Chapter Four
DEVELOPMENT ALTERNATIVES

The preceding chapter identified deficiencies of the Grants Pass Airport with respect to existing and anticipated aeronautical demand, which are consistent with current Federal Aviation Administration (FAA) design standards and State of Oregon development guidelines. This chapter presents several development alternatives that focus on meeting the Airport's facility needs for the long-term future (2029 and beyond).

While the development alternatives focus on meeting aeronautical demand projected for 2029, it is prudent to consider the ultimate potential of airport property. By doing so, the planning documents remain flexible and functional, considering the possibility that unforeseen events or increases in user demand occur. Consequently, the alternatives highlight possible airfield and landside uses that could meet facility needs projected to occur after 2029.

SUMMARY OF FACILITY REQUIREMENTS

The preceding chapter, *Facility Requirements*, identified development needs to accommodate forecasted aeronautical activity. These are summarized below.

Airfield Requirements

- The current Runway Protection Zones (RPZ) meet FAA design standards. However, if an instrument approach with visibility minimums greater than 1 mile or between ¾ mile and 1 mile is implemented, a larger RPZ will be required for that runway end. The larger the RPZ,

the more land that may need to be acquired by fee simple or easement to ensure land use compatibility.

- The existing Object Free Area (OFA) width is 460 feet, which is 40 feet short of the FAA standard. Shrubs and trees east of the runway should be removed to meet the requirement.

- The existing runway length is adequate for the planning period. However, a runway extension may be justified for business jet traffic in the longer-term future. Accordingly, all of the development alternatives show a runway extension, to a total length of 5,200 or 6,000 feet. As shown in Table 3D of Chapter 3, an extension to 5,200 feet would accommodate eight more ARC B-I or B-II business jets (mostly Cessna Citation models), and an extension to 6,000 feet would accommodate ten more ARC B-I or B-II business jets at maximum takeoff weight. The B-I/B-II aircraft that need more than 6,000 feet at maximum takeoff weight could use the longer runway at lower takeoff weights.

- It is recommended to construct a full-length parallel taxiway east of the runway to facilitate development on that side of the airport.

- The access taxilanes south of Hangar Row "A" have a non-standard grade. When those hangars are replaced, the taxiway system should be leveled.

- If a precision instrument approach is installed, the runway markings would need to be upgraded to precision. Currently the markings are visual.

- The medium intensity runway lighting (MIRL) system should be converted to a conduit system when the runway is rehabilitated.

- Taxiway and taxilane edge lights should be installed to enhance ground movement of aircraft.

- If an instrument approach is implemented, an instrument approach lighting system is recommended or required by the FAA, depending upon the type of approach.

- It is recommended the Airport have a precision instrument approach. To assess the impact of different approach visibility minimums on facilities and land, the alternatives reflect a range of instrument approach visibility minimums.

- It is recommended the existing Automated Weather Observation System (AWOS) be upgraded to transmit data to the FAA.

Landside Requirements

- It is recommended the tiedown apron be expanded by at least 9,375 square feet.

- Installation of an approximately 8,320 square yard cargo apron is recommended. This could be located at or near the general aviation apron area.

- At least one acre should be reserved for locating a Fixed-Based Operator (FBO) facility. A larger land area may be desirable for apron and aircraft storage hangars that would help generate revenue for the FBO.

- Install punch type combination locks on pedestrian gates.

- A solution to the aircraft congestion around the self-service fueling station is needed.

DEVELOPMENT ALTERNATIVES

Four alternatives for the long-term future development of the Airport are presented in this chapter:

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

- Alternative 1 includes a 1,200 feet runway extension and an instrument approach with visibility not lower than ¾ mile to Runway 12. The FBO facility is located in its current location.

- Alternative 2 shows a 2,000 feet runway extension and an instrument approach with visibility not lower than 1 mile to Runway 12. The FBO facility is relocated to the north, near the current Runway 12 end.

- Alternative 3 depicts a 2,000 feet runway extension and an instrument approach with visibility not lower than ¾ mile to Runway 12. The FBO is shifted north from its current location. A new access road is shown to facilitate movement around development near the FBO.

In addition to a runway extension, instrument approach improvement, and enlarged FBO, the three development alternatives depict additional hangar and apron expansion, a new area for helicopter operations, corporate development reserves, reserves for aviation-related business and aviation compatible commercial development, road improvements, optional solutions to the congestion at the fueling station, and different locations for the Super AWOS. While each alternative depicts land reserved for a future FBO, no FBO-specific apron has been designated. All the alternatives have excess apron area available that could accommodate FBO apron needs.

No-Build Alternative

Exhibit 4A illustrates the No-Build alternative. By showing the consequences of not developing the Airport, the Airport Sponsor can assess the advantages and disadvantages of development alternatives.

As shown in Chapter 2, *Aeronautical Activity Forecast*, the Airport is expected to experience increased demand. If no development were to occur, the Airport would not be able to support

forecasted aeronautical uses and demands. The OFA would remain non-standard. The FBO would remain in inadequate facilities and congestion around the self-service fueling station would remain a problem. The No-Build alternative would not optimize the Airport's potential.

While the No-Build alternative is essentially a do-nothing option, it does not mean that there would be no financial impact to the Airport. Most prominently, there would still be a cost associated with maintaining the current pavements and facilities.

Development Alternative 1

Development Alternative 1 includes a 1,200 feet runway extension and an instrument approach with visibility not lower than ¾ mile to Runway 12. The FBO facility is located in its current location. **Exhibit 4B** illustrates this alternative. Alternative 1 encompasses the facility requirements previously outlined, with areas identified to meet demand beyond the 20-year planning period.

Airfield. Airfield developments for Alternative 1 are outlined below.

- Runway and parallel taxiway extension of 1,200 feet to the north-northwest.
- Installation of an instrument approach to Runway 12 with minimums not lower than ¾ mile. This approach would require land acquisition or aviation easement, due to the larger imaginary surfaces needing clearance and the larger RPZ required. The new RPZ dimensions would be 1,000 feet by 1,700 feet by 1,510 feet. Runway 30 would have an RPZ to protect for an instrument approach with minimums not lower than 1 mile.
- Development of a full-parallel taxiway on the east side of the runway.
- Installation of instrument approach lighting system and taxiway/taxilane edge lights.
- Designation of helicopter operations area.

A significant feature of Alternative 1 is the installation of a precision-type approach to Runway 12. In order to meet specific standards outlined in FAA Advisory Circular 150/5300-13, *Airport Design*, the RPZ area would be increased to 1,000 feet by 1,700 feet by 1,510 feet, which would require additional property acquisition or avigation easements on the Runway 12 approach. An extension of 1,200 feet was shown in the Airport's last Master Plan Update.

Landside. The landside development features proposed in Alternative 1 include:

- Expanded FBO in the current location. Three rows of T-hangars (A, B, and C) would be removed for development of the FBO and adjacent future apron.
- Fueling station moved to the future aircraft parking apron.
- Reserved areas for corporate, T-hangar and conventional hangar, aviation-related business and aviation compatible commercial development.[1]
- Relocation of the road in the proposed aviation-related business reserve to the Airport perimeter.
- Relocation of the beacon and Super AWOS.

[1] Reserve areas include adequate space for taxilane development and other necessary improvements. Corporate Development Reserves provide ample area for hangars, taxilanes or parking aprons, as needed.

Alternative 1 shows much more aircraft storage and parking than the 2029 projected need.

Development Alternative 2

Development Alternative 2 shows a 2,000 feet runway extension. Non-precision instrument approaches with minimums not lower than 1 mile would serve both runway ends. The FBO facility would be relocated to the north, near the current Runway 12 end (see **Exhibit 4C**).

Airfield. Airfield development in Alternative 2 includes:

- Runway and parallel taxiway extension of 2,000 feet to the north-northwest.
- Installation of instrument approaches to both runways with minimums not lower than 1 mile.
- Development of a full-length parallel taxiway on the east side of the runway.
- Installation of taxiway and taxilane edge lights.
- Designation of helicopter operations area.

The extension of 2,000 feet would accommodate nearly all business jets with ARC B-I and B-II that could potentially operate at the Airport.

Landside. Alternative 2 consists of the following landside developments:

- FBO relocation to the north of its current location.
- Fuel station would remain in its current location
- Extension of aircraft parking apron.
- Reserved areas for corporate, T-hangar and conventional hangar, aviation-related business and aviation compatible commercial development.
- Relocation of the road in the proposed aviation-related business reserve to the Airport perimeter.

Alternative 2 meets the facility requirements outlined in Chapter Three. This alternative has land available for development in the event demand exceeds the aeronautical activity forecast. The reserve areas could be developed for aircraft storage and aviation related businesses as demand occurs.

Development Alternative 3

Development Alternative 3 includes the same 2,000-foot runway extension as Alternative 2 and the same precision-type instrument approach for Runway 12 (minimums not lower than ¾ mile) as Alternative 1. As with the other alternatives, it outlines development concepts beyond the planning period. Alternative 3 is illustrated by **Exhibit 4D**.

Airfield. Alternative 3 has the following airfield features:

- Runway and parallel taxiway extension of 2,000 feet to the north-northwest.
- Installation of an instrument approach to Runway 12 with minimums not lower than ¾ mile.

- Land or easement acquisition north of the extended runway to accommodate the RPZ.
- Development of a full-parallel taxiway on the east side of the runway.
- Installation of approach lighting.
- Installation taxiway and taxilane edge lights.
- Designation of helicopter operations area.

Landside. Significant landside developments within Alternative 3 are:

- Relocation of the FBO to the north of its current location.
- Improvement of existing Denver Avenue to make it the new main airport access road leading to the new FBO location.
- Fuel station relocated near the FBO facility.
- Extension of aircraft parking apron.
- Reserved areas for corporate, T-hangar and conventional hangar, aviation-related business and aviation compatible commercial development.
- Relocation of the road in the proposed aviation-related business reserve to the Airport perimeter.
- New access road on the east side of the airport to access the Corporate Development Reserve area.
- Relocation of the Super AWOS.
- Identification of potential land purchase, if parcel becomes available. Intent is to secure land near the runway for airport purposes, to ensure land use compatibility.

Like the other development alternatives, Alternative 3 incorporates all of the recommendations from the Facility Requirements chapter. In addition, it allows more hangar development options (*i.e.*, T-hangars, conventional hangars or large hangar lots).

COMPARISON OF ALTERNATIVES

Detailed costs estimates were not prepared for each alternative; however, the alternatives are compared in order of magnitude costs. Alternative 3 would have the highest capital cost, since it includes both the longer runway extension and the more expensive instrument approach improvement. Alternative 2 would cost less than Alternative 3 due to its less expensive instrument approach and Alternative 1 would cost less than Alternative 3 due to its shorter runway extension. Alternative 1, with shorter runway and parallel taxiway extensions would cost less than Alternative 2. The No-Build Alternative has the lowest capital cost, as it would only maintain the existing pavements and facilities. However, the three development alternatives would provide for more economic benefit and revenue growth than the No-Build Alternative.

Runway length would be nominally 4,000 feet for the No-Build Alternative, 5,200 feet for Alternative 1, and 6,000 feet for Alternatives 2 and 3. The No-Build Alternative would limit aircraft to those weighing not more than 12,500 pounds (maximum takeoff weight), while the three development alternatives would allow use by heavier aircraft.

Alternatives 1 and 3 would have an instrument approach to Runway 12 with visibility minimums not lower than ¾ mile and an approach lighting system. The best instrument approach for

Alternative 2 would have visibility minimums not lower than 1 mile. The No-Build Alternative would continue to have a circling instrument approach with 1-1/2 mile visibility minimums for the Airport Reference Code. The safety and reliability benefits of a straight-in instrument approach with lower visibility minimums would not be realized with the No-Build Alternative. These benefits include a larger window of time for air ambulance operations.

The three development alternatives include a parallel taxiway on the east side of the runway to facilitate east side development and enhance safety. Without the east side parallel taxiway, aircraft based on the east side must cross the runway to use the parallel taxiway on the west side.

Helicopter operations, which currently do not have a designated area, would be accommodated at the northwest end of the runway in Alternatives 1 and 2, and at the site of the current FBO in Alternative 3.

Alternatives 1 and 3 relocate the Super AWOS to the east side of the runway where it would have less interference from buildings and parked aircraft. The Super AWOS location relatively near the Runway 12 threshold in Alternative 3 would enhance instrument approaches to that runway.

The FBO remains in its inadequate facilities in the No-Build Alternative. Alternative 1 allows the FBO to expand at its mid-field location, which is desirable from the standpoint of taxiing efficiency, customer visibility, and road access. However, Alternative 1 requires the removal of two existing T-hangar buildings for the FBO, and apron expansion south of the expanded FBO would remove a third existing T-hangar building. These three T-hangar buildings are among the oldest on the Airport. Alternatives 2 and 3 relocate the FBO farther north on the west side. Alternative 3 includes the development of a new main entrance to the Airport by improving an existing road (Denver Avenue).

To relieve aircraft congestion around the self-service fuel station, the fuel station would be relocated farther north in Alternatives 1 and 3.

The No-Build Alternatives would have no additional T-hangars, conventional hangars, aviation related businesses, or aviation compatible commercial development than now exist. Alternative 1 reserves the most land for future T-hangars, some of which is needed to replace three buildings removed for the FBO and adjacent apron. Alternative 1 reserves the least amount of land for conventional hangars, and it is all on the east side, compared with Alternatives 2 and 3, which have conventional hangar reserves on the northwest end of the runway. Alternatives 1, 2, and 3 include relocation of an existing road in the aviation-related business reserve to the airport perimeter.

ENVIRONMENTAL SCREENING OF ALTERNATIVES

Each alternative was analyzed to assess its relative environmental impact, as well as identify any environmental constraints that may prohibit development. The results of this analysis are presented in **Table 4A**.

Each alternative presents an array of environmental opportunities and constraints. The following discussion summarizes the potential environmental concerns associated with each alternative.

No-Build Alternative

The No-Build Alternative does not propose any new use designations on the airport. It includes only maintenance for the next 20 years. The No-Build Alternative does not present land use compatibility concerns, noise concerns, changes to the social environment, or direct threats to plant and animal communities. In terms of overall impact, **this alternative has the least impact to the existing natural and built environments.**

Development Alternative 1

This alternative includes a runway extension, a new corporate development area and additional airport-related commercial development areas. The runway extension is 1,200 feet, on the northwest end of the runway. Corporate development is proposed for the northeast edge of the airport, while commercial uses are proposed for both sides of the southern end of the runway. Aviation-related commercial reserve areas are proposed on the west side, north of the existing developed area. Hangar reserves are proposed on both sides of the runway, at the southern end.

This alternative includes relocation of Brookside Boulevard outside of airport property near the runway extension and airport-related reserve area.

The helicopter operations area is on the west side of the airport, near the end of the runway extension.

Ultimate development of the reserve land could increase impervious surface significantly. Because the soil is very pervious, and the area is relatively dry, stormwater issues may not be significant. Development of the reserve areas may also increase surface transportation demand, creating peak period congestion or the appearance thereof for area residents.

The extension area appears to have been previously disturbed and likely does not constitute prime habitat. The area is undermined with rodent burrows, which, when developed, may reduce raptor and other larger animal presence on the airport.

With the runway extension, the noise contour of the airport would extend farther to the north.

This alternative has the least environmental impact of the three build alternatives.

Table 4A. Development Alternatives - Environmental Constraints and Impacts[2]

Impact Categories[3]	No-Build Alternative		Alternative 1		Alternative 2		Alternative 3	
	Comment	*Score*	*Comment*	*Score*	*Comment*	*Score*	*Comment*	*Score*
Air Quality	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Biotic Resources	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Land Use Impacts	No apparent issues	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Construction Impacts	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Section 4(f) Resources	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Threatened and Endangered Species	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Energy Supplies, Natural Resources and Sustainability	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Environmental Justice	No apparent issues.	1	Perception of runway extension impact on northwest residents.	2	Perception of runway extension impact on northwest residents.	3	Perception of runway extension impact on northwest residents.	3
Farmlands	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Hazardous Materials	No apparent issues.	1	Potential for future tenants to use hazardous materials without adoption of land use constraints.	2	Potential for future tenants to use hazardous materials without adoption of land use constraints.	3	Potential for future tenants to use hazardous materials without adoption of land use constraints.	4

[2] The small italic number in each cell represents the qualitative rank of each alternative for the specific category. Where all alternatives are approximately equal, a score of 2 was given. A score of 1 represents the least impacting alternative; a score of 4 represents the greatest impact. A summing of these values appears at the bottom of this table, which in turn provides a subjective ranking of the four alternatives.

[3] The analysis is divided into 21 impact categories and is examined per FAA Order 1050.1E and guidance from the Council on Environmental Quality.

Table 4A. Development Alternatives - Environmental Constraints and Impacts, *Continued*

Impact Categories	No-Build Alternative		Alternative 1		Alternative 2		Alternative 3	
	Comment	*Score*	*Comment*	*Score*	*Comment*	*Score*	*Comment*	*Score*
Historical, Archaeological and Cultural Resources	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Induced Socioeconomic Impacts	No apparent issues.	4	Commercial and industrial development would create jobs, tax revenue.	3	Commercial and industrial development would create jobs, tax revenue.	2	Commercial and industrial development would create jobs, tax revenue.	1
Light Emissions and Visual Effects	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Energy Supply & Natural Resources	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Noise	No apparent issues.	1	Runway extension expands airport noise footprint. Helicopter area at north end may increase it further.	2	Runway extension expands airport noise footprint. Helicopter area at north end may increase it further.	4	Runway extension expands airport noise footprint. Helicopter area closer to center of airport.	3
Social Impacts	No apparent issues.	1	Increased development could increase surface traffic demand. Perception of change in community structure.	2	Increased development could increase surface traffic demand. Perception of change in community structure.	3	New entrance road and increased development could increase surface traffic demand. Perception of change in community structure.	4
Solid Waste	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Water Quality	No apparent issues.	2	No apparent issues.	2	No apparent issues	2	No apparent issues.	2
Wetlands	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Cumulative Impact	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2	No apparent issues.	2
Controversy	No apparent issues.	2	No apparent issues.	2	No apparent issues.	3	No apparent issues.	3
Total ranking		*40*		*43*		*48*		*48*

Development Alternative 2

This Alternative is similar to Alternative 1 in the allocation of future uses. The runway extension is 2,000 feet. The landside development reserves would be larger than shown in Alternative 1, as they run parallel to the runway extension area. The development of these reserve areas could increase surface transportation demand at a level greater than Alternative 1. The increase in commercial and employment uses may also be perceived as a change in character by local residents.

The impacts of this alternative would be similar to Alternative 1; however, noise would extend farther north and with the 2,000' runway extension. While the airport reference code would remain the same, the longer runway could be used by larger aircraft than currently use the airport.

The helicopter operations area would be moved to the far north end of the development area in this alternative.

Ultimate development of the reserve lands and the extended runway (and associated taxiways) could increase impervious surface significantly, and therefore increase stormwater runoff and risk for water quality issues.

This alternative is greater in terms of overall environmental impact than Alternative 1.

Development Alternative 3

This alternative is essentially the same as Alternative 2, in terms of environmental concerns, with additional aviation-related development area along the southeast edge of the taxiway. This alternative also includes obtaining easements or ownership of the Runway Protection Zone (RPZ) on the north runway end.

The extended runway would have the same noise impact as Alternative 2. The helicopter operations area is relocated to the area currently used by the FBO.

This alternative has more area designated for aviation-related reserve use than Alternative 2, which could increase surface transportation demand and further alter perception of community character. All of the build alternatives have the potential for increased commercial and industrial uses, which could increase the potential for hazardous materials use or other potential risks because of tenant activities. Because no tenants have been identified, these risks are assumed to be relatively low for all alternatives.

The increase in development area would increase impervious surface areas over Alternative 2, requiring additional stormwater collection.

This alternative is roughly the same as Alternative 2 in terms of overall environmental impact of the three build alternatives.

As shown in Table 4A, the No-Build Alternative has the least impact, as it does not change the airport from its current configuration. Alternative 1 has the least impact of the build alternatives because of its shorter runway extension and smaller area devoted to future commercial or industrial development.

Alternatives 2 and 3 are shown as equal in impact. Alternative 2 has slightly less development potential than Alternative 3, which allows it to score better on social issues (*e.g.*, traffic). However, the secondary economic benefit of that development, along with the location of the helicopter operations area, cause Alternative 2 to score lower on noise and secondary impacts.

MASTER PLAN CONCEPT (PREFERRED ALTERNATIVE)

The four alternatives were presented to the County, Planning Advisory Committee (PAC), and members of the public on January 26, 2010. Based on comments made at that meeting, the County selected a Preferred Alternative (see **Exhibit 4E**). The Preferred Alternative, or Master Plan Concept, is based on various components of each of the alternatives presented in this chapter, as well as a few additional components not previously depicted. The Preferred Alternative is the basis for the Airport Layout Plan in Chapter 5. The proposed Preferred Alternative is summarized below.

Airfield.

- Ultimate runway and west parallel taxiway extension of 2,000 feet to the north-northwest, with an interim extension of 1,200 feet.
- Installation of a nonprecision instrument approach to Runway 12 with minimums greater than ¾ mile.
- Land acquisition north of the extended runway to accommodate the RPZ.
- Development of a full-parallel taxiway on the east side of the runway.
- Installation of instrument approach lighting system and taxiway/taxilane edge lights
- Designation of helicopter operations area at the southeast end of Runway 30.

Landside.

- Expanded FBO in the current location. No removal of T-hangars (A, B, and C) would be required.
- New vehicle parking across Brookside Boulevard near the FBO location.
- Fueling station moved to the future aircraft parking apron.
- Reserved areas for corporate, T-hangar and conventional hangar, aviation-related business and aviation compatible commercial development.
- Dead-ending of Denver Avenue near the proposed aviation-related business reserve and extending Chipley Road to re-route traffic.
- Relocation of the beacon and Super AWOS.
- New access road on the east side of the airport to access the Corporate Development Reserve area.
- New access road on the west side of the airport to access future T-hangar development in the triangle area.

The above-described Preferred Alternative closely mirrors the PAC's recommendations, with two exceptions. First, the PAC recommended relocating the FBO north of the proposed aircraft parking apron and future fueling facility. However, due to concerns over surface transportation impacts to the local community, the County elected to keep the FBO at its current location. Second, the PAC recommended a precision instrument approach with minimums not lower than ¾ mile. Upon closer investigation, the precision approach's primary surface requirement of 1,000 feet would be unattainable, as nearly all airport facilities would be penetrating the airspace (currently the Airport has a 500-foot primary surface). As such, the plans will protect RPZs for both approaches, but only the smaller RPZ and nonprecision approach will be used for creating the Airport Airspace Plan in Chapter Five.