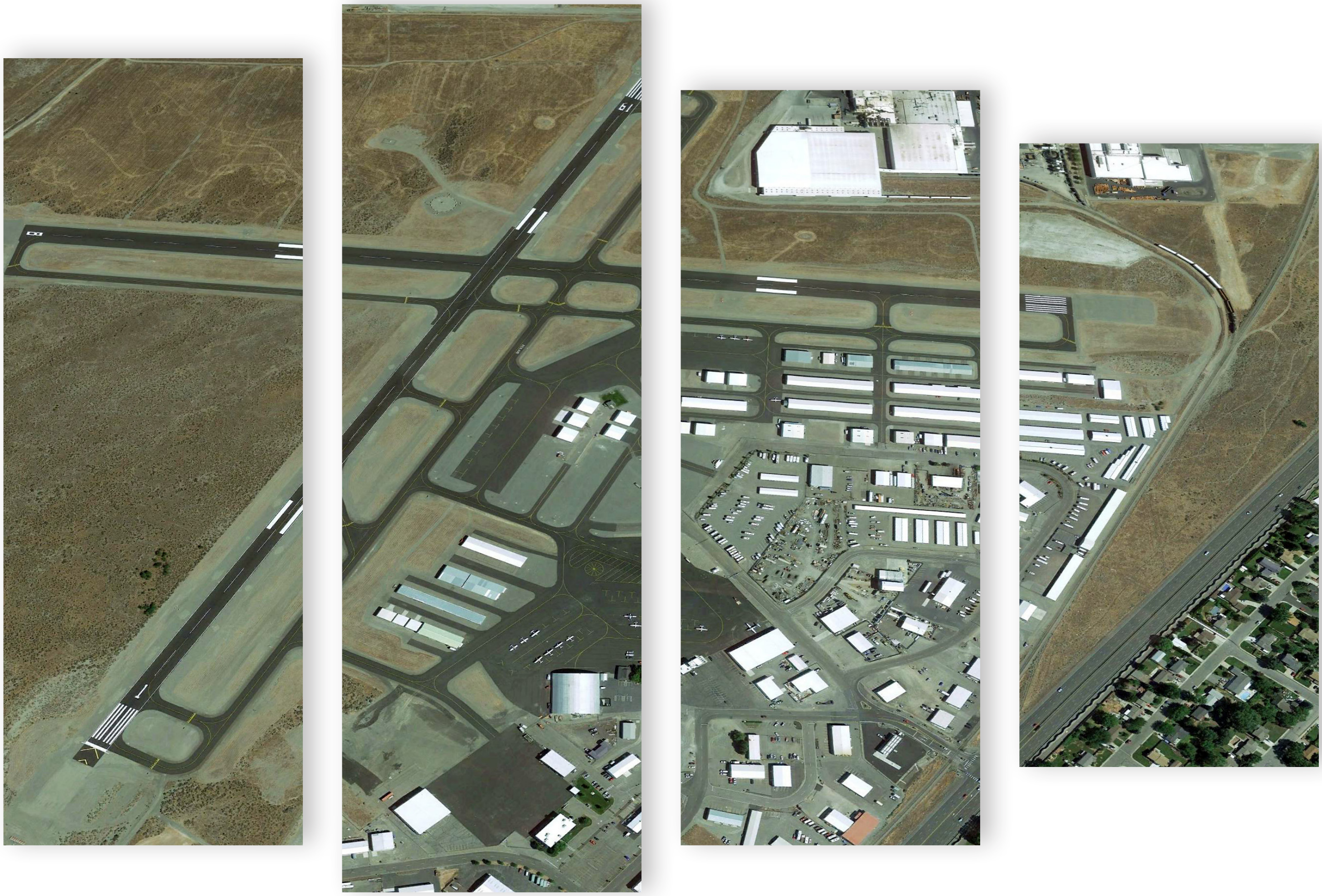
RICHLAND AIRPORT
AIRPORT MASTER PLAN



PORT OF BENTON

DECEMBER 13, 2021

Submitted by:

J-U-B ENGINEERS, INC.

THE LANGDON GROUP

GATEWAY MAPPING INC.

OTHER J-U-B COMPANIES

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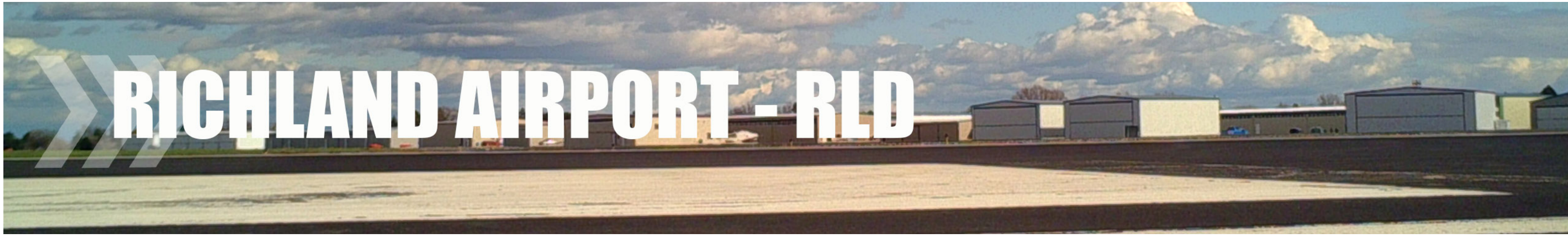
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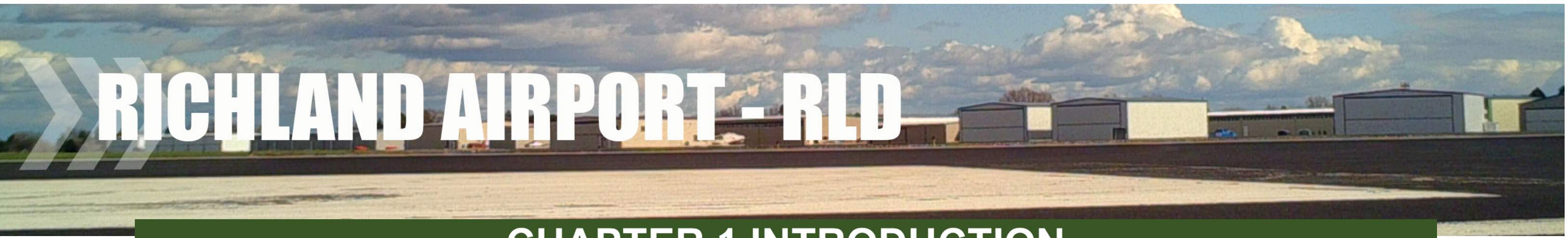
RICHLAND AIRPORT - RLD

APPENDIX



CHAPTER 1 INTRODUCTION

The Port of Benton has initiated this update of its airport planning to assess the Richland Airport's existing and future role and to provide direction and guidance related to short- and long-term development. This study will define a course of action which includes a list of projects to complete over a period of 20 years and beyond. The list of projects will then be completed over time as determined by the Port Commissioners and Airport Staff. These projects will also help the airport become more compliant with current Federal Aviation Administration (FAA) airport design standards.

This planning study is created to be both a forward-looking and flexible document. Resolutions and solutions are proposed well in advance of the likely need and the plan is flexible enough to change with the need. Federal and state agencies are then similarly able to program funding and be responsive to identified needs.

The remainder of this chapter describes the plan's purpose, objectives and issues, identifies the four-phase planning process, and public involvement steps for this planning effort.

1.1 PURPOSE

The purpose of this planning effort is to use developed methods to objectively evaluate and assess the needs of the Richland Airport from an aviation use, development, and implementation perspective. The planning will also assist Port Commission leadership in sorting through difficult questions, and then use that information to guide decisions regarding airport infrastructure investment.

Development at the Richland Airport continues in a robust way. Needs for infrastructure and additional facilities will be analyzed while looking to the future to determine how the airport may continue to participate and drive the local and regional economy.

The FAA and the Washington State Department of Transportation (WSDOT) Aviation Division determined that an airport planning update would be beneficial given current activity and economic conditions. The Port Commission consulted with the FAA, WSDOT and the airport master plan consultant to consider current issues and craft a custom work plan which addresses compliance and resolution.

The product of this effort will provide the Port Commission with a development program to meet aviation needs in the short, intermediate and long-range planning periods. Continuing robust aviation demand at Richland Airport makes it important to plan for aviation safety, capacity, proper facilities and land use compatibility. Benefits derived from the plan will positively affect the Airport, its users, and the surrounding area.

Recent airport planning and environmental work has focused on new facilities construction in compliance with current FAA guidance. A focus of this plan is to continue these efforts and finalize the airfield configuration to benefit aviation users, and to comply with FAA airport design standards.

1.2 OBJECTIVES AND ISSUES

Assessing airport needs and filing a new plan is often a complex and difficult, but beneficial task. Some basic questions are:

- Which airport services or capabilities are the most attractive to new business and existing users and why?
- What will it cost to get additional airport infrastructure in place? What is the opportunity cost if not done?
- What kinds of visitors, users, or companies may be interested in the airport?
- What will the basic needs for the airport be now and in the future?

Answers to these questions will help guide the community to establishing an airport plan and program that contributes to achieving community goals.

1.2.1 OBJECTIVES

Several project objectives and issues are in the forefront and will guide this planning.

Objectives:

- Comply with FAA design standards.
- Maximize development opportunities.
- Be environmentally-responsive.
- Plan for the highest and best use of the airport for a given development through analysis of the following factors: use of physical site assets, economic benefit, jobs created and corresponding salaries, fiscal impact and contribution to overall FAA objectives.
- Be **flexible** to accommodate a range of potential aviation and non-aviation users, as appropriate.
- Evaluate airport development relative to both long and short-term **costs and benefits.**

1.2.2 ISSUES

The project team reached out to stakeholders early in the process to gain their insight for some of the issues and concerns arising at the airport. This sub-section identifies those issues to be addressed in this airport planning effort along with other site-specific, unique features. **Figure 1.1** provides a graphical representation of these issues. The numbers correspond to the graphical depiction on **Figure 1.1.**

1 Area Growth, Critical Aircraft Forecast and Hangar Development

The current and future fleet mix provides the foundation for airport master planning and the FAA formally reviews and approves the forecasting. One of the more important tasks in receiving FAA approval for airport master plan forecasting is determination of the critical or design aircraft. Wingspan/Tail Height and speed of the aircraft on approach for landing are two criteria upon which the classification is determined. The critical aircraft is often more than one aircraft. For example, five different types of aircraft with similar wingspans and approach speeds can make a critical aircraft group. Airports are designed around a critical mass of airplanes that use them. The number of annual aircraft operations, from a group, necessary to be considered ‘critical’ is 500.

The master planning process will canvas current businesses, including Life Flight Network, Sundance Aviation, and the on-site restaurant Ann's Best Creole and Soul Food Café, among others to seek a basis for direct aviation demand forecasting. The non-aviation economy influences future aviation demand just as much as aviation-related businesses. Both will be explored in the initial portions of the Master Plan. As the Tri-Cities area grows, the fleet mix may include larger, faster and more expensive aircraft. If enough of these operations are observed, inventoried, and forecasted, airspace and on-the-ground design standards may change.

Evidence of current and future growth is the recent abundance of requests for hangar development. At least four requests for hangars including some larger-sized developments have been requested of the Port in recent months. The airport has limited area that can be developed in the future for hangars. One of the last areas available for larger hangar development is the circle area taxilanes and the area around the helicopter parking development. Careful planning of a mixed use of FBO facility and large and small hangars will be done in this Master Plan.

2 Existing and Future Design Standards Compliance

The Port of Benton is obligated to comply with the FAA's airport design standards as identified in various FAA Advisory Circulars. This obligation was put in place when the Port accepted the first Airport Improvement Program (AIP) dollars. Obligations are re-certified every time a new grant offer is executed by the Port.

Every so often the FAA updates their Advisory Circular guidance. A substantial update to the airport design manual occurred a few years ago. These standards affect pavement geometry, hangar footprint design and layout, approach and departure surfaces, land use control on and around the airport, and others. The FAA often will enforce new standards the next time project work is done at the specific area on the airport where the requirements need to be met.

As part of master planning, an inventory of Richland's existing facilities will be followed by an in-depth evaluation comparing current to required design standards. Any necessary dispositions could include correction via a future project or seeking an FAA-approved modification to standards.

As an example of these changes in standards, design and construction to relocate the eastern portion of Taxiway B, completed in 2012, met current standards at that time. However, to reduce the probability of runway incursions, the FAA revised taxiway geometry design standards to prohibit direct access from an apron to a runway. As a result, these two connectors do not currently meet FAA design standards. Possible correction options could include future CIP projects to shift or remove the taxiway connectors.

3 Runway 19 RPZ Protection

Determination of the current and future critical aircraft as well as future approach categories will define the size of the Runway Protection Zones (RPZs). RPZs are trapezoidal areas beyond runway ends established to protect people and property on the ground. RPZ dimensions were sized to contain the majority of crashes to minimize damage to property and loss of life. RPZs are not concerned with airspace but rather about the control of land use, preferably by owning the land or controlling it through the use of easements.

Whether or not a long-planned extension of Runway 19 occurs is dependent on the aircraft performance and a critical mass of operations sufficient to justify the extension. Since Runway 19 is the most logical direction for a future extension, it is perhaps in the Port's interest to continue to protect the potential extension and its future approach.

A good amount of valuable work has already been accomplished to acquire Runway 19 RPZ properties. There have been significant developments occurring within and around this protective area. A small land acquisition effort, in scope, may be necessary as there are only a few remaining properties that need to be acquired in order to complete fee simple/easement ownership of the RPZ. Continuing planning and pursuit of the following potential improvements within this area could be valuable:

- Extension of Runway 19 (900 feet)
- Published RNAV GPS Approach
- Closure of Saint Street
- Possible relocation of Snyder Road
- Acquisition of the City of Richland Gravel Pit

4 Adequate Primary Runway Length

The FAA Runway Length Advisory Circular (AC 150/5325-4B) has undergone three revisions since it was created in 1990. The first revision provided clarification for the original circular and the second established a different approach to runway length calculations for Airport Improvement Program (AIP) eligibility. The second revision (150/5325-4B, dated July 1, 2005) remains in effect and is the only guidance in force for airport master planning. Circular 150/5325-4B indicates that master planning analysis should be performed for those aircraft visiting the airport which weigh more than 12,500 pounds. Also, aircraft operators flying charter operations, as opposed to those flying private operations, are required to calculate runway lengths differently.

The FAA has established activity thresholds to justify some larger projects, especially for runway extensions at general aviation airports. For example, for a given runway extension to be eligible, justified and funded at the Richland Airport, it must be demonstrated that charter operators need the additional length. The master planning will study this situation, note and document 'penalized' operations, provide recommendations regarding a runway extension and establish a timeline for consideration.

5 Adequate Instrument Approach Capability

The FAA is, for all practical purposes, no longer funding traditional ground-based navigational aids at any general aviation airports. These include the more traditional aids such as Instrument Landing Systems (ILS), VHF Omni Directional Range with Distance Measuring Equipment (VOR/DME) and Non-Directional Beacon (NDBs). Satellite-based GPS navigation has matured since first being flight tested in Juneau, Alaska in May 1996. Improved straight-in instrument approach procedures to one or more runway ends at the Richland Airport may be desirable, especially to Runway 19. Instrument approach capability is often just as important as adequate apron parking, a restaurant, or available fuel to serve the flying public. Improved instrument approach capability, in the context of an alternatives analysis, will be addressed within the master planning process. It is important to consider these kinds of improvements and capabilities in a larger context, including environmental, land use, airspace and cost considerations.

6 Potential Land Release of Non-Aviation Properties

The final drawing in this Airport Master Plan is the Airport Property Inventory Map. It is created based upon the guidance in FAA's Standard Operating Procedure (SOP) No. 3. This drawing shows obligated properties along with encumbrances. The obligations created as a result of this map are a somewhat complex issue and a full understanding of its consequences are important for decision-makers.

The Richland Airport, FAA-approved, Airport Property Inventory Map depicts an amount of non-aviation businesses and operations, which are likely to never be aviation-use. FAA grant assurances require that any property within the Exhibit A boundary should be available for aviation use, or if necessary, released from FAA grant assurances. Defining these properties in this planning process as Non-Aviation Use is a first step. The discussion of Non-Aviation designation, or even land release, could be expanded to include all of the obvious properties east of Terminal Drive and Butler Loop.

Recent federal legislation has perhaps relaxed the FAA process for releasing aviation-related land use to Non-Aviation related land use in a grant assurance compliant way. This change in land use is considered a 'federal action' as it changes the Airport Layout Plan.

7 8 AGIS and Funding

These two elements round out the objectives put forth by the FAA and the Sponsor. Airport GIS (AGIS) is required on all projects to provide and upload geodetic data on the airport to the national database. AGIS is needed for the Next Generation of Aircraft movement.

Funding is critical to the Sponsor's ability to accomplish their goals. Projects must be identified on the approved Airport Layout Plan (ALP) in order to program and receive AIP funds.

FIGURE 1.1
PROJECT ISSUES

SOURCE: J-U-B

1.3 PLANNING PROCESS

A planning process is primary and accompanies this narrative. This planning process and participation through the process from those with interests in the overall aviation community is important to the creation of this narrative.

The planning process begins with preparation of the necessary data and mapping to be used in the study to prepare this narrative along with its ALP drawings for the Richland Airport.

The narrative and ALP drawings are prepared in accordance with FAA guidelines, policies and procedures and applicable federal and state laws and standards. Specifically, the FAA's relatively new Standard Operating Procedures (SOPs), provide a checklist. Previous reports and associated work will be reviewed, as necessary.

The project process is engaged in full coordination with the FAA, Port Commission, WSDOT and federal and other state agencies. The representatives of these agencies are consulted for input and invited to attend progress meetings, public meetings or other meetings associated with the process. The end result provides a planning process and deliverable document that recommends a responsive course of action and a scheduled plan, complete with current cost estimates for facility improvements.

Prior to initiation of this project, the project scope of services, budget and schedule were crafted and approved. The planning process and its project workflow consist of four project phases, described below and as graphically depicted on the project workflow exhibit **Figure 1.2** Project Flow Chart, following this page.

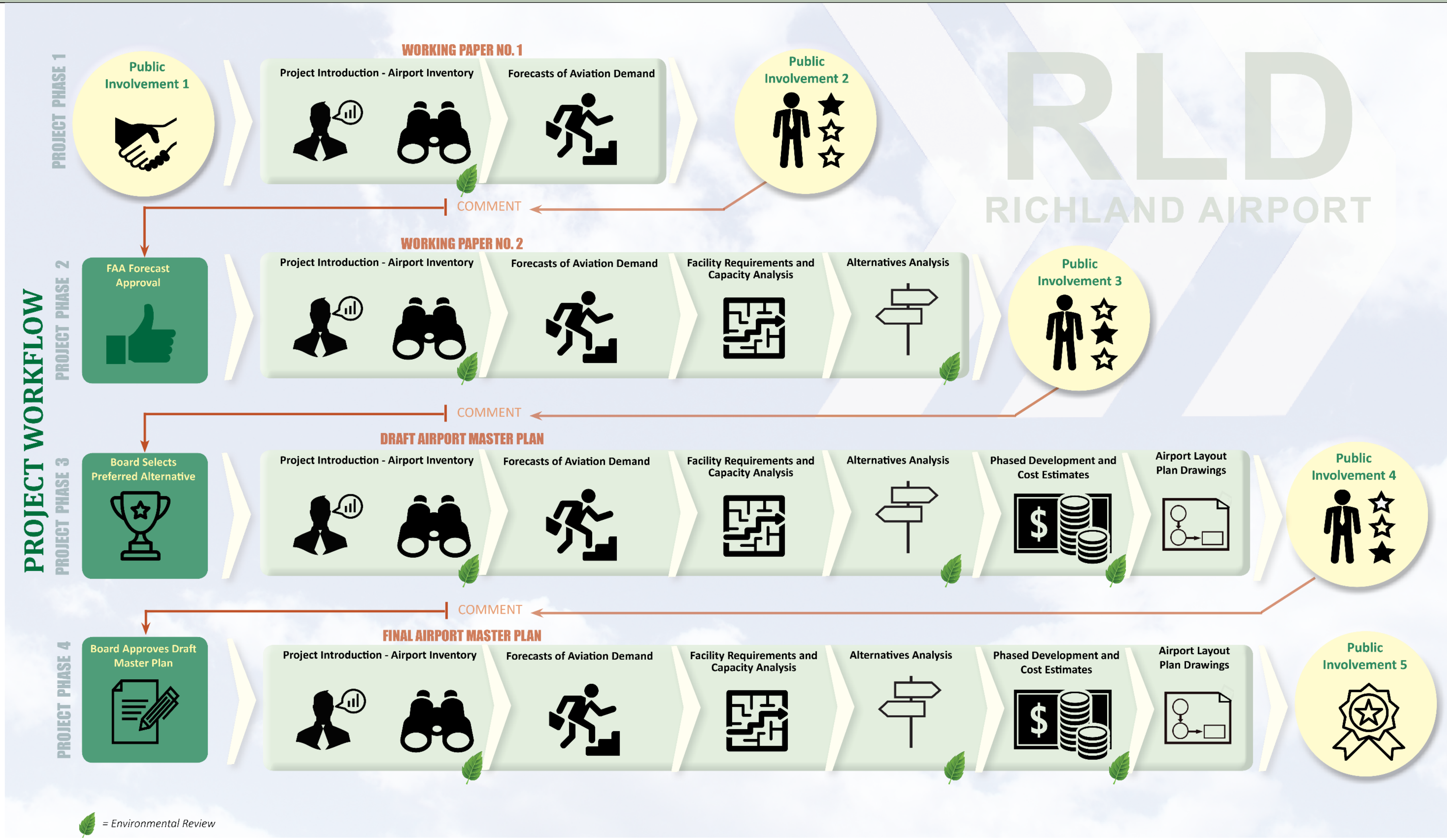
1.3.1 PROJECT PARTICIPANTS

The Port Commission makes final decisions about the future of the Richland Airport through the course of the master planning process. Various airport constituencies, including the users, nearby homeowners, business owners, and the general public will be consulted through the Port Commission's public participation process. A website has been established to facilitate communication with the public (www.RLDMasterPlan.com). The Airport Manager is the primary information conduit for the master plan consultant.

The FAA approves master plan forecasts and internally circulates the master plan for integration into the national airspace system. The FAA and WSDOT review project progress and documents at key project points. The airport master plan consultant prepares project documentation, guides project progress, solicits guidance, and works to build consensus from plan participants at key project points.

A public involvement process has been developed which follows through the plan development including the enlistment of a Technical Advisory Committee (TAC). The TAC meets at key points in the process to review and provide guidance to the Port and planners. A more detailed explanation of the Public Involvement Process is described in Subsection 1.4.

FIGURE 1.2
PROJECT FLOW CHART



SOURCE: J-U-B

1.3.2 PROJECT PHASE 1

The master planning process benefits from public participation and as such, a project initiation meeting, **Public Involvement 1,** is the first step.

Phase One project activities then continue with the drafting of **Chapter 2**, **Inventory** and **Chapter 3**, **Forecasts of Aviation Demand**. Efforts associated with Chapter 2 involve information acquisition including, but not limited to, facilities and improvements, survey, land uses, airspace and navigational aids, along with socioeconomic, environmental and financial data. Efforts associated with Chapter 3 include formulation of economic and activity projections culminating in various aviation forecasts specific to the first five-year period (2022-2026), the second five-year period (2027-2031), and the final 10-year period (2032-2041), of the 20-year planning horizon.

After review and feedback from the TAC and Port staff, the FAA and WSDOT review these chapters and provide comment, resulting in **Working Paper No. 1** and initiation of **Public Involvement 2.** Comments are solicited from the Commission and addressed prior to the second working session to discuss the first working paper and conclude the second meeting series.

1.3.3 PROJECT PHASE 2

Upon FAA approval of the Forecasts of Aviation Demand, the planning process then moves to Phase Two.

Chapter 4 Facility Requirements, can then be created based upon previous work. Efforts associated with Chapter 4 involve determination of the Richland Airport's role and service capabilities, along with airside and landside requirements and an appraisal of grant assurance compliance and airport security. **Chapter 5 Alternatives Analysis** considers various airfield and landside alternatives which may suit demand over the three planning periods.

After review and feedback from the TAC and Port staff, the FAA and WSDOT review Chapters 4 and 5 and provide comment, resulting in **Working Paper No. 2**, the second project milestone. The Port commission is presented with the findings of Working Paper No. 1 and 2. The Port will provide instruction, with respect to the alternatives, for the Airport's future. These consultations constitute initiation of **Public Involvement 3**. This meeting series concludes with an open house to be conducted via a Port Commission special session.

The Port Commission's selection of alternative(s) is perhaps the most crucial and important step in the creation of this master plan and execution of its process.

1.3.4 PROJECT PHASE 3

The airport master plan process then moves to Phase Three after Port Commission selection of the preferred alternative(s) or modification thereof.

Phase Three work includes creation of **Chapter 6 Phased Development and Cost Estimates**, which sequences and provides cost estimates for airport improvements pursuant to the preferred alternative(s) and **Chapter 7 Airport Layout Plan and Drawings**, which depict existing and future airport features per FAA's Standard Operating Procedures(SOP) checklists.

After review and feedback from the TAC and Port staff, the FAA and WSDOT review these chapters and provide comment, resulting in the

Pre-Draft Airport Master Plan, and the initiation of **Public Involvement 4.** The pre-draft narrative describes and illustrates the recommended course of action over the next 20 years, as directed by the Port Commission. Comments are solicited and addressed prior to a pre-draft master plan session with the Port to refine the pre-draft master plan for a final review.

When FAA, WSDOT, and Port Commissioner comments and expectations have been sufficiently addressed, Phase 3 concludes with a **Draft Airport Master Plan**.

1.3.5 PROJECT PHASE 4

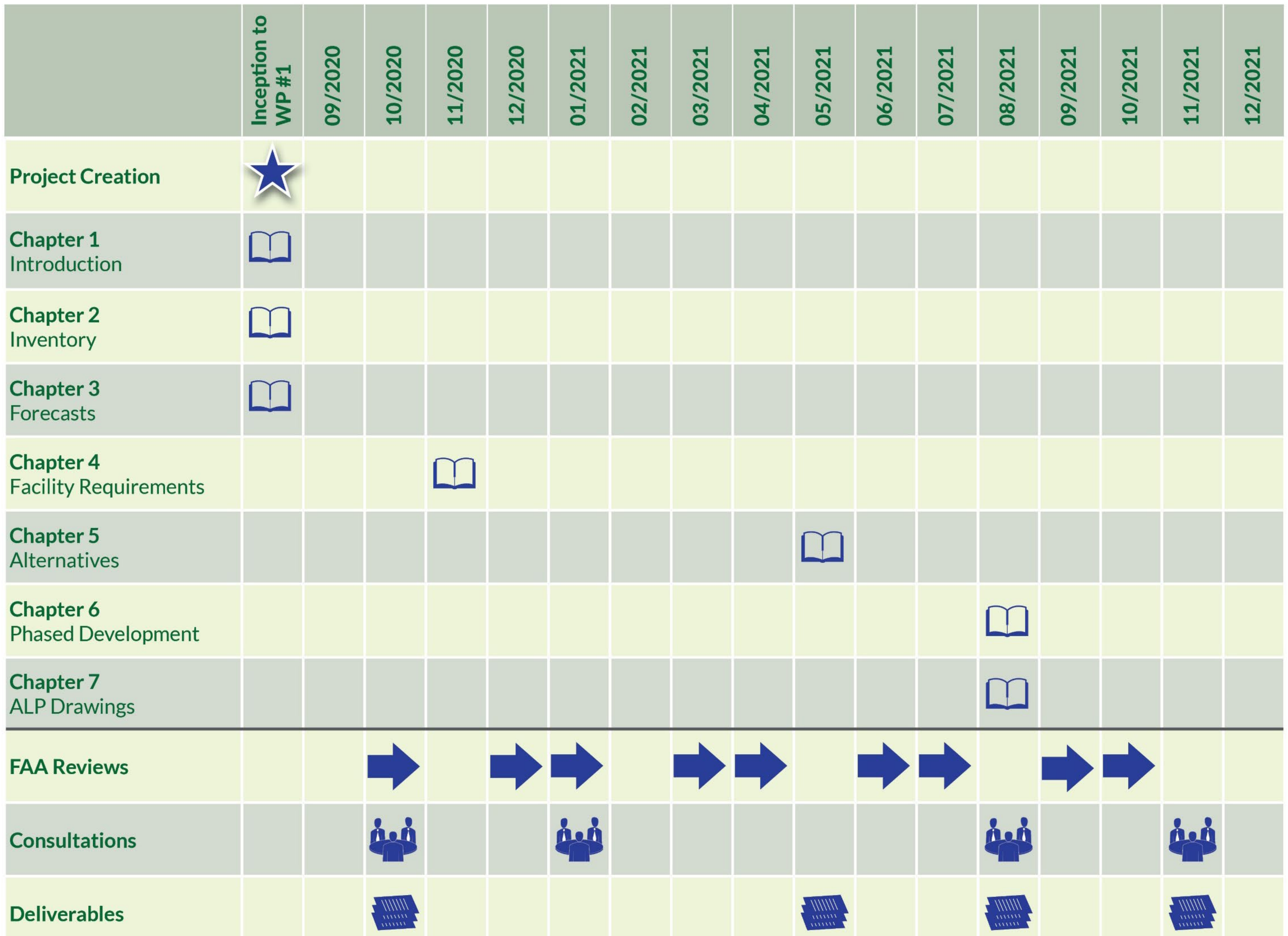
The airport master plan process then moves to its final phase after Port Commission approval of the Draft Airport Master Plan.

From there, the master plan narrative and drawings are turned over to the FAA for coordination. Coordination, or ‘airspacing’, is an internal, ±3-month FAA process consisting of a review wherein deliverables are considered for continuity and conformity to standards, and principal changes to the Richland Airport are included in the national airspace system.

The fifth and final project milestone is Port Commission concurrence with the **Final Airport Master Plan,** and a Port of Benton finding to accept the plan. Upon concurrence, final documents are printed and signed by the Port Commission and FAA, and the project is finalized.

Figure 1.3 depicts the initial project schedule. The overall planning process is expected to take 18 to 24 months in order to properly vet all of the solutions.

FIGURE 1.3
INITIAL PROJECT SCHEDULE



SOURCE: J-U-B

1.4 INITIAL PUBLIC INVOLVEMENT

Public involvement is a key part of the planning process. The master plan is developed in collaboration with Port of Benton stakeholders, including federal and state agencies, airport users, tenants, and the Richland area community to truly understand and plan for the needs of those who use and are affected by the current and future airport facilities and activities.

Several public involvement efforts are included: 1) a project website, www.RLDMasterPlan.com; 2) stakeholder interviews; 3) community survey; 4) Technical Advisory Committee (TAC); 5) press releases; and 6) community meetings. The public also has direct contact to the project team for questions and to provide feedback through the J-U-B public involvement representative.

The public involvement process started by working with The Port of Benton to identify the TAC members consisting of a variety of interests – airport users, community leaders and stakeholders. These members first joined at **Public Involvement 1** to be introduced to the master plan and help further identify key stakeholders to interview.

In sync with the first meeting the project website, www.RLDMasterPlan.com, was published with web pages for each of the following: Reporting, Community, Schedules, Visuals, and Resources. A community survey was linked to the first page, as well as distributed via mail, email and in-person. Shortly following these releases, a press release, announcing the project to the community was submitted to three local media sources--Tri-City Herald, Business Journal, and Tu Decides.

In late January and February 2020, the stakeholder interviews took place via a combination of in-person and phone interviews and email correspondence. The summary is described in the following sections.

For the remainder of the planning process, public involvement will include ongoing coordination and meetings with the TAC, a public meeting, press release, website updates, and additional outreach, as appropriate, to maintain stakeholder trust, knowledge, and advocacy.

Interviewees:

1. Carl Adrian, TRIDEC
2. Clif Dyer, Sundance Aviation
3. Stephanie Seamans and Patrick Pittenger, Benton/Franklin Council of Governments
4. Erin Whitney, Life Flight Network
5. Angela Beehler and Stephen Ingalls, Benton County Mosquito Control
6. Troy Stokes, Hi-line
7. Robert Wage, EAA
8. Ryan Risor, JR Imaging
9. Cannon Hill, Local Pilot
10. Karen Blasdel and Tim Doyle, Pacific Northwest Labs
11. Greg Wendt, Benton County Planning Manager
12. Herb Brayton, Property Owner
13. Recruiting Sergeant National Guard

Guiding Questions:

1. Tell me about the airport's role in the community. Is it important? How does it support the local economy? Could it support the community better?
2. How do you use or interface with the airport now? If you use it, how often and for what purpose?
3. Are there any factors (airspace considerations, approach minimums, runway dimensions, or hangar availability) that limit your use of the airport?
4. If your property is near the airport, do you have future plans to expand? Could the airport be beneficial to you?
5. Would an expanded airport help support your business or other businesses in the area? How?
6. Who else should we bring into the conversation? Are there other stakeholders that we need to seek input from?
7. What added features would enhance the airport? What is needed that is missing?
8. How do you feel overall about airport expansion? Is there benefit to the community?
9. Additional comments/suggestions for the project team regarding the future of the airport.

Overall Interview Themes:

1. For the amount and type of use, the current airport features are appropriate.
2. The airport is well maintained.
3. The airport is well managed by the FBO.
4. Economic growth opportunities are available—such as lengthening the runway for jets, enhancing the FBO, making more hangar space available—if there is a desire.

Please Note: The following comments are the opinions and perspectives of the those interviewed and not those of the interviewer or the Port.

Interview Feedback Positives:

a. Overall, people are content with the airport and all its features.
b. The FBO, Sundance Aviation, is supportive and knowledgeable.
c. Airport, specifically the runways and ramps, are well maintained.
d. People enjoy the small community feel of the airport:
   - Ease of access
   - Community events – BBQs, air/car show, breakfasts
   - Energized by local folks
   - Youth activities/aeronautical encouragement
   - Regular presence of people working at their hangars
e. Security – Users of the airport have differing opinions on the ability of the fencing to provide security.
f. Users commented that no control tower allows for flexibility, ease of operations and less need for security.
g. Fuel availability is appreciated and essential for many users.
h. Helicopter amenities are great.

Interview Feedback Opportunities:

a. FBO space is limited.
b. Conveniences/services, such as the restaurant, are limited.
c. Users would be interested in the following additions at the airport:
   - Avionics shop.
   - Gathering space for a large group (community events, organizational meetings).
   - Organized/safe public viewing areas with picnic tables.
   - Park space.
   - Camping.
   - Internet across the airport (fiber optic internet requested).
   - Coffee shop and other conveniences.
   - De-icing.
   - Pursuits of further development/growth opportunities (mentioned several times).
d. Users believe economic growth opportunities are available, if leadership wants to grow the airport and gain more flights and businesses. Several users would like to see the airport's use grow from increased flights and nearby businesses.
   i. *Follow-up comment from the Port: The Port and Airport are under new management with full support for growing the airport and the opportunities for more flights and businesses.*
e. Lengthening of runway to 5,500 feet or longer would open economic opportunities for jets to fly in.
f. Land to build more hangars would be utilized.
g. If the runway was longer, more jets would come, then more businesses could be sustained.
h. Users believe that airport growth and development ideas are happening on-the-ground at the airport, and to be effective, need to become part of a City and regional conversation also.
i. Re-purpose the traffic control tower for public viewing.
j. Projected growth: Ryan Risor, JR Imaging, is doubling his planes (light, single-engine Cessna planes) this year from two to four, and projects to have six or seven planes by 2022. (This business is currently the largest demand on Sundance Aviation). Life Flight – may get one more fixed wing within the next ten years, but not highly likely.
k. Communication: Port newsletter is an effective way to reach tenants.

Survey Overview

An online and printed survey with 14 multi-part questions was made available to stakeholders to gather their feedback from early December 2019 through late February 2020. The survey link was posted on the project website, RLDMasterPlan.com; emailed to available airport property owners/tenants and TAC members; and mailed to property owners/tenants. Twenty people completed the survey. The survey findings are summarized below.

a. For the ten flying respondents, the following reasons/benefits were listed. The top three reasons/benefits respondents listed for flying from Richland were:
   - Pleasure/recreation

- Access convenience
- Support for the aviation community

b. All 10 flying respondents who said they use the airport did not list any limitations or other reasons discouraging them.
   - Only eight of those respondents have aircraft based at the airport.

c. Overall, respondents expect to remain the same size or grow. No decrease in activity is anticipated.

d. Overall the top four favored features/services considered in the decision to use or base an aircraft at the Richland Airport are as listed below.
   - Weather data (ASOS)
   - 24-hour fuel availability
   - Airport manager or FBO on-site
   - Ground lease rates

   Additional items of value include 24-hour restroom facilities, Short driving time from residence/business, Visual aids (VASI, PAPI, REILS), Snow removal.

e. Several themes emerged from the comments. Listed below are the top five themes:
   - Economic development
   - Community center
   - Aviation promotion
   - Convenient
   - Recreational hub

f. Most respondents plan to grow or would grow if the airport expanded.

g. Overall, respondents like that the airport is convenient, easy to use and like where it is located.

h. Overall, respondents agree that an expanded airport would enhance and support businesses.

1.5 CONSULTANT AGREEMENT AND STUDY DOCUMENTATION

J-U-B ENGINEERS, Inc. entered into an agreement with the Port of Benton in August 2019 to conduct this master planning effort and to prepare this document.

1.5.1 REFERENCE DOCUMENTS

This study is prepared in accordance with these FAA advisory documents:

Previous Airport Documents (Various Years)

WSDOT System Plan/Economic Impact Study

150/5060-5	Airport Capacity and Delay
150/5190-4	A Model Zoning Ordinance to Limit Height of Objects around Airports
150/5070-6B	Airport Master Plans
150/5190-7	Exclusive Rights and Minimum Standards for Commercial Aeronautical Activities
150/5300-13A	Airport Design
150/5340-1M	Standards for Airport Markings
150/5340-18G	Standards for Airport Sign System
150/5300-16B	General Guidance and Specifications for Aeronautical Surveys
150/5300-17C	General Guidance and Specifications for Aeronautical Survey Airport Imagery Acquisition and Submission to NGS
150/5300-18B	General Guidance and Specifications for Submission of Aeronautical Surveys to NGS; Field Data and Collection and GIS Standards
150/5360-13A	Airport Terminal Planning
150/5020-1	Noise Control and Compatibility Planning for Airports
150/5320-5D	Airport Drainage
150/5050-4A	Community Involvement in Airport Planning
150/5230-4B	Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports
150/5325-4B	Runway Length Requirements for Airport Design
5100.38D	Airport Improvement Program Handbook
5050.4B	NEPA Implementing Instruction for Airport Actions
1050.1F	Environmental Impacts: Policies and Procedures

Environmental Desk Reference for Airport Actions

1.5.2 NARRATIVE REPORT CONTENT

This narrative report presents these chapters:

Chapter 1	Introduction
Chapter 2	Inventory
Chapter 3	Forecasts of Aviation Demand
Chapter 4	Facility Requirements
Chapter 5	Alternatives Analysis
Chapter 6	Phased Development and Cost Estimates
Chapter 7	Airport Layout Plan and Drawing

CHAPTER 2 - INVENTORY

2.1 INTRODUCTION

This chapter is intended to provide background information and an inventory of the Richland Airport (RLD), its environs, as well as the Tri-Cities area as it relates to the Richland Airport. Timely, relevant baseline information is necessary for plan integrity.

Information for the Master Plan is obtained from investigations and interviews, consulting team experience with the airport and its projects. FAA consultations along with other governmental agencies, interviews and various websites and databases finalizes the Report.

The Richland Airport is owned, operated, and sponsored by the Port of Benton, Washington, and managed by its Port Commission.

2.2 AIRPORT ROLE

This planning effort is intended to instruct and supplement state and federal airport planning efforts. This plan is a more detailed look at the Richland Airport, while state and federal planning generally considers the more general role the airport plays in the overall system of state airports.

2.2.1 FEDERAL SYSTEM

The Richland Airport is part of the national transportation system, and part of the Federal Aviation Administration's National Plan of Integrated Airport Systems (NPIAS). Of the nation's nearly 5,200 public-use airports, the NPIAS comprises 3,340 airports considered, by FAA, as significant to the capacity and integrity of the national airspace system. RLD serves some of the general aviation needs of the Richland and Tri-Cities areas.

Because of NPIAS participation, the Port, as sponsor, is eligible and has received Federal grant-in-aid for airport improvements under the Airport Improvement Program (AIP). Funds to pay for NPIAS improvements originate with the AIP program. AIP is a user-fee based program, established by the Airport and Airways Trust Fund in 1971 and amended by the Airport and Airway Improvement Act of 1982. This grant-in-aid program provides a large portion of funding for much of the federal, state and local airport planning and improvements. This planning effort, along with planning done by WSDOT, may be used to consider the extent of funding available for the Port of Benton through the NPIAS. NPIAS participation entitles the Port of Benton to up to $150,000 annually from the FAA for non-primary entitlements.

FAA general aviation NPIAS airport classifications designate airports as: National, Regional, Local, Basic, or Unclassified. The current NPIAS report shows RLD is classified as Regional with 104 based aircraft (Basedaircraft.com is currently showing 130 aircraft) and $1,055,555 of funds for eligible improvements in its most current 2019-2023 Capital Improvement Plan budget. RLD's Regional designation indicates the airport is publicly owned, has at least 10 validated aircraft in the FAA's National Based Aircraft Inventory Program, and accommodates turbo-jet and jet activity in the Tri-Cities Metropolitan Statistical Area (MSA).

2.2.2 STATE SYSTEM

The Richland Airport is eligible to receive funding through the Washington State Department of Transportation, Aviation Division (WSDOT) and other state agencies. The July 2017 *Washington State Aviation System Plan* identifies Richland as a Regional (as opposed to Community, Rural, or Local) Airport in the Washington system. **Table 2.1** describes the system plan performance metrics for a Regional Classification. The System Plan updates WSDOT's 2009 Long-Term Air Transportation Study and builds from the 2012 Aviation Economic Impact Study, the 2014 Airport Investment Study, and the 2015 Airport Investment Solutions Study.

WSDOT's 2012 Aviation Economic Impact Calculator Tool estimates that the Richland Airport contributes 81 jobs, $3,739,308 worth of labor earnings annually, along with a total annual economic impact (activity) of $9,391,126.

WSDOT's Airport Grant Program provides a maximum of $750,000 in annual aid to each airport sponsor. 95 percent funding is awarded for state-only funded projects and a 5 percent match is available for AIP-funded projects.

In accordance with the Revised Code of Washington (RCW), WSDOT has developed model code, template documents, formal consultation for land use protection, an online mapping application for visualization, and comprehensive planning guidance for sponsors to follow through a master plan process or for stand-alone needs.

Table 2.2 identifies the FAA and WSDOT Aviation grant history for the Richland Airport.

2.2.3 PREVIOUS AIRPORT PLANNING

The most recent airport planning document on file is dated 2009. That narrative and its Airport Layout Plan (ALP) drawing provided a matter-of-course planning analyses including identifying a number of sub-optimal or non-standard conditions, obstructions to navigable airspace, and a recommended course of action per a series of phased improvements. The ALP drawing has been updated with each successive project.

TABLE 2.1 WASHINGTON STATE AVIATION SYSTEM PLAN (2017); REGIONAL CLASSIFICATION	
Metric	**Standard/Minimum**
Economic Development	Collaboration with Community
Economic Development	Collaboration with Business Community
Air Cargo	Track and Report to WSDOT
Community Outreach	Documented Collaboration Plan with Community
Pavement Preservation	Pavement Condition Index Greater than 65 (Runway)
Aircraft Storage	Availability to meet Forecast Demand
Aviation Innovation	Collaboration with WSDOT On-Airport Innovations
Ground Access	Availability to meet Forecast Demand
Airport Maintenance	Annual Maintenance, Record keeping
Airport Planning	Every 10-Year Master Plan/AGIS, Current Airport Layout Plan
Airport Compatible Land Use	Local and Regional Code Compliant for Land Use Compliance
Airport Compatible Land Use	Zones 1-6 in Place, Airport in Comprehensive Planning
Emergency Response	Plan in Place
Sustainability	Airport Environmental Plan in Place
FAR Part 77 Airspace	Control Land Uses Underlying
Financial	Business Plan In-Place
Metric	**Target/Desired**
Obstructions	Clear Obstructions for Desired Minima
On-Site Weather Observation	Automated Weather Observing System (AWOS) not required
Airport Design	To FAA Standard
Economic Development	Documented Collaboration Plan with Community
Economic Development	Documented Collaboration Plan with Business Community
Air Cargo	Collaborate, Track and Report To WSDOT
Community Outreach	Documented Collaboration Plan with Community
Pavement Preservation	Pavement Condition Index Greater than 65 (Airfield-Wide)
Aircraft Storage	Availability for 80 Percent of Forecast Demand
Aviation Innovation	Work with WSDOT On-Airport Innovations
Ground Access	Optimize Access, Parking
Airport Maintenance	Daily/Monthly Maintenance, Recordkeeping
Airport Planning	Every 10-Year Master Plan/AGIS, Current Airport Layout Plan
Airport Compatible Land Use	Local and Regional Code Compliant for Land Use Compliance
Airport Compatible Land Use	Overlay Zones 1-6 in Place, Airport in Comprehensive Planning
Airport Compatible Land Use	No New Airport Land Use Incompatibilities
Emergency Response	Practiced Plan in Place
Sustainability	Airport Environmental Plan in Place
Sustainability	Wildlife Hazard Management Plan in Place
FAR Part 77 Airspace	No Land Use Incompatibilities Underlying
Financial	5-Year Business Plan In-Place, Reporting

TABLE 2.2
FAA/WSDOT GRANTS FOR THE RICHLAND AIRPORT

FAA Number, Year	Description	Total
PGP A-53-0056-01; 1975	Airport Master Plan	$16,333
PGP A-53-0056-02; 1976	Environmental for Airport Master Plan Projects	$5,333
	Acquire Land (B1 Area), Relocate Persons	$220,000
5-53-0056-02; 1977	Acquire Land (B2/C2 Areas), Relocation of Persons Construct, Mark, Light (MIRL) Runway 18-36, Construct and Mark Parallel and Connecting Taxiways, Install Lighted Wind Tee and Segmented Circle, Install Perimeter Fencing, Construct and Mark Access Road, Construct Service Apron, Rehabilitate Runway 7-25	$1,083,500
6-53-0056-03; 1979	Acquire land (Area B1), Construct and Mark Partial Parallel and Connecting Taxiways, Runway 7-25 Including Exit Indicators, Construct and Mark High Speed Taxiway, Runway 18-36 Including Exit Indicators, Construct and Mark Taxiways, Runway 18-36 Including Exit Indicators; Expand Aircraft Parking Apron, Construct and Mark Access Road, Relocate Apron Access Taxiway	$522,684
6-53-0056-04. 1980/1981	Acquire CFR Vehicle, Construct CFR Building	$69,300
	Acquire Land (Area B4) Grade Runway 7 Approach Surface, Relocate Fence, Overlay Apron and Taxiway, Construct Blast Pads for Runway 1/19	$89,252
6-53-0056-001-1984	Rehabilitate Apron	$163,232
	Install Apron Lighting	$17,168
	Install Apron Lighting	$304,592
	Improve Airport Drainage	$264,712
6-53-0056-002-1984	Conduct Airport Master Plan Study	$34,200
6-53-0056-003-1989	Noise Mitigation Measures for Public Buildings within 75 DNL	$23,250
	Acquire Land for Approaches	$262,908
6-53-0056-004-1990	Rehabilitate Taxiway	$140,470
	Install Apron Lighting	$6,000
	Improve Runway Safety Area	$22,000
	Install Runway Vertical/Visual Guidance System	$50,000
6-53-0056-005-1992	Conduct Airport Master Plan Study	$134,140
	Rehabilitate Taxiway	$108,566
	Construct Apron	$73,139
	Expand Apron	$62,850
6-53-0056-006-1993	Improve Airport Drainage	$2,000
	Install Airfield Guidance Signs	$111,200
	Construct Taxiway	$221,498
6-53-0056-007-1994	Conduct Airport Master Plan Study	$60,430

TABLE 2.2 (cont'd)		
FAA/WSDOT GRANTS FOR THE RICHLAND AIRPORT		
FAA No., Year	**Description**	**Total**
6-53-0056-008-1999	Rehabilitate Apron	$187,809
	Expand Apron	$279,177
	Install Perimeter Fencing	$40,608
6-53-0056-009-1999	Rehabilitate Apron	$67,641
	Install Runway Vertical/Visual Guidance System	$60,000
6-53-0056-010-2000	Acquire Land for Approaches	$319,393
6-53-0056-011-2001	Rehabilitate Apron	$614,866
	Rehabilitate Taxiway	$596,866
6-53-0056-012-2003	Construct Taxiway	$1,495,198
	Install Taxiway Lighting	$201,762
6-53-0056-013-2004	Construct Taxiway	$364,388
6-53-0056-014-2005	Conduct Airport Master Plan Study	$187,150
6-53-0056-015-2006	Rehabilitate Runway	$305,788
	Install Airfield Guidance Signs	$24,000
6-53-0056-016-2007	Install Runway Lighting	$274,456
	Construct Taxiway	$506,902
6-53-0056-017-2008	Rehabilitate Runway	$151,242
6-53-0056-018-2008	Rehabilitate Runway	$4,339,866
6-53-0056-019-2009	Update Airport Master Plan Study	$95,000
6-53-0056-020-2009	Update Airport Master Plan Study	$47,500
	Rehabilitate Runway	$59,806
	Rehabilitate Taxiway	$118,574
6-53-0056-021-2009	Rehabilitate Runway *(ARRA $)*	$2,195,470
6-53-0056-022-2010	Rehabilitate Apron	$120,000
	Rehabilitate Taxiway	$153,196
	Acquire Land for Approaches	$820,212
6-53-0056-023-2011	Rehabilitate Taxiway	$100,000
	Construct Taxiway	$89,990
6-53-0056-024-2012	Rehabilitate Taxiway	$978,170
	Construct Taxiway	$514,000
6-53-0056-025-2013	Install Perimeter Fencing	$476,884
6-53-0056-026-2014	Install Perimeter Fencing	$297,978
6-53-0056-027-2015	Rehabilitate Apron, Rehabilitate Taxiway, Construct Taxiway	$330,736
6-53-0056-028-2016	Rehabilitate Apron	$1,005,818
	Rehabilitate Runway	$744,742
	Rehabilitate Taxiway	$2,428,226
	Construct Taxiway	$500,000
6-53-0056-029-2017	Construct Heliport/Helipad	$80,000
6-53-0056-030-2018	Construct Heliport/Helipad	$415,467
6-53-0056-031-2019	Update Airport Master Plan Study	$430,305
	FAA Grant Totals	**$26,088,343**

Table 2.2 (CONT'D) FAA/WSDOT Grants for The Richland Airport		
WSDOT No., Year	**Description**	**Total**
2008	Phase II Construction; Runway 1-19 Rehab./Security Cams	$61,624
2011	Taxiway B, Circle Area Hangar Taxilanes Relocation; Design	$2,500
2012	Taxiway B, Circle Area Hangar Taxilanes Relocation; Construct	$21,260
2015	Circle Area Hangar Taxilanes Relocation; Design	$9,187
2016	Circle Area Hangar Taxilanes Relocation; Construct	$140,473
	WSDOT Grant Totals	**$235,044**

2.3 AIRPORT INVENTORY

The Richland Airport (RLD) is located in East-Central Benton County in South-Central Washington State near 46° 18’ 34” North, 119° 18’ 25” West. RLD is within the City of Richland, Washington along Highway 240 to Airport Way. RLD is approximately 210 road miles southwest of Seattle, WA. The defined Airport property boundary approximates 564 acres. Much of the property on the west side is unimproved, while the east side is developed with aviation and industrial uses.

This section describes an inventory of the existing facilities and conditions at RLD.

Exhibit 2.1 Inventory of Existing Conditions depicts the location of inventory items.

The airport rotating beacon is sited near the main apron. The beacon alternates green and white, indicating nighttime availability of a public-use, civilian airport. The Automated Weather Observing System (AWOS) is sited northwest of mid-field and has a segmented circle with lighted windcone with traffic pattern indications. Hourly AWOS atmospheric observations are available via 132.675 MHz and (509) 375-4247.

Both runway orientations are sufficient to meet FAA’s recommended 95 percent coverage of wind in all-weather conditions. FAA details the objectives of wind coverage; that is, a runway, or runways should have a crosswind component more than a given threshold 95 percent of the time. These thresholds are 10.5 knots for small aircraft, 13 knots for larger general aviation aircraft, 16 knots for larger turbo-prop and many commercial airline aircraft and 20 knots for the largest turbine commercial, cargo, and general aviation turbine aircraft.

Combined Runways 1-19 and 8-26 have a 99.26 percent all-weather crosswind coverage for a 10.5-knots and 99.85 percent wind coverage for 13-knot crosswind. The wind record is based upon the observational record from the Tri-Cities (PSC) Airport, WA, the suitable proximate station with sufficient observations (10 years, 2010-2019) and frequency for the wind analysis per FAA guidance. The on-field AWOS provides hourly wind observation, but an adequate period of time (5 years, 2015-2019) to meet the FAA standard is not available. Combined runways for this wind record have a 98.68 percent all-weather crosswind coverage for 10.5-knots and 99.70 percent wind coverage for 13-knot crosswinds. Wind roses based upon this information are depicted on the Airport Data Sheet in an upcoming chapter.

2.3.1 RUNWAY 1-19

Runway 1-19 is 4,009 feet long and 75 feet wide; Constructed of asphalt with an estimated design pavement strength:

- 30,000 pounds single-wheel gear (SWG),
- 45,000 pounds dual-wheel gear (DWG), and
- 75,000 pounds dual tandem-wheel gear (DTG); and

The wheel-gear (single, double, dual-tandem) nomenclature refers to a pavement design methodology which produces a pavement strength referenced to the number of wheels on a given aircraft strut. Design inputs in this regard include soil type and other soil characteristics, subgrade/base soil improvements, loading, frequency and mix of aircraft which are expected to use the pavement, pavement type and composition, planned pavement life, and other design criteria. Pavements are designed to accommodate a limited number of aircraft operations over time without substantial surface rehabilitation. It is worth noting that the design does allow for a limited number of aircraft operations with weights greater than identified. A blast pad, marked with yellow chevrons complements the Runway 1 End.

The effective and maximum longitudinal runway gradients are less than 0.1 percent. The Runway 1 end is 391.3 feet above mean sea level (MSL) and Runway 19 end elevation is 389.0 MSL. FAA design standards require that the effective and the maximum runway longitudinal gradients not exceed certain percentages to ensure a runway is not too steep either overall or within a shorter distance. The runway longitudinal line of sight standard is met. Line of sight provides that any two points five feet above runway centerline shall be mutually visible along the entire runway length.

Aircraft generally use all or portions of a rectangular flight pattern, of which the runway constitutes one side. Left turns are prescribed along this flight path and left traffic is established to Runway 1 and right traffic to Runway 19. Traffic Pattern Altitude is 1,200-feet MSL. Right traffic to Runway 19 has been established to avoid overflight of City features east of SR240.

Runway 1-19 is equipped with a Medium Intensity Runway Lighting (MIRL) system. This lighting consists of a series of incandescent edge lights, generally located 10 feet from the edge of pavements for the length of the runway. The lights are sequentially spaced at regular 200-foot intervals. Lights are frangible-mounted (breakable) at the base to avoid substantial damage to the aircraft in the event of a deviation from the runway. Runway threshold lights are part of MIRL and are directionally lighted red and green to indicate runway limits, with the last 2,000 feet amber-lit to indicate an approaching end.

Both the Runway 1 and 19 ends have a sited-to-standard 2-light Precision Approach Path Indicator (PAPI) VGSI (Visual Glide Slope Indicator) lighting system. The PAPI is a type of VGSI used to provide lighted, visual information to the pilot as descent toward a runway end is made. The PAPI indicates a color, when on the correct glideslope to either runway end. Runway 19 is equipped with a Medium Intensity Approach Lighting System (MALS). MALS is a series of sequenced visual guidance lights out to 1,600 feet beyond runway end along runway centerline extended. The Runway 1 End is not equipped with a Runway End Identifier Lighting (REIL) System. REILs are frangible-mounted strobe-type lights situated near each runway end. These lighting systems facilitate day or night runway end identification, in clear or semi-obscured weather conditions. Windcones are found in the standard configuration for each runway end.

Each runway end is marked with elements appropriate for straight-in, non-precision aircraft operation. End threshold bars and the designations are marked. Aiming points are marked. Runway marking elements include designation (the numbers), threshold bars, and the runway centerline. The runway has edge stripes to indicate lateral limits. Runway markings are white.

Instrument Approach Procedures (IAPs) are published to accommodate aircraft operation to the Runway 19 End only. IAPs are FAA designed and prescribed three-dimensional paths in the sky for safe aircraft landing during Instrument Meteorological Conditions (IMC). These paths necessarily avoid terrain, tall towers and other obstructions to allow safe aircraft operation to the airport (termed circling) or to a given runway end (termed straight-in). Area Navigation (RNAV) GPS and Localizer IAPs are published to the Runway 19 End for a southerly approach. Inclement weather take-off instructions for both runway ends exist. More about this terminology is found in upcoming chapters.

2.3.2 RUNWAY 8-26

Runway 8-26 is 4,001 feet long and 100 feet wide; constructed of asphalt with an estimated design pavement strength:

- 30,000 pounds single-wheel gear (SWG),
- 45,000 pounds dual-wheel gear (DWG), and
- 75,000 pounds dual tandem-wheel gear (DTG).

The effective and maximum longitudinal runway gradients are 0.18 percent. The Runway 8 end elevation is 394.4, and the Runway 26 end elevation is 387.1 MSL. The runway longitudinal line of sight standard is met.

Left traffic is established to Runway 8 and right traffic to Runway 26. Traffic Pattern Altitude is 1,200-feet MSL. Runway 8-26 is equipped with a Medium Intensity Runway Lighting (MIRL) system. The Runway 8 End has a sited-to-standard 2-light PAPI lighting system and Runway 26 has a 4-light Visual

Approach Slope Indicator (VASI) landing aids system. The VASI is a type of VGSI used to provide lighted, visual information to the pilot as descent toward a runway end is made. Runway 8 is equipped with a Omni-Directional Approach Lighting System (ODALS). ODALS are a series of sequenced visual guidance lights out to 1,600 feet beyond runway end along runway centerline extended. The Runway 26 End is not equipped with REIL. Windcones are found in the standard configuration for both runway ends.

The Runway 26 end is marked with elements appropriate for straight-in, non-precision aircraft operation and the Runway 8 End is marked for visual aircraft operation.

IAPs are published to the Runway 26 End only. RNAV GPS IAPs are published to the Runway 26 End for a westerly approach. Inclement weather take-off instructions for both runway ends exist.

Table 2.3 identifies instrument approach and departure procedures and their lowest ceiling and visibilities.

TABLE 2.3
RLD INSTRUMENT APPROACH AND DEPARTURE REQUIREMENTS

Procedure	Lowest Minima (Cloud Ceiling AGL/*Lowest* Statue Mile Visibility)			
	A	**B**	**C**	**D**
GPS RNAV RWY 26 (Straight-In)	639-**3/4** LNAV/VNAV	639-3/4 LNAV/VNAV	639-1 LNAV/VNAV	639-1 LNAV/VNAV
GPS RNAV RWY 26 (Circling)	*920-1*	*1000-1*	*1200-2 3/4*	*1940-3*
GPS RNAV Y RWY 19 (Straight-In)	1240-**3/4** LNAV	1240-1 LNAV	861-1 3/8 LPV	861-1 3/8 LPV
GPS RNAV Y RWY 19 (Circling)	*1240-1 1/4*	*1240-1 1/4*	*1240-2 1/2*	*1940-3*
*GPS RNAV Z RWY 19 (Straight-In)	640-**3/4** LNAV/VNAV	640-3/4 LNAV/VNAV	640-3/4 LNAV/VNAV	640-3/4 LNAV/VNAV
GPS RNAV Z RWY 19 (Circling)	*920-1*	*1000-1*	*1200-2 1/4*	*1940-3*
**LOC RWY 19 (Straight-In)	880-**3/4**	880-3/4	880-1 1/8	880-1 1/8
***LOC RWY 19 (Circling)*	*920-1*	*1000-1*	*1200 2 1/4*	*1940-3*
LOC RWY 19 (Straight-In)	1300-1	1300-1	1300-2 1/2	1300-2 1/2
LOC RWY 19 (Circling)	*1300-1 1/4*	*1300-1 1/4*	*1300-2 3/4*	*1940-3*
VOR-DME-A (Circling)	*1140-1*	*1140-1*	*1200-2 3/4*	*1940-3*
Runway 1,8 Departures	310’ ROC to 5,000’ AGL or 4,600-3 In Visual Conditions			
Runway 19 Departure	480’ ROC to 5,000’ AGL or 4,600-3 In Visual Conditions			
Runway 26 Departure	355’ ROC to 5,000’ AGL, 4,600-3 Visual Conditions			

Source: FAA
AGL: Feet Above Ground Level, ROC: Minimum Required Foot Per Minute Rate of Climb)
**Requires 2,000 foot-per-minute climb ability on missed approach*
***Dual VOR receivers or distance measuring equipment required*

2.3.3 TAXIWAYS AND LANDSIDE AREAS

Runway 1-19 is equipped with full-parallel Taxiway A and six (6) connecting taxiways, A1 through A6, numbered south to north. Taxiway A centerline is separated 300 feet from Runway 1-19's centerline. Connecting taxiways are all 40 feet wide at the narrowest point. Holdlines and lighted airfield signage are located no closer than 200 feet from runway centerline. Connecting Taxiway A3 is configured as a high-speed exit with holdline/signage sited for Obstacle Free Zone standards compliance. The southside holdline at the Taxiway A/Runway 8-26 is similarly configured.

Runway 8-26 is equipped with full-parallel Taxiway B and four (4) connecting taxiways, B1 through B4, numbered west to east. Taxiway B centerline is separated 240 feet from Runway 8-26's centerline. Parallel and connecting taxiway pavements west of mid-field are 35 feet wide at the narrowest point. Parallel and connecting taxiway pavements east of mid-field are 40 feet wide at the narrowest point, except B3 which is 45 feet wide. Holdlines and lighted airfield signage are located no closer than 200 feet from runway centerline. End connecting Taxiways B1 and B4 are configured with holdline/signage sited for Obstacle Free Zone standards compliance. Connecting Taxiways B2 and B3 provide direct runway to parking access and are currently non-standard.

Three formal apron areas are found on the Richland Airport. The North Apron is adjacent and southwest of midfield and provides 14 smaller aircraft tiedowns and one (1) large aircraft tiedown, taxiway centerlines are marked for Taxilane Object Free Area clearances for current and planned executive hangar development. Southside access to this apron area is via Taxiway D and D1, D2 and D3. North Apron area approximates 33,170 square yards. The T-hangar complex is found due east of the North Apron. These areas of the field are accessed via Butler Loop and Airport Way.

The Main Apron is due south of midfield beyond the North Apron. Main Apron area approximates 46,580 square yards with three nested rows of tiedowns along with a single row, totaling 31 total small aircraft tiedowns and taxilane clearances. Larger airplane clearances surround the tiedowns. Fueling and a compass rose service this apron. Taxiways C and D access Parallel Taxiway A. Life Flight Network Hangars, the Quonset Hangar and the Terminal Building are found adjacent to the Main Apron. Approximately 70 automobile parking spaces are found adjacent to the Main Apron along Terminal Drive.

The South Apron is found farther southwest from the Main Apron area and approximates 12,650 square yards. Taxiway C connects the South Apron to Taxiway A. Pavement strengths on these aprons approximate 30,000 SWG. Sundance Aviation and Airport Maintenance are found adjacent to the South Apron.

Chain-link fence surrounds the southeast perimeter of Runway 1-19 where aviation uses are generally found near the North and Main Aprons, and the South Apron. This area has three electronic gates at the south apron, main apron, and north apron.

Wire field fence is located around the perimeter of the northwest side of Runway 1-19. Some sections of this field fence are missing or are partially buried

Exhibit 2.1 depicts the overall airport and facilities as described in this section. **Exhibit 2.2** is a blow-up graphic of the terminal, apron, and hangar areas. Buildings within this area are numbered and identified with their known current use; Aviation or non-Aviation. There is a significant Non-Aviation use within the airport boundary that has never been used for aviation.

A detailed inventory of the buildings and facilities on the airport is tabulated in **Exhibit 2.3, Inventory of Existing Conditions Table.** This table summarizes the facility use, occupant, and approximate size. Adjacent ground and top of facility elevation is also shown. This information will assist the planners during evaluation of obstructions and other considerations.

EXHIBIT 2.1
INVENTORY OF EXISTING CONDITIONS

SOURCE: J-U-B

EXHIBIT 2.2
INVENTORY OF EXISTING CONDITIONS

SOURCE: J-U-B

EXHIBIT 2.3
INVENTORY OF EXISTING CONDITIONS TABLE

BUILDINGS AND FACILITIES

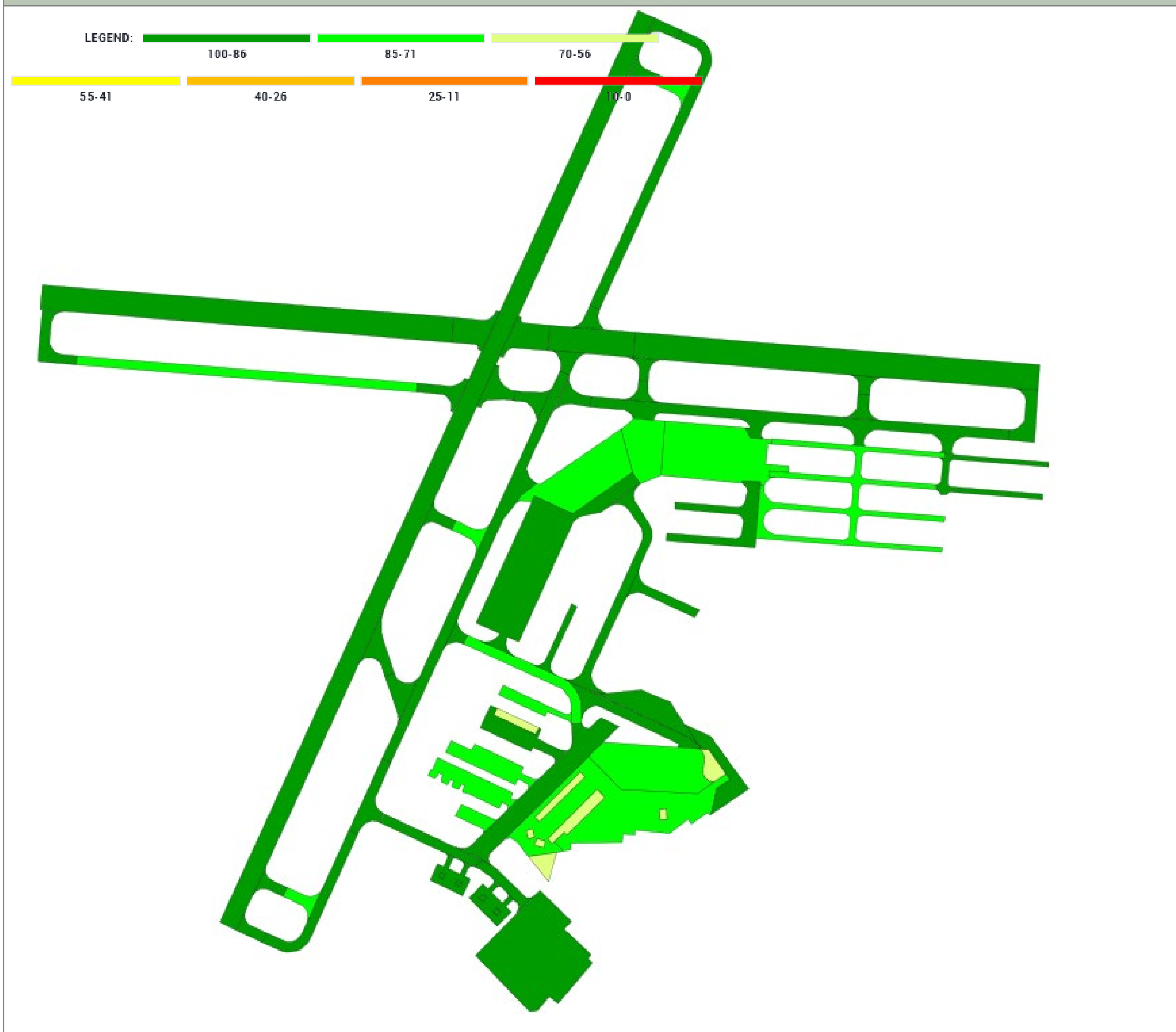
Bldg No.	Use	Top (Feet, MSL)	(7:1; V)	Ground (Feet, MSL)	Appx. Size (Square Feet)	Occupant
1	Commercial	410.2	-47	390.8	6,000	Lodgic & Ledgers, West
2	Aviation Association	412.2	-34	390.1	1,800	U/K - FAA Columbia Basin SSC
3	Commercial Multi Tenant / Non Aviation	411.8	-11	387	3,500	Advanced Commerical Flooring / BYOC
4	Commercial Multi Tenant / Non Aviation	407.6	-11	386.5	2,500	2571-2575 - Rendon Construction / Arntzen
5	Commercial Multi Tenant / Storage / Non Aviation	419.2	-12	394.3	4,400	1828-1830 Mission Investments / Power Alley Training
6	Commercial - Non Aviation / Steelman	410.1	-34	394.8	1,900	Re-Bath Tri-Cities
7	Commercial - Non Aviation / Arntzen	419.9	-42	395	3,700	Bouncin Bins Tri-Cities
8	Commercial Multi Tenant / Non Aviation	412	-69	394.7	4,100	2510-2512 Merz Luxury Cars
9	Commercial / Non Aviation	411.8	-82	394.8	4,100	2500-2502 - Merz Luxury Cars
10	Westinghouse Hanford Training Center	417.7		394.3	50,200	Penser North America/Winery Compliance Northwest/Columbia Energy & Environmental Services/OSHA Training Center
11	DBM Crigler - Commercial	419		397.5	10,200	Department of Energy
12	Vitro Building - Engineering	427.5		395.6	16,700	NV5, Dade Moeller, Jacobs Engineering
13	Commercial Multi Tenant / Storage / Non Aviation	412.1	-63	393.5	7,500	Keck Enterprises, Intellegration, Cassidys Custom Vortex Spray liners
14	Wholesale Distribution / Non Aviation	411.1	-29	392.1	4,100	1851 - Mission Foods / Bronco Girl Investments
15	Commercial / Non Aviation	409.3	-44	392.2	3,700	1857 - White Living Trust
16	Commercial	419.1	-36	393.4	14,700	Zero Gravity
17	Commercial Multi Tenant / Non Aviation	419.9		395.2	16,800	1841 - NW Restoration, BC Noxious Weed Control
18	Commercial Multi Tenant/ Non Aviation	413.8		397.1	4,200	Lawn Boys/A.M. Cleaning/Busack Electric/Bonafide Landscaping
19	Commercial Multi-Tenant / Non-Aviation	422.4		397.3	6,200	Tri-City Executive Suites / Dana Engineering, TM Inc and GoPln Ag Svcs
20	Commercial Multi Tenant/ Non Aviation	411.7		395.5	4,100	1856 - PAC Training / Vonderhulls
21	Light Industrial MFG	429.6		395.7	15,600	AMSC
22	Commercial Multi Tenant/ Non Aviation	414.9		393.6	4,200	1851-1857 - Porter's BBQ
23	Commercial - Multi Tenant	424.8		394.5	7,200	Chemcheck Instruments, US Transuranium & Uranium Register, WSU College of Pharmacy and InEntec
24	POB Pump	407.8		393.9	500	Port of Benton
25	Maintenance	415.8		392.8	5,200	Port of Benton
26	Aircraft Storage - 8 Units	411.4	1	389.9	7,200	1925A - QB Aviation LLC
27	Aircraft Storage	403.1	-1	390.2	1,600	1925B - Don and Christine Barnes
28	Aircraft Storage	403.5	6	390.6	1,600	1945C - Jeromie Mead (address incorrect)
29	Aircraft Storage	407.2	15	390.4	2,200	1925-D / RA & M Craig Investments
30	Aircraft Storage - 10 Units	402.2	12	390.1	11,600	1945 - Sky Hangar Associates
31	Aircraft Storage - 6 Units	405.3	3	390	14,200	1965 - Richland Hangar Assoc.
32	Aircraft Storage	405.4	3	390.5	11,200	48 & 76 one building - Baranaga
33	Quonset Hangar - Sundance Aviation	437.1	-50	391.5	24,000	Sundance Aviation
34	Maintenance Shed	406.1	-92	392.8	600	Port of Benton
35	Commercial Office	415.5		395.1	2,600	Formerly Perfect Image Photo
36	Port of Benton Equipment Shed	409.3		392.9	2,300	Port of Benton
37	Commercial / Non Aviation	414.4		394.1	4,100	1857 - Tri-Cities Steelband Association
38	Civil Air Patrol	415.9		393.8	2,400	Civil Air Patrol
39	Wine Barrel Storage	411.8		394.8	3,800	1887 - Hollis Construction
40	Commercial / Non Aviation	411.9		395	3,800	1881 - Semios / Liberty Saw - Hone
41	Commercial Multi Tenant / Non Aviation	411		394.8	4,100	2380-2382 - Strata Engineering / Dr. Dillon
42	Commercial Mini Storage - 12 Units	406.8		394.7	4,400	2376 - Richland Secure Self Storage
43	Commercial Mini Storage - 40 Units	406.5		395.1	4,900	2378 - Richland Secure Self Storage
44	Commercial Mini Storage - 35 Units	407.1		395	6,500	2374 - Richland Secure Self Storage
45	Commercial Lt Industrial / Non Aviation	415.2		394.3	10,800	2360- Single tenant building #53 / HiLine
46	Commercial / Non Aviation	413.2		396.3	4,100	Croskrey Properties - Vista Precision Solutions
47	Commercial / Non Aviation	415.6		394.9	4,100	2365 - MSA Storage / Riversedge Investments LLC
48	Commercial / Non Aviation	414.1		395.4	5,200	2395 - MSA Inc. / Riversedge Investments LLC
49	Automotive Repair	413.6		395.7	3,200	Redline Automotive
50	FBO Building / Pilots Lounge - Sundance Aviation	422		396.7	6,800	Sundance Aviation
51	Control Tower (Closed) & Restaurant	155.1		120.9	2,600	Ann's Best Creole
52	LifeFlight	418.5		395.6	18,100	Life Flight
53	Wholesale Distributor / Non Aviation	413.9		397.2	4,100	1941 - Fastenal
54	Commercial / Air Medic Pilot Lounge	410.6		396.5	2,000	1901 - Life Flight
55	Commercial Non-Aviation / Automotive	413.1		396.4	6,100	1893 - TK Machine
56	Commercial / Non Aviation	420.5		397.9	6,100	2340 - WSU / US Uranium & Transuranium Registry
57	Gas Station	416.5		397.8	2,500	Connell Oil
58	Commercial Multi Tenant / Non Aviation	413.4		395.7	4,100	1908-1910 - Boiler Piping Machine / Teri-Lin Galloway
59	Commercial Multi Tenant / Non Aviation	413.4		395.4	3,000	1916-1918 - Hunny-Do Crew/Colonial Lawn & Garden
60	Commercial Multi-Tenant/ Non-Aviation	411.7		394	4,100	Speedy Movers/Ink Giant Print Haus
61	Commercial Multi-Tenant / Non-Aviation	410.9		393.1	4,100	Jantec/Swagelok Northwest
62	Commercial Multi-Tenant / Non-Aviation	410.2		392.4	4,100	VOAK Vape of A Kind Brew
63	Search and Rescue	415.6		393.4	3,800	Columbia Basin Dive Rescue
64	Commercial / Mini Storage - 18 Units	404.8		391.8	8,100	1980H - Butler Loop Mini Storage
65	Commercial / Auto Storage - 2 Units	416.1	-40	391.7	11,400	1990J - Butler Loop Mini Storage
66	Mini Storage	404.9	-22	391.5	5,300	2008 - Richland Airport Mini Storage / Schaefer
67	Mini Storage	408.4	-13	391.5	4,300	2008 - Richland Airport Mini Storage / Schaefer
68	Mini Storage - 7 Units	404.8	5	391.4	1,800	2008H - Richland Airport Mini Storage / Schaefer
69	Mini Storage - 31 Units	406.7	5	391.7	3,800	2008G - Richland Airport Mini Storage / Schaefer
70	Mini Storage - 30 Units	404.5	3	391.9	3,200	2008F - Richland Airport Mini Storage / Schaefer
71	Mini Storage - 24 Units	405.1	1	391.5	4,100	2008E - Richland Airport Mini Storage / Schaefer
72	Commercial - Mini Storage - 20 Units	416.6	-1	391.7	4,600	2008D - Richland Airport Mini Storage / Schaefer
73	Commercial / Mini Storage - 48 Units	404.5	-2	391.5	11,900	2008C - Richland Airport Mini Storage / Schaefer
74	Commercial / Mini Storage - 39 Units	407.6	-11	391.5	12,500	2008B - Richland Airport Mini Storage / Schaefer
75	Mini Storage - 101 Units	411.5	-18	391.4	11,700	2008A - Richland Airport Mini Storage / Schaefer
76	Commercial	413.1	-43	394.4	5,400	Former Blue Star / POB / Vacant
77	Multi Tenant Building / Storage	416.5	-40	393.4	3,200	2021 - Gary DeHaan
78	Multi Tenant Building / Storage	416.4	-40	392.8	3,200	2025 - Gary DeHaan
79	Government / Non Aviation	412.4	-43	392.4	7,300	2061 - Mission Support Alliance
80	Mini Storage	402.5	-64	391.4	4,000	2040-A Richland Airport Mini Storage
81	Mini Storage	402.4	-74	391.6	4,000	2040-B Richland Airport Mini Storage
82	Aircraft Storage	415.3	-61	390.3	6,100	2105 - Zero Gravity
83	Aircraft Storage	0		390.4	5,400	2108 - Clif Berkey
84	Aircraft Storage	409.6	-20	389.5	3,700	2201 - Dennis Cole
85	Aircraft Storage	411.9	-17	389.7	3,700	2221 - Runnin T Enterprises / Tim White
86	Aircraft Storage	0		389.9	3,600	2241 - MyProcontractor/Moore
87	Aircraft Storage	411.6	-17	390.2	3,600	2261 - V&R Aviation/Fogelson
88	Aircraft Storage	412.2	4	389.9	3,700	2240 - Mark Showalter
89	Aircraft Storage	411.6	3	389.7	3,700	2220 - Greg Shaw
90	Aircraft Storage	411.9	3	389.5	4,000	2200 - Cannon Hill
91	Port of Benton - Restrooms	402.9	-18	390	500	Port of Benton
92	Aircraft Storage	413.8	-18	390.5	3,900	2114 - Richard Whitney
93	Aircraft Storage	415.3	-16	390.4	4,100	2108 - Trevino Family Investments
94	Aircraft Storage	411.2	-20	390.5	4,200	Hold Short LLC / Harrison
95	Aircraft Storage	415.6	-11	390.7	5,000	2096 - C & H Aviation (Hone/Collins
96	Aircraft Storage	415.5	-11	390.5	4,100	2094-C&H Aviation LLC (Hone/Collins)
97	Aircraft Storage	415.5	-11	390.8	5,100	2090- C&H Aviation (Hone/Collins)
98	Aircraft Storage	415.1	-11	390.9	3,700	2054 - Mark Jaeger
99	Aircraft Storage/Office	411.1	-15	390.7	3,700	2014 - Collins Enterprises . R Collins
100	Aircraft Storage / Commercial - 3 Units	413	-18	390.9	8,300	NA 2014? - Collins Enterprises /Black Dog Enterprises / Blue Star
101	Aircraft Storage - 14 Units	409.2	-2	390.7	16,300	2020 - Ralph Collins
102	Aircraft Storage - 13 Units	405.7	-6	390.4	15,600	2082 - Herb Brayton
103	Aircraft Storage - 11 Units	406.9	-9	390.5	12,000	2120 - Herb Brayton
104	Aircraft Storage	412.1	18	387.7	3,700	2146 - Richland Aero Shelters LLC / Bill Oneill
105	Aircraft Storage	0		388.5	3,500	TBD - Shadow Mtn Industries / George Schaefer
106	Aircraft Storage	413.4	22	389.2	4,200	2132 - Scott Urban
107	Aircraft Storage	413.2	22	388.7	4,000	2126 - Mark Gehlen
108	Aircraft Storage - 7 Units	409.4	16	390.5	15,800	2060 - Herb Brayton
109	Aircraft Storage - 7 Units	408	14	390.3	16,400	2030 - Ralph Collins
110	Aircraft Storage	410.3	22	389.7	6,100	2004 - C & S Hangar / C Hill
111	Aircraft Storage - Unit 6-7	408.1	20	389.7	4,900	2002 - C & S Hangar / Hill
112	Aircraft Storage - 5 Units	407.4	19	390.1	12,100	2002 A - C&S Hangar LLC
113	Aircraft Storage - 7 Units	406	16	391	14,400	2040 - Talent Aviation
114	Aircraft Storage	409.6	20	390.9	5,900	2048 - Sailplane Haven - Leedy
115	Aircraft Storage	404.9	15	390.6	2,500	H-2 - Axe LLC / Keller
116	Aircraft Storage	408.6	19	390	5,900	2050 - Bing Manawadu

SOURCE: J-U-B

2.3.4 AIRFIELD PAVEMENT CONDITIONS

WSDOT occasionally performs an evaluation of the airfield pavement conditions. Such an evaluation was completed in May 2018. **Figures 2.1** and **2.2** visualize results. **Figure 2.1** shows baseline values and **Figure 2.2** shows the 2025 forecast. WSDOT Pavement Condition Index Information identifies the following numerical reference index values related to the Green: 100-85 (Good), Bright Green: 85-70 (Satisfactory), Shaded Yellow: 70-55 (Fair), and Bright Yellow: 55-40 (Poor). WSDOT recommendations suggest no preventive maintenance or reconstruction recommended except attention to the tiedown pavements for the southern-most set of tiedowns on the Main Apron in 2018, and the Main Apron in its entirety starting in 2020.

FIGURE 2.1
WSDOT PAVEMENT CONDITION VISUALIZATION (2018)



Source: WSDOT

FIGURE 2.2
WSDOT PAVEMENT CONDITION VISUALIZATION (2025 FORECAST)

Source: WSDOT

2.4 ENVIRONMENTAL OVERVIEW

2.4.1 INTRODUCTION

The purpose of this section is to document known critical resources and environmentally sensitive features at the Richland Airport. This environmental overview provides the public, federal, state, and local officials with an understanding of the baseline environmental conditions. Environmental considerations provide direction on issues to be addressed relating to the existing operations and analysis of airport development alternatives. This environmental baseline inventory evaluates the area within the existing Airport property, which encompasses approximately 564 acres.

This environmental overview section has been developed in accordance with the President's *Council on Environmental Quality Regulations* (CEQ) Title 40 CFR §1500-1508; Federal Aviation Administration (FAA) Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*; and the FAA's *Environmental Desk Reference for Airport Actions*.

As identified in FAA Order 1050.1F and 5050.4B, this section addresses the following environmental resource categories:

- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historical, Architectural, Archeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks
- Visual Effects (including light emissions)
- Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

2.4.2 NEPA AND THE ENVIRONMENTAL PLANNING PROCESS

NEPA was enacted on January 1, 1970, with the purpose of requiring federal agencies to consider the impact proposed projects would have on the environment prior to implementing a project. In order to comply with NEPA regulations, airport projects must go through the NEPA process.

Proposed airport actions are evaluated in terms of the type of action and its potential impacts on the environment. As described in FAA Order 1050.1F, projects fall into one of three categories based on the type and significance of the impacts:

Categorical Exclusions (CATEX): Categorically excluded projects include actions that are found to have no potential for significant environmental impacts under normal conditions. The individual actions considered as categorical exclusions are listed in FAA Orders 1050.1F and 5050.4B.

Environmental Assessment (EA): EAs are prepared to determine the significant impacts of the proposed action. The analysis and documentation of an EA is similar to an Environmental Impact Statement (EIS). If an EA determines that the proposed action will not cause significant environmental impacts, then a Finding of No Significant Impact (FONSI) will be prepared. If the EA identifies significant impacts that will result from the proposed action, an EIS will be initiated.

Environmental Impact Statement (EIS): Actions typically requiring an EIS are those projects that are found to have significant impacts. For example, actions that normally require an EIS include, but are not limited to, site selection for a new airport location and approval for the location.

Information presented in this document is not intended to meet NEPA requirements. The information contained in this overview identifies resource categories that may potentially be impacted by future developments at Richland Airport.

2.4.3 METHODOLOGY

In general, regulatory policies, procedures, and considerations of airport facilities, operations, and improvements are evaluated along with existing and expected plans and permits. Baseline environmental conditions for the environmental impact categories were determined by reviewing existing data, conducting literature searches, reviewing databases, and consulting aerial photography and maps.

2.4.4 EXAMINATION OF ENVIRONMENTAL RESOURCE CATEGORIES

The following sections provide environmental context for Richland Airport and briefly discuss the potential environmental impacts related to the baseline conditions.

2.4.4.1 Air Quality

The Clean Air Act (CAA) sets the general policy for regulating air quality throughout the United States. Under the CAA, the Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) in the interest of protecting human health and the environment against the detrimental effects of outdoor air pollution. NAAQS have been established for the following criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), particulate matter (PM 2.5 ad PM 10), and lead (Pb).

Under the CAA, air quality conditions are assessed within all areas of a state, with respect to NAAQS. Areas that do not exceed NAAQS are designated as "*attainment*" areas, while areas exceeding standards are considered "*nonattainment*" areas. Areas that were once considered nonattainment areas but now currently meet the NAAQS and requirements set in the CAA are designated as "*maintenance*" areas. As of January 2020, Benton County, Washington is in attainment for all criteria pollutants (EPA 2020).

The EPA also monitors Hazardous Air Pollutants (HAPs) throughout the year in specific counties within each state. Benton County is not monitored for HAPs, however, according to the Benton County Clean Air Agency, particulate pollution and air toxics are the greatest air quality concerns in the County (Benton Clean Air Agency 2020).

2.4.4.2 Biological Resources (Including Fish, Wildlife, And Plants)

The Endangered Species Act (ESA) provides protection of plants, animals, and habitats listed as either endangered, threatened, or of special concern by the federal and state governments. An animal or plant species in danger of extinction throughout all or a significant portion of its range is considered *"endangered,"* and is protected from harm pursuant to federal and state law. A *"threatened"* species is one that is likely to become endangered. "*Species of special concern"* are not formally afforded regulatory protection, but any reduction in their numbers and habitat is of concern. In compliance with the ESA, agencies overseeing federally-funded projects coordinate with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) concerning listed, or proposed to be listed, species with the potential to occur within the area of any future development projects.

According to the USFWS Information for Planning and Consultation (IPaC) database, several ESA-listed species have the potential to exist at the Airport. These species are listed in **Table 2.4**.

TABLE 2.4
ESA-LISTED SPECIES POTENTIALLY OCCURRING AT RICHLAND AIRPORT.

Species	ESA Status
Gray Wolf (Canis lupus)	Endangered
Yellow-billed Cuckoo (Coccyzus americanus)	Threatened
Bull Trout (Salvelinus confluentus)	Threatened

Additionally, the Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) Report identified multiple occurrences of several state-listed species within the Airport property (see **Table 2.5**). It should be noted that other more common species than those listed in tables 2.4 and 2.5 have been observed at the Richland Airport.

Habitat considerations influence the observed occurrence of ESA and PHS-listed species described in the tables above. According to the City of Richland Comprehensive Plan and recent aerial imagery, the area surrounding the airport is highly disturbed by previous agricultural, residential, and industrial development, and the Airport property does not contain any aquatic features. Several agricultural fields are present to the northwest of the Airport, while a golf course is located at the south end of the Airport property. Essential Fish Habitat (EFH) for Chinook and Coho salmon has been documented for the nearby Yakima and Columbia Rivers, however these rivers are located approximately 0.5 miles west and 1.20 miles east of the Airport, respectively, at their closest points.

TABLE 2.5
PHS-LISTED SPECIES WITH RECORDS OF OCCURRENCE AT RICHLAND AIRPORT

Species	State Status	Date of Most Recent Occurrence
Black-tailed Jackrabbit (*Lepus californicus*)	Candidate	1999
Ferruginous hawk (*Buteo regalis*)	Candidate	None listed
Townsend's Ground Squirrel (*Urocitellus townsendii*)	Candidate	2008

The general habitat conditions observed at the Airport include fragmented and disturbed sagebrush-steppe habitat including rabbit brush, bitter brush, Indian ryegrass, and cheatgrass in the western portion of the Airport property. A maintained golf course exists in the southern portion of the Airport, while the terminal and industrial park make up the majority of the land in the eastern half of the property. The areas on and adjacent to the Airport are considered unsuitable habitat for gray wolf, yellow-billed cuckoo, bull trout, black-tailed jackrabbit, and ferruginous hawk due to the lack of suitable vegetation types, absence of nesting and roosting opportunities, lack surface water features, and a high amount of human activity in the area. The Airport may contain suitable habitat for Townsend's ground squirrel due to the amount of sagebrush steppe land in the western half of the property. No trees or riparian areas exist on within the study area, however ample amounts of riparian and aquatic habitat are readily available along the nearby Yakima River.

Due to unsuitable habitat conditions present at Richland Airport, along with a lack of recent general species observation data, gray wolf, yellow-billed cuckoo, bull trout, black-tailed jackrabbit and ferruginous hawk are unlikely to exist on Airport property. The Airport may contain suitable habitat for Townsend's ground squirrel. Given the available species information, a biological evaluation would be required before the implementation of any projects.

2.4.4.3 Climate

As described in FAA Order 1050.1F, the CEQ has indicated that climate and greenhouse gases (GHGs) should be considered in NEPA analysis due to the established effects of GHG emissions on climate. However, the CEQ also states that there is currently no useful way to analyze the effects of GHGs on climate. Given the relatively small size of Richland

Airport (approximately 1.0 square miles), GHG emissions from the Airport would be negligible and are not likely to cause adverse effects to the climate.

According to the Washington State Department of Transportation (WSDOT) Aviation Division, the latest available data indicates that the Airport current supports 70,000 annual aviation operations. Forecasted 20-year airport operations will be discussed further in Chapter 3. The airport improvements identified in this MPU are not anticipated to increase annual airport operations but will help meet future airport demands. The proposed airport improvements are not anticipated to result in a net or measurable change in GHG emissions.

2.4.4.4 Coastal Resources

Benton County is inland, and therefore this category is not applicable to the Richland Airport.

2.4.4.5 Department of Transportation Act: Section 4(f)

Section 4(f) resources protected by the Department of Transportation Act include publicly-owned lands from public parks, recreation areas, or wildlife and waterfowl refuges of national, state, or local significance; and, publicly- or privately-owned land from any historic sites of national, state, or local significance.

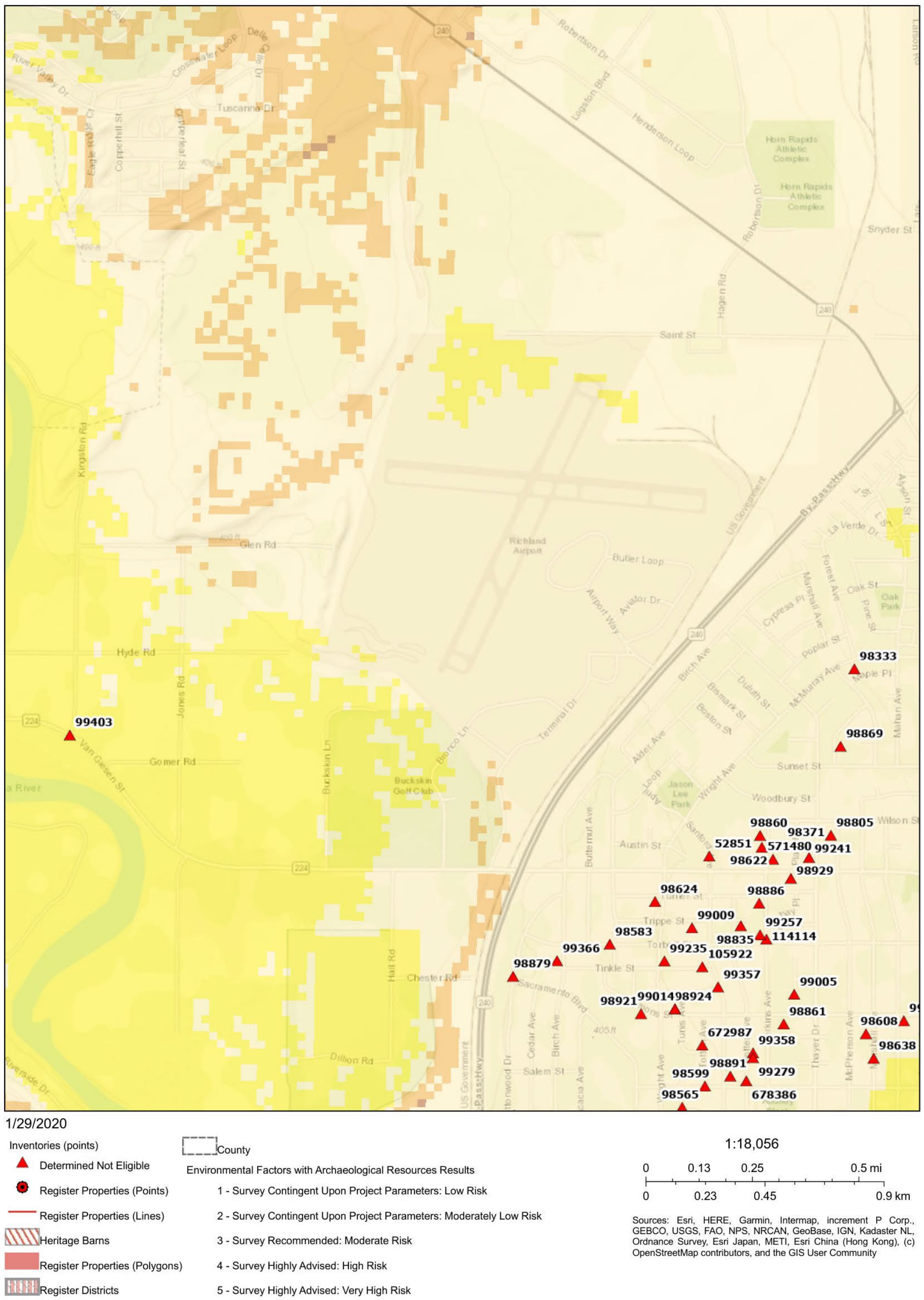
There are currently a variety of Section 4(f) resources in the vicinity of the Airport. **Table 2.6** describes the nearby resources alongside their distance from the Airport property The Columbia Basin Racquet Club is immediately adjacent to the southern edge of the Airport property, while the Buckskin Golf Course occupies the southern portion of the Airport.

As determined by the Washington State Department of Archaeology and Historic Preservation (DAHP) Washington Information System for Architectural and Archaeological Record Data (WISAARD), no publicly or privately-owned historic sites of national, state, or local importance exist within or adjacent to the Airport property (see Figure 2.3). All properties in the vicinity of the Airport with the potential to be on the National Register of Historic Places (NRHP) have been *"determined not eligible"* for listing.

TABLE 2.6
SECTION 4(F) RESOURCES IN THE VICINITY OF RICHLAND AIRPORT

Section 4(f) Resource	Distance from Airport
Buckskin Golf Course	On/Near Airport Property
Columbia Basin Racquet Club	Immediately Adjacent
Horn Rapids Athletic Complex	0.14 miles
Jason Lee Park	0.20 miles
Oak Park	0.25 miles
Westwood Park	0.34 miles
Chief Joseph Middle School	0.53 miles
Lynwood Park	0.55 miles
Sacajawea Elementary School	0.59 miles

FIGURE 2.3
WISAARD MAP FOR RICHLAND AIRPORT



Source: State of Washington

2.4.4.6 Farmlands

Farmlands are protected under the Farmland Protection Policy Act (FPPA), which requires federal agencies to minimize the conversion of farmland to nonagricultural uses so that federal programs do not unnecessarily contribute to the loss of valuable farmlands. The FPPA categorizes farmland as *“prime farmland,” “unique farmland,”* and *“farmland of statewide or local importance.”* Farmland subject to the FPPA requirements does not have to currently be used in agricultural production; it can be forestland, pastureland, cropland, or other land, but not water or urban built-up land.

The FPPA defines prime farmland as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor. Unique farmland is land other than prime farmland that is used for production of specific, high-value food and fiber crops. Unique farmland has soil and climatic conditions that can adequately supply economical yields of high-quality crops when managed appropriately. Farmland of statewide or local importance is land other than prime or unique farmland that is determined and designated as such by state or local governments.

As depicted by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey, soils at Richland Airport consist of a variety of silt loams and loamy sand, described in more detail in **Table 2.7** and in **Figure 2.4**.

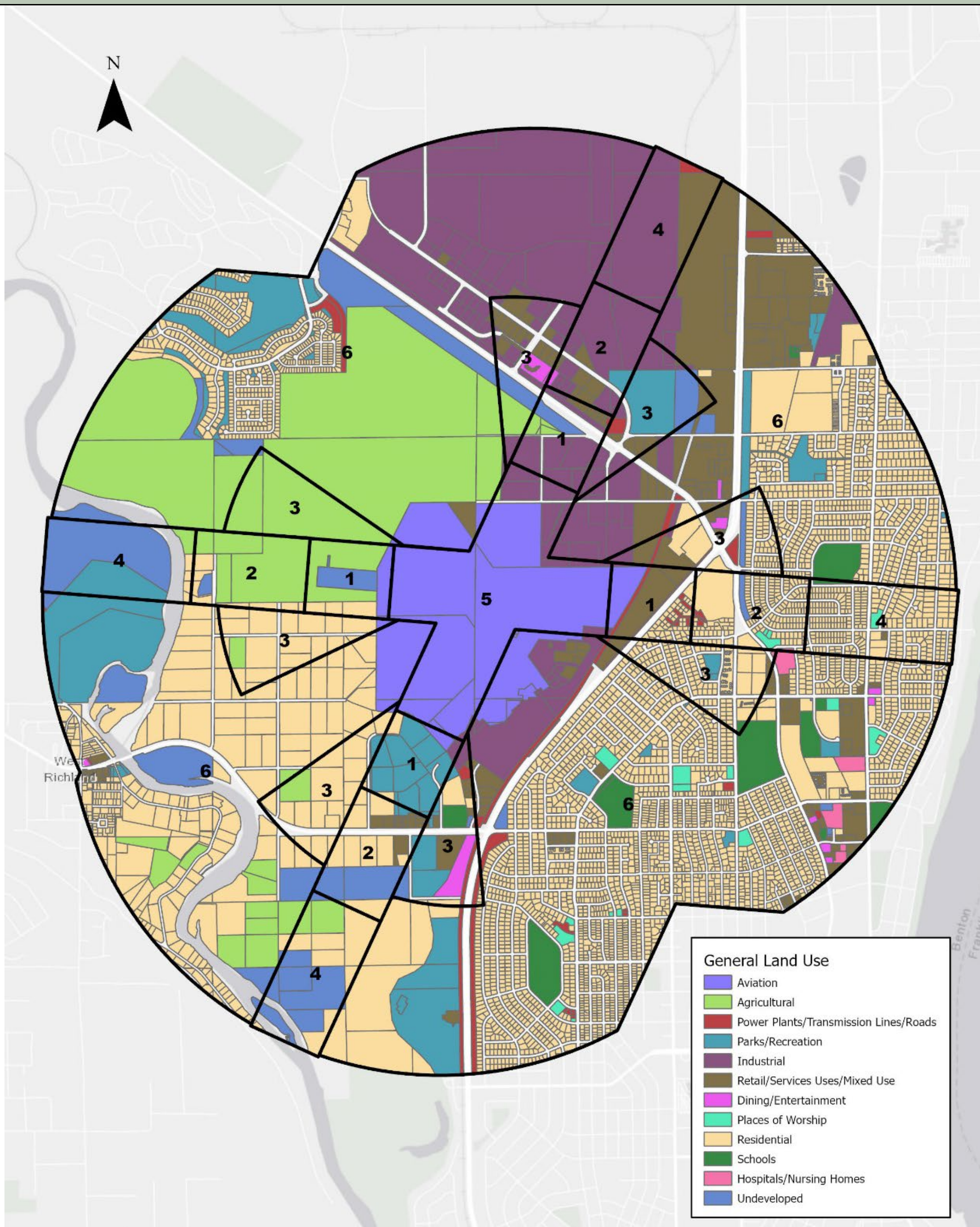
The FPPA does not apply to land that has already been developed for urban or built-up uses. Currently, all the land on the Airport property has already been developed for either Airport, industrial, or recreational uses. While the land in the western half of the Airport remains vacant of industrial or aviation facilities, it is actively maintained by Airport personnel and should be considered developed land due to it being existing Airport property. Therefore, no lands on Airport property should be considered prime farmland or farmland of statewide importance.

If, in the future, the Airport was to expand to the north or west, existing farmlands would be impacted, requiring the Airport sponsor to initiate formal coordination with the USDA/NRCS and complete Form AD-1006. After receiving NRCS’s input, the sponsor would perform additional analysis and calculate a *“site assessment”* score to determine the site’s fitness for protection under the FPPA.

TABLE 2.7
FARMLAND RATINGS OF MAPPED SOILS AT RICHLAND AIRPORT.

Soil Name	Map Symbol	Farmland Rating	Percent of Airport Property
Burbank loamy fine sand, 0 to 2 percent slopes	BbA	Not Prime Farmland	11.8%
Burbank loamy fine sand, 2 to 15 percent slopes	BbD	Not Prime Farmland	11.2%
Burbank loamy fine sand, gravelly substratum, 2 to 15 percent slopes	BIA	Not Prime Farmland	1.9%
Pasco fine sandy loam, 0 to 2 percent slopes	PaA	Farmland of Statewide Importance	0.01%
Pasco silt loam, 0 to 2 percent slopes	PcA	Farmland of Statewide Importance	9.3%
Pits	Pits	Not Prime Farmland	0.3%
Quincy loamy sand, 0 to 2 percent slopes	QuA	Farmland of Statewide Importance	3.7%
Quincy loamy sand, 2 to 15 percent slopes	QuD	Farmland of Statewide Importance	59.4%
Quincy loamy sand, 0 to 30 percent	QuE	Not Prime Farmland	2.3%

FIGURE 2.4
MAPPED FARMLANDS AT RICHLAND AIRPORT



Source: USDA, National Resource Conservation Service

2.4.4.7 Hazardous Materials, Solid Waste, and Pollution Prevention

The Airport is required to follow applicable laws and regulations regarding hazardous materials and/or solid waste management. Review of the Washington State Department of Ecology (WDOE) database has indicated that there are several listed sites on Richland Airport property (see **Table 2.8**).

Any planned projects that would impact the sites listed would likely require additional coordination with the WDOE. However, baseline conditions at Richland Airport are not anticipated to adversely affect human health or the environment, as pertinent best management practices (BMPs) have been and would be followed during any construction projects.

TABLE 2.8
WDOE HAZARDOUS FACILITIES/SITES ON RICHLAND AIRPORT PROPERTY

Facility/Site Name	Facility Site Number	Description	Ecology Program
Owens Corning Fiberglass	92657269	Underground Storage Tank	TOXICS
Truax Harris Energy LLC Richland	6343241	Emergency/Hazardous Chemicals Report TIER 2	HAZWASTE
Connell Oil, Inc.	96429988	Hazardous Waste Generator; Enforcement Final; Emergency/Hazardous Chemical Report TIER 2	HAZWASTE; TOXICS
W WSU Natl Human Radiobiology Tissue	25538659	Hazardous Waste Management Activity; Hazardous Waste Generator	HAZWASTE
HiLine Engineering Lindberg	878	Construction Stormwater General Permit	WATQUAL
Semios USA Richland	87814	Hazardous Waste Generator	HAZWASTE
Benton Port Richland Airport	73896	Construction Stormwater General Permit	WATQUAL
Redline Automotive	846	Revised Site Visit Program	HAZWASTE
Richland Auto Repair Inc	7239498	Hazardous Waste Generator	HAZWASTE
Control Tech Services	15552	Revised Site Visit Program	HAZWASTE

2.4.4.8 Historical, Architectural, Archaeological, and Cultural Resources

NEPA requires agencies to consider the effects of any planned federal undertaking upon the cultural environment, including historical, archaeological, and paleontological resources. In additional to NEPA, planned federal actions must also comply with the National Historic Preservation Act (NHPA) (16.U.S.C. 470, as amended). Section 106 of the NHPA and its implementing regulations (36 CFR 800) require federal agencies to analyze the effects of their undertakings on historic properties. According to these regulations, a historic property is *"any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP)…"* (36 CFR 800.16).

As described in Section 2.4.4.5**,** the DAHP WISAARD database does not illustrate any historical, architectural, archaeological, or cultural resources on or in the vicinity of the Airport (see **Figure 2.3**). While a number of potential properties are in the area, they have already been *"determined not eligible"* by the DAHP, and should not be considered in the Section 106 analysis. However, any development west of Runway 1/19, including any projects that would impact the potential historic ditch, should require a cultural resource survey prior to design and construction. If construction activities uncover any materials, such as stone tools, shell, bone, fire-cracked rock, charcoal, pottery, glass, brick, metal, or human remains, work in the immediate vicinity would stop at once and the State Historic Preservation Officer (DAHP)/Tribal Historic Preservation Officer (THPO) would be notified.

2.4.4.9 Land Use

Richland Airport is located within the City of Richland limits, northwest of the main downtown area. The Airport is bordered by a golf course to the southwest, State Route 240 to the southeast and east, an industrial park to the northeast, and agricultural fields to the northwest and west.

According to the Richland Comprehensive Plan, Richland Airport is located within the Medium Industrial (I-M) zone, which corresponds with the *"Industrial"* land use category and "*provides for limited manufacturing, assembly, warehousing and distribution operations and retail and wholesale of products manufactured on the premises or products; and administrative and research and development facilities for science-related activities and commercial uses that are supportive and compatible with other uses allowed in the district".* The land use policies pertaining to this zone are described in the Richland Comprehensive Plan, Land Use Goal 8, Policy 7. The City of Richland land use designation of areas adjacent to the Airport is a mix of Industrial, Developed Open Space, Commercial, and Agriculture.

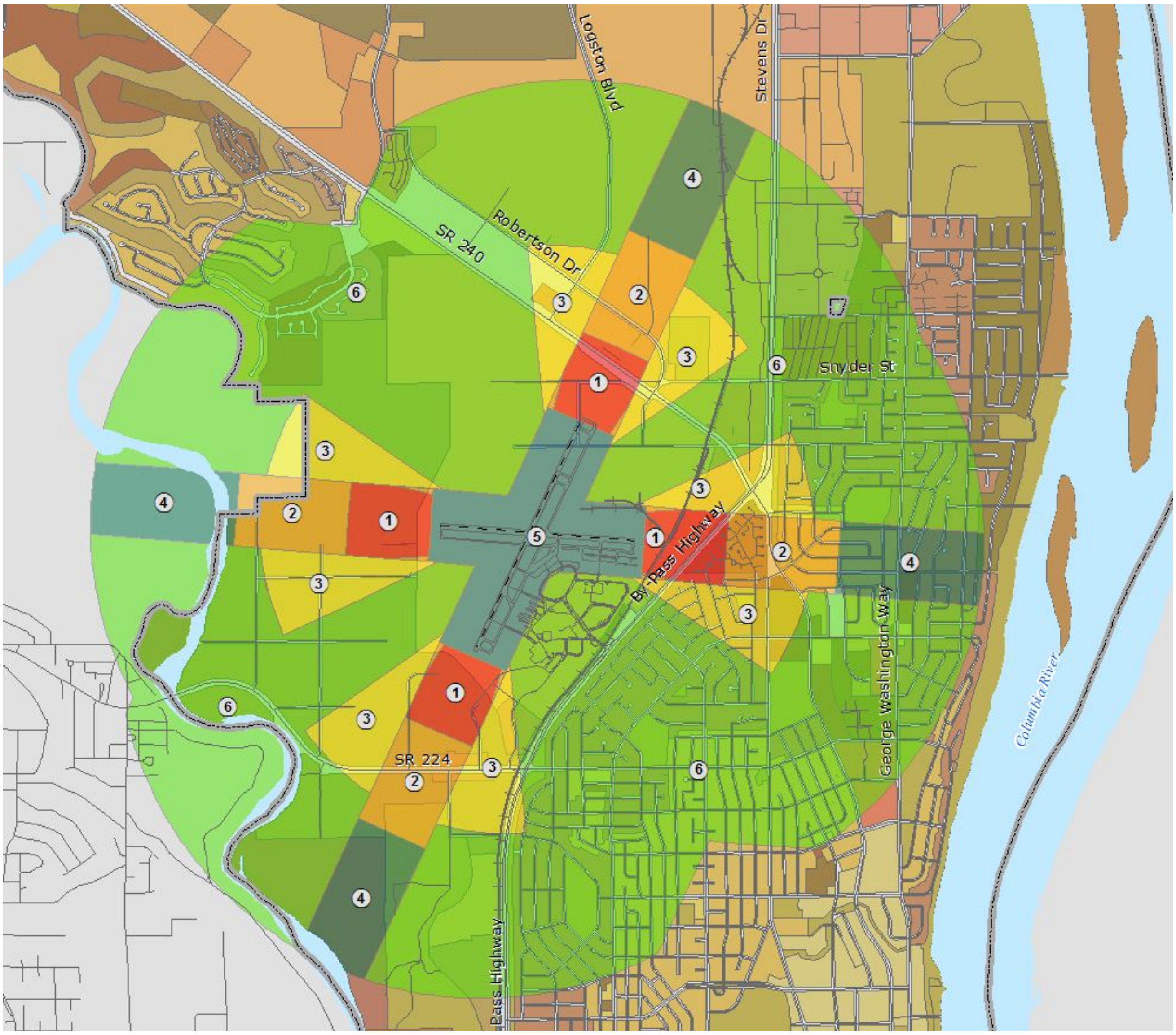
Figure 2.5 illustrates generalized land uses along with WSDOT land use compatibility zones.

The Benton County Land Use Map illustrates that the Airport and the surrounding area fall within the Urban category, which are "lands located within, adjacent to, or in the case of existing unincorporated islands, surrounded by existing city limits." The densities, uses, and development provisions allowed within this land use ensure that development is consistent with the associated city comprehensive plans. Land use compatibility is considered in more depth later in this study. For **Figure 2.5** The WSDOT compatibility zones are described as:

- Zone 1 – Runway Protection Zone
- Zone 2 – Inner Approach/Departure Zone
- Zone 3 – Inner Turning Zone
- Zone 4 – Outer Approach/Departure Zone
- Zone 5 – Sideline Zone –
- Zone 6 – Traffic Pattern Zone

The 1050.1F Environmental Desk Reference for Land Use explains that the compatibility of land uses and aviation is typically related to noise impacts and the significance of other impacts. Section 2.4.4.10 discusses noise and noise sensitive areas in the vicinity of the Airport.

FIGURE 2.5
CITY OF RICHLAND FUTURE LAND USE MAP



Source: City of Richland/J-U-B

2.4.4.10 Noise and Compatible Land Use

Noise is defined as unwanted sound that can disturb routine activities and cause annoyance. A variety of factors influence an individual's perception of noise, such as volume, frequency, atmospheric conditions, ambient sound, and the type of activity generating noise. Generally, aircraft noise is one of the more intrusive environmental impacts for a given project in an airport environment.

Existing and future noise impacts at an airport should be assessed based on current industry standards as they relate to the human environment and, potentially, to sensitive species and historic properties. Airport noise is measured in Day Night Average Sound Level (DNL). DNL represents the average total accumulation of all noise, measured in decibels (dB), over a 24-hour period. The average total noise accumulation arises from noise associated with all aircraft operations over the course of the 24-hour period, which represents the airport's average annual operations per day.

The established FAA noise significance threshold for most general aviation airports is 65 dB DNL. When considering noise at airports, noise sensitive areas are those found within the 65 dB DNL contour. In these areas, the DNL threshold does not sufficiently encompass the impact noise would have on quiet areas such as national parks, wildlife refuges, schools, or hospitals. A review of aerial imagery illustrates that there are a few residential areas to the east and west of the Airport, however the Airport is bordered by State Route 240 along its eastern edge, which essentially forms a barrier between the eastern edge of the Airport and nearby residential areas. Background noise is already relatively high in the vicinity of the Airport due to the proximity to State Route 240. Any future construction noise at the Airport is unlikely to surpass airport noise or high background noise in the Airport's vicinity.

Additionally, FAA guidance in the 1050.1F Environmental Desk Reference states that no quantitative noise analysis is required for projects involving Design Group I and II in Approach Categories A through D operating at airports whose forecast operations do not exceed 90,000 annual propeller operations or 700 jet operations; below these operations numbers the 65 DNL generally does not extend beyond Airport property limits. Current operations at Richland Airport do not exceed, and are not expected to exceed, 90,000 average operations or 700 annual jet-powered operations within the 20-year time frame of this planning process (see Chapter 3). Therefore, a quantitative noise analysis is not anticipated to be required for any future developments at Richland Airport, and a qualitative noise analysis was not performed for the development of this MPU.

2.4.4.11 Natural Resources and Energy Supply

Benton County covers approximately 1,760 square miles, with 416 square miles of that area occupied by the U.S. Department of Energy's Hanford Reservation (City of Richland 2017). Agriculture and rural communities make up much of the land within the county, influenced by the Columbia River, which flows along the north, east, and southern borders of the County, and the Yakima River, which bisects the County into northern and southern halves. These two rivers are the primary natural resources within and adjacent to the City of Richland, providing water for irrigation and domestic uses while offering a variety of open space, recreational, and waterfront development opportunities for the city. There are no mineral resource lands, and no forest resources within the City or near the Airport.

Water and wastewater services at the Airport are provided by the City of Richland, and electricity is provided by the City of Richland Energy Services. Future operations or development projects at Richland Airport are not anticipated to have the potential to cause demand to exceed available or future supplies of any of the described resources.

2.4.4.12 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

The work completed at the Hanford Nuclear Reservation is closely associated with the City of Richland and has impacted to the local economy for decades. Currently, Hanford is the region's largest economic strength. The City of Richland is unique due to several large employers that dominate the employment base, with eight of the 10 top employers in the Tri-Cities area located in Richland largely due to significant federal investments in the Hanford Nuclear Reservation.

The U.S. Census Bureau states the median household income in Richland was approximately $74,405 in 2019. Service and government, the largest employment sectors in the area, is growing at a rate of one to three percent a year, while agriculture is growing at a rate of 3.7 percent a year and is the strength behind the Richland economy. According to the U.S. Bureau of Labor Statistics, the average unemployment rate in the Tri-Cities area was approximately 5.4% as of November 2019, slightly higher than the Washington State average of 4.4% and the U.S. average of 3.5%. Development at Richland Airport has the potential to result in short-term increased economic activity in the Richland community because construction projects generally increase local business demand.

The Richland Comprehensive Plan states that the population of the City of Richland has grown rapidly in the last few years, with a 24% growth from 2000 to 2010, and an 11% growth from 2010 to 2016. Data from the 2010 U.S. Census indicates that the population of Richland was 48,058, the majority of which (approximately 77.5%) identified as white alone, the remaining 22.5% identified Hispanic or other minority races.

The EPA's Environmental Justice Screening and Mapping tool (EJSCREEN) was referenced to determine the population within a 1-mile radius of Richland Airport. This report states:

- that approximately 14,934 individuals live in the area surrounding the Airport. Of those individuals,
- approximately 14% identify as Hispanic, 76% identify as white alone, 3% identify as black alone, 3% identify as Asian alone, and 1% identify as American Indian alone.

It is unlikely that future development projects at Richland Airport would result in any residential relocations, due to the Airports inability to expand to the south and east due to the presence of State Route 240, and the developed agricultural and industrial lands to the north and west.

Children's environmental health and safety risks are usually impacted by the introduction of new physical hazards into the existing environment. Future development project at Richland Airport are not likely to exceed significance thresholds for air quality, noise, and water quality, and there are no other environmental impacts that would negatively impact the health and safety of children. Food, drinking water, recreational water, soil, and other products children might encounter would not be influenced by future development projects at the Airport.

2.4.4.13 Visual Effects (Including Light Emissions)

Visual effects, visual resources, and visual characteristics can be subjective because each category includes personal aesthetic preferences. Visual impacts can include contrasts between a specific area, the existing environment, and the general perception of the community concerning any change in lighting or visual characteristics.

At Richland Airport, the primary light sources consist of existing Airport buildings and facilities along with runway lighting. Any lighting associated with future development at the Airport would be comparable to what currently exists; therefore, no special lighting studies have been performed as part of this planning.

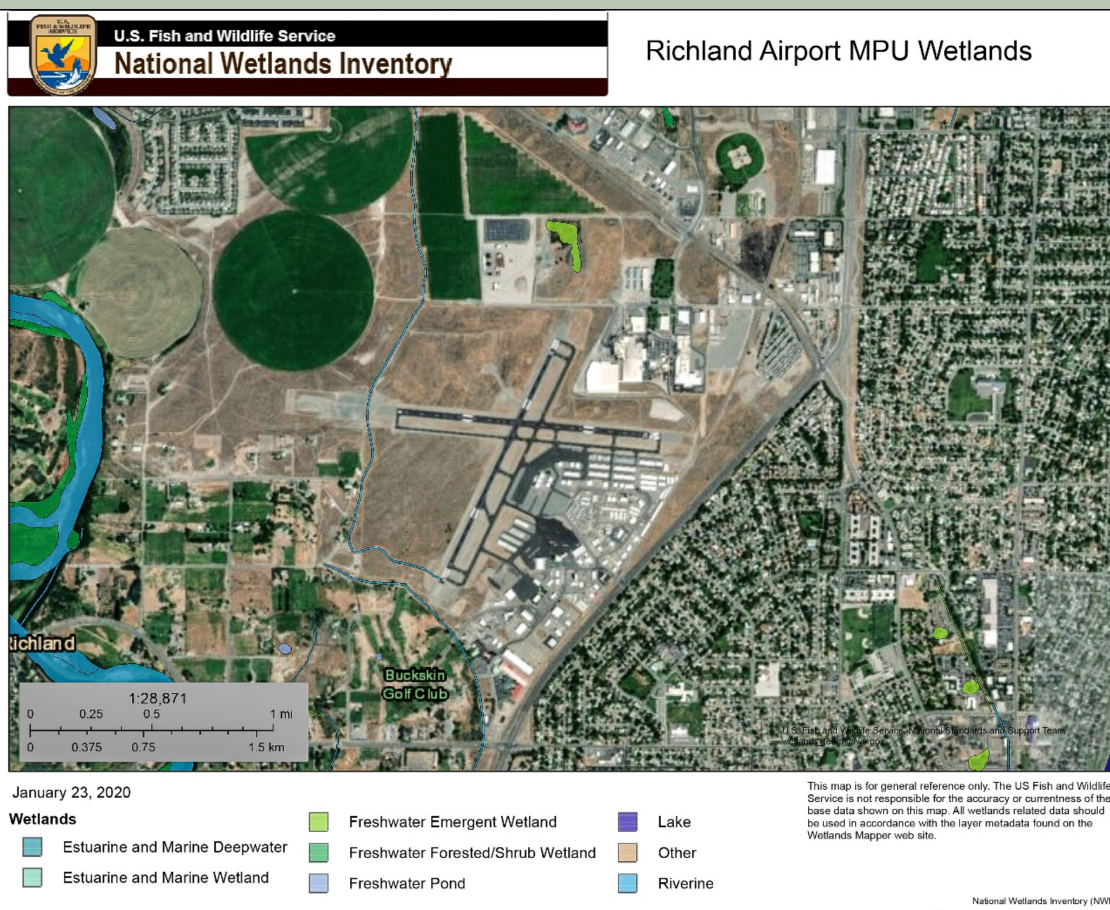
2.4.4.14 Water Resources (Including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

<u>Wetlands</u>

Wetlands are defined in the Clean Water Act (CWA) as *"areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."* Wetlands generally include swamps, marshes, bogs, and similar areas.

While the Yakima River flows 0.51 miles west of the Airport, and a number of irrigation fields exist to the northwest, no wetlands have been identified on or adjacent to the Airport property. The USFWS National Wetland Inventory (NWI) illustrates a riverine wetland associated with the former irrigation canals extending from south to north in the western segment of the Airport property, however the mapped wetland was inconsistent with observed conditions (see Figure 2.6). The Airport is dominated almost entirely by disturbed sagebrush habitat, with no segments of riparian vegetation or inundated areas, and the mapped soils on the Airport property have a hydric rating of zero out of 100.

FIGURE 2.6
RICHLAND AIRPORT NATIONAL WETLANDS INVENTORY MAP

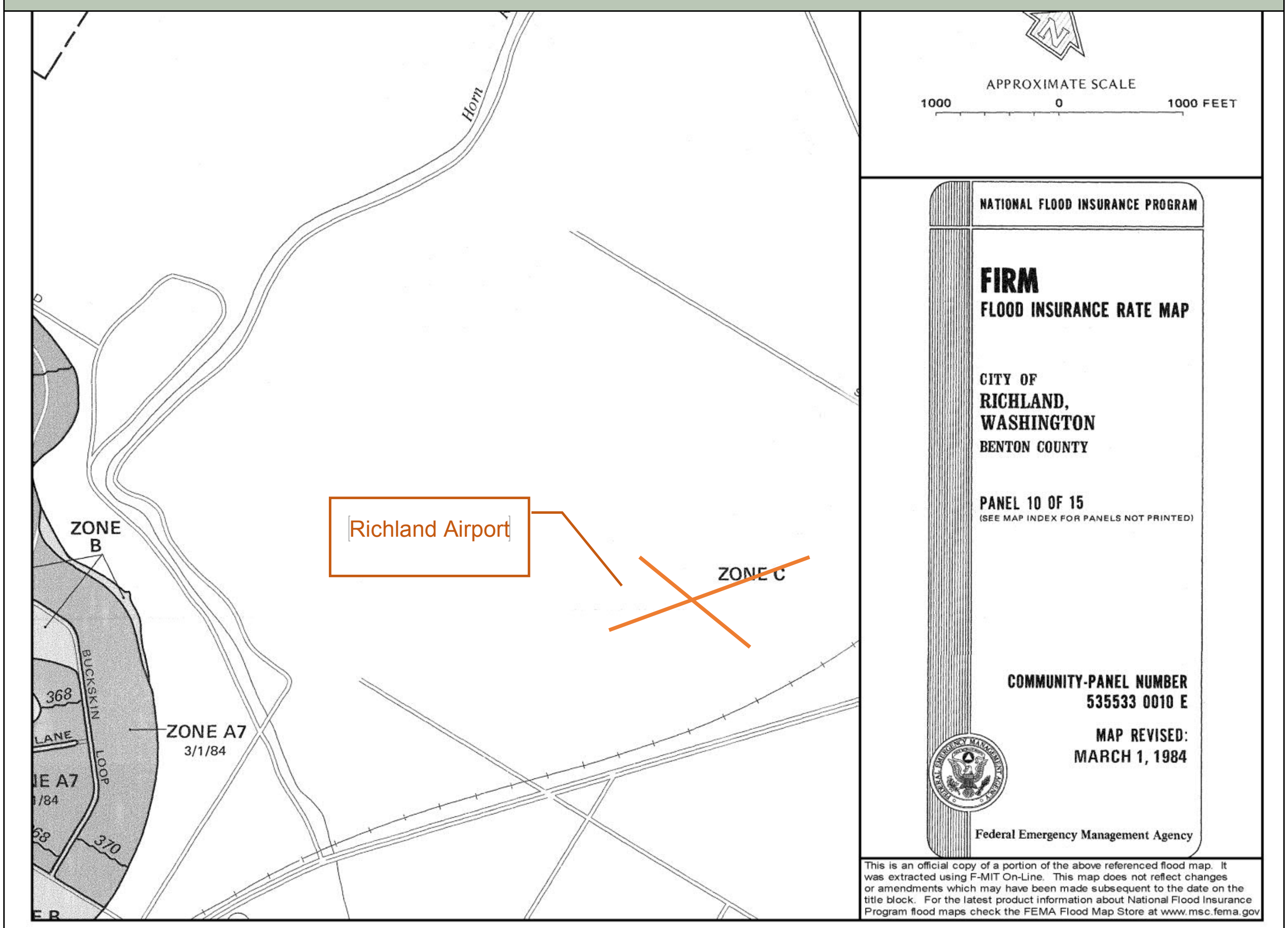


Source: US Fish and Wildlife

Floodplains

FAA Order 1050.1F Environmental Desk Reference for Water Resources describes floodplains as *"lowland areas adjoining inland and coastal waters which are periodically inundated by flood water, including flood-prone areas of offshore islands."* Generally, floodplains are discussed in terms of the 100-year flood, or a flood having a one percent chance of occurring in any given year. After review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel #5355330010E, the majority of the Airport property is within Flood Zone C, *"areas of minimal flooding."* However, a small portion of land in the southern portion of the Airport property associated with the Buckskin Golf Course falls within Flood Zone A7, "*areas of 100-year flood; base flood elevations and flood hazard factors determined,"* and Flood Zone B, *"areas between limits of the 100-year flood and 500-year flood"* (see **Figure 2.7**). These areas have not been developed for Airport use. If future airport development were needed in these areas, floodway impacts would need to be evaluated and will require coordination with the County Planning Department.

FIGURE 2.7
FEMA MAP PANEL #5355330010E



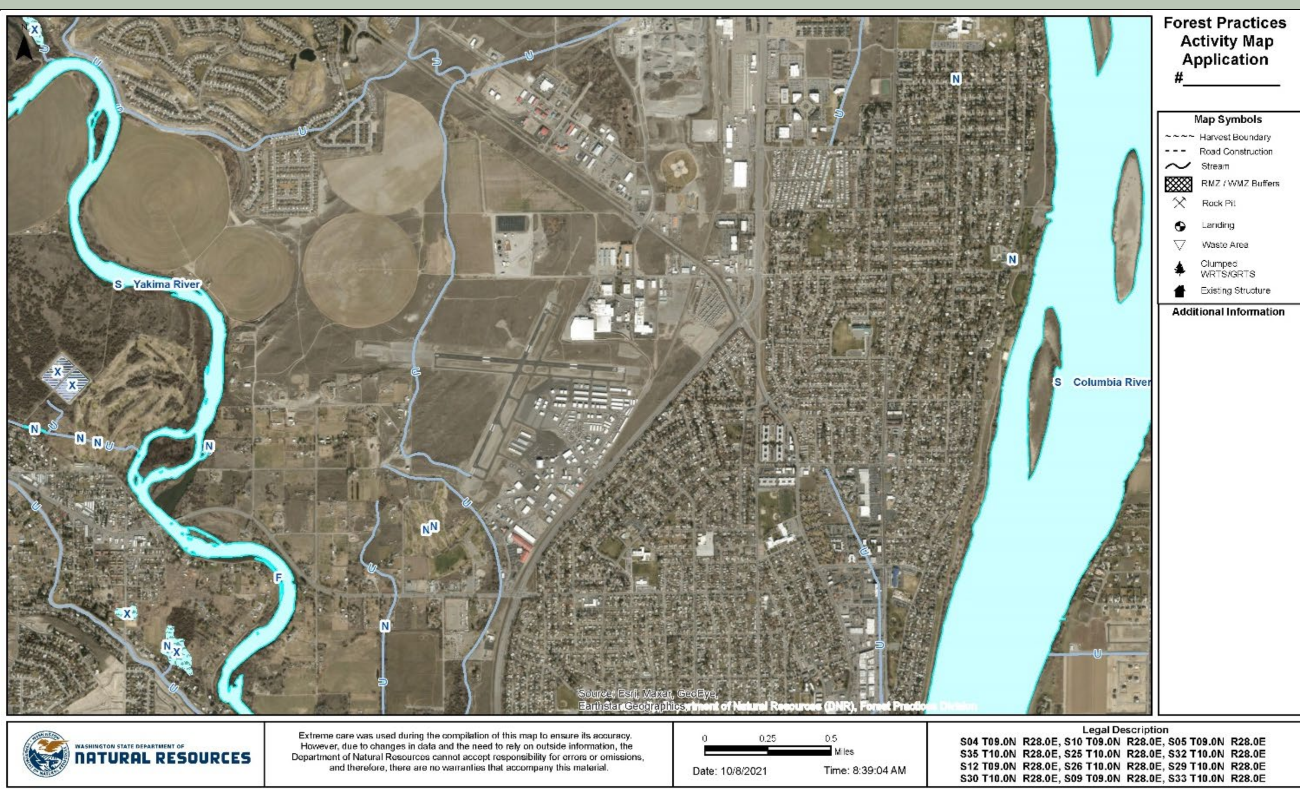
Source: FEMA

Surface Waters

Rivers, streams, lakes, oceans, ponds, and estuaries are examples of surface waters. The Washington State Department of Natural Resources (DNR) Water Typing Map identified one waterbody in the vicinity of the Airport (see **Figure 2.8**). A single un-typed (U) feature associated with former irrigation canals was illustrated in the western edge of the Airport property, following the same alignment as the riverine feature depicted on the USFWS NWI map. As previously discussed, due to its age a cultural resource survey will be needed for projects affecting the former canal. This mapped feature was inconsistent with observed conditions, as a dry, abandoned, sagebrush and weed filled ditch is present in the illustrated location. The Yakima River is also present approximately 0.51 miles west of the Airport, however it is outside the area shown on the Water Typing Map.

Pursuant to Washington State regulations, Shorelines of the State must adopt a Shoreline Master Program (SMP). The Columbia River and the Yakima River, both located in the vicinity of the Airport, are considered Shorelines of the State.According to Benton County's SMP and statewide regulations, the shoreline jurisdiction is defined as upland areas that extend 200 feet from the ordinary high-water mark (OHWM) associated with the Columbia River and Yakima River. Due to the distance from the Columbia River (Approximately 1.29 miles) and the Yakima River (approximately 0.51 miles) to the Airport, the Richland Airport does not fall within any portion of the Shorelines of the State shoreline jurisdiction. If any future airport projects were to fall within the shoreline jurisdiction (most likely along the Yakima River) and result in any shoreline modifications, stabilization, or construction, the Airport must follow applicable policies and regulations, including obtaining necessary permits.

FIGURE 2.8
WASHINGTON DNR WATER TYPING MAP



Source: US Fish and Wildlife Service

Groundwater

Groundwater is the subsurface water that occupies the space between sand, clay, and rock formations. Often, aquifers are discussed in relation to groundwater, and are defined as geologic layers that store or transmit groundwater to wells, springs, or other sources. The EPA's Sole Source Aquifer mapping tool was used to determine the presence or absence of sole source aquifers in the vicinity of the Richland Airport; however, no sole source aquifers were shown to exist in the area surrounding the Airport (see **Figure 2.9).** Instead, the water supply in the City of Richland is primarily supported by the City's Columbia River water treatment plant (WTP) and three well fields that provide additional regular supply to the system. No wells or other water sources are on or adjacent to the existing Airport property.

FIGURE 2.9
EPA SOLE SOURCE AQUIFER MAP

Source: US Environmental Protection Agency

Wild and Scenic Rivers

The purpose of the Wild and Scenic Rivers Act is to preserve certain rivers that *"possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values"* in a free-flowing condition. The only designated Wild and Scenic Rivers in Washington State include Illabot Creek, Klickitat River, Pratt River, Skagit River, Snoqualmie River (Middle Fork), and the White Salmon River. All of these designated rivers and creeks are located in western Washington and are outside of the study area. Therefore, there are no designated Wild and Scenic Rivers that would be impacted by future airport development projects at Richland Airport.

2.4.5 ENVIRONMENTAL SUMMARY

Airport improvements typically require environmental processes and documentation prior to implementation. Communication with agencies prior to improvement projects would allow Richland Airport to support and maintain its local community and the environment while completing necessary actions to meet existing and future needs. Overall, the current baseline environmental conditions at the Richland Airport suggest that future development would not likely result in significant environmental impacts.

2.5 AREA AIRSPACE, AIRPORTS AND NAVIGATIONAL AIDS

The operating airspace environment surrounding the Richland Airport is important given that it is part of the national and state system of airports. A description of the surrounding local airspace along with nearby public-use airports and navigational aids follows.

2.5.1 LOCAL AIRSPACE

FAA is charged with oversight of the nation's civil navigable airspace and has established various regulatory and non-regulatory airspace classifications and areas to create a safe operating environment for all types of aviation users.

The Richland Airport (RLD) is an uncontrolled facility; that is, no local air traffic control tower is available. Airspace surrounding the Airport is shown on **Figure 2.10** and U.S. airspace classifications are shown on **Figure 2.11** on upcoming pages.

RLD is found near the middle of the image within **Figure 2.10** as a magenta color. **Figure 2.11** identifies Class E airspace as existing from 700 feet above ground level (AGL) to 17,999 feet above mean sea level (MSL) above the field. This airspace provides a buffer, a transitional airspace from enroute to local airspace for flyers. **Figure 2.10** shows National Security Area airspace due north from RLD associated with the Hanford site. Class D airspace from the ground to up 2,899 feet is intended to provide positive control for Pasco air traffic control and Chinook Approach/Departure Control.

In order to land an aircraft at the Richland Airport under general aviation, visual flight rules (VFR), the pilot must have a flight visibility of greater than 3 miles and at a minimum, maintain clouds of no less than 500 feet below, 1,000 feet above and 2,000 feet horizontal of the aircraft. However, below 700 feet AGL in daytime conditions, the aircraft operator must have a flight visibility of greater than 1-mile and maintain the aircraft clear of clouds as described above. In nighttime conditions the visibility requirement of 3 miles, even below 700 feet AGL is reinstated.

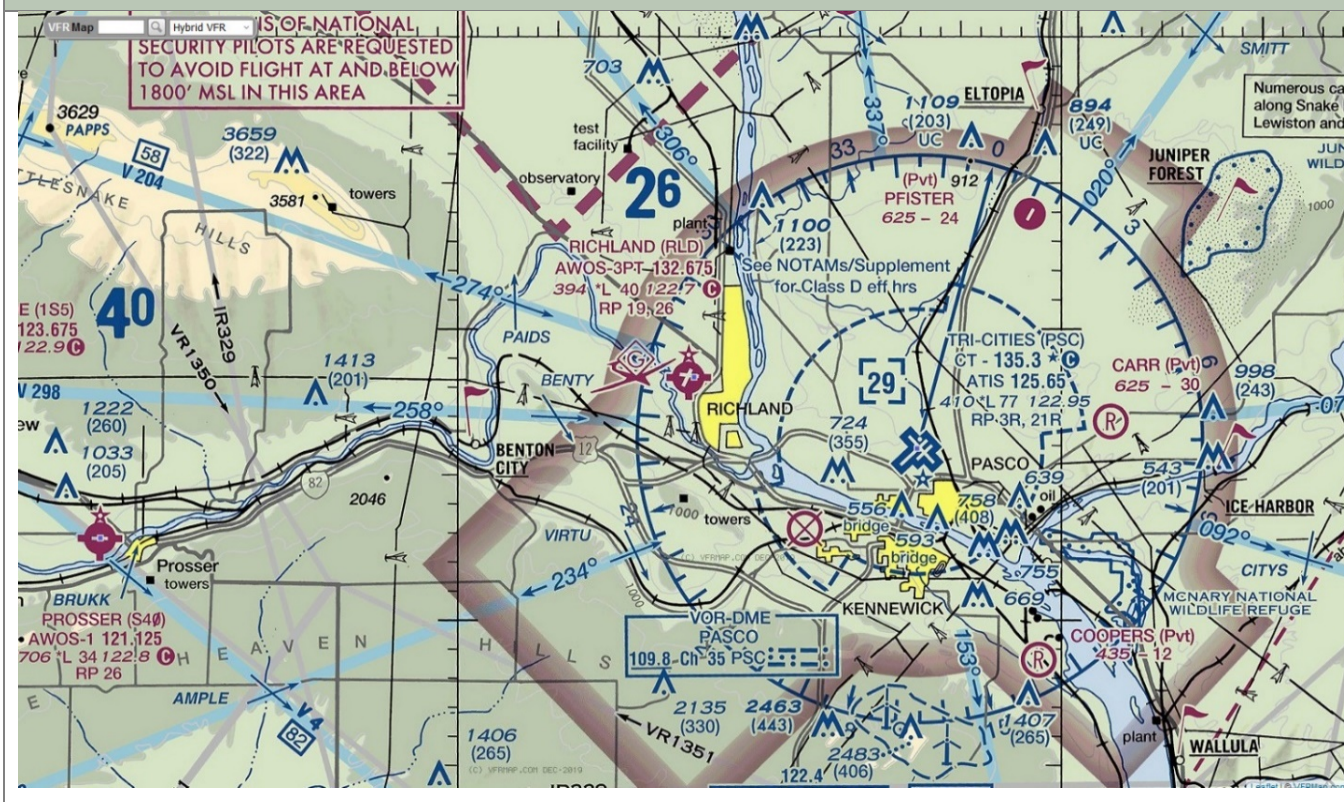
Aircraft operators may remotely control airfield lighting systems via the Common Traffic Advisory Frequency (CTAF) of 122.7 MHz. This frequency is assigned to RLD by FAA as the frequency from which a pilot may elect to announce location and intentions.

A sectional chart, often called sectional for short, is a type of aeronautical chart designed for navigation under visual flight rules.

A sectional chart shows topographical features that are important to aviators, such as terrain elevations, ground features identifiable from altitude (rivers, dams, bridges, buildings, etc.). The chart also shows information on airspace classes, ground-based navigation aids, radio frequencies, longitude and latitude, navigation waypoints, and navigation routes.

Sectional charts are in 1:500,000 scale and are named for a city on the map. The Federal Aviation Administration (FAA) in the United States publishes over 50 charts covering the continental United States, Alaska, and Hawaii. Sectional charts are published by the National Aeronautical Navigation Services Group of the FAA. The charts at the time this chapter was written were updated at six-month intervals, it is anticipated they will be updated more frequently to every 56 days in 2021. *(FAA)*

FIGURE 2.10
SECTIONAL AERONAUTICAL CHART



Source: US National Charting Office

Airspace Classifications

In the U.S., airspace consists of classes A, B, C, D, E, and G.[4] The National Airspace System (NAS) includes both controlled and uncontrolled airspace.

A flight through the NAS typically begins and ends at an airport which may be controlled (by a tower) or uncontrolled airspace. On departure, the aircraft is in one of five of the six classes of airspace administered by the Federal Aviation Administration (FAA), and different flight rules apply to each class. Depending on the class of airspace and flight conditions, communication with controllers may or may not be required.

<u>Class A</u> begins and includes 18,000 ft. MSL and continues up to 60,000 ft MSL. It is the most controlled airspace and requires a pilot to carry an Instrument Flight Rating and proper clearance no matter what type of aircraft is being flown.

<u>Class B</u> airspace extends from the surface up to 10,000 ft AGL and is the area above and around the busiest airports (e.g., LAX, MIA, CVG) and is also heavily controlled. Class B's layers are designed individually to meet the needs of the airport they overlay.

<u>Class C</u> airspace reaches from the surface to 4.000 ft AGL above the airport which it surrounds. Class C airspace only exists over airports which have an operational control tower, are serviced by a radar approach control, and have a certain number of instrument flight operations. Class C is also individually designed for airports but usually covers a surface area of about 5 nautical miles around the airport up to 1,200 ft AGL. At 1,200 ft. the airspace extends to 10 nautical miles in diameter which continues to 4,000 ft. Pilots are required to establish two-way radio communications with the ATC facility providing air traffic control service to the area before entering the airspace. Within Class C, Visual and Instrument pilots are separated.

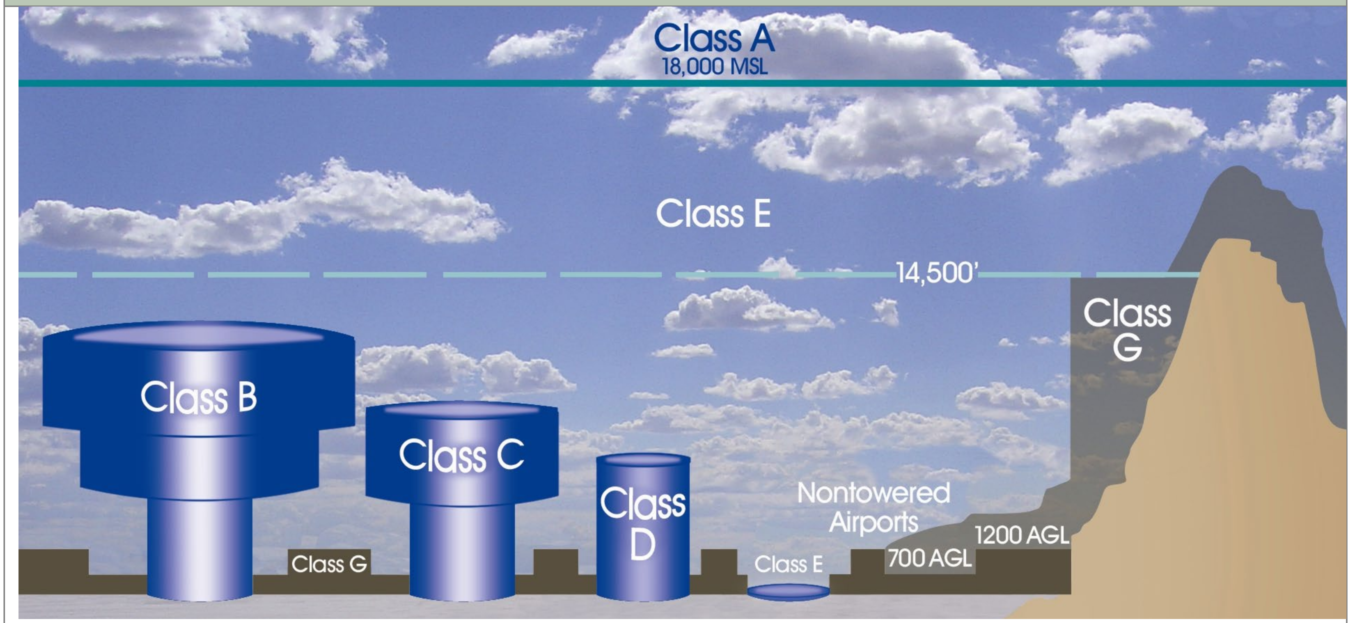
<u>Class D</u> airspace exists from the surface to 2,400 ft. AGL above an airport. Class D airspace only surrounds airports with an operational control tower. Class D airspace is also tailored to meet the needs of the airport. Pilots are required to establish and maintain two-way radio communications with the ATC facility providing air traffic control services prior to entering the airspace. Pilots using Visual Flight Reference must be vigilant for traffic as there is no positive separation service in the airspace.

<u>Class E</u> airspace is the airspace that lies between Classes A, B, C, and D. Class E extends from either the surface or the roof of the underlying airspace and ends at the floor of the controlled airspace. Class E Exists for those planes transitioning from the terminal to en-route state. It also exists as an area for instrument pilots to remain under ATC control without flying in a controlled airspace. Under visual flight conditions, Class E can be considered uncontrolled airspace.

Airports without operational control towers are uncontrolled airfields. Pilots in these areas are responsible for position and separation and may use a specified Common Traffic Advisory Frequency (CTAF) or UNICO< for that airport, although no-radio flight is also permitted.

<u>Class G</u> airspace is uncontrolled airspace which extends from the surface to either 700 or 1,200 ft. AGL depending on the floor of the overlying Class E, or to the floor of the Class A where there is no overlying Class E. In the vicinity of an uncontrolled airport the CTAF for that airport is used for radio communication among pits. No towered or in-flight control services are provided. *(Wikipedia)*

FIGURE 2.11
US NATIONAL AIRSPACE CLASSIFICATIONS



Source: J-U-B

2.5.2 AREA AIRPORTS, NAVAIDS

RLD is near several public general aviation and commercial service airports along with enroute and local navigational facilities. **Table 2.9** briefs these facilities and the Sectional Chart in previous **Figure 2.10** depicts some of them.

Tri-Cities Airport (PSC) is the commercial service airport for the Tri-Cities area. PSC is approximately 8 miles due east from RLD and has daily non-stop departures via Alaska Airlines' (AS) partner Horizon Air (QX) to their Seattle, WA hub with Q400 aircraft, via United Airlines' (UA) partner SkyWest Airlines (OO) to their Denver, CO hub with Canadair Regional Jet (RJs), and Delta Airlines' (DL) partner SkyWest to their Salt Lake City, UT hub with Canadair RJs. Allegiant Airlines provides scheduled non-stop service to Phoenix (PHX), Las Vegas (LAS) and Los Angeles (LAX) with the Airbus 319/320 family of aircraft. The current FAA Form 5010 record indicates PSC operations for 2018 totaling 48,211, distributed as follows: Air Carrier (Scheduled Airline); 9,154, Air Taxi (Charter); 4,453, General Aviation; 32,285 and Military operations; 2,319. PSC has 121 based aircraft, distributed as follows: 80 Single-Engine Piston (SEP), 23 Multi-Engine Piston (MEP), 14 Jets and 4 Helicopters. PSC's Runway 21R has Category I IAP capability with 200-½ cloud ceiling and approach visibility. More about this terminology is found on upcoming pages.

Prosser Airport (S40) near Prosser, WA is the second general aviation owned and operated by the Port of Benton. S40 is approximately 21 miles due west from RLD. The current FAA Form 5010 record indicates 13,200 general aviation operations for the year 2018. S40 has 52 based SEP airplanes. S40 is uncontrolled and accommodates visual aircraft operations only.

Martin Field Airport (S95) near Walla Walla, WA is a privately-owned and operated general aviation airport. S95 is approximately 40 miles due southeast from RLD. The current FAA Form 5010 record indicates 5,000 general aviation operations for the year 2016. S95 has 52 based SEP airplanes. S95 is uncontrolled and accommodates visual aircraft operations only.

Sunnyside Airport (1S5) near Sunnyside, WA is a general aviation airport, owned and operated by the City of Sunnyside. 1S5 is approximately 28 miles due west from RLD. The current FAA Form 5010 record indicates 24,000 general aviation operations for the year 2018. 1S5 has 8 based SEP and 1 MEP airplane. 1S5 is uncontrolled and accommodates visual aircraft operations only.

Hermiston Airport (HRI) near Hermiston, OR is a general aviation airport, owned and operated by the City of Hermiston. HRI is approximately 29 miles due south from RLD. The current FAA Form 5010 record indicates 24,300 general aviation operations, plus 500 Air Taxi and 50 Military operations, for the 12 months ending September 11, 2017. HRI has 38 based SEP, 2 MEP and 1 Jet airplane. HRI is uncontrolled and accommodates visual aircraft operations only.

The Pasco Very-High Frequency Omni-Directional Range with Distance Measuring Equipment (VOR/DME) navigational facility located at PSC, approximately 8 miles east of RLD. This facility is used for the VOR/DME-A IAP to RLD. This IAP has circling minima only. More about this terminology is found on upcoming pages.

The Pendleton Very-High Frequency Omni-Directional Range with Tactical Air Navigation System (VORTAC) navigational facility is approximately 40 miles south of RLD. These navigational facilities provide 360-degree radio interrogation capability for aircraft navigation.

TABLE 2.9
AREA AIRPORTS AND NAVIGATIONAL AIDS

Airport	Primary Runway & Approach Capability	Services	Distance/ Direction
Tri-Cities Airport (PSC)	Runway 3L-21R; 7,711'x150'	Fuel, Major Maint.	8 Miles
-Pasco, WA	ILS Precision Instrument	ATC Services	Due East
Prosser Airport (S40)	Runway 8-26; 3,452'x60'	Fuel, No Maint.	21 Miles
-Prosser, WA	Visual Airfield	Uncontrolled Field	Due West
Martin Field Airport (S95)	Runway 5-23; 3,819'x60'	Fuel, Minor Maint.	40 Miles
-College Place, WA	Visual Airfield	Uncontrolled Field	Due Southeast
Sunnyside Airport (1S5)	Runway 7-25; 3,423'x60'	Fuel, No Maint.	28 Miles
-Sunnyside, WA	Visual Airfield	Uncontrolled Field	Due West
Hermiston Airport (HRI)	Runway 5-23; 4,501'x75'	None	29 Miles
-Hermiston, OR	Visual Airfield	Uncontrolled Field	Due South
Navigational Aid	**Facility Frequency**	**Distance**	**Direction**
Pasco VOR/DME	109.8 MHz	8 Miles	East
Pendleton VORTAC	114.7 MHz	40 Miles	South

Source: FAA 5010

2.6 AIRFIELD DESIGN STANDARDS

FAA specifies a coding scheme for airport design that relates airfield design criteria to the operational and physical characteristics of aircraft along with IAP visibility. Standards compliance relates to individual runway ends and other movement areas at certificated and/or obligated airports. The Richland Airport is an obligated airport as the Port accepted federal grant-in-aid funding from FAA. The design standards criteria described herein helps the planners to establish a design critical aircraft for evaluation. The airport must then meet the design standards established by the FAA for this design critical aircraft.

2.6.1 DESIGN STANDARDS CRITERIA

The first portion of the overall evaluation of design critical aircraft relates to a given runway and runway end and it has three criteria. **Table 2.10** shows the criteria collectively, which is referred to as the Runway Design Code (RDC).

The first, represented by a letter, is the Aircraft Approach Category (AAC). It relates to aircraft approach speed, which is an aircraft operational characteristic (1.3 x Vso/Vref {the speed of an aircraft in the landing configuration}). The second designator, Airplane Design Group (ADG), is represented by a Roman numeral. This is related to aircraft wingspan and aircraft tail height which are physical characteristics. **Figure 2.13** identifies and visualizes a representative aircraft grouped only by ADG. Thirdly, a given runway end may accommodate an IAP with various FAA-approved visibilities. These visibilities are segregated and expressed in terms of Runway Visual Range (RVR). RVR is a real-time meteorological measurement noted in feet and related to ¼-mile visibility increments.

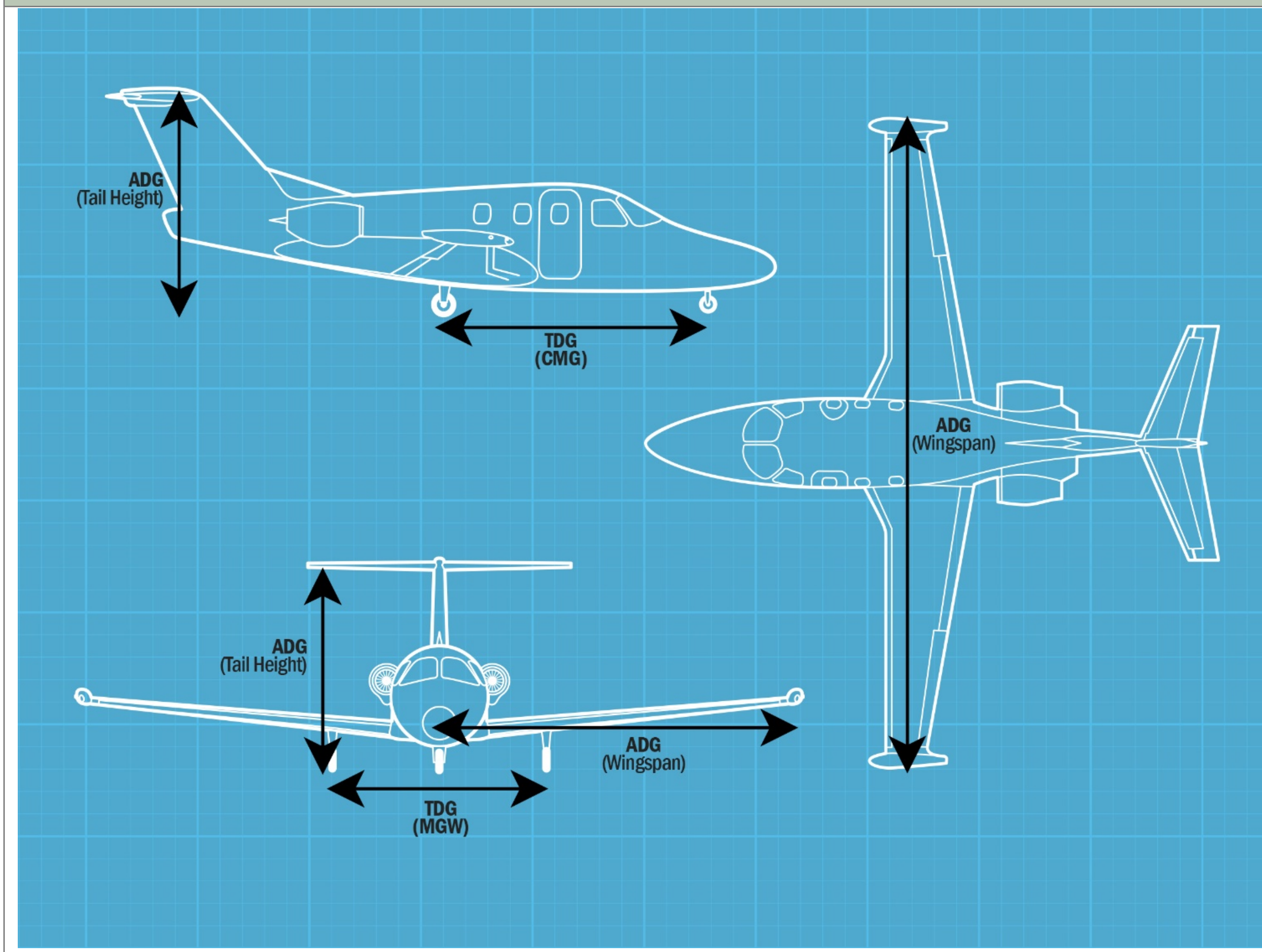
These criteria, the AAC speed, ADG wingspan and tail height, and IAP capability, combine to identify each runway's RDC and classify design standards, primarily related to runway safety and protection. An RDC is associated with a particular runway end. One runway may have a different RDC for each end, and an airport with multiple runways may have multiple RDCs.

In addition to the RDC, the Taxiway Design Group (TDG) is another element of the FAA coding scheme. It is based upon the dimensions of aircraft undercarriage, specifically the distance between the outer edges of the main gear, termed the Main Gear Width (MGW) with the distance between the Cockpit to Main Gear, termed CMG. Note that if the nose wheel fronts the cockpit, the CMG distance increases. MGW and CMG ranges combine to make TDG's 1A through 7, with 7 accommodating the largest ranges and aircraft. The visualization on **Figure 2.12** shows the physical aircraft characteristics associated with ADG and TDG. In many instances ADG and TDG for individual airplanes will be within the same grouping; for example, ADG-I with TDG-1A, ADG-II with TDG-2, and AGD-III with TDG-3. Notable exceptions generally include aircraft with a relatively long fuselage.

Finally, aircraft weight is used by the FAA in the airport planning and design at the Richland. Aircraft which weigh less than 12,500 pounds (maximum certificated gross), regardless of wheel configuration, are termed utility or small aircraft. Those which weigh more are termed non-utility or large aircraft. The runway, taxiway and the main apron pavement strengths are currently constructed for 30,000 pounds SWG.

The most demanding aircraft, or group of aircraft, with similar physical and operational characteristics that use the airport regularly, that is, to FAA's guideline of 500 annual takeoffs or landings, is termed the design or critical aircraft.

FIGURE 2.12
RUNWAY AND TAXIWAY DESIGN CRITERIA VISUALIZED ON AN AIRCRAFT

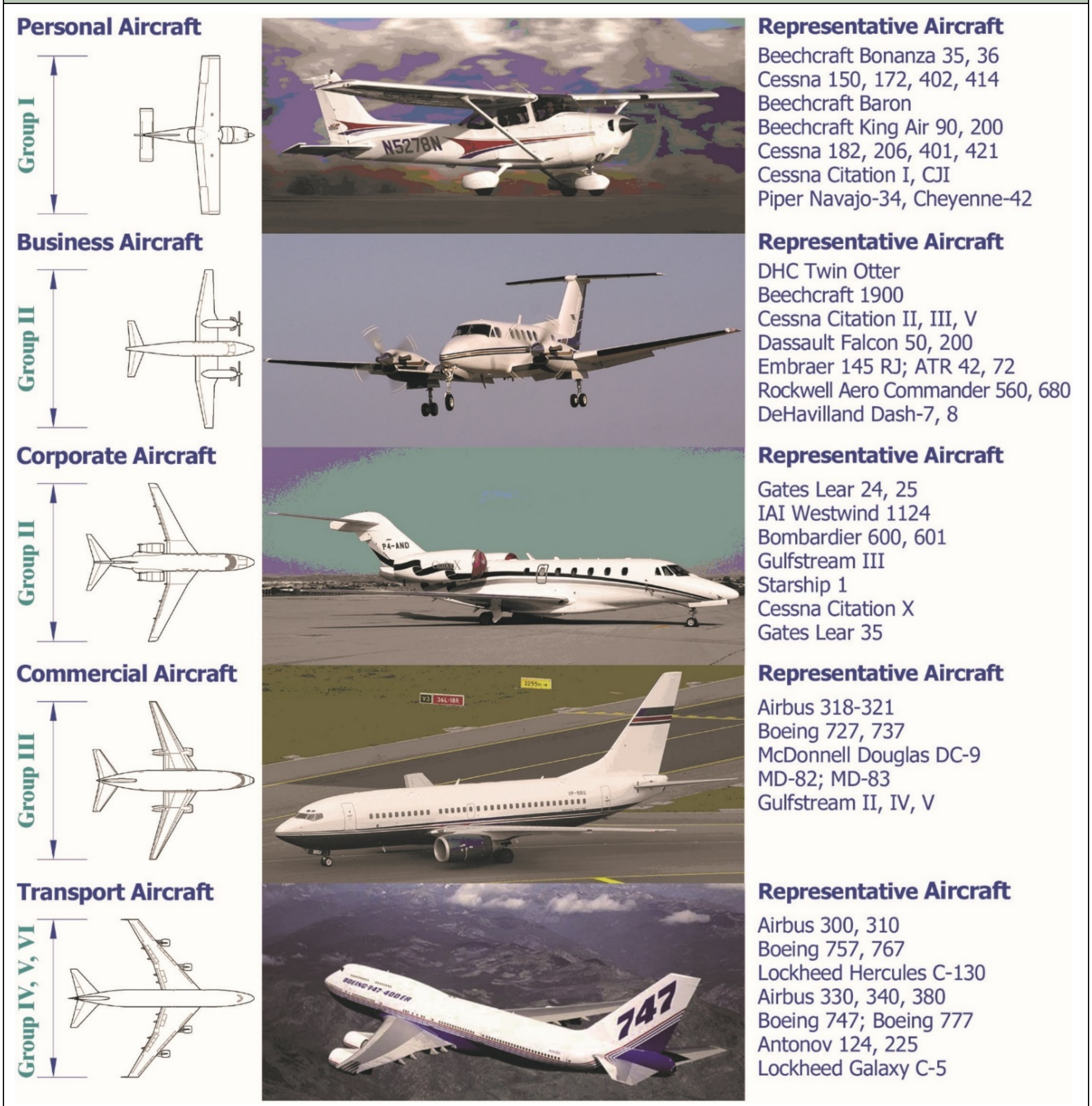


Source: FAA/J-U-B

TABLE 2.10
RUNWAY DESIGN CODE (RDC) CRITERION

Aircraft Approach Category (AAC)	Aircraft Speed Range (Knots)	
A	Less than 91	
B	More than 91, but less than 121	
C	More than 121, but less than 141	
D	More than 141, but less than 166	
E	More than 166	
Airplane Design Group (ADG)	**Aircraft Wingspan Range**	**Aircraft Tail Height Range**
I	Up to but not including 49’	Up to but not including 20’
II	49’ up to but not including 79’	20’, up to but not including 30’
III	79’ up to but not including 118’	30’, up to but not including 45’
IV	118’ up to but not including 171’	45’, up to but not including 60’
V	171’ up to but not including 214’	57’, up to but not including 60’
VI	214’ up to but not including 262’	66’, up to but not including 80’
IAP Capability in Terms of Visibility (Statute Mile)		
RVR 4000	Lower than one mile but greater than ¾ mile	
RVR 2400	Lower than ¾ Mile but not lower than ½ mile	
RVR 1600	Lower than ½ Mile but not lower than ¼ mile	
RVR 1200	Lower than ¼ Mile	
Source: FAA		

FIGURE 2.13
RUNWAY AND TAXIWAY DESIGN CRITERIA VISUALIZED ON AN AIRCRAFT



Source: FAA/J-U-B

2.6.2 FAA DESIGN STANDARDS

FAA design standards dictate the dimensions of various areas, zones, surface gradients and separations standards on an airport. Select standards are described below and are shown in **Table 2.11** based upon the current design aircraft (King Air 200) a B-II RDC at the Richland Airport.

1. A Runway Protection Zone (RPZ) is a trapezoidal area off each runway end, established to enhance protection of people and property by clearing incompatible land uses. **Richland Airport RPZs are currently partially owned in fee or easement.**
2. The Runway Safety Area (RSA) and Taxiway Safety Area (TSA) are established to ensure that the ground surface adjacent to runways and taxiways is suitably prepared to reduce the risk of damage in the event of an aircraft deviation from paved surfaces. Safety area specifications are dimensional, grade-specific and material-specific.
3. The Runway Object Free Area (ROFA) and Taxiway Object Free Area (TOFA) are established to ensure the safety of aircraft operations by having an area free of objects, except those frangible-mounted objects, necessary for air navigation or ground maneuvering purposes.
4. The Obstacle Free Zone (OFZ) is a volume of airspace up to 150 feet above airport elevation, centered on runway centerline, primarily established to preclude taxiing and parked aircraft in the area where aircraft are landing and taking off. The runway hold line is sometimes located to coincide with limits of the OFZ. Inner-Approach OFZs protect approach lighting systems with a 50:1 sloped surface
5. The purpose of the Approach and Departure Clearance Surfaces (AOCS/DOCS) is to provide obstacle clearance for visual approaches and instrument approach procedures. These surfaces are generally three-dimensional trapezoids with 20:1 or 34:1 surfaces extending upward and outward away from each end of runway.

Note that the design standards values shown in the tables are the minimum specifications. Exceeding the specifications for an individual project is generally acceptable but may not be eligible for federal or state funds. Design standards criteria assigned to each runway are identified the upcoming Section 2.7.

TABLE 2.11
SELECT RICHLAND AIRPORT DESIGN STANDARDS

Standard/Specification	Runway 1-19 *(B-II, NP, Large, TDG1B)	Runway 8-26 *(B-II, NP, Large, TDG1B)
Runway Width	75 Feet	75 Feet
Effective Runway Longitudinal Grade	Within ±2% percent max.	Within ±2 percent max.
Runway Pavement Strength (SWG Pounds)	30,000	30,000
Runway Protection Zones (RPZ)	500’x700’x1,000’ (1 End) 1,000’x1,510’x1,700’ (19 End)	500’x700’x1,000’ (8 End) 1,000’x1,510’x1,700’ (26 End)
Runway Safety Area Width/Beyond End	150’/300’	150’/300’
Runway Object Free Area Width/Beyond End	500’/300’	500’/300’
Taxiway Width/Safety Area Width	35’/79’	35’/79’
Taxiway/Taxilane Object Free Area Width	131’/115’	131’/115’
Runway to Parallel Taxiway	240’	240’
Runway to Aircraft Hold line on Taxiway	200’	200’
Runway to Aircraft Parking	>250’	>250’
Obstacle Free Zone Width/Beyond End	400’/200’	400’/200’
Inner Approach OFZ (50:1)	1,600’x400’ (19 End)	1,700’x400’ (8 End)
Approach Surface (20:1)	Table 3-2; Rows 1-5 (1 End) Table 3-2; Rows 1-6 (19 End)	Table 3-2; Rows 1-5 (8 End) Table 3-2; Rows 1-6 (26 End)
Part 77 Primary Surface Width/Beyond End	1,000’/200’	1,000’/200’
Runway 1,8 Part 77 Approach Surface Dims/Slope	1,000’x3,500x10,000’;34:1	1,000’x3,500x10,000’;34:1
Runway 19,26 Part 77 Approach Surface	1,000’x4,000x10,000’;34:1	1,000’4,000x10,000’;34:1
Runway Departure Surfaces Dims/Slope	1,000’x3,500x10,000’;34:1	1,000’x3,500x10,000’;34:1

Source: J-U-B
**NP: Non-Precision, Large: >12,500SWG*
Table 3-2 Refers to table within FAA Advisory Circular 150/5300-13A(1)

2.6.3 FAR PART 77

Title 14 of the Code of Federal Regulations, Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace* specifies various imaginary surfaces considered to protect the airspace around the Richland Airport from objects of natural growth or man-made features, termed obstructions. These surfaces are the primary, approach, transitional, horizontal and conical as described in Section 77.25 and as follows:

1. The primary surface is longitudinally centered on the runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the centerline. The width of the primary surface is based on the type of approach available or planned for each runway.
2. The approach surface is a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based on the type of approach available or planned for that runway end.
3. The transitional surfaces extend outward and upward at right angles to the runway centerline and runway centerline extended at a slope of 7:1 (±8.13 degrees) from the sides of the primary surface and from the sides of the approach surfaces.
4. The horizontal surface is a level horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of 10,000 feet from the center of each end of the primary surface of each runway and connecting the adjacent arcs with lines of tangency.
5. The conical surface extends outward and upward from the periphery of the horizontal surface at a slope of 20:1 (±2.86 degrees) for a horizontal distance of 4,000 feet.

Upcoming chapters contain a depiction of these surfaces and previous **Table 2.3** and **Table 2.11** contains dimensional information for the Part 77 primary and approach surfaces. In addition to these surfaces, parts of Section 77.23 provide for additional obstruction identification guidance. An object with a height of 500 feet above the ground surface, an object with a height of 200 feet above the ground surface within three nautical miles of the airport reference point (approximate geometrical center of the field) and other objects within terminal instrument airspace are considered obstructions. A determination in this regard is made by the FAA via filing of FAA Form 7460 *Notice of Proposed Construction or Alteration.*

2.7 BASED AIRCRAFT AND AIRCRAFT OPERATIONS

WSDOT inspects the Richland Airport on a periodic basis to assess facilities and activity. Data from the annual airport inspection for the year ended 2018 indicates that RLD accommodates 29,000 total aircraft operations, including 17,400 (60%) itinerant general aviation operations, and 11,600 (40%) local general aviation operations, with no military or air taxi operations. 82 Single-Engine Piston, 2 Multi-Engine, and 2 Jets along with 12 ultra-light aircraft are identified.

FAA also maintains a based aircraft and aircraft operations record and forecasting effort for NPIAS airports termed the Terminal Area Forecast (TAF). This record, effective February 2019, shows no growth in forecast operations or based aircraft from current. The 10-year historical period (2010-2019) is similarly unchanged. Historical based aircraft counts are as follows:

Historical Based Aircraft	Number
2010	173
2011	160
2012	168
2014-2014	178
2015	165
2016	182
0-17-2019	177

FAA maintains a database of based aircraft, updated by the Port of Benton, for official record keeping purposes. This database currently, as of January 2020, indicates 130 based aircraft, distributed as follows:

Based Aircraft	Number	%±
Single Engine Piston (SEP)	122	94%
Multi-Engine Piston (MEP)	4	3%
Jet	2	1.5%
Helicopters	2	1.5%
Totals	**130**	**100%**
Ultralight	*12*	*N/A*

This is the baseline value for based aircraft forecasting for purposes herein. Note that Ultralight aircraft are not part of the official counts. The Richland Airport has historically been an active general aviation airport and has the potential to change with a developing economy as described in the next chapter. Investigation for this planning document and consultation with the Port District and tenants was explored to establish baselines.

A general rule-of-thumb for estimating aircraft operations at uncontrolled airports is contained in FAA guidance, recommending 250 operations per based aircraft for rural general aviation airports, 350 for more urban, busier general aviation airports and 450 for reliever airports in metropolitan areas. Thus, the operations per based aircraft estimate for the 130 based aircraft at the Richland Airport is 45,500 aircraft operations.

Aircraft Operations	Number	%±
Itinerant	18,200	40%
Local	27,300	60%
Total	*45,500*	*100%*

The recommended 2020 baseline value for aircraft operations at the Richland Airport is 45,500 aircraft operations derived from the database of based aircraft. This is the baseline operations value for forecasting for purposes herein. Given that the historical itinerant/local operations split of 40/60 percent, 18,200 and 27,300 operations are estimated, respectively.

Estimating the number of relatively larger, faster and heavy aircraft operations requires additional attention. FAA maintains a record of flight operations that, when normalized, will identify most of the larger and faster aircraft operations at the Richland Airport. This FAA data was inventoried and normalized to identify aircraft operations which in the aggregate constitute a design or critical aircraft. **Table 2.12** provides an estimate of Group 11 aircraft operations with a breakdown by: Runway End, Year, and Airport Approach Category (AAC; A,B,C), Airport Design Group (ADG; II) and Aircraft Weight (Small/Large): as follows: A-II, B-II, and C-II Aircraft.

TABLE 2.12
SUMMARY OF GROUP II AIRCRAFT OPERATIONS ESTIMATES BY RUNWAY END AND YEAR

	Runway 1	Runway 19	Runway 8	Runway 26	Total
2013; A-II Large	154	257	513	103	1026
2013; B-II Large	19	37	11	7	74
2013; C-II Large	8	14	4	4	30
2013 Total	**180**	**308**	**528**	**114**	**1130**
2014; A-II Large	155	259	517	103	1034
2014; B-II Large	20	39	12	8	78
2014; C-II Large	5	10	3	2	19
2014 Total	**179**	**307**	**532**	**113**	**1131**
2015; A-II Large	174	290	579	116	1158
2015; B-II Large	17	34	10	7	68
2015; C-II Large	4	7	2	1	14
2015 Total	**194**	**331**	**591**	**124**	**1240**
2016; A-II Large	180	301	601	120	1202
2016; B-II Large	38	76	23	15	151
2016; C-II Large	5	10	3	2	20
2016 Total	**223**	**386**	**627**	**137**	**1373**
2017; A-II Large	223	371	742	148	1484
2017; B-II Large	41	81	24	16	162
2017; C-II Large	2	4			6
2017 Total	**265**	**456**	**766**	**165**	**1652**
2018; A-II Large	195	326	652	130	1303
2018; B-II Large	20	40	12	8	79
2018; C-II Large	0	2	0	0	2
2018 Total	**215**	**367**	**663**	**138**	**1384**

Source: FAA TFMSC/J-U-B

A&B-II Large forecasts all aircraft types weighing greater than 12,500 pounds, with approach speeds up to 121 knots and wingspans up to 79 feet, inclusive. Example aircraft include:

- Pilatus PC-12
- Cessna Citation 550, 650, Sovereign
- Dassault Falcon 20,50,200
- Hawker 400, 850XP

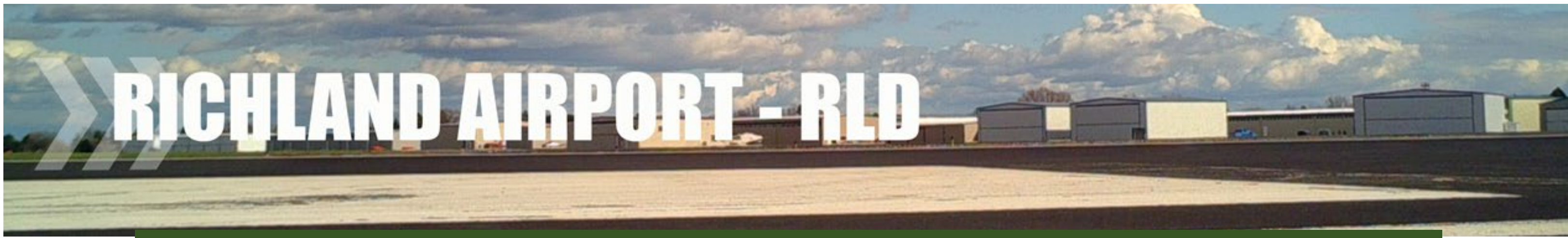
C&D-II Large forecasts all aircraft types weighing up to 60,000 pounds, with approach speeds up to 166 knots and wingspans up to 79 feet, inclusive. Example aircraft include:

- Cessna Citation X
- Bombardier Challenger 300, 605
- Dassault Falcon 900, 2000
- Gulfstream 350, 450

The design/critical aircraft is an aircraft or more typically a group of aircraft with similar design or performance characteristics which completes at least 500 annual operations at the Richland Airport.

FAA records show sufficient operations for **ARC A-II, TDG IB** operations as a design aircraft group for the current and long-term planning for both runways. Thus, the current designation is **A-II, Large Aircraft, Non-Precision, and** for taxiways and aprons **TDG-1B.**

From the perspective of the FAA Design Standards there is no difference between A and B Aircraft Approach Category (AAC), although the airport was previously designated B-II, this change to A-II will have limited impact to the facilities.



CHAPTER 3 FORECASTS OF AVIATION DEMAND

3.1. PURPOSE AND GOAL

The Forecasts of Aviation Demand are the basis for determining airport facility requirements. These requirements are then used to plan airport development such as runways and taxiways, apron area, hangar locations and the recognition of specific airfield design standards.

Forecasts estimate the nature and magnitude of aeronautical activity and the associated need for airport development for the 20-year planning period. Aviation activity forecasts provide data to estimate future local and itinerant aircraft traffic. Aircraft activity also forms the justification and need for demand-driven improvements. Aviation activity forecasts are often incorporated by reference into other studies and policy decisions. Forecast formulation is a subjective process concerning the extent to which one projection, or a combination of several projections, or prevailing or anticipated conditions, represents a reasonable estimate of future aviation activity.

3.1.1. FAA APPROVAL PROCESS

Guidance for preparing aviation activity projections are contained in FAA Advisory Circular 150-5070-6B, Airport Master Plans. The steps include:

- Identify aviation activity measures
- Review previous airport forecasts
- Gather data
- Identify and apply aviation forecasts metrics
- Select forecast results
- Compare forecast results to FAA Terminal Area Forecasts (TAF)
- Acquire written approval from the FAA

The FAA TAF is an annual report of historical aviation data and forecasts for airports included in the National Plan of Integrated Airport Systems (NPIAS). The TAF is compiled to assist the FAA in meeting its planning, budgeting, and staffing requirements, and to provide information for use by state and local authorities, the aviation industry, and the public. The FAA's Seattle Airports District Office (ADO) reviews and approves the forecasts prepared as part of this Master Plan. Specifically, FAA considers a forecast consistent with the TAF if it differs by less than 10 percent in the 5-year forecast period, and 15 percent in the 10-year forecast period. If the forecasts are inconsistent with the TAF, differences are resolved before the forecast is approved by the FAA.

There are generally no comprehensive historical accounts of aviation activity for airports without airport traffic control towers. A review of national, regional and local factors that might influence activity constitutes baseline values in determining the forecast estimates.

The Forecasts of Aviation Demand are provided in increments of 5, 10, and 20 years over the 20-year planning period. These periods are also classified in phases. Phase I is the first five years, Phase II is the second five years, and Phase III is the last 10 years. Year 2020 is the base forecast year, while 2040 is the final forecast year. Efforts are made to report data and projections as percent change for easy reference.

Aeronautical forecasts prepared to determine airport facility requirements for the Richland Airport herein include:

1. Based Aircraft
2. Based Aircraft by Type
3. General Aviation Operations
4. General Aviation Operations by Type
5. Aircraft Operations Mix
6. Peak Period Aircraft Operations
7. Instrument Aircraft Operations
8. Summary and Design/Critical Aircraft

3.2. RECENT ECONOMIC REVIEW

The beginning of the 2010 saw continued economic recovery from the *Great Recession*. Bailouts, low interest rates and deficit spending contributed to the decade-long recovery.

Economic recovery from the recession became more robust beginning in 2011 and 2012, with unevenly distributed benefits. The US budget deficit decreased $1.4 trillion from 2009, but the Federal Reserve made access to money more difficult with modifications to monetary and fiscal policies. Oil prices experienced steep decline beginning in the summer of 2014 from $107 per barrel to the year's end value of $53 per barrel. US population increased nearly 3 percent in the same period.

Unemployment decreased from 8.9 percent in 2011 to 3.9 percent in 2018. Per Capita GDP increased from 48,311 to 62,606 in the same time period. Total household net worth increased from $66,457 billion in 2011 to $104,329 billion in 2018. The US ranks 5th within the *"Ease of Doing Business Index",* promulgated by the UN World Bank Group. This index is populated with factors such as: (1) time, costs and start-up capital, (2) ease of permitting and electricity access, (3) access to credit and investors, among other factors. The *"Index of Economic Freedom"* promulgated by the *Heritage Foundation* and the *Wall Street Journal* ranks the US as 18th in its 2018 reporting. This index is populated with factors such as: (1) property rights, (2) government spending and integrity, (3) business, labor and monetary freedom, among other factors.

The Tax Cuts and Jobs Act of 2017 included reducing tax rates for businesses and individuals including a doubling of the standard deduction for married individuals. Corporate tax rates trimmed from a maximum of 35 percent to 21 percent. The *Tax Foundation* finds that law will "*significantly lower marginal tax rates and the cost of capital, which would lead to a 1.7 percent increase in GDP over the long-term, 1.5 percent higher wages, and an additional 339,000 full-time equivalent jobs*." The law and its changes were designed to increase corporate profitably, encourage job growth and increase wages. US Commerce Department reports that Washington state was the fastest growing economy in the nation in 2018, with an inflation-adjusted year-over-year increase of 5.7 percent.

3.2.1. CONTEMPORARY ECONOMICS IMPACTS – CORONAVIRUS 2020

Recent growth in the global economy has resulted in overall increased demand for air travel. Despite the increase in demand, the current landscape for air travel and the aviation industry has been tremendously impacted by the 2019 Novel Coronavirus.

The full extent of this disruption is yet to be fully realized. Many US air service carriers are reporting a 80-90% reductions in demand, and suppliers such as GE have announced plans to lay off thousands of workers. The Richland Airport Manager estimates a significant decrease in operations for the 2nd quarter of 2020.

As the industry moves through this unique historic time, it is reasonable to expect another period of growth. After the sharp decline currently emerging the economy will move toward recovery. The aviation industry should expect meaningful growth in passenger miles, enplanements, and operations over the next 20 years.

3.2.2. STATE OF WASHINGTON

The State of Washington's Office of Financial Management provides information on economic trends and long-term economic forecasts for the State. This office released updated leading economic indicators and long-term economic forecast tables in March and April of 2020. "*Long-term projections examine demographic trends, structural changes in industries, changes in production factors such as labor supply and capital investment and technology/productivity advances."* Here are some key indicators for the State of Washington:

- Washington ranked 6th in the U.S. for average wages in 2017.
- Washington's average wages have been ahead of the U.S. as a whole and consistently rising for the last decade.

- Historically, Washington has had slightly higher rates of unemployment than the U.S average; however, for the last decade the State's unemployment average had tracked very closely with the rest of the nation and has been declining steadily.
- Washington has seen an increase of 800,000 people since 2010, 62.1% of which comes from migration to the state.
- Long-term forecasts show a similar increase of over 800,000 in population increase in the coming decade and likely 1.6 million by 2040.
- Forecasts also show a steady growth rate of 2.2% and 2.7% for total personal income for years 2030 and 2040 respectively.

3.2.3. EWU - INSTITUTE FOR PUBLIC POLICY AND ECONOMIC ANALYSIS

Eastern Washington University has an Institute for Public Policy and Economic Analysis. According to their Community Trends Project, Benton and Franklin Counties are growing rapidly. *"Currently, nearly 290,000 people call the two counties home. The third largest metro area in the state, it has also recently been the fastest-growing one."* The area is also home to the **Pacific Northwest National Laboratory (PNNL)**. This facility handles over a billion dollars in research every year and consistently puts out new inventions and patents.

"In the 2012 Agricultural Census, Benton County ranked 38th among all U.S. counties and 5th in the state by value of agricultural production. Franklin County placed 48th in the U.S."

As Benton and Franklin Counties have become a top desired place to live, tourism and travel in the area has also increased dramatically in the past few years. "*During 2018 in **Benton & Franklin Counties combined**, direct travel and tourism spending was $672.1 million, increasing from $282.8 million, or by 137.7% since 2000."*

This area has also seen a net increase in new companies created for the last three years. *"From 2017 to 2018 in **Benton & Franklin Counties combined**, the total number of net firms created was 131."*

- Benton & Franklin Counties had a 2.2% population growth rate from 2018-2019, exceeding both the national average and the growth rate for the state of Washington.
- From 2017 to 2018 the annual growth rate of total retail sales in Benton & Franklin Counties combined was 7%.
- During 2018 in Benton & Franklin Counties combined, direct travel and tourism spending was $672.1 million, $2,318 per capita.

3.2.4. DOE HANFORD SITE

A significant economic driver in the area is the **Department of Energy's Hanford Site**. The Hanford Site has been in various stages of research, production, and clean-up since the 1940s. Today the Hanford Site boasts the following:

- $2.4 Billion annual budget
- $785 Million spent in subcontracting (2018)
- 9,000+ federal and contractor employees
- Ongoing opportunities for professionals and specialists
- Partnering programs with local schools and universities
- Continual infrastructure upgrades

This DOE Hanford site and its contractors have a significant impact on the Tri-Cities area economy. Because of direct and indirect employment opportunities at the site world class research and development activities continue to grow. Federal advocacy has led to "federal and non-federal missions that leverage the highly skilled workforce at PNNL and Hanford."

3.2.5. TRIDEC

The Tri-Cities Development Council (TRIDEC) reports that the *"Tri-Cities area is one of the fastest growing areas in the US"*, and *"Since 2000 no other community in the state of Washington has grown faster than the Tri-Cities".*

In addition to the economic activity associated with the Hanford Site, TRIDEC reports other items of note:

- Average area household income has increased by 30.7 percent in the past 20 years, currently $72,733.

- Washington state ranked 11th in the *Tax Foundation's Index of Business Taxes* reporting.
- No corporate or personal income tax, no tax intangibles or capital gains, low Business & Occupation and property taxes.
- More than 50 incentive programs for existing and prospective businesses.
- Tri-Cities area industries exported $15 billion worth of merchandise and goods.
- Nearly 90 percent of the labor force has a high school or greater education level.
- As of December 2019, selected employment was as follows:
  - DOE – The Hanford Site – 9,000 federal and contractor employees
  - Battelle/Pacific Northwest National Laboratory - 4,500 Employees
  - Kadlec Regional Medical Center - 3,800 Employees
  - Lamb Weston - 3,000 Employees
  - Washington River Protection Solutions - 2,971 Employees
  - Mission Support Alliance (Energy) - 2,240 Employees
  - CH2M (Energy) - 1,500 Employees
- 300 restaurants, 200+ wineries and breweries, 125 parks and 10 golf courses.
- In Richland, the Department of Energy is in the process of conveying over 1,600 acres of industrial property to the community for industrial/technology and energy development. A 900 acre "mega-site" is planned as part of this conveyance.

3.2.6. PORT OF BENTON

On its website the Port of Benton states its mission, *"to promote economic development within the Port of Benton, Benton County, Richland, Prosser, Benton City and this region."*

Some of the key economic statistics for the Port are listed here as drivers for the economic activity of the area. The Port's goals of creating economic prosperity throughout the region leads to growth in aviation activity at the Richland airport.

- Maintains 11 sites equating almost $90 million in assets and 2,756 acres.
- Supports Barge and Rail transportation in addition to Aviation
- Manages a budget of approximately $10 million per year
- Supports 3,300 jobs and provides $200 million in payroll every year
- Included Port facilities:
  - Technology and Business Campus
  - Richland Innovation Center
  - Richland Business Park
  - Tri-Cities Enterprise Center
- Enhances tourism with support to the local wine and agriculture business
- Offers recreation opportunities and attracts visitors to the region with features like the Crow Butte Park and USS Triton Sail

The Port of Benton has significant goals and plans to maximize their assets and do their part to grow the economy of the area. Some important efforts are here:

- The Port plans to upgrade to the Technology and Business Campus to attract more business to the area and make the property for the Innovation Center ready for additional development.
- Actively marketing the sale of land for development activities supporting agritourism.
- Considering construction of additional development buildings in the Tri-Cities Enterprise Center.
- Marketing available property for development in the Richland Business Park.

The Port of Benton's overall goals are geared toward promoting and creating economic prosperity in the region and maximizing the Port's assets to develop property and create jobs.

3.3. SOCIOECONOMIC INDICATORS

A review of historical and projected socio-economic activity can provide insights into the future use of the Richland Airport. The following information summarizes population, employment, income, sales and other appropriate, aviation-related data important to providing reasonable guidance to estimate the future utilization of the field.

Woods and Poole Economics, Inc. (WPE) is a nationally-recognized firm specializing in long-term economic and demographic projections. Their data is widely-used by governments and business alike.

Local airport users reside in or near Benton County and surrounding counties. Much of the general aviation in the area use the Richland airport to avoid the commercial service traffic at the Tri-Cities airport (PSC). The users of the airport will extend beyond Richland and Benton County. Thus, the Kennewick-Richland Metropolitan Statistical Area (MSA) will be considered the airport service area for purposes herein. Note: both Benton County and Kennewick-Richland MSA statistical information is included in the following tables and charts for comparative analysis. The MSA statistical values are found to be more representative of the airport use catchment area.

WPE identifies their data sources and projection methodologies. Historical population, household and sales data (and projections therefrom) is sourced from the U.S. Census Bureau. Historical employment, earnings, income data (and projections therefrom) is sourced from the U.S. Bureau of Economic Analysis (BEA).

WPE notes that it formulates its proprietary county-based projections as the result of an integrated process. WPE makes county-based projections based upon US personal income, earnings by industry, employment by industry, population, inflation and other variables. WPE segregates the U.S. into 179 economic areas as identified by the US BEA. WPE employs an *export-based* approach which is used to project employment, and a subsequent earnings projection. The employment and earnings projections are then used to estimate population and households. Final steps involve proprietary reconciliation with population and county-level modifications to the projections.

Select WPE socioeconomic indicators are inventoried for historical and future years of consequence for this planning, as identified on **Table 3.1 and Table 3.2** and as depicted within **Figures 3.1 - 3.4** on upcoming pages.

Complete data sources and methodologies are found within WPE's *2019 Benton County and Kennewick-Richland Metropolitan Statistical Area Data Pamphlets Profile; Technical Description.*

TABLE 3.1
AREA SOCIOECONOMICS (HISTORIC)

Population	**2009**	**2014**	***5 Year % Change****	**2019**	***10 Year % Change****
Benton County	171,122	186,439	*9.0% (1.7%)*	202,753	*18.5% (1.7%)*
Kennewick-Richland MSA	245,600	274,207	*11.6% (2.2%)*	298,546	*21.6% (2.0%)*
Employment	**2009**	**2014**	***5 Year % Change****	**2019**	***10 Year % Change****
Benton County	95,287	101,470	*6.5% (1.3%)*	113,668	*19.3% (1.8%)*
Kennewick-Richland MSA	129,447	141,373	*9.2% (1.8%)*	157,396	*21.6% (2.0%)*
Earnings ($)**	**2009**	**2014**	***5 Year % Change****	**2019**	***10 Year % Change****
Benton County (000)	$5,635,460	$5,683,480	*0.9% (0.2%)*	$6,782,030	*20.3% (1.9%)*
Kennewick-Richland MSA (000)	$7,160,150	$7,562,930	*5.6% (1.1%)*	$8,942,130	*24.9% (2.2%)*
Personal Income ($)**	**2009**	**2014**	***5 Year % Change****	**2019**	***10 Year % Change****
Benton County (000)	$7,000,070	$7,557,490	*8.0% (1.5%)*	$8,946,590	*27.8% (2.5%)*
Kennewick-Richland MSA (000)	$9,362,390	$10,356,470	*10.6% (2.0%)*	$12,242,910	*30.8% (2.7%)*
Per Capita ($) Personal Income	**2009**	**2014**	***5 Year % Change****	**2019**	***10 Year % Change****
Benton County	$38,491	$41,699	*8.3% (1.6%)*	$48,835	*26.9% (2.4%)*
Kennewick-Richland MSA	$35,869	$38,852	*8.3% (1.6%)*	$45,386	*26.5% (2.4%)*
Households	**2009**	**2014**	***5 Year % Change****	**2019**	***10 Year % Change****
Benton County	64,855	71,777	*10.7% (2.0%)*	78,093	*20.4% (1.9%)*
Kennewick-Richland MSA	88,184	97,753	*10.9% (2.1%)*	106,628	*20.9% (1.9%)*
Retail Sales($)**	**2009**	**2014**	***5 Year % Change****	**2019**	***10 Year % Change****
Benton County (000)	$2,348,870	$2,875,64	*22.4% (4.1%)*	$3,356,010	*42.9% (3.6%)*
Kennewick-Richland MSA (000)	$3,191,500	$3,921,140	*22.9% (4.2%)*	$4,580,570	*43.5% (3.7%)*

***5 and 10-year percentage change from 2009 baseline; compound annual percentage change in parens;**
***** 2012 dollars.***

Source: Woods and Poole Economics

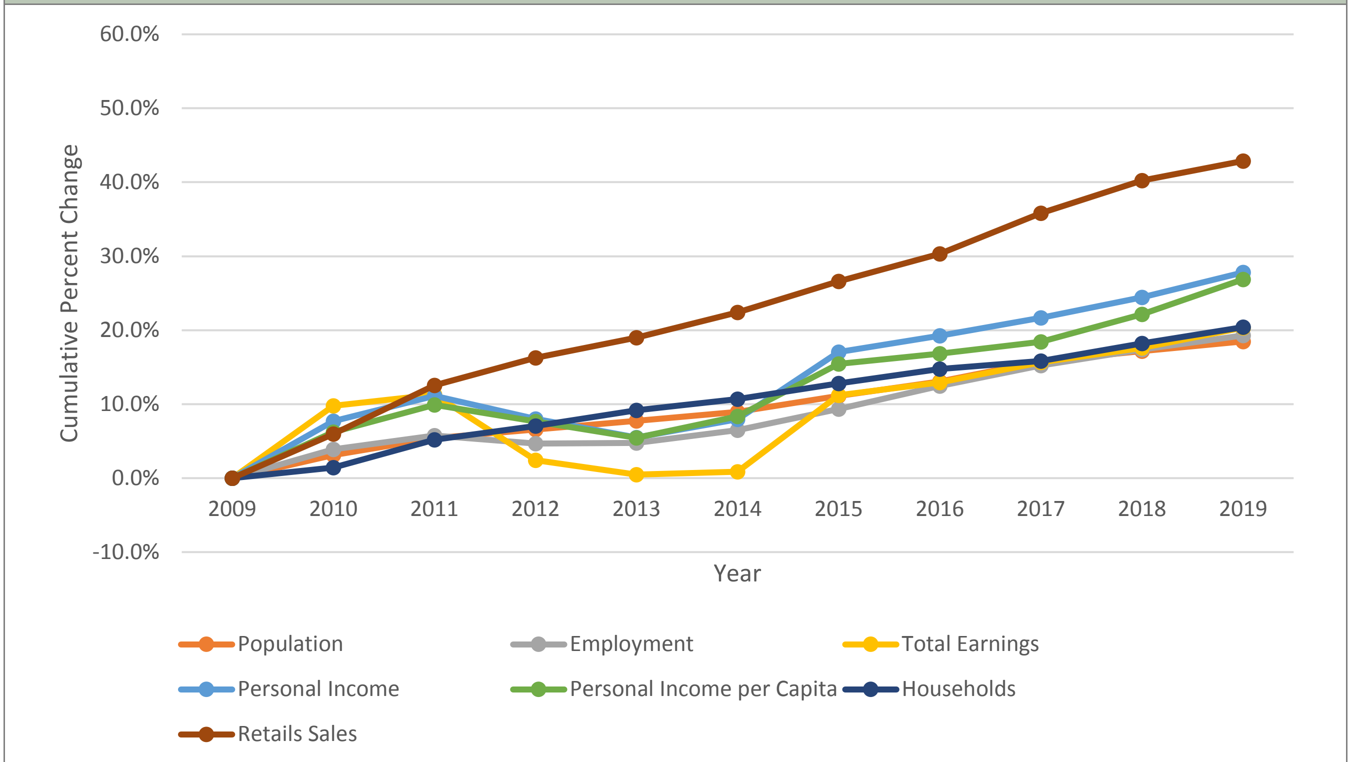
TABLE 3.2
AREA SOCIOECONOMICS (PROJECTED)

Population	2020	2025	5 Year % Change*	2040	20 Year % Change*
Benton County	205,032	216,545	*5.6% (1.1%)*	249,643	*21.8% (1.0%)*
Kennewick-Richland MSA	302,689	323,945	*7.0% (1.4%)*	389,439	*28.7% (1.3%)*
Employment	**2020**	**2025**	**5 Year % Change***	**2040**	**20 Year % Change***
Benton County	115,316	123,926	*7.5% (1.5%)*	148,367	*28.7% (1.3%)*
Kennewick-Richland MSA	159,950	173,377	*8.4% (1.6%)*	213,829	*33.7% (1.5%)*
Earnings ($)**	**2020**	**2025**	**5 Year % Change***	**2040**	**20 Year % Change***
Benton County (000)	$6,924,766	$7,631,095	*10.2% (2.0%)*	$9,878,705	*42.7% (1.8%)*
Kennewick-Richland MSA (000)	$9,143,368	$10,145,597	*11.0% (2.1%)*	$13,461,207	*47.2% (2.0%)*
Personal Income ($)**	**2020**	**2025**	**5 Year % Change***	**2040**	**20 Year % Change***
Benton County (000)	$9,175,102	$10,330,220	*12.6% (2.4%)*	$13,683,283	*49.1% (2.0%)*
Kennewick-Richland MSA (000)	$12,581,104	$14,307,134	*13.7% (2.6%)*	$19,574,637	55.6% (2.2%)
Per Capita ($) Personal Income	**2020**	**2025**	**5 Year % Change***	**2040**	**20 Year % Change***
Benton County	$50,748	$62,740	*23.6% (4.3%)*	$126,230	*148.7% (4.7%)*
Kennewick-Richland MSA	$47,136	$58,085	*23.2% (4.3%)*	$115,757	*145.6% (4.6%)*
Households	**2020**	**2025**	**5 Year % Change***	**2040**	**20 Year % Change***
Benton County	79,380	84,376	*6.3% (1.2%)*	94,121	*18.6% (0.9%)*
Kennewick-Richland MSA	108,611	116,660	*7.4% (1.4%)*	134,545	*23.9% (1.1%)*
Retail Sales($)**	**2020**	**2025**	**5 Year % Change***	**2040**	**20 Year % Change ***
Benton County (000)	$3,415,262	$3,729,845	*9.2% (1.8%)*	$4,651,356	*36.2% (1.6%)*
Kennewick-Richland MSA (000)	$4,671,575	$5,158,538	*10.4% (2.0%)*	$6,662,981	*42.6% (1.8%)*

5 and 20-year percentage change from 2020 baseline; compound annual percentage change in parens;
***** 2012 dollars.***

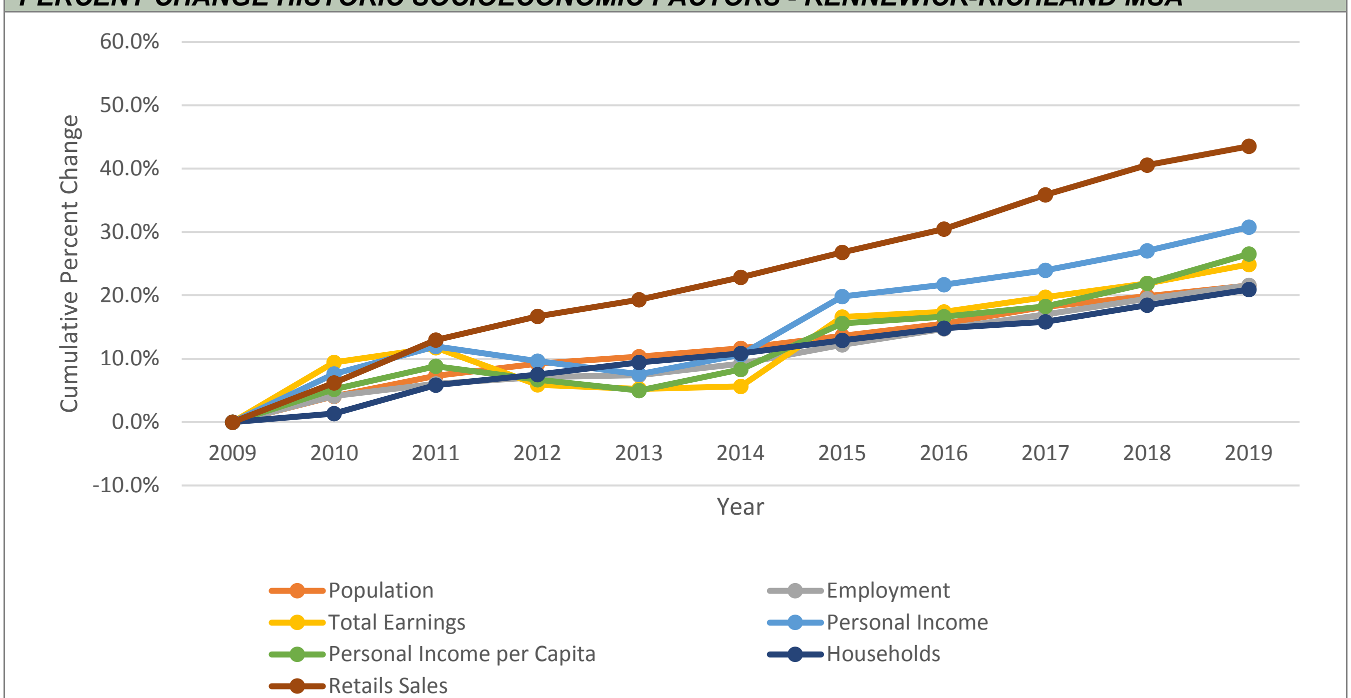
Source: Woods and Poole Economics

FIGURE 3.1
PERCENT CHANGE OF HISTORIC SOCIOECONOMIC FACTORS - BENTON COUNTY



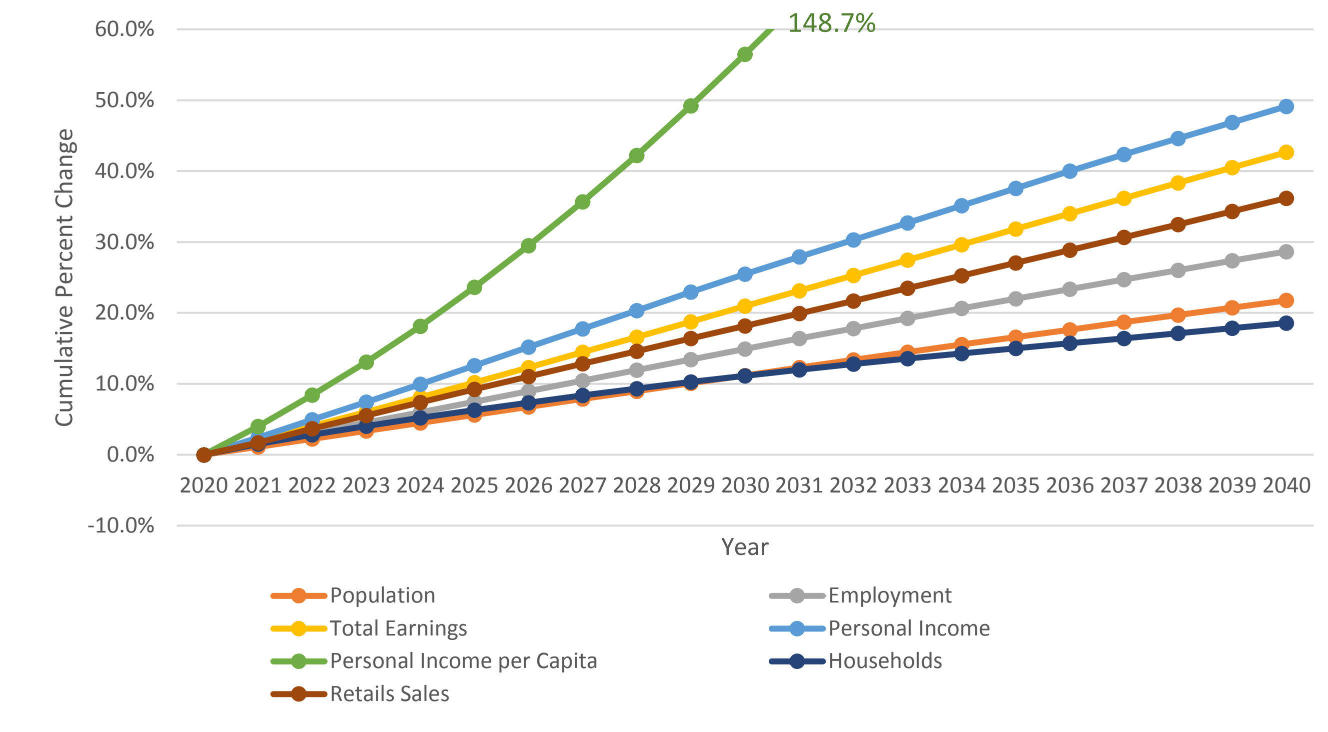
Source: J-U-B

FIGURE 3.2
PERCENT CHANGE HISTORIC SOCIOECONOMIC FACTORS - KENNEWICK-RICHLAND MSA



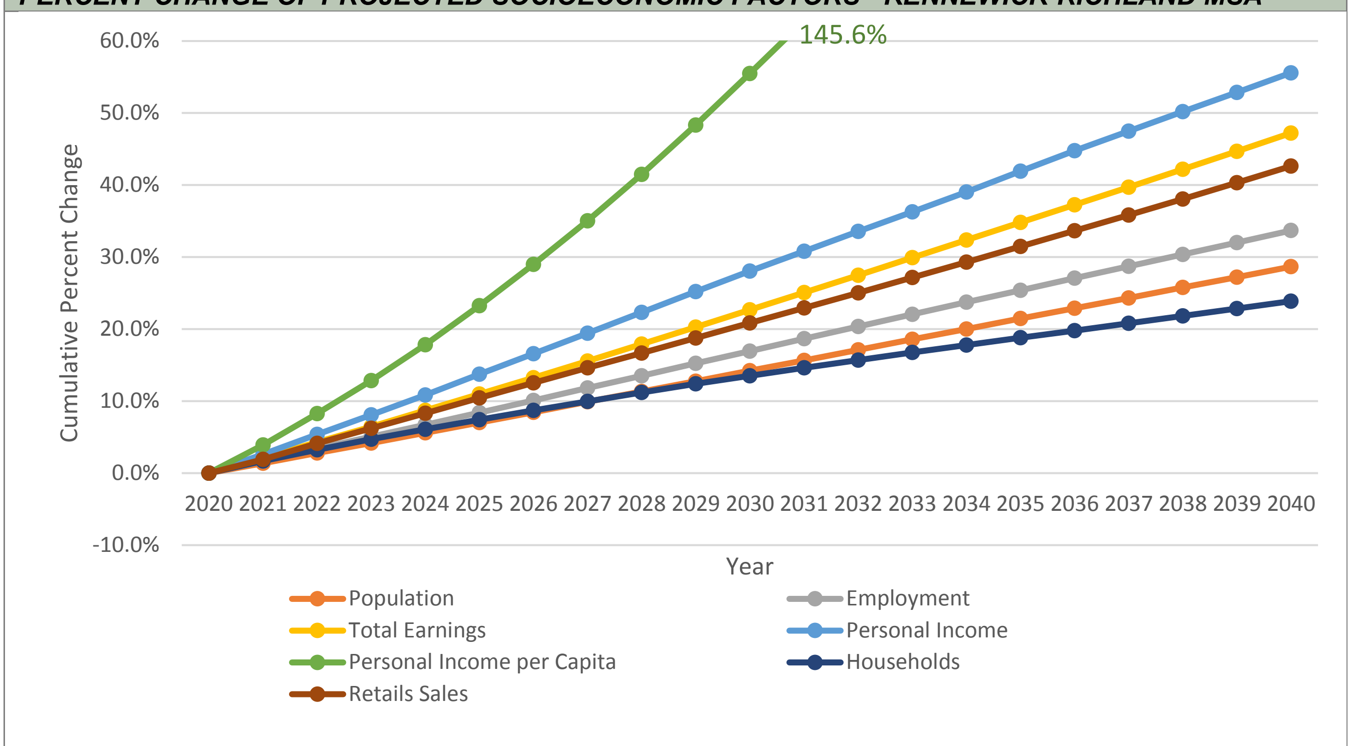
Source: J-U-B

FIGURE 3.3
PERCENT CHANGE OF PROJECTED SOCIOECONOMIC FACTORS - BENTON COUNTY



Source: J-U-B

FIGURE 3.4
PERCENT CHANGE OF PROJECTED SOCIOECONOMIC FACTORS - KENNEWICK-RICHLAND MSA



Source: J-U-B

3.4. AVIATION-RELATED INDICATORS

Although area socioeconomic data often closely correlates to aviation activity, more direct measures of aviation industry activity are also important.

According to *Avbuyers* Business Aviation Market Overview - March 2020, “*Allied Market Research has recently published a report projecting the global air taxi market will reach $817.5M by 2021 and $6.63B by 2030, a CAGR (Compound Annual Growth Rate) of 26.2% from 2021 to 2030.”* It also reports the following January 2020 vs January 2019 flight activity percent changes:

Aircraft Type	*FAR Part 91*	*FAR Part 135*	*Fractional*	*All*
Turboprop	-0.7%	-6.9%	-6.4%	-3.6%
Small-Jet	1.8%	-4.7%	12.1%	0.8%
Mid-Jet	-2.6%	-0.2%	8.0%	0.9%

FAR Part 91 are the regulations that most private, non-commercial flyers operate under, FAR Part 135 is air taxi charter regulations and Fractional represents aircraft jointly owned and operated.

Area airports have prepared forecasting for Master Planning purposes. The Tri-Cities Airport’s (PSC) 20-year forecast of general aviation operations finds a 49 percent overall increase (2008: 33,969; 2028: 50,476), along with a 41 percent overall increase in the number of based aircraft (2008: 123; 2028: 174).

3.4.1. WSDOT AVIATION SYSTEM PLAN

WSDOT’s *2017 Aviation System Plan* provides a basis for forecasting based aircraft for the Richland Airport. The *System Plan* notes:

- Statewide general aviation operations saw an average annual 1.1 percent decrease statewide from 2004 to 2014.
- The number of based aircraft statewide saw an average annual 1.3 percent decrease from 2004 to 2014.
- The Richland Airport is in the *Regional* classification. This classification expects to see an 18 percent overall increase in the number of based aircraft and a 24 percent increase during the statewide 2014-2034 planning period. This translates to a 0.8% and 1.1% average annual percent rate of change respectively.
- Aircraft operations statewide are expected to see a 20 percent overall increase during the 2014-2034 planning period. This translates to a 1.0% average annual percent rate of change.

Two appendices to the *Plan* discuss aviation fuels and the decline in general aviation activity in the context of emerging issues.

- The Fuels Appendix notes that general aviation flying tends to decrease as fuel prices rise. The Appendix notes that prices have been rising and that 100LL is the only remaining leaded fuel and is proposed to be phased out by FAA.
- The Fuels Appendix notes that Washington State aircraft registrations are expected to increase by 0.5 percent through 2027.
- The GA Appendix notes the cost of both piston and turbine fuels have tripled in price from 2000-2014.
- The GA Appendix notes that the quantity of aviation fuels dispensed is expected to increase 2.3 percent annually during the 2001-2035 period.
- The GA Appendix notes that the more strict aircraft storage policies, cost of ADS-B instrument implementation and general costs to own personal aircraft have put downward pressure on the potential number of aircraft owned and hours flown by aircraft owners.
- The GA Appendix notes that a “healthy” outlook is warranted partially based upon strong Per Capita Personal Income, with Washington State having the 11th highest such value among states.

3.4.2. FAA FORECASTING

FAA Aerospace Forecasts Fiscal Years 2020-2040 is a recent edition of this annually updated forecasting document. This document notes: "*Global economic growth accelerates in 2021 after slowing in 2019-20.*" *"The long-term outlook for general aviation is relatively stable, as growth at the high-end offsets continuing retirements at the traditional low end of the segment. Steady growth in both GDP and corporate profits results in continued growth of the turbine and rotorcraft fleets, the largest segment of the fleet – fixed wing piston aircraft continues to shrink over the forecast. Against the marginally declining fleet, the number of general aviation hours flown is projected to increase by 16 percent (an average of 0.7 percent per year) during the same period, as growth in turbine, rotorcraft, and experimental hours more than offset a decline in fixed wing piston hours."*

"The more expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow by 14,640 aircraft - an average rate of 1.8 percent a year between 2019 and 2040, with the jet fleet increasing 2.3 percent a year. The growth in U.S. GDP and corporate profits are catalysts for the growth in the turbine fleet."

Its review of the year 2019 notes, *"The general aviation industry recorded a modest increase of 1.4 percent in deliveries of U.S. manufactured aircraft in 2019 general aviation activity at FAA and contract tower airports had a 3.3 percent increase in 2019 as local activity rose 6.1 percent and itinerant operations went up by 0.8 percent. In local GA activity, this was the highest increase recorded in more than 20 years."*

- Total GA hours flown up 1.2% from 2017 to 2018
- A record $14.0 billion in factory net billings in 2019 for U.S. manufactured GA aircraft

Despite potential short-term slowing in U.S. industry sectors due to effects associated with the 2019 Novel Coronavirus (COVID-19), the long-term forecast for general aviation growth shows continued steady increases in the next 20 years.

The trend shows particular strength in additional turbine powered aircraft in the national fleet mix. This fact lends itself specifically well for the future plans for the Richland Airport to support and service the corporate business jet and turboprop operations in the Tri-Cities area.

Projections also show increases to the number of general aviation hours flown and increases in the number of light sport and experimental aircraft.

FAA Aerospace Forecasts finds 10 and 20-year Average Annual Growth Rates (AAGR) for active GA aircraft:

Aircraft type	***10-Year***	***20-Year***
Single Engine Piston	-1.0%	-1.0%
Multi-Engine Piston	-0.4%	-0.5%
Turbo-Prop	0.8%	1.2%
Turbo-Jet	2.6%	2.2%
Piston Rotorcraft	1.4%	1.4%
Light Sport	3.9%	3.3%
Experimental	1.0%	0.9%
Total	**-0.1%**	**0.0%**

FAA Aerospace Forecasts finds 10 and 20-year AAGR's for active GA aircraft hours flown:

Aircraft type	***10-Year***	***20-Year***
Single Engine Piston	-1.5%	-1.0%
Multi-Engine Piston	-0.5%	-0.3%
Turbo-Prop	1.1%	1.3%
Turbo-Jet	3.1%	2.6%
Piston Rotorcraft	2.6%	2.3%
Light Sport	4.8%	4.1%
Experimental	1.8%	1.6%
Total	**0.6%**	**0.7%**

FAA Aerospace Forecasts finds 10 and 20-year AAGR's for GA aircraft fuels consumption:

Aircraft type	***10-Year***	***20-Year***
Single Engine Piston	-1.6%	-1.3%
Multi-Engine Piston	-0.8%	-0.5%
Turbo-Prop	0.8%	0.9%
Turbo-Jet	2.2%	1.8%
Piston Rotorcraft	2.5%	2.3%
Light Sport	4.4%	3.7%
Experimental	1.5%	1.4%
Total	**1.7%**	**1.5%**

FAA Aerospace Forecasts finds 10 and 20-year AAGR's aircraft operations with air traffic control:

Operation Type	***10-Year***	***20-Year***
GA Itinerant	0.3%	0.3%
GA Local	0.3%	0.3%
Total GA	**0.3%**	**0.3%**

3.4.3. FUEL SALES

The past few years have seen a significant increase in fuel sales, especially jet fuel. This is attributed to an increase in operations by Life Flight and the agreement their organization has with the local FBO, Sundance Aviation, for fuel pricing. Fuel sales are expected to continue to grow based on

Projections for fuel sales are based on historic information and use simple linear regression to demonstrate future growth. **Table 3.3**, below, shows historic fuel sales at the Richland Airport as reported by Sundance Aviation (FBO). **Table 3.4** is projected fuel sales values based on simple linear trendline forecasting of the historic data.

TABLE 3.3
FUEL SALES INVENTORY

Year	Jet-A (gal)	100LL (gal)	Total (gal)
2014	6,000	21,000	27,000
2015	8,000	23,000	31,000
2016	13,000	25,000	38,000
2017	16,000	27,000	41,000
2018	49,000	29,000	78,000
2019	67,000	35,000	102,000

TABLE 3.4
FUEL SALES PROJECTED

Year	Jet-A (gal)	100LL (gal)	Total (gal)
2020	69,600	35,667	104,733
2025	131,171	48,524	178,867
5 yr % Change	**88.5%**	**36.0**	**70.8%**
2040	315,886	87,095	401,305
20 yr % Change	**353.9%**	**144.2%**	**283.2%**

3.5. BASED AIRCRAFT FORECASTING

The FAA-approved number of current based aircraft at the Richland Airport, for purposes of this planning, includes 122 Single-Engine Piston (SEP), 4 Multi-Engine Piston (MEP), 2 Jets, and 2 Helicopters for a total of 130 aircraft. Ultralight aircraft are not part of the count for master plan purposes. Previous socioeconomic data and fuel sales projections are the basis for developing Based Aircraft Forecasting.

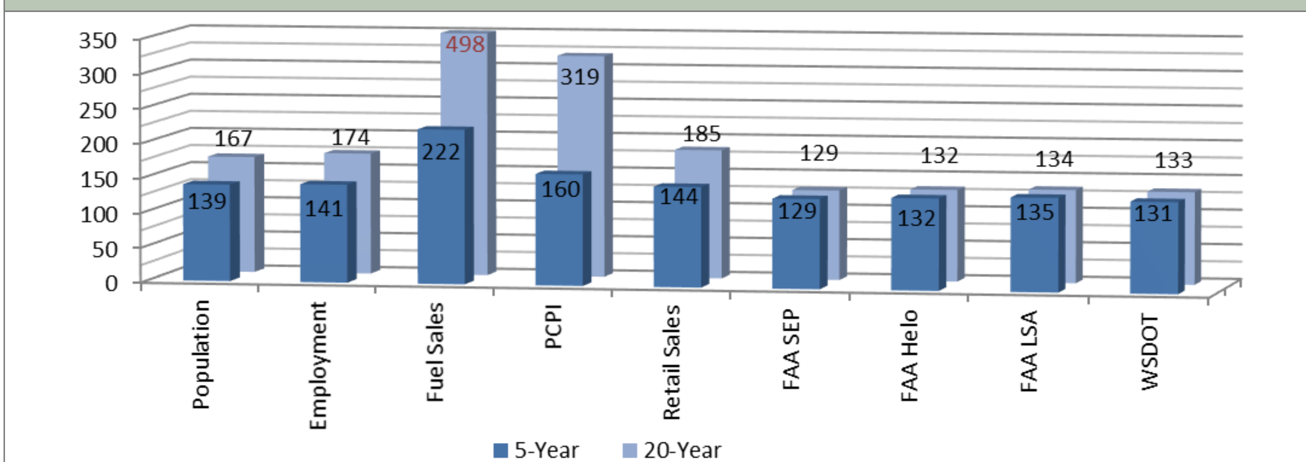
3.5.1. BASED AIRCRAFT PROJECTIONS

Using information from the previous sections **Table 3.5** and **Figure 3.5** predict the results of based aircraft projections. The Population, Employment, Per Capital Personal Income (PCPI) and Retail Sales Projections are Kennewick-Richland MSA WPE figures found within **Table 3.2.** FAA Projections are from *FAA Aerospace Forecasts* for Single-Engine Piston (SEP), Rotorcraft (Helo), and Light-Sport Aircraft (LSA) found in the previous section. Fuel Sales projections come from the data found in **Table 3.4** as reported by Sundance Aviation (FBO). Finally, The WSDOT Projection is via the 2017 *System Plan*.

TABLE 3.5
BASED AIRCRAFT PROJECTIONS

Projection	5-Year		20-Year	
	Forecast Overall Increase	Number of Based Aircraft	Forecast Overall Increase	Number of Based Aircraft
Population	7.0%	139	28.7%	167
Employment	8.4%	141	33.7%	174
Fuel Sales	70.8%	222	282.2%	498
Per Capita Personal Income	23.2%	160	145.6%	319
Retail Sales	10.4%	144	42.6%	185
FAA Single Engine Piston	-1.0%	129	-1.0%	129
FAA Helicopter	1.4%	132	1.4%	132
FAA Light Sport Aircraft	3.9%	135	3.3%	134
WSDOT	1.0%	131	2%	133

FIGURE 3.5
BASED AIRCRAFT RESULTING FROM PROJECTIONS

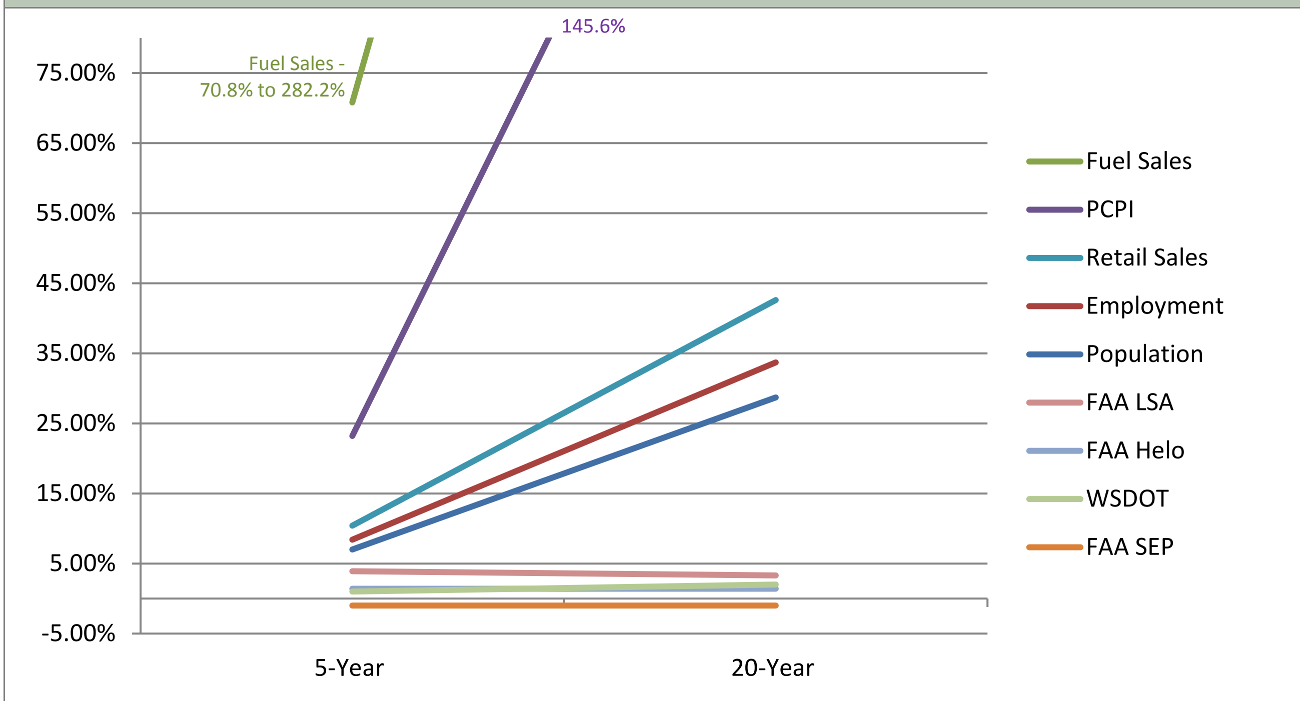


The projections group into relatively high, medium, and low values. The projections which produce large values are PCPI and Fuel Sales. Population, Retail Sales and Employment make up the middle group. The projections which produce low values are national aviation-related: FAA Projections and the WSDOT Projection. **Figure 3.5** shows the resulting number of based aircraft derived from the projections.

These projections suggest:

- As personal income increases, more local aviators will be able to acquire aircraft to store at Richland.
- Increased fuel sales show that there is an enticing atmosphere for aviators to use Richland as a base.
- Sales of jet fuel indicate larger/faster aircraft use the airport and are likely to be based here if there are facilities to house them.
- Increased aircraft storage capacity will quickly be filled.
- Aircraft based at Richland should increase faster than the national average.
- More local currency-related indicators show strong growth, somewhat mitigated by weaker national expectations.
- Helicopter activity is expected to increase; Richland has recently expanded its helicopter parking areas.

FIGURE 3.6
BASED AIRCRAFT PROJECTIONS



Source: J-U-B

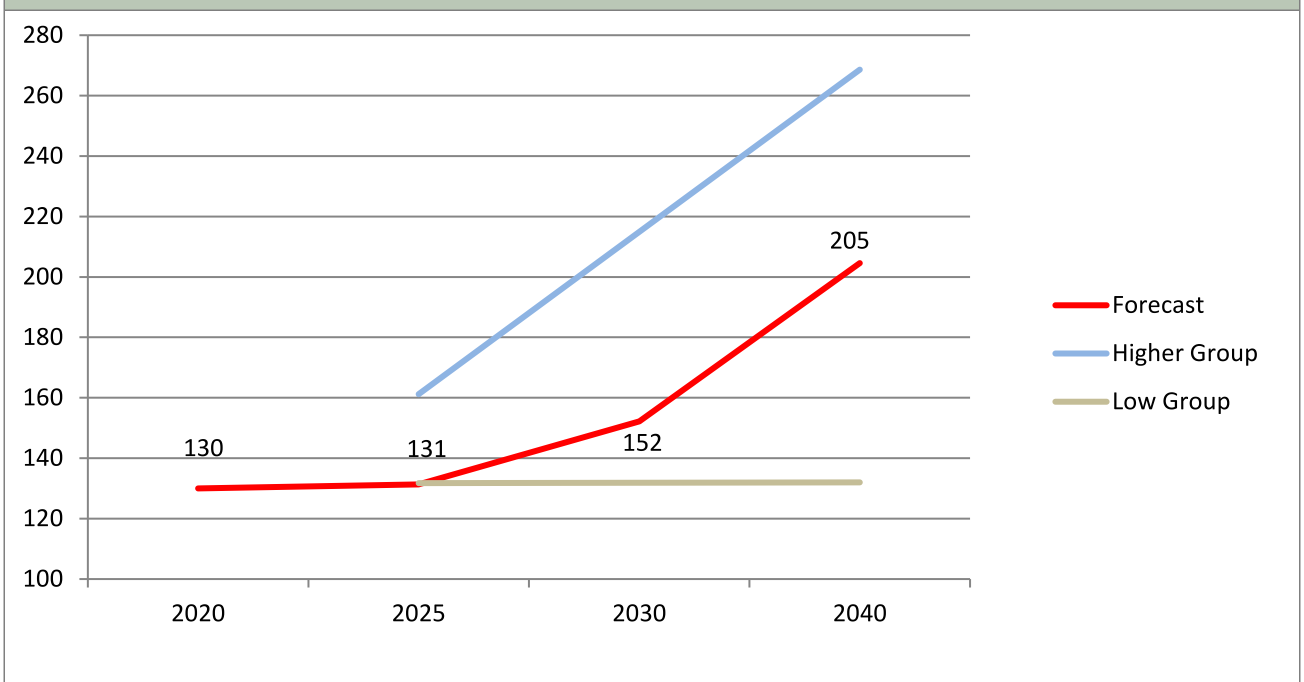
3.5.2. BASED AIRCRAFT FORECAST

A forecast of based aircraft can be taken from one of the above or a combination of projections. In the consultant's opinion, there is no need for extravagant statistical efforts given the nature and scope of the Richland Airport's aviation activity.

The factors mentioned previously suggest some optimism and are perhaps quantified within the larger-value projections. However, a bit of trepidation is also in order in that economic uncertainties persist at the national level and will likely remain a concern for the aviation industry. The 2020 novel coronavirus will also likely have some effect on operations and based aircraft over the next few years. What those effects will be are largely unknown at this point. Other possible issues could include potential terrorism and seemingly unforeseeable financial and monetary events. These factors are considered within the lower-value projections.

The Forecast of the Based Aircraft is shown by the redline on **Figure 3.7**. Because of recent events this forecast predicts a 0.0% percent annual growth for the first three years of the forecast period, followed by modest 0.5% for two years. It then assumes 2% growth each year after that. This begins with the 2020 baseline count of 130 aircraft, until the final forecast year of 2040. New based aircraft will likely come to the Richland Airport when new hangar capacity is increased. New hangars may be built (T- or box-types), by either the Port or a tenant when demand is likely sufficient to fill space at a given price. The result of this, for example, is that the based aircraft count may jump 10 percent when a new hangar is occupied.

FIGURE 3.7
FORECAST OF BASED AIRCRAFT



Source: J-U-B

3.5.3. BASED AIRCRAFT FORECAST BY TYPE

A further segregation of based aircraft by type is necessary to meaningfully complete this section. This subsection relies on information contained in WSDOT and FAA forecasting efforts previously discussed. These efforts suggest that future aviation activity in general is likely more robust for the turbo-prop, turbo-jet and helicopter types, as opposed to the single-engine type. Figures below repeat earlier data for FAA Aerospace Forecast findings for 10 and 20-year AAGR's for active GA aircraft.

	10-Year	*20-Year*
Single Engine Piston	-1.0%	-1.0%
Multi-Engine Piston	-0.4%	-0.5%
Turbo-Prop	0.8%	1.2%
Turbo-Jet	2.6%	2.2%
Piston Rotorcraft	1.4%	1.4%
Light Sport	3.9%	3.3%
Experimental	1.0%	0.9%
Total	**-0.1%**	**0.0%**

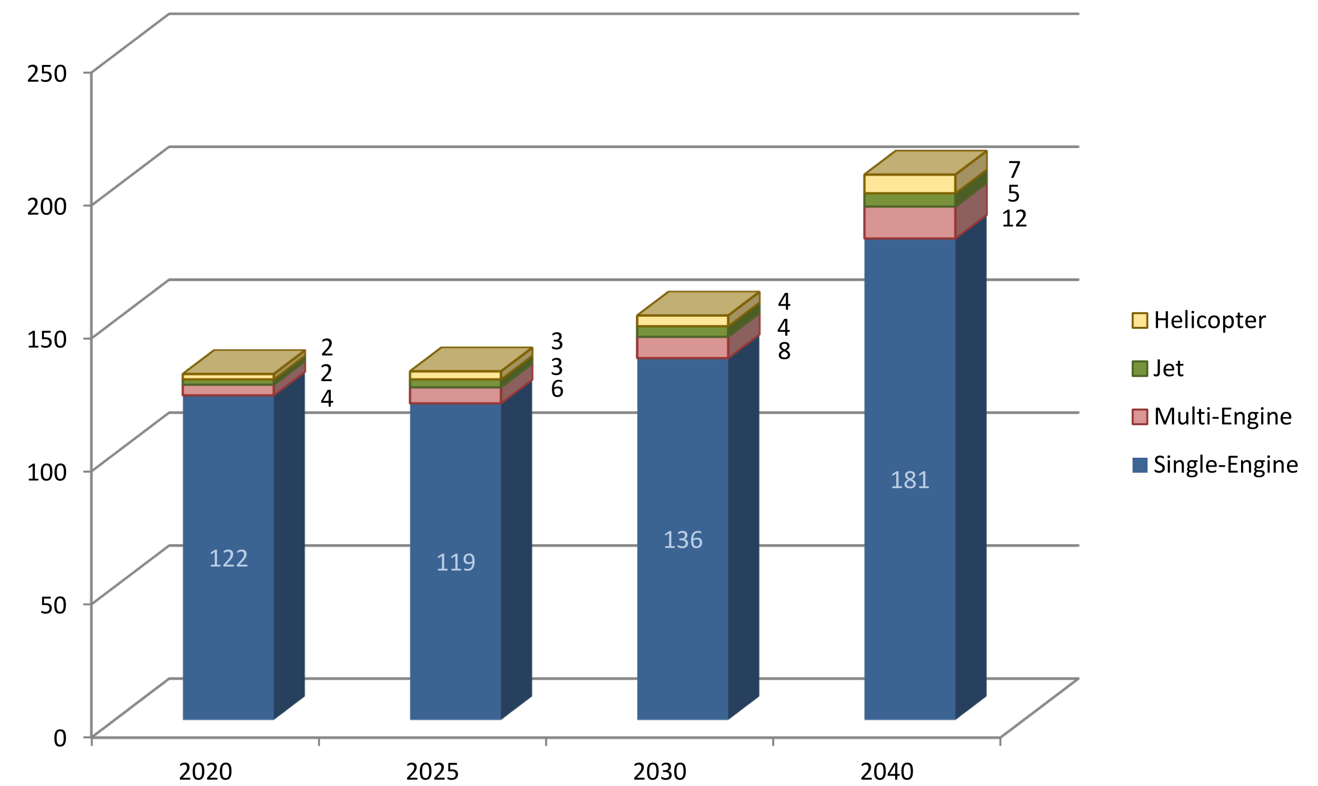
Generally speaking, FAA and WSDOT guidance expect that more sophisticated, expensive aircraft will outnumber less expensive aircraft in the future, with the notable exception of the Light Sport Aircraft category. Based upon this data, use of the Richland Airport by larger, faster and more expensive aircraft is expected to increase over the next 20 years, especially relative to use by smaller piston-driven aircraft. These factors are considered in the formulation of the based aircraft forecast by type as depicted in **Table 3.6** and **Figure 3.8.**

TABLE 3.6
FORECAST OF BASED AIRCRAFT BY TYPE

Aircraft Type	2020	2025	2030	2040
Single-Engine Piston	122	119	136	181
Multi-Engine Piston/Turbo-Prop	4	6	8	12
Jet	2	3	4	5
Helicopter	2	3	4	7
Total Based Aircraft	130	131	152	205

Source: J-U-B

FIGURE 3.8
FORECAST OF BASED AIRCRAFT BY TYPE



Source: J-U-B

3.6. AIRCRAFT OPERATIONS FORECASTING

The Richland Airport is an uncontrolled facility and accurate counts of aircraft operational activity are not available. The number of aircraft operations has been stable.

The Richland Airport is consistently used by Life Flight, Bonneville Power Administration, the Sundance Aviation flight school, JR Imaging, and the general flying public.

As previously detailed, general aviation as an industry has struggled over the past few years and aircraft production and sales have seen only slow growth in most categories of aircraft manufacture, including executive aircraft. Larger business and charter general aviation aircraft are expected to fly only a few more hours on a national basis. However, it is anticipated that itinerant general aviation operations will continue to increase.

The estimated number of 2019 aircraft operations at the Richland Airport, for purposes of this planning, total **45,500** and are estimated to be distributed as follows:

Aircraft Type	*Operations*	*%±*
Single Engine Piston	41,100	90.5%
Multi-Engine Piston	500	1%
Turbo-Prop/Jet	1,400	3%
Piston Rotorcraft	2,500	5.5%

These counts are substantially less than those identified in FAA's TAF or WSDOT estimates. Chapter 2 explained this count reduction for baseline purposes.

3.6.1. AIRCRAFT OPERATIONS PROJECTIONS

Indicators with statistical correlations to aviation activity are used to project the number of based aircraft. Many of the same indicators used to predict the number of based aircraft are also relevant to project aircraft operations, as statistical correlations continue to exist.

The Population, Earnings, Per Capital Personal Income (PCPI) and Retail Sales Projections are from the Kennewick-Richland MSA WPE figures as found within **Table 3.2** and are depicted in **Table 3.7** below.

TABLE 3.7
AIRCRAFT OPERATIONS PROJECTIONS

Projection	5-Year Forecast Overall Increase	Projected Number of Aircraft Operations	20-Year Forecast Overall Increase	Projected Number of Aircraft Operations
Population	7.0%	48,685	28.7%	58,559
Earnings	8.4%	49,322	33.7%	60,834
Fuel Sales	70.8%	77,714	282.2%	173,901
Per Capita Personal Income	23.2%	56,056	145.6%	111,748
Retail Sales	10.4%	50,232	42.6%	64,883
FAA Hours Flown	-1.0%	40,950	-1.0%	40,950
FAA Fuel	1.4%	46,137	1.4%	46,137
WSDOT	3.9%	47,275	3.3%	47,002

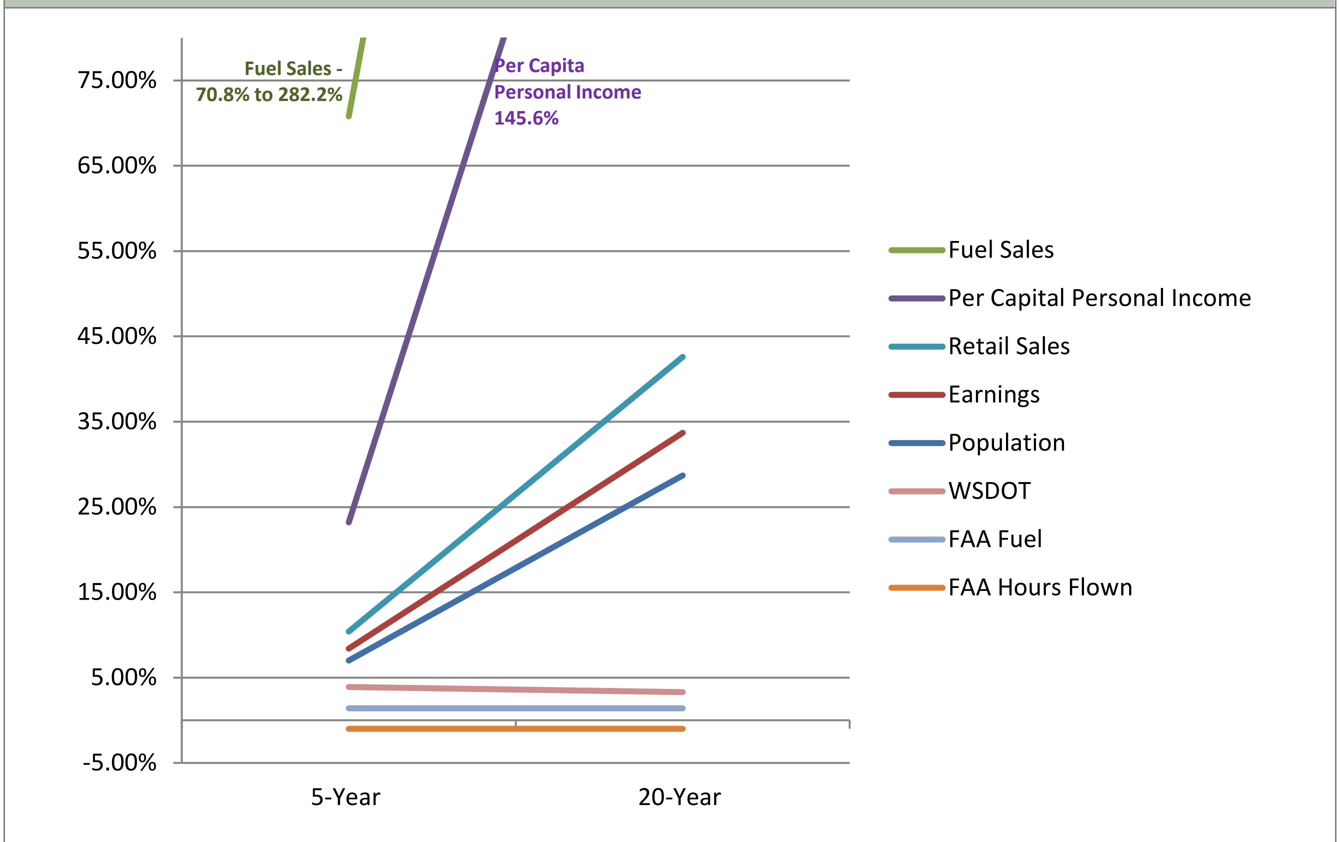
Source: Various

The projections can again be grouped into high, medium, and low values, as depicted in **Figure 3.9.** The projections which produce high values are again regionally-currency related: Fuel Sales, and Per Capita Personal Income. Retail Sales and, Population, and Earnings make up the middle group. The projections which produce low values are somewhat nationally aviation-related: the FAA Projections and the WSDOT *System Plan*-related Projection

These projections seemingly suggest:

- Fuel sales at the airport are a big factor in recent and future growth and is expected to continue to be strong.
- The Kennewick-Richland MSA and Benton County will continue to outpace the nation and region in population and economic growth.
- Aviation activity is expected to increase as the area grows.
- As airport increases its capacity to serve the aviation community it will draw more activity to the airfield.
- Local aviation demand is expected to surpass national expectations.
- Future aircraft operations activity is expected to be more robust than basing activity, given that the values have increased.

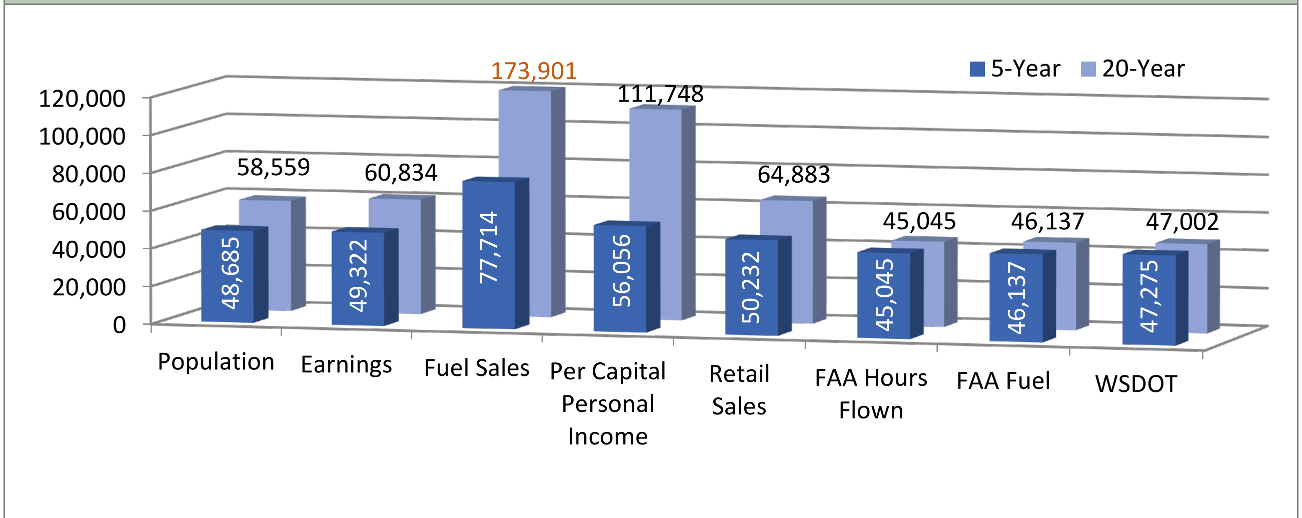
FIGURE 3.9
AIRCRAFT OPERATIONS PROJECTIONS



Source: J-U-B

Figure 3.10 shows how the resulting number of aircraft operations would be derived as a statistical consequence of the projections, based on each individual variable. This is provided for context and comparison in selecting the overall operations forecast.

FIGURE 3.10
AIRCRAFT OPERATIONS RESULTING FROM PROJECTIONS

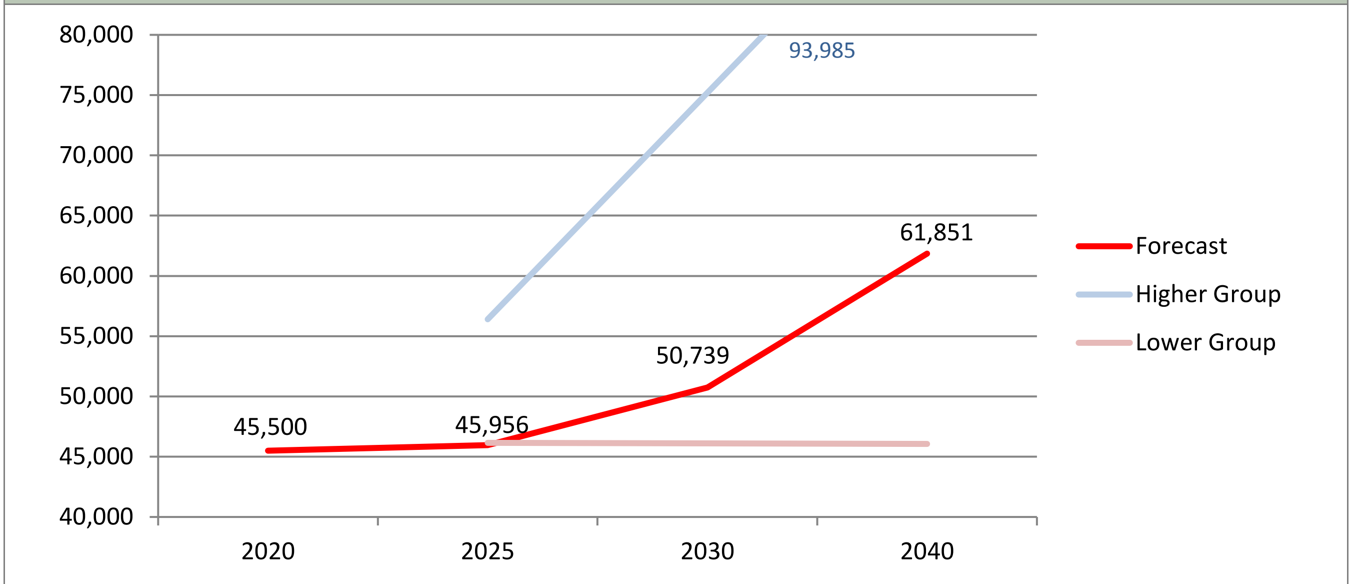


Source: J-U-B

3.6.2. AIRCRAFT OPERATIONS FORECAST

A forecast of aircraft operations can be taken from one of the above, or a combination of projections. In the consultant's opinion there is no need for extravagant statistical efforts given the nature and scope of the Richland Airport's aviation activity. Long-term optimism should be applied for the same reasons described in the based aircraft analysis. The Forecast of Aircraft Operations is shown by the red line on **Figure 3.11.** This forecast demonstrates flat growth for the first three years in the forecast period, followed by 0.5% growth for the next two years. Then assuming 2.0% annual growth for the years after that. The forecasting period, again, begins with the 2020 baseline of **45,500** operations, through 2040.

FIGURE 3.11
FORECAST OF AIRCRAFT OPERATIONS



Source: J-U-B

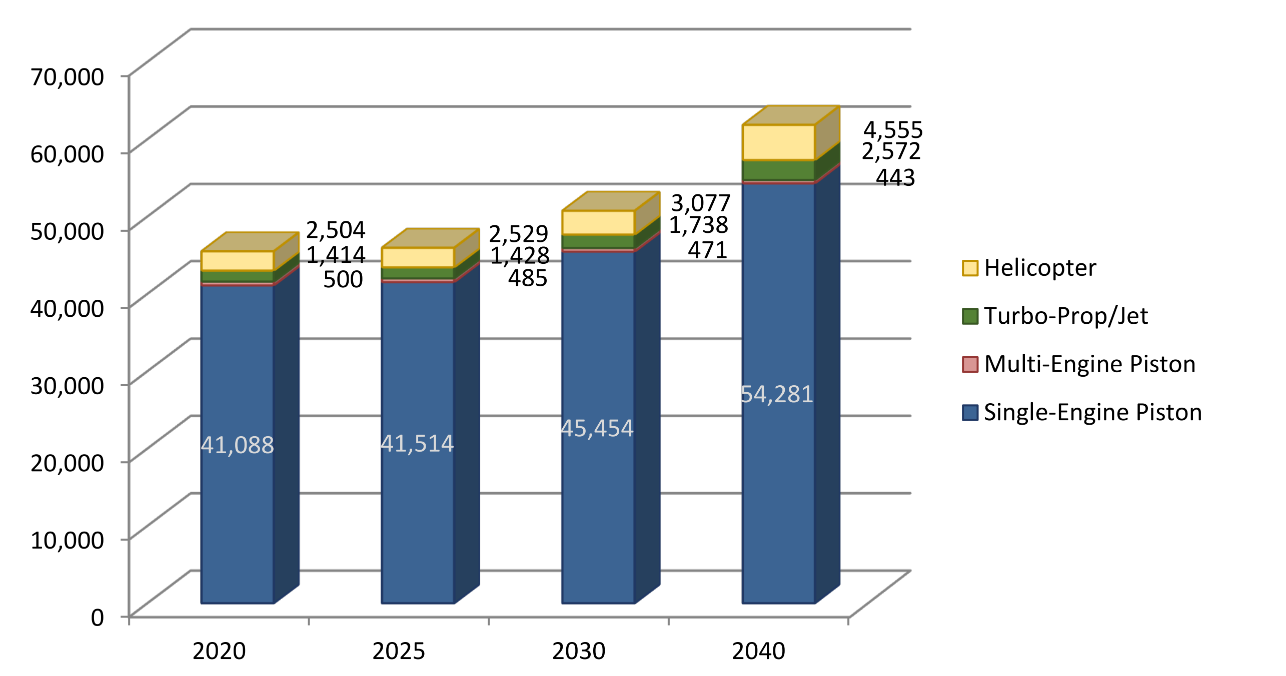
3.6.3. FORECAST AIRCRAFT OPERATIONS BY TYPE

A further segregation of forecast aircraft operations by type is necessary to meaningfully complete this section. This subsection relies heavily on information contained in WSDOT and FAA forecasting materials previously discussed. This guidance suggests that future aviation activity, in general, is likely more robust in the multi-engine jet and helicopter types, as opposed to the multi-engine type. A breakdown of operations by aircraft type is shown in **Figure 3.12.**

3.6.4. AIRCRAFT MIX FORECAST

An itinerant operation is defined as any aircraft operation other than a local operation. A local operation includes operations within the traffic pattern in sight of the field, low approach and or simulated instrument approaches and transitions to a practice area. FAA's 5010 Airport Master Record identifies an approximate 60/40 percent local to itinerant operation activity split at the Airport. The forecast mix of operations between local and itinerant is presented in **Table 3.8**

FIGURE 3.12
FORECAST OF AIRCRAFT OPERATIONS BY TYPE



Source: J-U-B

TABLE 3.8
FORECAST MIX OF AIRCRAFT OPERATIONS

Year	Itinerant Operations	% Itinerant Operations	Local Operations	% Local Operations	Total Operations
2020	18,200	40	27,300	60	45,500
2025	18,382	40	27,574	60	45,956
2030	20,296	40	30,443	60	50,739
2040	24,740	40	37,111	60	61,851

Source: J-U-B

3.6.5. PEAK PERIOD OPERATIONS FORECAST

Existing and future airport facilities should be designed and constructed not for an average day's aircraft activity and not for the busiest day, but for activity somewhere in between.

FAA guidance for estimating peaking activity is reflected in **Table 3.9.** Peak day is defined as the average number of operations per day during the most active month. In FAA's Northwest Mountain Region and at the Richland Airport, the most active month normally accounts for approximately 10 percent of total annual operations and approximately 15 percent of the peak day operations occur during the peak hour.

These operational activity estimates will be useful for analyses in upcoming chapters for estimating, for example, the hangars and apron area needed to accommodate future activity.

TABLE 3.9
PEAK PERIOD OPERATIONS FORECAST

Year	Total Operations	Peak Month Operations	Peak Day Operations	Peak Hour Operations
2020	45,506	4,551	152	23
2025	45,956	4,596	153	23
2030	50,739	5,074	169	25
2040	61,851	6185	206	31

Source: J-U-B

3.6.6. INSTRUMENT OPERATIONS FORECAST

The Richland Airport's Instrument Flight Rules (IFR) operations are consistent with typical observations in the region. 2020 instrument aircraft operations are estimated at 1,914. This works out to be 4.2 percent of the total 45,500 baseline operations. **Table 3.10** projects instrument operations over a 20 year period. See Chapter 2 for historic instrument operations information.

TABLE 3.10
INSTRUMENT OPERATIONS FORECAST BY YEAR

	2020	2025	2030	2040
Instrument Operations	1,914	1,934	3,391	4,784

Source: J-U-B

3.6.7. DESIGN/CRITICAL AIRCRAFT

The design/critical aircraft is an aircraft or more typically a group of aircraft with similar design or performance characteristics which completes at least 500 annual operations at the Richland Airport.

FAA maintains a record of flight operations that, when normalized, will identify the vast majority of the larger and faster aircraft operations at the Richland Airport. This FAA data was inventoried and normalized to identify aircraft operations which in the aggregate constitute a design or critical aircraft. This information is contained in **Table 3.11** which uses simple linear regression of the historical years defined in the previous chapter to produce the baseline values. 500 annual aircraft operations is FAA's design guideline threshold for planning purposes. FAA records show 1,652 Group II operations in 2017, which extrapolates to approximately 1,800 operations for 2019. Several area economic indications support continued growth in larger, faster aircraft at the Richland Airport.

Sundance Aviation (FBO) has stated that with additional space to provide maintenance and additional large hangars there will easily be an increase in turboprop and jet aircraft at the airport. Life Flight is a regular operator at the airfield and could bring more fixed wing aircraft over the next 10 years. JR Imaging, is doubling their planes this year from two to four, and projects to have six or seven planes by 2022.

As previously discussed, the forecast for the near future term is tempered somewhat by the acute economic situation of 2020 and the novel coronavirus pandemic. Thus, the forecast in all categories is metered, but then anticipated to rapidly increase with continued growth in the community.

For the Design/Critical Aircraft this forecast relies on the 5-year aircraft operation observations. The regression analysis projection from the historical 3-year period is included for reference and comparison. The values produced in the 5-year history more accurately project likely future conditions.

TABLE 3.11
DESIGN/CRITICAL AIRCRAFT FORECAST

ARC A/B/C-II	*2019*	2020	2025	2030	2040	Overall Change	CAGR
Projection Based upon 5-Year Change	1,859	1,914	1,934	3,391	4,784	82%	3.05%
Projection Based upon 3-Year Change	2,076	2,163	2,184	4,452	6,612	114%	3.89%

Source: J-U-B

With respect to Design/Critical Aircraft, note that:

A&B-I Small forecasts all aircraft types weighing less than 12,500 pounds, with approach speeds up to 121 knots, and wingspans up to 49 feet, inclusive. Example aircraft include:

- Cessna 152,172, 210, 206, 414
- Piper Cub, Arrow, Comanche, Saratoga
- Beechcraft Bonanza, Duke
- Cirrus, Mooney, Diamond, Glasair
- Ultralights, Gliders
- Citation Mustang, Eclipse 500
- Embraer Phenom, Beechcraft Premier 1
- All Helicopters

A&B-II Small forecasts all aircraft types weighing less than 12,500 pounds, with approach speeds up to 121 knots and wingspans 49 to 79 feet, inclusive. Example aircraft include:

- Cessna 441 Conquest
- Pilatus PC-12
- Beechcraft King Air 90/100

A&B-II Large forecasts all aircraft types weighing greater than 12,500 pounds, with approach speeds up to 121 knots and wingspans 49 feet up to 79 feet, inclusive. Example aircraft include:

- Cessna Citation 550, 650, Sovereign
- Dassault Falcon 20,50,200
- Hawker 400, 850XP

C&D-II Large forecasts all aircraft types weighing up to 60,000 pounds, with approach speeds up to 166 knots and wingspans 49 to 79 feet, inclusive. Example aircraft include:

- Cessna Citation X
- Bombardier Challenger 300, 605
- Dassault Falcon 900, 2000
- Gulfstream 350, 450

The design/critical aircraft is an aircraft or more typically a group of aircraft with similar design or performance characteristics which completes at least 500 annual operations at the Richland Airport.

FAA maintains a record of flight operations that, when normalized, will identify the vast majority of the larger and faster aircraft operations at the Richland Airport. This FAA data was inventoried and normalized to identify aircraft operations which in the aggregate constitute a design or critical aircraft. This information is contained in **Table 3.12** for each planning period. 500 annual aircraft operations is FAA's minimum design guideline threshold for planning purposes. Anticipated helicopter operations are included in the A&B-I Small grouping.

TABLE 3.12
CRITICAL/DESIGN AIRCRAFT DETERMINATION BY YEAR

	2020	2025	2030	2040
Aircraft Approach Category (AAC)	Category A	Category A	Category A	Category B
Airplane Design Group (ADG)	Group II	Group II	Group II	Group II
Aircraft Weight (<, >12,500 SWG)	Small	Small	Small	Large
Taxiway Design Group (TDG)	Group 1A	Group 1A	Group 1A	Group 2

Source: J-U-B

FAA records show sufficient operations for an **ARC A-II**, **TDG 1A** for the current and near-term planning period. The forecast for the **ultimate ARC** is **B-II**, **TDG Group 2. A representative** design aircraft for the current and near term should be the **Pilatus PC-12.** Representative aircraft for the ultimate design group include the **Beechcraft KingAir 300/350 series**, **Cessna's Citation CJ2, II, and V**.

The FAA provides a cursory estimate of operations information in their **Terminal Area Forecast** report **(TAF). Table 3.13** provides the forecast of this report in FAA TAF format for comparative purposes.

TABLE 3.13
FAA TAF FORECAST

	Itinerant			Local		
Year	**Air Taxi**	**GA**	**Military**	**GA**	**Military**	**Total Ops**
2020	1,700	19,280	100	26,220	500*	45,500
2025	1,700	19,403	101	26,553	505*	45,956
2030	2,800	22,042	110	28,697	550*	50,739
2040	3,900	27,162	136	34,689	680*	61,851

Source: J-U-B

3.7. RUNWAY END ESTIMATE BY AIRCRAFT CATEGORY

The final forecast of this chapter is a forecast of aircraft operations with a breakdown by the following categories:

1. Planning Years:
   - 2020, 2025, 2030, 2040
2. Runway Ends:
   - Runway 8 and 26
   - Runway 1 and 19
3. Airport Approach Category (AAC; A,B,C), Airport Design Group (ADG; I,II) and Aircraft Weight (Small/Large):
   - A&B-I Small Aircraft
   - A&B-II Small Aircraft
   - A&B-II Large Aircraft
   - C&D-II Large Aircraft

With respect to the second and third category, aircraft operations, as reported by the Airport Manager and FBO, were segregated with about 30% percent of the operations using Runway 8, and 10% percent using Runway 26, and 20% percent using Runway 1, and approx. 40% percent using Runway 19. (see **Table 3.14)**

TABLE 3.14
FORECAST SUMMARY OF AIRCRAFT OPERATIONS BY AAC/ADG/WEIGHT, RUNWAY END, AND PLANNING YEAR

Year/AAC/ADG	Runway 1	Runway 19	Runway 8	Runway 26	Total
2020; A&B-I Small	9,153	20,050	10,461	3,923	43,586
2020; A&B-II Small	367	698	588	184	1837
2020; A&B-II Large	7	14	12	4	37
2020; C&D-II Large	9	24	4	3	40
2020 Total	**9,537**	**20,786**	**11,064**	**4,113**	**45,500**
2025; A&B-I Small	9,245	20,250	10,565	3,962	44,022
2025; A&B-II Small	366	695	586	183	1,830
2025; A&B-II Large	13	24	20	6	63
2025; C&D-II Large	9	25	4	3	41
2025 Total	***9,633***	***20,995***	***11,175***	***4,154***	***45,956***
2030; A&B-I Small	9,943	21,780	11,364	4,261	47,348
2030; A&B-II Small	627	1,190	1,002	313	3133
2030; A&B-II Large	31	59	49	15	154
2030; C&D-II Large	24	63	9	7	104
2030 Total	**10,624**	**23,093**	**12,425**	**4,597**	**50,739**
2040; A&B-I Small	11,984	26,251	13,696	5,136	57,067
2040; A&B-II Small	855	1,625	1,368	428	4,276
2040; A&B-II Large	69	131	110	34	344
2040; C&D-II Large	38	100	15	11	164
2040 Total	**12,946**	**28,106**	**15,189**	**5,610**	**61,851**

3.8. SUMMARY

Aviation factors such as based aircraft and operations are strong at the Richland Airport. The area is also characterized by economic growth that surpasses that of the state of Washington and the Pacific Northwest Region. Growth is expected to continue in the Tri-Cities area and specifically in Richland and at the Airport. The Port would like to see growth and advancement of the airfield over the new few years. The current situation with the 2020 novel coronavirus pandemic is something to pay attention to, but long-term growth looks strong.

Strong growth is expected in for the Richland Airport and the Tri-Cities area in general. However, understanding the affects that the current coronavirus (COVID-19) pandemic will have on the national and local economy and also airport operations will be key as future plans are developed. Thus, as meaningful data and economic models concerning these affects become available and verified, this forecast will be updated accordingly via future addendum documentation.

Here are highlights from the forecasting effort:

- Fuel Sales
  - Increased from 27,000 gal to 102,000 gal in the last 6 years
  - Projected to increase 283% over the next 20 years
- Based Aircraft
  - Current count: 130
  - 20-year projection: 205
- Operations
  - Current estimate: 45,500
  - 20-year projected estimate: 61,851
- Current Design Aircraft Group
  - A-11 Small Groups
  - Cessna 441 Conquest, Beechcraft KingAir 90/100, Pilatus PC-12
- Ultimate Design Aircraft Group
  - B-II/Group 2
  - Beechcraft KingAir 300/350 series and Cessna’s Citation CJ2, II, and V

CHAPTER 4 FACILITY REQUIREMENTS

Based on the future aviation activity levels established in Chapter 3, the ability of existing facilities to satisfy this demand is evaluated herein and deficiencies identified to determine the airport improvement needs throughout the 20-year planning period. This chapter examines impacts to the airport due to the forecasts of aviation demand, focusing on three distinct elements:

- Airport Role and Service Level
- Airside Requirements
- Landside Requirements

Any shortfalls in the ability to serve existing and future demand are highlighted, and recommendations will be made regarding physical improvements or administrative modifications that might need to be corrected.

4.1 AIRPORT ROLE AND SERVICE LEVEL

The Richland Airport is currently classified in the FAA's National Plan of Integrated Airport Systems (NPIAS) and functions as a general aviation facility within the nation's system of airports. Richland is currently classified in the State of Washington's Aviation System Plan as a Regional Service General Aviation airport within the state system of airports. No change in role over the 20-year planning period is expected or planned by either.

For purposes of this narrative, a Regional Service General Aviation airport accommodates mostly small and large aircraft with approach speeds limited to 121 knots or A and B category speeds. The Forecasting for this project shows that the Richland Airport expects to see adequate numbers of B-II operations (500+) over the planning period. The airport staff and users anticipate reaching those numbers earlier than the forecast suggests. The role of the Richland Airport and the service it provides show important reasons to plan, protect, and build for larger and faster aircraft to use and be based here.

It should be noted, the mix of aircraft using the Richland airport is shifting to more operations of larger and faster aircraft. This has been true even in 2020 despite the coronavirus pandemic.

4.1.1 DESIGN STANDARDS

FAA guidance notes that the most demanding aircraft or group of aircraft with similar characteristics that use the airport on a regular basis, conducting at least 500 annual takeoffs and landings, is termed the critical/design aircraft. This aircraft/group determines design standards such as runway width, pavement strength and runway to taxiway separation criteria. Previous chapters of this narrative established that the airport should be designed to comply with specific standards. The Richland Airport has two runway systems. Runway 1/19, Taxiway A and connecting taxiways, along with Runway 8/26, Taxiway B and connecting taxiways. Both systems have the same design aircraft and the same design standards.

The critical/design aircraft within the short (0-5 years hence), intermediate (5-10 years hence), and most of the long-term (10-20 years hence) development periods are characterized by the various aircraft which have:

- Approach speeds not exceeding 121 knots, or up to Category B aircraft;
- Wingspans not exceeding 79 feet, or up to Group II;
- Maximum certificated weights not exceeding 30,000 SWG pounds; and,
- Undercarriage design within TDG-1B limits.

The types of aircraft in this classification, and those that visit the Richland Airport include single-engine personal, business, and recreational aircraft such as the Pilatus, King Air, Citation, Beechcraft, Cessna, and Cirrus Models, along with most helicopters and ultralight and light-sport aircraft.

Note that not all parts of the Airfield require design based upon this aircraft grouping. For example, T-hangar design or construction for smaller general aviation aircraft could be made for smaller aircraft wingspans, given that many T-hangar doors are narrower than 49 feet (Group I).

The following design standards are identified for these portions of the Airfield within the short and intermediate-term along with most of the long-term planning period:

- Runway 1/19 and 8/26; A-II (Small), 30,000 pounds or greater pavement strength;
- Taxiway A and B and Connectors: Group II, TDG-1B, 30,000 pounds or greater pavement strength;
- Main Apron: Group II, TDG-1B (Portions TDG-1A), 30,000 pounds or greater pavement strength; and
- Other Portions of Apron, Taxiways, and Taxilanes: Maintain Group II separations where feasible, TDG-1B, 30,000-pound or greater pavement strength.

4.1.2 LONG-TERM/ULTIMATE DESIGN STANDARDS

The previous chapter makes clear that the long-term forecast fleet mix supports B-II (Large) airport design standards as opposed to the A-II (Small) design standards. Again, both runway systems have the same ultimate design aircraft and the same ultimate design standards.

The types of aircraft in this classification include twin and single-engine personal, business, and recreational aircraft such as Pilatus, Beechcraft and Cessna models turbo-prop and jet types.

The following design standards are identified for these portions of the Airfield for the long-term planning period:

- Runway 1/19 and 8/26: B-II (Large), 30,000 pounds or greater pavement strength;
- Taxiway A and B and Connectors: Group II (Large), TDG-1B, Up to 30,000 pounds or greater pavement strength;
- Apron, Other Taxiways and Taxilanes: Group II, TDG-1A (Portions TDG-1B), Up to 30,000 pounds or greater pavement strength.

Note that airfield improvements for these more demanding standards are not justified by the *current* fleet mix identified in the Forecast of Aviation Demand and are not yet strictly eligible for federal grant-in-aid.

4.2 AIRSIDE RECOMMENDATIONS

A review of the airfield requirements generated from the FAA Design Standards above includes an analysis of wind data, instrument approach capability, navigable airspace, runway, taxiway and apron dimensions, pavement strengths and airfield design standards. Landing and navigational aids are also discussed. Further analysis of alternatives to achieve these airfield requirements will be addressed in the next chapter in the context of alternatives.

4.2.1 WIND ANALYSIS

FAA details the objectives of a wind analysis noting that the desirable wind coverage is 95 percent. That is, a runway, or runways, at a given alignment(s) should have a crosswind component less than a given threshold 95 percent of the time to meet FAA standards.

The inventory portion of this narrative notes that the wind record created from the closest location with a 10-year wind record is at the Airfield. Three wind roses were created as applicable to both runways at the Richland Airport, along with a combined condition:

- All-Weather (all cloud ceiling heights and all visibilities),
- VFR (occurrence of cloud ceiling heights greater than 1,000 feet above ground level and visibilities greater than three statute miles visibility), and
- IFR (occurrence of cloud ceiling heights less than 1,000 feet but greater than 200 feet above ground level and visibilities less than three statute miles but greater than one-half mile).

Five years of local wind data as it applies to Runway 1/19 or Runway 8/26 yields the following conditions. Note that Runway 8/26 technically has non-standard wind conditions:

- 1/19 All-Weather: 10.5 knots (96.05 percent)
- 1/19 VFR: 10.5 knots (95.97 percent)
- 8/26 All-Weather: 10.5 knots (92.26 percent)
- 8/26 VFR: 10.5 knots (91.67 percent)

Because 10 years' worth of wind record is necessary to determine adequacy in this regard, the next closest recording station at the Tri-Cities Airport (PSC) was inventoried in the same manner with the same RLD runway alignments producing the following results:

- 1/19 All-Weather: 10.5 knots (97.38 percent)
- 1/19 VFR: 10.5 knots (97.41 percent)
- 8/26 All-Weather: 10.5 knots (93.36 percent)
- 8/26 VFR: 10.5 knots (93.07 percent)

The above indicates that Runway 1/19 alone can meet the wind standard. However, given the marginal exception that the RLD wind data shows, it is reasonable to consider that if 10 years' worth of data were available, the values could be different. Local conditions support continued use of Runway 8/26. Disposition of this condition is left to the next chapter.

4.2.2 INSTRUMENT APPROACH CAPABILITY

Instrument approach capability is defined based upon the ability of the airport's navigational equipment and/or GPS technology to safely accommodate aircraft operations during periods of inclement weather. FAA categorizes three types of instrument approach capability: precision, non-precision and visual. A runway end with precision instrument approach capability is equipped with either ground-based navigational equipment or satellite-based technology that provides vertical and horizontal guidance to a runway end. A runway end with non-precision instrument approach capability is equipped with either ground-based navigational equipment or satellite-based technology that provides only horizontal guidance to a runway end. Horizontal guidance allows the aircraft to be piloted in poorer weather conditions, and horizontal and vertical guidance allows the aircraft to be piloted in poorer conditions still. A runway end with visual instrument approach capability is equipped with no navigation technology and requires relatively clear weather for aircraft operation. The Richland Airport currently has non-precision instrument approach and visual approach capability.

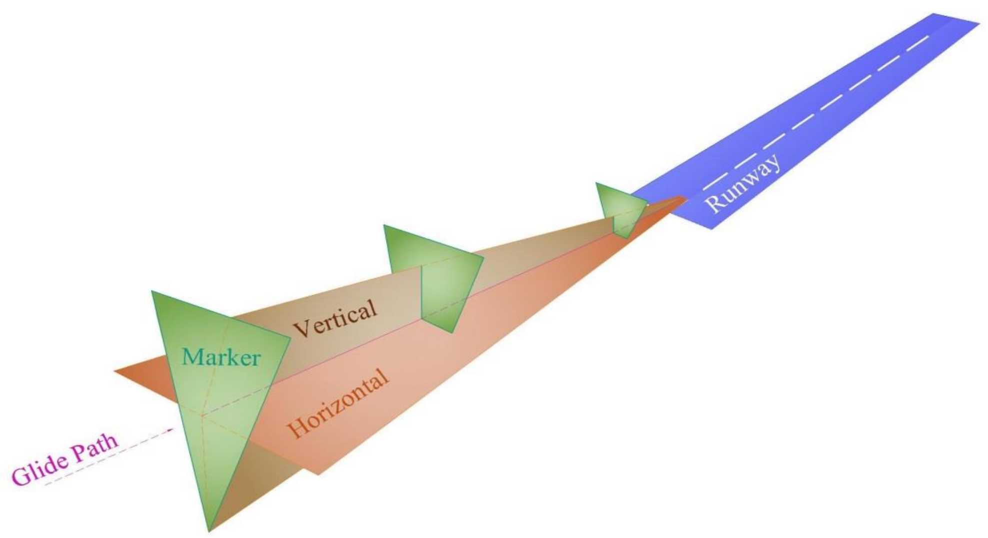
4.2.2.1 ILS-Based Navigation

The traditional equipment that provides precision instrument approach capability is an Instrument Landing System (ILS). This system generally consists of a glideslope, a localizer, along with an approach lighting system. The glideslope emits a radio signal which allows an aircraft to follow a pre-specified vertical path to a runway end, and a localizer emits a radio signal that allows an aircraft to follow a specific horizontal path to a runway end, as visualized in **Figure 4.1**. An approach lighting system allows close-in visual guidance for day and night. An ILS can provide the precision instrument approach capability necessary for safe aircraft operation during periods of inclement weather.

Weather, in this regard, comes in two measures, (1) local visibility in statute miles and (2) substantial height of a cloud ceiling above airport elevation.

These two measures are termed 'minimums'. An ILS, for purposes herein, allows a properly equipped aircraft, a properly certified pilot and properly equipped airfield to safely navigate to a runway end, avoiding obstacles. The path along which the aircraft follows, and instructions thereto is termed an instrument approach procedure (IAP). An IAP can be based upon or written for ILS equipment or GPS technology. While traditional navigation systems may remain in place for most airports depending on each airport's need, FAA has transitioned to a GPS-based National Airspace System. The Richland Airport should expect that any instrument approach airspace will be made via GPS Technology.

FIGURE 4.1
TRADITIONAL ILS APPROACH VISUALIZATION



Source: FAA/J-U-B

4.2.2.2 GPS-Based Navigation

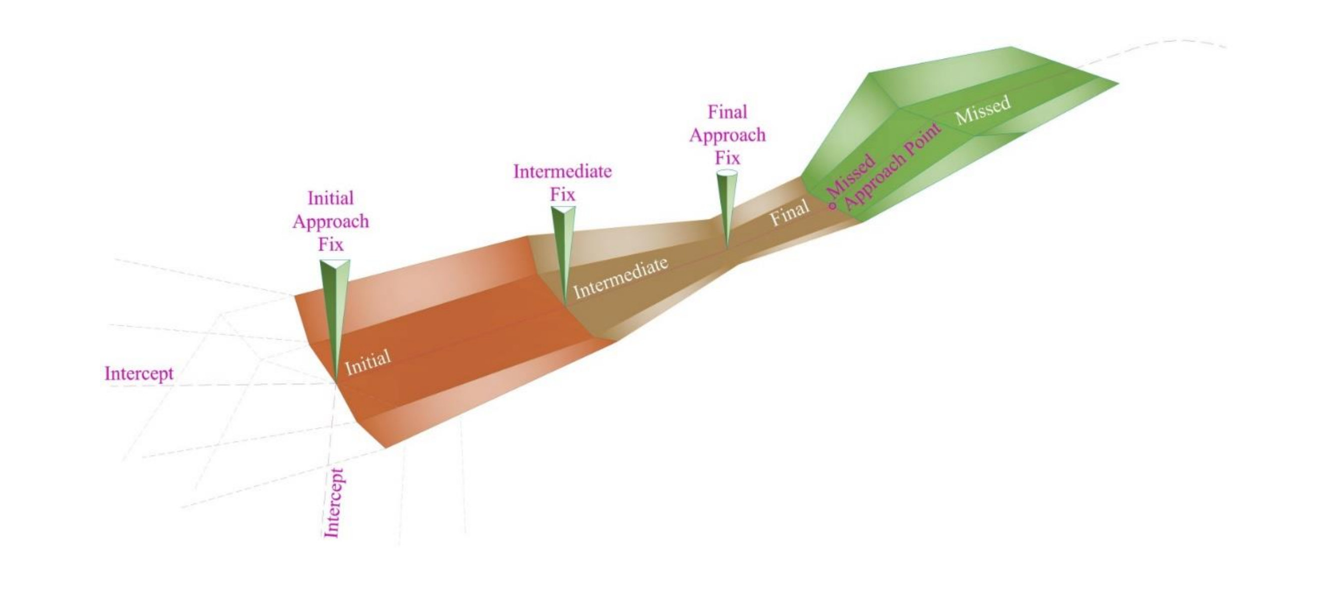
FAA has participated in establishing the Wide Area Augmentation System (WAAS) program for aviation, using regionally corrected satellite signals from the Global Navigation Satellite System (GNSS; more commonly known as GPS). Precision instrument approach procedures with ILS-type minima are employed at select airports across the country and do not necessitate ground-based navigational equipment.

GPS-based IAPs are now formally termed RNAV (aRea NAVigation) Approaches. These approaches are built based upon newer aviation terminology: waypoints, segments, fixes and points. These combine to create a path in the space above and surrounding the airport which the pilot must follow to ensure a safe landing.

A series of geometric shapes serve to protect the aircraft operating via the procedure. **Figure 4.2** depicts these typical surfaces and their dimensions as prescribed in FAA Order 8260.3B *US Terminal Instrument Approach Procedures* (*TERPS)*, and related orders. The elevation of these surfaces and the course upon which they are based is produced by the controlling obstacle height. The controlling obstacle is the tallest object which penetrates any of the surfaces. Generally, the higher the controlling obstacle, the higher the cloud ceiling minima.

In order to maximize the utility of the airport for the flying public, the Port could seek an improved instrument approach procedure to either runway end. This procedure will be based upon the controlling obstacle and FAA will assign minima for the IAP.

FIGURE 4.2
GPS APPROACH VISUALIZATION



Source: FAA/J-U-B

4.2.2.3 RNAV Approach Procedure Design Criteria

FAA has requirements prerequisite to IAP improvement for IAPs based upon GPS technology, including application of the appropriate airport design standards, airfield survey and identification and potential mitigation of area obstructions to navigable airspace. Once appropriate design standards have been implemented, survey completed and select obstructions mitigated, FAA could proceed to IAP creation. FAA has established airport and airspace design guidelines for new RNAV IAPs. Publication of all RNAV procedures is subject to compliance with various design criteria associated with the desired minima and approach capability. FAA guidance identifies the best-case minima requirements for new Non-Precision RNAV IAPs, with visibilities greater than 1 statute mile, as found within **Table 4.1.**

An IAP with improved or higher minima may be desirable and will be explored in depth in the upcoming chapter. An improved IAP to either or both runway ends more clearly indicates to aviation businesses and the flying public that the Richland Airport is ready to accommodate business and the aviation user in a more all-weather environment, thereby making the Richland Airport more reliable and open for business during periods of inclement weather.

Note that the Lineage Logistics Building, formerly Henningsen Cold Storage, located off the southeast end of Runway 19 is within future dimensional separation and is a governing obstacle when the FAA sets IAPs and minima.

Description of each of the items found in the table follows:

- **Height Above Touchdown (HAT)** is a calculation that is generally made to consider the desired cloud ceiling minima. HAT is the height of the Minimum Descent Altitude (MDA) above the highest elevation within the runway end environment. Minimum Descent Altitude is an altitude prescribed by an approach procedure below which a pilot should not descend unless able to visualize the airfield environment during inclement weather on a given glide path. Generally, a glide path angle greater than three degrees will increase the HAT and the cloud ceiling minimum established for a given approach.
- Although a complete analysis of ***TERPS*** surfaces for future or ultimate airfield configurations is beyond the scope of this planning, FAA has identified specific guidance for inclusion into FAA AC 150/5300-13A, *Airport Design*. Guidance therein relates to glideslope and visual 20:1 surfaces. These surfaces emanate from the end of each runway and protect its final approach.
- **Runways ends** should be marked non-precision with aiming points. Non-precision runway pavement markings include the runway designation, centerline, threshold marking and aiming point.
- Connector taxiways should have **hold lines and airfield signage** located a minimum of 240 feet from runway centerline. Medium-intensity runway lighting is recommended to accompany the runway, along with a full-parallel taxiway for Runway 19 and 26 Ends.
- Compliance with **≥¾-mile design standards** should be maintained (select standards are identified in **Table 4.1**).
- FAA guidance prescribes **vertical and/or non-vertical survey instructions** for airfield and obstacle location based upon TERPS airspace surfaces and potential obstructions for a proposed approach procedure.

TABLE 4.1
RNAV INSTRUMENT APPROACH PROCEDURE STANDARDS PER RUNWAY END

Standard/Specification	Runway 19 and 26 Ends	Runway 1 and 8 Ends
Height Above Touchdown (HAT)	≥250 Feet	≥250 Feet
TERPS GQS/Visual Surfaces	Clear/Night Lighted	Clear/Night Lighted
Airport Layout Plan	Approved	Approved
Minimum Runway Length	3,200 Feet	3,200 Feet
Runway Markings	Non-Precision	Non-Precision
Holdlines/Signage from Runway Centerline	240’	240’
Runway Edge Lighting	Medium Intensity	Medium Intensity
Parallel Taxiway	Full-Parallel	Recommended
Approach Lighting	Required	Recommended
Airfield Design Standards	≥3/4 Mile	≥3/4 Mile
Threshold Siting Criteria (Table 3-2 in Airport Design AC 150/5300)	20:1 Clear, Rows 1-4	20:1 Clear, Rows 1-4
Approach Survey	Completed	Completed

Source: FAA/J-U-B

4.2.3 RUNWAY LENGTH

Runway length requirements can be determined based on guidance in FAA Advisory Circular 150/5325-4B. For projects receiving federal funding use of the advisory circular is mandatory. Per the advisory circular, the recommended runway length is a function of a number of variables including airport elevation (noted in feet above mean sea level), mean maximum temperature of the hottest month, (degrees Fahrenheit), aircraft weight (in pounds, maximum certificated takeoff weight), number of passenger seats, aircraft engine performance, wet/dry condition of the runway and the maximum difference in runway elevation on centerline. The required runway length for both runways, calculated using FAA's guidance was determined through the steps identified below.

The existing and future critical aircraft, typified by the Cessna 172/206 and the Pilatus PC-12/Cessna Citation, respectively were approved by FAA in the Forecasts of Aviation Demand. Following Advisory Circular 150/5325-4B, the recommended runway length using the critical design airplane/airplane family is as follows:

Step #1: Records of instrument aircraft operations by type from recent years reveal several types that frequent the airport:

- Cessna 414, 340
- Cessna 206, 201
- Cirrus SR-20
- Pilatus PC-12

Note these aircraft are all generally small (less than or equal to 12,500 maximum gross certificated weight).

Step #2: Of those above, the aircraft that requires the longest take-off run is the Cessna 414 with a maximum gross certificated take-off weight of 6,750 pounds with less than 10 passenger seats.

Step #3: Based upon this information, FAA guidance specifies use of the performance chart found as **Figure 2-1** within Advisory Circular 150-5324-4B for Small Aircraft with Fewer than 10 Passenger Seats.

Step #4: The final step to determine the required runway length is to follow that chart and arrive at a runway length. The mean maximum temperature of the hottest month (July) in Richland, WA, as reported by the Western Regional Climate Center (WRCC), is 90.5° Fahrenheit and the airport elevation of 394.4 feet are necessary to determine the length.

Runway Length in the Short-Term

The recommended runway length based on the critical aircraft at the Richland Airport is approximately **3,800 feet** at the 100 percent of the small fleet value. Runway 1/19's existing runway length is 4,009 feet, and Runway 8/26's length is 4,001 feet. Anecdotally, a 5,000-foot runway length may be a minimum threshold for some business aircraft operators due to insurance requirements. While this requirement has not been verified, the Richland Airport Management has received inquiries and operations have been turned away as a consequence of inadequate runway length for that specific aircraft.

4.2.3.1 Runway Length in the Long-Term

Near the end of the long-term and beyond the design/critical aircraft is planned to change to B-II Large. This classification shifts the runway length analysis to a different series of performance charts, with a similar design methodology.

FAA guidance on this subject specific to general aviation airports for the long-term/ultimate planning period notes; "Ideally, sponsors would be able to accommodate all of the recommended runway length for the design airplane that meets the regular use definition. Yet, runway length also is dependent on the availability of land, funds and environmental concerns which will be looked at in the alternatives chapter.

FAA recommends use of aircraft-specific performance chart adherence with design inputs/assumptions for funds eligibility, specifically:

1. Mean Maximum Temperature of Hottest Month of 90.5°F,
2. Field Elevation of 394.4' MSL,
3. Maximum Take-off Weight,
4. Flaps setting that produces the shortest runway length.
5. Zero wind, plus,
6. An adjustment for runway slope.

The following aircraft types currently frequent the airport, and at the long-term point in the planning these aircraft are expected to constitute the critical/design aircraft for runway length calculation purposes. Airplane Flight Manual information was consulted to determine the required runway take-off length for these aircraft at the above field conditions:

Aircraft Type	Runway Length
Pilatus PC-12	3,434 Feet
Lear Jet 45	6,407 Feet
Cessna Citation CJ3	3,670 Feet
Cessna Citation CJ4	4,003 Feet
Length:	**5,000 Feet**

This length will be carried forward as a minimum runway length within Chapter 5 with longer lengths for long-term, Alternatives Analysis. Note that substantiation of 500 runway-length demanding aircraft operations will be necessary as the long-term planning period approaches.

4.2.4 RUNWAY DESIGN STANDARDS

Select airfield design standards are found in **Table 4.2.** The Forecasts of Aviation Demand indicate A-II (Small) aircraft operational activity at the Richland Airport now and throughout the short- and intermediate-term planning periods. The “On-The-Ground” column describes the conditions that exist at the airport today.

It is worth noting that these standards are generally intended as minimum; that is, it is permissible to exceed a given standard width or dimension. Not all items exceeding standards may be eligible for FAA funding.

In order to aid day and night visual and non-precision operation a Visual Glideslope Indicating System (VGSI), or Precision Approach Path Indicator (PAPIs) System should be maintained for the future. These units require demonstration of a clear 33:1 siting surface to a runway end. 2-light PAPIs are installed to guide pilots on all approaches except to the Runway 26 end. The 4-light system should be installed at the next life-cycle interval. The Runway 26 End runway end is equipped with a Visual Approach Slope Indicator (VASI) System. This system will likely be phased out and replaced with a 4-light PAPI. This VASI is FAA-owned.

Runway 1 and 19 Runway End Identifier Indicator Lighting (REILs) units will need replacement within the 20-years term of this planning. Both PAPI and REIL units are adequate for the planning period and should be relocated with any runway extension. Similarly, the Medium Intensity Runway Edge Lighting System (MIRL) should be extended. The medium-intensity of the system is adequate for the planning period and may need refurbishment in the long-term.

The FAA-owned Runway 8 Omni-Directional Approach Lighting (ODALs) System has been decommissioned by the FAA and will be removed. The Runway 19 Medium Intensity Approach Lighting System (MALS) should be maintained. The MALS will need refurbishment prior to the end of the planning period.

The current published runway strength is adequate for the fleet mix frequenting the Airfield. Occasional rehabilitation will be necessary. Rehabilitation in this context relates to a rejuvenating seal coat and crack seal. This should occur at regular intervals to maximize pavement life cycle.

Care should be taken to keep both the 500 and 1,000-foot critical area for the Automated Weather Observing System (AWOS) clear of trees or other objects which could interfere, per FAA siting guidance, with accurate reporting for the wind sensor. More on this equipment and its siting is defined and described in the upcoming chapter.

More detail on existing non-standards conditions are described in Chapter 2, Inventory. Disposition of these conditions is addressed in Chapter 5.

TABLE 4.2 SELECT AIRPORT DESIGN STANDARDS			
Standards for Runway Ends	**On-The-Ground Existing Conditions**	**Short and Intermediate-Term (A–II Small, Non-Precision)**	**Long-Term (B–II Large, Non-Precision)**
Runway Width	75’	75’	75’
Effective Runway Longitude Grade	±2% Max.	±2% Max.	±2% Max.
Runway Pavement Strength (lbs)	30,000 SWG	30,000 SWG	30,000 SWG
Runway Protection Zones ends 19 and 26 - IW/ OW/ L	1,000’x1,510’x1,700’	1,000’x1,510’x1,700’	1,000’x1,510’x1,700’
Runway Protection Zones ends 1 and 8 - IW/ OW/ L	250’x450’x1,000’	250’x450’x1,000’	1,000’x1,510’x1,700’
Runway Safety Area Width/Beyond End	150’/300’	150’/300’	150’/300’
Runway Object Free Area Width/Beyond End	500’/300’	500’/300’	500’/300’
Taxiway Safety Area Width	79’	79’	79’
Taxiway/Taxilane Object Free Area Width	131’/115’	131’/115’	131’/115’
Runway to Parallel Taxiway	240’/300’	240’	240’
Runway to Holdline	200’	125’	200’
Runway to Aircraft Parking	>250’	250’	250’
Runway OFZ Width/Beyond End	400’/200’	400’/200’	400’/200’
Approach Surfaces (Runway 19 & 26)	Rows 1-4	Rows 1-4	Rows 1-4
Approach Surfaces (Runway 1 & 8)	Rows 1-2	Rows 1-2	Rows 1-2
Part 77 Primary Surface Width/Beyond End (Runway 19 & 26)	500’/200’	500’/200’	1,000’/200’
Part 77 Primary Surface Width/Beyond End (Runway 1 & 8)	500’/200’	500’/200’	500’/200’
Part 77 Approach Dimension (Runway 19 & 26 Ends)	500’x2,000’,5,000	500’x2,000’,5,000	1,000’x4,000’x10,000’
Part 77 Approach Dimension (Runway 1 & 8 Ends)	250’x1,250’x5,000’	250’x1,250’,5,000	500’x3,500’x10,000’
Source: *FAA/J-U-B AC 150/5300-13A, 2014, (Tables A7-3 and A7-4) pp. 271-272*			

4.2.5 TAXIWAYS

Parallel Taxiway A and B and their connectors serve as primary taxiway systems for the Richland Airport. These taxiways and their connectors exceed 35 feet in width. Runway 1/19 to Taxiway A has a 300-foot separation while Runway 8/26 to Taxiway B has a 240-foot separation. A full-length parallel taxiway to serve the primary runway is a fundamental item of development for airfield safety and efficiency. A full-parallel configuration should be maintained, Location and configuration is left to the next chapter.

FAA guidance provides general design guidance for planned taxiway improvements not limited to:

- Taxiways should be designed for *cockpit-over-centerline* taxiing, as opposed to the previously permitted *judgmental oversteer*.
- Taxiway intersection design should be made so that no steering angle exceeds 50 degrees.
- Taxiway intersection design should be such that no more than three turn options exist.
- Taxiway intersection angles should be at regular intervals.
- Taxiway design should be made to discourage runway incursions, increase pilot situational awareness, remove hot spots, limit runway crossings, increase pilot visibility and permit indirect access only to an apron or runway.

Short and Intermediate-Term A-II (Small) airfield design standards compliance indicates that any future parallel or connecting taxiways should be a minimum of 25 feet wide, with a minimum 30,000-pound single-wheel gear pavement strength. Any parallel taxiway centerline should be sited with a minimum separation from runway centerline of 240 feet in order to comply with current and future runway centerline to parallel taxiway centerline separation. Holdlines and signage now 200 feet perpendicular from runway centerline should remain.

Periodic rehabilitation of the taxiway system should be planned. Rehabilitation in this context relates to a rejuvenating seal coat and crack seal. This should occur at regular intervals to maximize pavement life cycle. Other taxiways are important to the current airfield configuration. FAA specifies that the taxiway to taxiway centerline distances in a parallel configuration should be no less than 105 feet. A reconfiguration of the main and south aprons permits the opportunity to evaluate larger aircraft (and helicopter) parking area. The next chapter will consider this design in an alternative context.

FAA-established thresholds of operational demand with respect to holding bays (30 operations per hour) are, per the Forecasts of Aviation Demand, not reached in the long-term of this planning. Hold bays are situated near the end of runways.

4.2.6 NAVIGABLE AIRSPACE

Navigable airspace for purposes herein relates to 14 CFR Part 77 surfaces. Select surfaces are described in Chapter 2, Inventory and within **Table 4.2.**

While FAA does not have the statutory authority to regulate local land use, airport sponsors like the Port must adhere to grant assurances, which include #20 Hazard Removal and Mitigation and #21 Compatible Land Use. Airport sponsors that have accepted Federal funds are obligated under Federal grant assurances to take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations. WSDOT has promulgated advisory guidance to effect grant assurance compliance in this regard and Port and County code and comprehensive planning should continue to include language to that end.

An obstruction to navigable airspace is any object which penetrates a surface meaningful to aircraft operations. Not all obstructions are consequential to maintenance of compatible land use. For example, an obstruction that is properly lit and marked in compliance with FAA guidance is not necessarily considered incompatible.

A controlling obstacle and other obstructions to navigable airspace with proposed dispositions and other objects in the vicinity of the airport, for both the existing and future airfield are identified on the various drawings in upcoming chapters and appendices. **Figures 4.3** and **4.4** on the next two pages identify current obstructions to navigable airspace.

Compatible land use is and will always be a concern. The Port currently specifies that permitting is required for development proponents on or near the airport. Future applications for changes in land use or other sensitive development activities around the airport should continue to be received by the Port, potential incompatibilities should be sited/moved to avoid airspace conflicts, and multi-jurisdictional coordination should occur per the WSDOT guidance.

Washington State Code (RCW) specifies that a sponsor's effort to protect compatible land use is appropriate and should be considered within an overall comprehensive plan with assistance from WSDOT Aeronautics in the form of technical and general assistance and best practices handbook. WSDOT Aeronautics guidance focuses on height restriction, safety and noise mitigation to establish and maintain compatible land use in the airport vicinity.

Observations of **Figures 4.3** and **4.4** identify obstacles off the end of Runway 1 near West Richland's hillside, and ground around the airfield most likely due to blowing dust accumulation. The airport should develop a robust program of shoulder grading to maintain the ground adjacent to the runways below the Primary Surface.

The Airport currently has a robust compatible land use and airspace overlay with the City of Richland. This same language should be perfected with the City of West Richland and Benton County.

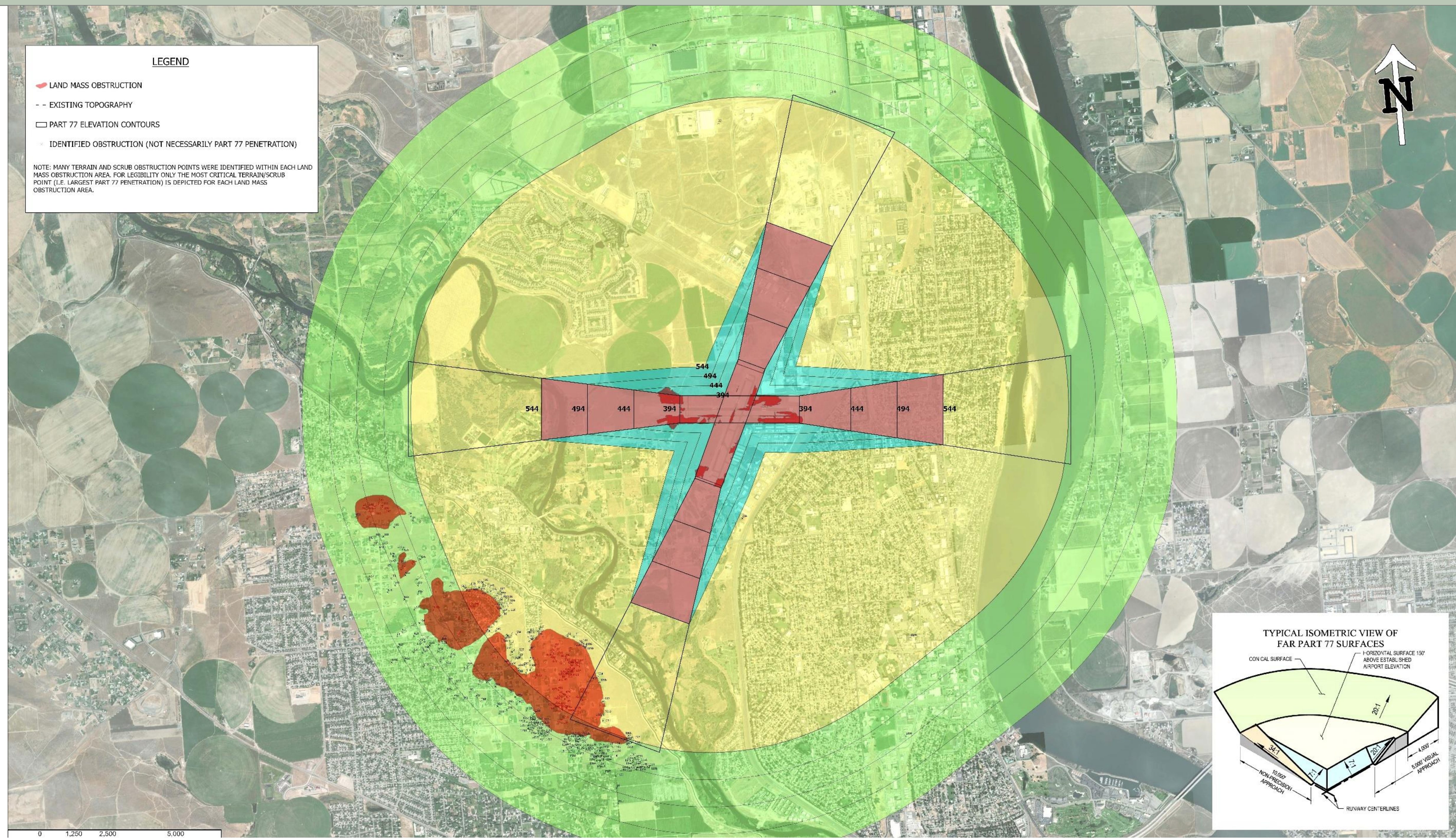
4.2.7 AIRSPACE CAPACITY

Airspace capacity for purposes herein relates to the ability of the airfield to accommodate the existing and forecast number of aviation operations.

FAA guidance specifies three measures in this regard, Annual Service Volume (ASV), hourly Visual Flight Rule (VFR) and Instrument Flight Rule (IFR) capacities. The first, ASV, is the overall ability of the Airport to accommodate a modeled number of aviation operations. This value is 230,000 for the Richland Airport in its current configuration. The VFR and IFR modeled values are 98 and 59 hourly aviation operations, respectively. FAA guidance as it applies to forecast the Richland Airport operational activity suggests no improvements as a consequence of these capacity guidelines.

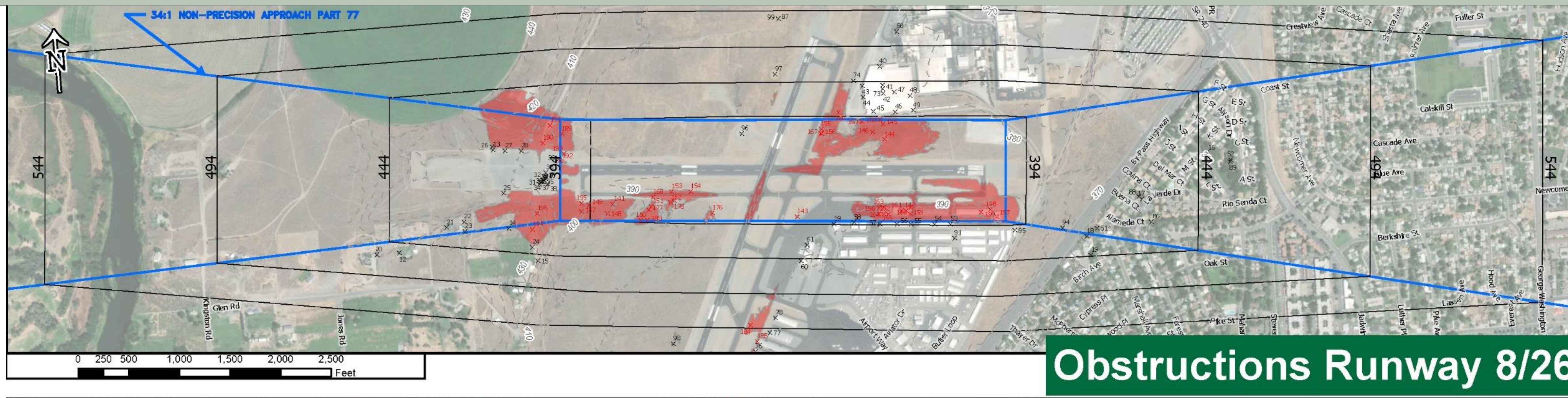
Given the community role the Richland Airport currently plays in the central Washington system of airports an air traffic control tower is not an improvement that FAA would likely recommend based upon its requisite cost-benefit analysis. Demonstration of a benefit as it relates to cost is a prerequisite for siting of a tower at the Richland Airport. Thus, the Airport will remain an uncontrolled Airfield. Therefore, the current airspace classification, per previous chapters, is unlikely to change.

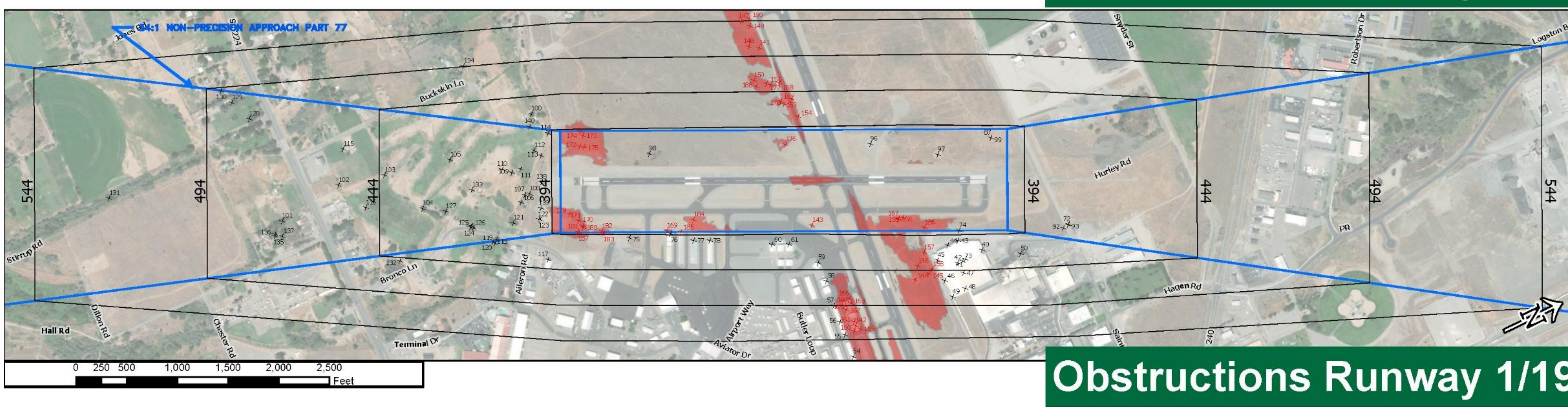
FIGURE 4.3
AIRSPACE OBSTRUCTIONS



Source: J-U-B

FIGURE 4.4
RUNWAY OBSTRUCTIONS





Source: J-U-B

FIGURE 4.5
OBSTRUCTION IDENTIFICATION

Point Number	Point Type	AGL	Penetration	Object Height	Airspace Surface Height	Easting	Northing	FAA Obstacle No.
1	TREE	68.7	55.5	599.8	544.3	1933712.39	348747.97	
2	TREE	75	53.5	597.8	544.3	1934042.54	348665.81	
3	CRANE	270.7	100.8	645.1	544.3	1942877.67	367686.62	
4	TREE	65.9	59.5	603.8	544.3	1933510.18	351136.93	
5	TREE	69	62	606.3	544.3	1933518.16	350657.94	
6	TREE	68.1	63.9	608.2	544.3	1933438.54	350746.93	
7	TREE	60.6	54.2	687.4	633.2	1931062.28	349102.34	
8	TREE	70.6	77.5	694.8	617.2	1931228.15	349477.79	
9	TREE	39.5	30.2	664.3	634.2	1929694.75	352742.27	
10	TREE	81.3	56.8	700	643.2	1929364.96	353183.43	
11	TREE	70.4	40.7	692.6	651.9	1929088.76	353479.07	
12	TREE	27.1	1.3	459.9	458.7	1938975.55	356603.97	
13	VERTICAL STRUCTURE	4.1	0.2	414.1	413.9	1939978.21	357548.69	
14	VERTICAL STRUCTURE	5.4	1.5	412.8	411.3	1940075.41	356761.16	
15	POLE	31.8	4.8	458.5	453.6	1940335.79	356419.63	53-022356
16	TREE	83.8	3.6	450.1	446.5	1947008.39	356964.38	
17	TREE	81.6	18.4	446	427.6	1946333.19	356561.2	53-025330
18	TREE	54.5	23.6	439.2	415.7	1945760.52	356235.96	
19	TREE	60.1	2	444.5	442.5	1945788.47	356047.85	
20	TREE	40.5	8.6	472	463.4	1938755.63	356605.89	
21	BUILDING	17.6	7.5	434.8	427.3	1939464.09	356817.39	
22	POLE	32.5	23.9	446.1	422.2	1939640.58	356862.99	
23	CATENARY	27.7	17.2	439.2	422	1939640.44	356766.26	
24	BUILDING	10.2	5.2	440.5	435.3	1940293.94	356555.87	
25	SCRUB	7.2	5.3	416.1	410.8	1940050.93	357111.8	
26	SCRUB	4.7	5.2	419.3	414.2	1939972.1	357579.8	
27	VERTICAL STRUCTURE	4.4	1.3	411.6	410.3	1940098.92	357529.2	
28	VERTICAL STRUCTURE	4.3	2.3	407.9	405.6	1940258.55	357516.52	
29	SCRUB	6.5	3.5	402.6	399.2	1940452.13	357194.17	
30	SCRUB	4.8	2.5	401	398.5	1940480.84	357238.36	
31	SCRUB	3.6	3	403.4	400.4	1940409.94	357170.91	
32	SCRUB	5.4	2.7	401.7	398.9	1940465.4	357243.41	
33	SCRUB	3.6	1.4	399.9	398.4	1940485.44	357283.18	
34	SCRUB	4.3	3.2	403.2	400	1940424.01	357196.13	
35	SCRUB	5.1	2.9	402.1	399.3	1940452.17	357215.26	
36	SCRUB	5.1	2.4	401.1	398.7	1940472.91	357222.38	
37	SCRUB	5.1	3.4	403	399.6	1940440.05	357194.7	
38	SCRUB	5.4	3.1	401.1	398	1940492.63	357172.72	
39	SCRUB	5.1	4.5	399.4	394.8	1940618.01	357404.68	
40	FLAGPOLE	58.9	25.6	441.9	416.4	1943850.67	358069.37	53-022358
41	BUILDING	50	3.7	433	429.3	1943866.94	357882.69	
42	BUILDING	50.9	5.3	432.2	426.9	1943867.25	357801.79	
43	BUILDING	22.9	7.3	409.8	402.5	1943666.35	357892.43	
44	BUILDING	29.7	7.2	416.1	408.9	1943666.81	357782.68	
45	BUILDING	29.1	10	411.3	401.2	1943758.34	357630.65	
46	BUILDING	28.3	9.3	410.3	401	1943971.2	357611.77	
47	BUILDING	49.5	3.1	432.3	429.2	1943976.14	357809.15	
48	BUILDING	48.4	7.5	431.3	423.8	1944127.92	357758.97	
49	BUILDING	28.9	7.8	410.9	403.1	1944148.76	357612.32	
50	BUILDING	41.9	0.4	423.6	423.2	1944047.35	358400.93	
51	TREE	46	10.8	425.5	414.6	1945868.97	356308.54	
52	TREE	98.4	7.5	460.9	453.4	1947236.18	356878.1	
53	BUILDING	17.7	15.1	408.7	393.6	1944428.71	356461.61	
54	BUILDING	17.7	14.8	408.6	393.8	1944272.09	356473.47	
55	BUILDING	19.1	15.9	409.9	393.9	1944039.37	356491.29	
56	BUILDING	19	15.9	409.8	393.9	1943904.04	356501.98	
57	BUILDING	19.4	15.9	409.9	393.9	1943732.63	356515.54	
58	BUILDING	23.8	22	413.7	391.7	1943479.65	356551.85	
59	BUILDING	23.8	18.5	412.3	393.8	1943282.71	356552.57	
60	BUILDING	22.6	4.1	412.5	408.4	1942929.04	356217.36	
61	BUILDING	22	3.7	412.3	408.6	1942997.5	356366.06	
62	TREE	67.3	57	601.3	544.3	1934409.05	348343.11	
63	TREE	44.2	43.8	633.3	589.5	1933065.85	347656.37	
64	TREE	47.8	47.5	643.3	595.8	1932761.94	347835.3	
65	TREE	62.3	57	665.9	608.9	1932462.18	347797.13	
66	TREE	57.9	49.3	663.7	614.3	1931951.09	348334.9	
67	TREE	70.5	54.4	673.1	618.7	1931520.02	348871.1	
68	TREE	41.7	34.7	648.8	614.1	1930052.29	352942.66	
69	TREE	36.7	32.7	666.8	634.2	1929731.21	352627.11	
70	TREE	73.4	41.1	691.7	650.6	1929203.89	353203.36	
71	TREE	44.1	41.3	714	672.7	1928428.29	354273.73	
72	POLE	35.9	6.9	413.5	406.6	1943984.3	358949.87	53-025324
73	BUILDING	0	1.7	432.9	431.2	1943867.17	357849.34	
74	VERTICAL STRUCTURE	6.7	4.9	393.3	388.4	1943582.06	357947.57	
75	TREE	16.3	2.3	401.5	399.2	1942274.69	354966.44	
76	BUILDING	16.8	14.7	407.4	392.6	1942409.53	355356.89	
77	BUILDING	15.4	3.4	405.7	402.3	1942566.97	355532.39	
78	BUILDING	14.7	3.5	405.6	402.1	1942633.12	355675.64	
79	TREE	24.1	22.6	566.9	544.3	1936972.15	346357.46	
80	TREE	64.4	39.3	624	584.8	1936687.66	344899.51	
81	TREE	87.1	52.9	637.6	584.7	1938212.02	344285.04	
82	TREE	87.7	48.7	629	580.4	1938508.84	344286.55	
83	TREE	29.6	27.3	571.6	544.3	1936406.85	348905.71	
84	TREE	39.3	38.5	622.3	583.9	1934674.32	346215.51	
85	TREE	63.7	42.7	647.6	604.9	1934137.87	346118.08	
86	TREE	0	1.6	432	430.4	1946409.48	356329.74	53-024102
87	TREE	0	18	407	389	1942889.48	358618.22	53-024118
88	TREE	0	11.3	438	426.7	1946303.74	356587.46	53-023985
89	TREE	0	2.7	456	453.3	1947231.19	356862.07	53-025331
90	TREE	0	64.4	689	624.6	1931118.82	349366.08	53-025337
91	POLE	28	6.8	420	413.2	1944455.65	356321.12	53-022367
92	POLE	29	4.8	410	405.2	1943996.67	358889.34	53-022335
93	TRANSMISSION_LINE	41	9.5	416	406.5	1943986.72	358943.89	53-022365
94	TREE	0	0.3	405	404.6	1945530.35	356336.53	53-062739
95	TREE	0	8.3	410	401.7	1945057.6	356350.57	53-062802
96	NAVAID	21.6	19.4	407.8	388.5	1942440	357513.59	53-022336
97	NAVAID	12.5	10.9	398.8	387.9	1942816.95	358072.28	
98	SCRUB	18.1	12.5	403	390.6	1941605.67	355497.53	
99	TREE	0	18	407	389	1942889.48	358618.22	53-024118
100	TREE	54.9	6.9	425.8	418.9	1940758.19	354606.72	53-025047
101	TREE	56	-45.9	426.3	472.2	1940677.42	351934.34	
102	TREE	38.8	-45.9	410	455.8	1940592	352587.64	
103	TREE	42.5	-28.4	414	442.5	1940691.49	353042.75	
104	TREE	42.1	-17.6	413.9	431.5	1941147.63	353242.42	
105	TREE	52.4	-0.8	422.6	423.4	1940828.35	353692.89	
106	TREE	29.6	0.6	403.5	402.9	1941506.37	354149.05	53-062961
107	TREE	27.4	-0.8	401.1	401.9	1941453.52	354211.57	
108	TREE	21	-2.9	397.6	400.5	1941462.19	354259.29	
109	TREE	25.9	-8.6	396.9	405.5	1941203.74	354190.52	
110	POLE	30.3	-9.5	398.9	408.4	1941130.58	354117.18	
111	POLE	28.7	-3.3	399.7	403	1941203.58	354283.48	
112	TREE	25.8	-2.8	396.3	399	1941095.93	354483.56	
113	TREE	23.7	-2.4	394.6	397	1941170.88	354523.88	
114	TREE	31	9.7	404.7	395	1940998.9	354679.51	53-025048
115	ANTENNA	41.4	-40.9	413.5	454.4	1940288.76	352780.84	53-022355
116	POLE	28.7	-48.1	399.9	448	1940903.91	352738.48	
117	BUILDING	24.8	-11.7	419.4	431.1	1942130.45	354153.02	53-022353
118	TREE	67	24.8	436.1	411.3	1941737.99	353737.16	
119	TREE	62.8	20.8	430.9	410.1	1941736.25	353772.74	
120	TREE	59.4	13.1	427.3	414.2	1941766.25	353746.07	
121	TREE	42.6	8.1	413.3	405.2	1941656.13	353993.31	53-025070
122	NAVAID	19.5	10.6	408	397.4	1941740.86	354247.52	
123	NAVAID	10.3	0.9	398.7	397.8	1941730.46	354237.05	
124	TREE	56.2	8.7	426.4	417.7	1941516.11	353590.88	
125	TREE	53.2	5.8	423.1	417.2	1941511.32	353610.39	
126	TREE	51.1	4.4	421.2	416.8	1941535.76	353616.09	
127	TREE	47.3	-8.1	416.8	424.8	1941271.94	353437.01	
128	TREE	73.7	-40.2	441.4	481.7	1939625.3	352065.15	
129	TREE	73.8	-43.5	443.1	486.7	1939409.26	351977.32	
130	TREE	75	-46.2	443.5	489.8	1939259.46	351930.64	
131	TREE	68.1	-94.3	428.2	522.4	1939752.4	350481.44	
132	TREE	0	-9.7	439	448.7	1941522.45	352821.03	53-023982
133	TREE	0	-13.2	404	417.2	1941190.18	353760.19	53-024301
134	TREE	0	-53	442	495.1	1940045.23	354204.9	53-025049
135	TREE	0	-2.2	472	474.2	1940782.07	351810.98	53-025050
136	TREE	0	-17.4	457	474.4	1940760.95	351814.71	53-025051
137	TREE	0	-9.2	463	472.2	1940812.75	351872.22	53-025069
138	NAVAID	4	-4	393	397	1941409.92	354413.89	53-022334
139	BUILDING	10	3.9	401	397.1	1941639.07	354304.9	53-022354
140	TREE	0	22.4	424	401.6	1940861.76	354538.33	53-062962
141	SCRUB	5.4	11.7	404.7	393	1941117.1	356921.17	
142	BUILDING	18.8	20.2	409.6	389.5	1944003.14	356627.02	
143	NATURAL HIGH POINT	0	0.1	389.5	389.5	1942925	356655	
144	NAVAID	18.8	19	408.5	389.5	1943842.27	357346.73	
145	SCRUB	2.7	7.3	396.8	389.5	1943840.86	357500.12	
146	SCRUB	5.4	8.1	397.5	389.5	1943730.05	357430.54	
147	SCRUB	4.7	10.3	404.5	394.3	1940804.51	356869.71	
148	SCRUB	3.7	11.6	404.9	393.3	1941059.99	356831.99	
149	SCRUB	6	10.1	404.2	394.1	1940881.01	356930.41	
150	NATURAL HIGH POINT	0	5.9	397.7	391.8	1941383.56	356738.18	
151	SCRUB	4.2	6	397.3	391.4	1941496.31	356868.36	
152	SCRUB	4.2	5	395.4	390.5	1941690.27	356890.35	
153	VERTICAL STRUCTURE	1.1	1.9	392.4	390.4	1941706.56	356997.5	
154	VERTICAL STRUCTURE	1	2.4	392.1	389.7	1941891.72	356982.71	
155	NATURAL HIGH POINT	0	3.3	390.7	387.4	1943233.14	357496.2	
156	NATURAL HIGH POINT	0	3.6	391.1	387.5	1943228.66	357450.76	
157	VERTICAL STRUCTURE	5.6	6.5	396	389.5	1943635.46	357539.11	
158	VERTICAL STRUCTURE	6.1	10	399.5	389.5	1943815.42	357541.54	
159	BUILDING	16	17.4	406.9	389.5	1944049.08	356655.87	
160	BUILDING	15.8	17.4	406.9	389.5	1944043.98	356590.72	
161	BUILDING	18.8	20.2	409.6	389.5	1943956.4	356630.99	
162	BUILDING	16.1	17.4	407	389.5	1943821.94	356608.7	
163	BUILDING	18.9	19.7	409.2	389.5	1943781.89	356676.39	
164	BUILDING	18.6	19.7	409.2	389.5	1943776.14	356612.23	
165	BUILDING	16.7	17.3	406.8	389.5	1943730.75	356615.73	
166	BUILDING	17	17.3	406.8	389.5	1943735.71	356679.96	
167	NATURAL HIGH POINT	0	3.6	391.1	387.4	1943225	357455	
168	VERTICAL STRUCTURE	1.1	1.1	392.4	391.3	1941517.25	356956.92	
169	BUILDING	14.5	14.6	404.8	390.2	1942368.23	355332.12	
170	SCRUB	5.4	10.6	402	391.4	1941970.04	354603.92	
171	SCRUB	5.9	10.1	401.6	391.5	1941911.07	354588.38	
172	SCRUB	4.4	18.1	409.6	391.5	1941248.27	354907.06	
173	SCRUB	5.9	20.9	412.4	391.4	1941165.04	354978.03	53-023984
174	NATURAL HIGH POINT	0	15.3	406.8	391.5	1941117.98	354970.97	
175	SCRUB	6.3	20.6	412.1	391.4	1941269.5	354946.54	53-024114
176	NATURAL HIGH POINT	0	2.3	391.8	389.5	1942091.22	356754.7	
177	SCRUB	3.5	6.9	398.4	391.5	1941467.93	356836.61	
178	SCRUB	4.7	4.9	395.3	390.4	1941721.34	356909.24	
179	SCRUB	4.7	9.6	401.1	391.5	1941809.51	354533.82	
180	SCRUB	5.9	11.4	402.9	391.4	1941989.8	354598.28	
181	NATURAL HIGH POINT	0	9.1	400.6	391.5	1942005	354535	
182	NATURAL HIGH POINT	0	3.8	395	391.2	1942100.14	354750.7	
183	NATURAL HIGH POINT	0	2	394.8	392.7	1942125	354754.99	
184	NATURAL HIGH POINT	0	1.6	391.4	389.8	1942381.14	355619.09	
185	BUILDING	12.1	12.2	402.3	390	1942433.57	355453.9	53-022337
186	NATURAL HIGH POINT	0	3	390.6	387.6	1943413.58	357650.78	
187	VEGETATION	0	9.5	401	391.5	1942009.78	354538.45	53-024302
188	VEGETATION	0	7.5	399	391.5	1941448.63	356733.38	53-025476
189	SCRUB	6.6	10	404.3	394.3	1940666.73	357651.33	
190	SCRUB	5.5	12.1	411.5	399.4	1940476.42	357575.65	
191	ELECTRICAL_SYSTEM	5	10.7	408	397.3	1940562.06	357746.24	53-022344
192	SCRUB	4.8	4.9	399.4	394.5	1940628.33	357390.33	
193	NATURAL HIGH POINT	0	0.6	394.9	394.3	1940675	357455	
194	SECONDARY ROAD	10	26.1	436.4	410.3	1940307.22	356730.33	
195	VEGETATION	0	37.7	432	394.3	1940810.58	356954.73	53-062902
196	TREE	0	26	427	401	1940365.78	356888.26	53-062960
197	BUILDING	20.4	22.7	410.8	388.1	1944889.56	356497.36	
198	BUILDING	16.3	18.1	406.2	388.1	1944833.49	356574.21	
199	BUILDING	18.5	20.4	408.6	388.3	1944738.7	356555.7	
200	COMMUNICATION TOWER	85.6	207.5	840	632.5	1929175.78	354599.13	53-023625
201	POLE	32.3	165.6	791.1	625.5	1929342.71	354507.32	
202	BUILDING	20.8	164.1	784.1	620	1929441.73	354569.65	
203	COMMUNICATION TOWER	76.2	192.6	828.4	635.9	1929149.07	354427.96	53-001325
204	COMMUNICATION TOWER	63.6	177.2	814.8	637.6	1929090.03	354525.68	
205	COMMUNICATION TOWER	56.2	175.1	808.9	633.8	1929149.61	354605.11	53-000235
206	COMMUNICATION TOWER	53	171.3	805.9	634.6	1929151.01	354522.83	53-001622
207	TREE	44.4	53.4	683.9	630.5	1929938.88	352214.22	
208	BUILDING	28.9	35.8	657.9	622.1	1929972.48	352663.09	
209	BUILDING	27.8	44	651.7	607.8	1930358.66	352394.88	
210	TREE	49.7	103.2	669.7	566.5	1932030.5	350149.49	
211	TREE	60.8	118	662.3	544.3	1932535.97	350662.79	
212	STEEPLE	65.7	104.4	688.7	584.3	1931863.55	349680.32	53-022370
213	TREE	53.3	109.5	653.8	544.3	1932448.39	350765.3	
214	TREE	39.9	102.4	647.6	545.2	1932309.02	350566.82	
215	TREE	56.2	110.2	679.8	569.6	1931921.07	350238.9	
216	TREE	64.5	90.1	634.4	544.3	1933307.24	349003.25	
217	TREE	69.9	127	671.3	544.3	1935544.79	347173.99	
218	TREE	55.3	141.5	685.8	544.3	1935460.94	348666.14	53-025280
219	TREE	43	130.8	675.1	544.3	1935493.79	348732.22	
220	TREE	50.2	137.2	681.5	544.3	1935377.84	348740.72	53-024103
221	TREE	68.6	126.3	670.6	544.3	1935544.67	347174.67	
222	TREE	71.6	123.1	667.4	544.3	1936156.85	347005.44	
223	BUILDING	38.3	117.9	662.2	544.3	1936145.04	348288.88	53-022372
224	TREE	69	120.8	665.1	544.3	1936150.03	347009.81	

Source: J-U-B

4.3 LANDSIDE RECOMMENDATIONS

Landside area requirements are generated based upon the Forecasts of Aviation Demand. These relate to apron/ramp aircraft parking and circulation area, terminal/FBO building and aircraft hangar area, aircraft fueling and fueling area, automobile access and parking area. Landside facilities are those portions of the airfield which are not directly related to the landing and take-off of aircraft but support it.

4.3.1 BASED AIRCRAFT APRON AREA

Based aircraft apron area is and will continue to be beneficial. Based aircraft parking area is foremost for aircraft rental, transient aircraft and charter activity. Also, a given aircraft owner may likely choose to hangar their aircraft due to personal choice and weather.

The Richland Airport's aprons aircraft parking area (including but not limited to based aircraft parking) approximates 9,181 square yards. Total apron area approximates 92,400 square yards. These areas currently accommodate 45 single-engine aircraft tie-downs, 1 larger aircraft tiedown, along with multiple marked and unmarked helicopter positions.

It is assumed that 95 percent of single-engine aircraft owners will wish to hangar their aircraft.

Table 4.3 shows recommendations for based aircraft apron using an FAA guideline of 960 square yards per each single-engine, and 1,385 for each multi-engine aircraft. The existing open areas can generally accommodate the next 20-year forecast.

TABLE 4.3
BASED AIRCRAFT APRON RECOMMENDATIONS

	2020	2025	2030	2040	Current
Forecast Single-Engine Based Aircraft	122	*119*	*136*	*181*	
Single-Engine Based Aircraft not Hangared	6	6	7	9	
Based Aircraft Apron (Single-Engine) (Sq. Yards)	5,760	5,760	6,720	8,640	
Forecast Multi-Engine, Jet, Helicopter Aircraft	8	12	16	24	
Multi-Engine Based Aircraft and Helicopter not Hangared	0	0	0	0	
Based Aircraft Apron (Multi-Engine/Helo) (Sq. Yards)	0	0	0	0	
Total Based Aircraft Apron Recommendations (Sq. Yards)	5,760	5,760	6,720	8,640	16,185

Source: FAA/J-U-B

4.3.2 ITINERANT AIRCRAFT APRON AREA

Area recommendations for itinerant aircraft activity are estimated differently, as described below and as shown in **Table 4.4**. Predicated upon the long-term Forecasts of Aviation Demand, approximately 28 percent of aircraft are expected to be in larger aircraft category, corresponding to the 1,385 square yard area standard, while 72 percent of aircraft are expected to be in small aircraft category, corresponding to the 960 square yard area standard. Note that the larger aircraft category includes multi-engine, jet and helicopter aircraft.

A basis for itinerant apron area required can then be calculated: 72 percent (for smaller aircraft) times 960 square yards per smaller aircraft plus the quantity of 28 percent (for larger aircraft) times 1,385 square yards per larger aircraft is equal to 1,079 square yards per aircraft {(960 x 72%)+(1,385 x 28%)=1,079}.

FAA guidance for estimating peaking activity originates via *Airport Design*. Peak day is defined as the average number of operations per day during the most active month. At the Richland Airport, the most active month normally accounts for approximately 10 percent of total annual operations. The following is assumed for the calculations in **Table 4.4** per FAA estimating guidelines: (1) Peak day itinerant activity constitutes 43 per cent of peak day operations, (2) half of these aircraft will require apron parking at some point during the peak day, and (3) approximately 75 percent of peak day transient aircraft are to be simultaneously accommodated.

For example, the year 2020 calculation is as follows: 152 peak day operations times 43 percent (peak day itinerant operations) equals 65, divided by 2 (for those that require parking area) is equal to 33. The product of 33 and 75 percent (aircraft that are expected to be simultaneously accommodated) is equal to 25, and 25 times 1,079 square yards per aircraft is equal to 26,446 square yards. Note that only the final number in this calculation sequence is not rounded. This calculated value does not include taxiway/taxilane clearance areas and much of the north and south aprons are obligated for uses other than tiedowns.

Itinerant helicopter parking area is considered. The Forecasts of Aviation Demand identify a couple of based helicopters in the future and anticipate continuing itinerant operations, within the existing apron areas.

TABLE 4.4
ITINERANT AIRCRAFT PARKING AREA RECOMMENDATIONS

	2020	2025	2030	2040	Current
Peak Day Operations	152	153	169	206	
Peak Day Itinerant Operations	65	66	73	89	
Itinerant Aircraft Positions Required	33	33	36	44	
Simultaneous Itinerant Aircraft	25	25	27	33	
Total Itinerant Parking Area Required (Sq. Yards)	26,446	26,620	29,404	35,842	43,200 51 Small 2 Large

Source: FAA/J-U-B

The primary issue for the Richland Airport is that while there is space available for itinerant aircraft there is very limited space that is adequate to accommodate larger aircraft types that are using the airport with more frequency. As mentioned above, the fleet mix using the Richland Airport is changing. Much of the apron is dedicated to tie-downs for small single engine aircraft. More apron space that accommodates movement and parking for multi-engine, turboprop, and jet aircraft is needed.

An additional consideration is the future development and enhancements for the Richland Airport. In particular, if the airport is able to achieve enhanced approach capabilities to runway 1/19 the primary runway protection surface will dictate that some of the existing apron be designated as movement area and disqualify a number of the current tie-down spots. Further analysis of runway enhancements is explored in the next chapter.

Typical overuse of small aircraft parking by larger aircraft

4.3.3 TERMINAL/FBO BUILDING AREA

A basic general aviation terminal/FBO building should ideally provide office space, a waiting room for pilots and passengers, an area for food and beverage vending, a public telephone and restrooms. Building area recommendations are shown in **Table 4.5**. FAA does not have current advisory guidance for general aviation area recommendations by use or in total, yet generalized recommendations remains valuable if considered in the context of FBO perspective and overall airport lease area needs.

Terminal/FBO area recommendations are a function of the anticipated number of peak hour operations and airport users. Peak hour operations are estimated at 15 percent of peak day operations from **Table 4.4.** Peak hour users are computed as 1.5 passengers per each local aircraft arrival and 2.5 passengers per itinerant arrival. The previous chapter identified a 70/30 percent mix of local/itinerant activity. Typical floor space requirements, expressed in square feet per user are as follows for general aviation terminal facilities:

- Waiting Lounge; 15 SF,
- Office Space; 3 SF,
- Public Conveniences; 1.5 SF,
- Concession and/or Vending; 5 SF,
- Storage, Circulation, HVAC; 24.5 SF.

The Richland Airport has a formal, dedicated pilot's lounge with public restrooms operated by the FBO, Sundance Aviation. Concessions in the form of a local restaurant exist adjacent to the pilot's lounge in the old tower building. FAA very rarely provides funding for terminal-related improvements at local general aviation airports like Richland. While the Richland Airport's square foot terminal area is adequate for purposes herein, expansion and refurbishment could be considered in the long-term, to encourage a more business-oriented operator.

TABLE 4.5
TERMINAL/FBO BUILDING RECOMMENDATIONS

	2020	2025	2030	2040	Existing
Peak Hour Operations	23	23	25	31	
Peak Hour Users	41	41	46	56	
Waiting Lounge	616	620	684	834	
Office Space	123	124	137	167	
Public Conveniences	62	62	68	83	
Vending/Concession	205	207	228	278	
Storage, Circulation, HVAC	1005	1012	1118	1363	
Total Terminal Building Area (Square Feet)	**2,011**	**2,025**	**2,235**	**2,725**	**3,000**

Source: FAA/J-U-B
Note: All number except for the area values are rounded

4.3.4 AIRCRAFT HANGAR AREA

It is presumed that more than 95 percent of future single-engine based aircraft desire hangar space given current owner preferences. This will be higher for multi-engine and jet aircraft. The Richland Airport currently accommodates multiple hangars with total area of approximately 400,000 square feet available in existing hangars as well as hangar lots not yet constructed.

±120,000 sq ft – 99 T-Hangars

±202,000 sq ft – 45 Box Hangars

±80,000 sq ft – reserved for additional Box and T-Hangars

Note: Additional aviation space is used by Life Flight, Sundance Aviation (FBO), Zero-Gravity.

Hangar area recommendations found within **Table 4.6** are based upon: 1,200 square feet for single-engine piston aircraft, 2,200 square feet for multi-engine piston and twin-turbo prop aircraft, 4,000 square feet for smaller jet aircraft, 12,000 square feet for larger jet aircraft, and 1,500 square feet for helicopters. The small/large jet aircraft category is created by estimating 80/20 segregation from the Forecasts of Aviation Demand for the Jet category. Jet Aircraft accounted for within **Table 4.3** are not included for analysis within **Table 4.6.**

Note that aircraft may be located in T-hangar units, in more conventional small box hangars, or collocated with other aircraft in a larger hangar. A single aircraft, perhaps only requiring 1,200 square feet, may be located in a 6,400 square foot hangar. It is not meaningful to infer from the table that a given quantity of future hangars units is recommended, only a minimum hangar area.

Current conditions at the Richland Airport indicate that existing hangar space is occupied at or near total capacity. Also, if the airport is able to achieve enhanced approach capabilities to Runway 1/19 the primary runway protection surface will dictate that some of the existing T-hangars will need to be removed. Reasonably, these will be replaced with other T-hangars and box hangars where space may be available, within intermediate phase 1 or 2025.

Additional hangar area will be required, for each of the 5-year period over the 20-year term, per the Forecasts of Aviation Demand and as demand to accommodate various aircraft types materializes.

Overall available hangar space seems adequate when evaluating total square footage. However, as discussed, configuration and individual use scenarios of the tenants results in continued demand for more hangar space at the Richland Airport. This will be especially true as more hangars are required for larger airplanes. Richland could see demand for an additional 10,000 sf in the 5-year planning term, 30,000 sf in the 10-year planning term, and more than 80,000 sf in the long-term planning period.

TABLE 4.6 ***HANGAR AREA RECOMMENDATIONS***					
Aircraft Type	**2020**	**2025**	**2030**	**2040**	**Current**
Single-Engine Based Aircraft	122	119	136	181	
-Single-Engine Hangar Area	146,400	142,800	163,200	217,200	
Multi-Engine/Twin Based Aircraft	4	6	8	12	
-Multi-Engine/Twin-Turbo Prop Hangar Area	8,800	13,200	17,600	26,400	
Jet (Small) Based Aircraft	2	3	4	5	
-Jet (Small) Hangar Area	8,000	12,000	16,000	20,000	
Jet (Large) Based Aircraft	0	0	0	0	
-Jet (Large) Hangar Area	0	0	0	0	
Helicopter/Other Based Aircraft	2	3	4	7	
-Helicopter/Other Hangar Area	3,000	4,500	6,000	10,500	
Total Hangar Area (SF) Recommended	**166,200**	**172,500**	**202,800**	**274,100**	**±400,000***

***Includes available hangar lots not yet constructed**

Source: FAA/J-U-B

4.3.5 AIRCRAFT FUELING

The current tank capacity of piston and turbine fuels roughly equates to a delivery every couple of weeks depending upon activity. Future operations because of the Forecasts of Aviation Demand, may suggest additional capacity as opposed to more frequent deliveries.

Turbine fuels are often dispensed from a fuel truck and additional capacity may be needed to meet future customer expectations.

4.3.6 SUPPORT FACILITIES AND INFRASTRUCTURE

As the airport is developed and improvements take place, extensions to existing utility systems should be considered. Future airport users, including individual aircraft owners and corporate interests, should to the extent reasonable be required to participate in the cost of extending utilities to their building, or could be charged a fee for system connection. The fee may be levied directly or through user fees and leases. Utility extensions should be maintained underground to the maximum extent feasible.

4.3.7 AUTOMOBILE PARKING AND ACCESS

Approximately 70 automobile parking spaces are near the terminal building. Although an expansive formal parking lot is not necessary, adequate space should be planned and protected, in accordance with **Table 4.7**. These recommendations are from older FAA guidance, Circular 150/5360-13(1), yet remain valuable if considered in the context of FBO perspective and overall airport auto parking needs. Formal automobile parking is not established for the main apron and planning thereto is left to the next chapter.

The recommended number of automobile parking spaces required is a function of peak hour users and tenant/employee demand. The peak hour user count was previously derived for the terminal building analysis. The number of tenants and employees at an airport like Richland is estimated to be one person per five based aircraft. A standard 35 square yards per automobile is used to complete **Table 4.7**. Note that this includes parking area only and not the access. Additional paved parking could be customer-service friendly.

4.3.8 SNOW REMOVAL AND AIRFIELD MAINTENANCE EQUIPMENT

Snow removal equipment (SRE) and airfield maintenance equipment are occasionally federally funded at local general aviation airports. An opportunity exists via a state surplus equipment program to acquire equipment dedicated to the Richland Airport. Such equipment might include: one plow, a dedicated mower and one or two multi-use vehicles (perhaps including sweeper, snowblower, front loader and backhoe attachments).

SRE buildings/facilities are eligible for federal funding and are operationally needed to protect and extend the useful life of equipment. These facilities may be co-located with FBO facilities or perhaps space could be made to service in an existing sponsor-owned hangar.

Additional SRE buildings and equipment will be identified in Chapter 6.

TABLE 4.7
AUTOMOBILE PARKING AREA RECOMMENDATIONS

	2020	2025	2030	2040	*Current*
Peak Hour Users	41	41	46	56	
Tenants/Employees	26	26	30	41	70
Automobile Parking Positions Required	67	68	76	97	
Total Automobile Parking Area (Square Yards)	**2346**	**2363**	**2661**	**3382**	**±7,000**

Source: FAA/J-U-B

4.4 SECURITY

General aviation security requirements do not currently specify access procedures. Aviation industry groups have endorsed various airport watch security programs to protect the airport and its aircraft from terrorist incidents. These programs focus on informal surveillance procedures and airport user monitoring of activities, not necessarily security-related capital improvements.

Occasional, formal airfield inspections are recommended. Such inspection procedures should be formalized, and airport emergency and security plans should be drafted as necessary.

The Transportation Security Administration (TSA) is charged with security at commercial service and general aviation airports. TSA has no requirements of the Port but has created recommendations based upon threat and the local and regional aviation environment.

Per TSA's 2004 Security Guidelines for General Aviation Airports, WSDOT recommends a medium security level and that the following actions be considered:

- Install strategically located security-related signage;
- Formalize and document security procedures;
- Established procedures to ensure all aircraft are secured;
- Formalize community watch program;
- Create security-related contact list;
- Formalize law enforcement support;
- Formalize a security committee;
- Formalize transient pilot sign-in/out procedures;
- Install access control infrastructure and formalize procedures;
- Formalize personnel identification system;
- Establish vehicle identification protocol for airfield access; and
- Establish and reinforce challenge procedures.

TSA and WSDOT stop short of recommending security-related fencing. TSA has worked extensively to ensure that a meaningful security apparatus is provided for the general aviation community while being responsive to its constituents. It would be appropriate to occasionally, perhaps every year, coordinate with TSA representatives. In the event of a threat or perhaps resulting from a commercial or general aviation incident, TSA may elect to regulate rather than recommend various security infrastructure or procedures.

A security plan addressing these, and other issues is recommended. Richland Airport has an approved Emergency Plan, Minimum Standards, and Rules and Regulations that address some of these recommendations.

4.5 EMERGING AERIAL TRANSPORT TECHNOLOGY

Advanced Air Mobility (AAM) and Urban Air Mobility (UAM) are technologically advanced transportation concepts that are expected to emerge on the market and in the airspace, in the time of the planning period for this study.

NASA's publication "Advancing Aerial Mobility: A National Blueprint (2020)," suggests that AAM/UAM systems could be fully operational by the year 2028 in many locations around the US.

NASA and the FAA are collaborating to support the needs for development of the AAM and UAM transportation market, and are specifically planning, designing, and testing this new technology.

Additionally, the FAA states that initially existing "helicopter infrastructure such as routes, helipads, and Air Traffic Control (ATC) services" will serve the aerial vehicles in this class of transportation, but that they will soon develop specific guidance for planning and designing a vertiport.

The Richland Airport should plan for needs that AAM and UAM transportation options could demand at the airport during the course of this planning period.

4.6 SUMMARY

A summary of improvements and actions in **Table 4.8** which begins below. Through the course of master planning consultations and public involvement, the Port has received feedback from users that the airport should be planned to maximize community economic development opportunities and be a safe and inviting facility.

Both Port staff and users agree that this airport planning should protect for the larger, faster and more expensive aircraft that sometimes use the airport, even if the critical mass of 500 annual aircraft operations has not yet been reached for eligibility purposes.

Previous planning and the prevailing view in this regard has aimed to protect for B-II category operations with a potential IAP to either end of runway 1/19. The larger, faster and more expensive aircraft often fit more nicely in the B-II grouping, as opposed to the B-I grouping and the lack of precision approach capability to either runway end may be artificially restricting demand at the Richland Airport.

The type of aircraft activity, current and future, found in the Forecasts of Demand does not make B-II design standards eligible for grant-in-aid funding from FAA until the near the end of the long-term period. Description, visuals, and cost estimates to meet B-II with a non-precision, straight-in instrument approach procedure to both runway ends is left to the next chapter where it can be considered in the larger alternatives context, as an ‘ultimate’ plan.

The alternatives will also consider the needs for additional apron and hangar space for both based aircraft and itinerant aircraft. As the Richland Airport continues to see a shift in the types of aircraft that use the airport, it is requisite to plan the landside development areas to accommodate larger and faster airplanes.

TABLE 4.8
SUMMARY OF RECOMMENDATIONS

Airport Role	Existing	Future		Ultimate	
Design Standards	A-II/TDG1A, Small, ≥3/4 Mile	A-II/TDG1A, Small, ≥3/4 Mile		B-II/TDG2, Large, ≥3/4 Mile	
Airside	**Existing**	**Future**		**Ultimate**	
Instrument Approach Capability (GPS Instrument Approach Procedure{s})				See Next Chapter	
Runway Length (1/19 / 8/26)	4,009'/4,001'	4,009'/4,001'		See Next Chapter	
Runway Width	75'	75'		75'	
Taxiway Width	25''	25'		35'	
Runway Protection Zones ends 19 and 26	1,000'x1,510'x1,700'	1,000'x1,510'x1,700'		1,000'x1,510'x1,700'	
Runway Protection Zones ends 1 and 8	250'x450'x1,000'	250'x450'x1,000'		1,000'x1,510'x1,700'	
Runway Safety Area	150' wide/300' ends	150' wide/300' ends		150' wide/300' ends	
Runway Object Free Area	500' wide/300' ends	500' wide/300' ends		500' wide/300' ends	
Runway Obstacle Free Zone	250' wide/200' ends	250' wide/200' ends		400' wide/200' ends	
Taxiway Safety Area Width	79'	79'		79'	
Taxiway/Taxilane OFA Width	131'/115'	131'/115'		131'/115'	
Runway to Taxiway A	240'	240'		240'	
Runway to Holdline	125'	125'		200'	
Runway Aircraft Parking	>250'	250'		250'	
Airside	**Existing**	**Future**		**Ultimate**	
Runway and Taxiway Pavements	Occasional Rehabilitation				
Runway Lighting (MIRL, PAPI, REIL)	PAPIs/REILs, MIRL Rehabilitation				
Navigable Airspace	Clear/Mitigate Obstructions				
Landside	**Existing**	**2020**	**2025**	**2030**	**2040**
Based Aircraft Apron Area (SY)	±10,000	5,760	5,760	6,720	8,640
Recommended Additional Area (SY)		0	0	0	0
Itinerant Aircraft Apron Area (SY)	±82,400	26,446	26,620	29,404	35,842
Recommended Additional Area (SY)	See Next Chapter				
Terminal Building Area (SF)	±3,000	2,011	2,024	2,236	2,725

TABLE 4.8
SUMMARY OF RECOMMENDATIONS (Continued)

Landside	Existing	2020	2025	2030	2040
Recommended Additional Area (SF)		0	0	0	0
On-Airport Hangar Area (SF)	±400,000	166,200	172,500	202,800	274,100
Recommended Additional Area (SF)	See Next Chapter				
Automobile Parking Area (SY)	±700	1618	1629	1810	2234
Recommended Additional Paved Area (SY)	See Next Chapter				
Automobile Access	See Next Chapter				
Helicopter/Rotocraft Parking	See Next Chapter				
Airfield Snow Removal/Maintenance Equip	Occasional Purchase				
Fencing			Full Perimeter, Rehabilitate		

Security, Compliance and Sustainability	
Security	Monitor
Compliance; Through-the-Fence	None, Monitor
Compliance; Update Overlay District Zoning/Comprehensive Plan	Monitor-Develop City of West Richland & Benton County
Compliance; Airport Rules and Regulations	Update as Necessary
Compliance; Minimum Standards	Update as Necessary
Compliance; Development Standards	Update as Necessary

Source: FAA/J-U-B

CHAPTER 5 ALTERNATIVES ANALYSIS

This chapter describes development alternatives and configurations that could be considered in order to meet the facility requirements and accommodate demand in the short and long-term. Several issues are at hand and are carried forward from the previous chapter.

- Accommodate FAA Design Standards and Clear/Mitigate Obstructions
- Consider Runway 1/19 Improved Instrument Approach Capability
- Consider Additional Runway 1/19 Length
- Consider Future Disposition and Approach Capability for Runway 8/26
- Locate Future Hangars, Fuel, Apron and Taxiways

These roughly correspond to the issues to be addressed as described in the introduction to this planning effort. Although distinct, the above issues are related, and each impact others in obvious and in more subtle ways.

5.1 ALTERNATIVES INTRODUCTION

It is important for grant assurance compliance that this overall planning effort conforms to FAA design standards. There is an ever-increasing gap between aviation infrastructure needs and federal and state funding at local, regional, and national levels, particularly for general aviation airports. As a result, certain improvements, or series of improvements necessary for FAA design standards compliance may not be funded in the short-term or perhaps even in the intermediate-term if the improvements are substantial. Improvements for the selected projects are likely to occur over a 20-year period and beyond. The current airport staff expect some of the factors that increase demand for certain improvements could occur more quickly than the forecast for this study shows. Thus, some of the proposed improvements may be programed earlier in time. It will be a responsibility for the Airport to continue to evaluate alternatives and plan for changing scenarios.

AIRSIDE ALTERNATIVES

The following airside alternatives are introduced below and described in detail within Section 5.2.

It is important to note that all alternatives include design standards compliance.

Airside Configuration No. 1A - Improved Approach Capability to Runway 1 End:
This alternative provides for little future improvements other than the accommodation of select FAA design standards and mitigation of obstructions to accommodate an additional >3/4-mile RNAV GPS approach to Runway 1, matching the existing Runway 19 approach.

Airside Configuration No. 1B - Improved All-Weather Instrument Approach Capability Runway 19 End:
This alternative provides future improvements to accommodate select FAA design standards and mitigation of obstructions for improved instrument approach capability, specifically, >1/2-mile RNAV GPS to Runway 19 End and >3/4-mile RNAV GPS approach to Runway 1 End. Future hangars and apron areas are intended to be sited within this alternative to clear the appropriate airspace.

Airside Configuration No. 2A – Runway 19 End Extension with current approach:
This alternative provides a northerly runway extension up to 600 feet to accommodate aircraft demanding additional runway length or those requiring more payload or fuel, with continued >3/4-mile approach to Runway 1/19 Ends.

Airside Configuration No. 2B – Runway 19 End Extension and Improved All-Weather Instrument Approach Capability:
This alternative provides a northerly runway extension up to 600 feet to accommodate aircraft demanding additional runway length or those requiring more payload or fuel, along with a >1/2-mile RNAV GPS approach to Runway 19 End. This alternative specifies compliance with select FAA design standards and mitigation of obstructions for precision aircraft operation. Future hangars and apron areas are intended to be sited to clear the appropriate airspace.

Airside Configuration No. 3A – Runway Ends 1 and 19 Extension:
This alternative provides a northerly runway extension up to 600 feet as well as a southerly extension up to 500 feet to accommodate aircraft demanding additional runway length or those requiring more payload or fuel. Provides for >3/4-mile approach to both Runway 1 and 19 Ends.

Airside Configuration No. 3B – Runway Ends 1 and 19 Extension and Improved All-Weather Instrument Approach Capability:
This alternative provides a northerly runway extension up to 600 feet as well as a southerly extension up to 500 feet to accommodate aircraft demanding additional runway length or those requiring more payload or fuel, along with >1/2-mile RNAV GPS approach to Runway 19 End and >3/4-mile RNAV GPS approach to Runway 1 End. This alternative specifies compliance with select FAA design standards and mitigation of obstructions for precision aircraft operation. Future hangars and apron areas are intended to be sited to clear the appropriate airspace.

Airside Configuration No. 4 – Runway Ends 1 and 19 Full Extension and Improved All-Weather Instrument Approach Capability:
This alternative provides a northerly runway extension up to 1,300 feet as well as a southerly extension up to 500 feet to accommodate aircraft demanding additional runway length or those requiring more payload or fuel, along with >1/2-mile RNAV GPS approaches to Runway 19 End. This alternative specifies compliance with select FAA design standards and mitigation of obstructions for precision aircraft operation. Future hangars and apron areas are intended to be sited to clear the appropriate airspace.

Airside Configuration No. 5A – Standards Compliance for Current Runway 8/26 Configuration:
This alternative provides for no future improvements other than the accommodation of select FAA design standards and mitigation of obstructions to accommodate existing approach capability to Runway 8. Runway 26 is shown with visual only approach capability. Note that FAA has published an RNAV GPS approach to Runway 26 at >3/4 mile recently and the existing approach to Runway 8 is a VOR/DME at >1 mile.

Airside Configuration No. 5B – Runway 8/26 Configuration Improved Approach Capability:
This alternative provides for no future improvements other than the accommodation of select FAA design standards and mitigation of obstructions to accommodate existing approach capability to Runway 26 RNAV GPS with >3/4 mile approach, and potential future non-precision approach to Runway 8 >3/4 mile RNAV GPS approach.

LANDSIDE ALTERNATIVES

The following landside configurations are introduced below and described within Section 5.3.

Three landside development configurations will consider accommodation of potential on-airport aprons, hangars, taxiways, and aviation businesses. The previous chapter demonstrated the future need for additional aviation facilities, especially at peak times, and the landside development configurations below show increasing levels of demand accommodation. These are not meant to be mutually exclusive depictions. Facilities on more than one configuration can, and perhaps should be, combined to create the 20-year preferred program.

Landside Configuration No. 1A – Low Growth, Limited Revenue Potential:
This alternative provides for the development of additional recreational and smaller hangar space as well as filling in areas for business hangars within the existing configuration. Some existing hangar space should be repurposed as apron to accommodate larger aircraft operations and parking.

Landside Configuration No. 1B – Low-Moderate Growth, Modest Revenue Potential:
This alternative provides for the development of some more additional recreational and smaller hangar space as well as filling in area for business hangars within the existing configuration. More business jet operations and vertiport (aerodrome) services are planned. Some existing hangar space should be repurposed as apron to accommodate larger aircraft operations and parking.

Landside Configuration No. 2 – High Growth, Significant Revenue Potential:
This alternative provides for some or all of the development in Configuration No.1 but is also showing significant areas for developing new larger business hangars and apron space on the southwest quadrant of the airport. Access to this new area of development is considered. Also, some of the airport property to the northwest could be used for non-aviation business activities and help the Port of Benton maximize revenue possibilities.

5.2 AIRSIDE ALTERNATIVES

This section describes each of the airside alternatives considered in more detail. When evaluating each alternative, the considerations are noted.

Standards Compliance
Design standards compliance is compulsory and considered in all alternatives.

Runway Approach Capability
Requirements for the most advantageous approach procedures and visibility minimums are considered for the current runway configuration as well as potential future configurations. Note that terrain near the end of Runway 8 could create an issue for the RSA and other required clearance surfaces.

Runway Length
A 600-foot Runway 1/19 extension is considered for Alternative 2 and an additional extension of 500 feet is considered for Alternative 3 to a total length of 5,100 feet. Additional length to Runway 19 End is also considered to full capacity of 5,800 feet in Alternative 4. It should be noted that roads and other commercially developed space is a constraint for some runway extensions.

Long-term Use and Existence of Runway 8/26
It is a priority for the airport to keep Runway 8/26 as an active runway in the future. However, a viable alternative could be to repurpose the land for development of additional landside uses such as hangars, FBO, apron space, fuel, and commercial activity.

Additional Apron and Hangar Space
Development of additional apron space and large hangars to support business' aviation needs.

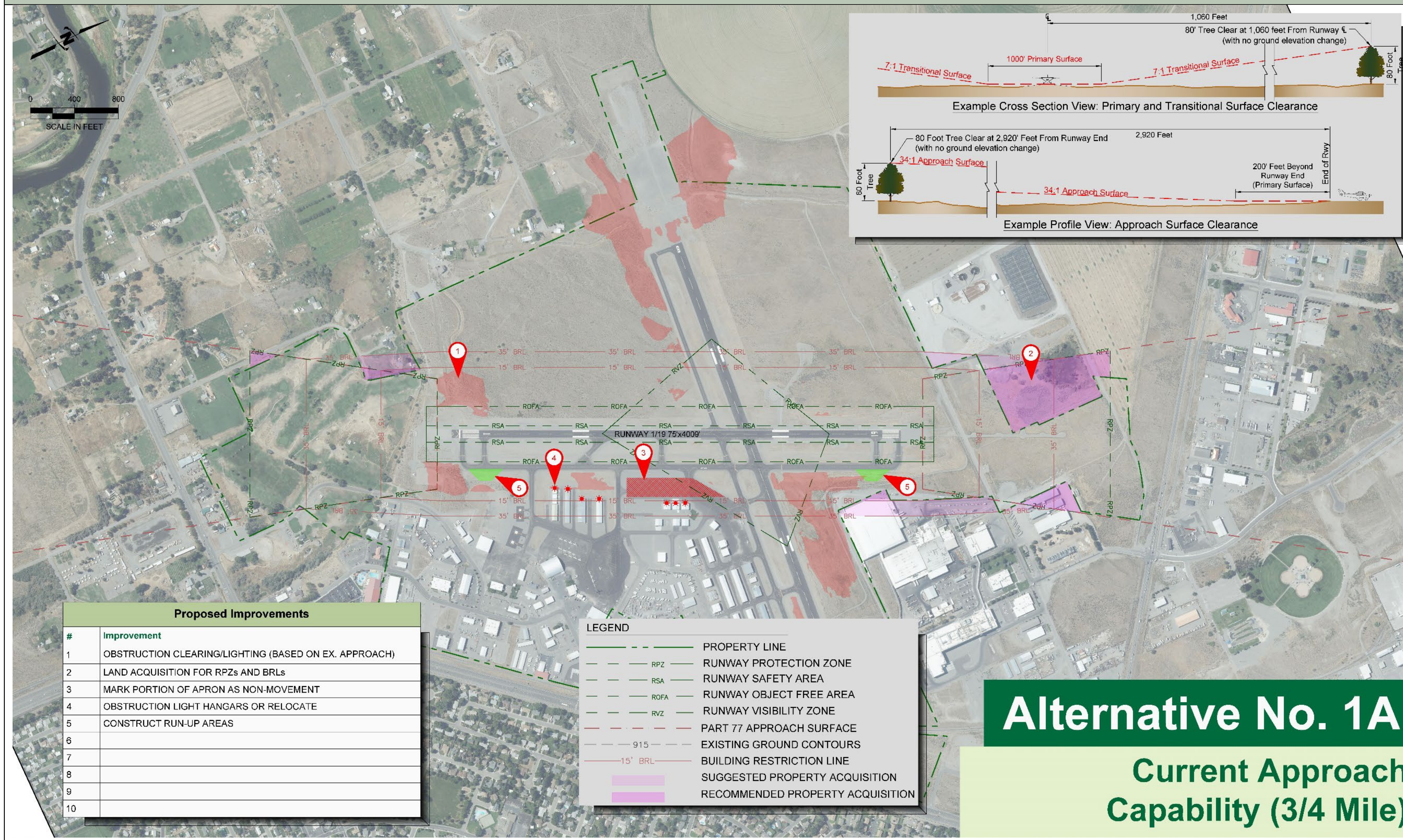
Areas for Aviation Land Use vs. Non-aviation Land Use
Consideration should be given to what areas the Port designates for aviation use and areas specifically for non-aviation use on Port property. Once a configuration is selected, those recommended non-aviation areas should be identified and discussed further with the FAA.

It is important to note that the following remains to be done prior to projects depicted in the alternative figures:

1) Depiction on Airport Layout Plan (ALP);
2) Inclusion in FAA and/or State Capital Improvement Planning Program(s);
3) NEPA Environmental Clearance and Mitigation;
4) Justification per FAA thresholds of activity; and most importantly
5) Be Funded.

The airport and general flying community feel that operations of more significant aircraft are likely to increase even faster in the next few years than the forecast in this study shows. If that scenario plays out, certain projects in these alternatives may need to advance in schedule to accommodate demand.

FIGURE 5.1
IMPROVED APPROACH CAPABILITY TO RUNWAY 1 END



Source: J-U-B

AIRSIDE CONFIGURATION NO. 1A - IMPROVED APPROACH CAPABILITY TO RUNWAY 1 END:

This alternative is characterized by accommodation of select FAA design standards and mitigation of obstructions to accommodate a future >3/4-mile RNAV GPS approach to Runway 1 and support the existing >3/4-mile RNAV GPS non precision approach to Runway 19 End.

Property acquisition and additional avigation easements are recommended. The increase in approach capability creates a larger primary protection surface around the runway. Thus, there are existing airport features (hangars) that need to be lighted or removed to accommodate these surfaces. A portion of the existing apron would need to be striped and considered as movement area, removing some aircraft tie-down spots. Obstruction clearing activities are also considered.

Advantages:

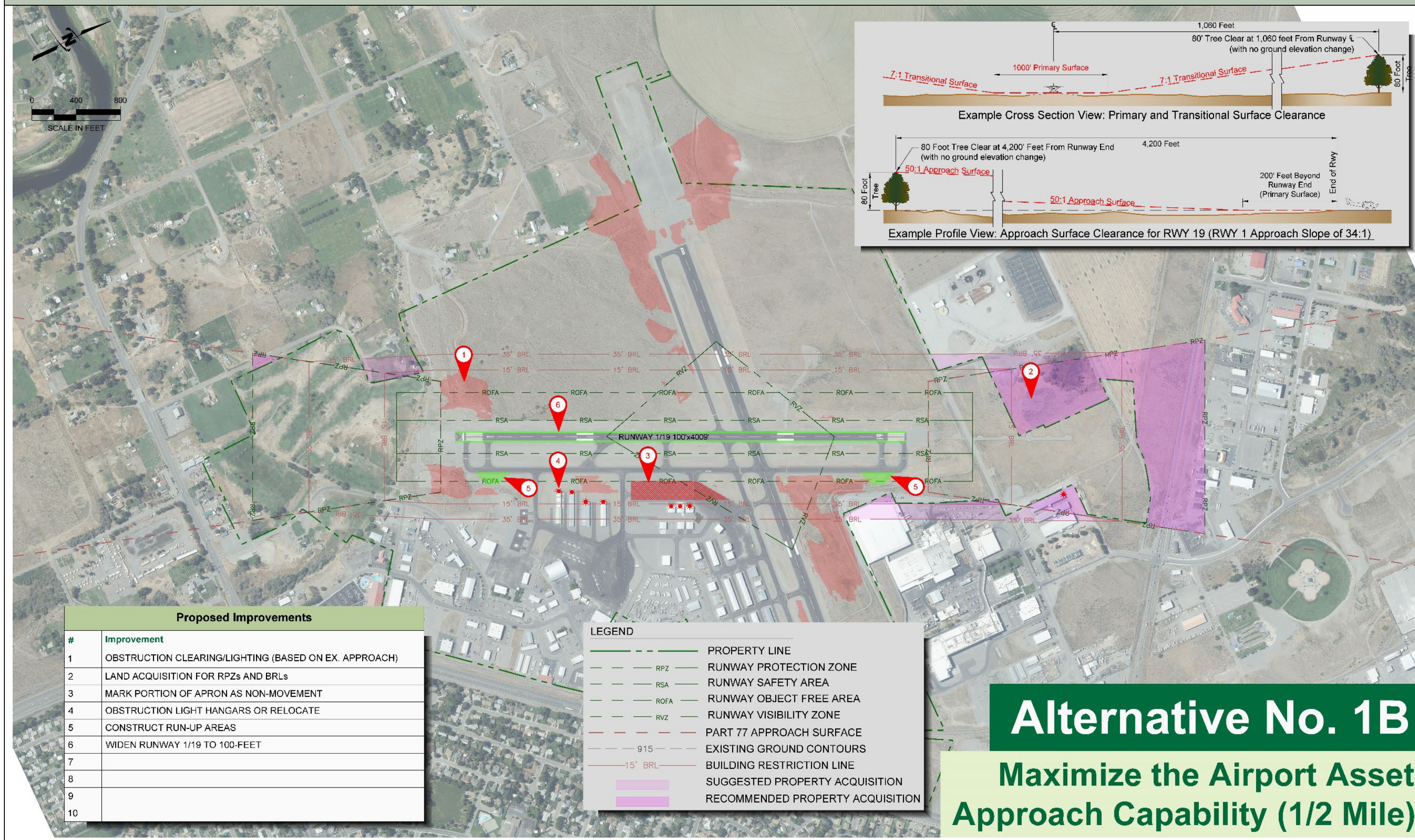
- Improved approach to Runway 1 End.
- Control of property to protect approach capabilities.
- Potentially relatively lower cost.

Disadvantages:

- Need to light some hangars or remove them.
- Loss of a portion of the apron area.
- Loss of ~9 tie-down spots.
- Land acquisition or avigation easements required

Total Estimated Project Costs: $2,558,658

FIGURE 5.2
IMPROVED ALL-WEATHER INSTRUMENT APPROACH CAPABILITY RUNWAY 19 END



Source: J-U-B

AIRSIDE CONFIGURATION NO. 1B - IMPROVED ALL-WEATHER INSTRUMENT APPROACH CAPABILITY RUNWAY 19 END:

This alternative is characterized by accommodation of select FAA design standards and mitigation of obstructions to accommodate a future >3/4-mile RNAV GPS approach to Runway 1 as described in Alternative 1A. This also depicts support for improved all weather approach capability of >1/2-mile RNAV GPS precision approach to Runway 19 End.

Property acquisition and additional avigation easements are recommended. The increase in approach capability creates a larger primary protection surface around the runway as well as expands the runway protection zone off the runway end. Thus, just like Alternative 1A there are existing airport features (hangars) that need to be lighted or removed to accommodate these surfaces. The Runway will also need to be widened to 100 ft. A portion of the existing apron would need to be striped and considered as movement area, removing some aircraft tie-down spots. This alternative requires more obstruction clearing activities.

Advantages:

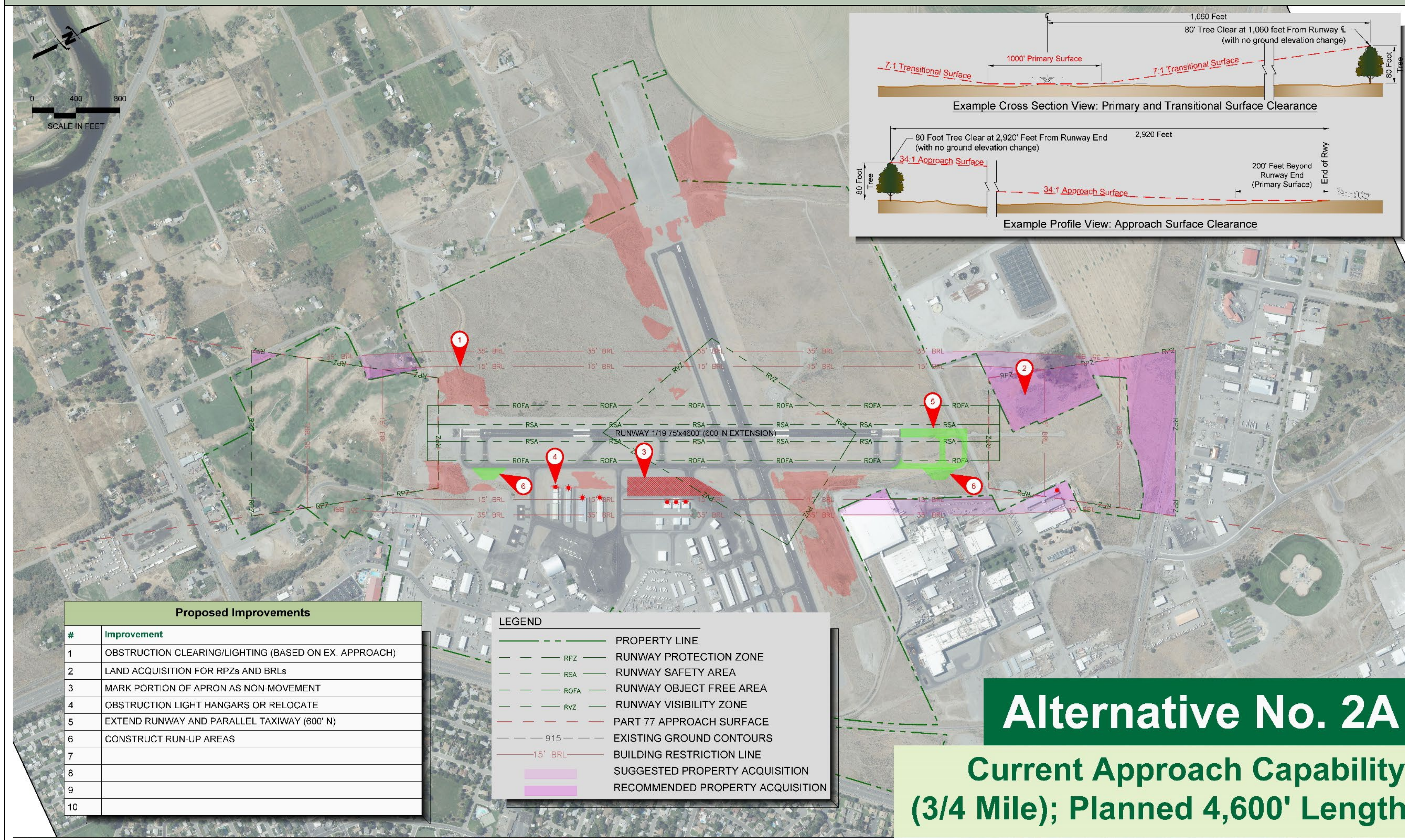
- Improved approach to Runway 1 End.
- Improved approach to Runway 19 End.
- Control of property to protect approach capabilities.

Disadvantages:

- Need to light or remove some hangars.
- Loss of a portion of the apron area.
- Loss of ~9 tie-down spots.
- Land acquisition or avigation easements required.

Total Estimated Project Costs: $5,491,158

FIGURE 5.3
RUNWAY 19 END EXTENSION



Source: J-U-B

AIRSIDE CONFIGURATION NO. 2A – RUNWAY 19 END EXTENSION:

This alternative is characterized by a significant northerly extension, up to 600 feet, to Runway 19 End and the parallel taxiway. FAA design standards will need to be met in this new configuration which includes mitigation of obstructions to accommodate a future >3/4-mile RNAV GPS non precision approaches to Runway 19 End and potentially Runway 1 End as depicted.

Property acquisition and additional avigation easements will be necessary. The increase in approach capability creates a larger primary protection surface around the runway. As discussed in Alternative 1A there are existing airport features (hangars) that need to be lighted or removed to accommodate these surfaces. A portion of the existing apron would need to be striped and considered as movement area, removing some aircraft tie-down spots. Obstruction clearing activities are also considered. Existing NAVAIDs will need to be relocated.

Advantages:

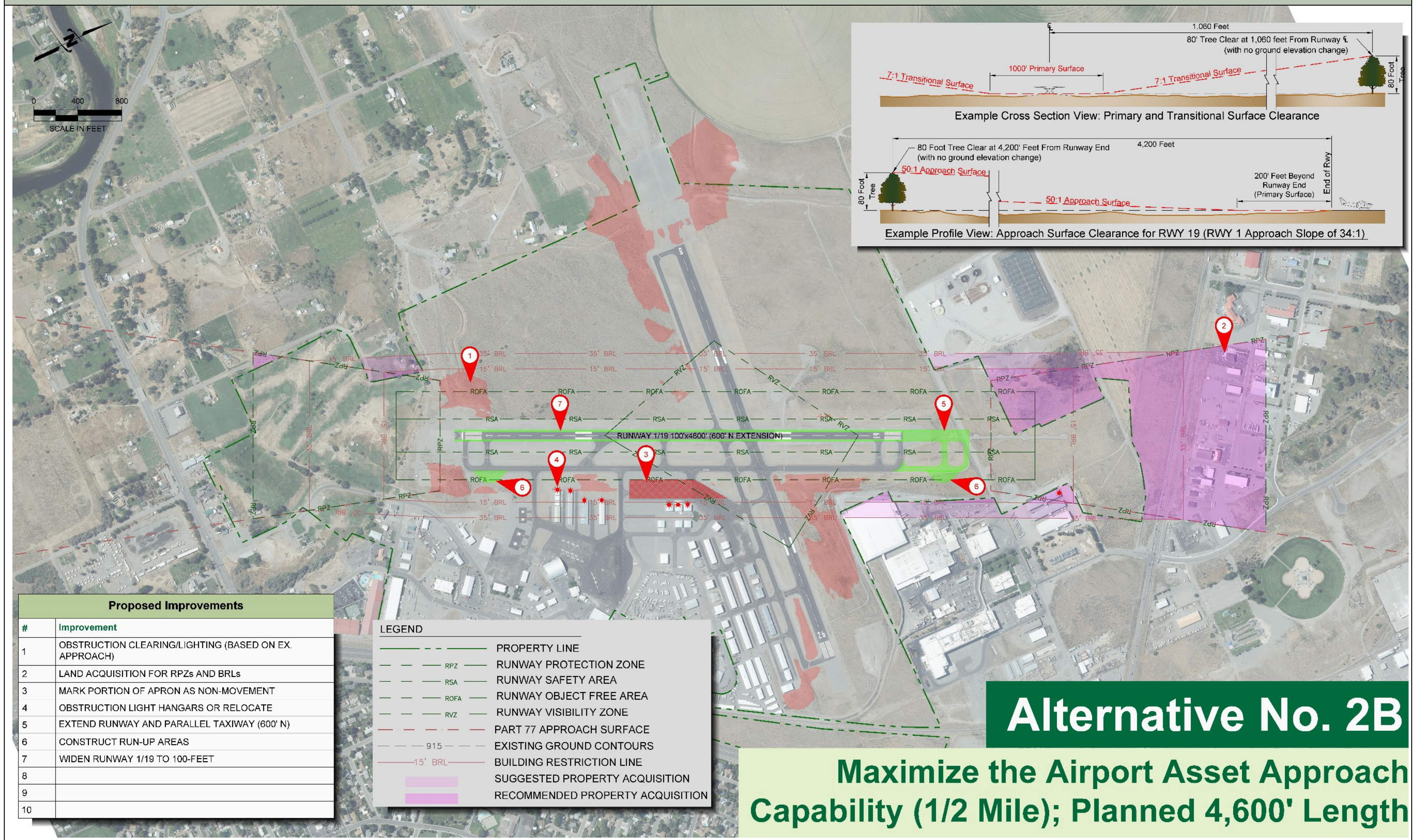
- Improved runway length to accommodate larger, faster aircraft.
- Reaches the 4,600 ft. mark, possibly allowing larger/faster aircraft to be based at Richland.
- Improved approach to Runway 1 End.
- Control of property to protect approach capabilities.

Disadvantages:

- Additional land acquisition or avigation easements required.
- Need to light or remove some hangars.
- Loss of a portion of apron area.
- Loss of ~9 tie-down spots.
- Cost and funding are a consideration.

Total Estimated Project Costs: $5,799,900

FIGURE 5.4
RUNWAY 19 END EXTENSION AND IMPROVED ALL-WEATHER INSTRUMENT APPROACH CAPABILITY



Source: J-U-B

AIRSIDE CONFIGURATION NO. 2B – RUNWAY 19 END EXTENSION AND IMPROVED ALL-WEATHER INSTRUMENT APPROACH CAPABILITY:

This alternative is characterized by a significant northerly extension, up to 600 feet, to Runway 19 End and the parallel taxiway as described in Alternative 2A. FAA design standards will need to be met to accommodate a future >1/2-mile RNAV GPS precision approach to Runway 19 End and >3/4-mile non-precision approach capability to Runway 1 End as depicted.

This scenario provides a significant increase in approach capability in poor weather conditions. As discussed in other alternative scenarios there are existing airport features (hangars) that need to be lit to accommodate larger protection surfaces. The Runway will also need to be widened to 100 ft. A portion of the existing apron would need to be striped and considered as movement area, removing some aircraft tie-down spots. Obstruction clearing activities are also considered. Existing NAVAIDs will need to be relocated.

Advantages:

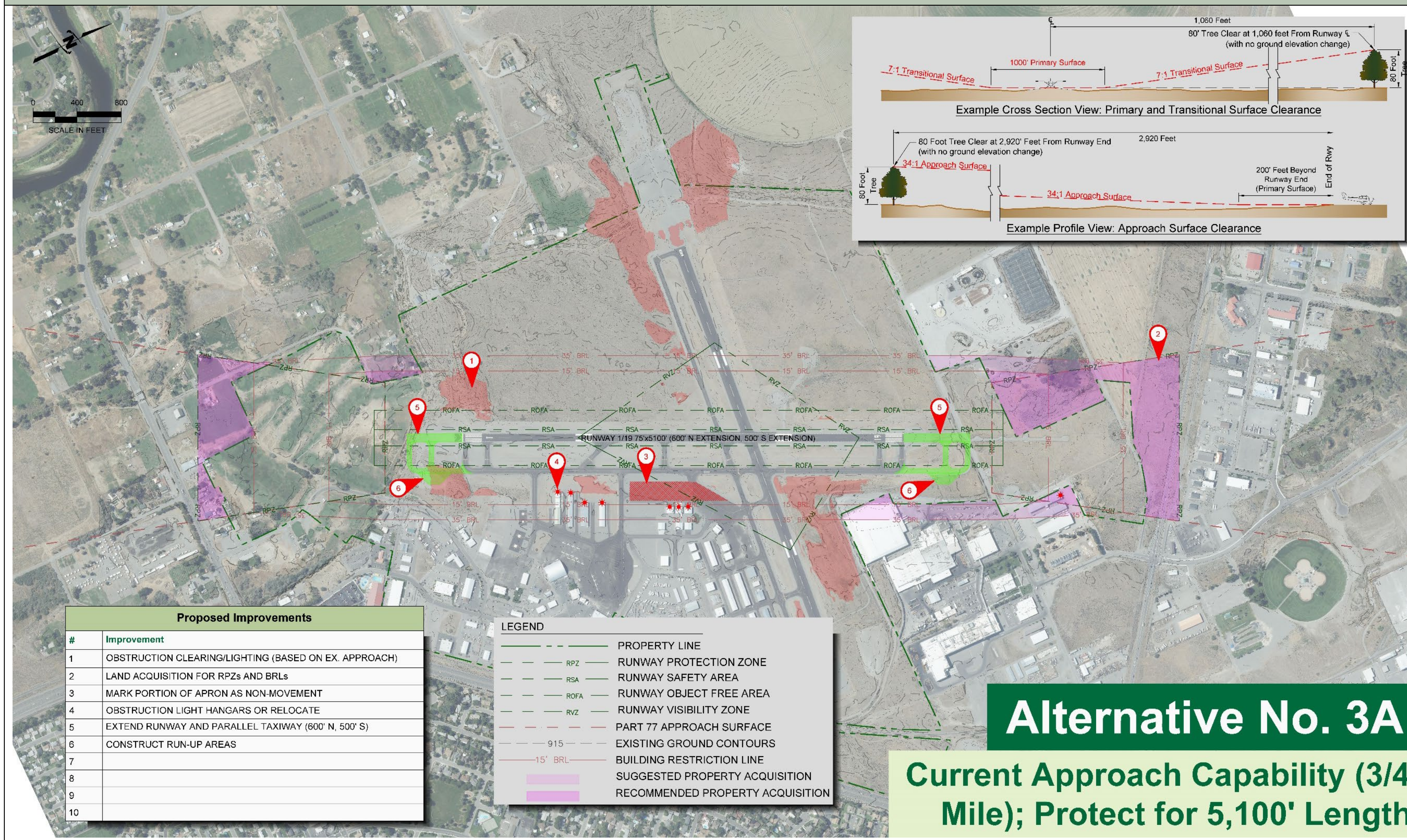
- Improved runway length to accommodate larger, faster aircraft.
- Reaches the 4,600 ft. mark, possibly allowing larger/faster aircraft to be based at Richland.
- Significantly improved approach to Runway 19 End.
- Control of property to protect approach capabilities.

Disadvantages:

- Additional land acquisition or avigation easements required.
- Need to light or remove some hangars.
- Loss of portion of apron area.
- Loss of ~9 tie-down spots.
- Cost and funding are a consideration.

Total Estimated Project Costs: $12,054,900

FIGURE 5.5
RUNWAY ENDS 1 AND 19 EXTENSION



Proposed Improvements

#	Improvement
1	OBSTRUCTION CLEARING/LIGHTING (BASED ON EX. APPROACH)
2	LAND ACQUISITION FOR RPZs AND BRLs
3	MARK PORTION OF APRON AS NON-MOVEMENT
4	OBSTRUCTION LIGHT HANGARS OR RELOCATE
5	EXTEND RUNWAY AND PARALLEL TAXIWAY (600' N, 500' S)
6	CONSTRUCT RUN-UP AREAS
7	
8	
9	
10	

Source: J-U-B

AIRSIDE CONFIGURATION NO. 3A – RUNWAY ENDS 1 AND 19 EXTENSION:

This alternative is characterized by a significant northerly extension, up to 600 feet, to Runway 19 End and a southerly extension up to 500 feet to Runway 1 End, with matching parallel taxiway. FAA design standards will need to be met in this new configuration which includes mitigation of obstructions to accommodate a future >3/4-mile RNAV GPS non precision approach to Runway 19 End and Runway 1 End.

Property acquisition and additional avigation easements will be necessary. The increase in approach capability requires a larger protection surface around the runway. As discussed in previous alternatives there are existing airport features (hangars) that need to be lighted or removed to accommodate these surfaces. A portion of the existing apron would need to be striped and considered as movement area, removing some aircraft tie-down spots. Obstruction clearing activities are also considered. Existing NAVAIDs will need to be relocated.

Advantages:

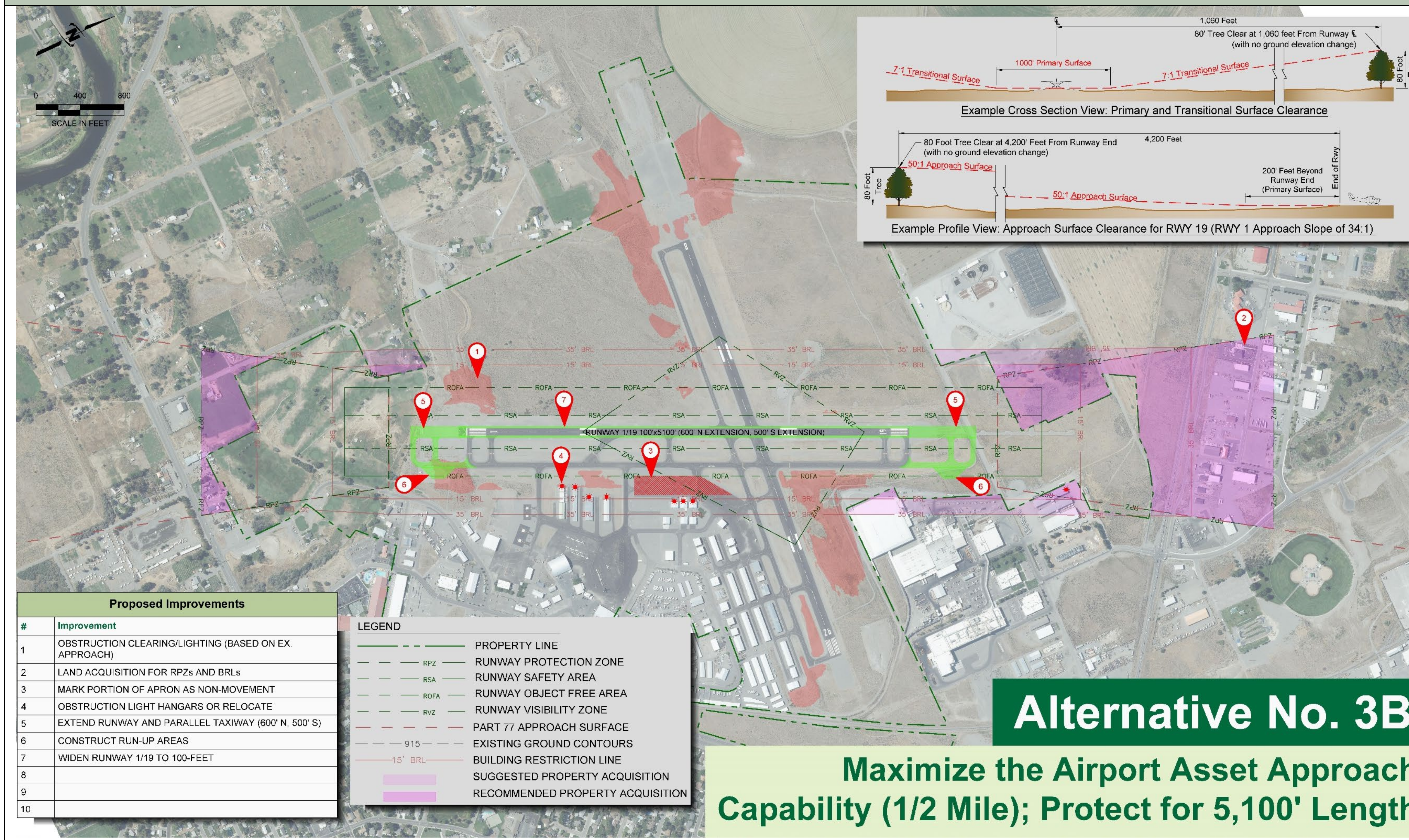
- Improved runway length to accommodate larger, faster aircraft.
- Reaches the 5,100 ft. mark, possibly allowing larger/faster aircraft to be based at Richland.
- Improved approach to Runway 1 End.
- Control of property to protect approach capabilities.

Disadvantages:

- Additional land acquisition or avigation easements required.
- Earthwork may be required to achieve full length depicted. Loss of portion of golf course.
- Need to light or remove some hangars.
- Loss of portion of apron area.
- Loss of ~9 tie-down spots.
- Cost and funding are a consideration.

Total Estimated Project Costs: $9,340,213

FIGURE 5.6
RUNWAY ENDS 1 AND 19 EXTENSION AND IMPROVED ALL-WEATHER INSTRUMENT APPROACH CAPABILITY



Proposed Improvements

#	Improvement
1	OBSTRUCTION CLEARING/LIGHTING (BASED ON EX. APPROACH)
2	LAND ACQUISITION FOR RPZs AND BRLs
3	MARK PORTION OF APRON AS NON-MOVEMENT
4	OBSTRUCTION LIGHT HANGARS OR RELOCATE
5	EXTEND RUNWAY AND PARALLEL TAXIWAY (600' N, 500' S)
6	CONSTRUCT RUN-UP AREAS
7	WIDEN RUNWAY 1/19 TO 100-FEET
8	
9	
10	

Source: J-U-B

AIRSIDE CONFIGURATION NO. 3B – RUNWAY ENDS 1 AND 19 EXTENSION AND IMPROVED ALL-WEATHER INSTRUMENT APPROACH CAPABILITY:

This alternative is characterized by a significant northerly extension, up to 600 feet, to Runway 19 End and a southerly extension up to 500 feet to Runway 1 End, with matching parallel taxiway as described in Alternative 3A. FAA design standards will need to be met to accommodate a future >1/2-mile RNAV GPS precision approach to Runway 19 End and >3/4-mile non-precision approach capability to Runway 1 End as depicted.

This scenario provides a significant increase in approach capability in poor weather conditions. As discussed in other alternative scenarios there are existing airport features (hangars) that need to be lighted or removed to accommodate larger protection surfaces. The Runway will also need to be widened to 100 ft. A portion of the existing apron would need to be striped and considered as movement area, removing some aircraft tie-down spots. Obstruction clearing activities are also considered. Existing NAVAIDs will need to be relocated.

Advantages:

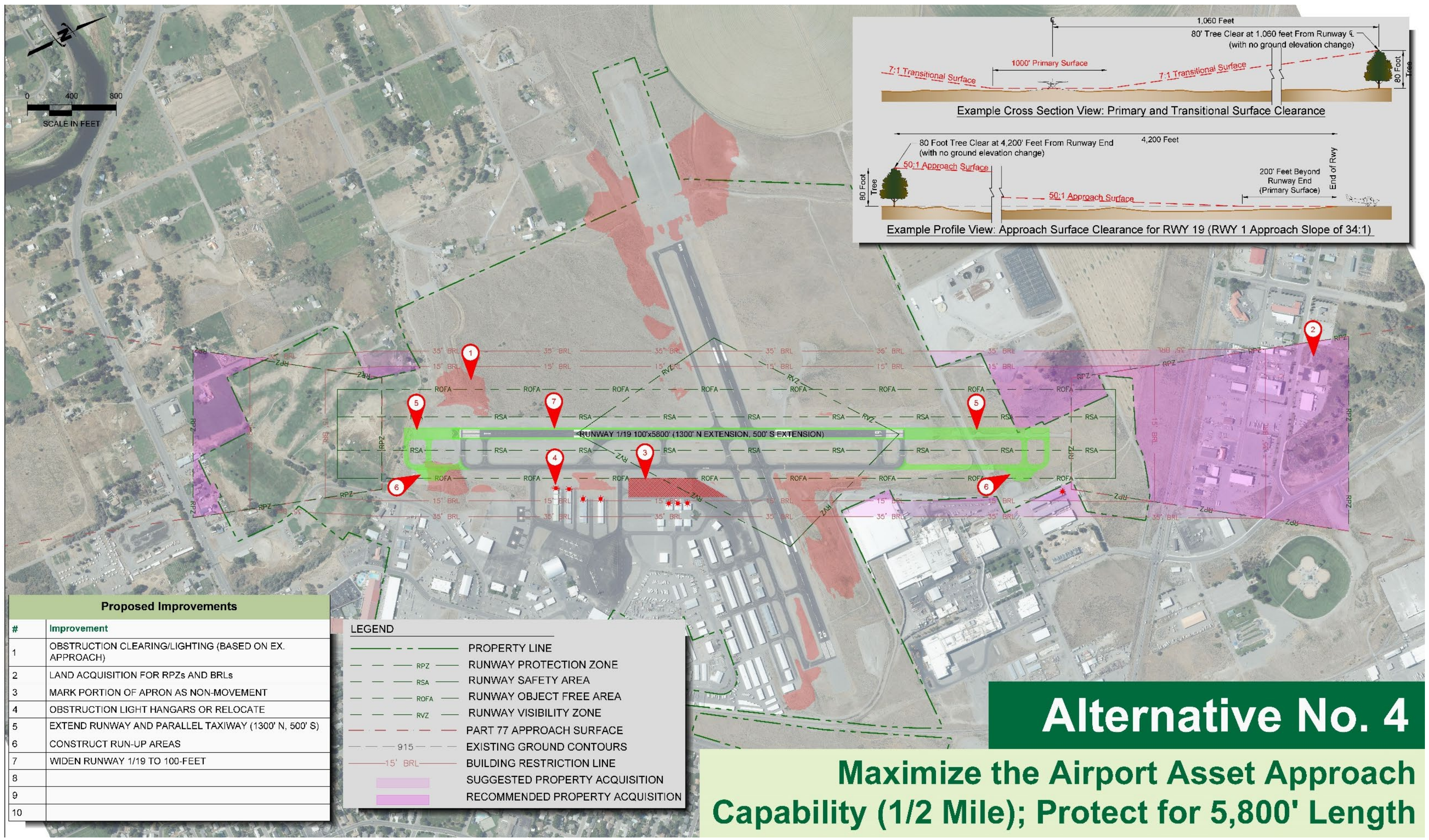
- Improved runway length to accommodate larger, faster aircraft.
- Reaches the 5,100 ft. mark, possibly allowing larger/faster aircraft to be based at Richland.
- Significantly improved approach to Runway 19 End.
- Control of property to protect approach capabilities.

Disadvantages:

- Additional land acquisition or avigation easements required.
- Earthwork may be required to achieve full length depicted. Loss of portion of golf course.
- Need to light or remove some hangars.
- Loss of a portion of apron area
- Loss of ~9 tie-down spots.
- Cost and funding are a consideration.

Total Estimated Project Costs: $16,570,713

FIGURE 5.7
RUNWAY ENDS 1 AND 19 EXTENSION AND IMPROVED ALL-WEATHER INSTRUMENT APPROACH CAPABILITY



Proposed Improvements

#	Improvement
1	OBSTRUCTION CLEARING/LIGHTING (BASED ON EX. APPROACH)
2	LAND ACQUISITION FOR RPZs AND BRLs
3	MARK PORTION OF APRON AS NON-MOVEMENT
4	OBSTRUCTION LIGHT HANGARS OR RELOCATE
5	EXTEND RUNWAY AND PARALLEL TAXIWAY (1300' N, 500' S)
6	CONSTRUCT RUN-UP AREAS
7	WIDEN RUNWAY 1/19 TO 100-FEET
8	
9	
10	

Source: J-U-B

AIRSIDE CONFIGURATION NO. 4 – RUNWAY ENDS 1 AND 19 EXTENSION AND IMPROVED ALL-WEATHER INSTRUMENT APPROACH CAPABILITY:

This alternative is characterized by a significant northerly extension, up to 1,300 feet, to Runway 19 End and a southerly extension up to 500 feet to Runway 1 End, with matching parallel taxiway as described in Alternative 3A. FAA design standards will need to be met to accommodate a future >1/2-mile RNAV GPS precision approach to Runway 19 End and >3/4-mile non-precision approach capability to Runway 1 End as depicted.

This scenario provides a significant increase in approach capability in poor weather conditions. As discussed in other alternative scenarios there are existing airport features (hangars) that need to be lit to accommodate larger protection surfaces. The Runway will also need to be widened to 100 ft. A portion of the existing apron would need to be striped and considered as movement area, removing some aircraft tie-down spots. Obstruction clearing activities are also considered. Existing NAVAIDs will need to be relocated.

Advantages:

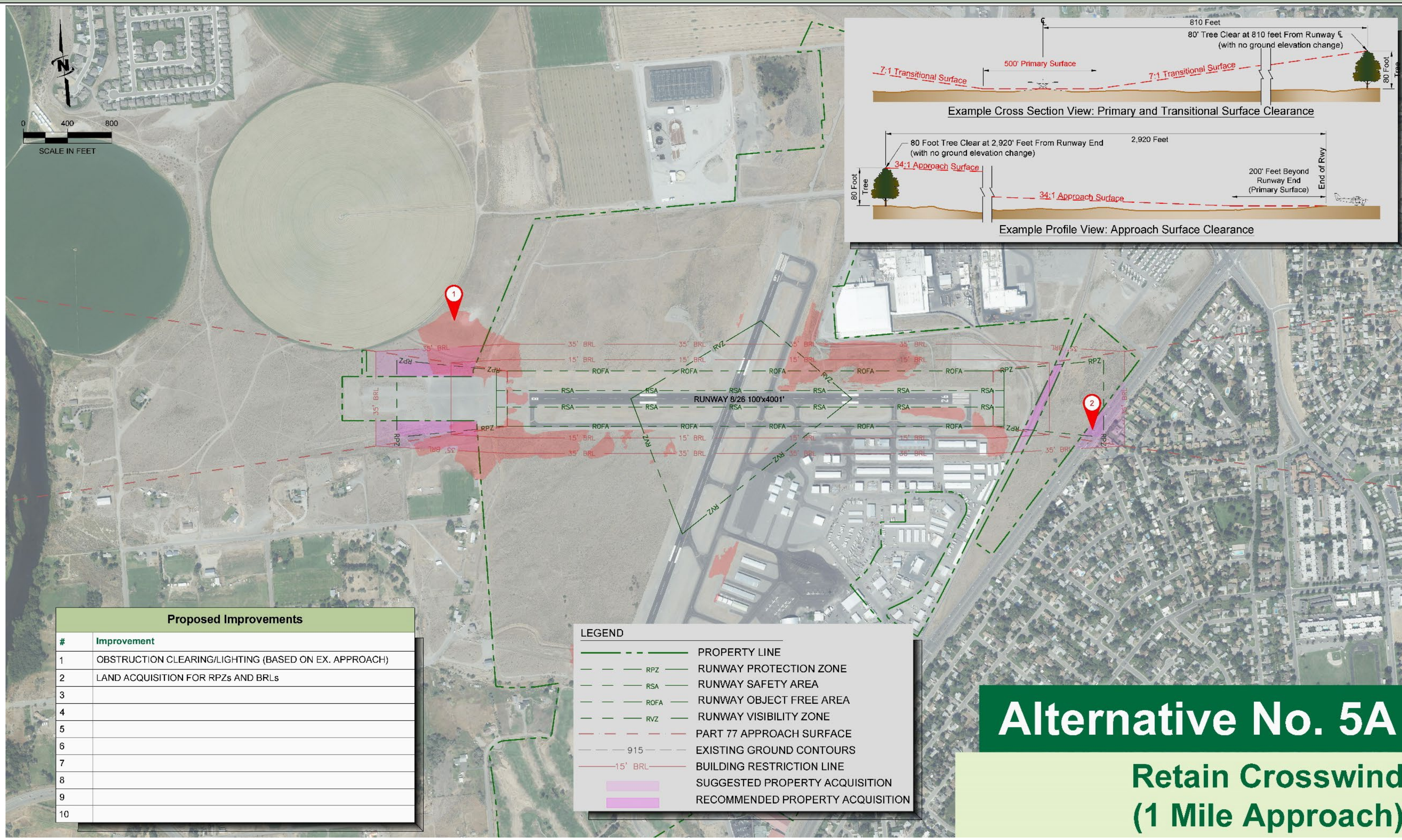
- Improved runway length to accommodate larger, faster aircraft.
- Reaches the 5,800 ft. mark, possibly allowing larger/faster aircraft to be based at Richland.
- Significantly improved approach to Runway 19 End.
- Requires control of property to protect approach capabilities.

Disadvantages:

- Additional land acquisition or avigation easements required. Possible impacts to existing buildings.
- Earthwork may be required to achieve full length depicted. Loss of portion of golf course.
- Need to light or remove some hangars.
- Loss of a portion of apron area.
- Loss of ~9 tie-down spots.

Total Estimated Project Costs: $20,871,933

FIGURE 5.8
STANDARDS COMPLIANCE FOR CURRENT RUNWAY 8/26 CONFIGURATION



Source: J-U-B

AIRSIDE CONFIGURATION NO. 5A – STANDARDS COMPLIANCE FOR CURRENT RUNWAY 8/26 CONFIGURATION:

This alternative provides accommodation of select FAA design standards and mitigation of obstructions to accommodate existing approach capability to Runway 8 for VOR/DME with > 1 mile visibility. Runway 26 is shown with visual only approach capability (not current status).

Currently Runway 26 End has a published RNAV GPS approach capability. This designation is beneficial for options to use the airfield but also problematic for the adjacent residential area to the runway end. Some consideration should be given as to what type of approach is appropriate for each end of this runway.

Property acquisition or additional avigation easements are recommended.

Advantages:

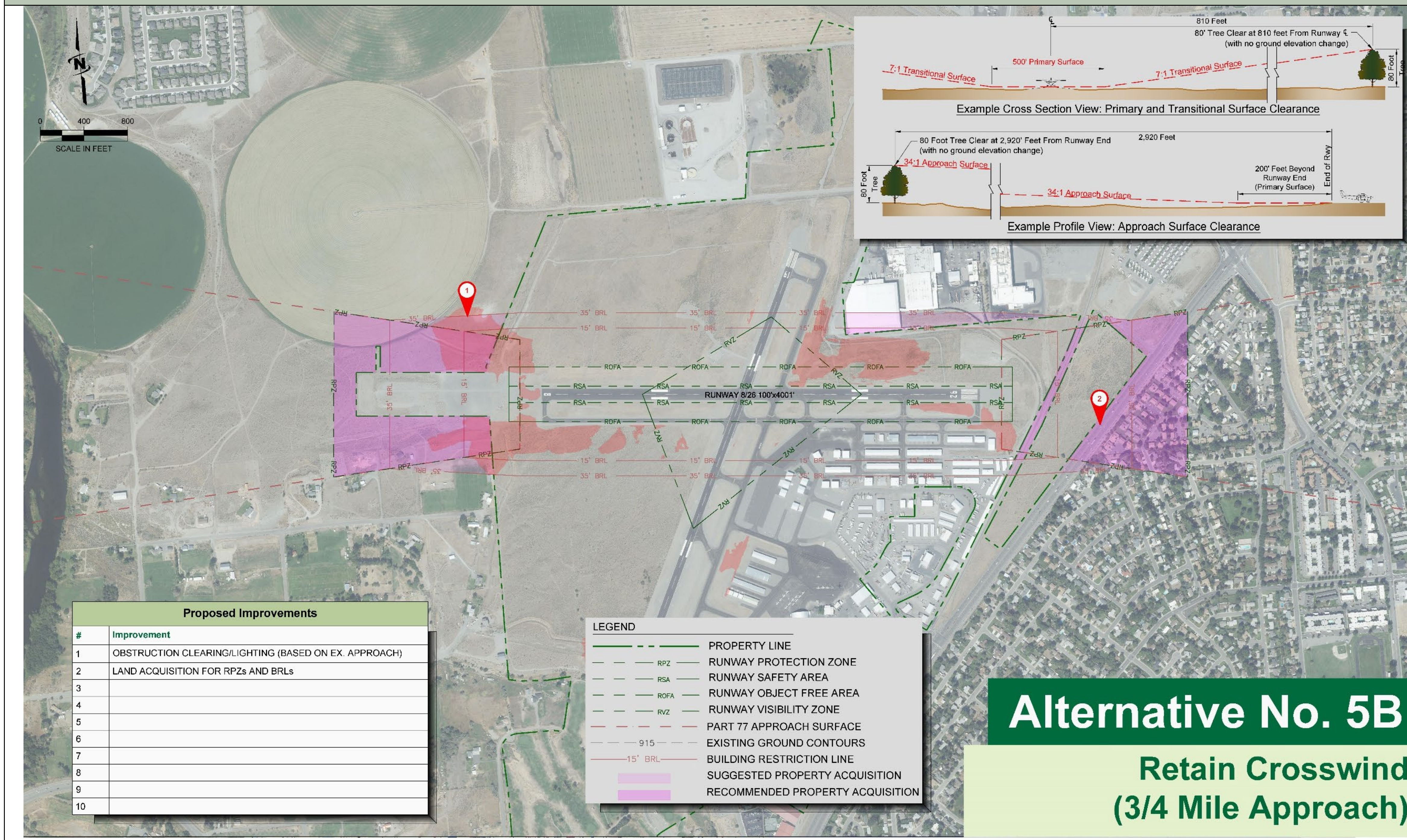
- Mitigation of potential issues with a lower minimum approach to Runway 26.
- Control of property to protect approach capabilities.
- Minimal costs to implement.

Disadvantages:

- Downgrade of approach capability for Runway 19 End.
- Some land acquisition or avigation easements required.

Total Estimated Project Costs: $1,120,000

FIGURE 5.9
RUNWAY 8/26 CONFIGURATION IMPROVED APPROACH CAPABILITY



Source: J-U-B

AIRSIDE CONFIGURATION NO. 5B – RUNWAY 8/26 CONFIGURATION IMPROVED APPROACH CAPABILITY:

This alternative provides accommodation of select FAA design standards and mitigation of obstructions to accommodate improved approach capability to Runway 8. >3/4-mile approach capability to Runway 8 would provide more options for aircraft to use the Richland airport in adverse weather conditions. No other airside improvements are included in this scenario.

Currently Runway 26 End has a published >3/4-mile RNAV GPS approach capability. This designation is beneficial for options to use the airfield but is also problematic for the adjacent residential area to the runway end. Some consideration should be given as to what type of approach is appropriate for each end of this runway.

Property acquisition or additional avigation easements are recommended.

Advantages:

- Improved approach capability to Runway 8 End.
- Control of property to protect approach capabilities.
- Costs to implement.

Disadvantages:

- Additional land acquisition or avigation easements required.
- Relocate or remove hangars closest to the runway near the 26 end.
- A need to mitigate potential issues with the current approach to Runway 26.

Total Estimated Project Costs: $3,668,000

5.3 LANDSIDE CONFIGURATIONS

The alternatives analysis now shifts to the accommodation of future hangars, apron, and aviation businesses while also considering auto access and future generalized landside configuration. 'Landside' in this context and for this planning effort, refers to these facilities.

Near-term, long-term, and reserve development areas for aviation and non-aviation purposes are planned for each alternative. This is done in the context of the site and permitted land uses given municipal and/or City code and grant assurance requirements.

Examples of compatible aviation-related land uses include:

- General Aviation Terminal/Ramp,
- Corporate Aviation Terminal/Ramp,
- Air Cargo, Aircraft Maintenance and Support,
- Aircraft Rescue and Structural Firefighting,
- On-Field Agricultural/Agricultural Lease,
- Aviation-Related Light Industrial,
- Parts Manufacturing and Sale,
- Flight Simulator,
- Defense Contractor,
- Aerial Photography/Photogrammetry,
- Aerial Spray,
- Fixed Base Operation (FBO),
- Aircraft Charter, Storage, Sales,
- Aircraft Repair and Wash,
- Pilot Supplies Sale,
- Pilot Lounge, Flight Planning, Flight Training, Food Services/Catering,
- Aviation Office/Overnight Accommodations, Restrooms,
- Aircraft Storage (T-Hangar, Executive Hangar, Mixed-Use Hangar, T-Shade),
- US Government, Military,
- Air Traffic Control,
- Navigational Aids,
- Homeland Security,
- Public Safety and Emergency Facilities,
- Weather Collection and Dissemination,
- Satellite Communications.

Examples of non-aviation related land uses which are generally compatible off-airport, and at a distance from the airport vicinity include:

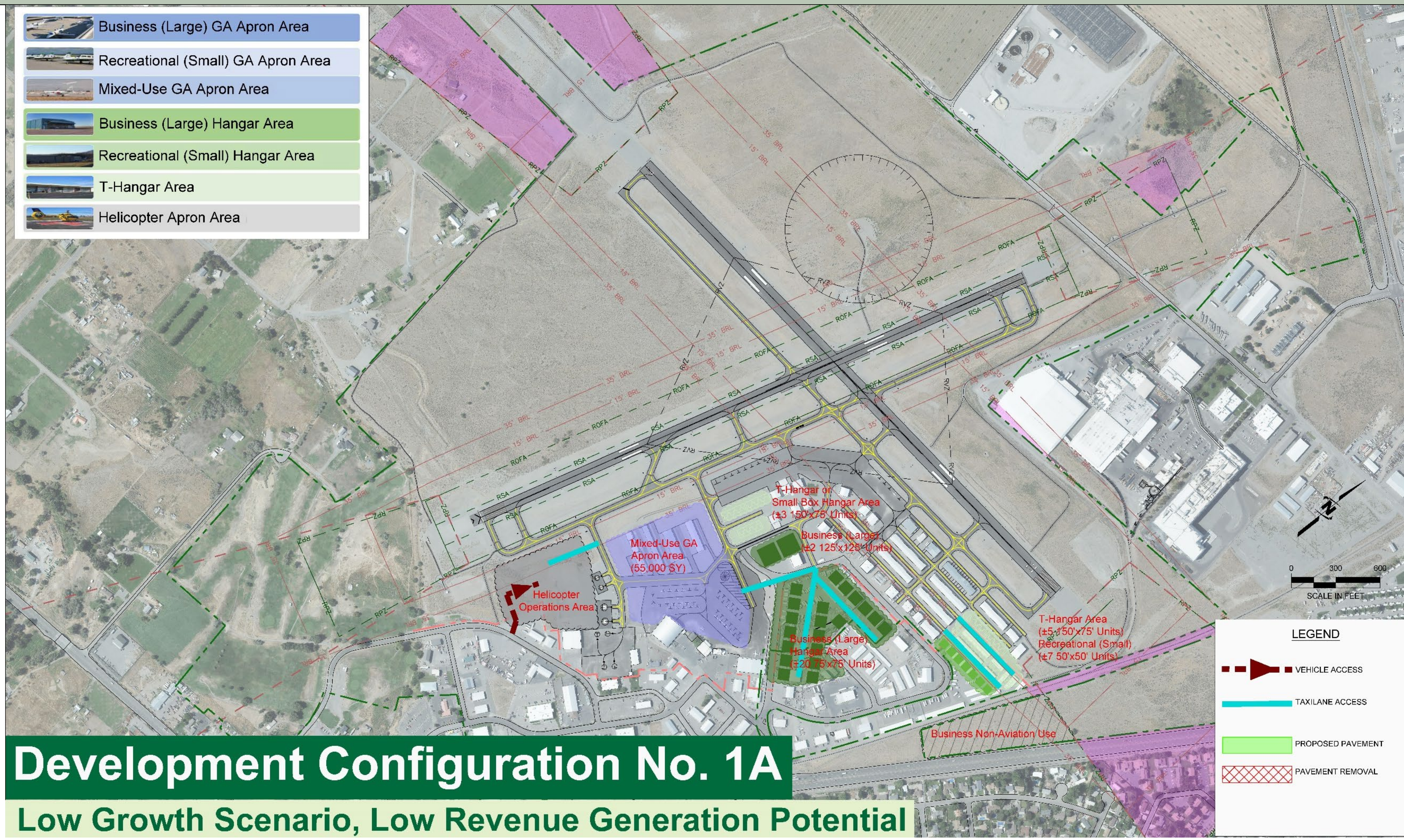
- Postal Annex,
- Telecommunications Facilities,
- Greenhouses,
- Auto Mall/Large-Scale Retail,
- Rental Car Ready Return/Storage,
- Auto/Boat Storage and Mini-Storage,
- Light and Heavy Manufacturing,
- Warehousing/Storage,
- Data Storage,
- Recreational; Fields and Golf Course,
- Hotel/Motel, and
- Support/Regional Businesses including Bank, Convenience, Restaurant, and Coffee/Snack.

Multiple potential development areas are considered in these alternatives. These start with filling in and using available space and redeveloping some space near the current hangars and aprons. The alternatives then progress to show possible expansion of apron, hangar, and terminal space on the airfield. Although the 20-year period of this planning is the primary focus with respect to limits of time for planned development, FAA permits master planning to cover up to 50 years' worth of development. These landside facilities will be shown to accommodate potentially more demand than anticipated in the forecasting portion of this planning.

Specific aims for landside configuration planning include: (1) Plan land uses and propose facilities which will meet anticipated demand, and which will also allow for continued demand accommodation in case economic activity is more robust than anticipated, and (2) Plan land uses and propose facility locations which will allow the airport to attain financial self-sufficiency.

Two configurations are explored on the following pages. The primary difference between them is the extent of planned development and locations for that development. Brief descriptions of each of the configurations and refinements follows.

FIGURE 5.10
LOW GROWTH, LIMITED REVENUE POTENTIAL



Source: J-U-B

LANDSIDE CONFIGURATION NO. 1A – LOW GROWTH, LOW REVENUE POTENTIAL:

This alternative is characterized by filling in areas around the existing terminal, hangars, and aprons at the airfield. The Richland Airport has a good area for helicopter operations, this depiction provides for expanded helicopter operations area.

As noted in the airside alternative scenarios, there are some hangars that need to be mitigated in order to expand the protection areas around the runways. This alternative shows relocating those hangars and reconfiguring the primary apron and tie-down area as a large apron that can accommodate larger business aircraft movement, fueling, and parking.

The Richland Airport has available space to continue to allow hangar development and tie-down areas for recreational aircraft. Additionally, the Airport can reclaim part of the non-aviation use space for large business aircraft hangars and additional T-hangars.

Note that while reconfiguring land uses around the existing aprons and hangars will provide opportunities for additional tenants and business on the airfield, there is a definite limitation to how much expansion and growth can occur

Advantages:

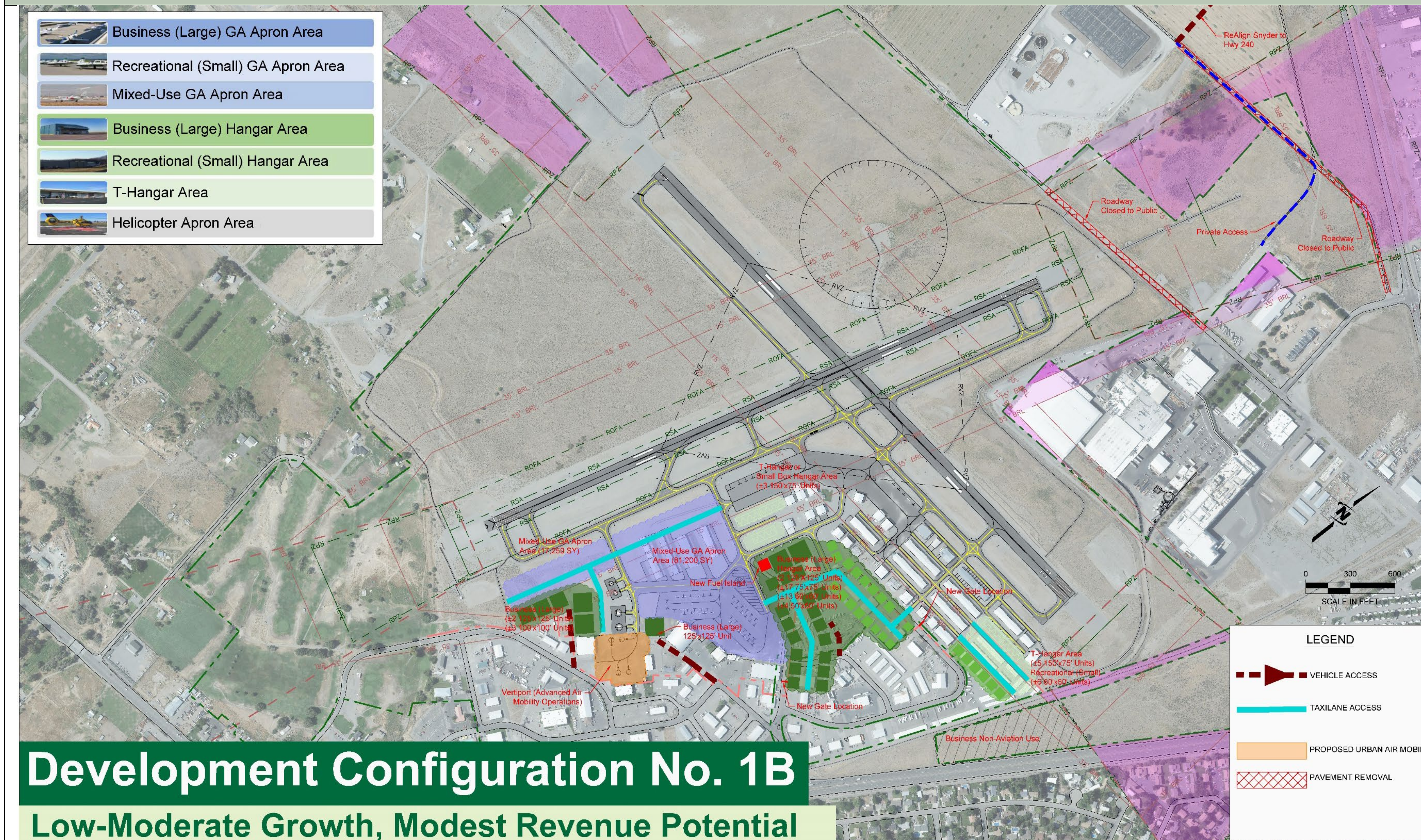
- Maximizes current accessible space.
- Easy existing access.
- Lower development costs.

Disadvantages:

- Limited growth potential.
- Displacement of existing businesses at the Airport.
- Requires development around existing features.

Total Estimated Project Costs: $17,847,500

FIGURE 5.11
LOW-MODERATE GROWTH, MODEST REVENUE POTENTIAL



Source: J-U-B

LANDSIDE CONFIGURATION NO. 1B – LOW-MODERATE GROWTH, MODEST REVENUE POTENTIAL:

Similar to Landside configuration 1A This alternative shows filling in areas around the existing terminal, hangars, and aprons at the airfield. Unique on this designating the south apron as not only a location for helicopter parking, but also as the primary location for the development of a vertiport along with design standards, criteria, and services to support a future Advance Air Mobility vertiport.

Some hangars need to be mitigated in order to expand the protection areas around the runways. This alternative also shows relocating those hangars and reconfiguring the primary apron and tie-down area as a large apron that can accommodate larger business aircraft movement, fueling, and parking. In addition, large hangars or other facilities are developed to support larger business jet operations.

The Richland Airport has available space to continue to allow hangar development and tie-down areas for recreational aircraft. Additionally, the Airport can reclaim part of the non-aviation use space for a mix of large business aircraft hangars, smaller box hangars, and additional T-hangars.

Advantages:

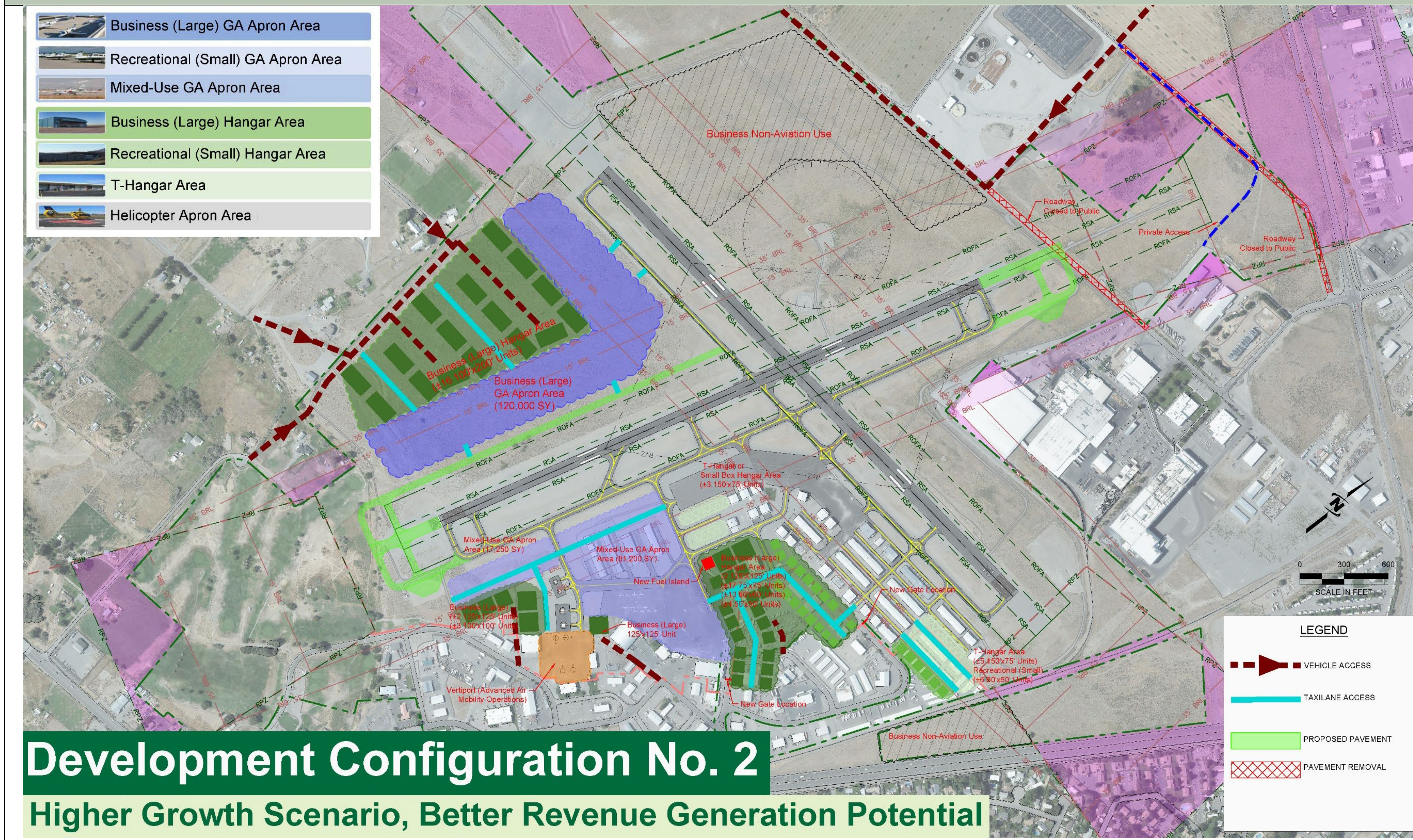
- Maximizes current accessible space.
- Easy existing access.
- Lower development costs.
- Mixed hangar options
- Future AAM vertiport considered.

Disadvantages:

- Limited growth potential.
- Displacement of existing businesses at the Airport.
- Requires development around existing features.

Total Estimated Project Costs: $17,392,500

FIGURE 5.12
HIGH GROWTH, SIGNIFICANT REVENUE POTENTIAL



Source: J-U-B

LANDSIDE CONFIGURATION NO. 2 – HIGH GROWTH, SIGNIFICANT REVENUE POTENTIAL:

This alternative shows the same possibilities for development near the existing airport features as shown in Alternative No.1B. It also depicts the possibility for developing additional apron and hangar space on the west side of Runway 1/19.

Developing this new area allows the airport to create hangar and apron space that caters to larger business aircraft operations and attract new businesses or additional FBOs. Creating space for these potential business operations would separate much of the larger aircraft from the recreational flyers.

Development on the west side of the airfield will require providing new access options to the airfield as well as constructing taxiways to access the movement areas of the airfield. This scenario also depicts a partial parallel taxiway to Runway 1/19.

The northwest section of the airfield is depicted as an area for non-aviation businesses with access from the north.

Note: this configuration requires aircraft to cross an active runway to effectively use all of the runways available.

Advantages:

- Significant additional hangar and apron space.
- Opportunity for more revenue generating activity on the airfield.
- Separation of operation types.

Disadvantages:

- West side access to the airfield maybe awkward.
- Significant development costs.
- Increased risk of runway incursions.

Total Estimated Project Costs: $41,420,000

5.4 CONTINGENCY ALTERNATIVE SCENARIO

Chapter 4 section 4.2.1 of this document indicates that the currently available wind data and analysis shows that the primary Runway 1/19 alone could potentially handle over 95% of the All-Weather and VFR wind conditions, creating a potential non-standard crosswind configuration. Additional analysis is needed when more years of local wind condition information is available for the Richland Airport and before any decisions about the established runway configuration are made.

In the event that the airport should choose to make changes to the overall runway configuration due to FAA funding decisions, the following contingency alternative scenario is possible:

This scenario would be dominated by the closure of Runway 8/26 and repurposing the land area of that runway for other development needs. Closure of Runway 8/26 provides more available space on the west side of the airport property for development of larger apron areas and hangars. There is also area east of Runway 1/19 and north of the existing hangar area where other new hangars and pavements could be developed.

Closing Runway 8/26, should it become necessary, reduces the available options for aircraft operations to the Richland Airport. However, redeveloping the land where the runway is located could provide the Airport with more potential revenue generating facilities.

Note: it is understood that the Airport is very interested in keeping Runway 8/26 at the time of this evaluation but recognizes that it must remain eligible for FAA improvement funds to continue to maintain it.

5.5 SUMMARY AND EVALUATION

Selecting a course of action for the future involves the formulation of a development policy as much as the process of concept selection. To meet the objectives identified in the introduction to this planning effort, alternatives will be evaluated based upon the following criteria:

1. Safety
2. Cost
3. Operational effectiveness
4. Airspace considerations
5. Land resource utilization
6. Environmental considerations
7. Terminal/landside operational effectiveness
8. Flexibility and expandability
9. Construction/phasing issues
10. Revenue generation
11. Opportunities for private investment

Port of Benton commission should select a preferred set of alternatives that functions as the basis for an updated Airport Layout Plan within the overall master planning context. It is important to note that selection of an alternative(s) does not necessarily mean it will happen. The intent is to create a visionary, 20-year 'road' map.

The map then becomes a plan, and plans may change. A plan which has remained unchanged over a given 10-year period has perhaps not been responsive to 10 years' worth of community or economic growth.

The Port may elect to update or change the Airport Layout Plan at any time, but FAA currently funds a more comprehensive Airport Master Plan Update about every 10 years or so.

FAA and State funding decisions for improvements are not made exclusively based upon analyses herein or the Port leadership's decision to adopt alternative(s) from this Master Plan. Funding decisions are made during the annual Capital Improvement Plan (CIP) process, with dialogue between the FAA, the State, and the Port. Generally, for funding participation, a given improvement or series of improvements must:

1. Be found on the approved Airport Layout Plan; that is, officially sanctioned by the Port Commission and the FAA.
2. Be eligible and justified for funds per FAA advisory circular or supplemental guidance.
3. Be environmentally cleared.
4. Be funded, in an increasingly competitive general aviation funding environment.

More about these prerequisites is covered in the next chapters.

Prior to evaluation, a bit of clarification for, and description of, each evaluation criteria is provided:

1. Safety in this context refers to design standards compliance and ability to effectively provide obstruction disposition.
2. For comparison purposes, costs are based on planning-level estimates.
3. Operational effectiveness relates to the ability of the airport to operate without limitation and constraint.
4. Airspace considerations relates to the ability of the airport to operate without limitation and constraint from an airspace perspective.
5. Land resource utilization refers to the ability of existing and/or planned land envelope to accommodate anticipated demand.
6. Environmental issues relate to the extent of potential impact on the local environment with respect to NEPA impact categories.
7. Terminal/landside operational effectiveness relates to ease of access to on-field facilities, such as parking, fueling location, access and circulation.
8. Flexibility and expandability relates to the ease of adding onto the current airfield.
9. Construction/phasing relates to the effectiveness of a given multi-year project to leverage value.
10. Revenue generation is the ability of the airport fund to raise sufficient dollars with an aim to self-sufficiency.
11. Opportunities for private investment is the extent to which aviation businesses find opportunities to conduct business via ground leasing or off-airport accommodation.

This evaluation is somewhat subjective. The next few subsections brief each evaluation criteria for the alternatives and configurations.

SAFETY

Each alternative is crafted to meet design standards compliant with relative ease of obstruction disposition should future recommendations be considered. All alternatives are weighted equally as a consequence.

COST

Alternatives are simply identified via the planning-level cost estimate, with the least expensive being the most responsive.

OPERATIONAL EFFECTIVENESS

The notion of operational effectiveness focuses on airside operations, but landside interaction is also important. Generally, the more demand accommodation afforded, with the prerequisite design standard compliance, the greater operational effectiveness.

Future demand, at least for purposes of forecasted values herein, is not constrained with any alternative. Planning for a 50-year demand, with growth trends continuing as they are may result in the need for land acquisition to provide for runway extension(s) and improved approach capabilities.

AIRSPACE CONSIDERATIONS

Each alternative is crafted to meet airspace standards compliant with relative ease of obstruction disposition. Any future obstructions will need to be disposed of via removing, lowering, or lighting per FAA guidance.

LAND RESOURCE UTILIZATION

The potential to continue to employ future aviation and off-airport (not obligated) non-aviation uses significantly expands the airport's economic potential. Landside Configuration No. 2 and 3 are more effective in maximizing the available land envelope to support larger business aircraft operations.

ENVIRONMENTAL CONSIDERATIONS

Any disturbance beyond existing built infrastructure on or off airport property has the potential to impact environmental resources in the vicinity of the airport. All alternatives would need to be evaluated for environmental impacts. Specific considerations would include but are not limited to the following:

- Neighboring business impacts from land and acquisition and/or avigation easements under Airside Alternatives 1, 2, 3, and 4.
- Transportation impacts from the relocation of Saint Rd. under Airside Alternatives 2 and 3.
- Increased traffic through rural residential areas to access the west side of the airfield for Landside Configuration 2.
- Loss of a portion of the Golf Course and embankment construction in Airside Alternative 3.

FLEXIBILITY AND EXPANDABILITY

This item and the next are somewhat related. There are a couple of development scenarios that create interesting juxtapositions to consider.

Airside Configurations 2 and 3 depict expansion of the primary Runway 1/19. The potential extension to the north creates additional challenges to meet standards for improved approach capability to Runway 19 End. The consideration is: value for the improved, lower minimum visibility range (>1/2-mile), approach versus additional runway length.

CONSTRUCTION AND PHASING

Continuing with the above flexibility discussion, phased construction of the improvements will likely be required. Phasing and meaningful project sequences according to the Port of Benton's desires is the subject of the next chapter.

REVENUE GENERATION

Financial self-sufficiency is a matter for grant assurance compliance and is foundational to this planning effort. It is for this reason that demand accommodation is considered critical. Hangar ground lease revenue is often a large component of revenue for a given general aviation airport. Box hangars should continue to be built. Upfront costs for these box hangars are relatively small. With respect to these facilitates, revenue will proportionally increase with a larger, more business aircraft capable airfield. Limited additional recreational and T-hangar space is planned.

OPPORTUNITIES FOR PRIVATE INVESTMENT

On-airport hangar ground leasing may be an important part of the airport's financial future. Enough land in various on-airport locations exists to accommodate future demand.

Each of the alternatives are evaluated for the criteria described below in **Table 5.1**. Each alternative is weighted appropriately, with a value representing a benefit to the airport and identifies the combination of the most appropriate alternatives as: **Airside 1B and Landside Config 1B.**

TABLE 5.1
ALTERNATIVES EVALUATION

AREA OF THE AIRPORT		AIRSIDE									LANDSIDE		
Evaluation Criteria		Airside 1A	Airside 1B	Airside 2A	Airside 2B	Airside 3A	Airside 3B	Airside 4	Airside 5A	Airside 5B	Landside Config 1A	Landside Config 1B	Landside Config 2
General Aviation (GA) Continuity Considerations													
1	Safety	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Cost	✓	✓								✓	✓	
3	Operational Effectiveness		✓							✓			
4	Airspace Considerations		✓	✓	✓	✓	✓	✓		✓			
5	Land Resource Utilization	✓	✓						✓	✓	✓	✓	✓
6	Environmental Considerations	✓							✓	✓	✓	✓	
7	Terminal/Landside Operational Effectiveness											✓	✓
8	Flexibility and Expandability			✓	✓	✓	✓	✓					✓
9	Construction/Phasing Issues	✓	✓	✓	✓				✓	✓	✓		
10	Revenue Generation		✓									✓	✓
11	Opportunities for Private Investment		✓	✓	✓	✓	✓	✓				✓	✓

Source: JUB

5.6 PUBLIC INVOLVEMENT SUMMARY

The public involvement process aimed to:

- Inform stakeholders, airport users, and general public about future airport plans.
- Understand the needs and perspectives of those affected by the current and future airport facilities and activities.
- Gather specific feedback about the airport layout alternatives.

Beginning in late 2019 and concluding in December 2020, The Langdon Group (TLG), The public involvement division of J-U-B ENGINEERS, implemented several processes over two phases:

- Project website (www.RLDMasterPlan.com) that served as the hub for current information and opportunities for engagement in the process.
- Thirteen Key stakeholder interviews.
- Technical Advisory Committee coordination and meeting facilitation.
- Media relations.
- Two community surveys.
- Virtual/Online “open house” campaign to engage the general public and airport users; providing a window of opportunity for feedback, questions, and comments.
- Virtual display boards with an overview of each of the airside and landside alternatives were created, as well as boards to describe the masterplan process, goals, and schedule. The final display board listed how people could provide feedback via reaching out to the public involvement representative or completing the online survey.
- Flyers with information about how to provide feedback were also posted and distributed at the airport.

Generally, community stakeholders indicated the airport meets their current needs, is well maintained and managed, and presents growth opportunities such as longer runway, enhanced FBO and future hangar space. Airport users indicated a preference for:

- Greater than 5,000-foot primary runway 1/19 with ¾ mile vm RNAV for 1 end and ¾ mile vm LOC and RNAV for 19 end, with priority given to lengthening the runway only if it keeps the approach capacity it currently has.
- Extending the runway should be a higher priority than approach capability improvement.
- ¾ mile RNAV approach for Runway 8 End.
- ¾ mile RNAV approach for Runway 26.
- Strong preference for T-hangars over tiedowns, shade hangar tiedowns, small box hangars and large box hangars. Small box hangars were second preference.
- Improvements to current runway conditions and runway length were equally favored over improvements to apron, hangars and parking.

These comments generally favor the selected preferred alternative, which shows future extensions to the primary runway, approach improvements to Port staff weighed the responses and feedback as they directed the future improvement depictions for this planning effort.

Comprehensive summaries of the two public involvement phases are included in this document as Appendix A and B.

5.7 PORT SELECTED PREFERRED DEVELOPMENT

The Port Board of Commissioners, TAC, and Staff have selected a combination of a modified Alternative No. 3A with a modified Landside Configuration 2 as the Preferred Development. The Board understands that a phased approach will be necessary.

Prerequisite to runway extension(s) and any approach capability enhancement is obstruction disposition, and property and avigation easement acquisition, as identified in Chapter 4. See **Figure 5.13** for a more detailed description. The extension of Runway 19 described within the preferred alternative would extend the runway along with its protected imaginary boundaries. These imaginary boundaries would impact Saint St and potato storage driveway to the north eastern end of Runway 19, thus requiring these roads to be closed. However, this would be of some impact to Lineage Logistics, formerly known as Henningsen Cold Storage, and Lamb Weston. These establishments can continue to use the newly accessible route for Snyder Road to cross the RPZ and access their facility to the north of the Runway 19.

Chapter 6 will address phased development as a whole, including financial feasibility.

Implementation of this plan and elements of the plan are primarily reliant on funding from FAA and other sources. To move forward with any specific project will depend upon trigger-point thresholds for specific projects and justification from FAA.

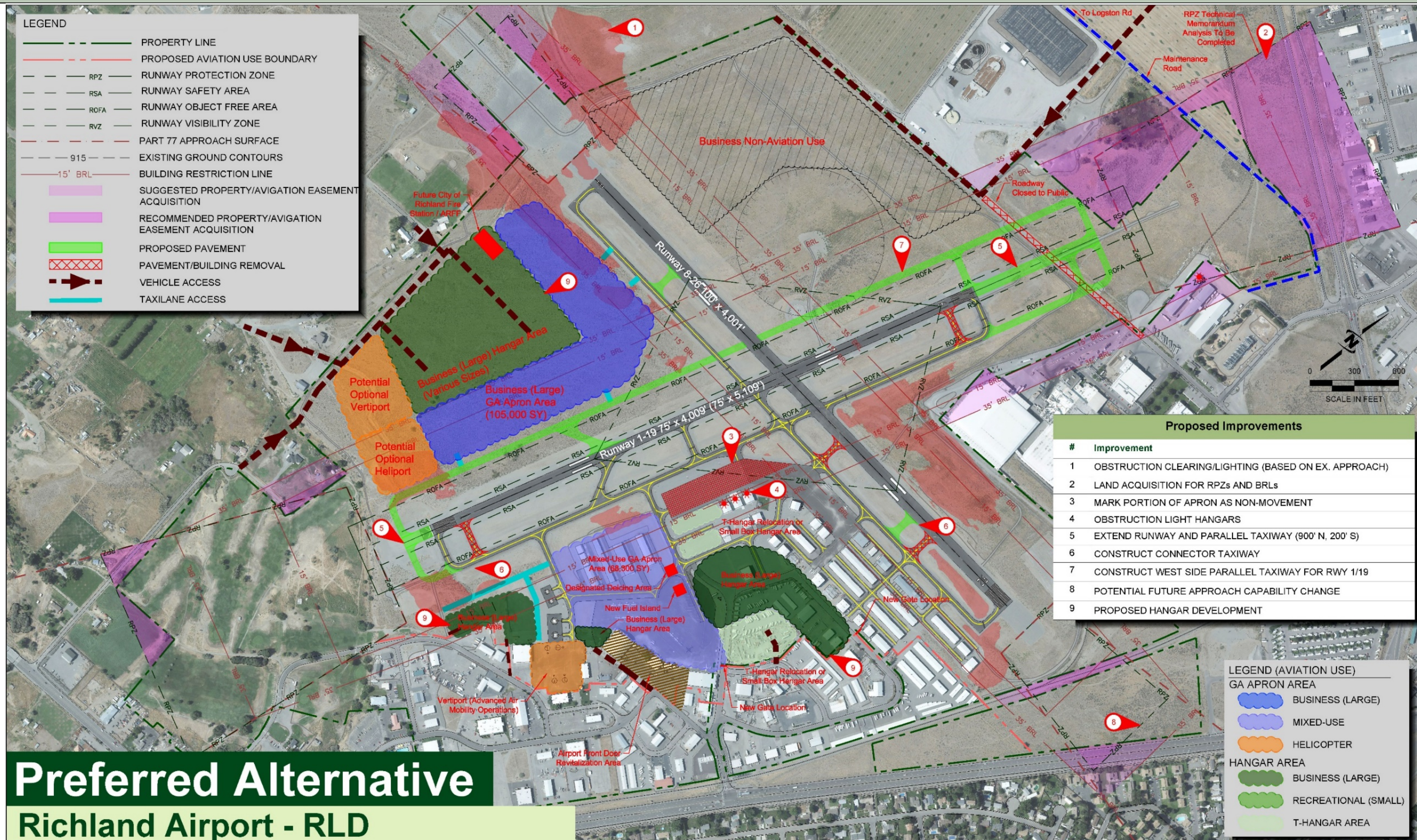
The Port of Benton has made significant efforts to engage with the public and specifically users of the Richland Airport to seek input and build consensus for the Airport's future plans. The Preferred Alternative (**Figure 5.13**) depicts the intended growth and updates the Port would like to implement over the course of the planning period. Specific commentary about the alternatives and this ultimately preferred alternative can be found in Appendix C of this document.

The Preferred Alternative shows possibilities for development near the existing airport features, Including relocating some hangars and other building in the short term. The Port desires to ultimately extend the length of the primary runway when it becomes justified. It also depicts the possibility for expanding and developing additional apron and hangar space on the west side of Runway 1/19 long-term.

Significant aspects of the Preferred Alternative are described herein:

- The Port of Benton's primary objective is to maximize the Richland Airport as an asset to the Port and to the community. This includes accommodating businesses and commercial activity that operates on and around the Airport. Some of the areas within the aviation use boundary have been operating as non-aviation for many years and provide substantial revenue for the airport. In order to continue that accommodation, the Port will need to delineate areas for aviation use and those for non-aviation use and proceed to acquire FAA approvals for possible release of obligation on some properties. **Figure 5.13** depicts a proposed future aviation use boundary line.
- Hangar development ties closely to the accommodation of business on the Airport. Support for business as well as providing hangars to meet growing demand need to work together. The Preferred Alternative shows areas where redevelopment or new development should be considered for hangar expansion. Some of this hangar expansion is planned. This development is likely to happen both in the short and long-term time frame across the planning period. The Port is committed to working with current property tenants as new areas are scoped for redevelopment and will strive for amiable and equitable transactions.
- The Port desires to develop the airport as a favored destination for larger business aircraft. To do this, the Richland Airport should consider expanding the available apron space and access to desired services such as the FBO, fuel, and terminal building. To expand the apron space available on the east side of Runway 1/19, there are a series of existing T-hangars and a few box hangars that may require relocation. It should be

FIGURE 5.13
PREFERRED ALTERNATIVE



Source: J-U-B

noted that a portion of these hangars are also obstacles to the airspace around the runway and the airport. New areas for relocation of T-hangars and small box hangars is depicted just north and northeast of the hangars proposed to move. The Port of Benton is committed to working with the tenants and hangar owners as relocation becomes necessary.

- The Port desires to have the Runway 1/19 extended by 900' to the north and by 200' to the south to accommodate the forecasted growing activities of larger business aircraft. Ultimately this provides the Richland Airport with a primary runway over 5,000 ft in length. This will be complemented by a full-length parallel taxiway and expanded business aircraft activity to the west and an extension of the existing east-side parallel taxiway.
- The Port has also seen the value in protecting the airport's operational safety and the potential for the future growth of its approach capabilities. Understanding the benefits of reliable and safe approach capabilities can also encourage aviation activity and ensure its longevity and potential growth in operational numbers and variety. Runway 1 End shows an enhanced protection zone to provide for enhanced approach procedures. Procedures for Runway 26 End and 19 Ends may need to be considered for future compliance requirements, because of roads entering portions of the RPZ. The acquisition of avigation easements to protect the RPZ and BRL boundaries, supported by additional land zone planning ordinance amendments can further guarantee that these goals are met in both the short and long-term.
- The Port of Benton would like to have taxiway elements developed to comply with current design standards and facilities to support the runway extension, and future hangar/apron development. Taxiway B will receive two additional connectors, while its two existing connectors will be removed. This will also provide new access options to the airfield, as well as constructing taxiways to access the movement areas of the airfield. Complying with design standards will ensure Richland's ability to meet FAA grant assurances and its ability to maintain its qualification for future AIP funding.
- The Port also desires to have the plan depict future enhancements for visitors to the airfield, which will encourage more general aviation and recreational activity from the community. Having a proactive approach to progressive industry trends can provide advanced air mobility, Internet of Things (IoT) technological infrastructure, and multi-modal options to integrate new essential services being built within Richland community.
- The Port wishes to continue its facilitation of transport in general and recreation aviation activities by redeveloping its 'Airport Front Door' to provide an entrance experience that begins at the Main Terminal, parking, and FBO areas. The goal is to create a seamless route through the airport's areas, remove as much stress from the process, and offer an ambiance that local users appreciate. By providing safe, clean, technologically integrated, and clearly marked facilities, the Airport will continue to promote use of its and the FBO's facilities.
- The Port has acknowledged that investment into the development of apron, hangars, aircraft parking, and fuel will promote general and recreational aviation activities, aviation business growth and other local industries in Richland. On the west side of the airfield these facilities have been identified in the preferred alternative and will provide a competitive edge over similar sized general aviation airport in the region.
- To protect considerable investments, mitigation of risks should be implemented. The Port desires to provide general and recreational aviation activities and structures with a well-equipped and reliable Richland City Aircraft Rescue Firefighting (ARFF) station. The positioning of the potential ARFF station to the west side midfield area will address immediate aircraft/airfield emergencies within 3-4 minutes.
- The Port desires to relocate the existing fueling services to an area more accessible on the mixed-use general aviation apron. It appreciates that facilitating easily accessible aviation fuel, immediately near the apron will have a dual advantage to airport users and ARFF personnel. Existing fueling tanks are privately owned and relocation will require coordination between the Airport and private owner.

Total Estimated Project Costs for the Preferred Alternative: $58,900,000

CHAPTER 6 PHASED DEVELOPMENT

6.0 INTRODUCTION

Capital improvements and preventive maintenance at the Richland Airport are scheduled for three successive time periods: Short Term -years 1-5 (2022–2026); Intermediate Term – years 6-10 (2027–2031); and Long Term – years 11-20 (2032–2041). The following sections describe and depict the various improvements, by phase, along with an estimated cost for each item. Development items are shown on three exhibits within the chapter. The recommended phasing is not set in stone and changes in aviation demand, Port perspective, grant funding or area economics may alter proposed improvement timing or composition.

The figures include an estimate for project costs. Estimates were developed using historical year (2020) costs. Estimates include construction, engineering, administration, testing, surveying, and legal expenses. It should be noted that these estimates are order of magnitude accurate for planning purposes, based upon area bid tabulations. A 25% contingency amount is added to anticipate unforeseen circumstances. This approach reduces the chance of budget surprises when a more detailed investigation and design is initiated. Cost estimates should be reviewed and updated as necessary to account for technological improvements, changes in the economy, future construction innovations, and/or changes in local conditions.

These costs constitute an unconstrained, yet reasonable, estimate of future airport needs.

The exhibit tables found in each figure, identify AIP Non-Primary Entitlement (NPE), Unfunded, WSDOT, and Port of Benton funding participation.

The Airport Improvement Program, AIP NPE column approximates the current FAA entitlement funding for the airport of up to $150,000 annually. The Port of Benton, as sponsor of the Richland Airport is assigned this entitlement funding given the activity levels at the airport and its participation in FAA's National Plan of Integrated Airport Systems (NPIAS). The FAA funding level for approved airport projects is typically 90%.

The FAA Unfunded column shows the desired level of capital improvement and necessary funding for the unconstrained demand identified by the planning process. The planning process has revealed the sponsor's desire for capital improvements beyond that which can be accommodated by current FAA entitlement funding for the airport. The purpose of this column is to identify financially unconstrained capital improvements and highlight the improvements that exceed the $150,000 annual entitlement.

FAA grant funds available for this unfunded amount can come from primarily two sources within AIP funding formulae: FAA State Apportionment (SA) and FAA Discretionary funds. FAA SA grant funds are those funds assigned to states for airports large and small according to a priority ranking. The National Priority Ranking (NPR) methodology assigns value to airports based upon activity and type of capital improvement. FAA Discretionary funding is more often distributed to those airports with airline service.

The Washington State Department of Transportation (WSDOT) offers a partial grant program, often used to supplement and match (generally 2.5 to 5 percent) FAA funding. WSDOT grant funding has a similar priority ranking mechanism for project evaluation. WSDOT requires the Port of Benton to match the remaining percentage for a total project funding; thus, FAA may provide 90 percent, WSDOT provides 5 percent and the final 5 percent of typical capital improvement project funding comes from Port of Benton's budget.

The Port of Benton participation column may be revenues that originate from the operation of the airport or from other sources. This column identifies the ±5 percent matching funds and the additional funds required for larger, generally revenue producing capital improvements or maintenance projects that do not meaningfully compete for FAA or WSDOT grant dollars.

6.1 SHORT-TERM IMPROVEMENTS

During the Short-Term phase, several development and improvement items are planned to provide for safe and efficient airport operations and to kick-off planned development. The Short-Term Improvements listed should be roughly in line with the Airport Capital Improvement Plan (ACIP). The following descriptions accompany the **Figure 6.1** on an upcoming page.

SHORT - TERM ITEM NO. 1 (YEAR 1)

Construction of Runway 1/19 Lights, Signage, Taxiway Lights, Signage, Backup Generator and Electrical Vault

The project includes electrical room modifications and replacement of the existing Medium Intensity Runway Lights (MIRLs), signs, Precision Approach Path Indicators (PAPIs), and wind cones. These updates are for equipment on both Runway 1/19 and Runway 8/26. The backup generator and electrical vault equipment are to be replaced.

SHORT - TERM ITEM NO. 2 (YEAR 1)

Obstruction Mitigation within RPZ and Primary Surfaces – Rwy 8 RPZ grading, hangar, obstruction lighting, RVZ tie-down removal

The Runway Protection Zone for the Runway 8 End will require some area preparation for obstacle clearance. Additional obstruction mitigation would also involve the lighting of hangars within the primary protection surfaces to both runways and removal of tie-downs to ensure Runway Visual Zone clearance for simultaneous approaching crosswind operations on Runway 1/19 and 8/26.

SHORT - TERM ITEM NO. 3 (YEAR 2)

Design of Pavement Related Rehabilitation No. 1

FAA grant assurances require that a pavement maintenance plan be established to maximize the airfield's life cycle. At this point in the planning process, designs will be created for pavement rehab actions to the following specifications: Runway 1/19 and 8/26; A-II (Small), 30,000 pounds or greater pavement strength.

SHORT - TERM ITEM NO. 4 (YEAR 3)

Construction of Pavement Rehabilitation No. 1.

Construction of the pavement rehabilitation activities, designed in the previous project, will include treatments such as crack seal and a seal coat with re-marking. This preventive maintenance is planned on a 4-6-year cycle over the course of the 20-year planning period.

SHORT - TERM ITEM NO. 5 (YEAR 3)

Design Hangar Taxilanes, Relocate Taxiway Connectors

The design process for future hangar taxilanes around the eastern apron and central area of the airfield should begin at this point. Simultaneously, the design process for connectors on Runway 8/26 should also occur here. Taxiway design specifications should include Taxiway A and B and Connectors: Group II, TDG-1B, 30,000 pounds or greater pavement strength. For other portions of apron, taxiways, and taxilanes: Maintain Group II separations where feasible, TDG-1B, 30,000-pound or greater pavement strength.

SHORT - TERM ITEM NO. 6 (YEAR 3)

1905 Terminal Drive Building

This project is the razing of the building located at 1905 Terminal Drive and the removal of construction and debris from the demolition site. This will require proper Personal Protective Equipment (PPE) and proper environmental control measures to ensure Particle Patter (PMIO) and an Environmental Site Assessment (ESA) due to the lead and asbestos contamination.

SHORT - TERM ITEM NO. 7 (YEAR 4)

Design and Construction of Access Control Points and Airport Perimeter Fencing

This upgrade to the airfield involves the design and construction of an airport perimeter and wildlife control fence that covers both the airside air operations area and landside areas of the airport. This may involve the removal of small structures like box-culverts, farm fence, reinforced concrete structures, foundations, trees, and final site cleanup.

SHORT - TERM ITEM NO. 8 (YEAR 5)

Construct Hangar Taxilanes and Relocate Taxiway Connectors

The following projects follow the design of new taxilanes, hangar sites and parking areas with construction north of the main apron area and east of some of the existing hangars. (8A-8C inclusively)

SHORT - TERM PORT PROJECT NO. 8A/8B

Construct Hangar Taxilanes and Automobile Parking (D3) – Phase 1

Small, but formal automobile parking areas will be added near the hangar area. The addition of these facilities will be to accommodate hangar users that desire parking closer to their leased hangars. The new hangar taxilanes will be constructed, and utility access should be included to facilitate hangar development. The taxilane construction should conform to the design of Group II separations where feasible, TDG-1B, 30,000-pound or greater pavement strength.

SHORT - TERM ITEM NO. 8C

Relocate Taxiway Connectors

The two taxiway connectors on Runway 8/26 should be relocated to meet design and safety standards. This will facilitate the increasing size and speed of aircraft operating at Richland and prevent direct apron access to and from the runway. Taxiway A and B and Connectors should conform to specifications of: Group II, TDG-1B, 30,000 pounds or greater pavement strength.

SHORT – TERM ITEM NO. 9 (YEAR 4)

Land Release for Non-Aviation Land

The historical Airport boundary includes much of what is today commercial and industrial facilities. In order for the Airport to comply with federal grant assurances and land use standards, Airport staff should seek its release as an aviation use area. Pursuant to section 163 of the FAA Reauthorization Act of 2018 certain portions of land included in the airport property should be requested to be re-designated from aeronautical use, to non-aeronautical use. This land could be released from obligation and used for economic development.

SHORT - TERM ITEM NO. 10 (YEARS 1-5)

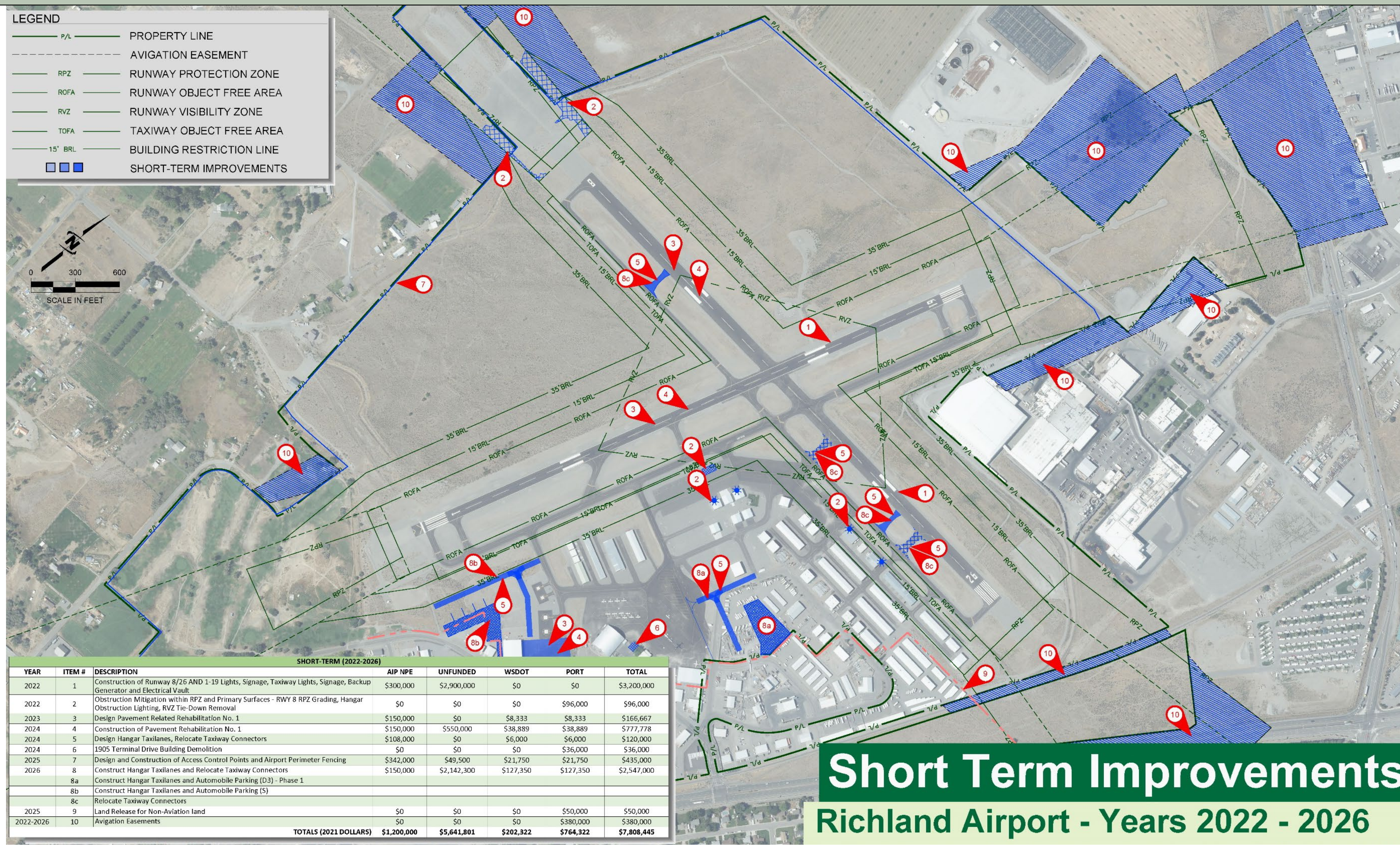
Avigation Easements

The FAA requires that airports own and control the land parcels within an RPZ and other protection surfaces by ownership, or easements. In order to facilitate the future Runway 1 and 19 End extensions, the Port of Benton should work with neighboring jurisdictions and property owners to acquire property as depicted. For areas where property acquisition is not feasible, avigation easements should be acquired. Easements may also be acquired prior to land acquisition as an interim protection while purchase agreements are worked out. This scenario could likely occur with the City-owned gravel pit near Runway 19 End.

Figure 6.1; Short-Term Improvements (2021-2025) following this page depicts items numerically tabulated and referenced in plan view, totaling:

AIP NPE:	$1,200,000
Unfunded:	$5,641,800
WSDOT:	$202,322
Port District:	$764,322
Totals	$7,808,444

FIGURE 6.1
SHORT-TERM IMPROVEMENTS



SHORT-TERM (2022-2026)

YEAR	ITEM #	DESCRIPTION	AIP NPE	UNFUNDED	WSDOT	PORT	TOTAL
2022	1	Construction of Runway 8/26 AND 1-19 Lights, Signage, Taxiway Lights, Signage, Backup Generator and Electrical Vault	$300,000	$2,900,000	$0	$0	$3,200,000
2022	2	Obstruction Mitigation within RPZ and Primary Surfaces - RWY 8 RPZ Grading, Hangar Obstruction Lighting, RVZ Tie-Down Removal	$0	$0	$0	$96,000	$96,000
2023	3	Design Pavement Related Rehabilitation No. 1	$150,000	$0	$8,333	$8,333	$166,667
2024	4	Construction of Pavement Rehabilitation No. 1	$150,000	$550,000	$38,889	$38,889	$777,778
2024	5	Design Hangar Taxilanes, Relocate Taxiway Connectors	$108,000	$0	$6,000	$6,000	$120,000
2024	6	1905 Terminal Drive Building Demolition	$0	$0	$0	$36,000	$36,000
2025	7	Design and Construction of Access Control Points and Airport Perimeter Fencing	$342,000	$49,500	$21,750	$21,750	$435,000
2026	8	Construct Hangar Taxilanes and Relocate Taxiway Connectors	$150,000	$2,142,300	$127,350	$127,350	$2,547,000
	8a	Construct Hangar Taxilanes and Automobile Parking (D3) - Phase 1					
	8b	Construct Hangar Taxilanes and Automobile Parking (S)					
	8c	Relocate Taxiway Connectors					
2025	9	Land Release for Non-Aviation land	$0	$0	$0	$50,000	$50,000
2022-2026	10	Avigation Easements	$0	$0	$0	$380,000	$380,000
		TOTALS (2021 DOLLARS)	**$1,200,000**	**$5,641,801**	**$202,322**	**$764,322**	**$7,808,445**

SOURCE:JUB

6.2 INTERMEDIATE-TERM IMPROVEMENTS

During this Intermediate-Term phase the focus shifts to improvements to the main terminal and hangar area. A major part of the improvements involves hangar space for more airport users to store aircraft and options for future relocation of hangar tenants. The following descriptions accompany **Figure 6.2** on an upcoming page.

INTERMEDIATE - TERM ITEM NO. 1 (YEAR 6)

This item changes the face or the "Front Door" of the airport in meaningful ways. Site preparation and sub-surface utility improvements will accompany renovations to the terminal building and surrounding facilities. The auto parking area next to the terminal building should be reconfigured, reconstructed, and expanded. Revitalization of this area should also include new signage, and amenities for itinerant aircraft crew and passengers such as a pilot's lounge and improved waiting areas. The addition of these facilities should make the Richland Airport a more business-friendly airport and attract more users.

INTERMEDIATE - TERM ITEM NO. 2 (YEAR 6)

Snow Removal Equipment Project

A multi-use unit for mowing, airfield maintenance and snow removal will be planned at this point to replace the current equipment that may have aged past its useful life.

INTERMEDIATE - TERM ITEM NO. 3 (YEAR 7)

Reconstruct Apron and Relocate Fueling Station

These construction projects all occur within the same year but have been separated for their depiction on the phase plan figures.

INTERMEDIATE - TERM ITEM NO. 3A

Reconstruct Main Apron

This project will reconstruct the primary apron at the Richland airport to make it more conducive to larger aircraft. Taxilane alignments and tiedown areas need to change to allow ease of operation for larger and faster jets. The project will also prepare the way for apron expansion to the west when existing hangars can be relocated in the future. The Main Apron's design specifications should follow; Group II, TDG-1B (portions TDG-1A), 30,000 POUNDS OR GREATER PAVEMENT STRENGTH.

INTERMEDIATE - TERM ITEM NO. 3B

Relocate Fueling Station

This project also includes the relocation of the existing aviation fueling system (1x12,000 gal 100LL above-ground tank and 1 x 15,000-gal Jet A1 above-ground tank). This card-based system will be sited and designed to accommodate a future above-ground, second tank for Jet-A fuels, but installation of this tank is not planned within the 20-year planning horizon. Relocation of the fuel systems will provide better service for based and itinerant aircraft and open more area for future hangar siting to the north of the main apron.

INTERMEDIATE - TERM ITEM NO. 4 (YEAR 8)

Design and Construction of Vertiport

A major component of the Urban Air Mobility (UAM) ecosystem will be landing sites and facilities to service vertical takeoff and landing (VTOL) aircraft. The dimensional requirements of the landing area will depend on the aircraft's Critical Dimensions (CD) and maximum gross takeoff weights. Upgrading the area now designated for helicopter parking and operations will fit the anticipated requirements that the FAA will issue for eVTOL operations. Upgrades to this area should largely consider utilities and power needed to support eVTOL services and possibly space for landing pads and terminal facilities. Specific details concerning requirements for these operations are still in development with FAA as well as NASA at the time of the formulation of this plan and flexibility will be key in successful implementation in the future.

INTERMEDIATE - TERM ITEM NO. 5 (YEAR 6-10)

Intermediate Term Hangar Development and Modify Runway 26 End Approach

Given new taxilane and parking areas implemented in the Short-Term Project Item 7, the Port should make space available for development of hangars and can also consider construction of T-hangars or others as future lease space for tenants of hangars that will be relocated. These construction projects all occur within the same year but have been separated for their depiction on the phase plan figures.

INTERMEDIATE - TERM ITEM NO. 5A

Intermediate Term Hangar Development

Economical hangar space at many GA airport across the western states is in high demand. The Port will provide property and access for ground leases to those who want to build additional hangars at the Richland Airport. The Port may also consider constructing hangars or teaming with an FBO to provide hangar space, such as T-hangars or small box hangars, to accommodate tenants whose hangars may need to be relocated in the future.

INTERMEDIATE - TERM ITEM NO. 5B

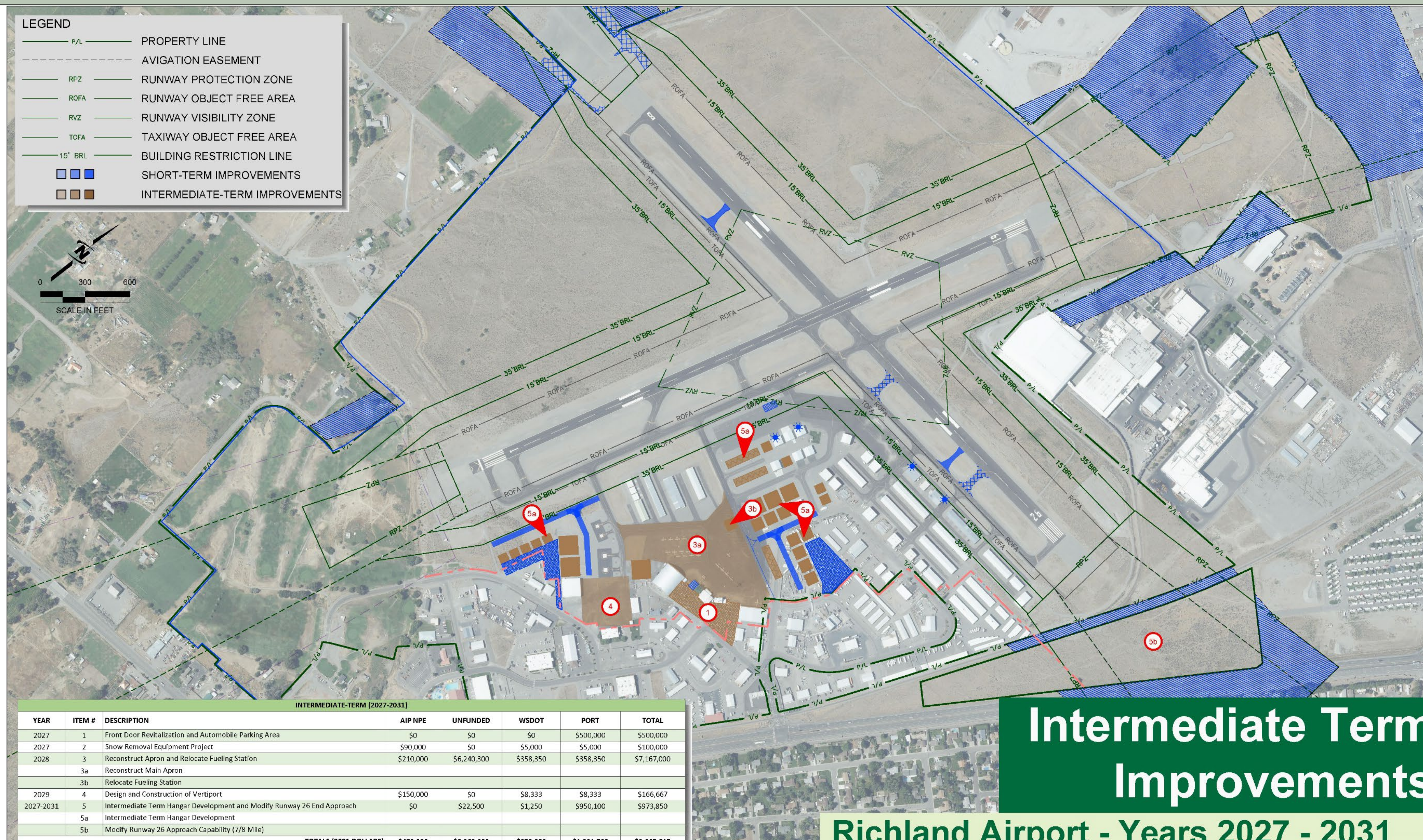
Modify Runway 26 Approach Capability (7/8 Miles)

This item addresses the Instrument Approach Procedures into Runway 26. The forecast for the Richland Airport shows the Airport Reference Code ultimately changing from a category A-II less than 12,500 lbs. MTOW to a category B-II greater than 12,500 lbs. MTOW. As that change occurs the primary protection surface dimensions for Runway 8/26 would demand 1,000 feet wide clear area centered on the Runway. To preserve the hangars along the south side of Runway 8/26 the Airport should keep the primary surface at 500 feet if possible. This will require approval from the FAA to alter the visibility requirements of the approach minimums for Runway 26 End from ≥3/4 mile on its published RNAV GPS Approach with an LNAV/VNAV visibility requirement to 7/8 mile.

Figure 6.2; Intermediate-Term Improvements (2026-2030) on the following page depicts these items numerically tabulated and referenced in plan view, totaling:

AIP NPE:	$450,000
Unfunded:	$6,262,800
WSDOT:	$372,933
Port District:	$1,571,783
Totals	$8,657,517

FIGURE 6.2
INTERMEDIATE-TERM IMPROVEMENTS



INTERMEDIATE-TERM (2027-2031)							
YEAR	ITEM #	DESCRIPTION	AIP NPE	UNFUNDED	WSDOT	PORT	TOTAL
2027	1	Front Door Revitalization and Automobile Parking Area	$0	$0	$0	$500,000	$500,000
2027	2	Snow Removal Equipment Project	$90,000	$0	$5,000	$5,000	$100,000
2028	3	Reconstruct Apron and Relocate Fueling Station	$210,000	$6,240,300	$358,350	$358,350	$7,167,000
	3a	Reconstruct Main Apron					
	3b	Relocate Fueling Station					
2029	4	Design and Construction of Vertiport	$150,000	$0	$8,333	$8,333	$166,667
2027-2031	5	Intermediate Term Hangar Development and Modify Runway 26 End Approach	$0	$22,500	$1,250	$950,100	$973,850
	5a	Intermediate Term Hangar Development					
	5b	Modify Runway 26 Approach Capability (7/8 Mile)					
		TOTALS (2021 DOLLARS)	$450,000	$6,262,800	$372,933	$1,821,783	$8,907,517

SOURCE:JUB

6.3 LONG-TERM IMPROVEMENTS

During the Long-Term phase the focus continues to be on preventive maintenance, as well as beginning development on the west side of the airfield, and the design and construction of a parallel taxiway with a runway extension. The following descriptions accompany **Figure 6.3** on an upcoming page.

LONG - TERM ITEM NO. 1 (YEAR 10)

Pavement Rehab

FAA grant assurances require that a pavement maintenance plan be established to maximize the airfield's life cycle. At this point in the planning process, designs will be created for pavement rehab actions to the following specifications: Runway 1/19 and 8/26 along with taxiways and aprons; A-II (Small), 30,000 pounds or greater pavement strength. Pavement rehab activities will include treatments such as crack seal and a seal coat with re-marking. This preventive maintenance is planned on a 4-6-year cycle over the course of the 20-year planning period**.**

LONG - TERM ITEM NO. 2 (YEAR 11)

Construct Hangar Taxilanes (D-3) – Phase 2

Taxilanes for surface movement across the apron is a fundamental safety requirement at all airports, especially where aircraft operate in uncontrolled environments around other parked aircraft and hangars. This item addresses expanding the hangar taxilanes eastern area of existing hangars and taxilanes, north of the main apron. Additional taxilanes open opportunities for additional hangars in the future. Taxilane construction should conform to the design of Group II separations where feasible, TDG-1B, 30,000-pound or greater pavement strength.

LONG -TERM ITEM NO. 3 (YEAR 12)

Environmental Assessment for Runway 1/19 Extension

Each capital improvement on the airfield, regardless of FAA/WSDOT financial participation, requires an environmental evaluation and clearance. Upcoming projects to be reviewed should include the extensions to Runway 1/19 along with the partial parallel taxiway extensions to the north that will accompany it. The environmental review may also include clearance for the future parallel taxiway on the west side of Runway 1/19 as well as for future development areas. The environmental clearance process and level of effort for these long-term projects will be determined by FAA.

LONG-TERM ITEM NO. 4 (YEAR 13)

Land Acquisition

Land acquisition within the existing and proposed RPZs at both ends of Runway 1/19 is necessary. Areas where land acquisition is not practical should be protected with avigation easement and RPZ analysis approved by FAA. The land acquisition is needed to protect visual and instrument approach capabilities to Runway Ends 1 and 19.

LONG -TERM ITEM NO. 5 (YEAR 14)

Runway 1/19 Extension with Parallel Taxiway(s) Design.

FAA guidance for runway length suggests that an additional 1,100-foot of runway length (900' to the north and by 200' to the south) is not currently eligible for grant-in-aid funding. The Airport Manager reports that he continues to receive comments that aircraft operators would use the airport in a more meaningful way, with additional payloads or fuel, if more runway was made available. Therefore, while the forecasting for this planning did not demonstrate that a threshold number of demanding aircraft operations is enough to warrant FAA AIP eligibility for a ±5,000-foot runway now, the airport sponsor has made it clear that planning to that end should be done to protect the needed area for future expansion and expects that by this point in the planning period cause for justification may be apparent.

This project will provide the design of the runway extension(s) parallel taxiway extensions and a full-length Parallel Taxiway to the west of Runway 1/19 with four additional connector taxiways.

LONG -TERM ITEM NO. 6 (YEAR 15)

Runway 1 and 19 Extension, from 4,009 Feet to 5,109 Construction.

This project will construct the extensions described in the design above. Construction will include earthwork to improve the extended runway safety areas (RSA). These are dimensional and grade-specific changes. The surface grades and the RSA width and beyond end dimensions are maintained. Runway pavement will be extended approximately 900’ to the north and 200’ to the south with matching additions to the east-side parallel taxiway and updated markings. Visual and other navigational aids, such as REILS, MALSRs, PAPIs, localizer, wind cones, etc. will need to be relocated accordingly. At this point in the planning period the medium intensity runway edge lighting system (MIRLs) may well have aged past its useful life, so with the extension of the MIRLs along the runway extension, the existing system will also be replaced.

LONG - TERM ITEM NO. 7 (YEAR 16)

Pavement Rehabilitation No. 3

FAA grant assurances require that a pavement maintenance plan be established to maximize the airfield’s life cycle. At this point in the planning process, pavements would benefit from crack sealing and a seal coat with re-marking. This preventive maintenance is planned on a 4-6-year cycle over the course of the 20-year planning period.

LONG - TERM ITEM NO. 8 (YEAR 17)

Parallel Taxiway Construction to the West

A full-parallel taxiway is a fundamental item of development for airports large and small, especially those airports operating in the instrument environment with IAPs. This item addresses constructing the additional parallel taxiway for Runway 1/19 as designed in Long-term Item No. 5. Future taxilanes in and around an apron on the west side of the airfield should be considered as needed for hangar development.

LONG-TERM ITEM NO. 9 (YEAR 18)

Apron and Hangar Area Construction

Port officials have expressed a desire to make an area available for additional apron space on the west side of the airfield. The new west apron will provide access to future hangars as well as provide additional aircraft parking. This area will be developed specifically to serve larger jet traffic with larger more maneuvering space. Amenities such as available fuel, tiedowns and deicing might also be a consideration in this apron area.

LONG-TERM ITEM NO. 10 (YEAR 10-20)

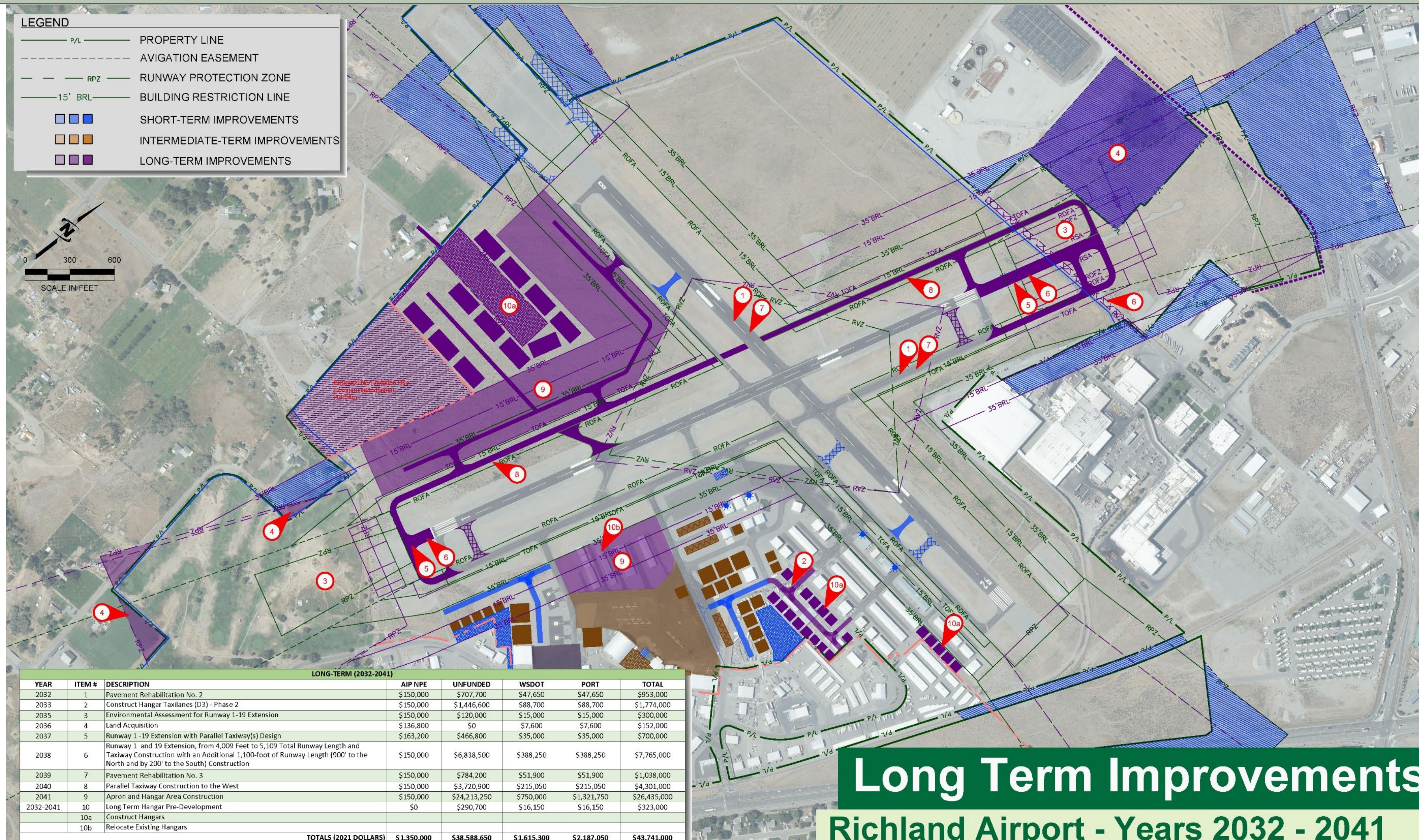
Long-term Hangar Pre-Development

A continuation of Port of Benton’s strategy to make an area available for additional apron space to the west will provide access to additional future hangars as well as provide additional aircraft parking. This phase will also require the creation of a strategic plan for the hangar projects, design, securing permits and gathering labor resources required for before actual construction.

Figure 6.3, Long-Term Improvements (2031-2040) on the following page depicts these items numerically tabulated and referenced in plan view, totaling:

AIP NPE:	$1,350,000
Unfunded:	$38,588,650
WSDOT:	$1,615,300
Port District:	$2,187,050
Totals	**$43,741,000**

FIGURE 6.3
LONG-TERM IMPROVEMENTS



LONG-TERM (2032-2041)							
YEAR	ITEM #	DESCRIPTION	AIP NPE	UNFUNDED	WSDOT	PORT	TOTAL
2032	1	Pavement Rehabilitation No. 2	$150,000	$707,700	$47,650	$47,650	$953,000
2033	2	Construct Hangar Taxilanes (D3) - Phase 2	$150,000	$1,446,600	$88,700	$88,700	$1,774,000
2035	3	Environmental Assessment for Runway 1-19 Extension	$150,000	$120,000	$15,000	$15,000	$300,000
2036	4	Land Acquisition	$136,800	$0	$7,600	$7,600	$152,000
2037	5	Runway 1 -19 Extension with Parallel Taxiway(s) Design	$163,200	$466,800	$35,000	$35,000	$700,000
2038	6	Runway 1 and 19 Extension, from 4,009 Feet to 5,109 Total Runway Length and Taxiway Construction with an Additional 1,100-foot of Runway Length (900' to the North and by 200' to the South) Construction	$150,000	$6,838,500	$388,250	$388,250	$7,765,000
2039	7	Pavement Rehabilitation No. 3	$150,000	$784,200	$51,900	$51,900	$1,038,000
2040	8	Parallel Taxiway Construction to the West	$150,000	$3,720,900	$215,050	$215,050	$4,301,000
2041	9	Apron and Hangar Area Construction	$150,000	$24,213,250	$750,000	$1,321,750	$26,435,000
2032-2041	10	Long Term Hangar Pre-Development	$0	$290,700	$16,150	$16,150	$323,000
	10a	Construct Hangars					
	10b	Relocate Existing Hangars					
		TOTALS (2021 DOLLARS)	**$1,350,000**	**$38,588,650**	**$1,615,300**	**$2,187,050**	**$43,741,000**

SOURCE:JUB

Funding included for the 20-year term of this planning totals:

AIP NPE:	$3,000,000
Unfunded:	$50,493,250
WSDOT:	$2,190,555
Port District:	$4,523,155
Totals	**$60,206,960**

A good portion of funds for improvements are currently identified as Unfunded. The reason for this identification is that financial plans must, per FAA, remain financially constrained until such time as projects become justified and funding is programmed via the annual ACIP process.

6.5 ENVIRONMENTAL REVIEW

The proposed capital improvements and preventative maintenance projects at the Richland Airport are described in detail in Sections 6.1 Short Term Projects, 6.2 Intermediate Term Projects and 6.3 Long-Term Projects and constitute the work anticipated as a result of the master planning and public involvement processes. The short-term improvements include several development projects to address immediate needs for safe and efficient Airport operations and prepare for planned future development, while intermediate and long-term projects focus on preventative maintenance and continuation of the phased apron, runway extension and parallel taxiway project.

FAA will make the final determination regarding the level of NEPA documentation and the required resource evaluations for the project listed in the Phased Planning Approach. Based on the scope, scale, and location of the proposed Airport improvements, the following environmental resource studies are anticipated to be required prior to implementation of the listed projects:

- **Environmental Evaluation –** Based on the Preferred Alternative actions, it is anticipated that the short-term improvements would meet the FAA's requirements for categorically excluded actions as detailed in FAA Order 1050.1F. Several resource studies may be required if a documented categorical exclusion document with an environmental evaluation is necessary for any of the short-term improvement projects.
- **Biological Evaluation –**A preliminary biological evaluation and site visit indicates that there is no habitat on the Airport for ESA-listed species. The Washington Department of Fish and Wildlife's PHS database identified black-tailed jackrabbit, ferruginous hawk, and Townsend's ground squirrel as potentially occurring at and adjacent to the Airport. As described in Chapter 2, Townsend's ground squirrel is the only listed species with the potential to occur at the Airport. A biological evaluation is recommended prior to the implementation of the Preferred Alternative to verify that there is no suitable habitat for sensitive species at the Airport and that there are no changes to the ESA or state species lists.
- **Cultural Resource Survey/Mitigation –** A cultural survey is recommended for areas that have not been surveyed due to the future ground disturbance at the Airport. Additionally, given that there are structures of historic age on site scheduled for demolition, including the Martha Building 1905, mitigation may be required under Short-Term Project 6.
- **ESA Phase I/Hazardous Materials –** An ESA Phase I assessment would likely be required prior to the removal of the 1905 Terminal Drive Building due to the potential presence of lead paint and asbestos. Asbestos and lead mitigation or cleaning would likely be necessary and would require a qualified hazardous material professional to remove and dispose of any contaminated materials. Additionally, a review of the Washington State Department of Ecology Facility Site Atlas should be conducted prior to proceeding with any of the aforementioned short-term projects.
- **Environmental Justice Analysis –** The Preferred Alternative would require the acquisition of land and avigation easements. While the construction and development actions of the Preferred Alternative are not anticipated

to impact health and safety conditions off the Airport, an environmental justice analysis would likely be required as part of the NEPA process.

- **Construction Impact Analysis –** Construction activities have the potential to result in temporary impacts to air, noise, and water quality in the proposed project area. Therefore, construction impacts and mitigation measures, such as Best Management Practices, should be considered prior to the implementation of the Preferred Alternative.

The following resource surveys are not anticipated to be required for the completion of the NEPA requirements associated with the Preferred Alternative:

- **Water Resources Assessment –**A preliminary site visit indicates that there are no surface waters or wetlands on the Airport property. A water resources report is not anticipated to be required for the Preferred Alternative.
- **Air Quality Analysis –** Benton County is currently in attainment for all criteria pollutants and GA operations at the Airport are forecasted to remain under the operation threshold for air quality analysis. Therefore, the proposed improvements are anticipated to remain under the operation threshold for air quality. An air quality analysis may be required if Benton County's air quality designation changes or if the Preferred Alternative results in an overall increase of operations such that the threshold is reached for air quality analysis.
- **Farmland Analysis –** There are no agricultural activities on the Airport property, and the Preferred Alternative would not convert any agricultural land to non-agricultural activities. No farmland analysis is anticipated to be required.
- **Land Use Analysis –** A land use analysis for the Preferred Alternative is included in an upcoming chapter of this Master Plan Update. Pertinent information from this Master Plan Update would be included in the environmental documentation.
- **Noise Analysis –** The proposed improvements under the Preferred Alternative are not likely to impact the surrounding land uses based on the current 65 DNL contour, and therefore, a noise analysis is not anticipated to be required.

Intermediate-Term Improvements: The Intermediate-Term Projects (2027-2031) would not be pursued until completion of the appropriate environmental analysis as dictated by the FAA. In general, the Intermediate-Term Projects focus on obstruction mitigation and standards compliance along with the construction of a new, phased midfield terminal area. Based on these projects, a categorical exclusion (CATEX) would likely be necessary prior to the implementation of the Intermediate Term improvements.

Long-Term Improvements: The Long-Term Projects (2032-2041) would include a continued focus on preventative maintenance, expansion of apron, taxilanes, and hangar space on the west side of the Airport, design and construction of a parallel taxiway, and runway extension. NEPA requirements for each of the Long-Term Projects would be assessed by the FAA at a later date, however an Environmental Assessment would likely be required for any runway extension project.

- **Visual Resources –**The installation of the PAPI, MALS and REIL lighting systems should be evaluated for visual resource impacts. These improvements are anticipated to be consistent with the existing built environment at the Airport and not result in any visual resource impacts.
- **Floodplain Analysis –** According to FEMA, a small portion of land in the southern portion of the Airport property associated with the Buckskin Golf Course is within the Yakima River floodplain. If any of the Preferred Alternative actions would occur within the floodplain, an analysis would be required to determine potential impacts to the floodplain.

6.6 POTENTIAL LAND USE TRANSFER

During the master plan process, it became clear that there is a significant amount of non-aviation use at the airport in surrounding areas which is not accurately depicted on the current ALP. The Port of Benton is interested in having these areas released from aviation use and possibly from FAA obligations. The FAA Airport Compliance Manual, Order 5190-6b dictates the requirements for consideration. "*Any property, when described as part of an airport in an agreement with the United States or defined by an airport layout plan (ALP) or listed in the Exhibit "A" property map, is considered to be "dedicated" or obligated property for airport purposes by the terms of the agreement. If any of the property so dedicated is not needed for present or future airport purposes, an amendment to, or a release from, the agreement is required.*" Any lands within your Exhibit A property boundary are bound by the FAA obligations and must be available for aviation use.

The FAA Administrator has authority to consider all or partial release with the consideration that "Such action may involve only relief from specific limitations or covenants of an agreement or it may involve a complete and total release that authorizes subsequent disposal of federally obligated airport property."

Figure 6.4 depicts the areas that are currently not used for aviation purposes but are highly utilized and the revenue is accumulated for use in airport maintenance and operations. These properties could be considered for partial or full release from FAA obligations. At the least, preference would be to agree to designate those areas as "non-aviation" and identified on the ALP as such. The benefit of identifying these properties as "non-aviation" allows the Port to extend long term lease agreements without expectation from the FAA that the lands should be turned over for aviation use in the future.

Should the Port wish to consider a land release proposal, the following process must be accomplished:

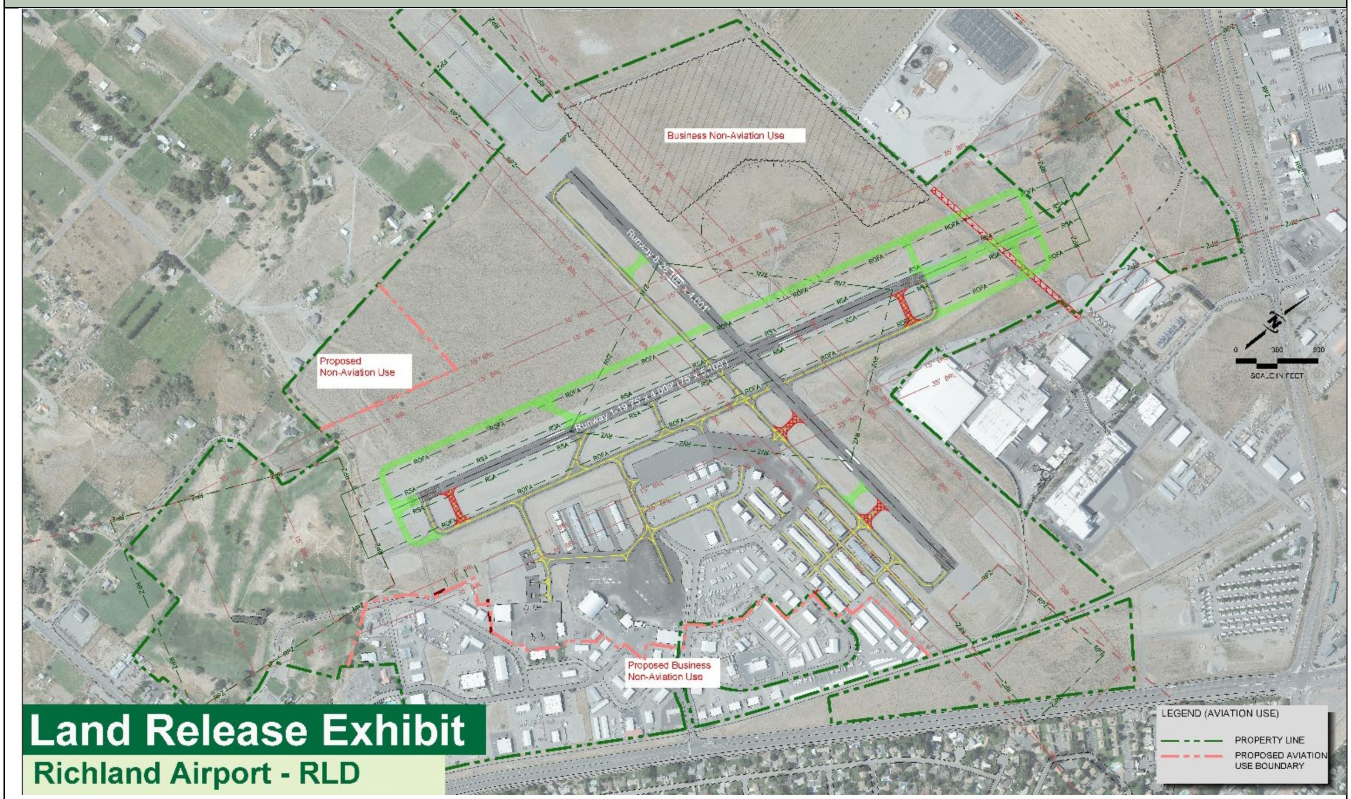
- Section 163 Determination – The FAA Reauthorization Act of 2018 narrowed the scope of the FAA's authority over airport land uses. If the lands considered fall within the Section 163 guidelines the FAA may have limited authority to consider whether to allow a release of aeronautical use. The Port should initiate a screening process to determine the proposed lands Section 163 designation. A description of the process is included below.

Should the Section 163 determination find that the FAA does not have authority over the lands, a land release may not be necessary, and the designation of "non-aviation use" on the ALP can be affixed.

Should the Section 163 determination find that the FAA does have full authority over the lands, then the following land release steps must be accomplished to initiate a review by the FAA. The lands would still be subject to airspace review, ALP/Exhibit A updates, and other federal obligations.

- Prepare a formal request and supporting documentation
- Submit to the FAA Regional office for initial review and consideration.
- After conferring with the FAA Regional office, if they agree that there is validity, the action may be submitted to headquarters for further consideration.
- If approved, the action is then advertised in a Public Notice for 30 days.
- If there are no public comments the FAA Regional office will issue a partial or full release.

FIGURE 6.4
AREA CONSIDERED FOR PARTIAL OR FULL RELEASE



Source: J-U-B

6.6.1 SECTION 163 DETERMINATION

Pursuant to the FAA Reauthorization Act of 2018, the FAA may have limited authority for action on portions of lands within the Exhibit A property boundary. *"When a sponsor submits an ALP change, requests a change in land use from aeronautical to non-aeronautical, or requests to dispose of airport-owned land, the FAA must determine whether the proposal is subject to the agency's approval authority, as defined/limited by section 163. This determination involves a two-step process. In order to ensure the FAA exercises its regulatory authority consistent with the statutory constraints, the FAA must separately examine and reach a determination regarding its authority under both steps outlined in these instructions. The first step is to determine if FAA has ALP approval authority (under section 163(d)). The second step is to determine how the land was acquired (and therefore if a release of obligations may be required (under section 163(a))."*

In **Step One**, Section 163(d) limits the FAA's review and approval authority for ALPs to those portions of ALPs or ALP revisions that affect one of three zones of interest. FAA retains ALP approval authority for portions of ALPs or ALP revisions that:

i. Materially impact the safe and efficient operation of aircraft at, to, or from the airport.
ii. Adversely affect the safety of people or property on the ground adjacent to the airport because of aircraft operations.
iii. Adversely affect the value of prior Federal investments to a significant extent.

Step Two involves the Sponsor providing documentation to aid the FAA in determining how the land was acquired. It is the Sponsor's responsibility to adequately document how the land was acquired. This includes the following information:

- A copy of the current approved ALP or draft ALP change (e.g., pen-and-ink change) that identifies the project and its location on the airport.
- A copy of the on-airport land use map.
- A copy of the Exhibit A property map, conforming with ARP SOP 3.0 (Standard Operating Procedure for FAA Review of Exhibit 'A' Airport Property Inventory Maps). This SOP includes identification of the funding source used for purchase of the property.
- Any supporting deeds or any other conveyance documentation regarding airport ownership of the land the project is located on, including surplus or any other property deeds of conveyance, etc.
- Source(s) of funding for the proposed project (and/or for facilities previously funded or impacted by the proposed project).
- A project description of the proposed alteration(s) to the airport or its facilities, if available.

Upon submittal of the documentation to the FAA Regional office, an FAA Approval Authority Review will be conducted. This determination will dictate the FAA's future authority on the lands to be considered and will outline specific authority. Note that certain specific authority is still retained by the FAA even if the property falls within Section 163 guidelines.

6.7 FINANCIAL REVIEW

Upon completion of the environmental analysis of the Airport, the following financial overview is prepared. Financial forecasting is the estimation of future revenue and expenses. While historical data and development plans are the best indicators of what these monies might be, future financial performance is affected by many events and outside influences.

Some of these include the effects of inflation and major impacts on the region's economy such as specific changes at the Port of Benton. As the forecasting horizon moves further out, these outside influences and events compound and often have a more profound effect on the entity's financial performance. Because of these outside influences, forecasts beyond a five-year horizon should be viewed more as a signal than as an estimate.

In preparing financial considerations for the Airport, potential project costs and expenses are evaluated and considered at 2020-dollar values. These itemized projects may be funded, in part, typically through grants with 90% participation by FAA. Grant funds depend upon authorization of the FAA's AIP program by Congress each year and the funding is not 100% guaranteed. Much of the cost and funding are considered in the Unfunded category as future AIP funding and other federal grants issues through FAA will be allocated at the time the projects become justified. It is assumed that Port funds acquired through, user fees, land leases and other revenue sources are sufficient to cover the annual NPE match as needed and will be considered available for use as matching funds for other project grants should they become awarded. WSDOT should also participate in the matching of funds.

This financial analysis assumes that no new key sources of operating revenues will be implemented during this five-year forecast. This is admittedly conservative. Possible sources of additional or new revenues could come from new infrastructure spending from the Federal Government, other State grants, future fuel sales and flowage, or the addition of a new business or hangars. However, the Airport must judge the potential profitability of such opportunities, given corresponding costs for collection and administration.

Finally, any forecast has unforeseen elements and unexpected expenditures may arise. The uncertainty associated with a new AIP program should also be expected. Should federal grant monies diminish, certain capital improvements may have to be funded from other sources or postponed.

Table 6.1 and **Table 6.2** show recent expenditures for operations and projects over the last 5 years. General funding for Airport operations and maintenance is not expected to change significantly in the near future. Based on historic activity it is reasonable that the Richland Airport should continue to fund operations expenses as well as support Port funded projects in the short-term future period. See **Table 6.3** Figures in this table do not specifically include Port of Benton match expenditures for grant funded projects, however, at the Port's discretion revenues from activity at the Richland Airport are eligible for use in Port match expenses. See below for further comparison of Port available funds and short-term project plan requirements.

TABLE 6.1 ***HISTORIC 5 YEAR AIRPORT EXPENSES/ REVENUES***			
Year	**Operating Expenses**	**Operating Revenue**	**Port Funded Projects**
2016	$223,199	$265,933	$26,127
2017	$255,014	$297,435	$410,621
2018	$177,884	$310,497	$106,935
2019	$220,247	$322,779	$39,149
2020	$181,675	$310,040	$134,730
Source: Port of Benton			

TABLE 6.2 ***HISTORIC 5 YR. AIRPORT PROJECTS AND FUNDING***			
Year	**Project**	**FAA Funding**	**WSDOT Funding**
2016	Rehabilitate Apron, Runway,	$1,005,818 $744,742	$140,473
2017	Construct	$80,000	
2018	Construct	$415,467	
2019	Update Airport	$430,305	
2021	Upgrade	$254,893	
Source: Port of Benton			

TABLE 6.3 **2021-2025 FORECASTED RICHLAND AIRPORT OPERATIONS EXPENSES/ REVENUES**			
Year	**Operating Expenses**	**Operating Revenue**	**Net Operating Income/(Loss)**
2021	$223,432	$291,946	$68,514
2022	$275,000	$274,646	($354)
2023	$275,000	$286,646	$11,646
2024	$275,000	$286,646	$11,646
2025	$275,000	$286,646	$11,646
Source: Port of Benton/J-U-B			

Note: The information above was compiled for purposes of including in the Richland Airport Master Plan. This information was gathered from Sage 100 and is based on the accuracy and completeness of coding and cost allocations. The values include estimates and accruals based on representations of management. Transactions may not be timely or accurately accrued. Transactions may not be matched with the correct revenue or period. The effect of these departures has not been determined.

The following **Table 6.4** identifies the projects and financial categories requiring funding for the 5-year (Short-term) CIP.

TABLE 6.4 EXPECTED 5 YR PROJECTS AND FUNDING SOURCES							
YEAR	ITEM	DESCRIPTION	AIP NPE	UNFUNDED	WSDOT	PORT	TOTAL
2022	1	Construction of Runway 8/26 AND 1/19 Lights, Signage, Taxiway Lights, Signage, Backup Generator and Electrical Vault	$300,000	$2,900,000	$0	$0	$3,200,000
2022	2	Obstruction Mitigation within RPZ and Primary Surfaces - RWY 8 RPZ Grading, Hangar Obstruction Lighting, RVZ Tie-Down Removal	$0	$0	$0	$96,000	$96,000
2023	3	Design Pavement Related Rehabilitation No. 1	$150,000	$0	$8,333	$8,333	$166,667
2024	4	Construction of Pavement Rehabilitation No. 1	$150,000	$550,000	$38,889	$38,889	$777,778
2024	5	Design Hangar Taxilanes, Relocate Taxiway Connectors	$108,000	$0	$6,000	$6,000	$120,000
2025	6	Demolition of Building 1905 Terminal Drive	$0	$0	$0	$36,000	$36,000
2025	7	Design and Construction of Access Control Points and Airport Perimeter Fencing	$342,000	$49,500	$21,750	$21,750	$435,000
2026	8	Construct Taxilanes, Relocate Taxiway Connectors	$150,000	$2,142,300	$127,350	$127,350	$2,547,000
2025	9	Land Release for Non-Aviation land	$0	$0	$0	$50,000	$50,000
2022-2026	10	Avigation Easements	$0	$0	$0	$380,000	$380,000
		TOTALS (2020 DOLLARS)	**$1,200,000**	**$5,641,800**	**$202,322**	**$764,322**	**$7,808,444**

The Port of Benton's net operating revenue does not allow for significant contributions during the forecasted 5-year period. Available funds are compared to the 5-year forecasted CIP costs, ***Figure 6.5***. The Port may be able to contribute towards its obligated Port Cost for each project in the sequence. However, it will need to make additional funds available every year to meet the Port-obligated amounts required. On average the shortfall after Airport related expenses and expected revenue is approximately $78,700 per year.

The Port of Benton will likely need to secure additional funding of $106,190 at the start of the financial year for 2022, while also securing $87,391 for 2023, $111,947 for 2024, and $93,058 for 2025. These sums will help ensure that projects items 1-10 are properly funded during their execution year.

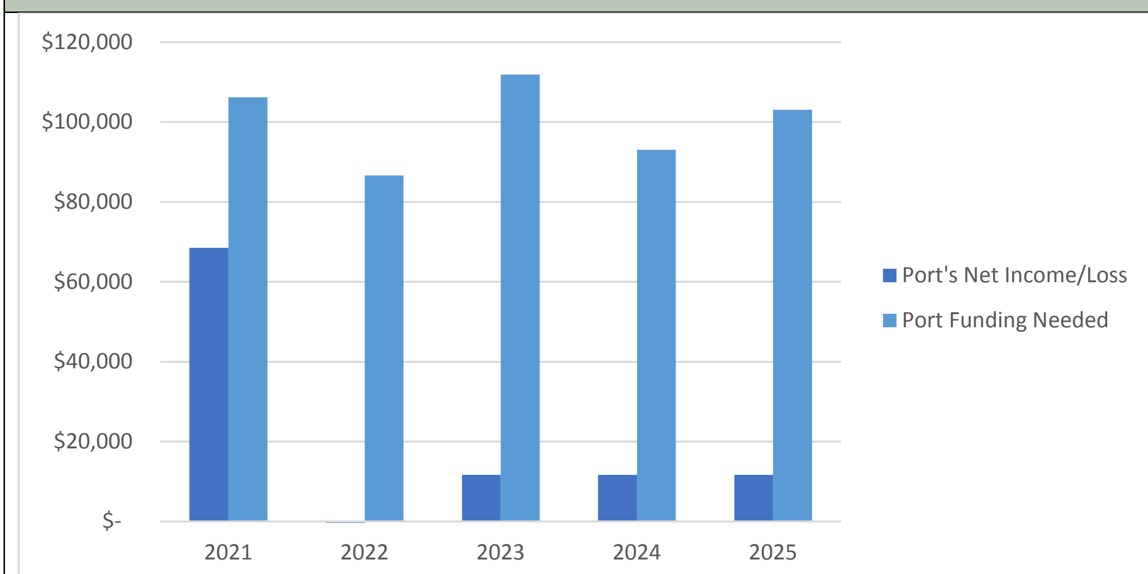
These funding requirements do not account for all of the project costs. As discussed above, the Airport should expect to continue to participate in the FAA AIP program and State opportunities grant monies to fund projects that includes Non-Primary Entitlements.

There remains a category of unfunded costs. These unfunded expenditures could also be provided through other FAA funding mechanisms such as Discretionary Funding or Supplemental Funding grants. The Port of Benton should also seek other funding opportunities to increase the likelihood of accomplishing these projects.

Other potential funding sources the Port may consider for airport projects:

- CERB (Specifically for creating access and bringing utilities to future non-aviation areas on the west side of the airport)
- Additional non-aviation industrial/commercial land lease
- 2021 Federal infrastructure spending package(s)
- Fuel flowage fee
- Increased lease rates on existing hangars
- Cargo tonnage fee
- Car parking fee

FIGURE 6.5
EXPENSE/REVENUE TO PROJECT COMPARISON



Source: J-U-B

CHAPTER 7 – AIRPORT LAYOUT PLAN DRAWINGS

7.0 INTRODUCTION

This chapter describes and depicts improvements derived from previous chapters in an Airport Layout Plan (ALP) set. This includes but is not limited to the following features: existing airfield and landside configurations, future developments, airport airspace, land uses and property ownership.

While the single-sheet ALP drawing shows most of the airport-related features, other depictions, such as airspace limits and close-in land uses are shown on separate drawings.

These drawings constitute the ALP drawing set:

AF-1	Cover and Index
AF-2	Airport Layout Plan
AF-3	Airport Data Sheet
AF-4	Airport Airspace Plan
AF-4A	Airport Airspace Obstruction Tables
AF-5	Runway 08 Inner Approach Surface
AF-6	Runway 26 Inner Approach Surface
AF-5	Runway 01 Inner Approach Surface
AF-6	Runway 19 Inner Approach Surface
AF-7	Runway Centerline Plan and Profile
AF-8	Terminal Area Plan
AF-9	Land Use Plan
AF-10	Exhibit A Airport Property Inventory Map

The ALP is a legal document that represents an agreement between the Port of Benton and the Federal Aviation Administration.

The agreement relates to design standards compliance, future development locations, and obstruction disposition. On-airport development must be depicted on the ALP and the ALP should be kept reasonably current. A reduced-size ALP along with other drawings are found at the end of this chapter. The following sections describe each of the ALP Drawings.

7.1 COVER

The Cover Sheet provides information regarding responsible parties appraised along with project location, vicinity maps, content information and FAA approval.

7.2 AIRPORT LAYOUT PLAN AND DATA SHEET

The ALP is a scaled graphic representation of existing and proposed airport development including pertinent clearance and dimensional information required to show conformance with design standards. Forecast over the next 20-years is for current Aircraft Design Group A-II Small and Ultimate is B-II Large.

The ALP depicts the recommended location of facilities proposed to accommodate the 20-year demand (and beyond in some cases) as discussed in the facility requirements chapter and refined through the alternatives and financial process.

Short-term improvements include preparation for straight-in instrument approach procedures and landing/visual aid improvements while intermediate and longer-term improvements are geared more toward runway and taxiway improvements and satisfying future demand with a new mid-field terminal area.

Other notable improvements shown on the ALP include an 1,100’ runway extension, parallel taxiway construction, upgraded terminal and new aprons, hangars, and pavement maintenance projects. Airspace and land uses are protected for an ultimate runway length of 5,109 feet.

A series of improvements, starting in the short-term and finishing up in the end of the 20-year planning period provides new and reconfigured facilities for design standards compliance and demand accommodation.

The Airport Data Table provides basic information concerning airport elevation, airport reference point location, design aircraft and airport reference code, etc. The Runway Data tables provide information such as runway design and reference code, approach surface information and runway end coordinates/elevations. A scale, legend, and north arrow orient the reader on the ALP and wind roses are included on the Airport Data sheet.

7.3 AIRPORT AIRSPACE PLAN (PART 77)

FAR Part 77 specifies various imaginary surfaces designed to protect the airspace around the airport from objects of natural growth or man-made features called obstructions. These surfaces are the primary, approach, transitional, horizontal and conical as shown on the Airport Airspace Plan in their ultimate configuration.

- The primary surface is longitudinally centered on the runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is based on the type of approach planned for each runway. The planned primary surface is 1,000 feet wide for Runway 1/19 and 500 feet wide for Runway 8/26 and extends 200 feet beyond each runway end. These are the dimensions after the instrument approach is published.
- The approach surface is a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based on the type of approach planned for that runway end. The transitional surfaces extend outward and upward at right angles to the runway centerline and runway centerline extended at a slope of 7:1 (±8.13 degrees) from the sides of the primary surface and from the sides of the approach surfaces.
- The horizontal surface is a level horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of 5,000 feet from the center of each end of the primary surface of each runway and connecting the adjacent arcs with lines of tangency.
- The conical surface extends outward and upward from the periphery of the horizontal surface at a slope of 34:1 for a horizontal distance of 10,000 feet.

Parts of Section 77.23 specify additional surfaces. A surface at a height of 500 feet exists along with another surface at 200-foot height above the ground surface within 3 nautical miles of the airport. These surfaces are not shown.

7.4 RUNWAY PLAN AND PROFILES

The Inner-Approach Surface Plan and Profile drawings show the existing, future and ultimate approach surface configurations and their interaction with the airport and off-airport environs. The extended runway centerline ground profile and the critical point profiles are shown for terrain clearance purposes. Notable objects in this regard are shown in each plan and profile and tabulated with heights and disposition, as appropriate. These drawings are supplemental to the Airport Airspace Plan. Obstructions of concern are trees and terrain; these are planned for lowering or lighting over the near-term of this planning.

The Runway Centerline Profile drawing depicts surface longitudinal grades on centerline, edge of runway pavement, and edge of Runway Safety Area. The Line of Sight standard is also depicted.

7.5 TERMINAL AREA PLAN

A number of changes are depicted on the Terminal Area Plan for the airport. This drawing represents a closer-in view of the proposed landside improvements shown on the ALP. Phased private hangar development is planned for the short, intermediate and long-term. Parking for larger aircraft is sited on the new apron near the relocated terminal building and future aircraft fueling and terminal location.

Apron design for larger, more corporate-type aircraft are found on the main apron nearer to the future “front door” of the airport. Additional space is planned for helicopter operations and potential Advanced Air Mobility operations in the future. Phased facility construction, utility extension, landscaping, auto access and auto parking area are planned.

These improvements should be constructed as funding and demand allows and are planned to accommodate the expected activity as well as activity beyond, within a 50-year time horizon. The proposed size and location in this regard are for planning purposes only and specific plans should be evaluated on a case-by-case basis for general conformance to the ALP.

7.6 LAND USE PLAN

The Land Use Plan AF-8 identifies areas within and adjacent to airport property by zone and/or land use. Although not anticipated close by, review for any residential development near the airport should consider the airport’s proximity and noise sensitivity. The Richland Land Use compatibility zones as they apply to the airport are depicted for inclusion into area comprehensive planning. Land uses within these zones should be protected by jurisdictional ordinance or code in pursuit of compatible land use. Areas off the end of each runway are generally the most noise sensitive. Richland City has considered a formal overlay district in place to serve this purpose. West Richland, and Benton County should also be encouraged to formally adopt an airport overlay district to protect airport operations and growth.

Federal Land Use Polices

FAA usually gives technical and advisory assistance to protect its funding to encourage compatible land development around airports, but it has no regulatory authority for controlling land uses to protect airport capacity. It plays a part in regulating on-airport land, through the approval of the Airport Layout Plan (ALP), inclusion into the NPIAS, and associated apportionments from the AIP grant funding supported by the Airport and Airway Improvement Act (AAIA). Eligibility to access these opportunities, require airport sponsors to remain in compliance with the 39 Grant Assurances and in this case; measures to maintain, to the extent reasonable, off-airport land use compatibility and to protect that aeronautical function of an airport by restricting the location of non-aviation land uses. The FAA recognizes that state and local governments are responsible for land use planning, zoning, and regulation including that necessary to provide land use compatibility with airport operations.

Washington State Land Use Policies

The State of Washington has a lead role in promoting land use compatibility around the airports in the state. This role derives from the state’s broad interest in all modes of transportation in recognition of the benefits that transportation brings the state and its citizens. The specific responsibility as the primary steward and advocate of the state’s aviation interests is assigned to WSDOT Aviation. WSDOT Aviation’s role extends to advocating for promotion of safe air transportation, preservation of aviation facilities, provision of airport capacity to meet demand, and technical assistance.

Local Government Land Use Policies

The ultimate responsibility for airport land use compatibility rests with local government bodies such as towns within, the Cities of Richland and West Richland, and the county of Benton. Although local comprehensive plans, plan policies, and regulations must be consistent with state law and countywide planning policies, local government has discretion to determine how development occurs within the community. Also, the federal preemption doctrine does not affect the local government's ability to use its police powers, particularly land use controls, to anticipate, abate, mitigate, and otherwise respond to other land use concerns provided they are reasonable and do not restrict airport operations.

Incompatible Land Uses and Airports

Historically land use plans (comprehensive plans) prepared by local governments have only minimally recognized the implications of planning for airports and off-site, airport-related development. Local land use planning, as a method of determining appropriate (and inappropriate) use of properties around airports should be an integral part of the land use policy and regulatory tools used by airports and local land use planners. Very often such land use planning coordination is hampered by the fact that airport facilities can be surrounded by a multitude of individual local governmental jurisdictions, each with their own comprehensive planning process.

Compatibility Planning for Land Uses and Airports

Ideally, the responsibility for maintaining compatibility between airports and its surrounding land uses should involve input from all levels of government and the airport operator. This can be done through; early identification of the encroachment of incompatible land uses and airports, de-conflicting existing incompatible land uses and airports within its counties and cities, and the maintaining and continued enhancement of existing/ future compatible land uses around airports through the use of the following Washington State ordinances:

- Planning Enabling Act
  - Chapter 36.70 RCW
- Comprehensive Plan
  - RCW 36.70.320 and RCW 36.70.547 General Aviation Airport
- Growth Management Act
  - Chapter 36.70A RCW
- Aeronautics Law
  - RCW 14.07 and 14.08 Municipal Airports Act
  - RCW 14.12 Airports Zoning

Existing Land Uses

Existing land uses around the Richland Airport include populated areas of downtown Richland to the east and southeast, residential subdivisions to the east, rural residential neighborhoods, and agricultural uses to the west and north, and industrial and agricultural uses to the north. Benton County and the cities of Richland, Pasco, and West Richland are the principal jurisdictions that have land use authority around the Richland Airport. Existing land use patterns for these jurisdictions are described and depicted on AF-8 Land Use Plan.

- **Benton County:** The Richland Airport is within the County of Benton in the southeastern part of the U.S. state of Washington, at the confluence of the Yakima and the Columbia Rivers. Light industrial uses are located to the area north of RLD, while agricultural, open space land and rural residential neighborhoods exist to the west.
- **City of Richland:** The City of Richland encompasses the Richland Airport. Most of the populated areas of the City lie east and southeast of the airport. These areas are characterized as mostly residential, commercial, and industrial areas specifically north of the Airport.
- **City of West Richland**: The Richland Airport is located east of the City of West Richland. Land uses that border the Airport to the west and southwest include mostly residential and agricultural uses.
- **City of Pasco:** The Richland Airport is located to the west of the City of Pasco. Land uses in this existing area is predominantly residential neighborhoods and a mix of commercial, industrial uses located immediately east and south of the Airport.

On Airport Land Use

RLD encompasses 564 acres of land. On-airport land uses include areas designated for airport operations, aviation use and non-aviation use, which are described below.

- **Airport operations:** Includes airfield (aircraft movement areas) plus the FAA-defined safety areas and Runway Protection Zones (RPZs).
- **Aviation use:** Includes aviation and aviation related uses such as the terminal area, fixed based operator (FBO) facilities, and general aviation hangars, airport maintenance facilities, areas for NAVAIDs, and other support facilities.
- **Non-aviation:** Allows for the development of compatible non-aviation uses such as highways, commercial, light industrial, business park and hotel use. This designation also includes agricultural and open space land areas

Land Use Compatibility Zones

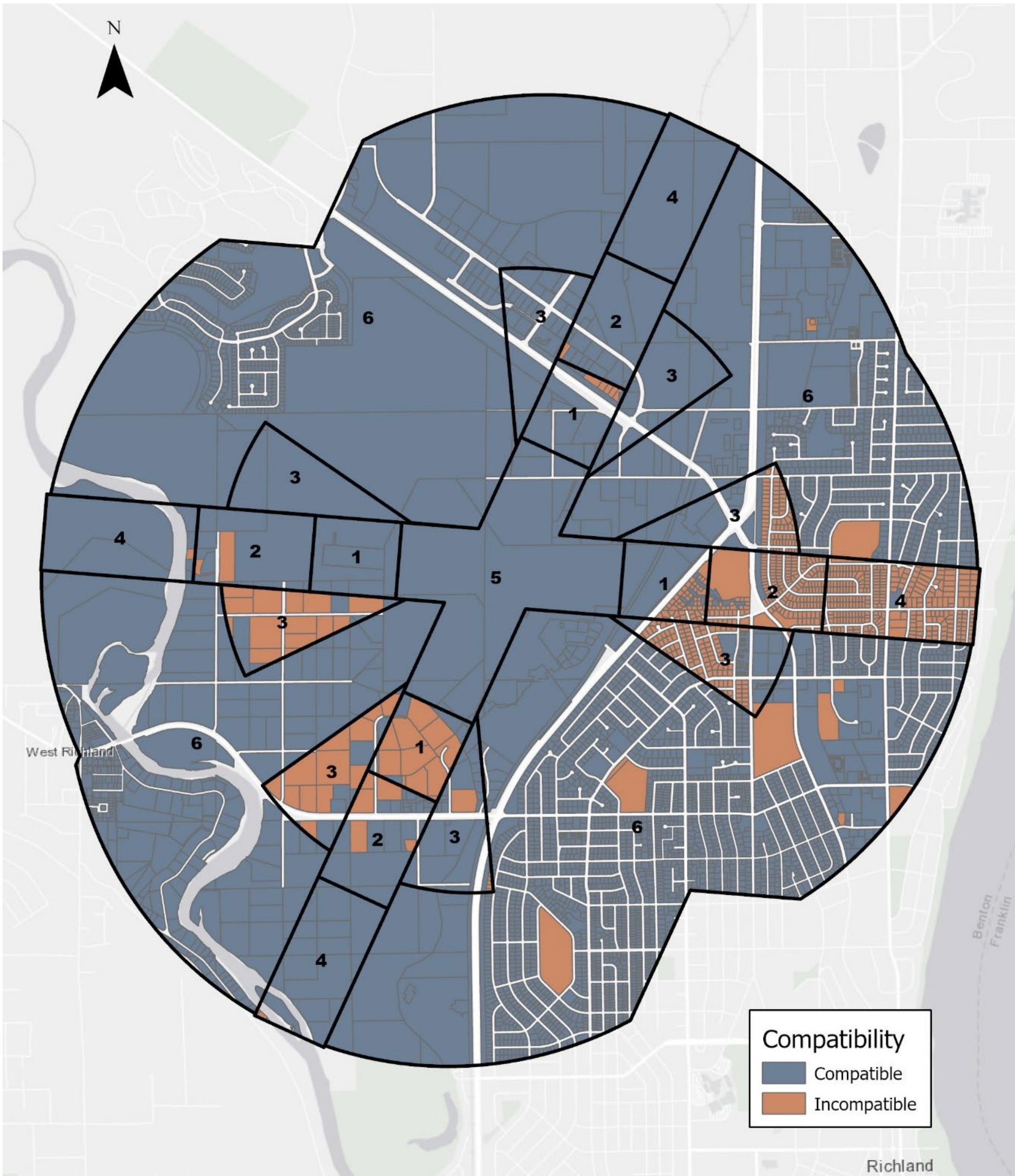
WSDOT Aviation has developed an “Airports and Compatible Land Use Guidebook for use by airport sponsors and local jurisdictions to advocate for planning requirements surrounding airports. Compatibility zones seen in **Table 7.1**, identify planning guidelines surrounding the airport. These WSDOT zoning guidelines in **Table 7.1**, have been overlayed on the existing parcel designations and zones within the vicinity of Richland Airport, and can be seen on **Figure 7.1**.

TABLE 7.1
COMPATIBILITY ZONE LAND USE GUIDELINES

Zone	Primary Surface Protected	Land Planning Restrictions
Zone 1	RPZ	Avoid land uses which concentrate people indoors or outdoors. Prohibit all residential land uses. All non-residential land uses permitted outright subject to the population density and special function land use guidelines. Prohibit all special function land uses.
Zone 2	Inner Approach/ Departure Zone	Avoid land uses which concentrate people indoors or outdoors. Prohibit all residential land. All non-residential land uses permitted outright subject to the population density and special function land use guidelines. Prohibit all special function land uses.
Zone 3	Inner Turning Zone	Avoid land uses which concentrate people indoors or outdoors. Runway 3,000 to 5,000 feet – prohibit all residential land uses. All non-residential land uses permitted outright subject to the special function land use guidelines. Prohibit all special function land uses.
Zone 4	Outer Approach/ Departure Zone	Limit population concentrations. Runway < 4,000 feet – Prohibit all residential land uses. All Non-residential land uses permitted outright subject to the special function land use guidelines. Prohibit all special function land uses.
Zone 5	Sideline Zone	Avoid land uses which concentrate people indoor or outdoor. Prohibit all residential land uses all non-residential land uses permitted outright subject to the population density and special function land use guidelines. Prohibit all special function land uses.
Zone 6	Traffic Pattern Zone	Limit large concentrations of people. Runway < 4,000 feet – maximum 1DU/5 acres in rural areas or 1DU/5 acre in urban area all non-residential land uses permitted outright subject to the special function land use guideline. Prohibit all special function land uses.

Source: WSDOT Airports and Compatible Land Use Guidebook

FIGURE 7.1
LAND USE COMPATIBILITY ZONE, RICHLAND AIRPORT



Source: WSDOT/ City of Richland/ J-U-B

Figure 7.1 shows the incompatible parcel designations within the vicinity of Richland Airport (orange). Parcels indicated within the zones depicted as incompatible, will need to be investigated further to determine a strategy to de-conflict these parcels.

Rwy 26 Zone 1-4: This zone consists of densely located residential and mixed-use **properties** which already exist. There is not much that can be done to address these. A strategy restricting heights of future structures and recommending disclosure during future real estate transactions of any further structures should be considered and collaborated with the City Planning development.

Rwy 26 Zone 6: This zone already has eight elementary schools (Hanford High-school, Children's Garden Montessori, Jason Lee Elementary School, Liberty Christian School, Chief Joseph Middle School, Sacajawea Elementary School, Torbett Street Kindercare, Jefferson Elementary School), three hospitals (Lourdes Counselling Center, Kadlec Regional Medical Center, and Inland Cardiology Associates) and numerous residential structures. Any further attempts to construct additional schools, hospitals or undesirable residential structures should be resisted and protected by coordination with the City, specifically for height below the Part-77 surface.

Rwy 01 Zones 1-2-3: These zones have mixed use residential, commercial, and open undeveloped parcels. There is a golf course (Buckskin Golf Course) and an animal hospital (Richland Animal Hospital). Parcels here should remain the with open land space use and structures should be restricted by height. The open land space should be preserved, structures should maintain height limitations, easements should be encouraged, as no airspace obstructions exist at the moment. This can be achieved through land ordinances that limit the conversion of open land areas to incompatible uses. Any future attempts to adjust the land use for parcels in these zones should be carefully coordinated.

Rwy 08 Zones 2-3-4: Agricultural or open spaces should remain as it is compatible with the Airport. The other land uses for these parcels should remain as low-density residential family dwellings in the future. Any future attempts to adjust the land use for parcels in these zones should be carefully coordinated.

Rwy 19 Zones 1-2: These zones consist of mixed use commercial and industrial use land. No residential use parcels exist and should be restricted in the future. Structures should maintain height limitations, avigation easements should be encouraged, as no major airspace obstructions exist at the moment. Any future attempts to adjust the land use for parcels in these zones should be carefully resisted.

The Port of Benton has been collaborating with the City of Richland on monitoring compatible land use since the late 1990's. The City has a Geographic Information System (GIS), which includes the Airport's Part-77 Surface and Compatible Land Use Zones. The City has instructions to notify the Airport when there are developments within the Airport's influence areas. Overtime there can be turnover in staff at the City Planning Department and this obligation is forgotten. It is incumbent upon the Port to regularly reinforce the importance of airspace and land use compatibility with the City of Richland. Additionally, the Airport Sponsor needs to initiate collaborative discussions with the City of West Richland and Benton County on the same issues and put in place procedures for monitoring.

7.7 AIRPORT PROPERTY INVENTORY MAP

The Airport Property Map shows the locations of existing airport sponsor ownership and areas proposed for ownership or release. The map also shows known easements, airfield, buildings, apron, fences, roads and other relevant features. Tracts are shown for depiction purposes only and this map is not to be used for survey or land acquisition. Property information includes ownership, location, purpose, book and page/reception and Federal involvement.

7.8 RECYCLING PLAN

A Recycling Plan for the Richland Airport was developed as a part of this study as specified by the FAA AIP Handbook. This Recycling Plan can be found in Appendix D of this document.

7.9 SUMMARY

This study provided a comprehensive long-term assessment of the facilities at the Richland Airport. It described the infrastructure plans to meet the projected future aviation demands and provided the framework needed to guide Airport development. The study also considered the potential environmental, financial, and socioeconomic impacts meeting all Federal Aviation Administration (FAA) facility requirements.

The goal was to optimize the operational efficiency, effectiveness, capability and safety of the airport, enhance the economic and social value of the airport and meet the long-term aviation and multi-modal transportation needs of the community. Additional goals were to optimize the airport's income to continue towards financial self-sufficiency, ensuring that the current and future airport plans are environmentally compatible in the region.

<u>The major findings and products include:</u>

a) The Richland Airport Forecast over the next 20-years for the Current Aircraft Design Group A-II Small (Pilatus PC-12) and for the Ultimate is B-II Large (Citation XLS)
b) An extension of Runway 1/19 is planned. Increasing it from 4,009 feet to 5,109 feet, and adding a full-length Parallel Taxiway
c) A Preferred Development Alternative
d) An implementation plan for major projects consisting of three phases at 0-5 years, 6-10 years and 11-20 years
e) An environmental strategy to mitigate the effects of future project plans
f) A Waste Management and Recycling Plan
g) An Airport Layout Plan drawing set
h) A record of community involvement and public participation through online and in-person input
i) Recommendations for non-aviation use areas release from federal obligation or compliance through the section 163 process of the FAA Airport Compliance Manual, Order 5190-6b
j) A Land Use Plan with recommendations to the Port of Benton to determine a strategy for compliance with the WSDOT compatibility zones.

With the preferred development alternative identified and the Airport Layout Plan complete, it is important to consider the necessary tasks that keep the process moving forward, specifically; (1) Locating Funds, (2) Environmental Approvals and, (3) Federal Aviation (FAA) Coordination.

APPENDIX A - AIRPORT RECYCLING PLAN

AIRPORT RECYCLING PLAN

FACILITY DESCRIPTION AND BACKGROUND

Richland Airport (RLD) is a general aviation airport owned and operated by the Port of Benton (Port) under compliance of the Federal Aviation Administration's (FAA) Northwest Mountain Airport Region Seattle Airports District Office. RLD is managed by the Port of Benton staff in conjunction with the Port of Benton Commissioners. The Commission is comprised of a three-member board and each member is elected to a six-year term. While the Executive Director or Port Representative is the point of contact for airport matters, the Commissioners execute contracts or agreements. Each commissioner represents a separate district within the Port boundaries. The commissioners at the time of this document are:

- Jane F. Hagarty - President
- Robert Larson - Vice President
- Roy D. Keck - Secretary

The Port provides for multi-modal transportation at two airports (Prosser and Richland), short line rail, barge, and trucking amenities. RLD is located within Benton County, two miles northwest of the Richland central business district. It occupies 650 acres of land of which approximately 564 acres are used for aeronautical purposes.

WSDOT staff inspects Richland Airport on a semi-regular basis to assess facilities and activity. The latest Airport Facilities and Services Report on the WSDOT Aviation website indicates that RLD has historically accommodated 29,000 total annual aircraft operations, including 17,400 itinerant (60%) and 11,600 local-general (40%) aviation operations with no commercial or military operations. The inspection noted 122 based single-engine, four (4) multi-engine-based aircraft, two (2) jet aircraft, and two (2) helicopters. The forecast for based aircraft projects that the airport will increase to 205 Based Aircraft in 20 years.

The Master Plan estimates 45,500 itinerant and local operation growing to 61,850 operations in 20-years. An operation is considered a take-off and landing.

EXISTING RECYCLING PROGRAM

(a) Facilities over which the Airport has direct control of for recycled materials – Currently, there are no recycling drop boxes at the Richland Airport, however, there are several recycling drop sites within the City of Richland. Clayton-Ward Recycling, (1936 Saint Street) is located nearby and receives recyclable materials, including newspaper, aluminum and steel, glass, mixed paper, and cardboard.

(b) Areas over which the Airport has no direct control but may have influence – The Port/Airport encourages hangar occupants, Airport users, and the FBO at Richland Airport to recycle as much as possible at local Recycling Drop Boxes.

(c) Areas over which the airport has no direct control or influence – The Port/Airport has no direct specific control over airport users or tenants regarding recycling material.

RICHLAND AIRPORT'S CURRENT WASTE MANAGEMENT PROGRAM

Most of the solid waste at Richland Airport is generated by airport users, Port staff, itinerant pilots, Ann's Best Café, and individuals/organizations who lease hangars. The Port of Benton maintenance facility contracts with the City of Richland's Solid Waste Division (RSW) for solid waste disposal for their activities.

The FBO and current restaurant also have Solid Waste Disposal Services through the City of Richland. Individual hangar waste is typically disposed of at the FBO or removed from the site in private vehicles.

Collected waste is transported to the Horn Rapids Landfill where it is consolidated and ultimately disposed. Horn Rapids Landfill is a municipal solid waste disposal facility permitted by the Washington Department of Environmental Quality and is in full compliance with all federal and state rules and regulations.

REVIEW OF RECYCLING FEASIBILITY

Richland Airport works to maintain compliance with applicable federal, state, and local waste regulations. However, the most important policy that impacts recycling at the Richland Airport is the FAA Modernization and Reform Act of 2012 (FMRA), which amended Title 49, United States Code (U.S.C.), and included several changes to the Airport Improvement Program. The changes contained in Section 132 (b) of the FMRA expanded the definition of an airport planning to include "developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit." This change caused the recycling and reduction of waste to become a consideration for the current Airport Master Plan update for Richland Airport. Additionally, Section 133 of the FMRA added a provision requiring airports that have, or plan to prepare a master plan, and that receive AIP funding for an eligible project to address solid waste recycling. Including this Recycling Plan in the Master Plan Update, ensures that the Airport will address these issues.

PROMOTING A RECYCLING PROGRAM

Benefits for implementing a recycling, reuse, and waste reduction program at Richland Municipal Airport may include the following:

- Minimize contributions to the landfill.
- Lessen the risk of debris or garbage left onsite.
- Ability to immediately dispose of recyclables rather than allowing them to pile up.

RECYCLING PROGRAM CONSTRAINTS

Logistical constraints to a recycling program at the Richland Airport may include:

- The minimal volume of material that is generated for recycling.
- The lack of common areas to place properly marked containers discourages Airport users and tenants to easily use recycling facilities.
- There is no regularly scheduled pick up of recyclable materials at the Airport.
- Any Facility or organization picking up recyclable would need to be trained for access on the airport. As drivers tend to change, staying on top of training could be considered a constraint.

OPERATION AND MAINTENANCE REQUIREMENTS

Waste collected by RSW from Ann's Best, the FBO or the Maintenance Facility is transported to the Horn-Rapids Landfill where it is processed and ultimately disposed of. Solid waste and recyclable materials are currently mixed in the containers. There is no effort to split out recyclable material by RSW.

Currently, there are no identifiable Operation and Maintenance costs, or requirements associated with the Airport's recycling efforts, other than an occasional trip to the Recycling Drop Box facilities by Airport users and tenants. There are currently no other resources dedicated to recycling organic materials.

Construction debris is typically removed or reused on the Airport based on specific direction in the individual construction contracts.

REVIEW OF WASTE MANAGEMENT CONTRACTS

Currently the Port contracts solid waste collection service from the City of Richland for the Port's Maintenance Facility only. These solid waste collection services are paid for from the general revenue account. Ann's Best Café and the FBO contract individually with the City for Solid Waste Collection.

POTENTIAL FOR COST SAVINGS OR REVENUE GENERATION

It is likely that no real cost savings or potential for revenue generation exists with the current volumes and types of solid waste and potential recyclables that exist today at the Richland Airport. However, a recycling program could be put into place with the following considerations:

- While recyclable volumes are very small today, they will likely grow as the Airport and its tenant base grow in future years.
- Community recycling is a responsible approach to the waste management process and all contributions lessen the landfill burden.
- Participating in recycling and responsible waste management programs is an appropriate role for a major community facility like the Airport and shows dedication toward being good stewards of the land.

Even though such recycling and waste management programs may not be especially financially viable today, being involved in these processes today will better prepare the Airport for the future.

PLAN TO MINIMIZE SOLID WASTE GENERATION

Objectives must be established for the program before commencing collection activities.

Richland Municipal Airport's comprehensive approach to reduce the amount of waste being disposed of can include the following objectives:

	OBJECTIVE	TARGET DEADLINE
A.	Purchase/contract and locate suitable sized containers for collection and negotiate a suitable annual contract fee for removal services. Or Solicit contract with Local Organization or Charity (if any exist) for Recycling Pick and disposal.	6-months post MP submission
B.	Review City of Richland policies on reuse, recycling, and waste reduction and apply applicable policies to the Airport as necessary.	8-months post MP submission
C.	Implement policies and educational programs that encourage airport users and tenants to minimize the amount of waste that is being disposed of in the landfill and reuse materials whenever possible by participating in a reuse and recycling effort. For example, purchase items made from recycled products. Other ideas may include the following: i. Include reminders to recycle in Lease Invoices. ii. Negotiate a reduced cost for airport tenants to have waste pickup at hangars and individual sites. iii. Reduce dependence on RSW, as airport users and employees increase their own recycling. iv. Include clause in airport construction contracts encouraging contractor(s) to return unused paint back to the paint manufacturer. v. Encourage the return and/or reuse of shipping containers, pallets, boxes. vi. Practicing 'Xeriscaping.' The practice of xeriscaping applies to landscaping that uses slow-growing, drought-tolerant plants, which conserve water and reduce the amount plant trimmings, and ultimately waste generation. vii. Establish an internal airport recycling and waste management program.	12-months post MP submission
D.	Review and update arrangements/contracts/leases between the Airport users or tenants and the Port of Benton, to encourage purchasing policies/requirements that focus on purchasing products made from post-consumer recycled materials and incorporate necessary changes.	15-months post MP submission
E.	Review and revise current construction contracts and agreements to reflect the Airport's recycling goals for Construction and Demolition (C&D) Debris and incorporate necessary changes.	18-months post MP submission