

## CHAPTER SIX

### DEVELOPMENT ALTERNATIVES

The primary objective of this chapter is to identify a feasible set of facility development alternatives for meeting the projected aviation demand discussed in Chapter Three of this Master Plan Update. Chapter Four presented the general facility requirements that should be planned for during the 20-year planning period at Flagler County Airport. This chapter analyzes and discusses how to meet these objectives in the most effective and efficient manner in the following sections:

- Facility Requirements
- Airside and Landside Development Alternatives
- Summary

#### 6.1 FACILITY REQUIREMENTS

The development alternatives discussed in the following sections were formulated to meet the airside and landside facility requirements at the Airport. The following summarizes the key improvements that are recommended:

- Recommended Airside Improvements
  - Extension of one runway to 7,000 feet to meet D-III standards
  - Installation of a precision approach on extended runway
  - Construction of an Air Traffic Control Tower
- Recommended Landside Improvements
  - Construction of 62 additional T-hangars
  - Construction of 16 additional conventional hangars
  - Construction of apron space adequate for an additional 103 tie-down spaces
  - Construction of new terminal/administration building at 12,500 square feet
  - Construction of 180 additional automobile parking spaces

As discussed, the majority of future airside and landside facility requirements address the extension of one runway as the primary runway and the addition of significant aircraft storage facilities. The forecast numbers of operations and based aircraft are anticipated to include an increasing number of larger multi-engine and jet aircraft, suggesting the evolution of the Flagler County Airport into a full-service business class airport by the end of the 20-year planning period.

The facility requirements included in the following alternatives are recommended to address the forecast demand presented in Chapter Three. Additionally, these alternatives consider such favorable objectives as providing for enhanced safety of airport operations, improved operational efficiency, reducing limitations for development beyond the 20-year planning horizon, and maximizing the role of Flagler County Airport as a catalyst for economic development in the County.

## 6.2 AIRSIDE AND LANDSIDE DEVELOPMENT ALTERNATIVES

The deliberations leading to the identification of development alternatives for Flagler County Airport revealed two overarching constraints. First, environmental concerns related to the numerous wetland areas on Airport property are significant. In fact, a recent wetland delineation project conducted for the Airport indicates that approximately 400 acres of wetland exist on Airport property, representing approximately 35 percent of the existing Airport property. This poses a considerable constraint to any feasible development alternative that may attempt to address future demand.

A second broad constraint to the future development of Flagler County Airport is the configuration of the existing airfield. The location and orientation of the two active runways, along with the arrangement of existing landside facilities, presents a real constraint to the ability of the Airport to accommodate demand in the future. Landside facilities located to the north of Runway 11/29, such as the existing terminal building, High Jacker's Restaurant, and several conventional and T-hangar storage units have all been constructed with respect to the surrounding roadway infrastructure and limits of the existing Airport property on the north side of the airfield. The location of these facilities inhibits the manner in which development can proceed in the future at the Airport.

Based on these constraints, the alternatives analysis did not evaluate the ability of the Airport to provide additional operating capacity. As noted in Chapter Four, the Airport's operations are projected to exceed its annual service volume (ASV). While airports can operate at levels higher than their ASV, as the ratio of demand to capacity increases, the level of delay experienced by aircraft also increases. With the existing airfield, the FAA's capacity guidelines indicate that approximately 230,000 operations can generally be accommodated at the Airport before delay becomes a significant issue. This constraint was considered as part of the planning process and it was determined that the operational activity would maximize itself and that the Airport would not pursue additional capacity enhancement projects such as parallel runways.

The airside and landside development alternatives for Flagler County Airport have been formulated with these constraints in mind, and are presented in the following sections:

- Alternative 1 – “No-Build”
- Alternative 2 – Extension of Runway 6/24
- Alternative 3 – Extension of Runway 11/29 with South Terminal Area
- Alternative 4 – Extension of Runway 11/29 with North Terminal Area
- Alternative 5 – Relocation of Runway 11/29

These development alternatives were devised for evaluation of future opportunities at Flagler County Airport. Alternative 1 is a “No-Build” Alternative. “No-Build” alternatives are typically included to present a baseline for comparison of other “action-oriented” alternatives. Alternative 2 examines development of Runway 6/24 as the primary 7,000-foot long runway with a precision approach. Alternative 3 considers the installation of a precision approach to an extended Runway 11/29 while providing for minimal impact on wetland areas. This includes the development of a

terminal area on the south side of the airfield. Alternative 4 includes the same extension of the existing Runway 11/29 in Alternative 3, however Alternative 4 represents an option for accommodating future demand with the development of a terminal area on the north side of the airfield in an area containing wetlands. To conclude the analysis, Alternative 5 was conceived to consider the alteration of the existing airfield as an option for meeting demand and minimizing wetland impacts.

At the time of this Master Plan Update, a “fly-in” residential community has been proposed for an area adjacent to the existing southern boundary of Airport property. While still in the conceptual stage, this residential development is envisioned as one that would be attractive to aviation enthusiasts that would be interested in having access to a general aviation airport. To provide for possible future access, an additional taxiway is included in the development alternatives. In the event that private interests develop such a residential project and funding for Airport access is identified, this taxiway could be constructed as shown.

#### Alternative 1 - “No-Build”

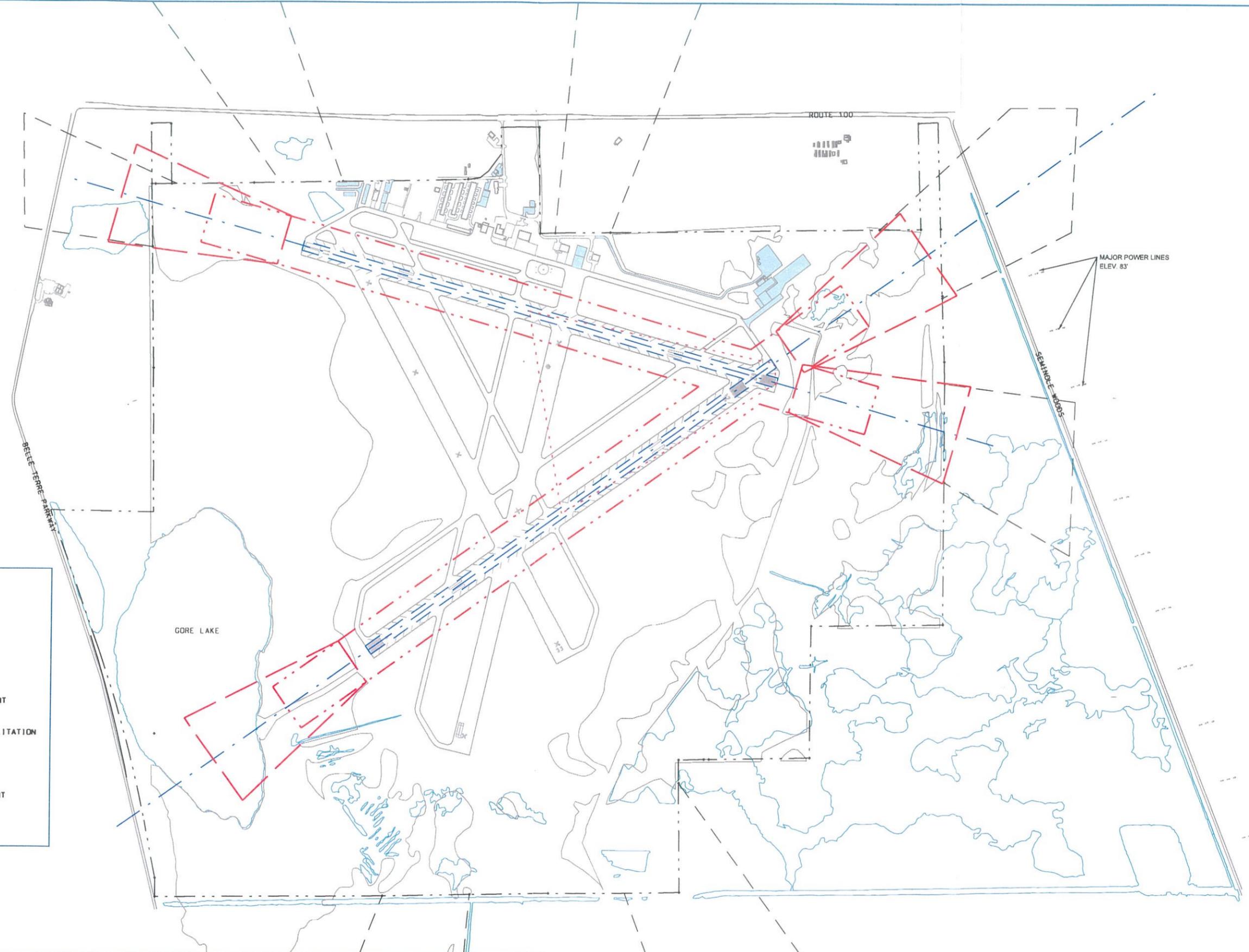
During the process of developing a master plan for an airport, an objective and pragmatic selection of the direction and scope of the final plan is imperative. The thoughtful deliberation of the airport’s role in the local community, the broader general aviation system, and future demand are all carefully considered before determining the facility requirements necessary for the airport over the planning period. Therefore, included in an alternatives analysis is the option to make no improvements to the existing airport being studied. This is oftentimes referred to as the “No-Build” scenario. The “No-Build” Scenario for Flagler County Airport is shown in **Exhibit 6-1**. There are several projects underway at the Airport, including the Airpark Phase A and Flight Training Complex<sup>1</sup> on the east end of Taxiway A and the condo-hangar development at the west end of Taxiway A.

For Flagler County Airport, the next 20 years can be characterized as a period projected to show significant growth. As discussed in previous chapters, the population of Flagler County continues to increase at a rate estimated to be the 5<sup>th</sup> fastest in the nation over the past two years. This growth, as aviation activity forecasts presented in Chapter Three indicate, is expected to spur significant increases in based aircraft and operations at Flagler County Airport over the planning period. As described in Chapter Four, the Airport is currently estimated to be operating at nearly 80 percent of its annual operational capacity. Demand projections indicate that annual demand will exceed 100 percent of annual operating capacity prior to 2012.

As shown in Exhibit 6-1, the “No-Build” Scenario considers no changes to the existing airfield to address future demand. Considering the extent to which population growth will increase the demand for general aviation in the region, and the understanding that this demand will significantly impact Flagler County Airport in its current configuration, it is reasonable to conclude that some improvements to the existing airfield are warranted. Selection of the “No-

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<sup>1</sup> The Airpark Phase A and Flight Training Complex is located at the intersection of Taxiway A and Taxiway E on the north side of the airfield. This development is currently in the bid stage of the development process, and will contain both office space and hangar storage.



LEGEND

	PROPERTY LINE
	RUNWAY OBJECT FREE AREA
	RUNWAY VISIBILITY ZONE
	PROPOSED RPZ
	CURRENT PROJECTS
	PROPOSED AIRFIELD PAVEMENT
	PROPOSED PAVEMENT REHABILITATION
	PROPOSED BUILDINGS
	PROPOSED LANDSIDE PAVEMENT
	PAVEMENT TO BE REMOVED

REVISIONS		
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TITLE		DATE

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Wilbur Smith Associates

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ALTERNATIVE 1	
SDATES	6-1
FILES	Exhibit No.

Build” Scenario also minimizes the utility of the Airport for continued and increased use by larger multi-engine and jet aircraft, the segment of the national fleet that is expected to grow the most over the planning period. Under this scenario, Flagler County Airport would continue to function primarily as an auxiliary field for flight training aircraft, an outcome in conflict with the County’s objective to capitalize on the Airport as a tool for attracting economic development to the County. In addition, accommodating demand for storage facilities is an objective of the Airport and the “No-Build” Alternative does not provide a means to accommodate demand. Therefore, the “No-Build” Scenario is not recommended.

#### Alternative 2 – Extension of Runway 6/24

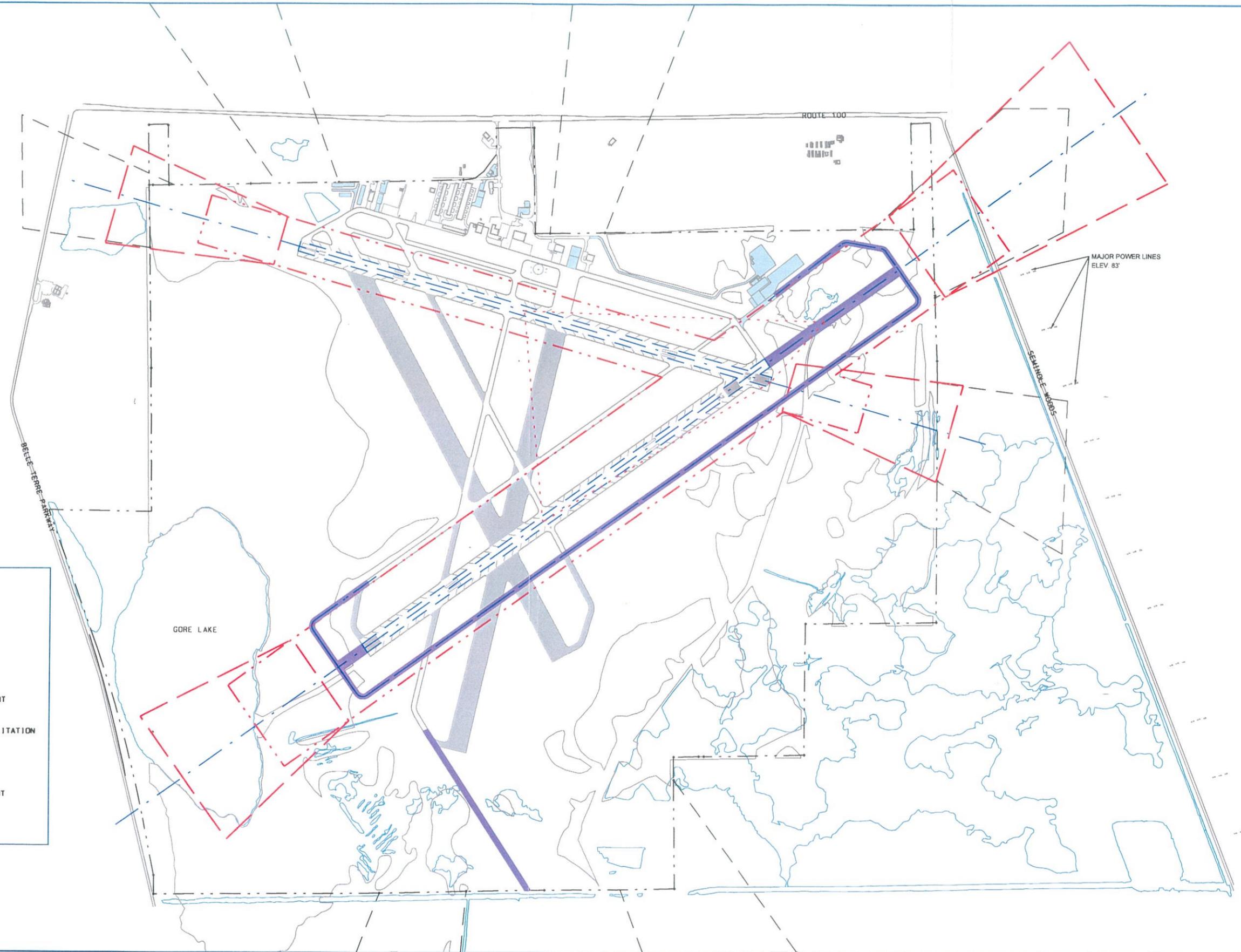
The most significant improvement recommended in Chapter Five: Facility Requirements is the extension of an existing runway to 7,000 feet. This represents an additional 2,000 feet of runway, which will require a significant amount of land for pavement and maintenance of cleared area under FAA airfield safety area specifications. The ability of Runway 6/24 to be extended to 7,000 feet was examined in detail in Alternative 2.

Runway 6/24 provides adequate wind coverage for operations during most weather conditions; however it currently functions as a secondary facility to Runway 11/29. This is due primarily to the proximity of landside facilities to Runway 11/29. The extension of Runway 6/24 is presented in **Exhibit 6-2**, which indicates an additional 350 feet of pavement to Runway 6 and an additional 1,650 feet to Runway 24.

The extension of Runway 6/24 is limited on the southwest by the presence of Gore Lake, located approximately 1,500 feet from Runway end 6. An extension of up to 350 feet from Runway end 6 could be accomplished; however it would impact approximately 21.5 acres of wetland. To achieve a total length of 7,000 feet, the remaining 1,650 feet of runway extension would then need to be added to Runway end 24. This would impact approximately 27.3 acres of wetland.

The installation of a precision approach for Runway 6/24 presents similar obstacles. The runway protection zone (RPZ) for a precision instrument approach with ½-mile visibility minimums encompasses nearly 79 acres. Analysis indicates that such an RPZ for Runway end 24 would contain 73.5 acres of land beyond the current Airport property, including land east of Seminole Woods Parkway. Additionally, there is a major power line located along the east side of Seminole Woods Parkway. This presents a significant obstacle to the installation of a precision approach with ½-mile visibility minimums to Runway 24. Under these circumstances, the implementation of a 2,000-foot extension and precision approach to Runway 6/24 would require the acquisition of more than 84 acres of property.

The 1997 Master Plan indicates that the power line would penetrate a 34:1 approach surface, as required for non-precision approaches in Federal Aviation Regulation (FAR) Part 77. The approach surface required by FAR Part 77 for a precision approach is 50:1, which the power line would also penetrate.



LEGEND

	PROPERTY LINE
	RUNWAY OBJECT FREE AREA
	RUNWAY VISIBILITY ZONE
	PROPOSED RPZ
	CURRENT PROJECTS
	PROPOSED AIRFIELD PAVEMENT
	PROPOSED PAVEMENT REHABILITATION
	PROPOSED BUILDINGS
	PROPOSED LANDSIDE PAVEMENT
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ALTERNATIVE 2

SDATES

FILES

6-2

Exhibit No.

As stated in the previous chapter, a medium intensity approach lighting system (MALSR) is recommended for ½-mile visibility minimums in conjunction with a precision approach at Flagler County Airport. However, the constraints posed by the limits of the existing Airport property also make the installation of a MASLR difficult. A MALSR extends approximately 2,600 feet from the end of a runway. Due to the location of Gore Lake to the southwest and Seminole Woods Parkway to the northeast, there is not sufficient area to install a MALSR to serve either end of Runway 6/24.

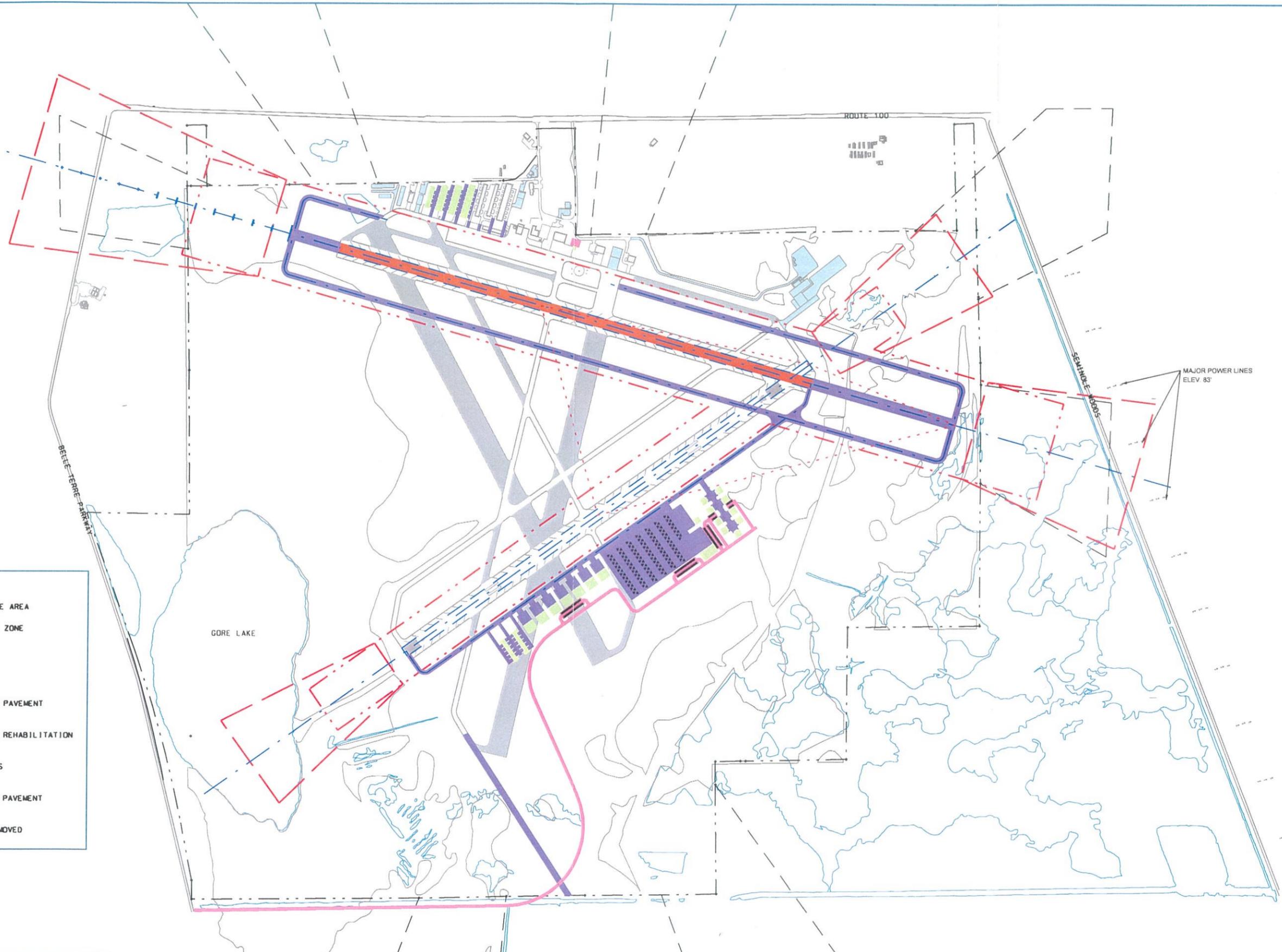
The extension of Runway 6/24 under Alternative 2 also presents difficulties to maximizing the use of developable land (areas not designated as wetland) for landside facilities. Development opportunities on the north side of the airfield are not significantly reduced; however a significant amount of developable land on the southeast side of Runway 6/24 would be required to provide a full-length parallel taxiway with access to landside facilities. The construction of a new full-length parallel taxiway on the southeast side of the runway to meet ARC D-III standards is estimated to require up to 40 acres of land from the area identified for the future development of a business park. Construction of a full-length parallel taxiway on the southeast side of Runway 6/24 under ARC C-II standards however would require less than 30 acres of land in this same area.

Based on the physical constraints discussed above, it is clear that the extension of Runway 6/24 to meet ARC D-III standards is not preferable. Limited available land presents obstacles to the construction of the runway extension and installation of MALSR. The establishment of a precision approach is affected by the existence of power lines to the east of Seminole Woods Parkway. Finally, the development of a full-length parallel taxiway to serve an extended Runway 6/24 would require valuable land on the Airport. Since preservation of developable land in this area is a key element to future economic development in Flagler County, and the physical constraints pose significant obstacles to the use of Runway 6/24 as the primary runway, the maintenance of Runway 6/24 at ARC C-II standards is recommended.

### Alternative 3 - Extension of Runway 11/29 with South Terminal Area

Alternative 3 can be characterized as one that presents facility improvements to accommodate anticipated levels of future demand while utilizing the existing airfield configuration and providing for the least amount of wetland impacts. As shown in **Exhibit 6-3**, this alternative strives to keep wetland impacts to a minimum by avoiding a large wetland area located north of Taxiway A and west of the Airpark Phase A and Flight Training Complex. As illustrated, Alternative 3 would impact approximately 35 acres of existing wetlands.

Currently, Runway 11/29 functions as the primary runway. This is due primarily to the proximity of the Runway to various landside facilities. However, several existing conditions do pose obstacles to the extension of Runway 11/29. For example, an extension of 1,500 feet to Runway 29 would impact roughly 20 acres of wetland area. The addition of the remaining 500 feet to Runway 11 would impact approximately 6 acres of wetland. Extending Runway 11 by 1,500 feet would provide for less wetland impacts; however this option has the greatest potential for negative impacts on residential areas located west of Belle Terre Parkway.



LEGEND

	PROPERTY LINE
	RUNWAY OBJECT FREE AREA
	RUNWAY VISIBILITY ZONE
	PROPOSED RPZ
	CURRENT PROJECTS
	PROPOSED AIRFIELD PAVEMENT
	PROPOSED PAVEMENT REHABILITATION
	PROPOSED BUILDINGS
	PROPOSED LANDSIDE PAVEMENT
	PAVEMENT TO BE REMOVED

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PLANS PREPARED BY

ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

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ALTERNATIVE 3	
SDATES	SFILES
6-3 Exhibit No.	

Therefore, the extension of Runway 11/29 to 7,000 feet in length under Alternative 3 considers extending 500 feet to the west and 1,500 feet to the east, which impacts 26 acres of wetland.

As illustrated on Exhibit 6-3, Alternative 3 indicates one full-length parallel taxiway is recommended on the south side of Runway 11/29 while a partial parallel taxiway is shown for the north side. Both taxiways would be designed to meet 400-foot separation requirements from the centerline of Runway 11/29 as prescribed for ARC D-III runways. Also shown is a full-length parallel taxiway to serve Runway 6/24, which would be designed to meet C-II separation requirements (300 feet). This taxiway is illustrated on the southeast side of Runway 6/24, which would provide access to additional landside facilities to be located on the southeast side of the airfield.

Implementing a precision approach for Runway 11/29 requires the acquisition of some property. A precision RPZ for Runway 29 would include significant acreage on the east side of Seminole Woods Parkway. However, as mentioned previously, a power line that runs through this area presents a major obstruction. In fact, the power line would penetrate a 50:1 slope required for a precision approach surface to Runway 29, therefore making a precision approach to Runway 29 largely infeasible. Implementing a precision approach to Runway 11 requires property acquisition and avoids conflicts with the power lines. A precision RPZ for Runway 11 requires the acquisition of approximately 60 acres of land beyond the current Airport property line. For this reason, Alternative 3 illustrates the precision approach and MALSR on Runway 11. The implementation of the airside facility requirements under this alternative would require the acquisition of more than 108 acres of property.

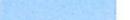
The 1997 Master Plan does not indicate any obstructions to FAR Part 77 surfaces for a precision approach (50:1 slope) to Runway 11 under this alternative.

In addition to these airside facilities, Alternative 3 provides for the following landside improvements to accommodate the forecast levels of demand through the end of the 20-year planning period:

- 62 additional T-hangar units
- 16 additional conventional hangar units
- 103 additional apron tie-down spaces
- 12,500-square foot terminal building
- 180 additional automobile parking spaces
- Relocated fuel farm
- Air Traffic Control Tower (ATCT)

As shown in **Exhibit 6-4**, Alternative 3 indicates limited development on the north side of the airfield. This development includes four structures on the west end of Taxiway A that will contain 40 T-hangar storage units. Also shown are an air traffic control tower and a parking area located just east of the existing terminal building.

LEGEND

-  PROPERTY LINE
-  RUNWAY OBJECT FREE AREA
-  RUNWAY VISIBILITY ZONE
-  PROPOSED RPZ
-  CURRENT PROJECTS
-  PROPOSED AIRFIELD PAVEMENT
-  PROPOSED PAVEMENT REHABILITATION
-  PROPOSED BUILDINGS
-  PROPOSED LANDSIDE PAVEMENT
-  PAVEMENT TO BE REMOVED

ROUTE 100

T-HANGARS

ATCT



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PLANS PREPARED BY



**Wilbur Smith Associates**  
ENGINEERS  
PLANNERS  
ECONOMISTS

PLANS PREPARED FOR

**FLAGLER COUNTY AIRPORT**

PROJECT NO. (CLIENT)      PROJECT NO. (WSA)

ALTERNATIVE 3  
TERMINAL AREA PLAN - NORTH

SDATES  
SFILES

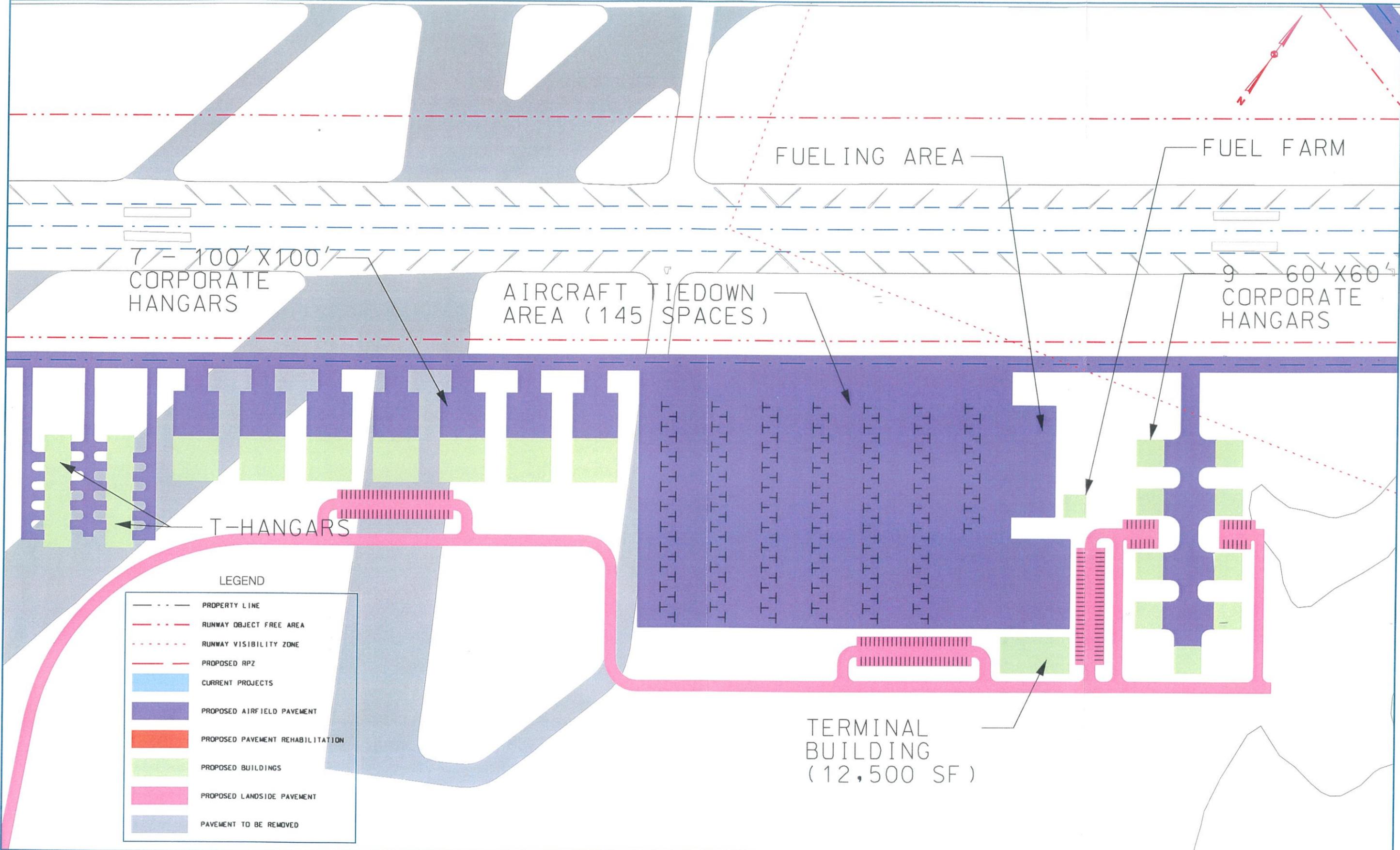
6-4  
Exhibit No.

Due to the objective of avoiding the large wetland on the north side of the airfield, the development of substantial landside facilities on the southeast side of the airfield is necessary. **Exhibit 6-5** illustrates the terminal area plan for the southeast side of the airfield. Under this alternative, this level of development would be necessary in the near-term in order to accommodate the forecast levels of future demand. This includes the development of approximately 22 T-hangar units along with 16 conventional hangar units on the southeast side of Runway 6/24. Included in this development are 145 apron tie-down spaces and a large ramp area to accommodate a fuel farm and a 12,500-square foot terminal building. Also shown are 180 automobile parking spaces to serve corporate hangars, transient tie-down spaces, and the terminal building. These landside facilities would be accessible via an access road that would connect to Belle Terre Parkway on land that is located just south of existing Airport property but owned by Flagler County.

Alternative 3 represents a practical option for the future development of Flagler County Airport. One advantage of this Alternative is the removal of impact on the large wetland area located north of Taxiway A and west of the Airpark Phase A and Flight Training Complex. However, while minimizing the impact of future Airport development on wetland areas is desirable, there are some disadvantages associated with this alternative.

First, a full-length parallel taxiway in conjunction with the extension of Runway 11/29 is desirable. However, the implementation of a full-length parallel taxiway on the north (to provide access to landside facilities) would require the relocation of two retention ponds located near the current west end of Taxiway A. Secondly, separation requirements to meet ARC D-III standards would necessitate the abandonment of the large existing apron that currently offers 42 aircraft tie-downs spaces to transient and based aircraft.

A third disadvantage of Alternative 3 is that the Airport would have to claim a significant portion of developable land on the southeast side of the airfield for aviation-related facilities in order to accommodate forecast levels of demand through the planning period. Under this alternative, future FBO facilities or additional aircraft storage units necessary beyond 2022 would also have to be developed on the southeast side of the field. While these developments are feasible, the alternative would effectively separate Airport operations to opposite sides of the airfield, complicating the provision of services the Airport seeks to provide as benefits to its tenants. This separation places the newest landside facilities along Runway 6/24, which has already been deemed the secondary runway with limited ability to adequately serve the anticipated growth in business/corporate aviation activity. Additionally, this alternative also reduces the amount of land available on the southeast side of the Airport for economic development purposes, a pursuit that has been central to efforts underway by Enterprise Flagler, the group that is working to secure economic development for the future of Flagler County.



**LEGEND**

- PROPERTY LINE
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- PROPOSED RPZ
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- PROPOSED BUILDINGS
- PROPOSED LANDSIDE PAVEMENT
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PLANS PREPARED BY

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**ALTERNATIVE 3**

**TERMINAL AREA PLAN - SOUTH**

SDATES  
SFILES

6-5  
Exhibit No.

*Estimate of Construction Cost*

The evaluation of development alternatives for Flagler County Airport includes a general review of construction costs associated with each airside and landside facility improvement. Construction cost estimates were prepared based upon standard industry unit costs for airport construction and consulting engineering work in representative projects throughout the southeastern United States. The estimated construction cost for Alternative 3 is presented in **Table 6-1**.

As shown, the construction estimate for Alternative 3 includes costs associated with providing additional aircraft storage, the extension of Runway 11/29, taxiway and ramp improvements, additional lighting, signage and marking, and the implementation of a precision approach. The sub total estimated construction cost of these facility improvements is more than \$20.8 million. The total cost, including the mobilization and maintenance of traffic, along with engineering, inspection, testing and contingency fees is estimated to exceed \$26.7 million. As indicated, this estimate does not consider the cost of property acquisition or mitigation of wetland impacts.

More than 55 percent of the estimated construction cost is devoted to the development of landside facilities, of which more than \$7.5 million are devoted to T-hangar and conventional/corporate hangar units. Another significant portion of the estimated construction estimate is proposed as taxiway/ramp pavement. Nearly 165,000 square yards of pavement, indicated as the new parallel taxiways to Runway 11/29 and 6/24, are estimated to cost roughly \$4 million. NAVAID improvements account for more than \$1.3 million.

**TABLE 6-1**  
**ESTIMATE OF CONSTRUCTION COST – ALTERNATIVE 3**

<b>Element</b>	<b>Unit</b>	<b>Quantity</b>	<b>Cost/Unit</b>	<b>Element Total</b>
<b>Buildings</b>				
Terminal	SF	12,500	\$100.00	\$1,250,000.00
T-hangars	Bay	62	\$30,000.00	\$1,860,000.00
60'x60' Corporate Hangar	EA	9	\$240,000.00	\$2,160,000.00
100'x100' Corporate Hangar	EA	7	\$500,000.00	\$3,500,000.00
Air Traffic Control Tower	EA	1	\$1,500,000.00	\$1,500,000.00
ARFF Station	EA	1	\$1,200,000.00	\$1,200,000.00
<b>Pavement</b>				
Proposed Runway	SY	22,225	\$24.00	\$533,400.00
Proposed Taxiway/Ramp	SY	164,600	\$24.00	\$3,950,400.00
Proposed Roadway/Parking	SY	34,470	\$18.00	\$620,460.00
Rehabilitated Runway	SY	55,556	\$11.00	\$611,116.00
Rehabilitated Taxiway	SY	0	\$11.00	\$0.00
<b>Earthwork</b>				
<b>Excavation/Embankment</b>				
Runway	CY	92,593	\$5.00	\$462,962.96
Taxiway	CY	118,519	\$5.00	\$592,592.59
Roadway	CY	39,259	\$5.00	\$196,296.30
Pond Relocation	LS	1	\$340,736.00	\$340,736.00
<b>Lighting/Signing/Marking</b>				
Runway (HIRL)	LF	7,000	\$22.00	\$154,000.00
Taxiway (MITL)	LF	18,000	\$22.00	\$396,000.00
Runway Marking	LF	7,000	\$7.00	\$49,000.00
Taxiway Marking	LF	20,300	\$5.00	\$101,500.00
<b>NAVAIDS</b>				
ILS	LS	1	\$1,000,000.00	\$1,000,000.00
MALSR	LS	1	\$350,000.00	\$350,000.00
			<b>Sub Total Cost</b>	<b>20,828,463.85</b>
Mobilization and Maintenance of Traffic			7%	1,457,992.47
Engineering, Inspection, Testing & Contingency			20%	4,457,291.26
			<b>Total Cost</b>	<b>26,743,747.59</b>
Property Acquisition	AC	108.34		
Wetland Impacts	AC	34.54		

Source: Wilbur Smith Associates

#### Alternative 4 - Extension of Runway 11/29 with North Terminal Area

Alternative 4 can be described as another option that presents facility improvements to accommodate anticipated levels of future demand utilizing the existing airfield configuration. However, Alternative 4 considers future development at the Airport in a large wetland area located north of Taxiway A and west of the Airpark Phase A and Flight Training Complex. Alternative 4 is presented in **Exhibit 6-6**. As illustrated, Alternative 4 would impact nearly 51 acres of existing wetland areas.

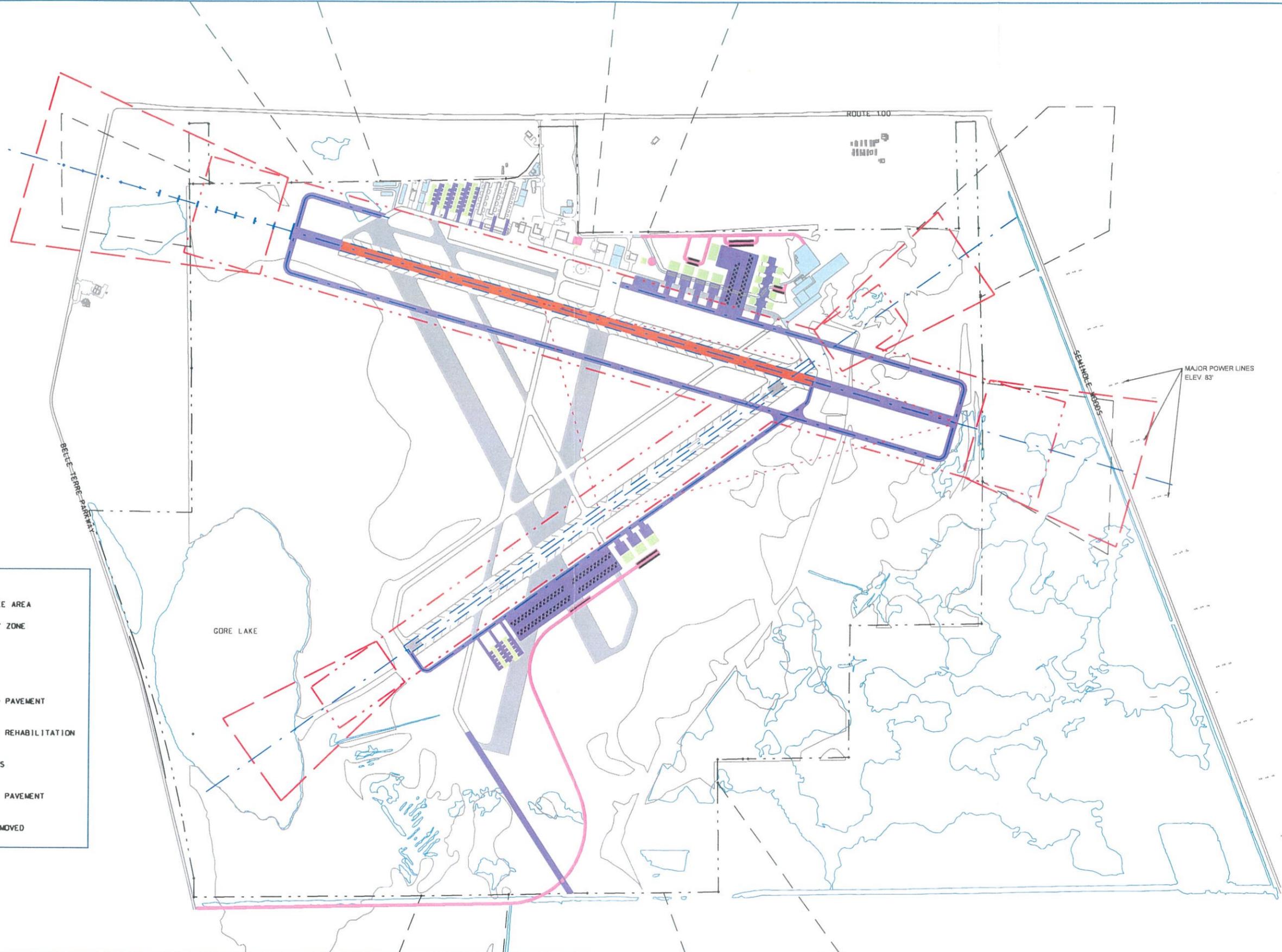
As illustrated on Exhibit 6-6, Alternative 4 approaches the extension of Runway 11/29 to 7,000 feet in the same manner as Alternative 3; by extending 500 feet to Runway 11 and 1,500 feet to Runway 29. The same options are therefore available for the provision of one full-length parallel taxiway (located on the south side of Runway 11/29) and a partial parallel taxiway (located on the north side). Both taxiways are designed to meet 400-foot separation requirements from the centerline of Runway 11/29 as prescribed for ARC D-III runways. Also shown is a full-length parallel taxiway on the southeast side of Runway 6/24, designed to meet ARC C-II separation requirements and to serve landside facilities to be located on the southeast side of the airfield.

Alternative 4 illustrates the installation of the precision approach and MALSR on Runway 11 in an effort to avoid the power lines east of Seminole Woods Parkway. The implementation of the airside facility requirements under this alternative would require the acquisition of the same 108 acres of property indicated on Exhibit 6-3.

In addition to these airside facilities, Alternative 4 provides for the following landside improvements to accommodate the forecast levels of demand through the end of the 20-year planning period:

- 62 additional T-hangar units
- 16 additional conventional hangar units
- 103 additional apron tie-down spaces
- 12,500 square-foot terminal building
- 180 additional automobile parking spaces
- Relocated Fuel farm
- Air Traffic Control Tower (ATCT)

As shown in **Exhibit 6-7**, Alternative 4 indicates similar development on the north side of the airfield as that indicated in Alternative 3. This development includes 40 T-hangar storage units on the west end of Taxiway A along with the air traffic control tower and parking area located just east of the existing terminal building. In addition, as mentioned previously, Alternative 4 illustrates significant landside development in the area immediately west of the Airpark Phase A and Flight Training Complex. This development of landside facilities is shown in **Exhibit 6-8**, and includes development within the wetland areas avoided in Alternative 3.



**LEGEND**

	PROPERTY LINE
	RUNWAY OBJECT FREE AREA
	RUNWAY VISIBILITY ZONE
	PROPOSED RPZ
	CURRENT PROJECTS
	PROPOSED AIRFIELD PAVEMENT
	PROPOSED PAVEMENT REHABILITATION
	PROPOSED BUILDINGS
	PROPOSED LANDSIDE PAVEMENT
	PAVEMENT TO BE REMOVED

REV. NO.		DATE	REVISIONS	DESCRIPTION OF REVISION
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

DESIGNED BY	MRB/JET	DATE	12-24-03
DRAWN BY	MRB/JET/HAP	DATE	12-24-03
CHECKED BY	MSS	DATE	12-24-03

APPROVALS:	
TITLE	DATE
TITLE	DATE
TITLE	DATE

PLANS PREPARED BY

**Wilbur Smith Associates**

PLANS PREPARED FOR

**FLAGLER COUNTY AIRPORT**

PROJECT NO. (CLIENT)      PROJECT NO. (WSA)

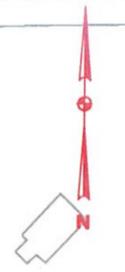
**ALTERNATIVE 4**

SDATES  
SFILES

LEGEND

-  PROPERTY LINE
-  RUNWAY OBJECT FREE AREA
-  RUNWAY VISIBILITY ZONE
-  PROPOSED RPZ
-  CURRENT PROJECTS
-  PROPOSED AIRFIELD PAVEMENT
-  PROPOSED PAVEMENT REHABILITATION
-  PROPOSED BUILDINGS
-  PROPOSED LANDSIDE PAVEMENT
-  PAVEMENT TO BE REMOVED

ROUTE 100



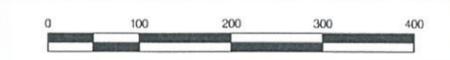
T-HANGARS

FUEL FARM

ATCT

FUELING AREA

REVISIONS:		
REV. NO.	DATE	DESCRIPTION OF REVISION



DESIGNED BY	MRBJET	DATE	12-24-03
DRAWN BY	MRBJETHAP	DATE	12-24-03
CHECKED BY	MSS	DATE	12-24-03

APPROVALS:		
TITLE	DATE	

PLANS PREPARED BY



Wilbur Smith Associates

PLANS PREPARED FOR

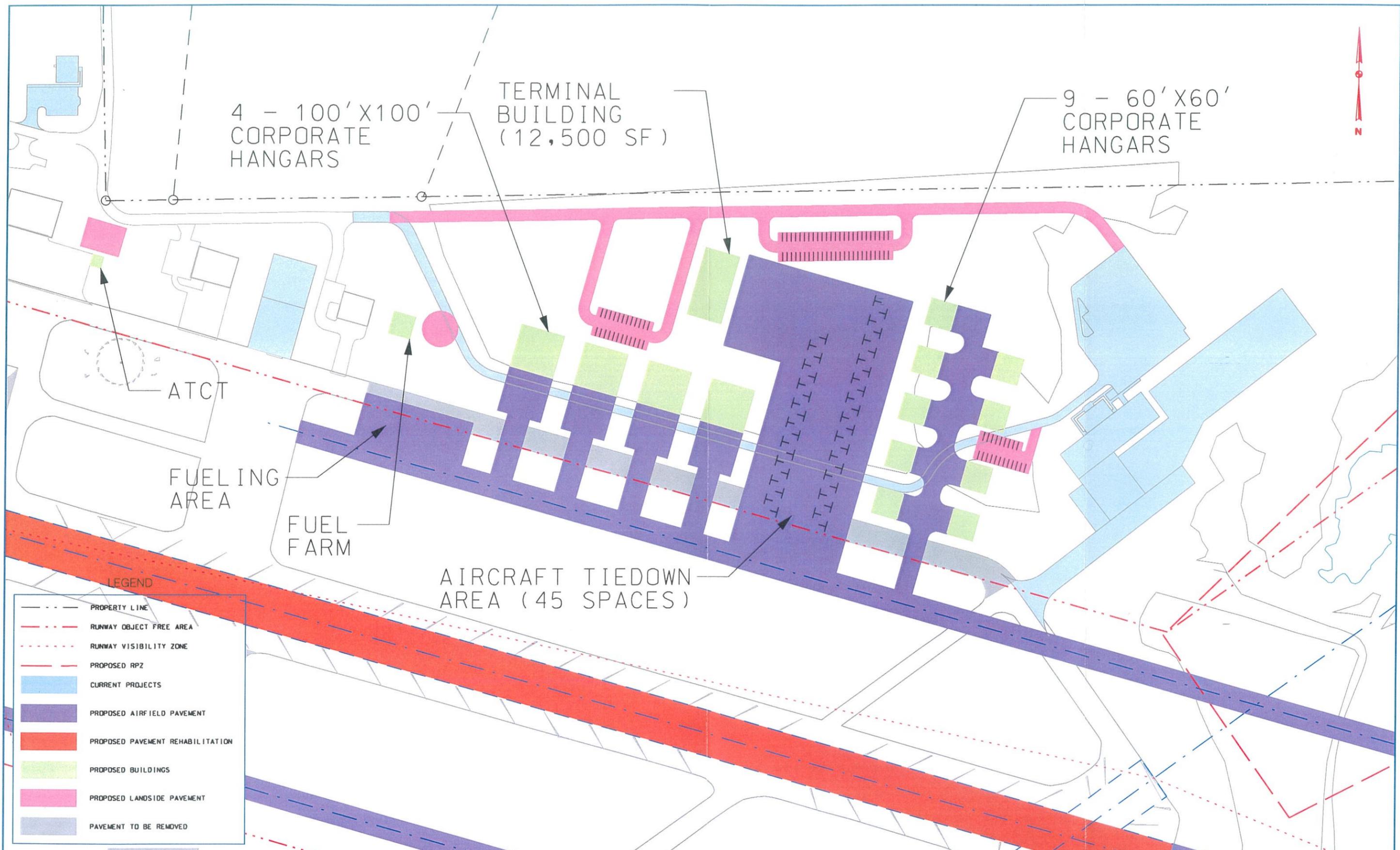
FLAGLER COUNTY AIRPORT

PROJECT NO. (CLIENT)      PROJECT NO. (WSA)

ALTERNATIVE 4  
TERMINAL AREA PLAN - NORTH (1)

S/DATES  
S/FILES

6-7  
Exhibit No.



4 - 100' X 100'  
CORPORATE  
HANGARS

TERMINAL  
BUILDING  
(12,500 SF)

9 - 60' X 60'  
CORPORATE  
HANGARS

ATCT

FUELING  
AREA

FUEL  
FARM

AIRCRAFT TIEDOWN  
AREA (45 SPACES)

LEGEND

- PROPERTY LINE
- RUNWAY OBJECT FREE AREA
- RUNWAY VISIBILITY ZONE
- PROPOSED RPZ
- CURRENT PROJECTS
- PROPOSED AIRFIELD PAVEMENT
- PROPOSED PAVEMENT REHABILITATION
- PROPOSED BUILDINGS
- PROPOSED LANDSIDE PAVEMENT
- PAVEMENT TO BE REMOVED

REVISIONS:

REV. NO.	DATE	DESCRIPTION OF REVISION

DESIGNED BY	MRB/JET	DATE	12-24-03
DRAWN BY	MRB/JETH/AP	DATE	12-24-03
CHECKED BY	MSS	DATE	12-24-03

APPROVALS:	
TITLE	DATE
TITLE	DATE
TITLE	DATE

PLANS PREPARED BY

**Wilbur Smith Associates**

PLANS PREPARED FOR

**FLAGLER COUNTY  
AIRPORT**

PROJECT NO. (CLIENT)      PROJECT NO. (WSA)

ALTERNATIVE 4  
TERMINAL AREA PLAN - NORTH (2)

SDATES  
FILES

6-8  
Exhibit No.

When development on the north side of the airfield is not constrained by wetland impacts, a significant portion of future demand can be accommodated before moving to the southeast side of the airfield. As shown on Exhibit 6-8, there is sufficient area for the construction of a 12,500-square foot terminal building, 45 apron tie-down spaces, 13 conventional hangar units, and the relocation of the fuel farm in this area. Also included are more than 100 automobile parking spaces. These facilities should be sufficient to meet demand during the near and mid-term periods. In the later stages, however, the development of landside facilities on the southeast side of the airfield will be required.

Under Alternative 4, development on the southeast side of the airfield would include approximately three conventional hangar units, 100 apron tie-down spaces, and 78 automobile parking spaces. This landside facility development is presented in **Exhibit 6-9**. These landside facilities would be accessible via an access road that would connect to Belle Terre Parkway. This access road is the same as that presented in Alternative 3.

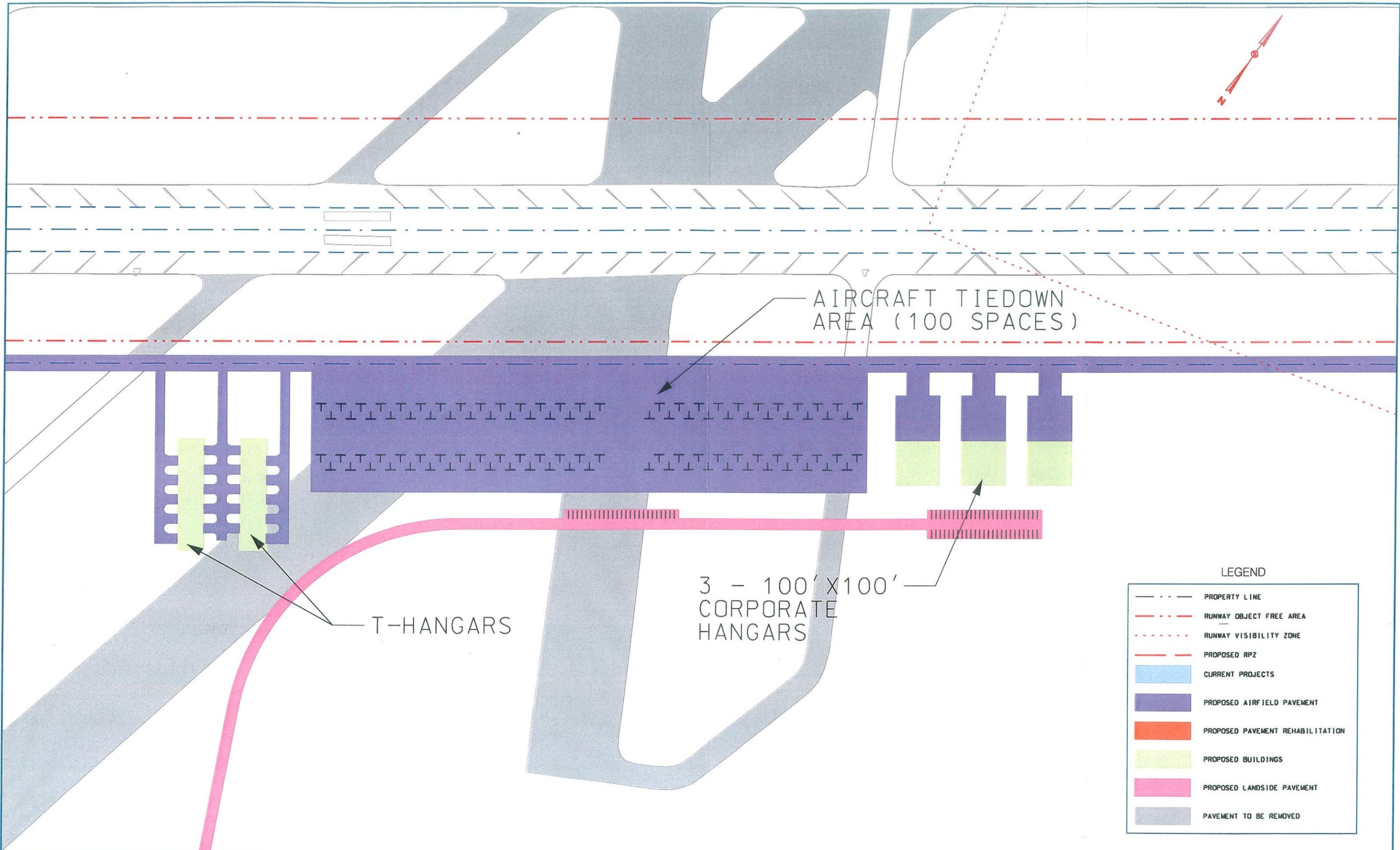
As described, Alternative 4 represents a reasonable option for the future development of Flagler County Airport. When compared to Alternative 3, Alternative 4 exhibits an advantage because it can meet near and mid-term demand with the construction of new facilities on the north side of the airfield. This is preferable because the concentration of landside facilities on the north side of the airfield maintains the prominence of the existing terminal area. Under Alternative 4, it is feasible to locate future FBO facilities along Runway 11/29. As such, this alternative would succeed in keeping Airport operations concentrated on the same side of the airfield, allowing the efficient provision of services to tenants and the general public. This is significant because the Airport can reserve a significant portion of developable land on the southeast side of the airfield for the desired business park development.

In light of the favorable aspects of Alternative 4, it does exhibit several disadvantages. The first shortcoming is the negative impact on the large wetland area on the north side of Taxiway A. Alternative 4 also shares some of the disadvantages associated with Alternative 3, namely the relocation of two retention ponds required to construct a parallel taxiway and the loss of the large existing apron that accounts for 42 tie-down spaces. These disadvantages are significant and make the consideration of additional development alternatives desirable.

#### *Estimate of Construction Cost*

As discussed, Alternative 4 diverges from Alternative 3 as it considers implementing landside facility improvements in an area currently occupied by a large wetland on the north side of the airfield. The estimated construction cost for Alternative 4 is presented in **Table 6-2**.

Similar to the costs of Alternative 3, the construction estimate for Alternative 4 includes costs associated with providing for additional aircraft storage, the extension of Runway 11/29, taxiway and ramp improvements, additional lighting, signage and marking, and the implementation of a precision approach. The sub total estimated construction cost of these facility improvements surpasses \$22.1 million. The total cost, including the mobilization and maintenance of traffic, along with engineering, inspection, testing and contingency fees is estimated to be roughly \$28.4



LEGEND

	PROPERTY LINE
	RUNWAY OBJECT FREE AREA
	RUNWAY VISIBILITY ZONE
	PROPOSED RPZ
	CURRENT PROJECTS
	PROPOSED AIRFIELD PAVEMENT
	PROPOSED PAVEMENT REHABILITATION
	PROPOSED BUILDINGS
	PROPOSED LANDSIDE PAVEMENT
	PAVEMENT TO BE REMOVED

REVISIONS:

REV. NO.	DATE	DESCRIPTION OF REVISION

DESIGNED BY: MRBJET DATE: 12-24-03

DRAWN BY: MRBJETHAP DATE: 12-24-03

CHECKED BY: MSS DATE: 12-24-03

APPROVALS:

TITLE	DATE

PLANS PREPARED BY

Wilbur Smith Associates

PLANS PREPARED FOR

FLAGLER COUNTY AIRPORT

PROJECT NO. (CLIENT)      PROJECT NO. (WSA)

ALTERNATIVE 4  
TERMINAL AREA PLAN - SOUTH

SDATES  
SFILES

6-9  
Exhibit No.

**TABLE 6-2**  
**ESTIMATE OF CONSTRUCTION COST – ALTERNATIVE 4**

<b>Element</b>	<b>Unit</b>	<b>Quantity</b>	<b>Cost/Unit</b>	<b>Element Total</b>
<b>Buildings</b>				
Terminal	SF	12,500	\$100.00	\$1,250,000.00
T-hangars	Bay	62	\$30,000.00	\$1,860,000.00
60'x60' Corporate Hangar	EA	9	\$240,000.00	\$2,160,000.00
100'x100' Corporate Hangar	EA	7	\$500,000.00	\$3,500,000.00
Air Traffic Control Tower	EA	1	\$1,500,000.00	\$1,500,000.00
ARFF Station	EA	1	\$1,200,000.00	\$1,200,000.00
<b>Pavement</b>				
Proposed Runway	SY	22,225	\$24.00	\$533,400.00
Proposed Taxiway/Ramp	SY	176,755	\$24.00	\$4,242,120.00
Proposed Roadway/Parking	SY	36,130	\$18.00	\$650,340.00
Rehabilitated Runway	SY	55,556	\$11.00	\$611,116.00
Rehabilitated Taxiway	SY	0	\$11.00	\$0.00
<b>Earthwork</b>				
Excavation/Embankment				
Runway	CY	92,593	\$5.00	\$462,962.96
Taxiway	CY	118,519	\$5.00	\$592,592.59
Roadway	CY	45,185	\$5.00	\$225,925.93
Pond Relocation	LS	1	\$340,736.00	\$340,736.00
<b>Lighting/Signing/Marking</b>				
Runway (HIRL)	LF	7,000	\$22.00	\$154,000.00
Taxiway (MITL)	LF	18,000	\$22.00	\$396,000.00
Runway Marking	LF	7,000	\$7.00	\$49,000.00
Taxiway Marking	LF	20,300	\$5.00	\$101,500.00
<b>NAVAIDS</b>				
ILS	LS	1	\$1,000,000.00	\$1,000,000.00
MALSR	LS	1	\$350,000.00	\$350,000.00
			<b>Sub Total Cost</b>	<b>21,179,693.48</b>
Mobilization and Maintenance of Traffic			1,482,578.54	1,457,992.47
Engineering, Inspection, Testing & Contingency			4,532,454.41	4,457,291.26
			<b>Total Cost</b>	<b>27,194,726.43</b>
Property Acquisition	AC	108.34		
Wetland Impacts	AC	50.71		

Source: Wilbur Smith Associates

million. This estimate does not consider the cost of acquiring property needed to make these improvements, nor does it include the mitigation of wetland impacts.

The largest portion of the estimated construction cost for Alternative 4 is accounted for by the development of landside facilities, most of which is related to T-hangar and conventional hangar units. Proposed taxiway/ramp pavement accounts for more than \$4.2 million of the estimated cost, providing for nearly 177,000 square yards of pavement. NAVAID improvements total more

than \$1.3 million. The estimated construction cost of Alternative 4 is roughly two percent higher than the construction estimate for Alternative 3.

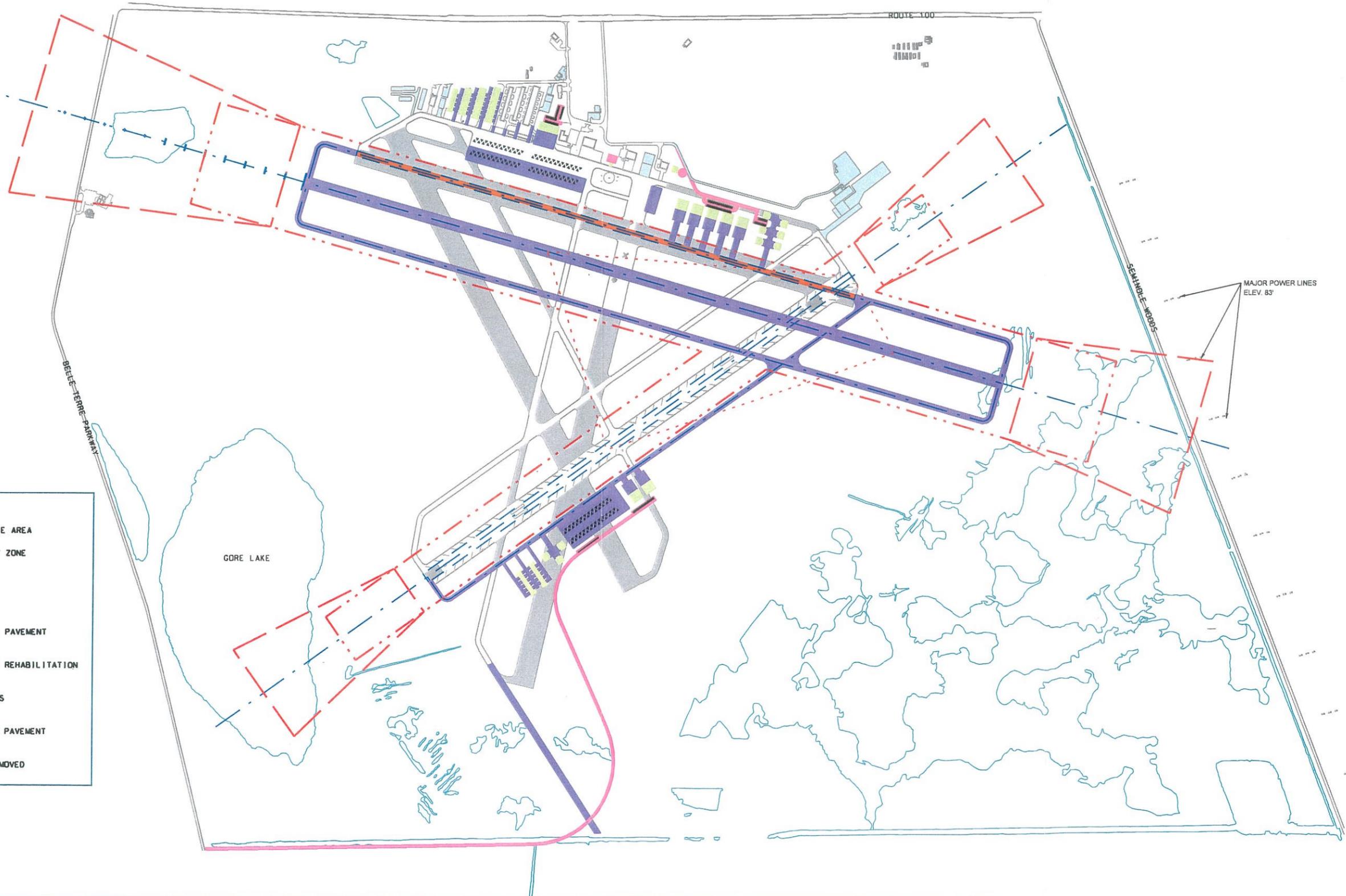
#### Alternative 5 – Relocation of Runway 11/29

The evolution of development alternatives for Flagler County Airport revealed a shortage of available land within the existing Airport property and especially on the north side of the airfield. Limitations imposed by the existing Airport property boundary and significant wetland areas hinder the extent to which development can occur on the north side of the Airport in its existing configuration. The concentration of landside facilities on the north side of the airfield is preferable largely because this area was originally developed as the primary terminal and passenger circulation area. This side of the airfield contains other amenities such as the EMS station, along with Enterprise rental car and Hijackers, a popular restaurant, all with easy access to SR 100 and Interstate 95.

The lack of land for development on the north side of the airfield is complicated by FAA design requirements for ARC D-III runways that would regulate the extension of Runway 11/29. Therefore, Alternative 5 presents an option to accommodate future demand that considers the moderate alteration of the existing airfield configuration. Additionally, Alternative 5 attempts to minimize the impact of future Airport development on wetlands while maximizing the potential for expansion of landside facilities on the north side of the airfield over the 20-year planning period.

Presented on **Exhibit 6-10**, Alternative 5 illustrates the development of a relocated 7,000-foot runway, oriented 11/29 and located 400 feet south of the centerline of the existing Runway 11/29. The reconstruction of Runway 11/29 as indicated in this alternative effectively addresses future demand by providing for a 7,000-foot long runway. However, by shifting the location of the runway 400 feet to the south, Alternative 5 increases available land on the north side of the airfield for landside facilities. The shift of the new runway 400 feet to the south positions the existing Runway 11/29 to serve as a parallel taxiway to the new runway. This option makes it possible to avoid the development of the large wetland area west of the Airpark Phase A and Flight Training Complex while allowing the existing landside structures to remain functional into the future. It also permits the continued use of the existing Runway 11/29 for aircraft operations during the construction of the new runway. As illustrated, Alternative 5 would impact less than 34 acres of existing wetland areas. This is less than the impact on wetlands provided for by Alternatives 3 and 4.

The development of landside facilities on north side of the airfield illustrated in **Exhibit 6-11** includes the addition of 40 T-hangar storage units on the west end of Taxiway A as both previous alternatives have shown. Alternative 5 also includes a relocated fuel farm in the same manner as Alternative 4, positioned to serve aircraft stored on the north side of the airfield. Alternative 5 indicates, however, that the large existing apron may now be expanded to contain an additional 44 tie-down spaces, providing for a total of approximately 86 apron tie-down spaces. In Alternatives 3 and 4, the area of the existing apron would be abandoned to comply with separation requirements for an ARC D-III runway. In this regard, Alternative 5 exhibits a



**LEGEND**

	PROPERTY LINE
	RUNWAY OBJECT FREE AREA
	RUNWAY VISIBILITY ZONE
	PROPOSED RPZ
	CURRENT PROJECTS
	PROPOSED AIRFIELD PAVEMENT
	PROPOSED PAVEMENT REHABILITATION
	PROPOSED BUILDINGS
	PROPOSED LANDSIDE PAVEMENT
	PAVEMENT TO BE REMOVED

REVISIONS:		
REV. NO.	DATE	DESCRIPTION OF REVISION

DESIGNED BY	MRBJET	DATE	12-24-03
DRAWN BY	MRBJET/HAP	DATE	12-24-03
CHECKED BY	MSS	DATE	12-24-03

APPROVALS:			
TITLE		DATE	
TITLE		DATE	
TITLE		DATE	

PLANS PREPARED BY

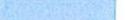
ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

PLANS PREPARED FOR	
<b>FLAGLER COUNTY AIRPORT</b>	
PROJECT NO. (CLIENT)	PROJECT NO. (WSA)

<b>ALTERNATIVE 5</b>	
SDATES	FILES

LEGEND

-  PROPERTY LINE
-  RUNWAY OBJECT FREE AREA
-  RUNWAY VISIBILITY ZONE
-  PROPOSED RPZ
-  CURRENT PROJECTS
-  PROPOSED AIRFIELD PAVEMENT
-  PROPOSED PAVEMENT REHABILITATION
-  PROPOSED BUILDINGS
-  PROPOSED LANDSIDE PAVEMENT
-  PAVEMENT TO BE REMOVED

ROUTE 100

T-HANGARS

TERMINAL BUILDING  
(12,500 SF)

ATCT

FUEL FARM

AIRCRAFT TIEDOWN AREA (44 SPACES)

FUELING AREA

REVISIONS:		
REV. NO.	DATE	DESCRIPTION OF REVISION

			
DESIGNED BY	MRB/JET	DATE	12-24-03
DRAWN BY	MRB/JET/HAP	DATE	12-24-03
CHECKED BY	MSS	DATE	12-24-03

APPROVALS:			
TITLE	DATE	TITLE	DATE

PLANS PREPARED BY



ENGINEERS  
PLANNERS  
ECONOMISTS

PLANS PREPARED FOR

FLAGLER COUNTY  
AIRPORT

PROJECT NO. (CLIENT)      PROJECT NO. (WSA)

ALTERNATIVE 5  
TERMINAL AREA PLAN - NORTH (1)

SDATES  
SFILES

6-11  
Exhibit No.

substantial advantage over the previous alternatives because it allows the continued use of the existing apron and ramp areas for the storage of transient aircraft and traffic circulation to and from the primary Runway 11/29 via Taxiway A.

The expansion of the existing apron area to serve transient and based aircraft provides an opportunity and benefit for locating the new terminal building in close proximity. Conversely, Alternative 3 indicated the terminal to be located on the southeast side of the airfield, and Alternative 4 placed the terminal to serve the addition of apron tie-downs and corporate hangar units in the large wetland area. As shown in Exhibit 6-5, the 12,500-square foot terminal building is located north of the expanded apron area. This preserves the north side of the airfield as the primary terminal area into the future, presenting an easily visible and accessible point for transferring users to the apron area or T-hangars.

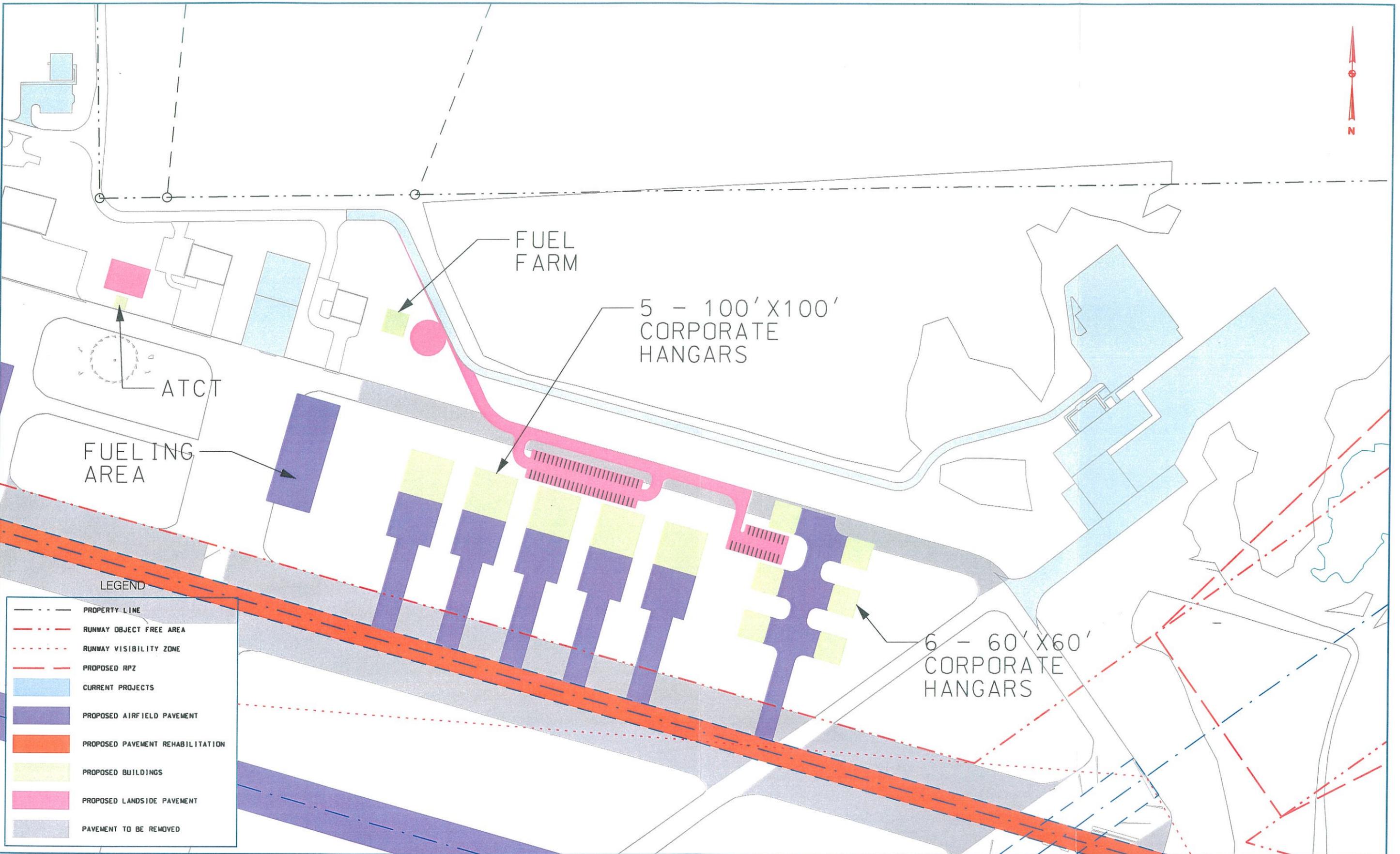
The reconstruction of Runway 11/29 to the south increases developable land on the north side of the airfield without building in the large wetland area. As shown in **Exhibit 6-12**, the addition of an expanded fueling area, along with 11 conventional hangars and automobile parking to serve them is possible under this alternative. The hangar units are provided direct access to a parallel taxiway, and share access to the relocated fueling area with aircraft utilizing the apron tie-down spaces.

As described, Alternative 5 provides a significant benefit in that it preserves the north side of the airfield for landside facility improvements to meet future demand in the near to mid-term periods. At some point, however, there will no longer be sufficient space on the north side of the airfield and aviation facility improvements will need to be made on the southeast side of Runway 6/24. As shown in **Exhibit 6-13**, Alternative 5 indicates the development of an additional 50 apron tie-down spaces on the southeast side of the airfield, along with five conventional hangar units. These aircraft storage facilities and automobile parking would be accessible via the connection of a new road to Belle Terre Parkway, similar to that indicated in Alternatives 3 and 4. As presented, landside facilities required to meet future demand would include storage facilities only. This effectively reserves substantial developable land on the southeast side of Runway 6/24 for the development of a business park, a goal that plays a vital role in the future economic development of Flagler County.

#### *Estimate of Construction Cost*

As described, Alternative 5 considers the alteration of the existing airfield configuration with the construction of a new 7,000-foot long runway to be oriented 11/29 and located 400 feet south of the existing Runway 11/29. This modification results in a construction cost estimate that is approximately four percent higher than Alternative 4, and six percent higher than Alternative 3. The estimated construction cost of Alternative 5 is shown in **Table 6-3**.

Similar to the costs of Alternative 3 and 4, the construction estimate for Alternative 5 includes costs associated with additional aircraft storage, taxiway and ramp improvements, additional lighting, signage and marking, and the implementation of a precision approach. The sub total estimated construction cost of these facility improvements is more than \$22.1 million. The total



LEGEND

	PROPERTY LINE
	RUNWAY OBJECT FREE AREA
	RUNWAY VISIBILITY ZONE
	PROPOSED RPZ
	CURRENT PROJECTS
	PROPOSED AIRFIELD PAVEMENT
	PROPOSED PAVEMENT REHABILITATION
	PROPOSED BUILDINGS
	PROPOSED LANDSIDE PAVEMENT
	PAVEMENT TO BE REMOVED

DESIGNED BY	MRBJET	DATE	12-24-03
DRAWN BY	MRBJETHAP	DATE	12-24-03
CHECKED BY	MSS	DATE	12-24-03

APPROVALS:

TITLE	DATE
TITLE	DATE
TITLE	DATE

PLANS PREPARED BY

Wilbur Smith Associates

PLANS PREPARED FOR

FLAGLER COUNTY AIRPORT

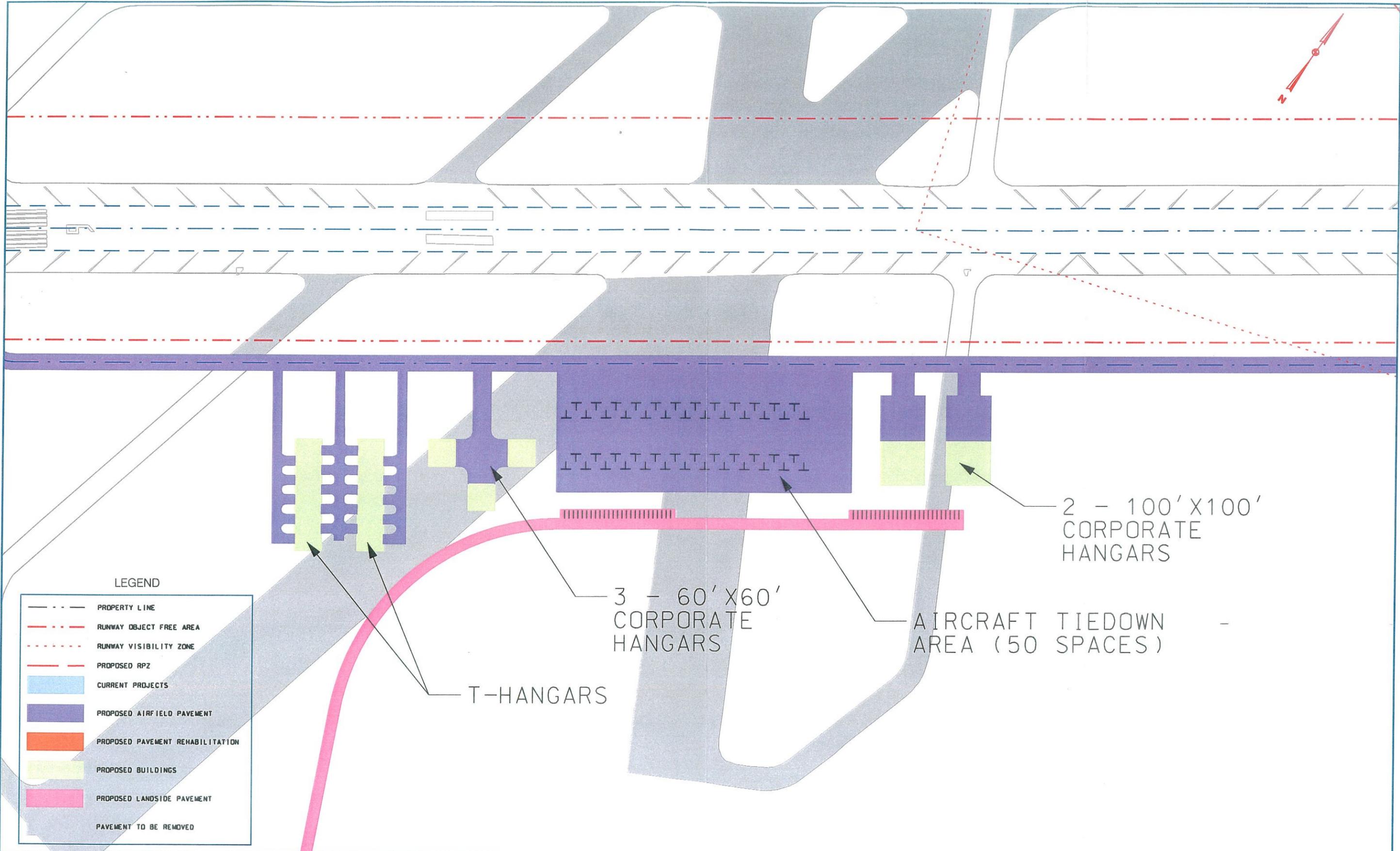
PROJECT NO. (CLIENT)

PROJECT NO. (WSA)

ALTERNATIVE 5  
TERMINAL AREA PLAN - NORTH (2)

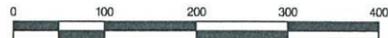
SDATES  
FILES

6-12  
Exhibit No.



LEGEND

	PROPERTY LINE
	RUNWAY OBJECT FREE AREA
	RUNWAY VISIBILITY ZONE
	PROPOSED RPZ
	CURRENT PROJECTS
	PROPOSED AIRFIELD PAVEMENT
	PROPOSED PAVEMENT REHABILITATION
	PROPOSED BUILDINGS
	PROPOSED LANDSIDE PAVEMENT
	PAVEMENT TO BE REMOVED



DESIGNED BY MRBJET DATE 12-24-03  
 DRAWN BY MRBJETHAP DATE 12-24-03  
 CHECKED BY MSS DATE 12-24-03

APPROVALS:

TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
 TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
 TITLE \_\_\_\_\_ DATE \_\_\_\_\_

PLANS PREPARED BY  
  
 ENGINEERS  
 PLANNERS  
 ECONOMISTS

PLANS PREPARED FOR  
 FLAGLER COUNTY  
 AIRPORT

PROJECT NO. (CLIENT)

PROJECT NO. (WSA)

ALTERNATIVE 5  
 TERMINAL AREA PLAN - SOUTH

SDATES  
 SFILES

6-13  
 Exhibit No.

**TABLE 6-3**  
**ESTIMATE OF CONSTRUCTION COST – ALTERNATIVE 5**

<b>Element</b>	<b>Unit</b>	<b>Quantity</b>	<b>Cost/Unit</b>	<b>Element Total</b>
<b>Buildings</b>				
Terminal	SF	12,500	\$100.00	\$1,250,000.00
T-hangars	Bay	62	\$30,000.00	\$1,860,000.00
60'x60' Corporate Hangar	EA	9	\$240,000.00	\$2,160,000.00
100'x100' Corporate Hangar	EA	7	\$500,000.00	\$3,500,000.00
Air Traffic Control Tower	EA	1	\$1,500,000.00	\$1,500,000.00
ARFF Station	EA	1	\$1,200,000.00	\$1,200,000.00
<b>Pavement</b>				
Proposed Runway	SY	77,778	\$24.00	\$1,866,672.00
Proposed Taxiway/Ramp	SY	143,255	\$24.00	\$3,438,120.00
Proposed Roadway/Parking	SY	32,275	\$18.00	\$580,950.00
Rehabilitated Runway	SY	0	\$11.00	\$0.00
Rehabilitated Taxiway	SY	27,778	\$11.00	\$305,558.00
<b>Earthwork</b>				
<b>Excavation/Embankment</b>				
Runway	CY	324,074	\$5.00	\$1,620,370.37
Taxiway	CY	103,704	\$5.00	\$518,518.52
Roadway	CY	39,259	\$5.00	\$196,296.30
Pond Relocation	LS	0	\$0.00	\$0.00
<b>Lighting/Signing/Marking</b>				
Runway (HIRL)	LF	7,000	\$22.00	\$154,000.00
Taxiway (MITL)	LF	20,500	\$22.00	\$451,000.00
Runway Marking	LF	7,000	\$7.00	\$49,000.00
Taxiway Marking	LF	20,500	\$5.00	\$102,500.00
<b>NAVAIDS</b>				
ILS	LS	1	\$1,000,000.00	\$1,000,000.00
MALSR	LS	1	\$350,000.00	\$350,000.00
			<b>Sub Total Cost</b>	<b>22,102,985.19</b>
Mobilization and Maintenance of Traffic			1,547,208.96	1,457,992.47
Engineering, Inspection, Testing & Contingency			4,730,038.83	4,457,291.26
			<b>Total Cost</b>	<b>28,380,232.98</b>
Property Acquisition	AC	104.23		
Wetland Impacts	AC	33.91		

Source: Wilbur Smith Associates

cost, including the mobilization and maintenance of traffic, along with engineering, inspection, testing and contingency fees is estimated to exceed \$28.3 million. This cost will likely increase due to the need for mitigation of the wetland area.

The largest portion of the estimated construction cost for Alternative 5 is related to landside buildings, primarily T-hangar and conventional hangar units. These structures are estimated to cost almost \$11.5 million. The proposed relocated Runway 11/29 is estimated to require nearly

77,800 square yards of pavement at a cost of approximately \$1.9 million. Excavation and earthwork required in conjunction with the new runway is estimated to cost about \$1.6 million. Proposed taxiway/ramp pavement accounts for roughly \$3.4 million of the estimated cost, providing for nearly 143,000 square yards of pavement. NAVAID improvements total more than \$1.3 million.

### 6.3 SUMMARY

As described in the preceding section, the future of Flagler County Airport can proceed in several directions with the selection of one of the previous development alternatives. It is clear, however, that alternatives 1 and 2 do not adequately address the various and complex issues that face Flagler County Airport. The “No-Build” alternative provides no improvements to accommodate forecast levels of demand and the extension of Runway 6/24 makes the establishment of a precision approach unlikely. For these reasons, along with those addressed previously, Alternatives 1 and 2 are not recommended.

The future development of Flagler County Airport under Alternative 3 presents one feasible option for meeting anticipated levels of aviation demand. The premise of Alternative 3, to avoid a large wetland area on the north side of the airfield, however, forces the development of landside facilities to the southeast side of the airfield in the near term. The extension of Runway 11/29 to 7,000 feet as depicted in Alternative 3 requires the abandonment of the existing apron area, therefore requiring that a significant portion of land on the southeast side of the airfield be used for aviation storage. The location of these storage facilities to the southeast side of the airfield separates them from the terminal building. This will undoubtedly create a need for terminal-related facilities to be added on the southeast side of the airfield in the mid to long-term. These circumstances would limit the potential for a business park on the Airport, while complicating the daily operation of the Airport.

Accommodating future demand under Alternative 4 represents a reasonable option for the future of the Airport. However, this alternative includes construction in a large wetland area that would likely prove quite expensive. Similar to Alternative 3, the extension of existing Runway 11/29 in Alternative 4 requires the relocation of several retention ponds and includes the abandonment of the existing apron. The loss of the existing apron necessitates the construction of 100 apron tie-down spaces on the southeast side of the airfield. This separates the most significant facility for transient aircraft storage from the services available on the north side of the airfield. The circumstances presented by Alternative 4 also limit the potential for a business park on the southeast side of the airfield, and does not contribute to the efficient daily operation of the Airport.

As discussed, however, Alternative 5 accomplishes several objectives outlined for Alternatives 3 and 4 while exhibiting numerous advantages. One advantage is that the construction of a relocated Runway 11/29 permits the continued use of the existing 42 apron tie-down spaces. Another advantage is that the new runway location does not require the relocation of the retention ponds located at the west end of Taxiway A. Additionally, the existing Runway 11/29

can be extended at each end to serve as a full-length parallel taxiway to the new runway. The existing Runway 11/29 may also remain active during the construction of the new runway.

The most significant advantage of Alternative 5 over the other alternatives is that it makes available for landside facilities a significant portion of land now located north of existing Runway 11/29 and south of Taxiway A. Development in this area is currently restricted by FAA standards for object free areas. As shown on Exhibit 6-5, Alternative 5 provides a fueling area, 11 conventional hangars and parking for 75 automobiles in this area. The development of these facilities on the north side of the airfield, in addition to a new terminal facility and the preservation and expansion of the existing apron make Alternative 5 an attractive option for the future development of Flagler County Airport. As indicated, future demand can be accommodated by implementing facility improvements in Alternative 5 in a more orderly fashion, with fewer complications related to limited land on the north side of the airfield, wetland impacts, and preservation of sufficient land for a business park on the southeast side of the airfield.

The development alternatives for Flagler County Airport are summarized in **Table 6-4**. As indicated, Alternative 1 provides no benefits to the future of Flagler County Airport. Alternative 2 requires the least amount of property acquisition while impacting the second-largest amount of wetland areas. As discussed earlier, however, both Gore Lake and the presence of power lines east of Seminole Woods Parkway are significant obstacles to the improvement of Runway 6/24 to meet anticipated demand. Overcoming these constraints to improve Runway 6/24 would be extremely costly. This is especially true given the lack of any significant benefits such as improving the operational efficiency of the airfield or providing better opportunity for future development at the Airport.

**TABLE 6-4**  
**SUMMARY OF DEVELOPMENT ALTERNATIVES**

	Meets Future Demand	Property Acquisition	Wetland Impacts	Estimated Construction Cost	Improved Operational Efficiency	Future Development Opportunity
Alternate 1 – “No-Build”	-	-	-	-	-	-
Alternate 2 – Extend 6/24	✓	84.43	48.84	-	N	N
Alternate 3 – Extend 11/29	✓	108.34	34.54	\$26,743,747	N	N
Alternate 4 – Extend 11/29	✓	108.34	50.71	\$27,194,726	✓	N
Alternate 5 – New Runway 11/29	✓	104.23	33.91	\$28,380,233	✓	✓

Source: Wilbur Smith Associates

Comparison of alternatives 3, 4 and 5 reveals that Alternative 5 provides for the least amount of impacts to wetland areas while requiring less property acquisition than alternatives 3 and 4. The estimated construction cost of Alternative 5 is approximately four percent higher than Alternative 4, and six percent higher than Alternative 3. It is important to note, however, that estimated construction costs do not include property acquisition or wetland mitigation, both of which would be lower under Alternative 5. Since the estimated construction costs do not vary significantly, it is somewhat likely that property cost and wetland mitigation may drive the final cost of Alternatives 3 and 4 beyond the final cost of Alternative 5.

Table 6-4 also attempts to compare some qualitative aspects of the five development alternatives. The qualitative criterion considered includes the operational efficiency and future development opportunities at Flagler County Airport. As shown, both Alternatives 1 and 2 provide no qualitative benefits to the Airport. Alternative 3 does not improve operational efficiency as it directs the development of landside facilities to the southeast side of the airfield. This effectively limits future economic development opportunities in this area because a large portion of developable land would be required for Airport-related use.

The construction of landside facilities on the north side of the airfield presented under Alternative 4 does provide for improved operational efficiency, as it maintains the north side of the airfield as the primary terminal area. However, Alternative 4 limits future economic development opportunities on southeast side of the airfield because separation requirements entail the loss of the large existing apron area, which would be replaced on the southeast side of Runway 6/24.

Alternative 5, however exhibits qualities that will provide the best opportunities for improved operational efficiency at the Airport, while also preserving land on the southeast side of the airfield for economic development purposes. The construction of a relocated Runway 11/29 under Alternative 5 allows the concentration of landside facilities on the north side of the airfield, which supports improved operational efficiency of the airfield over the 20-year planning period. Alternative 5 also provides ample opportunity for the development of a business park on the southeast side of the airfield, a pursuit that is of great importance to Flagler County. Therefore, to secure these benefits while accommodating future demand and providing for the least amount of wetland area impacts, Alternative 5 is recommended as the preferred alternative for the future development of Flagler County Airport.