If east side hangar development is pursued, taxiway access between the runway and the hangar area would initially be limited to a single point, as depicted at the Runway 30 connection with Taxiway A1.

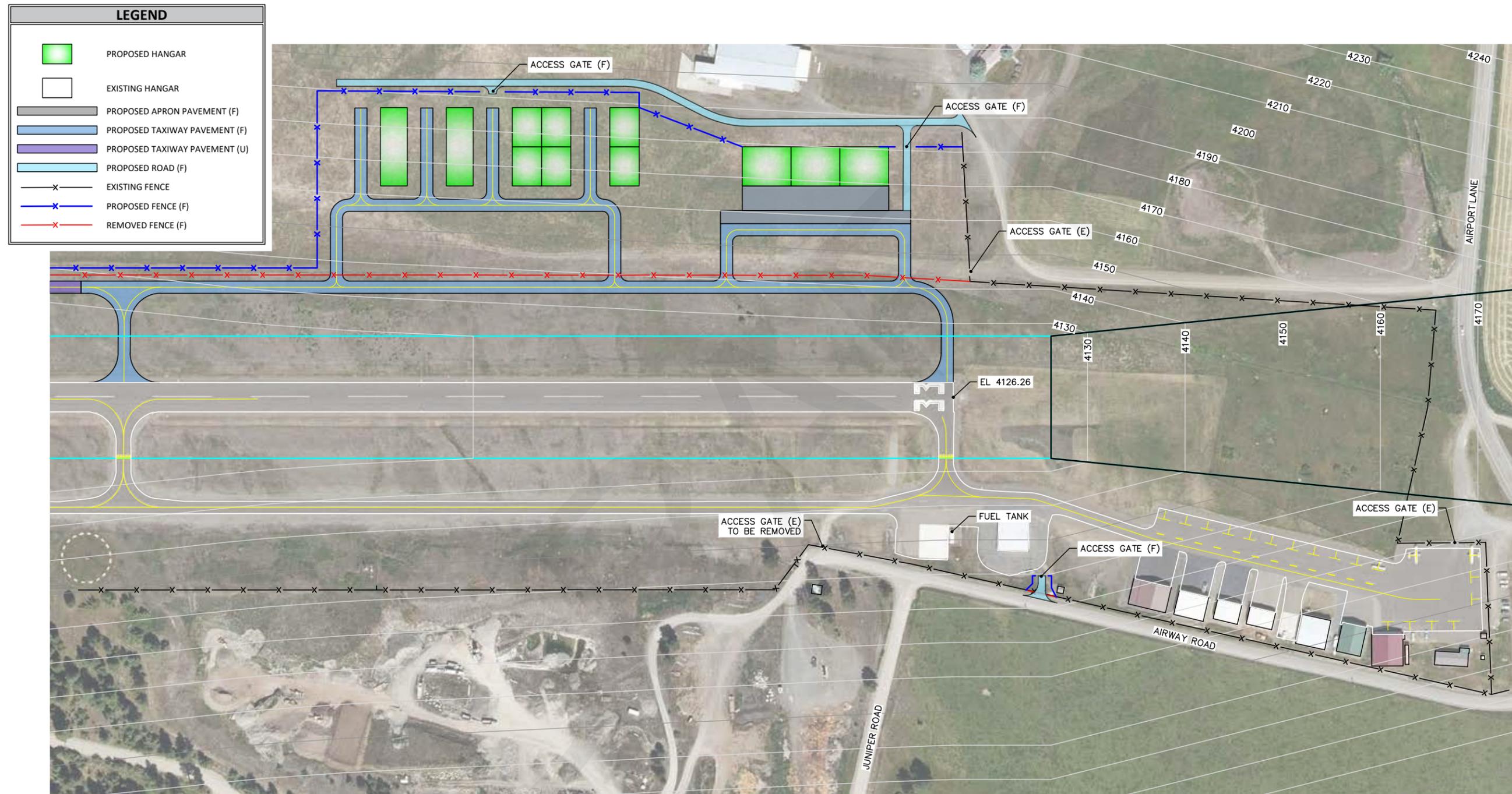
Alternatives 3A/3B provide identical layouts with sites for six conventional storage hangars and two 8-unit T-hangars, for a total of 22 hangar units. It is important to note that this capacity could be reduced significantly if the mix of individual and multi-unit hangars is changed by market demand. In addition to the aircraft storage hangars, three commercial hangar sites with apron are provided at the south end of the development. These sites are appropriate for commercial aeronautical service providers, or for tenants requiring large conventional hangar space.

An extension of the existing road within the site is required for Alternatives 3A and 3B to access the new hangars. Alternative 3B also includes a realignment of a section of the existing access road within the site to avoid penetrating the NPI approach surface for Runway 30. The existing public road connection (to Airport Lane) is maintained in both alternatives.

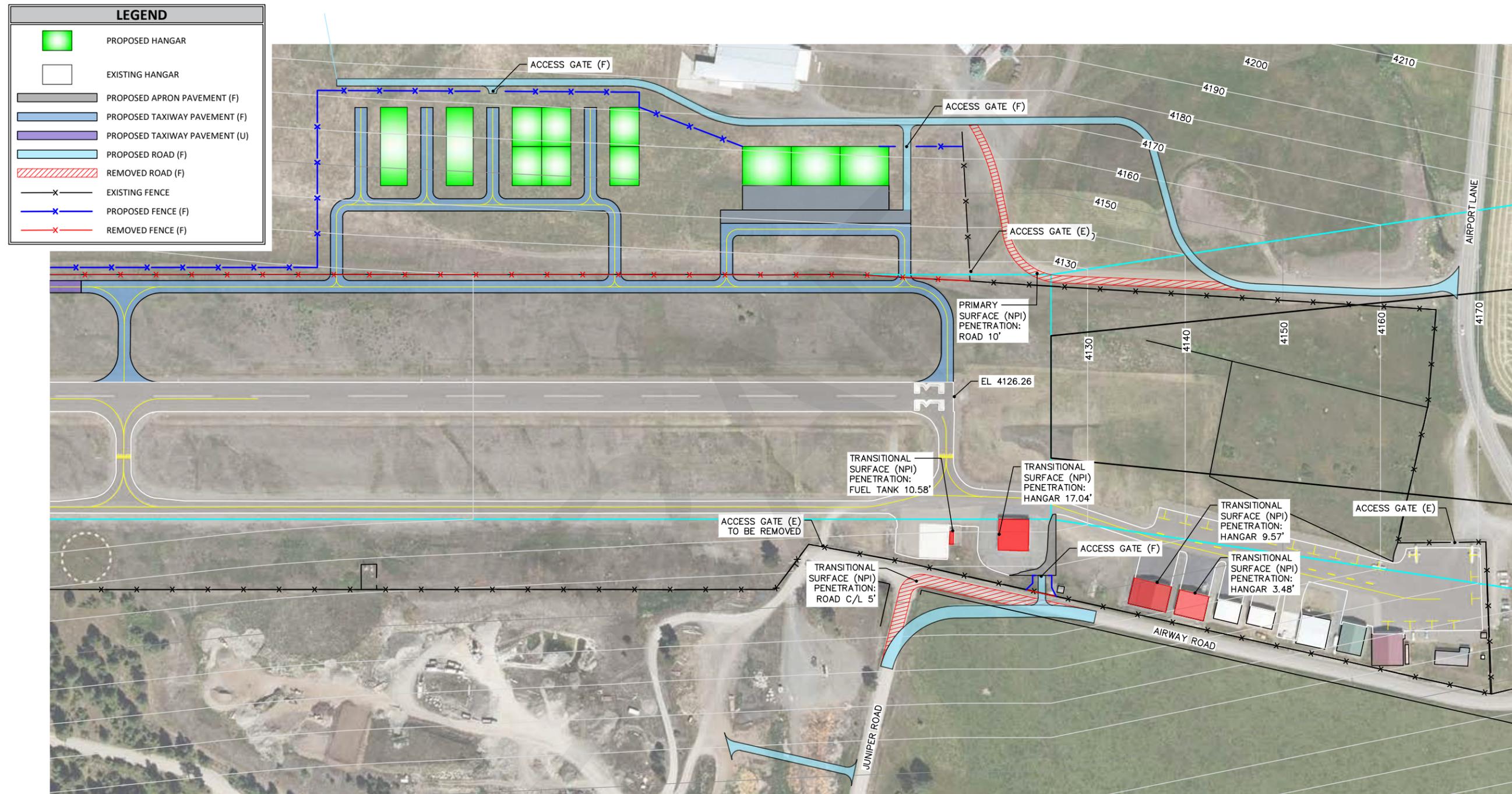
Table 5-6 summarizes the key features of Landside Alternatives 3A and 3B.

TABLE 5-6: ALTERNATIVE 3A/3B FEATURES

Development Features	Alternative 3A	Alternative 3B
New Conventional Hangar Sites	6 Storage 3 Commercial	Same
T-Hangar Units	16	Same
Taxiways	Access taxiway connection with runway and east parallel taxiway reserve	Same
Taxilanes	Hangar access taxilane connections to runway with 4 stub taxiways	Same
Airport Roads	New access roads and vehicle gate within site	Same Realign existing private road within site to avoid Runway 30 approach surface penetration
Public Roads Impacts	None	None
Site Development Issues	Grading and drainage Previous mill site remediation	Same
Off-Airport Site Requirements	Approximately 10-12 acres	Same



ALTERNATIVE 3A - EAST SIDE HANGAR AREA - FAR PART 77 (VIS) AIRSPACE



ALTERNATIVE 3B - EAST SIDE HANGAR AREA - FAR PART 77 (NPI) AIRSPACE

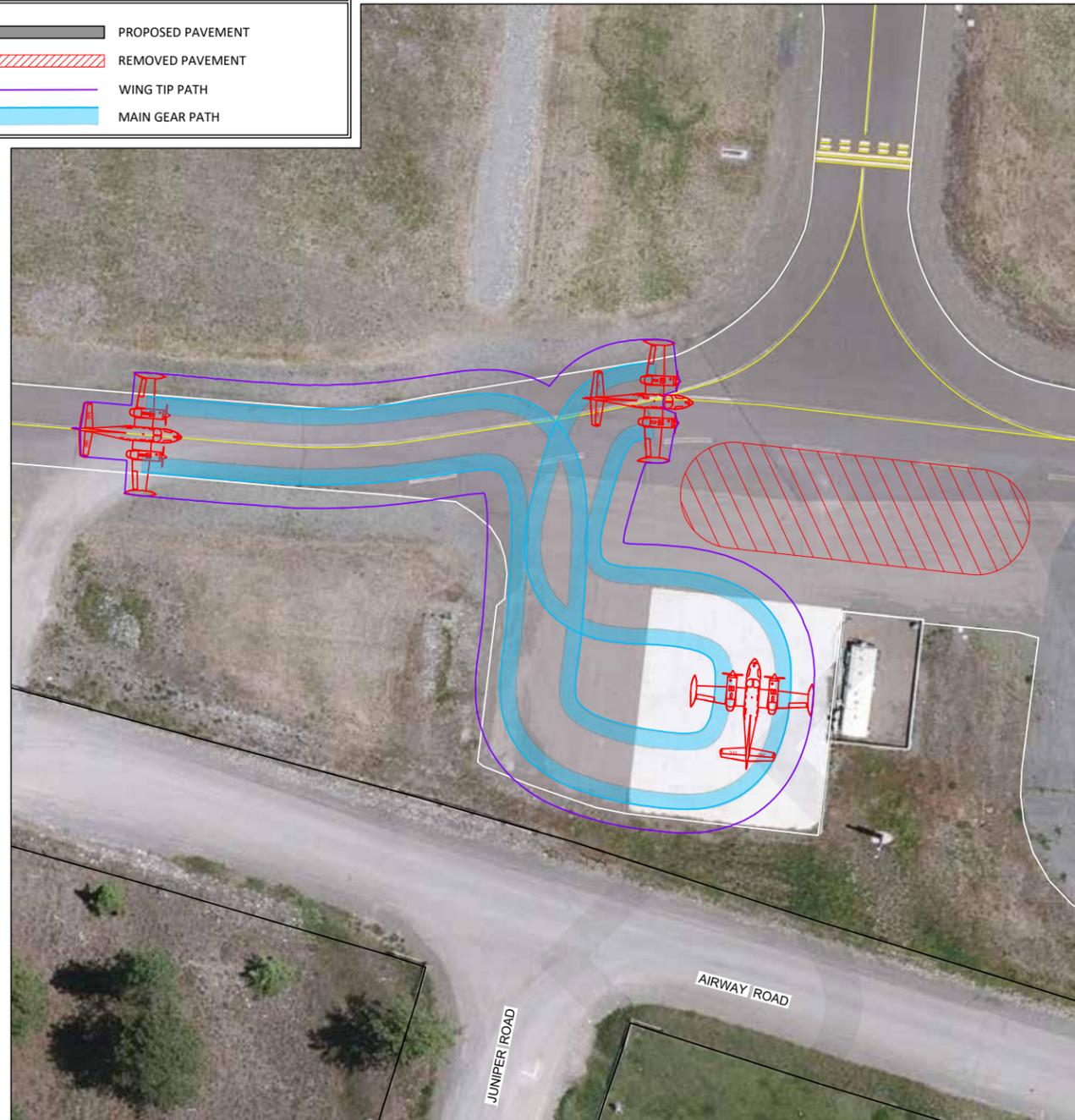
LANDSIDE ALTERNATIVE 4 – EXISTING FUEL APRON MODIFICATION

The **Fuel Apron Modification - Alternatives 4A and 4B (Figure 5-11)** provides modifications to the existing fuel apron connection to Taxiway A and eliminates the direct path from the apron to the runway via Taxiway A1. The primary modification is removal of a small section of existing pavement between the west edge of Taxiway A and the fuel apron. Aircraft would access and exit the apron from its north side. The apron connection to Taxiway A would be shifted 60 to 85 feet north, for the existing (Alternative 4A) and expanded apron (Alternative 4B) configurations. The typical turning movements of a small multi-engine aircraft are depicted for both the existing and expanded apron configurations.

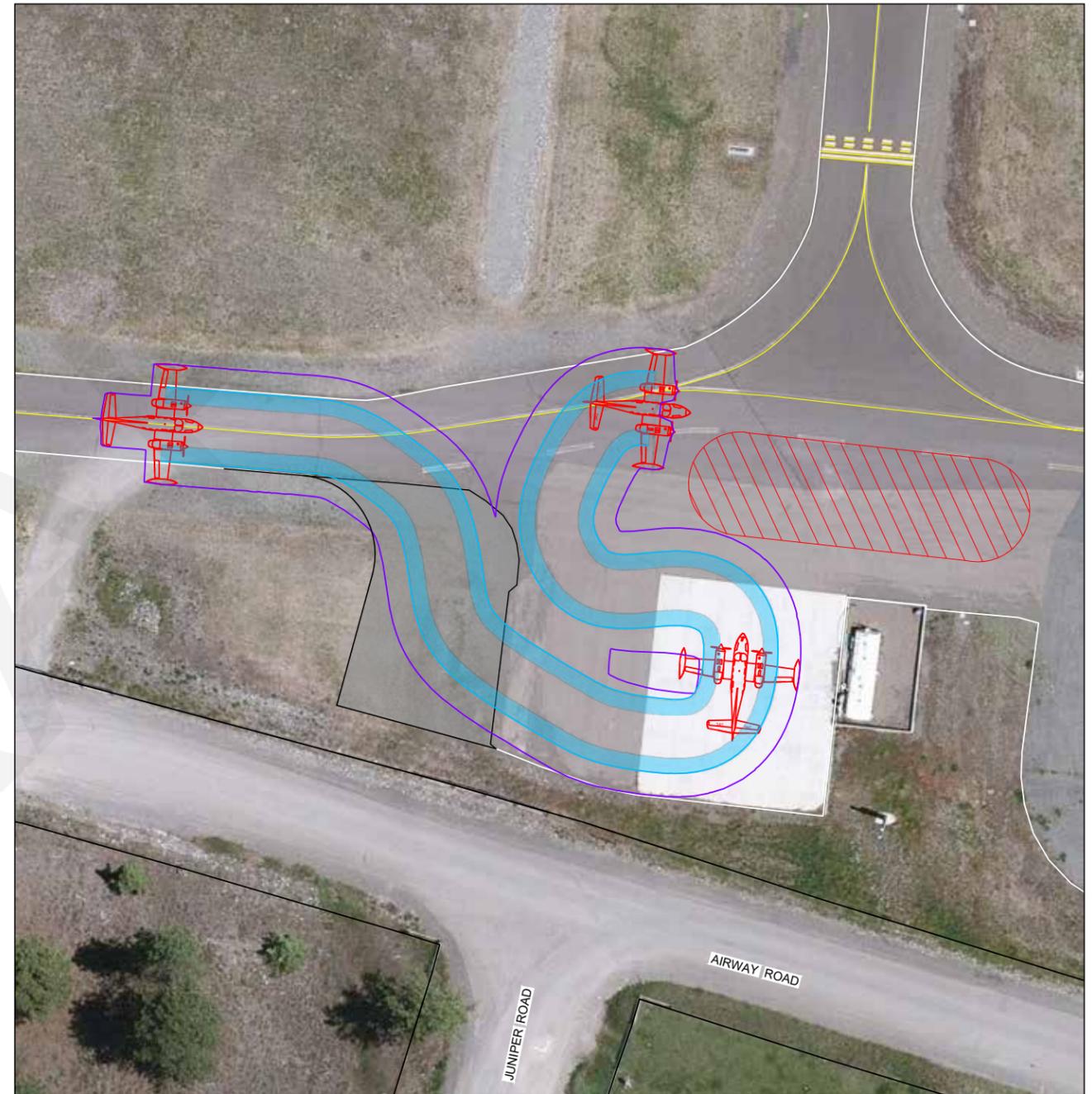
As noted earlier, the existing fueling apron is compatible with visual airspace for Runway 15/33 only. An upgrade to NPI airspace will require relocation of the fueling area (see West Side Hangar Development Alternative 2B - Figure 5-5).

DRAFT

LEGEND	
	PROPOSED PAVEMENT
	REMOVED PAVEMENT
	WING TIP PATH
	MAIN GEAR PATH



ALTERNATIVE 4A - EXISTING APRON PAVEMENT



ALTERNATIVE 4B - EXPANDED APRON PAVEMENT

SUMMARY OF LANDSIDE ALTERNATIVES

TABLE 5-7: SUMMARY OF LANDSIDE ALTERNATIVES

Alternative	1A	1B	2A	2B	3A	3B
	(South - VIS)	(South -NPI)	(West – VIS)	(West – NPI)	(East - VIS)	(East - NPI)
New Conventional Storage Hangar Sites	7	5	3	3	6	6
New Conventional Commercial Hangar Sites	0	0	0	0	3	3
T-Hangar Units	0	0	8	8	16	16
New Taxiways Required	No	No	Yes	Yes	Yes	Yes
Replacement Pilot Building	Yes	Yes	No	No	No	No
Transient Large Aircraft or Helicopter Parking	Yes	Limited	Yes	No	Yes	Yes
Transient Helicopter Parking	Yes	Limited	Yes	No	No	No
Small Airplane Tiedowns	8	8	N/A	N/A	N/A	N/A
Part 77 Airspace Impacts	No	Yes	No	Yes	No	Yes

VIS = Visual FAR Part 77 Airspace (supports NPI circling procedure to Airport)

NPI = Non Precision Instrument FAR Part 77 Airspace (required for NPI straight-in procedure to Runway 15)

LAND USE, TRANSPORTATION, AND ENVIRONMENTAL ISSUES

The preliminary development alternatives were reviewed to identify potential issues related to local site conditions. **Table 5-8** identifies potential issues for each alternative. **Table 5-9** summarizes potential issues by development area. This information is intended to provide a preliminary level of screening and comparison of potential issues when comparing the alternatives. Additional evaluations will be performed as the alternatives are refined.

TABLE 5-8: SUMMARY OF ALTERNATIVES - EVALUATION

Instrument Approach Option 1	Instrument Approach Option 2	Airside Improvements	South Landside Alternative 1A	South Landside Alternative 1B	West Hangar Alternative 2A	West Hangar Alternative 2B	East Landside Alternative 3A	East Landside Alternative 3B	Fuel Apron Alternative A	Fuel Apron Alternative B
<u>Evaluation Items:</u>										
Airspace Obstruction Mitigation (trees, hangars, etc.)										
On-Airport Environmental										
RPZ Land Use Compatibility Issues										
Off Airport Property Required										
Land Use Compatibility Issues (Zoning)										
Critical Areas Affected										
Traffic/Transportation										
Additional FAR Part 77 Site Development Constraints										

Yes
 No
 Possible

TABLE 5-9: POTENTIAL DEVELOPMENT FACTORS - LAND USE/TRANSPORTATION/ENVIRONMENTAL

Development Alternatives	Development Factors
Instrument Approach Development	<p><u>Land Use:</u></p> <ul style="list-style-type: none"> • No known issues related to land use or zoning. • Potential changes to airport overlay zoning footprint based on FAR Part 77 airspace surfaces defined for runway. <p><u>Traffic/Transportation:</u></p> <ul style="list-style-type: none"> • A change in the runway airspace designation to non-precision instrument (NPI) may impact existing public roads (Juniper and Airway) and private roads (existing access to adjacent mill site connecting to Airport Lane). Vehicles may penetrate protected airspace, requiring mitigation (TBD). • Obstructions (overhead powerlines/poles) in the vicinity of the airport will require mitigation (TBD) for instrument procedure airspace. <p><u>Environmental:</u></p> <ul style="list-style-type: none"> • Obstructions (trees) in the vicinity of the airport will require mitigation (TBD) for instrument procedure airspace. • No construction activities required; potential changes in runway markings would be limited to existing impervious surfaces. • No other environmental issues identified. <p><u>Property:</u></p> <ul style="list-style-type: none"> • No known property issues.
Airside	<p><u>Land Use:</u></p> <ul style="list-style-type: none"> • No known issues related to land use or zoning. <p><u>Traffic/Transportation:</u></p> <ul style="list-style-type: none"> • A change in the runway airspace designation to non-precision instrument (NPI) may impact existing public roads (Juniper and Airway) and private roads (existing access to adjacent mill site connecting to Airport Lane). Vehicles may penetrate protected airspace, requiring mitigation (TBD). <p><u>Environmental:</u></p> <ul style="list-style-type: none"> • Proposed in-place runway or taxiway reconstruction options in previously-disturbed areas, which would limit potential impacts. Changes in surface grading and drainage may be required. Potential improvements would be contained on airport property and are not in proximity to known wetlands, streams or other critical habitat. <p><u>Property:</u></p> <ul style="list-style-type: none"> • No known property issues. All improvements contained on Airport property.

(Continued)

TABLE 5-9: POTENTIAL DEVELOPMENT FACTORS - LAND USE/TRANSPORTATION/ENVIRONMENTAL

Development Alternatives	Development Factors
South Apron Area	<p><u>Land Use:</u></p> <ul style="list-style-type: none"> No known issues related to land use or zoning. <p><u>Traffic/Transportation:</u></p> <ul style="list-style-type: none"> Changes in vehicle access gate locations may require new or relocated access road connections to public roads. Development of additional vehicle parking areas may require new connections to adjacent public roads. <p><u>Environmental:</u></p> <ul style="list-style-type: none"> Proposed in-place apron or taxilane reconfiguration in previously-disturbed areas, which would limit potential impacts. Construction of new hangars in previously-disturbed areas adjacent to apron/taxilane, which would limit potential impacts. Expanded apron areas (new impervious surfaces) may affect surface grading and drainage and require water quality and stormwater management evaluation. The environmental review (see Figure 2-5, Chapter 2) identifies Newby Creek in the vicinity of the southeast corner of the Airport. This perennial stream is classified as a Riverine Wetland. No direct impacts are anticipated; additional evaluation required. <p><u>Property:</u></p> <ul style="list-style-type: none"> No known property issues.
West Hangar Area	<p><u>Land Use:</u></p> <ul style="list-style-type: none"> No known issues related to land use or zoning. The existing Wallowa County Industrial (M-1) zoning for the city-owned parcel is the same as the Airport. <p><u>Traffic/Transportation:</u></p> <ul style="list-style-type: none"> Existing surface access the parcel would be reconfigured/relocated to accommodate proposed aeronautical development. A change in the runway airspace designation to non-precision instrument (NPI) may impact existing public roads (Juniper and Airway). <p><u>Environmental:</u></p> <ul style="list-style-type: none"> Proposed construction in previously-disturbed areas (current City of Joseph solid waste recycling site and western edge of Airport). The proposed development avoids the adjacent gravel pit, which is in active use. Impacted existing facilities and surface access are proposed to be relocated within the site. New apron, taxiways and hangar areas (new impervious surfaces) will require surface grading and drainage improvements; water quality and stormwater management evaluation required in design. Potential improvements are not in proximity to known wetlands, streams or other critical habitat. <p><u>Property:</u></p> <ul style="list-style-type: none"> The proposed area is outside current Airport property. Additional evaluation required for potential acquisition/incorporation into the Airport, or the ability to support off-airport development with an ODA/FAA-approved through-the-fence (TTF) agreement. Conceptual development area (3 acres)

(Continued)

TABLE 5-9: POTENTIAL DEVELOPMENT FACTORS - LAND USE/TRANSPORTATION/ENVIRONMENTAL

Development Alternatives	Development Factors
East Hangar Area	<p><u>Land Use:</u></p> <ul style="list-style-type: none"> • Applicability of Recreational Residential (R-2) zoning for proposed aeronautical use requires evaluation by Wallowa County. Potential re-zone to Industrial (M-1) may be considered for airport-related land uses. <p><u>Traffic/Transportation:</u></p> <ul style="list-style-type: none"> • A change in runway airspace clearances may require relocation for a section of the private access road connecting the site to the adjacent public road (Airport Lane). <p><u>Environmental:</u></p> <ul style="list-style-type: none"> • Construction would occur in previously-disturbed areas (former sawmill site). The site has undergone extensive environmental remediation as part of its planned redevelopment (as reported by owner). • New apron, taxiways and hangar areas (new impervious surfaces) will require surface grading and drainage improvements; water quality and stormwater management evaluation required in design. • The environmental review (see Figure 2-5, Chapter 2) identifies Newby Creek in the vicinity of the southeast corner of the Airport. This perennial stream is classified as a Riverine Wetland. The creek is proximity to development area; additional evaluation required. <p><u>Property:</u></p> <ul style="list-style-type: none"> • The proposed area is outside current Airport property. Additional evaluation required for potential acquisition/incorporation into the Airport, or the ability to support off-airport development with an ODA/FAA-approved through-the-fence (TTF) agreement. • Conceptual development area (10-12 acres, including development reserves)
Airport Fuel Apron Modification	<p><u>Land Use:</u></p> <ul style="list-style-type: none"> • No issues. <p><u>Traffic/Transportation:</u></p> <ul style="list-style-type: none"> • No issues. <p><u>Environmental:</u></p> <ul style="list-style-type: none"> • Expanded apron option (new impervious surface) and pavement removal will require surface grading and drainage improvements; water quality and stormwater management evaluation required in design. Proposed improvements would be in previously-disturbed areas, not in proximity to known wetlands, streams or other critical habitat. <p><u>Property:</u></p> <ul style="list-style-type: none"> • No known property issues. All improvements contained on Airport property.

Next Steps

The preliminary development alternatives will be available for public review and comment at the February 25, 2021 PAC meeting and project open house, and subsequently through the airport master plan project website. The project meetings will be held virtually, with links provided to access the draft chapter and supporting documents. The draft Alternatives Analysis chapter will also be formally submitted to the FAA for review.

A two-week public comment period will be provided for the draft Alternatives Analysis chapter. All reviews, including public, PAC, FAA, ODA, and other stakeholders are anticipated to conclude approximately 30 days following the February 25, 2021, public meetings. However, project-related comments and questions will be accepted until the airport master plan is finalized.

At the conclusion of the review period, all input will be compiled and reviewed by ODA to assist in narrowing the preliminary development alternatives for further refinement.

Two primary ODA decision points are anticipated:

1. Instrument Approach Procedure Development. Determine a preference between the circling and straight-in NPI approach procedures identified as feasible by FAA. This critical path decision point is required to:
 - a. Provide feedback to FAA TWSE group for proceeding with formal instrument procedure design.
 - b. Develop a penetrating obstacles mitigation plan based on FAA requirements for instrument procedure development.
 - c. Define future FAR Part 77 airspace for Runway 15/33 as either visual or non-precision instrument.
 - i. This decision will eliminate several of the “A/B” sub-options for presented landside development alternatives that are dependent on the specific type of instrument approach planned.
 - ii. This decision will define critical elements of the Airport Layout Plan (ALP) drawing set.
2. Landside Development Alternatives. The evaluation will consider the Airport’s response to forecast short-term and long-term facility needs. It is assumed that the initial development focus will prioritize use of remaining developable land capacity on the Airport. ODA will also consider the options presented for expanding facilities beyond current property ownership to accommodate additional future demand. The evaluation will determine if either of the proposed off-airport development concepts should be further refined as an element of the preferred alternative, or if future landside development will be limited to existing airport property.

This chapter will be updated and added to the project website, to include the refined alternatives evaluation and a project-level environmental review. A preliminary preferred alternative will be developed for public review that includes both airside and landside elements. This information will be presented at the next PAC meeting, which will also include discussion of project cost estimates and development priorities. Once the preferred alternative is finalized, it will be incorporated into the ALP, where it may be refined further based on FAA review.

Recommended Development Alternative

The development concepts described in the previous section were included in the draft Airport Development Alternatives chapter. The chapter was distributed to the Airport Master Plan - Planning Advisory Committee (PAC) for review. The chapter and the supporting graphics were also posted for public review on the project webpage, and a special webpage created for an online open house. This material was presented at the virtual PAC meeting and online open house held on February 25, 2021.

Comments provided by PAC members, airport users, community members, FAA, and ODA staff were organized and presented to ODA to assist in their selection of the preferred alternative. This input provided important guidance in the refinement of development concepts leading to the selection of the preferred alternative.

ODA staff presented the proposed preferred alternative to the State Aviation Board at their April 1, 2021 meeting. ODA staff subsequently confirmed the selection of the preferred alternative for further refinement and incorporation into the Airport Layout Plan (ALP) drawing set, and the master plan's twenty-year Capital Improvement Program (CIP).

The recommended preferred alternative will be reviewed by the FAA Seattle ADO. Minor refinements to the preferred alternative may be incorporated into the final ALP, as needed, to reflect ongoing airport activities and coordination with FAA.

The following section describes the proposed improvements for specific airside and landside facilities which have been consolidated into the preferred alternative. **Figures 5-12** and **5-13** depict the recommended facility improvements.

2020-2040 RECOMMENDED IMPROVEMENTS (PREFERRED ALTERNATIVE)

Airside Facilities (Runway/Taxiway System)

The primary development focus for airside facilities is to implement the design and publication of a non-precision instrument approach. The approach will be compatible with the existing visual designation for Runway 15/33. To accomplish this, the FAA will design a "circling" procedure to the Airport that allows aircraft to land on either runway end.

- No changes to existing 5,200' x 60' runway or west parallel taxiway configuration;
- Existing runway lighting systems will be replaced/upgraded at the end of their useful lives;
- Development of GPS-based Non-Precision Instrument Approach with Circling Procedure:
 - » Maintains existing FAR Part 77 Airspace surfaces, lighting system capabilities, and markings for Runway 15/33;
 - » Obstacle mitigation (tree removal, etc.), as required by FAA for approach procedure.
- Parallel taxiway object free area grading minor terrain penetrations (north section);
- Periodic pavement maintenance (e.g., crackfill, sealcoats, etc.) and rehabilitation (e.g., overlay) based on condition;
- Pavement removal adjacent to aircraft fueling apron and parallel taxiway to address potential runway incursion (FAA standards); and
- A long-term aviation use development reserve is identified off airport property, on the east side of the runway. This area has been identified as compatible with aviation-related uses (aircraft hangars, parking, etc.) in the event that future aviation-related development opportunities are identified.

Landside Facilities

The initial focus for landside facilities is to maximize the development potential within existing airport property. Improvements to the south apron area are intended to address near-term demand for aircraft storage (hangar and apron parking), while also addressing other needs such as a replacement pilot building, vehicle parking, gate access, and aircraft parking configurations.

The need to locate a snow removal equipment (SRE) building has been incorporated into the preferred alternative. The SRE building will be co-located with a future pilot building at the south end of the apron. The building may be constructed in phases based on funding availability and may include community use space that complements the Airport. A modular pilot building is proposed as an interim step to replace the existing mobile home/pilot building. The existing building will be removed in conjunction with the site redevelopment needed for hangars at the southwest corner of the apron.

Other landside improvements are recommended for transient large aircraft and helicopter parking, and the existing aircraft fueling apron. Longer term hangar needs are addressed through expansion off airport property on property currently owned by the City of Joseph. As proposed, the site will accommodate a new taxiway connection the parallel taxiway and both T-hangar and conventional hangars. Final hangar sizes and configurations will be determined during site development; however, the access taxiways are configured to accommodate aircraft with wingspans less than 49 feet (Airplane Design Group I).

South Apron Area

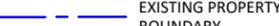
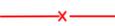
- South Hangar Area Site Preparation:
 - » Remove existing mobile home and septic drain field;
 - » Site preparation (grading/fill);
 - » Modify fencing and gates;
 - » Reconfigured vehicle access and parking; new access connection to Airway Road;
 - » Relocated/upgraded (electronic) south vehicle gate and pedestrian gates;
- Infill new hangars (7 conventional hangars proposed);
- Replace existing pilot building:
 - » Modular pilot building (Phase I);
 - » Permanent structure (Phase II) - mixed use building with public use space;
- Snow Removal Equipment (SRE) building co-located with new pilot building;
- Expansion/reconfiguration of existing aircraft apron:
 - » Hangar access;
 - » Transient large aircraft and helicopter parking (including medevac aircraft);
 - » Elimination of 12 small airplane tiedowns (at full build out) to accommodate hangars and large aircraft parking;
- Expanded aircraft fueling apron:
 - » Modified access to parallel taxiway at Taxiway A1 (pavement removal and north expansion of apron).

West Hangar Area

- Property acquisition (1.9 acres +/-) City of Joseph-owned land;
- New taxiway connection to west parallel taxiway;
- New hangars (4 conventional hangars and 1 8-unit T-hangar proposed);
- New vehicle parking;
- New fencing and vehicle gates;
- Relocate existing City solid waste recycling station within existing City-owned parcel;
- Preserve (relocate) existing access to City-owned parcel, including the recycling station and gravel pit extraction;
- No change in zoning (M-1) required;

East Hangar Development Reserve

- Areas identified for potential aviation use facilities with access to runway.

LEGEND			
	EXISTING HANGAR		VEHICLE PARKING/ACCESS
	PROPOSED HANGAR		PROPOSED AIRSIDE PAVEMENT
	REMOVE BUILDING		PROPOSED PAVEMENT REMOVAL
	ROAD RESERVE		AIRSIDE PAVEMENT RESERVE
	PROPOSED ROAD		AVIATION DEVELOPMENT RESERVE
	EXISTING PROPERTY BOUNDARY		REMOVE FENCE
	EXISTING FENCE		DEVELOPMENT RESERVE FENCE
	PROPOSED FENCE		REMOVE TIEDOWN

