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LETTER OF TRANSMITTAL

Via: ☐ Regular Mail ☐ Overnight Delivery ☒ Hand Delivery

To: Lee County Community Development
Attn: Laskowski, Michael
1500 Monroe Street
Fort Myers, FL 33901

Date: September 7, 2018
Project No.: 20181001-000
Project Name: Lee County Port Authority
CPA2018-10009

We are sending you the following: ☒ Attached ☐ Under Separate Cover

Copies	Drawing No.	Description
3		Revised Proposed Text for CPA Application
3		USB with Backup Material

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These are transmitted as checked below:

☐ For approval
☐ For your information
☒ For review and comment
☐ Approved as submitted
☐ Approved as noted
☐ Returned for corrections
☐ As requested
☐ See remarks

Remarks:

Copy: Emily Underhill
Ellen Lindblad
Alicia Dixon
File

Signed: Laura DeJohn
Name: Laura DeJohn
Title: Director of Planning & Landscape Architecture Department

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Amendments are proposed as indicated below.
Underline indicates additions, and strikethrough indicates deletions.
Yellow highlight indicates changes from 8/31/18 Lee County staff suggested changes.

I. Lee County - A Vision for 2030

...

10. Gateway/Airport - This c~~C~~ommunity is located South of SR 82, generally east of I-75, and north of Alico Road including those portions of the Gateway development that either have not been or are not anticipated to be annexed into the City of Fort Myers, the Southwest Florida International Airport and the properties the airport expects to use for its expansion, the lands designated as Tradeport, and the land designated as Industrial Development west of I-75 north of Alico Road. In addition to these two land use designations, properties in this community are designated New Community (the Gateway development), Airport, Rural, and General Interchange. ~~The road network in this community is planned to change dramatically over time creating access to and from this community to the north, south, and east without relying on I-75.~~

There are three distinct areas within this community. The Gateway portion of this community is the area where residential uses will occur. It is anticipated that the Gateway community will be a thriving, nearly built-out, mixed-use community and ~~in 2020. T~~the population of this community is anticipated to grow substantially ~~from today to 2030~~.

The second area in this community is the Southwest Florida International Airport. The airport has plans for a terminal expansion, new air traffic control tower, and future parallel runway. ~~will be greatly expanded by 2030. The expanded airport will have a second parallel runway and a new terminal building that will more than double the existing capacity of the airport.~~ Development will be guided by the Federal Aviation Administration (FAA) approved Airport Master Plan and Airport Layout Plan ~~(as established through the airport master plan process) consistent with the Southwest Florida International Airport Proposed Development Schedule (Table 5(a)) and all other~~ and applicable Lee Plan provisions.

The airport expansion and ~~the completion of~~ Florida Gulf Coast University are expected to energize the ~~remaining area in this community, including the~~ commercial and industrial components of this community. This portion of the community is to the south and west of Gateway and the airport and extends west of I-75 along Alico Road. While this segment of the community is not expected to build out during the timeframe of this plan, the area will be much more urbanized with hi-tech/clean industry businesses. (Amended by Ordinance No. 04-16, 07-12, 09-14, 10-20, xx-xx)

...

13. San Carlos - This c~~C~~ommunity is located in the southern portion of Lee County, east of Hendry Creek and, for the most part, south of Alico Road and north of the Village of Estero. ~~It is north of the Estero River on the west side of US 41 then north of the new Brooks of Bonita development east of US41.~~ The community ~~does~~ extends east of I-75 to include ~~the approved developments along Corkscrew Road and~~ all lands designated University Community. The majority of the land in this community is designated as Suburban and then Urban Community ~~(both having a maximum standard density of 6 units per acre)~~ with the remaining areas designated as Rural, Outlying Suburban, and Industrial Development. There are three

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distinct areas within this community: San Carlos Park, Island Park, and the ~~new~~ university area. ~~All of t~~These areas will ~~be~~ experience~~cing~~ ~~tremendous~~ development pressures as this community continues to grow.~~:~~

~~This community will be challenged with addressing the needs of the Lee County community that contains the newest major state university, a new semi-professional ice hockey arena, and immediate access to the Southwest Florida International Airport. Most of the vacant property in this community (nearly 70%) has some type of development approval most of which were granted prior to the advent of many of these new development engines. The San Carlos/Estero will struggle with these conflict throughout the life of this plan but~~ and will emerge as a vibrant urban core for Lee County's high-tech research and development employment base. (Added by Ordinance No. 99-15, Amended by Ordinance No. 07-12, xx-xx)

II. Future Land Use

OBJECTIVE 1.2: RESERVED. ~~SOUTHWEST FLORIDA INTERNATIONAL AIRPORT AND PAGE FIELD GENERAL AVIATION AIRPORT AREAS.~~ ~~Designate on the Future Land Use Map adequate land in appropriate locations to accommodate the projected growth needs of the Southwest Florida International Airport and the business and industrial areas related to it, as well as research and development activities and other non-aviation related development that is not necessarily related to the airport. Designate on the Future Land Use Map existing and proposed development areas for Page Field General Aviation Airport. The Lee County Port Authority desires to establish nonaviation related uses to provide a supplementary revenue source as well as provide an opportunity for businesses that desire a location on airport property. Designate on the respective Airport Layout Plans suitable areas to accommodate these desired uses and provide general policy guidance as to how these uses will be developed. These categories are considered future urban areas. (Ordinance No. 94-30, 02-02, 04-16, 07-12, 09-14, 16-15)~~

> ~~**POLICY 1.2.1:**~~ **POLICY 1.1.12:** The Airport Lands future land use category ~~includes the existing facility and projected growth areas for the Southwest Florida International Airport and Page Field General Aviation Airport. The Airport Lands comprising the Southwest Florida International Airport include airport and airport related development as well as non-aviation land uses as proposed in the currently adopted Airport Master Plan and as depicted on the Airport Layout Plan (Map 3F) and the Southwest Florida International Airport Proposed Development Schedule (Table 5(a)).~~ accommodates Lee County Port Authority airports and their projected growth needs as economic engines, meeting the region's demands for air travel and for the industrial, commercial and office uses necessary to continue viable airport operations. ~~This mix of uses is intended to support the continued development of the Southwest Florida International Airport.~~
>
> Future development will be consistent with the most recently adopted Airport Master Plans and Airport Layout Plans maintained by Lee County Port Authority in accordance with FAA regulations. ~~at the Southwest Florida International Airport will also include~~ Development will include aviation related facilities such as hangars, terminals, and runways, and development of non-aviation related land uses such as hotels/motels, light industrial, manufacturing, service stations, retail/shopping, and office development as approved through the Airport Operations Planned Development (AOPD) zoning process. Compatible non-aviation related uses support the continued development of airports by providing a supplementary revenue source and economic growth for the community.

In cooperation with local, state, and Federal regulatory agencies, the Port Authority will work to minimize and correct any wildlife hazards arising from existing wetlands or water bodies located on Southwest Florida International Airport and Page Field Airport properties in accordance with FAA directives. Site improvements on airport properties will be designed to minimize attractiveness to wildlife of natural areas and man-made features on airport properties such as detention/retention ponds, landscaping, and wetlands, which can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Specific to Southwest Florida International Airport, any future airport expansion or development of aviation-related and non-aviation uses ~~at Southwest Florida International Airport~~ will offset environmental impacts through the Airport Mitigation Lands Overlay (Map 3M) or other appropriate mitigation. The physical design of the airport expansion will minimize any degradation of the recharge capability of land being developed.

~~Wetland mitigation for any future expansion or development of aviation and nonaviation uses on Airport Lands must be designed so it does not create a wildlife hazard. Development and land management practices on airport property will be in accordance with Federal Aviation Administration directives and other required agency approvals. Airport expansion beyond the present boundaries will be subject to necessary amendments to the Lee Plan.~~

~~All development on Airport Lands comprising Southwest Florida International Airport must be consistent with Map 3F and Table 5(a).~~

~~Future development on Airport Lands comprising Page Field General Aviation Airport must be consistent with Objective 1.9 and related policies as well as Map 3G and Table 5(b).~~

~~If the airport master planning process precipitates a substantive change to the Airport Layout Plan (Map 3F or Map 3G), then the Port Authority must amend Map 3F or Map 3G, as appropriate, prior to obtaining local development approval.~~

~~The non-aviation related development areas have been depicted on the Airport Layout Plan (Maps 3F and 3G). These uses will be constructed upon Airport Lands with long-term leases. All development within the non-aviation land use areas will be subject to mitigation requirements for wetland impacts. Mitigation of wetland impacts will be in accordance with the U.S. Army Corps of Engineers and South Florida Water Management District requirements.~~ All non-aviation land use development will meet the indigenous vegetation requirements set forth in the Lee County Land Development Code.

(Ordinance No. 94-30, 00-22, 04-16, 07-12, 09-14, 11-16, 13-12, 16-15, xx-xx)

...

~~**POLICY 1.2.3:** Airport Noise Zones are subject to varying levels of airport-related noise; see Policy 1.7.1 for details of these overlay zones.~~

~~**POLICY 1.2.4:** The Airport AOPD zoning resolution must be amended before any non-aviation related uses can be developed at the Southwest Florida International Airport. The intensity of the~~

~~proposed aviation and non-aviation land uses at Southwest Florida International Airport must be consistent with Lee Plan Table 5(a). The Page Field General Aviation Airport project must be rezoned to AOPD prior to development of the new non-aviation uses proposed in Map 3G and Table 5(b). (Ordinance No. 04-16, 09-14)~~

~~**POLICY 1.2.5:** Map 3F, as currently incorporated into the Lee Plan, includes transportation improvements that exceed those shown on the balance of the Transportation Map Series maps. The direct access improvements to I-75 depicted on Map 3F, which are being pursued by the Port Authority to benefit the midfield terminal, include an interchange at I-75 and grade separation at Treeline Avenue/Ben Hill Griffin Parkway. These future improvements are the Port Authority's desired access to the airport. The Port Authority will be responsible for achieving consistency between Map 3F and the balance of the Transportation Map Series concerning access to I-75. The Port Authority will serve as the lead agency for achieving direct access to I-75. (Ordinance No. 04-16)~~

~~**POLICY 1.2.6:** Any future airport expansion or development of aviation-related or non-aviation related uses will provide appropriate buffer areas, as determined by Lee County, for the protection of groundwater resources in the Southeast and Northeast quadrants of the airport property. (Ordinance No. 04-16)~~

~~**POLICY 1.2.7:** In cooperation with local, state, and Federal regulatory agencies, the Port Authority will work to minimize and correct any wildlife hazards arising from existing wetlands located on airport property. Site improvements on airport property will be designed to minimize attractiveness to wildlife of natural areas and man-made features on airport property such as detention/retention ponds, landscaping, and wetlands, which can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Development within the non-aviation area, as designated on Map 3F, is limited to a maximum of 300 acres north of runway 6-24 and approximately 52 acres within the midfield terminal area. All development must be in compliance with Map 3F and the intensities outlined in Table 5(a). Development of additional acreage will require prior Lee Plan amendment approval. (Ordinance No. 04-16, 11-16, 13-12)~~

POLICY ~~1.2.2~~1.1.13: The Tradeport areas are commercial and industrial lands adjacent to the airport ~~needed to accommodate projected growth through the year 2030~~. These areas will include developments consisting of light manufacturing or assembly, warehousing, and distribution facilities; research and development activities; laboratories; ground transportation and airport-related terminals or transfer facilities; hotels/motels, meeting facilities; and office uses. Stand alone retail commercial uses intended to support and compliment the surrounding business and industrial land uses are permitted if they are approved as part of a Development of Regional Impact (DRI) or Planned Development rezoning. Stand alone retail commercial uses are limited to 1 acre out of every 10 Tradeport and preserved wetland acres within the project. To provide an incentive to preserve upland habitat, Developments of Regional Impact or Planned Developments may also receive additional stand alone retail acres at the rate of 1 additional acre out of every 10 acres of preserved and enhanced uplands within the project that protect wetlands, flowways or occupied listed species habitat. Ancillary retail commercial uses, related directly to the sale of products manufactured or services provided in the Tradeport, are allowed if they are part of a planned development. Residential uses, other than bona fide caretaker residences, are not permitted in this

category. Caretaker residences are not permitted in the Airport Noise Zone B. Limerock mining may be approved through the Mine Excavation Planned Development rezoning process for the land designated Tradeport on the Future Limerock Mining map (Map 14.) Because this area is located within the Six Mile Cypress Basin and is also a primary point of entry into Lee County, special environmental and design review guidelines will be applied to its development to maintain the appearance of this area as a primary point of entry into Lee County. Property in Section 1 and the east ½ of Section 2, Township 46 South, Range 25 East, and in Section 6, Township 46 South, Range 26 East, must be rezoned to a planned development zoning category prior to any development other than the construction of essential public services. During the rezoning process, the best environmental management practices identified on pages 43 and 44 of the July 28, 1993 Henigar & Ray study entitled, "Groundwater Resource Protection Study" will be rebuttably presumed to be necessary to protect potential groundwater resources in the area. (Ordinance No. 94-30, 02-02, 03-04, 04-16, 07-09, 09-06, 10-14, 10-20, 10-37, 18-05)

...

~~**OBJECTIVE 1.9: PAGE FIELD GENERAL AVIATION AIRPORT.** Page Field General Aviation Airport plays a vital role as a reliever airport facility to Southwest Florida International Airport. In its role as a reliever airport, Page Field reduces general aviation traffic from Southwest Florida International Airport, thereby increasing the capacity and efficiency of the International Airport. Therefore, it is important to designate the land comprising the Page Field General Aviation Airport as Airport Lands on the Future Land Use Map. This designation should include adequate land to accommodate the projected growth needs of Page Field General Aviation Airport in its continued role as an airport reliever, including the industrial, commercial and office uses necessary to continue viable aviation. (Ordinance No. 09-14, 16-15)~~

~~**POLICY 1.9.1:** In order to create the revenue source necessary to maintain Page Field General Aviation Airport as a viable aviation operation and reliever to Southwest Florida International Airport, the Port Authority seeks to establish non-aviation uses on the Page Field General Aviation Airport property. Suitable locations for these non-aviation uses are designated on the Page Field Airport Layout Plan adopted as Lee Plan Map 3G. The Page Field Airport Layout Plan (Map 3G) was adopted by the Federal Aviation Administration as part of the Page Field Airport Master Plan Update. The currently adopted Airport Master Plan is incorporated into the Lee Plan by reference as support for Map 3G and Table 5(b). (Ordinance No. 09-14, 16-15)~~

~~**POLICY 1.9.2:** The Page Field Airport Layout Plan (Map 3G) identifies existing facilities and projected growth areas for both aviation and non-aviation uses. The mix of uses is identified on Table 5(b). This mix of uses is intended to support the continued future development of Page Field General Aviation Airport and includes aviation and non-aviation related land uses such as light industrial, office, and retail development. Development of the aviation and non-aviation uses on Page Field General Aviation Airport property must be consistent with Map 3G and Table 5(b) and will be required to comply with the Lee County Land Development Code regulations, including, but not limited to, the impact fee regulations. Any environmental mitigation deemed necessary to support development of Page Field General Aviation Airport property will be addressed separately by each development project and is not entitled to claim a benefit from the Airport Mitigation Lands Overlay (Map 3M). (Ordinance No. 09-14, 16-15)~~

~~**POLICY 1.9.3:** If the Port Authority determines expansion of the Page Field General Aviation Airport boundaries is necessary in order to provide continued viability to Page Field as a reliever to Southwest Florida International Airport, then the Port Authority will submit to the Board of County Commissioners the appropriate application and support documentation to amend Map 3G, Table 5(b) and the Future Land Use Map to reflect the land added to Page Field General Aviation Airport. (Ordinance No. 09-14)~~

~~**POLICY 1.9.4:** The Page Field Airport Master Plan and Airport Layout Plan (Map 3G) will be updated in accordance with Federal Aviation Administration requirements with a corresponding comprehensive plan amendment submitted by the Port Authority to update Map 3G and Table 5(b) prior to obtaining local development approval. Lee County staff will be included in the Master plan update process as required under the terms of the existing memorandum of understanding regarding airport development. (Ordinance No. 09-14, 16-15)~~

~~**POLICY 1.9.5:** The Port Authority will seek to eliminate or modify existing uses on the Page Field property deemed incompatible with existing aviation activity or causing a diminution in the Page Field Airport capacity. In order to protect Page Field as a Southwest Florida International Airport reliever, the Port Authority will use its capacity/authority as a reviewing entity to influence land use decisions and approvals with respect to development of the lands surrounding Page Field in order to promote development that is compatible with the aviation activity at Page Field General Aviation Airport. (Ordinance No. 09-14)~~

~~**POLICY 1.9.6:** Development on Page Field lands must be consistent with the Airport Layout Plan (Map 3G). If the Page Field Airport Master Plan or Airport Layout Plan set is amended or updated by the Port Authority in a manner that constitutes a substantive change from Map 3G or Table 5(b), local development order approval may be delayed or denied pending a Lee Plan Amendment, by the Port Authority, with respect to Map 3G and Table 5(b). (Ordinance No. 09-14)~~

~~**POLICY 1.9.7:** Non-aviation development areas at Page Field Airport, as depicted on Map 3G, will be developed under long term land leases. All non-aviation development must comply with Land Development Code regulations, including payment of impact fees. The intensity of nonaviation development must be consistent with Table 5(b). (Ordinance No. 09-14)~~

~~**POLICY 1.9.8:** In cooperation with local, state, and Federal regulatory agencies, the Port Authority will work to minimize and correct any wildlife hazards arising from existing wetlands located on airport property. Site improvements on airport property will be designed to minimize attractiveness to wildlife of natural areas and man-made features on airport property such as detention/retention ponds, landscaping, and wetlands, which can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. (Ordinance No. 09-14, 13-12)~~

~~**POLICY 1.9.9:** Future aviation and non-aviation development at Page Field General Aviation Airport must comply with the provisions of the Educational Restriction Zone established under Florida Statutes, section 333.03 and the School Zone Map adopted as part of the Lee County Land Development Code. (Ordinance No. 09-14)~~

GOAL 2: GROWTH MANAGEMENT. To provide for an economically feasible plan which coordinates the location and timing of new development with the provision of infrastructure by government agencies, private utilities, and other sources.

OBJECTIVE 2.1: DEVELOPMENT LOCATION. Contiguous and compact growth patterns will be promoted through the rezoning process to contain urban sprawl, minimize energy costs, conserve land, water, and natural resources, minimize the cost of services, prevent development patterns where large tracts of land are by-passed in favor of development more distant from services and existing communities. (Ordinance No. 94-30, 00-22)

...

POLICY 2.1.5: Residential and commercial development proposals within the vicinity of existing or proposed commodity movement facilities must demonstrate land use compatibility with these uses during the rezoning process and propose mitigation measures for adverse impacts.

(Scrivener's note: new Policy 2.1.5 is a relocation of text from Policy 46.2.2)

III. Transportation Element

a. Multi-modal Transportation

...

GOAL 42: INTERGOVERNMENTAL COORDINATION. Cooperate with other governmental entities in the planning, funding, construction, operations and maintenance of transportation improvements within or affecting Lee County. (Ordinance No. 99-15, 02-02)

OBJECTIVE 42.1: PLANNING. Lee County will plan cooperatively with its municipalities, surrounding counties, Lee County Port Authority, and FDOT. (Ordinance No. 99-15)

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GOAL 43: MASS TRANSIT SERVICE. Reduce the number of automobile trips on Lee County roads by providing high quality public transit service within and between the concentrated population centers of Lee County, and ensure that this service is integrated with other modes of transportation. (Ordinance No. 99-15, 07-09, 17-13)

...

OBJECTIVE 43.4: COORDINATION. All mass transit plans will be coordinated with state, regional, and other local governmental agencies and special needs groups. (Ordinance No. 99-15, 07-09)

...

POLICY 43.4.4: Lee Tran will coordinate with the Port Authority to continue to provide high quality public transit service to the Southwest Florida International Airport. This includes participation in Southwest Florida International Airport Master Plan Update efforts to re-evaluate

and identify appropriate locations for multi-modal transfer facilities on airport property. (Ordinance No. 98-09, 99-15, 07-09, 17-13, xx-xx)

...

b. Ports, Aviation and Related Facilities

...

GOAL 46: COORDINATED SYSTEM OF RAILWAYS, AVIATION, PORTS, AND ROADS. Develop and maintain a coordinated system of railways, aviation, ports, roads, and related facilities to facilitate the safe and efficient movement of commerce, consistent with community values and economic objectives. (Ordinance No. 99-15)

~~**OBJECTIVE 46.1: EXPANDED PORT AUTHORITY.** By 2005 the county will investigate the possible expansion of the current role of the Lee County Port Authority to deal with all issues over which it has statutory authority. (Ordinance No. 99-15)~~

~~**POLICY 46.1.1:** The county will coordinate with the Lee County Airports Special Management Committee on recommended expansion of the Port Authority's role in order to further integrate the county's different modes of transportation. (Ordinance No. 99-15, 07-09)~~

~~**OBJECTIVE 46.2: FUTURE LAND USES.** The county will encourage the location of suitable commerce movement support facilities such as warehouses, cargo handling facilities, and transfer points at areas appropriately designated on the Future Land Use Map. (Ordinance No. 99-15)~~

~~**POLICY 46.2.1:** The following interchange areas are appropriate examples of truck terminal transfer points: Luckett Road, Daniels Parkway, and Alico Road. (Ordinance No. 99-15)~~

~~**POLICY 46.2.2:** Residential and commercial development proposals within the vicinity of existing or proposed commodity movement facilities must demonstrate land use compatibility with these uses during the rezoning process and propose mitigation measures for adverse impacts. (Ordinance No. 99-15)~~
(Scrivener's note: Text from Policy 46.2.2 is relocated to Policy 2.1.5)

~~**POLICY 46.2.3:** The county will develop a study of possible additional warehousing, cargo handling facilities, and transfer points that may be needed for viable commerce movement, and recommend the undertaking of these projects to such entities as the Horizon Council, Industrial Development Authority and the Lee County Port Authority. (Ordinance No. 99-15)~~
(Scrivener's note: Text from Policy 46.2.3 is relocated to Policy 47.5.8)

NOTE: RENUMBER OBJECTIVE 46.3 TO 46.1 AND SUBSEQUENT POLICIES AND OBJECTIVES UNDER GOAL 46 ACCORDINGLY.

...

OBJECTIVE 47.1: ECONOMIC GROWTH. ~~To aid in the diversification of the county's economic growth~~ Tthe capacity and long term development of the Southwest Florida International Airport and Page Field ~~General Aviation~~ Airport will be expanded ~~in compliance~~ consistent with the currently adopted Airport Master Plans and Airport Layout Plans maintained by Lee County Port Authority in accordance

with the FAA to aid in the diversification of the county's economic growth. ~~Maps 3F and 3G, and Table 5(a) and 5(b). Specific project implementation and approval of the proposed development will be coordinated through the annual Capital Improvement Program process and be consistent with the Airport Layout Plans (Map 3F and 3G). These expansions~~ Expansions will be funded through user fees, airline contributions, and other funding sources not involving general county tax dollars. The Port Authority will strive to minimize impacts to surrounding land uses while maintaining a safe and efficient facility for airport operations. (Ordinance No. 98-09, 99-15, 04-16, 09-14, xx-xx)

> ~~**POLICY 47.1.1**: The Port Authority will coordinate the implementation of scheduled infrastructure and facility improvements for the Southwest Florida International Airport and Page Field General Aviation Airport consistent with the approved Airport Layout Plan sheets (Map 3F and Map 3G, respectively) and the Development Schedules (Table 5(a) and (b), respectively). (Ordinance No. 98-09, 99-15, 04-16, 09-14)~~
>
> **POLICY 47.1.1~~2~~:** The development potential of ~~Southwest Florida International Airport~~Port Authority facilities will continue to be protected by the acquisition of additional land for runway and taxiway, road access, storm water management, and environmental mitigation use, consistent with the adopted Airport Master Plans and the Port Authority's Capital Improvement Programs. (Ordinance No. 98-09, 99-15, 07-09, xx-xx)
>
> **POLICY 47.1.2~~3~~:** The Port Authority will continue to expand existing and proposed aviation facilities such as ~~the~~ terminals ~~building~~, airport aprons, cargo facilities, roadways and parking in order to meet the forecasted demand at its facilities. (Ordinance No. 98-09, 99-15, 04-16, xx-xx)
>
> ***NOTE: RENUMBER POLICY 47.1.4 AND SUBSEQUENT POLICIES ACCORDINGLY.***
> ...
>
> ~~**POLICY 47.1.7:** The Port Authority will plan to accommodate growth at the existing facilities and provide for the development of future aviation facilities as warranted. (Ordinance No. 98-09, 99-15)~~

OBJECTIVE 47.2: DEVELOPMENT COMPATIBILITY IN VICINITY OF AIRPORTS. ~~The county and Port Authority will e~~Evaluate development proposals for property located within the vicinity of existing or planned aviation facilities to ensure land use compatibility, to preclude ~~obstructions~~ hazards to aircraft operations~~,~~ and to protect airport capacities and facilities. (Ordinance No. 99-15, 07-09, xx-xx)

> ~~**POLICY 47.2.1:** The Port Authority will coordinate efforts with aviation and other transportation interests at the Southwest Florida International Airport to establish multi-modal transfer facilities. During prior master planning efforts, the Port Authority identified on its Airport Layout Plan (Map 3F) an "Ultimate Passenger Multi Modal" area. As part of the normal Airport Master Plan update approval process, the Airport Layout Plan was approved by the FAA, FDOT, and the Board of County Commissioners and is consistent with other transportation related objectives. Future Southwest Florida International Airport Master Plan Update efforts will re-evaluate appropriate locations for multi-modal transfer facilities on airport property. (Ordinance No. 99-15, 04-16, 11-16)~~

(Scrivener's note: text from Policy 47.2.1 is relocated to Policy 43.4.4 for consistency with statutes regulating coordination of transit services with plans for ports, aviation and related facilities.)

POLICY ~~47.5.4~~47.2.1: ~~The county will consider l~~Land use compatibility will be considered when reviewing development proposals within the vicinity of existing or ~~proposed~~planned aviation facilities. (Ordinance No. 99-15, xx-xx)

POLICY 47.2.2: ~~The county will coordinate with the Port Authority to ensure that~~Maintain regulations in the Lee County Land Development Code which restrict land uses in areas covered by the Airport Noise Zones ~~(ANZ)~~ to those uses that are compatible with the operation of the airport. (Ordinance No. 99-15, xx-xx)

~~**POLICY 47.2.3:** Future updates of the Page Field and Southwest Florida International Airport Master Plans will monitor and incorporate development of non-aviation uses at the airports and suggest aviation-related uses as appropriate. (Ordinance No. 99-15, 04-16)~~

~~**POLICY 47.2.4:** To the greatest extent possible, future airport master plans will retain the long term aviation expansion capability and capacity at both Page Field Airport and the Southwest Florida International Airport. (Ordinance No. 99-15)~~

POLICY 47.2.5~~3~~: The county will utilize the approved Airport Master Plans, rules of Chapter 333 F.S. and the Southwest Florida International Airport FAR Part 150 Study, including updates, as a basis to amend the Lee Plan and the Land Development Code to prohibit development that is incompatible with the Southwest Florida International Airport or Page Field ~~General Aviation~~ Airport; and, to ensure future economic enhancement consistent with Objective ~~46.2~~47.1. ~~Future updates of the Southwest Florida International Airport Master Plan and Page Field General Aviation Airport Master Plan that precipitate substantive changes to the Airport Layout Plans (Map 3F and Map 3G, respectively) will require a Lee Plan Amendment prior to obtaining local development order approval for the affected airport. The Airport Master Plan and Airport Layout Plans (Maps 3F and 3G) will be updated in accordance with Federal Aviation Administration requirements.~~ (Ordinance No. 99-15, 04-16, 09-14, 16-15, xx-xx)

POLICY ~~47.6.6~~47.2.4: In the interest of the safety of air commerce, the county will not approve a temporary or permanent structure that is an obstruction to air navigation which affects the safe and efficient use of navigable airspace or the operation of planned or existing air navigation and communication facilities; or that does not comply with placement, lighting and marking standards, established by the Port Authority, Florida Statutes, or the FAA rules and regulations. (Ordinance No. 99-15, 07-09, xx-xx)

POLICY ~~47.6.4~~47.2.5: The safety of aircraft operators, aircraft passengers, and persons on the ground will guide the Port Authority in the operation of county airports. Hazardous wildlife attractants within 10,000 feet of the airport's Air Operations Area (AOA) will be avoided by minimizing and correcting any wildlife hazards arising from wetlands or water bodies in accordance with FAA AC 150/5200-33B, or as otherwise amended. Site improvements on or near the airports are to be designed to minimize attractiveness to wildlife of natural areas and man-made

features such as detention/retention ponds, landscaping, and wetlands, which can provide wildlife with ideal locations for feeding, loafing, reproduction and escape. (Ordinance No. 99-15, xx-xx)

POLICY 47.2.6: Through ~~an~~ interlocal agreements, the Port Authority and ~~the City of Fort Myers~~incorporated local governments within Lee County will continue to coordinate the review of new ~~land uses that have the~~ potential ~~to create tall structure~~ obstructions or hazards to aviation within ~~the City of Fort Myers~~those jurisdictions. (Ordinance No. 07-09, xx-xx)

OBJECTIVE 47.3: FUTURE DEMANDS. Continually evaluate the projected demands for public aviation facilities and ensure their adequate provision.

...

POLICY 47.3.3: ~~Maximum use of airport facilities should be ensured before expanding or developing n~~New or expanded facilities will be planned as part of the normal Airport Master Plan update approval process, subject to approval by the FAA, FDOT, and the Board of County Commissioners. (Ordinance No. 07-09, xx-xx)

~~**POLICY 47.3.4:** The proposed development schedule for the Southwest Florida International Airport is depicted in Table 5(a). The proposed development schedule for the Page Field General Aviation Airport is depicted in Table 5(b). These Tables include both aviation and non-aviation related development. If the Federal Aviation Administration/Florida Department of Transportation mandate navigational improvements (NAVAIDS) or require improvements related to airport security or safety at Southwest Florida International Airport or Page Field General Aviation Airport, then the Port Authority may pursue installation of the improvement even though the improvement is not specifically identified on Table 5(a) or Table 5(b). However, the Port Authority must obtain all appropriate approvals and permits prior to installation, including approval from Lee County. If these improvements precipitate a substantive change to Table 5(a), Table 5(b), Map 3F, or Map 3G, then the Port Authority must pursue a Lee Plan amendment incorporating the changes. (Ordinance No. 04-16, 09-14, 11-16, 16-15)~~

OBJECTIVE 47.4: ACCESS. The Southwest Florida International Airport is an intermodal facility of significant value to the regional, state and federal transportation systems. Page Field Airport plays a vital role as a reliever airport facility to Southwest Florida International Airport. Protecting ~~this~~ these resources requires ~~the provision of~~ adequate landside and airside capacity. (Ordinance No. 99-15, xx-xx)

~~**POLICY 47.4.1:** The County and Port Authority will coordinate aviation facility expansion and demand, consistent with the Airport Layout Plan, through the County's annual Capital Improvement Program in conjunction with regular briefings by Port Authority staff to County staff. (Ordinance No. 98-09, 99-15, 04-16)~~

~~**POLICY 47.4.2:** The county and Port Authority recognize that the access from Interstate 75 to the Southwest Florida International Airport is designated as a priority intermodal connector in the National Highway Plan and Florida Intrastate Highway System Plan, and will work with the MPO, FDOT and the Federal Highway Administration to ensure that this access receives funding and is developed compatibly with the intermodal access needs of the region. (Ordinance No. 99-15)~~

POLICY 47.4.~~3~~1: The Port Authority will coordinate surface transportation planning for Page Field Airport and the Southwest Florida International Airport with the Lee County Metropolitan Planning Organization, the Lee Ceounty Department of Transportation, Lee Tran, and the Florida Department of Transportation to ensure adequate access to the airports. (Ordinance No. 98-09, 99-15, 07-09, xx-xx)

POLICY 47.4.4~~2~~2: ~~The County and Port Authority recognize the significance and value of the Southwest Florida International Airport.~~ The Lee County Port Authority will aggressively pursue Federal and State funding for access roadway improvements as identified on the Airport Layout Plans. (Ordinance No. 04-16, xx-xx)

POLICY 47.4.~~5~~3: Development of non-aviation related uses on airport property will be required to meet concurrency standards set forth in the Lee County Land Development Code. (Ordinance No. 04-16, xx-xx)

OBJECTIVE 47.5: COORDINATED COMMERCE MOVEMENT. ~~The Port Authority will provide facilities that are economically feasible and compatible with adjacent land uses, environmental standards and public safety, and that also meet the needs of commerce movement enterprises and facilities.~~ Encourage facilities that meet the needs of commerce movement enterprises that are also economically feasible and compatible with adjacent land uses, environmental standards, and public safety.~~-~~(Ordinance No. 99-15, xx-xx)

~~**POLICY 47.5.1:** The Port Authority will continue to coordinate plans for existing and proposed aviation facilities with appropriate transportation agencies such as the Federal Aviation Administration, the Transportation Security Administration, the Lee County Metropolitan Planning Organization, the Florida Department of Transportation, Lee Tran and the Lee County Department of Transportation. (Ordinance No. 98-09, 99-15, 07-09)~~

~~**POLICY 47.5.2:** The county will monitor roads leading to Page Field and the Southwest Florida International Airport in order to facilitate efficient and convenient access for airport users. (Ordinance No. 99-15)~~

~~**POLICY 47.5.3:** The county will coordinate with private investors by reviewing plans and otherwise providing technical assistance in the development of aviation facilities in Lee County to ensure land use, airspace, and environmental compatibility. (Ordinance No. 99-15)~~

~~**POLICY 47.5.4:** The county will consider land use compatibility when reviewing development proposals within the vicinity of existing or proposed aviation facilities. (Ordinance No. 99-15)~~
(Scrivener's note: Text of Policy 47.5.4 is relocated to Policy 47.2.1 because it relates to compatibility referenced in Objective 47.2)

~~**POLICY 47.5.5:** Locations adjacent to or near aviation facilities are identified in the Future Land Use Map as suitable for commerce movement support facilities such as warehouses, cargo handling facilities, and other transfer points, and will be periodically reviewed and updated. (Ordinance No. 98-09)~~

POLICY 47.5.61: The Port Authority will encourage cargo and freight development at the Southwest Florida International Airport by implementing domestic and international cargo marketing programs and by expanding airport facilities, as needed, in order to accommodate large domestic and international cargo carriers. (Ordinance No. 99-15, xx-xx)

~~**POLICY 47.5.7:** The County will protect existing and proposed aviation facilities from the encroachment of incompatible land uses by updating the Future Land Use Map as needed to achieve consistency with revisions to the respective FAR Part 150 Studies (if applicable), and Airport Layout Plans for Southwest Florida International Airport and Page Field, as proposed by the Port Authority. (Ordinance No. 99-15, 04-16)~~

POLICY 47.5.82: The county will study future needs for and encourage the provision of warehouses, cargo handling facilities, and freight transfer points at and near aviation facilities. The study of future needs and implementation of strategies to address ~~needed for the~~ movement of commerce by local industries, trade, and commercial enterprises may be coordinated with the Horizon Council, Industrial Development Authority and the Lee County Port Authority. (Ordinance No. 99-15, xx-xx)
(Scrivener's note: Text from Policy 46.2.3 is relocated to Policy 47.5.2 because it relates to Objective 47.5 references to coordinated commerce movement.)

~~**OBJECTIVE 47.6: AGENCY COORDINATION.** Ensure that existing and future air system needs can be met safely and with a minimum of land use conflict by coordinating aviation facility plans with appropriate federal, state, regional, and local review and permitting agencies. (Ordinance No. 99-15)~~

~~**POLICY 47.6.1:** The Port Authority will coordinate and obtain approval for airport development from the County through the annual capital improvement planning and programming process; local permitting process; Airport Master Plan Update process; and, the Lee Plan amendment process to ensure compatibility with other County programs. The Port Authority will provide Lee County copies of the annual Capital Improvement Plan or other similar document for the Southwest Florida International Airport and Page Field General Aviation Airport. Airport development will remain consistent with the MPO Long Range Transportation Plan and will support the provision of regional transportation facilities for the efficient use and operation of the transportation system and airports. Additional specific coordination requirements are contained in Objective 151.4 and subsequent policies. (Ordinance No. 99-15, 04-16, 09-14)~~

~~**POLICY 47.6.2:** While airport facilities will be operated in conformance with applicable state and federal regulations, the Port Authority will strive to ensure that Lee County environmental and other regulations are also implemented to the greatest extent possible. (Ordinance No. 99-15)~~

~~**POLICY 47.6.3:** The Port Authority will develop plans for aviation in the county that are consistent with the Continuing Florida Aviation System Planning Process and the National Plan of Integrated Airport Systems. (Ordinance No. 99-15)~~

~~**POLICY 47.6.5:** The county will maintain the tall structure permitting process to ensure that proponents of potential structural hazards to aviation coordinate with the Port Authority and the~~

~~Federal Aviation Administration to properly place, mark and light potential obstructions as necessary. (Ordinance No. 99-15)~~

~~**OBJECTIVE 47.7: COORDINATION OF ELEMENTS.** Coordinate the expansion of existing airports and the proposed siting of any new airports with the Future Land Use and Conservation and Coastal Management elements. (Ordinance No. 99-15, 07-09)~~

~~**POLICY 47.7.1:** The use of existing and proposed aviation facilities will be promoted by the Port Authority consistent with the Future Land Use and Conservation and Coastal Management elements of the Lee Plan. (Ordinance No. 99-15)~~

~~**POLICY 47.7.2:** Ensure that adverse structural and non-structural impacts of aviation facilities upon natural resources and wildlife are mitigated consistent with FAA policies and procedures and in coordination with federal, state, regional and local environmental agencies. (Ordinance No. 99-15)~~

~~**POLICY 47.7.3:** The Port Authority will abide by all other relevant parts of this comprehensive plan in the construction and operation of Page Field Airport and the Southwest Florida International Airport, especially the Future Land Use, Conservation and Coastal Management, and Transportation elements. (Ordinance by No. 98-09, 99-15, 07-09)~~

IV. Community Facilities and Services Element

POLICY 66.3.11: ~~Prohibit the location of schools in the areas designated on the Future Land Use Map as Airport Noise Zone B or within other high noise impact areas. Additionally,~~ Location of schools must be in accordance with Florida Statute Chapter 333, and the Airport Compatibility standards in the Land Development Code. ~~the construction of a public or private school is prohibited within an area extending five miles along the extended centerline of a runway (either existing or proposed) with a width one half the length of the runway. As per State Statute, "Exceptions approving construction of an educational facility within the delineated area shall only be granted when the political subdivision administering the zoning regulations makes specific findings detailing how the public policy reasons for allowing the construction outweigh health and safety concerns prohibiting such a location."~~ (Ordinance No. 07-09, xx-xx)

X. Intergovernmental Coordination Element

OBJECTIVE 151.4: COORDINATION OF AIRPORT DEVELOPMENT AND IMPROVEMENTS AT THE SOUTHWEST FLORIDA INTERNATIONAL AIRPORT AND PAGE FIELD ~~GENERAL AVIATION~~ AIRPORT WITH ALL PERMITTING AGENCIES. The Port Authority will coordinate with Lee County, the Southwest Florida Regional Planning Council, the Florida Department of ~~Community Affairs~~Economic Opportunity, ~~Federal Aviation Administration~~FAA, and the Florida Department of Transportation to ensure that the development of the Southwest Florida International Airport and the Page Field ~~General Aviation~~ Airport is consistent with the Lee Plan. (Added by Ordinance No. 04-16, Amended by Ordinance No. 09-14, xx-xx)

POLICY 151.4.1: Port Authority staff will ensure that Lee County staff is directly involved in the review and approval process related to the ongoing updates of the Airport Master Plans for Southwest Florida International Airport and Page Field ~~General Aviation~~ Airport. This mandatory inter-agency coordination will provide an official means for scheduled review and comment regarding Airport Master Plan Updates, related Lee Plan amendments, annual updates of the Airport Layout Plan and Capital Improvement Program, permitting for scheduled capital improvement projects, amendments to the Airport zoning approvals and compliance with the Lee County Land Development Code.

POLICY 151.4.2: The Port Authority will submit and County staff will review and provide comments regarding the following:

1. Scope and content of ongoing updates to the Airport Master Plans for Southwest Florida International Airport and Page Field ~~General Aviation~~ Airport, ~~pursued in accordance with Federal Aviation Administration Advisory Circular 150/5070-6 and the Florida Department of Transportation Guidebook for Airport Master Planning.~~
2. Consistency of proposed amendments to the Airport Master Plans ~~and resulting Airport Layout Plan for Southwest Florida International Airport (Map 3F) and Page Field General Aviation Airport (Map 3G)~~ with the Lee Plan, Land Development Code (LDC) and local zoning approvals.
3. Compatibility and compliance of individual CIP projects with the Lee Plan, LDC regulations, zoning approvals and other applicable regulations.
4. ~~Proposed Lee Plan Amendments necessary to support revisions to the Airport Layout Plan for Southwest Florida International Airport (Map 3F) and Page Field General Aviation Airport (Map 3G), the Southwest Florida International Airport Proposed Development Schedule (Table 5(a)), the Page Field General Aviation Airport Proposed Development Schedule (Table 5(b)), the Airport Master Plans for Southwest Florida International Airport and Page Field General Aviation Airport, or CIP project list.~~ (Added by Ordinance No. 04-16, Amended by Ordinance No. 09-14, xx-xx)

XII. Glossary

AIRPORT LAYOUT PLAN - A map of existing and proposed airport property, facilities and development that is created as a result of the Airport Master Planning process. ~~The Airport Layout Plan for Southwest Florida International Airport is adopted as Map 3F, and the Airport Layout Plan for Page Field General Aviation Airport is adopted as Map 3G.~~ (Ordinance No. 04-16, 09-14, xx-xx)

NON-AVIATION RELATED USES - This phrase refers to the commercial and industrial land uses identified on the Southwest Florida International Airport Layout Plan ~~(Map 3F)~~, ~~the Southwest Florida International Airport Proposed Development Schedule (Table 5(a))~~,and the Page Field ~~General Aviation~~ Airport Layout Plan ~~(Map 3G), and the Page Field General Aviation Airport Proposed Development Schedule (Table 5(b))~~. Non-aviation related uses are typically developed in non-aviation settings. Non-aviation uses may be enhanced by proximity to an airport, but these uses are not dependent on access to an airport. These uses could be developed in other locations within the County. Non-aviation related uses will be established on Airport lands through lease agreements with the Port Authority. The areas identified to accommodate these non-aviation uses are ~~not necessary to~~ supportive of the primary aviation facilities comprising the Southwest Florida International Airport or the Page Field ~~General Aviation~~ Airport. Use of Airport lands for non-aviation use is intended to provide a revenue stream that may be used to enhance airport operations. ~~Though located on airport property, the establishment of non-aviation uses is not necessary for the continued function of the primary aviation facilities associated with the airport.~~ (Ordinance No. 04-16, 09-14, xx-xx)

~~**PAGE FIELD GENERAL AVIATION AIRPORT PROPOSED DEVELOPMENT SCHEDULE (TABLE 5(b))** - Depicts the proposed development schedule for the Page Field General Aviation Airport. The Table will be updated by Lee Plan Amendment based on future Airport Master Plan and Airport Layout Plan updates. (Ordinance No. 09-14, 16-15)~~

~~**SOUTHWEST FLORIDA INTERNATIONAL AIRPORT PROPOSED DEVELOPMENT SCHEDULE (TABLE 5(a))** - Depicts the proposed development schedule for the Southwest Florida International Airport. (Ordinance No. 04-16, 07-12, 09-14, 16-15)~~

~~**SUBSTANTIVE CHANGE** - As used in Policies 47.2.5 and 47.3.4, the term "substantive change" means development not specifically stated or identified in Table 5(a) or Table 5(b), or depicted on Map 3F or Map 3G. (Ordinance No.04-16, 09-14)~~

Page Field
General Aviation Airport

Master Plan Update • May 2002

Submitted by

Birk Hillman Consultants, Inc.

Lee County Port Authority
Page Field
General Aviation Airport

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Chapter One - Introduction

INTRODUCTION

This Airport Master Plan Update for Page Field General Aviation Airport (FMY) was prepared in accordance with the requirements of the Federal Aviation Administration (FAA), and the Florida Department of Transportation (FDOT). All portions of this document are based on the criteria set forth in the FAA Advisory Circulars (AC) 150/5070-6A, "Airport Master Plans," AC 150/5300-13, Change 5, "Airport Design," as well as the FDOT's Guidebook for Airport Master Planning.

The elements of this study provide a comprehensive analysis of current airport facilities, determination of trends, and activities affecting the airport. The master plan will result in the preparation of airside and landside alternative analysis, preparation of a financial plan, an environmental overview, and an Airport Layout Plan set that meets the FAA and FDOT criteria to guide future development on the airport. All of the recommendations made in this document are focused on maintaining an adequate, safe, and reliable facility to meet the air transportation needs of the community.

OBJECTIVES

The primary goal of this airport master plan study is to create a twenty-year development program that will maintain a safe, efficient, economical and environmentally acceptable airport facility for Lee County. By achieving this goal, the document will provide the guidance to satisfy the aviation demand in a financially feasible and responsible manner, while at the same time addressing the aviation, environmental, and socioeconomic issues of the community. In support of this goal, the following objectives were considered:

- Identify airside, landside, and airspace improvements and recommend options to further optimize the economic aspects of the airport while enhancing the safety and operational capability.
- Establish an implementation schedule for short, intermediate, and long-term improvements and insure that they are financially feasible.
- Identify short-term requirements and recommend actions to optimize short-term funding opportunities.
- Insure that short-term actions and recommendations do not preclude long-range planning options.
- Incorporate the interests of the public, airport users and government agencies into the planning process.
- Be sensitive to the overall environmental characteristics and needs of the area surrounding the airport.
- Reflect current comprehensive land use (on and off airport property) and make recommendations as to compatible land uses and the appropriate steps necessary to ensure proper zoning and minimum noise impacts.
- Enhance operational efficiency and safety of the airport through the review of airport maintenance programs, operating procedures, and minimum operating standards.

KEY ISSUES

The last airport master plan update was accepted by the FAA in October of 1993. This was the last comprehensive look by the Lee County Port Authority at the existing conditions and future plans and goals for the airport. Therefore, the County decided to revisit and revalidate its goals and objectives for the continuation of a strong and viable general aviation airport. Prior to the start of the master plan update, there were a number of key issues identified by the Port Authority, as well as the FAA, requiring attention. These issues include:

- The current approved ALP carries an adaptation to FAA standards for deviations to the runway safety area and object free area standards for Runway 5-23.
- The cost and facilities required to improve the Runway 5 visibility minimums.
- The feasibility of using the Declared Distance Concept for determining appropriate runway lengths.
- Potential land uses and strategies for non aviation related property that the airport has acquired to maximize revenues.
- The uses of aviation and non aviation land, including areas, and cost.

The preceding list is not an exhaustive delineation of the issues considered in the master plan update. The master plan also reviews the land area needs of the airport, the potential absorption of land for aviation development, and the local environmental conditions that may impact property acquired by the airport and its development viability.

This master plan defines the current and future aviation demand at the airport; the means and alternatives for addressing this demand; and the role of the airport in the local, regional, and national aviation system. The master plan also provides a capital improvements program for future development of the airport, as well as an overview of land use compatibility issues in the airport environs and possible recommendations and options for addressing land use compatibility.

PROCESS

This airport master plan provides the officials responsible for the scheduling, budgeting, and ultimate funding of airport improvement projects with an advance notice of the future needs of the airport. By phasing the airport improvements, the development of the airport can be conducted in an orderly and timely fashion. To accomplish the objectives identified in this master plan, the study has included the following tasks:

- Conduct an inventory of the existing documents related to the airport, the physical airport facilities, the demographics of the airport service area, and the airport environment.
- Collect historical operational data, conduct tenant interviews, and forecast aviation activity through the year 2020.
- Evaluate and compare the airfield capacity to the expected aviation activity.
- Determine the airport facilities required to meet the forecast demand.
- Develop and evaluate alternative methods to meet the facility requirements of the airfield.

- Create a concise Airport Layout Plan drawing set reflecting the proposed improvements through the year 2020.
- Compile a schedule of the proposed improvements to include the cost estimates and phasing.

Overall, the master plan will provide the sponsor with a comprehensive overview of the airport's needs over the next twenty year time period, including issues related to the timing of proposed development, costs for this development, methods of funding, management options, and a clear plan of action. Funding for the completion of this airport master plan has been assisted by the FDOT.

Chapter Two - Inventory of Existing Conditions

AIRPORT SETTING

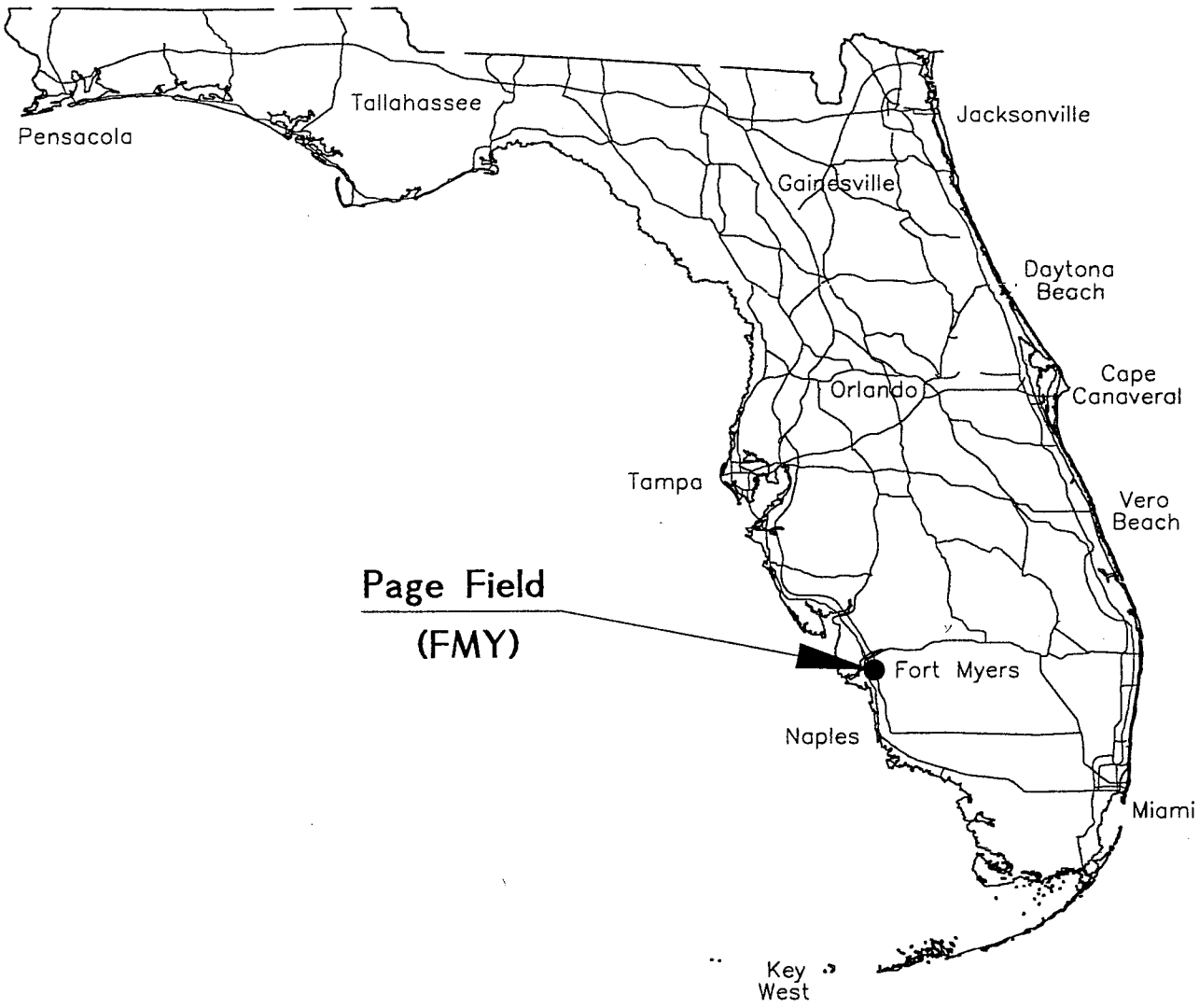
Page Field Airport (FMY) is located in Southwest Florida, approximately four miles south of downtown Fort Myers. The airport has a reference point elevation of 17 feet mean sea level (MSL.) and a magnetic variation of three degrees west. The airport serves a significant amount of the region's general aviation activity including small single engine piston aircraft as well as a number of corporate and business jet operations. **Exhibit 2-1**, a general location map of the airport, depicts the relationship of FMY to other major cities in the region. The airport is included within the National Plan of Integrated Airport System (NPIAS), which is published by the U. S. Department of Transportation. The NPIAS is a congressionally mandated program for development of a national system approach in planning for new airports, and expansions and improvements at existing airports. NPIAS identifies the estimated airport development and planning costs necessary to expand and improve the national system of airports.

In the NPIAS, the role of each airport is identified as one of five basic service levels. These levels describe the type of service that the airport is expected to provide the community through the end of the NPIAS five-year planning period. A former military training base and air carrier airport, FMY no longer has any regularly scheduled flights. The airport is designated as a public use General Aviation - Reliever Airport according to the most recent (1999) NPIAS. In the NPIAS there are 88 airports in the State of Florida with the general aviation designation of which 32 are classified as relievers. Page Field was designated a reliever airport to help reduce demand at the local area commercial service airports such as Southwest Florida International Airport and Naples Airport of the smaller aircraft associated with General Aviation operations.

Locale

Most of the property comprising Page Field Airport is located within Lee County. However, a portion of the land on the north side of the airport falls within the incorporated limits of the City of Fort Myers. The airport itself occupies approximately 616 acres of land located south of the city of Ft. Myers, just to the east of U.S. 41 (Cleveland Ave). The airport is owned by Lee County and is operated by the Lee County Port Authority. Lee County includes the cities of Ft. Myers, Cape Coral, Bonita Springs, Fort Myers Beach, and the popular resort areas of Sanibel and Captiva Islands (see **Exhibit 2-2**). The County is bordered by Charlotte County to the north, Hendry County to the east, Collier County to the south, and the Gulf of Mexico to the west.

There are a number of private and public use airports within a 30-mile radius of FMY. The most significant is Southwest Florida International Airport (RSW), located less than 10 miles east and south of FMY. Southwest Florida International Airport provides regularly scheduled domestic air carrier service as well as international air carrier service for the southwest Florida region. According to Lee County Department of Tourism, nineteen domestic and eight international passenger airlines provide flights into and out of Southwest Florida International Airport. The airport is also served by three air cargo carriers, most notably, United Parcel Service (UPS), Federal Express (FedEx), and Airborne Express.



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PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

NOT TO SCALE
Date: 04/07/2000

Location Map
Exhibit 2-1

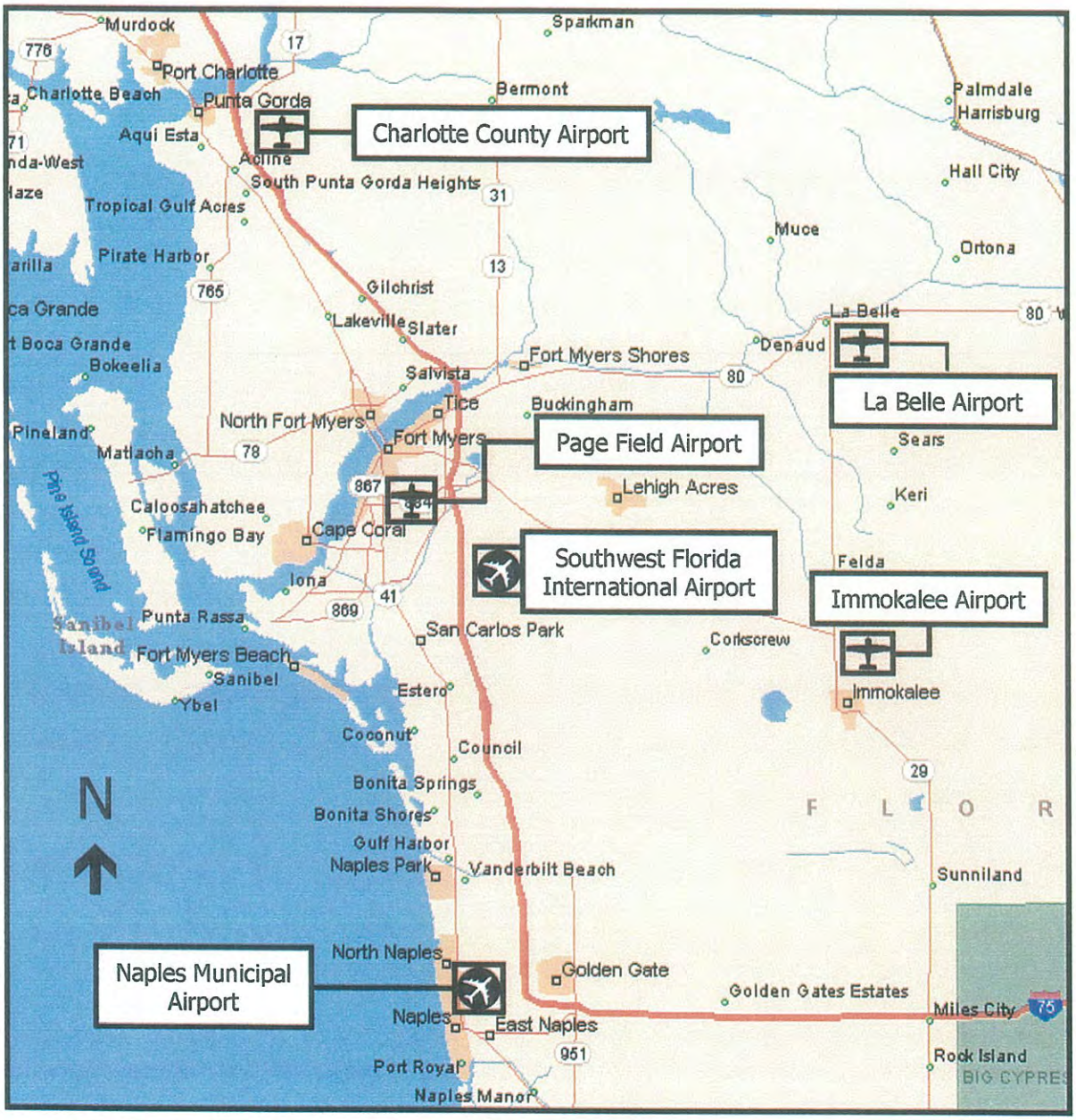


EXHIBIT 2-2
Airport Vicinity Map
Fort Myers, FL

Excluding RSW, there are four other public airports in Southwest Florida within 30 miles of FMY that offer general aviation services. These include Charlotte County Airport, Immokalee Airport, La Belle Municipal Airport, and Naples Municipal Airport. Aside from these airports there are at least 12 privately owned airstrips within a 30 miles radius of FMY. **Table 2-1** provides a comparison of some aspects of these public airports.

TABLE 2-1
PUBLIC AIRPORTS IN THE REGION

Airport	Runways	Instrument Approaches	Services
Page Field Airport	5-23 (6,401' x 150') 13-31(4,997' x 150')	ILS Runway 5 VOR/ GPS Runway 13 NDB and GPS Runway 5 GPS Runway 23 and 31 Circling VOR or GPS ASR all runways	Fuel – 100LL, & Jet A Major Airframe Repair Major Powerplant Repair High Pressure Oxygen Major Avionic Repair Landing Rights Airport
Charlotte County Airport	3-21 (6,580' x 150') 15-33 (5,049' x 150') 9-27 (5,044' x 150')	VOR / DME Runway 27 RNAV / GPS Runway 27 VOR / GPS Runway 3 VOR / GPS Runway 21 Circling VOR / GPS	Fuel – 100LL, & Jet A Major Airframe Repair Major Powerplant Repair
Immokalee Airport	4-22 (5,001' x 150') 9-27 (5,000' x 150') 18-36 (5,000' x 150')	VOR / GPS Runway 18 Circling VOR / GPS	Fuel – 100LL & Jet A Minor Airframe Repair Minor Powerplant Repair
La Belle Municipal Airport	14-32 (3,810' x 50')	Visual Approaches Only	Fuel-100LL Major Airframe Repair Major Powerplant Repair
Naples Municipal Airport	5-23 (5,000' x 150') 14-32 (5,000' x 100')	VOR / NDB Runway 5 GPS Runway 5 VOR / NDB Runway 23 GPS Runway 23	Fuel – 100LL & Jet A Major Airframe Repair Major Powerplant Repair High Pressure Oxygen Low Pressure Oxygen

Source: Southeast U.S. Airport Facility Directory and Southeast U.S. Terminal Procedures.

Climate

Page Field Airport is situated in Southwest Florida, where the climate is considered to be tropical. With the location of the airport only minutes from the Gulf of Mexico, the climate of this region is often influenced by the maritime air masses developing out over the ocean. In the summertime, daily afternoon thunderstorms are very typical of this region due to high temperatures and humidity. The frequency of various weather phenomena can have a direct bearing on the capacity of an airport, specifically with regard to movement areas such as runways. It is therefore imperative that the meteorological conditions at Page Field Airport be carefully analyzed.

Temperature

One of the most important factors affecting aircraft performance is temperature. During the summer months high temperature conditions may dramatically decrease aircraft engine performance and require increased take-off distance. The impact of the high temperature upon runway length requirements (and potentially runway capacity) is determined through the use of a formula, which corrects the aircraft take-off length requirements for environmental factors such as runway slope, altitude, and temperature. According to metrological data compiled by National Oceanic and Atmospheric Administration (NOAA) the hottest month of the year at FMY is August with an average maximum temperature of 91.4 degrees Fahrenheit. During the winter, FMY experiences the coldest average temperatures during the month of January, which has an average high temperature of 53.2 degrees Fahrenheit.

Precipitation

The amount and type of precipitation experienced by any airport is a concern due to the effects that water may have on the braking action of landing aircraft as well as the ceiling and visibility at the facility. A wet runway surface can result in reductions in the deceleration rates due to reduced friction. Precipitation in Southwest Florida occurs during all seasons, however is more abundant during the hotter summer months of June, July, and August, accounting for an average of 9.15 inches of rainfall a month at FMY. The driest months are April, November and December, accounting for an average of only 1.40 inches of rainfall during each of these months. The average annual rainfall for Page Field is 53.44 inches.

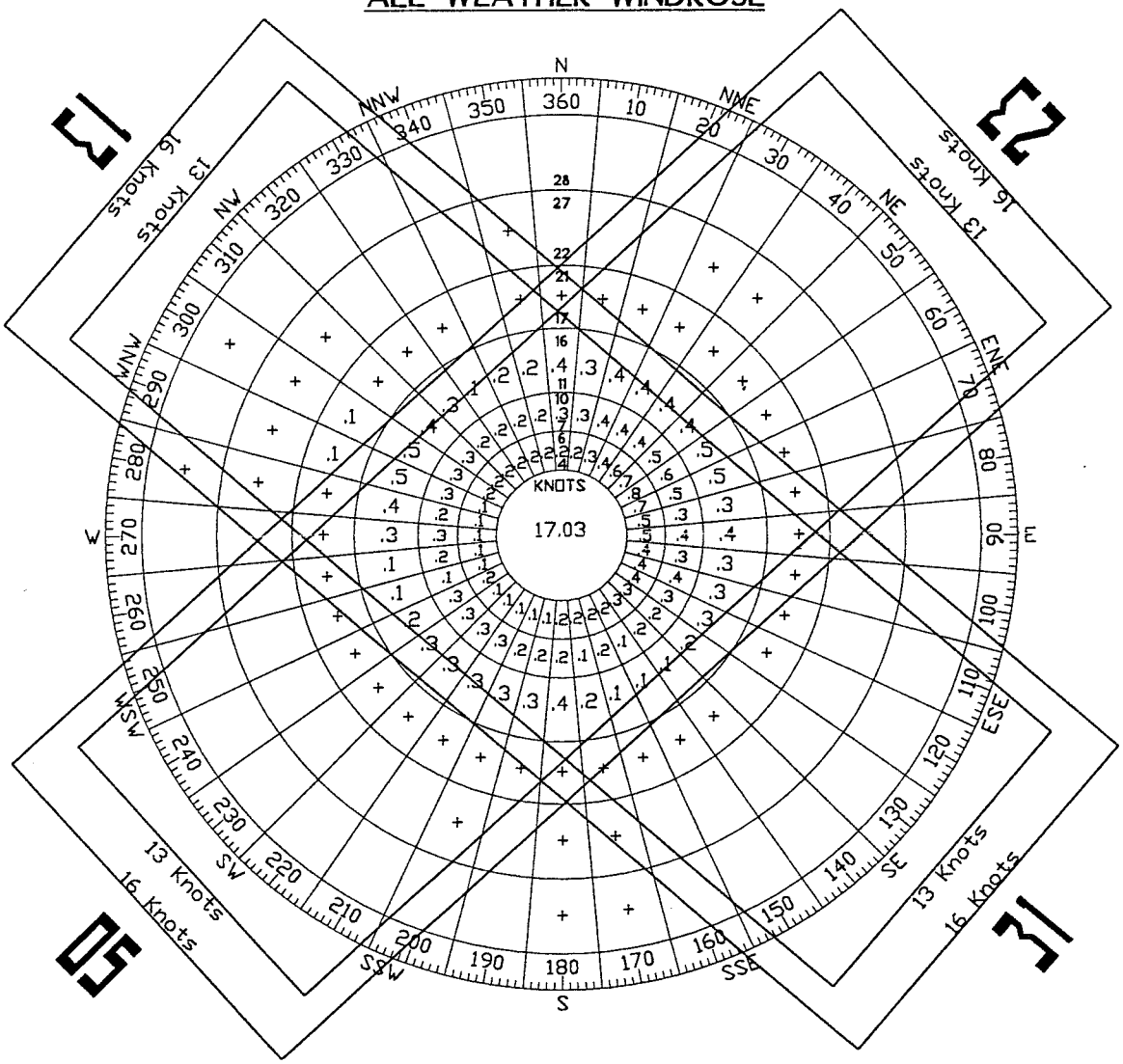
Wind

Wind is a primary factor that influences the number of runways and their orientation. Under ideal conditions, operations (landings and departures) are conducted in the runway direction required to always provide a head wind. Wind is important since aircraft takeoff and land into the wind. The FAA recommends that sufficient runways be provided to achieve a 95 percent wind coverage. Wind coverage for a given runway is that percent of time when the crosswind component is below an acceptable velocity. The crosswind component can be defined as the maximum permissible wind velocity occurring at right angles to (90 degrees left or right of) the true course of a landing or departing aircraft. This is calculated by using a 10.5 knot (12 mph) maximum cross wind component for the smaller, lighter aircraft, while a 13 knot (15 mph) and 16 knot (18 mph) maximum cross wind component is utilized for the larger and jet aircraft. When carrying out an evaluation of this type, the FAA suggests that historical weather information for a period of at least five years is desirable for determining the wind coverage.

Using the data provided by the National Climatic Data Center, wind conditions at Page Field Airport were analyzed for a 6 year period. The existing wind distribution and associated velocities are provided in **Table 2-2** and are assumed to remain consistent through the year 2020, the period of this study. Considering a crosswind component of 13-knots, Runway 05-23 and Runway 13-31 have wind coverage of 98.04 percent and 97.31 percent respectively.

Exhibit 2-3 (All weather wind rose) graphically displays the runway's wind coverage based upon the information provided in **Table 2-2**. Each segment of the wind rose represents a wind direction and speed grouping based on a percentage of the total recorded hourly observations for the airport.

ALL WEATHER WINDROSE



CROSSWIND COMPONENT: 13 KTS.		CROSSWIND COMPONENT: 16 KTS.	
RUNWAY	COVERAGE	RUNWAY	COVERAGE
05/23	98.04 %	05/23	99.68 %
13/31	97.31 %	13/31	99.67 %

OBSERVATION PERIOD: 1990–1995

TOTAL OBSERVATIONS: 50,439

SOURCE: NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, N.C.

Birk Hillman Orlando · Miami · Atlanta	PAGE FIELD AIRPORT MASTER PLAN Fort Myers, Florida	NOT TO SCALE	All Weather Windrose Exhibit 2-3

TABLE 2-2
WIND VELOCITIES AND DIRECTION AS A % OF TIME

Wind Direction	Average Wind Velocity (Kts.)							
	0-3	4-6	7-10	11-16	17-21	22-27	28-33	38-40
0	1,287.8							
10	1.5	84.0	45.3	21.2	1.3			
20	3.2	126.5	78.5	30.0	1.7			
30	5.0	166.8	75.2	35.3	4.0	1.0		
40	6.7	251.8	85.3	37.2	1.8	1.0		
50	6.3	284.8	89.7	35.2	2.2			
60	11.7	342.7	101.7	43.0	1.8			
70	9.3	308.5	86.3	43.2	2.4			
80	7.7	195.3	51.2	24.8	1.0			
90	9.8	227.0	63.3	31.0	2.7			
100	6.3	173.2	52.0	24.2	1.3			
110	10.5	180.3	63.2	21.8	2.0			
120	8.5	194.7	60.8	22.2	1.0			
130	6.0	128.8	45.3	15.3				
140	5.7	105.3	34.0	10.3	1.0			
150	4.8	98.3	24.3	9.5	1.0			
160	4.0	72.5	28.5	9.8	1.0			
170	4.0	66.7	22.3	13.3	1.3	1.0		
180	4.7	82.7	40.2	30.5	2.2	1.0	1.0	
190	1.0	59.8	38.5	27.5	1.3			
200	2.7	49.3	38.7	26.5	2.8	1.0		
210	0.7	51.5	43.0	28.5	1.7			
220	2.5	52.7	45.8	24.7	2.8			
230	1.8	53.5	48.7	25.5	1.0			
240	2.7	78.5	56.7	18.3	1.0			
250	0.8	59.8	30.8	8.3	3.0			
260	1.5	47.5	36.8	11.0	2.5			
270	0.7	49.3	47.8	23.8	1.3			
280	1.3	41.7	39.3	31.8	1.8	1.5	2.0	
290	1.2	60.0	50.8	41.3	5.3	2.0	0.0	1.0
300	2.0	79.3	56.3	41.7	5.7	1.7	1.0	
310	1.5	87.3	48.3	29.5	2.6	1.0		
320	1.3	71.5	41.2	24.5	2.3			
330	1.3	66.8	35.8	11.8	1.0			
340	1.7	68.3	36.3	15.8		1.0		
350	1.0	64.5	31.8	15.2	2.3	1.0		
360	2.3	76.2	48.8	33.2	2.2			
Total								

Source: NOAA, NCDC: 1990 – 1995 Hourly Weather Observation, BHC Analysis, 2000

Analysis of the tables and review of the graphic determines that the existing Runway 05-23 and Runway 13-31 at Page Field Airport provide adequate wind coverage. Based on this, wind conditions do not warrant consideration of an additional runway at FMY.

Airport History

Aviation was introduced to Lee County in 1918, when a landing strip was constructed at Ft. Myers Beach, then called Crescent Beach. Two airstrips had been built in Arcadia for the purposes of training Army Air Corps pilots during World War I. Pilots would fly from the Arcadia airport, designated Carlstrom Field, to the beach landing strip on their days for rest and relaxation.

In 1924 the city of Ft. Myers acquired a quarter section of land south of Ft. Myers from Charles A. Stadler, president of Stadler Realty Company. Initially, the land was to be used as a municipal golf course, but shortly thereafter it became earmarked as the site for a new airport. The airport, now known as Page Field, was ultimately named to honor Channing Page, a World War I hero, and a highly respected member of the community. In 1926, the airport consisted of two 300' wide runways in an L configuration along the two sides of the city owned quarter section. By April 1, 1926 daily airmail service was introduced to the Ft. Myers area by Reid M. Chambers, president of Florida Airways. At this time the airport was a joint use military and civilian airfield. Shortly thereafter, in May of 1927, Charles Lindbergh made his famous solo flight from New York to Paris which resulted in renewed focus on the practical uses of aviation.

In 1937, National Airlines began scheduled passenger service and airmail and air express to the Fort Myers area driving the construction of an initial 4000' asphaltic surface runway. There were operational concerns during wet runway conditions which existed almost from the start of their service. With the continued threat of service cancellation, concerns about safety, and insufficient funds available for improvements, the City finally transferred ownership of the airport to Lee County in order to qualify for Federal monies from the Works Projects Administration (WPA). With voters backing a bond issue, work on three concrete runways was started on January 1, 1940, by the WPA. The work was later taken over by the Civil Aviation Association (CAA) and finally, the US Army. With the advent of World War II and the availability of 8000' long runways, February 1943 saw P-39-1s stationed at Page Field, transforming the base into a training ground for "high tech" pursuit fighter planes. The airport played a big role in World War II, and was considered a site for an important and top secret development in the war against Japan. Fort Myers was also the home to the 310th Aviation Squadron, an all African American squadron. Over the years many events and changes have taken place at the airport, some of the more significant have included the following:

- In 1955, National Airlines was the only major airline operating at Page Field and during this time a new $25,000 terminal was constructed.
- In December 1965, Fort Myers introduced jet air transportation with daily B727 flights to and from New York's John F. Kennedy Airport and Boston's Logan Airport.
- By 1973, Eastern Airlines started their service to Fort Myers, and the new $850,000 terminal was under construction.
- In 1978 more than 100,000 passengers had arrived and departed Page Field during the month of March.
- In 1983, all air carrier operations were shifted over to Southwest Florida International Airport, eventually designating Page Field the only "Reliever Airport" in Southwest Florida.

Since 1983, Page Field has served primarily the general aviation community. Over the years the airport has grown and attracted tenants such as the Experimental Aircraft Association (EAA), the Florida Department of Law Enforcement (FDLE), various Fixed Base Operators (FBOs), aviation maintenance companies, and flight training schools. It is anticipated that the airport's role will not change significantly over the planning period.

Previous Studies

In 1993, Carter and Burgess completed the last master plan update for Page Field. This Master Plan provided a comprehensive analysis of the airport needs and alternatives through the year 2010. This master plan was an update to the previous master plan which was completed by Peat, Marwick, Mitchell & Company in October of 1986. Information in the 1993 Master Plan has been reviewed for inclusion of any applicable data/information in this master plan report.

The airport is included in the Lee County Comprehensive Plan (the Lee Plan). The Lee Plan, which was updated in mid/late 1998, considers the comprehensive development of Lee County through the year 2020.

Page Field has also been included in the Continuing Florida Aviation System Plan (CFASP). The latest CFASP document which was completed in 1992, provides a planning and administrative tool which is utilized as a guide and blueprint for directing and administering the CFASP. The plan provides recommendations and general costs for needed improvements, additions, and/or modifications to the system. An update to the plan was initiated in 1999.

National aviation plans are administered by the U.S. Department of Transportation through the FAA. Page Field is included in the National Plan of Integrated Airport Systems (NPIAS) as well as the Terminal Area Forecasts. The inputs from these plans are integral to the development of the forecasting chapter of this report.

AIRPORT FACILITIES

This section presents a description of the existing airfield, airside, landside and support facilities at Page Field including recent and ongoing improvement projects. The description of the following facilities provides the basis for the airfield demand/capacity analysis and determination of facility requirements to be presented in subsequent chapters. The overall primary airfield components are presented initially followed by the airside and landside facilities located in each quadrant and finally, airport support facilities.

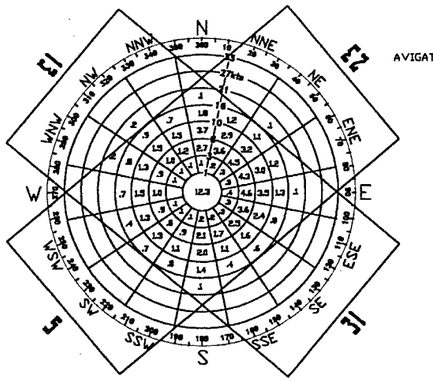
Airfield Facilities

The airfield or airside facilities generally include all facilities required to support the movement and operation of aircraft. These facilities include the airport's runways, taxiways, ramps and aprons, airfield lighting, pavement markings and navigational aids. Numerous improvements to the airports pavement systems have recently been completed.

The current airfield facilities at Page Field are depicted on the Existing Airport Layout Plan, **Exhibit 2-4**. This includes most development projects completed at the airport since the 1993 Master Plan Update. A description of the airfield facilities is included in the following sections.

Runways

There are two active runways at FMY, Runway 05-23 and Runway 13-31. The primary runway, Runway 05-23, is 6,401 feet long and 150 feet wide while the secondary or crosswind runway, Runway 13-31, is



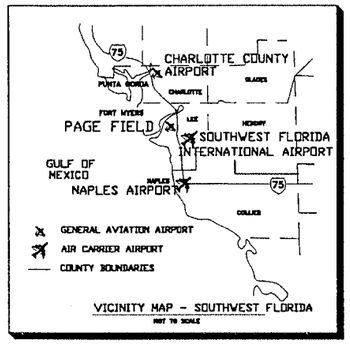
ALL WEATHER WIND ROSE

RUNWAY	COVERAGE
5/23	99.7%
13/31	99.9%

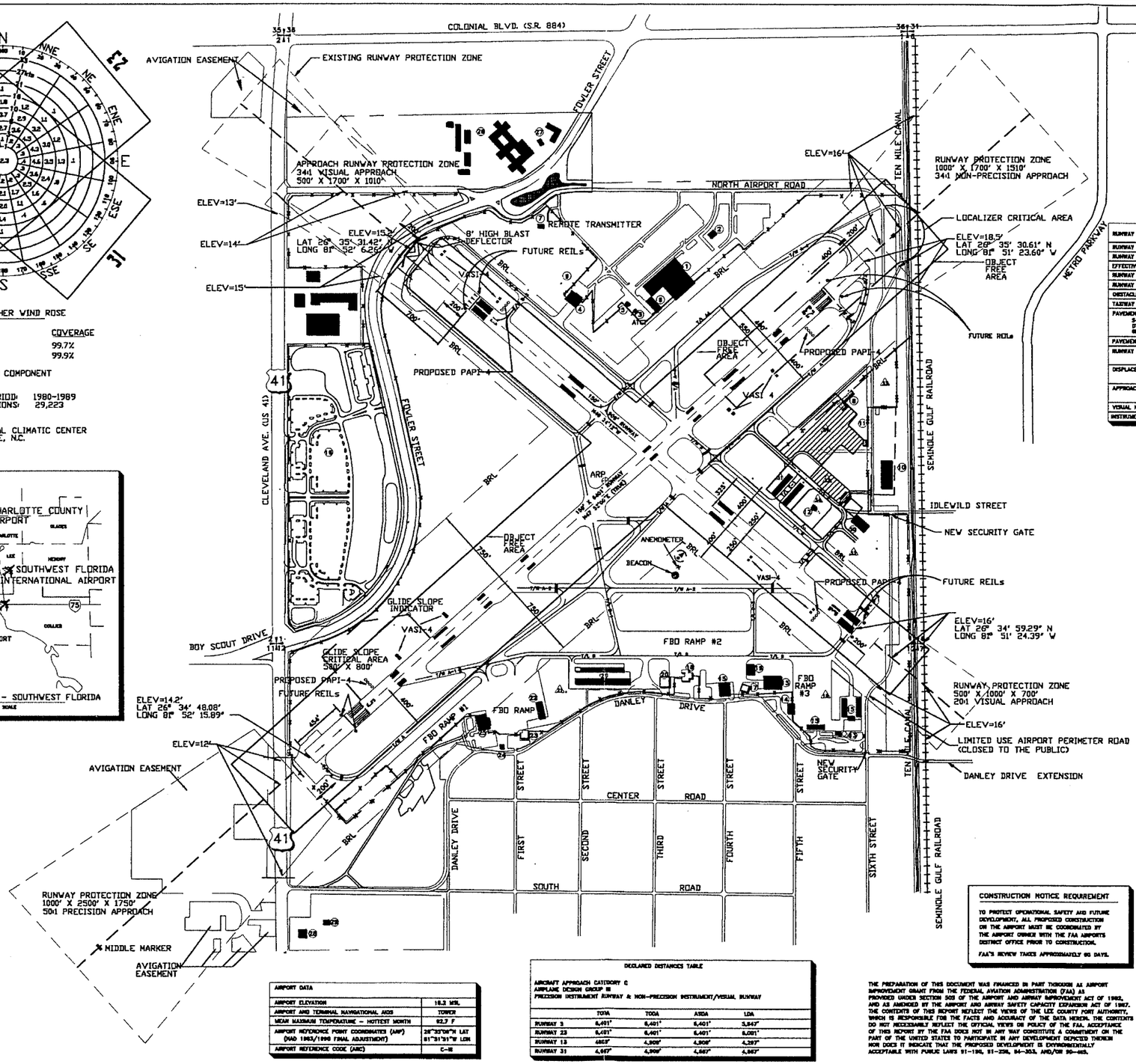
16 KT CROSSWIND COMPONENT
12.3% CALMS

OBSERVATION PERIOD: 1980-1989
TOTAL OBSERVATIONS: 29,223

SOURCE: NATIONAL CLIMATIC CENTER
ASHEVILLE, N.C.



VICINITY MAP - SOUTHWEST FLORIDA
NOT TO SCALE



LEGEND	EXISTING	EXISTING TO BE REMOVED	PROPOSED
AIRPORT BOUNDARY			SAME
AIRPORT REFERENCE POINT			SAME
BUILDING RESTRICTION LINE	BRL		BRL
EASEMENT			SAME
PAVEMENT			
RUNWAY THRESHOLD LIGHTS			SAME
RUNWAY END IDENTIFICATION LIGHTS			
VISUAL NAVAID	(VASI)		(PAPI)
WIND INDICATOR			SAME
SECTION CORNER			SAME
ROADS			
PAVEMENT MARKINGS			
BUILDINGS			
DIMENSIONS			
SECURITY FENCE			
CANAL			SAME
AVIGATION EASEMENT			SAME
RUNWAY PROTECTION ZONE			

RUNWAY DATA TABLE	RUNWAY 5/23		RUNWAY 13/31	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY CATEGORY	ADG C-III	SAME	ADG B II	SAME
RUNWAY LENGTH AND WIDTH	6,401' X 150'	SAME	4,908' X 150'	SAME
EFFECTIVE GRADIENT	.06 %	SAME	.02 %	SAME
RUNWAY INSTRUMENTATION	INSTRUMENT	SAME	VISUAL	SAME
RUNWAY SAFETY AREA	8,401' X 500'	SAME	4,849' X 150'	SAME
OBSTACLE FREE ZONE	8,801' X 400'	SAME	4,849' X 250'	SAME
TAXIWAY LIGHTING	MITL	SAME	MITL	SAME
PAVEMENT STRENGTH S-SINGLE, D-DUAL, DT-DUAL TANDEM BEARING AIRCRAFT	123,000# S 130,000# D 350,000# DT	SAME SAME SAME	30,000# S 35,000# D N/A	SAME SAME SAME
PAVEMENT TYPE	ASPHALT CONCRETE	SAME	ASPHALT CONCRETE	SAME
RUNWAY MARKING	5 - N.S 23 - NPI	SAME SAME	13 - NPI 31 - VISUAL	SAME SAME
DISPLACED THRESHOLD	5 - 484' 23 - 400'	SAME SAME	13 - 700' N/A	13 - 700' SAME
APPROACH SURFACE SLOPE	5 - 50:1 23 - 34:1	SAME SAME	13 - 34:1 31 - 20:1	SAME SAME
VISUAL NAVAIDS	MIRL, VASI	MIRL, PAPI, REIL	MIRL, VASI	MIRL, PAPI, REIL
INSTRUMENT APPROACH NAVAIDS	5 - ILS, MDR	SAME, 23 - TVOR	13 - VOR	13 - TVOR

STRUCTURES INVENTORY	EXISTING	ULTIMATE
TERMINAL BUILDING	①	SAME
PORT AUTHORITY VEHICLE MAINTENANCE	②	SAME
CONTROL TOWER, CONTRACT WEATHER OFFICE	③	SAME
AIRCRAFT RESCUE & FIRE FIGHTING (ARFF)	④	SAME
ELECTRICAL VAULT	⑤	SAME
AIR CARGO BUILDING	⑥	SAME
REMOTE TRANSMITTER	⑦	SAME
LEE COUNTY DOT DEPOT 7 MAINTENANCE	⑧	REMOVE
EMS HELIPAD	⑨	SAME
LEETRANS MAINTENANCE FACILITIES	⑩	SAME
LEETRANS MAINTENANCE FACILITIES	⑪	REMOVE
EAA (EXPERIMENTAL AIRCRAFT ASSN.)	⑫	RELOCATE
FORMER FORT MYERS AIRWAYS A.S. FUEL FARM	⑬	SAME
BEAVER AVIATION SERVICES SOUTH	⑭	SAME
PAGE FIELD AVIATION CENTER HANGAR	⑮	
PROPOSED PAGE FIELD COMMONS	⑯	SAME
PAGE FIELD AVIATION CENTER A.S. FUEL FARM	⑰	SAME
PAGE FIELD AVIATION CENTER	⑱	SAME
PAGE FIELD AVIATION CENTER HANGAR	⑲	SAME
FORMER F.M. AIRWAYS MAINTENANCE HANGAR	⑳	SAME
FORMER FORT MYERS AIRWAYS T-HANGARS	㉑	
FORMER FORT MYERS AIRWAYS SHADE HANGARS	㉒	SAME
FORMER FORT MYERS AIRWAYS HANGAR	㉓	SAME
REMOTE COMMUNICATIONS OUTLET	㉔	SAME
FORMER FORT MYERS AIRWAYS OFFICE / MIKE'S LANDING BISTRO RESTAURANT	㉕	SAME
SHADY REST CARE PAVILION	㉖	SAME
CHILDREN'S HOME	㉗	SAME
FLORIDA HIGHWAY PATROL	㉘	SAME
DEPARTMENT OF MOTOR VEHICLES	㉙	SAME
SMS CORPORATE HANGAR	㉚	SAME
PAGE FIELD AVIATION CENTER GA HANGARS	㉛	㉛
CORPORATE HANGAR EXPANSION AREA	N/A	㉜
PUBLIC INSTITUTION'S AVIATION WORK	N/A	㉝

ORIGINALLY DRAWN BY:	REVISED	APPROVALS
R. LEMONS 1988	LARRY BRAHAM 1995	DATE
R. CAMPBELL 1993	LARRY BRAHAM 1995	FAA
ADAPTATIONS TO STANDARDS		DATE
PREVIOUS APPROVAL: JAMES E. SHEPPARD 8-4-88 ORL-ADO MOR		LEE COUNTY PORT AUTHORITY
RSA ADAPTATION FOR RWYS 5/23 & 13/31		

MAGNETIC DECLINATION
1°W (APRIL 1987)

NOT TO SCALE

AIRPORT DATA	
AIRPORT ELEVATION	16.3 MSL
AIRPORT AND TERMINAL NAVIGATIONAL AIDS	TOWER
MEAN MAXIMUM TEMPERATURE - HOTTEST MONTH	92.7 F
AIRPORT REFERENCE POINT COORDINATES (ARP) (NAD 1983/1990 FINAL ADJUSTMENT)	26°32'08"N LAT 81°31'31"W LON
AIRPORT REFERENCE CODE (ARC)	C-III

DECLARED DISTANCES TABLE

AIRCRAFT APPROACH CATEGORY C
AIRPLANE DESIGN GROUP III
PRECISION INSTRUMENT RUNWAY & NON-PRECISION INSTRUMENT/VISUAL RUNWAY

	TORA	TODA	ASDA	LDA
RUNWAY 5	6,401'	6,401'	6,401'	5,843'
RUNWAY 23	6,401'	6,401'	6,401'	6,001'
RUNWAY 13	4828'	4,908'	4,908'	4,397'
RUNWAY 31	4,849'	4,908'	4,849'	4,849'

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.

FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.

THE PREPARATION OF THIS DOCUMENT WAS FINANCED IN PART THROUGH AN AIRPORT IMPROVEMENT GRANT FROM THE FEDERAL AVIATION ADMINISTRATION (FAA) AS PROVIDED UNDER SECTION 303 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AND AS AMENDED BY THE AIRPORT AND AIRWAY SAFETY CAPACITY EXPANSION ACT OF 1987. THE CONTENTS OF THIS REPORT REFLECT THE VIEWS OF THE LEE COUNTY PORT AUTHORITY, WHICH IS RESPONSIBLE FOR THE FACTS AND ACCURACY OF THE DATA HEREIN. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE WITH PUBLIC LAWS 91-190, 91-236, 84-353, AND/OR 90-495.

EXHIBIT 2-4
Existing Airport Layout Plan

4,997 feet long and 150 feet wide. Both runways are of asphalt concrete construction and were observed to be in good condition. Runway 05-23 was recently rehabilitated in 1996. Additionally, both runways are equipped with medium intensity runway edge lights (MIRL) to allow for nighttime operations and both runways operate with a left hand traffic pattern.

Runway 05-23 is estimated to have a gross weight pavement strength for a single-wheel load of 125,000 pounds, a dual-wheel load of 155,000 pounds and 350,000 pounds for dual-tandem geared aircraft. These high pavement strengths reflect the earlier use of the facility for commercial service by such aircraft as the Boeing 727.

Runway 05 is the only precision instrument approach runway and has a 3° visual glide path angle. The Runway 05 pavement end coordinates are latitude 26°34'48.028"N, longitude 81°52'15.939"W. Runway 05 is at an elevation of 12.8 feet MSL and the threshold crossing height for the runway is 52 feet AGL. To provide proper clearance to US Highway 41, Runway 05 has a threshold displacement 459 feet with a displaced threshold elevation of 13.2 feet MSL. The threshold coordinates for the displacement are latitude 26°34'51.079"N, and longitude 81°52'12.193"W. The approach slope to the displaced threshold is 34:1 while the touchdown point elevation is 15.0 feet MSL. Additionally, a seven foot tall wooden blast fence is located approximately 190 feet beyond the approach end of this runway.

Runway 23 is a non-precision approach runway with a 3° visual glide path angle. The runway pavement end coordinates for Runway 23 are latitude 26°35'30.596"N, longitude 81°51'23.613"W. A non-precision approach procedure is a standard instrument approach procedure in which no electronic vertical guidance is provided. Runway 23 is at an elevation of 17.1 feet MSL and the threshold crossing height for the runway is 55 feet AGL. To provide proper clearance to the Seminole Gulf Railroad tracks Runway 23 has a threshold displacement of 399 feet with a displaced threshold elevation of 16.1 feet MSL. The threshold coordinates for the displacement are latitude 26°35'27.943"N and longitude 81°51'26.877"W. The touchdown point elevation for the runway is 16.0 feet MSL.

Runway 13-31 is estimated to have a gross weight pavement strength for a single-wheel load of 30,000 pounds and a dual-wheel load of 35,000 pounds.

Runway 13 is a non-precision instrument approach runway with a 3° visual glide path angle. The runway pavement end coordinates are latitude 26°35'31.416"N, longitude 81°52'06.249"E. Runway 13 is at an elevation of 14.0 feet MSL and the threshold crossing height for the runway is 30 feet AGL. To provide proper clearance to the Fowler Street extension which transitions the airport property to both the north and west, the Runway 13 threshold was displaced 700 feet. The threshold coordinates for the displacement are latitude 26°35'26.914"N and longitude 81°52'00.384"E. The touchdown point elevation is 15.0 feet MSL. There is also an 8-foot tall blast fence at located just off the approach end of the runway.

Runway 31 is a non-precision approach runway. The runway end coordinates are latitude 26°34'59.285"N, longitude 81°51'24.384E". The Runway 31 end and threshold is at an elevation of 14.9 feet MSL and the threshold crossing height for the runway is 39 feet AGL.

Taxiways

There are four main taxiways at Page Field that provide access between both runways and all of the aircraft parking areas. These taxiways include Taxiway A, Taxiway B, Taxiway D, and Taxiway E. Previously, Taxiway C provided access between the approach ends of Runway 5 and Runway 13. However, this pavement has since been abandoned and removed.

Taxiway A

Taxiway A is a full-length parallel taxiway for Runway 5-23. This taxiway, which is located on the southeast side of Runway 5-23, has a minimum runway centerline to taxiway centerline separation of 400 feet and a width of 50 feet. There are four connector taxiways, Taxiway A-1, A-2, A-3, and A-4 associated with Taxiway A.

Taxiway A-1, which is also 50 feet wide, ties into Runway 5-23 approximately 600 feet from the Runway 5 threshold. Taxiway A-2, provides access between Runway 5-23 and Runway 13-31. This taxiway, which is 75 feet wide, ties into Runway 5-23 approximately 1,800 feet from the Runway 5 threshold and approximately 700 feet from the Runway 31 threshold. Taxiway A-3 and Taxiway A-4 are both 50 feet wide. Taxiway A-3 ties into the displaced threshold for Runway 23, while Taxiway A-4 ties into the displaced portion of the runway (in front of the Runway 23 threshold). On the northwest side of Runway 5-23, Taxiway A-4 also provides access to both sides of the former air carrier apron. On this side of the runway, the width of Taxiway A-4 varies from 50 to 75 feet.

In addition to the dedicated connectors associated with Taxiway A, Taxiway B also serves as an additional connector taxiway for aircraft operating on Runway 5-23. Each portion of the Taxiway A system has Medium Intensity Taxiway Lights (MITL). All of the pavement associated with Taxiway A and its connectors is in good to excellent condition. These pavements were all rehabilitated in 1992.

Taxiway B

Taxiway B is a full-length parallel taxiway serving Runway 13-31. This taxiway is located on the northeast side of Runway 13-31 and has a minimum runway centerline to taxiway centerline separation of 325 feet. There are five connector taxiways, Taxiway B-1, B-2, B-3 and B-4 each of which connects Runway 13-31 with Taxiway B. All of the portions of Taxiway B, including the connectors, to the northwest of Runway 5-23 have a width of 40 feet, while the portions to the south of Runway 5-23 have a width of 60 feet.

Taxiway B-1 ties into the displaced portion of the runway at the Runway 13 approach end. Taxiway B-2 connects to the runway at a point approximately 300 feet from the displaced Runway 13 threshold. Taxiway B-3 connects Taxiway E to Runway 13-31 at a point approximately 700 feet from the approach end of Runway 31. Taxiway B-4 simply ties into Runway 13-31 at the approach end of Runway 31.

Due to its deteriorating condition, portions of Taxiway B are closed to DC-9, Boeing 727, and other larger aircraft. These portions include all the pavements southeast of Taxiway A and the pavements to the northwest of Taxiway A but south of the Taxiway C connector. Also, due to recent hangar development, the portion of Taxiway B southeast of Taxiway A is considered a

non-movement area because it is not visible from the air traffic control tower. All portions of Taxiway B have a MITL system.

Taxiway D

Taxilane D lies between Taxiway A and the approach end of Runway 31. At a width of 50 feet, this taxilane provides access to all of the hangars and apron areas located on the south side of the airport. Two connector taxiways, Taxilane D-1 and D-2, tie Taxilane D into Taxiway A-2. Taxilane D is in good to excellent condition due to it's recent rehabilitation as a part of improvements made to the south side of the airfield in 1998. Taxilane connectors D-1 and D-2 are noted as being in poor condition. Taxilane D has both MITLs and reflective cans. The reflective cans are used on the portion of taxilane that runs through the middle of the south aircraft parking apron.

Taxiway E

Taxiway E is the newest taxiway at Page Field. This taxiway was constructed to provide additional apron and hangar development on the east side of the airport. At a width of 40 feet, Taxiway E runs parallel to Taxiway B between Taxiway A and Taxiway B-4. A connector taxiway to Taxiway B was also constructed and is located to the north of the Experimental Aircraft Association hangar. This connector has been labeled Taxiway E-1 and is also 40 feet wide. Both Taxiway E and Taxiway E-1 are in excellent condition and have MITLs.

Airfield Lighting & Signage

Proper airfield lighting is required at all airports that are utilized for nighttime operations. Edge lights are used to outline usable operational areas of airports during periods of darkness and low visibility weather conditions - AC 150/5340-24 Chg. 1 "Runway and Taxiway Edge Lighting System". The Page Field Airport is capable of accommodating aircraft at night because of the existing lighting fixtures found on the airfield.

Runway Lighting

A runway edge lighting system is a configuration of lights that define the lateral and longitudinal limits of the usable landing area. Both Runways 05-23 and 13-31 are equipped with Medium Intensity Runway Lighting (MIRL) systems.

Taxiway Lighting

Taxiway lighting, similar to runway lighting is essential to safe nighttime operations at an airport. Taxiway lights allow pilots to taxi to and from the active runways and for other surface guidance to vehicles on the airport.

Taxiway edge lights, emit blue light and are used to outline the edges of taxiways during periods of darkness or restricted visibility conditions. These lights have variable intensity settings and may be adjusted at pilot request or when deemed necessary by the air traffic controller.

Taxiways A and B are equipped with Medium Intensity Taxiway Lighting systems (MITL). Taxiway D is under positive control of the air traffic control tower and has limited edge lighting.

Signage

The airfield is not currently equipped with lighted airfield signage. Hole Montes & Associates is currently in the process of addressing the lighted airfield signage needs for FMY and the first phase of implementation is scheduled for the year 2000. The new plan calls for lighted signs which will comply with the standards set-forth in FAA circular 150/5340-18C. Because of the increase in electrical output needed to illuminate these signs the electrical vault is also scheduled for upgrades.

Pavement Markings

The runways at FMY have slightly different markings from each other, based on the different type of operations each one accommodates.

Runway 05 and Runway 23 are marked the same. Both have precision instrument runway markings, which include number designation markers, a centerline stripe, side stripes, threshold markers, aiming point markers and touchdown zone markings. Both runways have displaced thresholds and they are properly marked.

Runway 13 is marked as a non-precision instrument runway. The markings on this runway include the number designation marker, a centerline stripe, threshold markers and aiming point markers. The approach end has adequate markings with displaced threshold markings, arrows and arrowheads.

Runway 31 is a non-precision instrument runway but is marked incorrectly. The runway has the proper designation number and threshold markings but is missing the aiming point markers which are required for non-precision runways according to AC 150/5340-1H.

All of the taxiways at FMY have taxiway centerline stripes. Hold short lines are located at all of the required locations on the taxiways at FMY.

Navigational Aids (Navaids) - Electronic

Navigational aids (navaids) include any facility or equipment that provide guidance and assistance to pilots during the takeoff, landing, or enroute phase of flight. There are various types of navaids available to aviation. The following sections deal with electronic navaids, which include any facilities or equipment that provide some form of electronic signal to provide directional guidance or position information to an aircraft in flight. There are various types of electronic navaids in use today, each serving a special purpose. The FAA has the authority to establish, operate, and maintain navigational facilities and to prescribe standards for the operation of any of these aids that are used for instrument flight in federally controlled airspace.

VHF Omni-Directional Range/Tactical Air Navigation Facility

A VHF Omni-Directional Range/Tactical Air Navigation (VORTAC) facility is one of the most fundamental electronic navaids serving the national airspace system. A VORTAC facility is actually the combination of separate civil and military navigational facilities.

The basis of civilian navigation is provided by a system of VHF Omni-Directional Range (VOR) facilities. A VOR is a ground-based facility that transmits a very high frequency signal, oriented from magnetic north, on a 360-degree azimuth. The VOR signal, which provides accurate course alignment, allows an aircraft in flight to determine its bearing relative to the VOR station. This navaid is utilized to facilitate both instrument flight and visual flight traffic into and out of an airport area.

A Tactical Air Navigation (TACAN) station provides the same function for military aircraft as VOR's for civilian aircraft. The primary difference between a VOR and TACAN is the signal. TACANs operate on a ultrahigh frequency to support military equipment.

A VORTAC collocates the VOR and TACAN navigational facilities. The Ft. Myers area is served by a VORTAC that is located at the Southwest Florida International Airport. This facility is identified as the Lee County VORTAC. Page Field is located 5.8 nautical miles to the northwest of the Lee County VORTAC, along the 308-degree radial from the station. The Lee County VORTAC is a low altitude facility, which provides directional service from 1,000 feet above ground level (AGL) up to and including 18,000 feet AGL, at radial distances out to 40 nautical miles.

In addition to the VOR and TACAN service, the Lee County VORTAC is also equipped with Distance Measuring Equipment (DME). DME provides compatible receivers with very reliable and accurate distance information up to 199 nautical miles away. The VORTAC also provides a non-precision instrument approach into Page Field. This approach will be discussed in the section on published instrument approach procedures.

Instrument Landing System

The most significant electronic navaid located at Page Field is the instrument landing system (ILS). An ILS consists of the following basic components: localizer antenna array and a glide slope antenna array, and marker beacons. The purpose of an ILS is to provide a method of precision instrument navigation to a point just beyond the approach end of the runway. Since the system provides both course and glide slope information, much lower weather minimums are possible than the minimums provided by a non-precision instrument approach.

At a specified point on the ILS approach (coincident with the minimum decision height), the pilot must decide whether to land or execute a missed approach. The missed approach procedure is required if visual contact with the runway environment cannot be established by a set decision height or a landing cannot be made for any other reason. This procedure consists of an immediate climb and then a climbing turn to a safe altitude and course that will take the aircraft back to an initial approach fix so that the approach can be attempted again if desired. The aircraft would proceed to an alternate airport if a decision was made to not attempt another approach.

Precision instrument approaches are runway specific and therefore, each runway that is to have such an approach must have its own ILS system. At Page Field, Runway 5 is the only runway equipped with a Category I ILS system. Details pertaining to the precision ILS approach for Runway 5 are included in the section on published instrument approach procedures.

The localizer antenna array provides the horizontal guidance to the pilot with respect to the longitudinal axis of the runway. This antenna is located at the end of the runway opposite that for which the ILS system is installed. The localizer antenna array has a latitude of 26°35'32"N and a longitude 81°51'20"W which locates it approximately 355 feet beyond the departure end of Runway 5.

The glideslope antenna provides vertical guidance to the pilot and is positioned near the intended touchdown point on the runway. The glideslope antenna for Runway 5 at Page Field provides a standard three-degree glide slope angle. This antenna, which is located on the left side of the runway, is offset approximately 346 feet from the Runway 5-23 centerline. The unit is also located 1,000 feet from the Runway 5 threshold which gives its location a latitude of 26°35'00"N and a longitude of 81°52'06"W.

Both the localizer and glideslope antenna arrays require a unique and significant critical area that must be clear of all objects. These areas, which are depicted on the airport layout plan, cannot be impacted by any type of activity or development.

There is an outer beacon associated with the Runway 5 ILS. The outer marker is used to indicate the point at which an aircraft, at the appropriate altitude on the localizer course, should intercept the glide path to begin the approach. When a non-directional radio beacon is used in conjunction with the ILS markers, it is called a compass locator or locator outer marker. The outer marker for the Runway 5 ILS does have a radio beacon and is identified by the name Caloo. This beacon is discussed further in the next section. The outer marker lies approximately 34,300 feet (5.7 nautical miles) from the Runway 5 threshold and has a latitude of 26°30'97"N and a longitude 81°57'00"W.

Non-Directional Beacon

The outer marker of the ILS incorporates a Non-Directional Beacon (NDB) which makes it a compass locator or locator outer marker. This NDB provides a radio beacon frequency which transmits non-directional signals. With the appropriate equipment, these signals allow the pilot of an aircraft to determine bearings to and from the facility. In addition to being a navaid, the NDB also provides the airport with a non-precision instrument approach. Details of this approach are included in the section on published instrument approach procedures.

Airport Surveillance Radar

Because of Page Field's close proximity to Southwest Florida International Airport, it is included in the coverage area of the Airport Surveillance Radar (ASR) located at the Southwest Florida International Airport. An ASR assists air traffic controllers by detecting and displaying the position of aircraft within the coverage area. Depending on local conditions, the typical coverage area for an ASR can extend out to 60 miles. ASR information is primarily utilized by air traffic controllers to facilitate the sequencing of both arriving and departing traffic.

Published Instrument Approach Procedures

There are seven instrument approach procedures published for Page Field. Although they may have options for visual approaches, only precision and non-precision instrument approaches are published in the United States Flight Information Publication – U.S. Terminal Procedures. The primary difference between a precision and a non-precision instrument approach is that the

precision instrument approaches provide some form of electronic glideslope or glidepath for vertical guidance.

At Page Field, the only precision instrument approach is the Category I ILS for Runway 5. There are three categories of ILS approaches. The following list provides a breakdown of the different ILS categories.

Category I	-Decision Height ≥ 200 feet -Runway Visibility Range = 2,400 feet -or Runway Visibility Range = 1,800 feet (with touchdown zone and centerline lighting)
Category II	-Decision Height ≥ 100 feet -Runway Visibility Range = 1,200 feet
Category III	-No Decision Height or below 50 feet -Runway Visibility Range = between 700 and 150 feet

The Runway 5 Category I ILS provides instrument rated pilots with a decision height of 266 feet MSL and visibility minimums of 1 mile. The approach also provides a straight-in non-precision approach utilizing the localizer with a minimum descent altitude (like the precision approach decision height) of 440 feet MSL and visibility minimums of 1 mile. Also, there is a circle to land approach (visual approach) that provides a decision height of 480 feet MSL and visibility minimums of 1 mile. **Exhibit 2-5** provides additional details about these approaches.

A VOR or GPS non-precision straight-in instrument approach is available to Runway 13. This approach is created by the Lee County VORTAC and requires Automatic Direction Finding (NDB) or DME equipment. This straight-in approach provides instrument rated pilots with a minimum descent altitude of 560 feet MSL and visibility minimums of 1 mile. The approach also provides a circle to land approach with the same minimums as the straight-in approach. If the DME equipment is used, the minimum descent altitudes for both the straight-in and visual approach decrease to 440 feet and 480 feet MSL respectively. **Exhibit 2-6** provides additional details about these approaches.

An NDB non-precision straight-in instrument approach is available to Runway 5. This approach is created from the NDB (compass locator/outer marker locator) signal. This straight-in approach provides instrument rated pilots with a minimum descent altitude of 480 feet MSL and visibility minimums of 1 mile. The approach also provides a circle to land approach with the same minimums as the straight-in approach. **Exhibit 2-7** provides additional details about these approaches.

All four runways have non-precision global positioning satellite (GPS) approaches. These approaches have a minimum descent altitude of between 380 feet MSL to 420 feet MSL depending on the runway. All four runways have a one-mile visibility minimum. Additional information for these approaches is provided in **Exhibits 2-8, 2-9, 2-10, 2-11.**

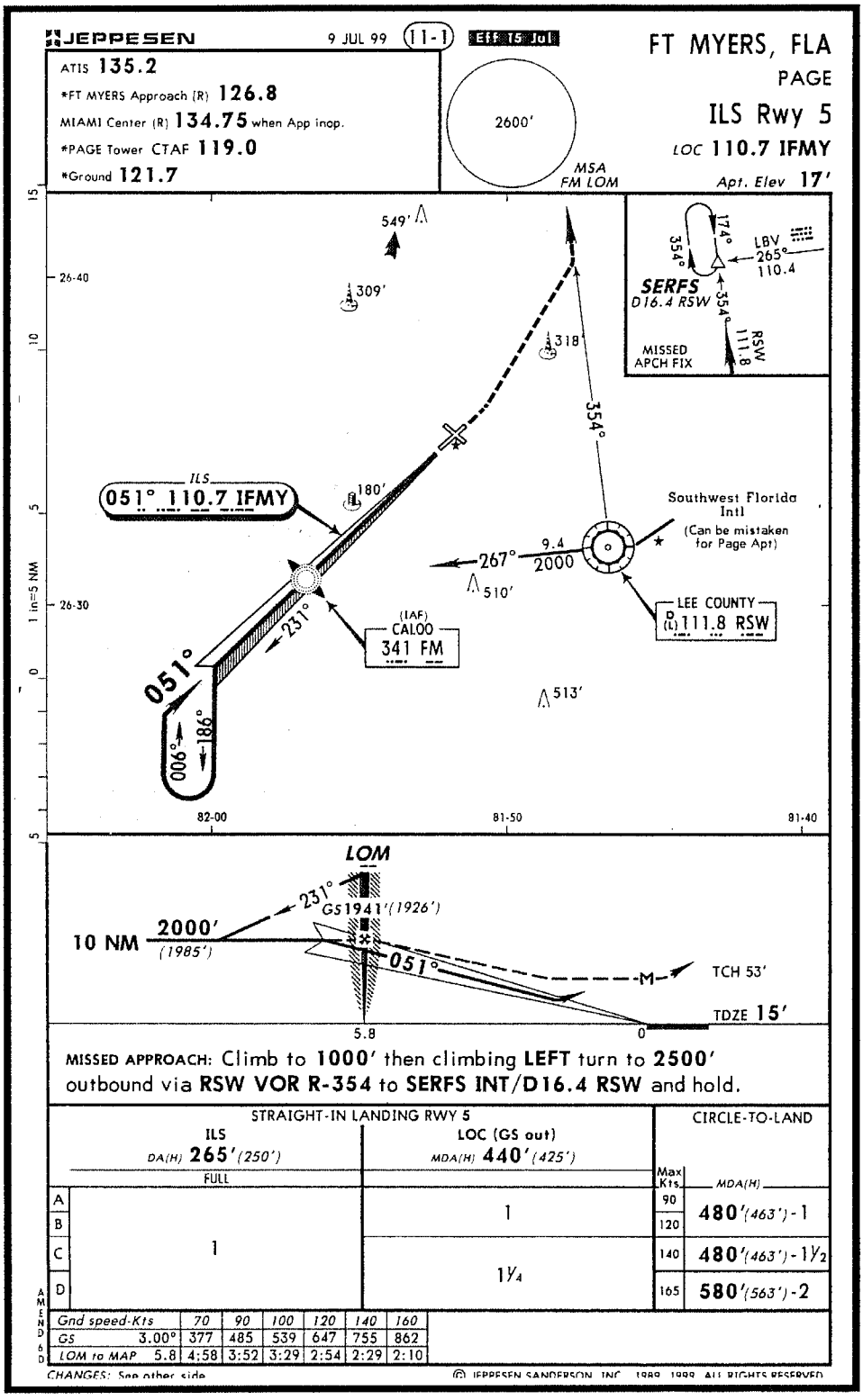


EXHIBIT 2-5

FMY-ILS Approach Plate

Page Field Master Plan

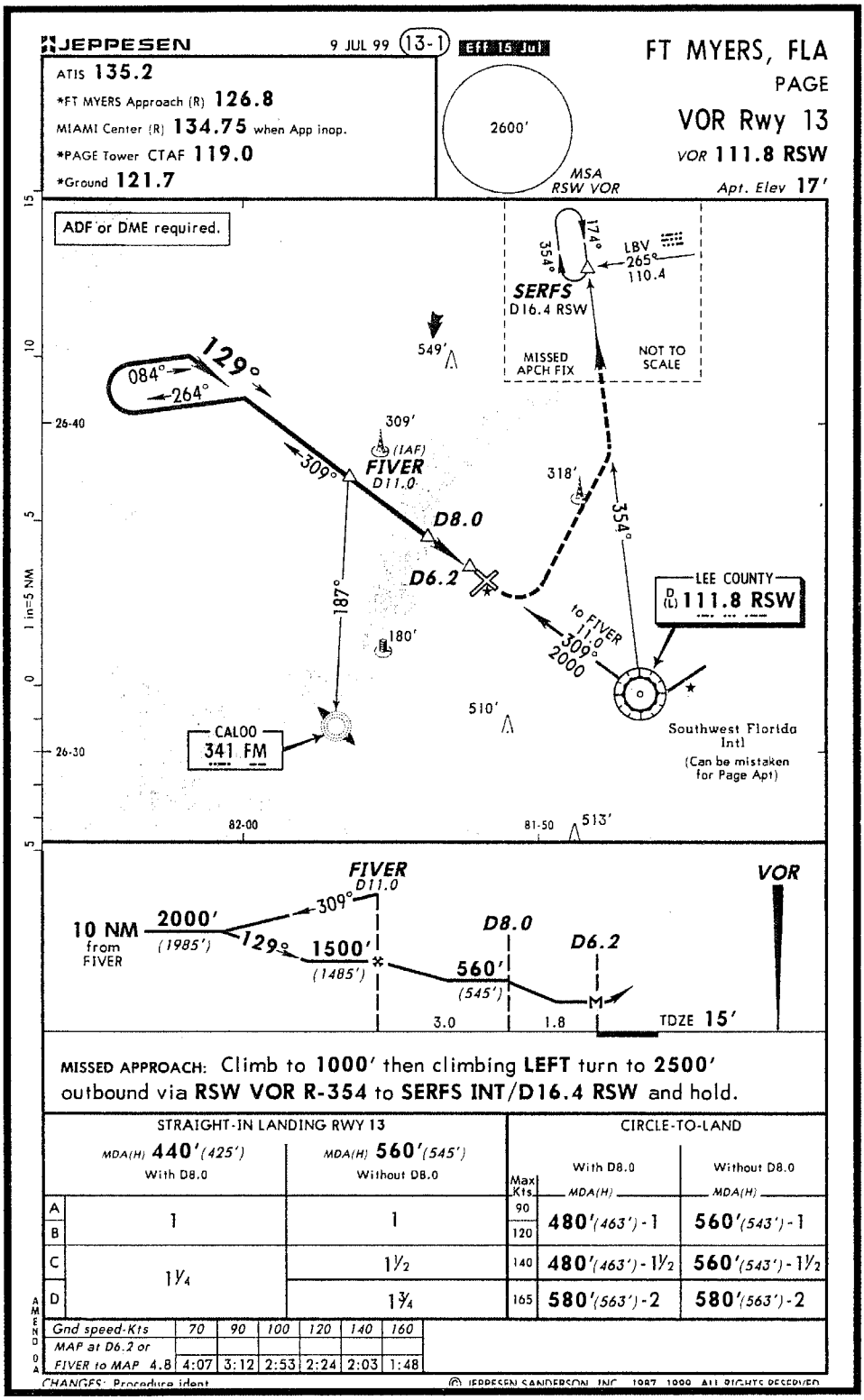


EXHIBIT 2-6

FMY-VOR Approach Plate

Page Field Master Plan

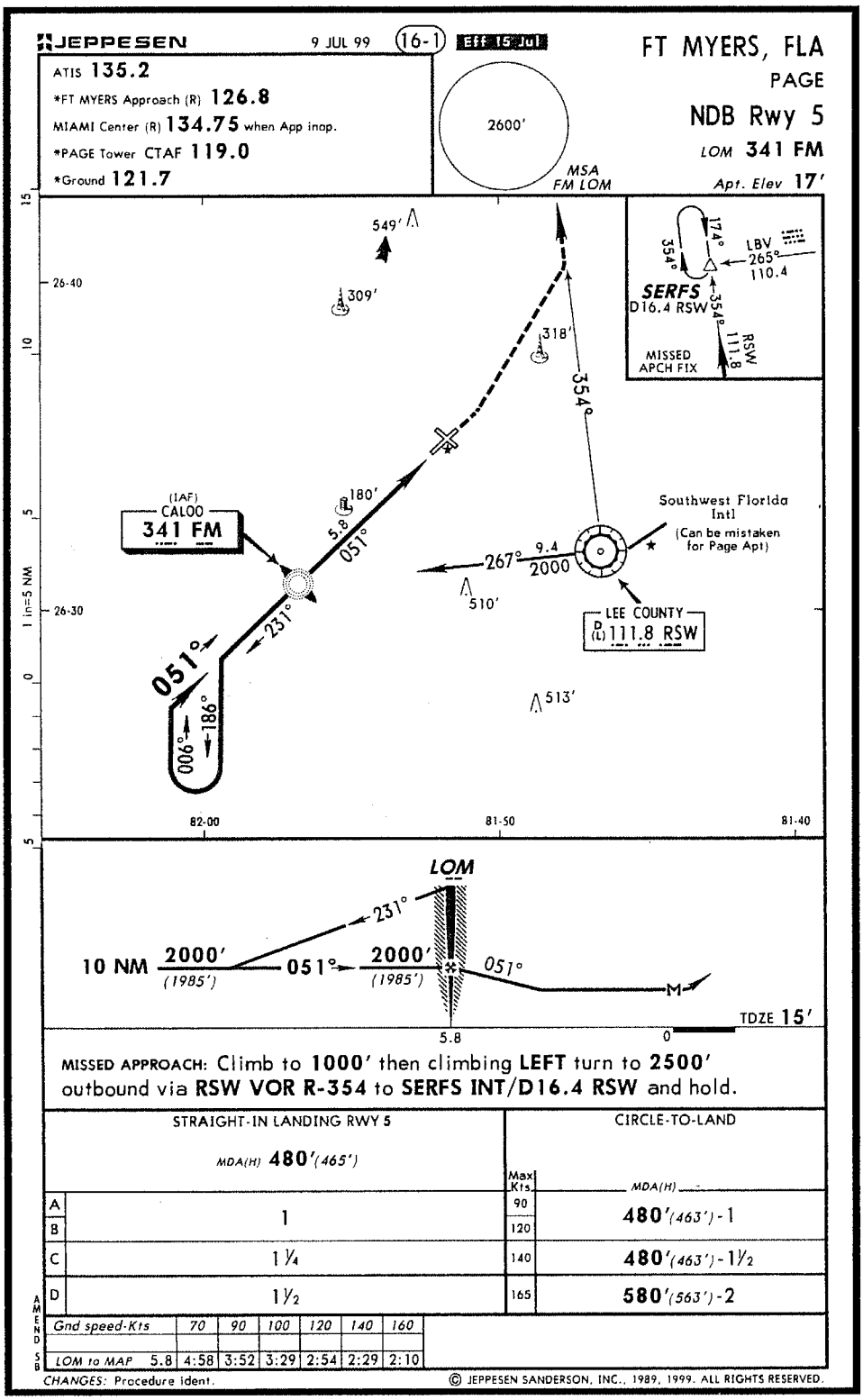


EXHIBIT 2-7

FMY-NDB Approach Plate

Page Field Master Plan

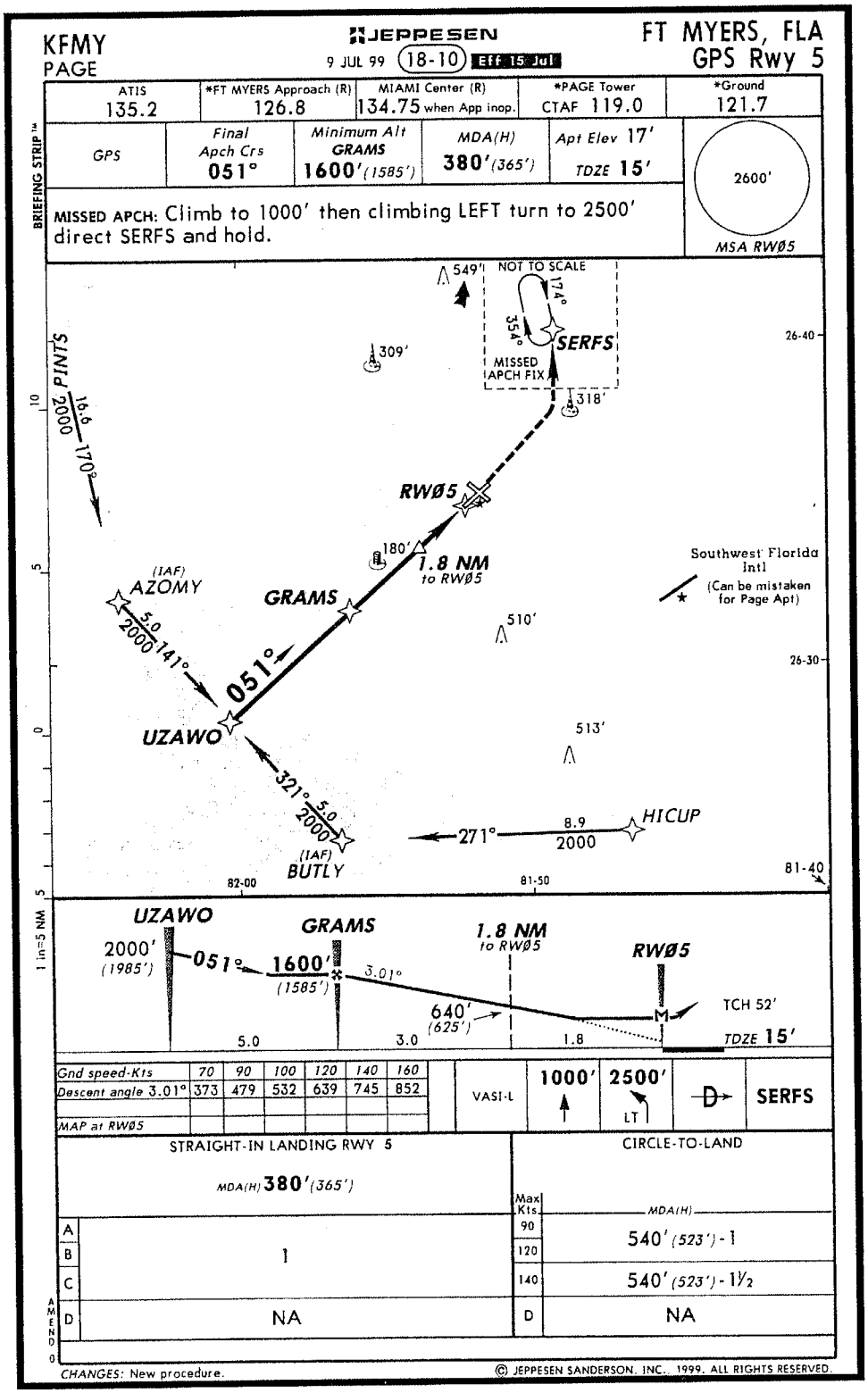


EXHIBIT 2-8

FMY-GPS Approach Plate

Page Field Master Plan

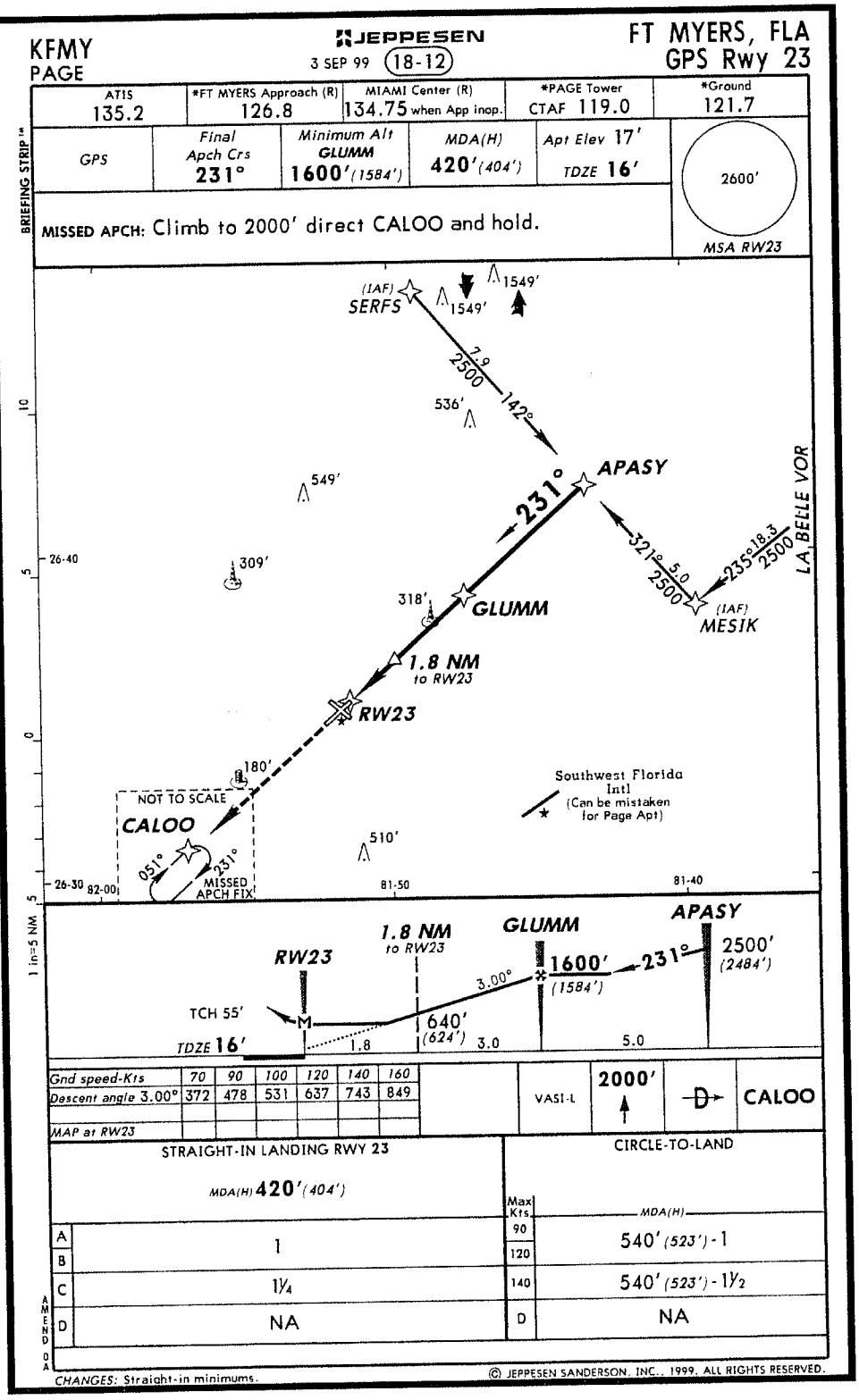


EXHIBIT 2-9

FMY-GPS Approach Plate

Page Field Master Plan

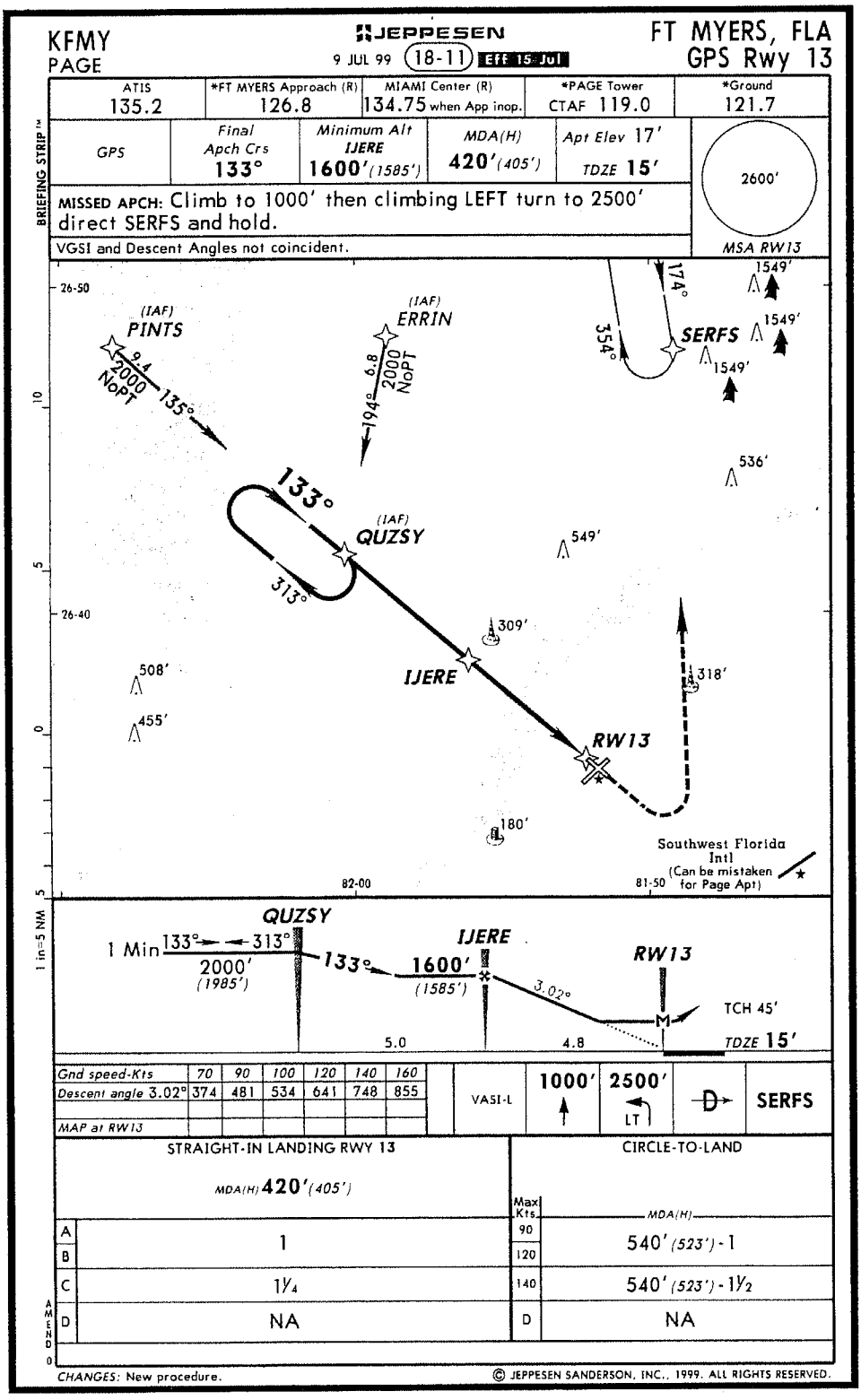


EXHIBIT 2-10

FMY-GPS Approach Plate

Page Field Master Plan

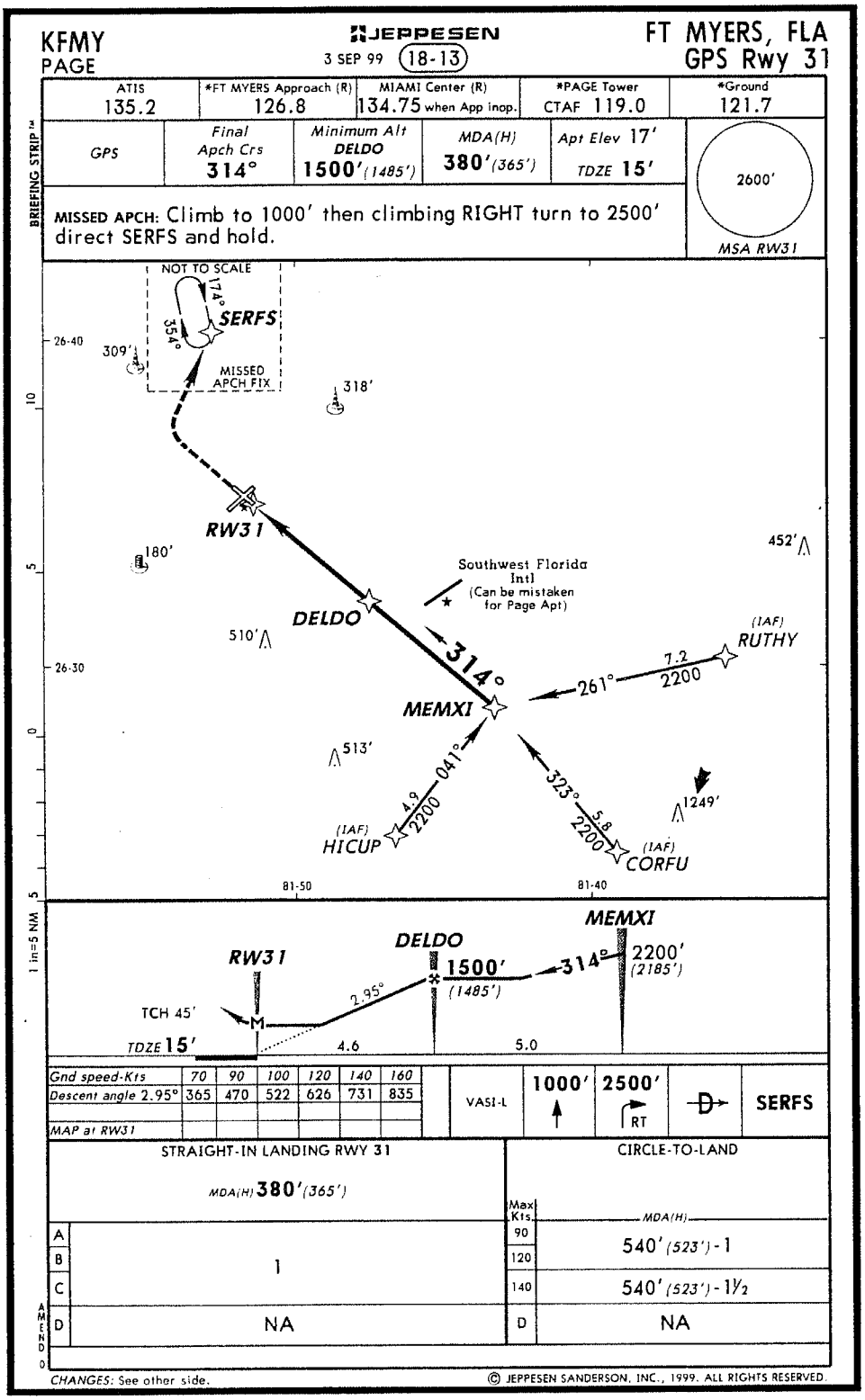


EXHIBIT 2-11

FMY-GPS Approach Plate

Page Field Master Plan

Navigational Aids – Visual/Supplemental

The following sections address the visual and supplemental navaids that are provided at Page Field. Although runway and taxiway lighting, along with airport signage and pavement markings are significant visual navaids, they have been addressed in other sections of this Inventory.

Airport Beacon

The location and presence of an airport at night or in adverse conditions is universally indicated by an airport rotating beacon. The rotating airport beacon at Page Field is located approximately 927 feet southeast of the Runway 5-23 centerline and approximately 661 feet southwest of the Runway 13-31 centerline. This beacon, which is approximately 72 feet AGL, is equipped with an optical rotating beacon system that projects two beams of light, one green and one white, 180 degrees apart. Although the beacon is old, it is still in good working condition. The beacon is in operation during nighttime hours and when the airport is under instrument meteorological conditions.

Visual Approach Slope Indicators

Visual glide slope indicators provide the pilot of an aircraft with visual descent guidance information during the approach to a runway. These lights are typically visible from three to five miles during the day and up to 20 miles or more at night. The Visual Approach Slope Indicator (VASI) system consist of two or three light bars, near, and far (or near, middle, and far). The lights in the light bars project a beam of white light in the upper segment and red light in the lower segment. Depending on the aircraft's angle in relation to these lights, the pilot will receive a combination that indicates his position relative to the desired glide slope. All four runway ends at Page Field have a four box (2 bars with four lights) VASI on the left side of the runway.

Automated Surface Observing System

Page Field is equipped with an Automated Surface Observing System (ASOS) located midfield near the rotating bacon. An ASOS provides continuous real-time weather reports, 24 hours-a-day, without human involvement. Using a computer-synthesized voice, an ASOS can generate new weather reports every minute in a standard format familiar to pilots. The ASOS at Page Field, which is located just south of the runway intersection near the airport beacon, includes the sensors required to measure and report temperature, dew-point, wind speed, wind direction, altimeter setting, density altitude, visibility, precipitation, cloud height, and cloud cover information. Pilots can access the information provided by the ASOS by directly dialing up the system on a telephone. Most of the data is also available on the national weather data network.

ASOS installations create a network of reporting stations that are a part of a joint program involving the FAA, the National Weather Service, and the Department of Defense. By providing information on the atmosphere, at a number of locations, these systems are designed to improve the safety and efficiency of aviation operations as well as being the key to improving forecasts and warnings.

Anemometer

In addition to the ASOS, wind speed at Page Field is also measured using a cup anemometer. This unit has a vertical shaft with three cups attached to capture the wind. The wind speed is calculated by electronically registering the number of revolutions per minute. The anemometer is

also fitted with a wind vane to detect the wind direction. Currently, the anemometer, which is adjacent to the rotating beacon and ASOS, is approximately 897 feet southeast of the Runway 5-23 centerline and approximately 588 feet southwest of the Runway 13-31 centerline.

Segmented Circle and Windsock

There is a segmented circle and lighted windsock located just south of the runway intersection at Page Field. The segmented circle provides a visual indication of the runway traffic patterns when the air traffic control tower is closed. Similarly, the lighted windsock provides a visual reference, during both the day and night, of the wind's direction and relative speed.

Airside and Landside Facilities by Quadrant

The runway orientations of 05/23 and 13/31 create a large "X" on the airfield with each runway crisscrossing the roughly square airport site from corner to opposing corner. This configuration breaks the developable airport lands into four primary quadrants which are roughly triangular in shape. The airside and landside facilities located in each of these quadrants – Northern, Eastern, Southern, and Western – are outlined in this section. **Exhibit 2-12** presents a key map indicating the general location of each quadrant and their related exhibits.

Northern Quadrant – Airside

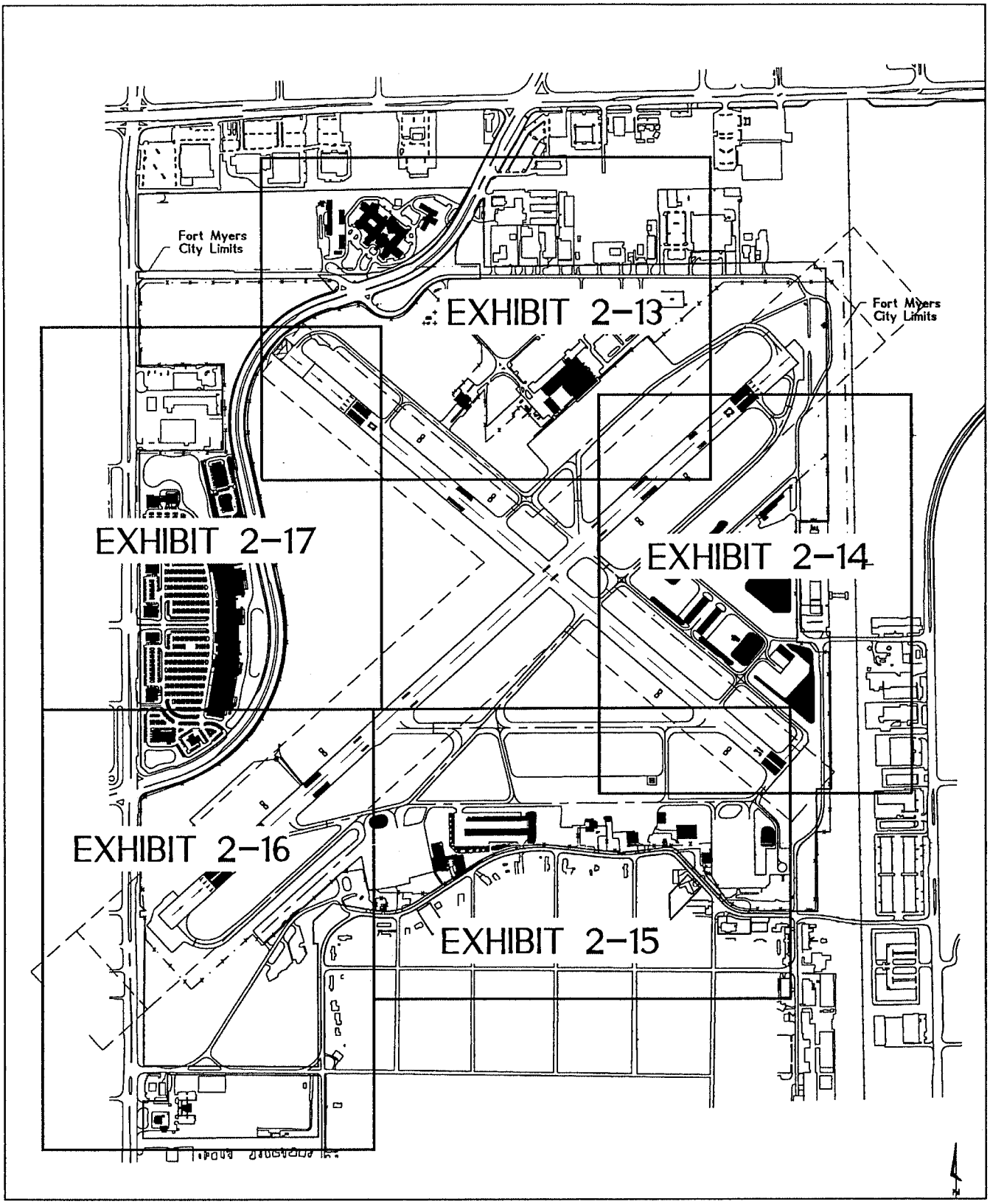
Each facility outlined in the northern quadrant is graphically depicted in **Exhibit 2-13**.

North Ramp

The large aircraft ramp adjacent the old terminal facility originally accommodated air carrier aircraft. This ramp was rehabilitated in 1998 and configured to accommodate general aviation aircraft. The 1998 Apron Rehabilitation construction drawings identified a letter designator to each of the various ramps that were included in the project and this nomenclature will be carried throughout this inventory. The large north ramp was configured to accommodate 40 aircraft tie-downs with two rows of eight nested aircraft at both the east and west ends of the ramp and two single rows accommodating four aircraft each near the center portion of the ramp. The tiedowns are of the Fly-Tie variety, with straps that retract into the recessed ground canisters. Rehabilitation of the North Ramp consisted of: 1 ½" milling of bituminous surface, crack sealing and then overlay with 2 ½" bituminous surface course.

EMS Helipad

An Emergency Medical Service (EMS) helipad is located just north of the Aircraft Rescue and Fire Fighting facility, south of the remote transmitter. This facility has been abandoned and is currently not being used. EMS does operate helicopters from a parking pallet in front of the fire station building, but a designated helipad is not available.



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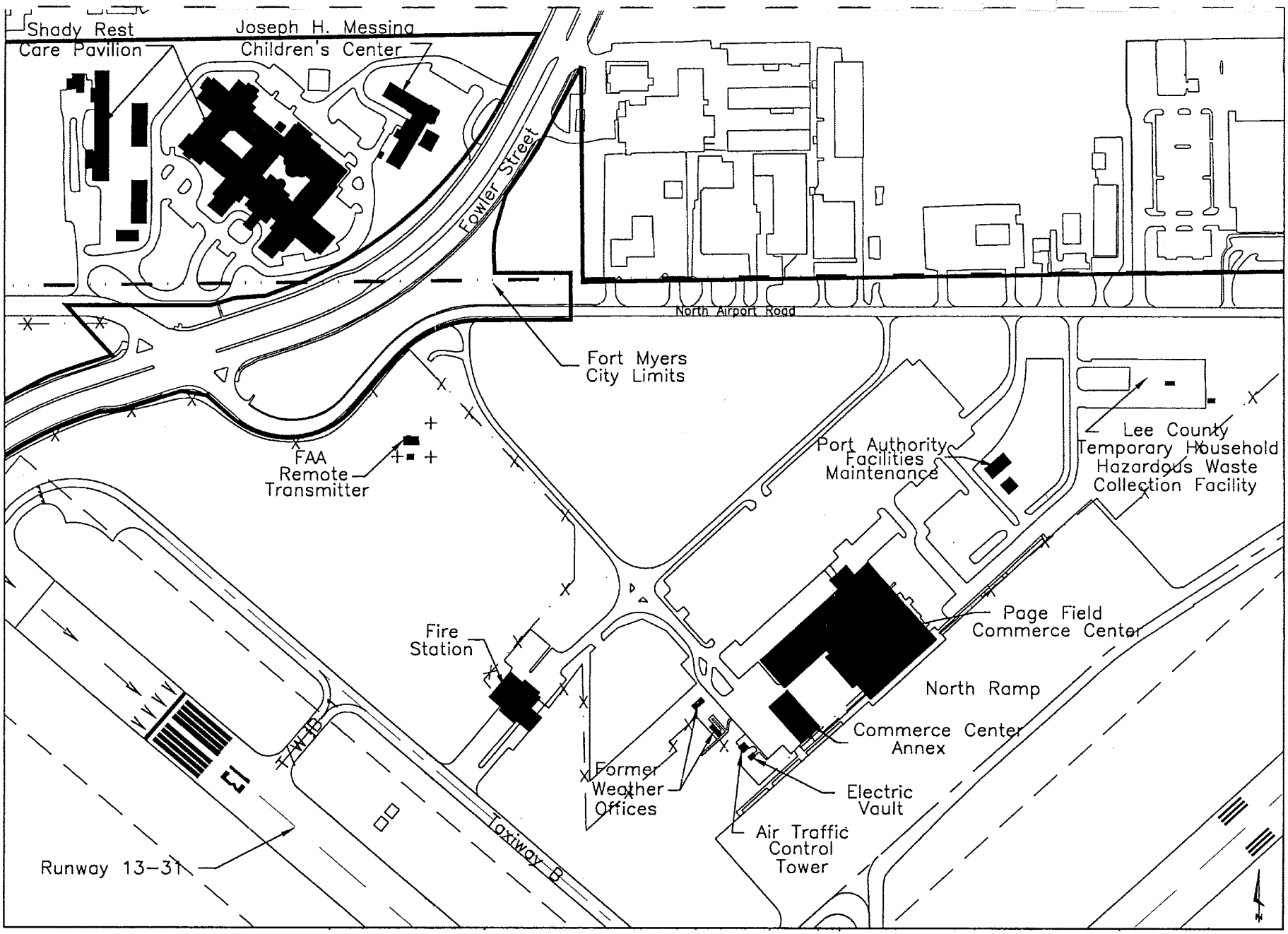
PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

NOT TO SCALE

FMY-Key Map

Exhibit 2-12



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Fort Myers, Florida

GRAPHIC SCALE
0 150 300
SCALE IN FEET

FMY-Existing
Northern Quadrant
Exhibit 2-13

Northern Quadrant – Landside

Page Field Commerce Center (Former Terminal Building)
The former terminal building was noted as beginning to show signs of deterioration in the previous master plan due primarily to lack of use and age. Originally constructed as an interim facility in 1975 to better accommodate passengers until the Southwest Florida International Airport could be constructed, the facility was renovated and expanded in 1979 to its existing footprint of 64,460 ft^2. The precast concrete panel building underwent major renovations in late 1998/early 1999 to accommodate a new major facility tenant, the Florida Department of Law Enforcement (FDLE). The FDLE lease includes just over 24,200 ft^2 in the eastern half of the facility.

Commerce Center Annex (Former Air Cargo Building)
The 6000 ft^2 air cargo building located west of the old terminal building was constructed in 1976 and renovated in 1980. The prior master plan noted this facility as being in good condition but its future need has been questioned. There has been interest in the property by local businesses and the Port Authority is actively seeking a tenant.

Lee County Temporary Household Hazardous Waste Collection Facility
A portion of the northeastern section of the easternmost parking area is used on a periodic basis by Lee County Temporary Household Hazardous Waste Collection Facility. The facility is a household solid waste collection facility which collects solid hazardous waste such as batteries directly from the public. The waste is then containerized and removed from the site. No long term storage of waste is done at the site.

Port Authority Facilities Maintenance
This facility, located northeast of the old terminal, is used by the Port Authority to service vehicles and as a workshop for the maintenance of on-site facilities.

Shady Rest Care Pavilion & Joseph H. Messina Children's Center
Two non-aviation related facilities have been developed on airport owned land on the northwest corner of North Airport Road and Fowler Street. These facilities are the Shady Rest Care Pavilion and the Joseph H. Messina Children's Center.

Northern Quadrant – Other

Additional facilities located in this quadrant which will be discussed in subsequent sections of this chapter include:

- Air Traffic Control Tower/Weather Office
- Remote Transmitter
- Aircraft Rescue and Fire Fighting facility (ARFF)
- Electrical Vault

Eastern Quadrant – Airside

Each facility outlined in the eastern quadrant is graphically depicted in **Exhibit 2-14**.

Aviation Center GA T-Hangars

The Aviation Center GA hangars were constructed in late 1996/ early 1997 as part of the Ramp Expansion – Phase 1 project. Access to the ramp on which the T-hangars are located was provided by extending Taxiway Connector B-3 northeastward, Taxilane B-4, and connecting this extension with Taxiway A by constructing a 40' wide taxiway section, Taxilane E, parallel to Taxiway B. The two parallel rows of nested t-hangars have a 75' separation with central access taxilane, Taxilane E-1, that connects from Taxiway B northeast to the new parallel segment. The east side of the east row of T-hangars and the west side of the west row have access off the new parallel segment via a 50' wide section of pavement starting at the face of each building. However, they do not have access to Taxiway B. The distance from the Taxilane E-1 to the centerline of either of the outer access taxilanes is 126'. Each row of the T-hangars accommodates 8 smaller nested aircraft and one larger cabin class aircraft in a total building width of 51' and length of 232'. Each of the T-hangar buildings is internally separated by three four-hour fire walls, limiting the number of aircraft in each building section to no more than three. The northern end of each facility accommodates the single cabin class aircraft position and the height of the structure increases in this area by 5'6" to a height of 22' above the building threshold.

Plane Wash

Although space has been set aside for a plane wash facility and its design was provided as part of the Phase 1 project, this facility has yet to be developed. The anticipated site is north of the intersection of the Taxilane E and the Taxilane B-4. The septic field for this facility was constructed as part of the Phase 1 Apron Rehabilitation project and currently serves the SMS Corporate Hangar Facility.

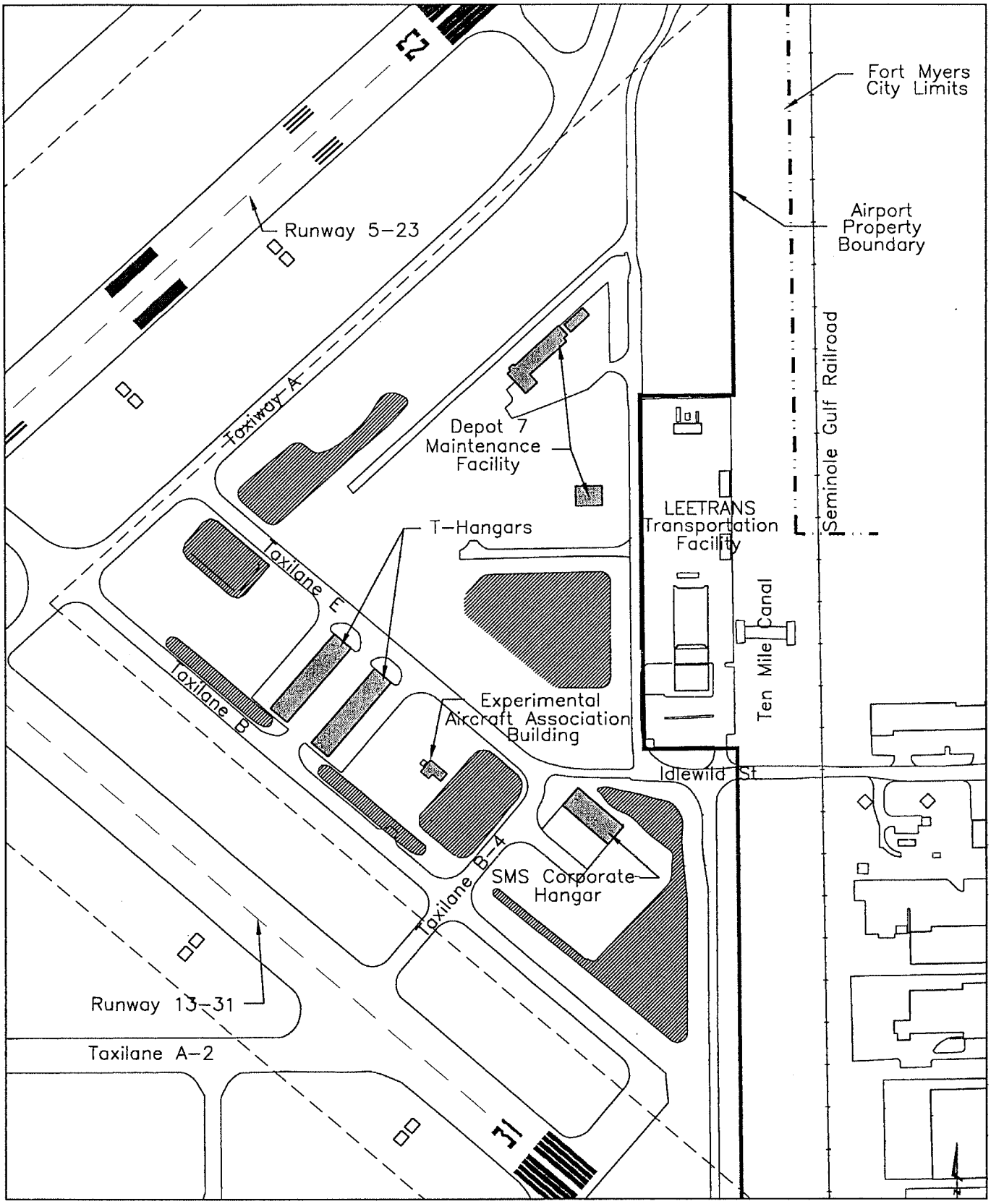
Southern Machine and Steel (SMS) Corporate Hangar

The SMS Corporate Hangar is located east of Taxilane B-4 and is accessed by a short connector taxilane. The SMS Corporate hangar is approximately 11,000 square feet and is the first of a total of three potential conventional hangar sites with access off the small connector.

Eastern Quadrant – Landside

EAA Building

The Experimental Aircraft Association (EAA) currently utilizes a metal building located southeast of The Aviation Center GA Hangars. The location of this facility is currently earmarked for eastward expansion of the T-hangar facilities.



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Fort Myers, Florida

GRAPHIC SCALE
0 150 300
SCALE IN FEET

FMY
Eastern Quadrant
Exhibit 2–14

Lee County DOT Depot 7 Maintenance/Lee Trans Maintenance Facilities

The Lee County DOT Depot 7 Maintenance yard is currently located on the north half of the triangular section that makes up the Eastern Quadrant of the airfield. Two non-aviation structures in this portion of the quadrant include the Lee Trans Maintenance Facilities. Efforts have been initiated to relocate these facilities offsite to allow for the expansion of aviation uses into this area.

Southern Quadrant - Airside

The southern quadrant of Page Field accommodates a majority of the ramp and hangar facilities at the airport. Each facility outlined in the southern quadrant is graphically depicted in **Exhibit 2-15** and **Exhibit 2-16**.

Southwest Ramp

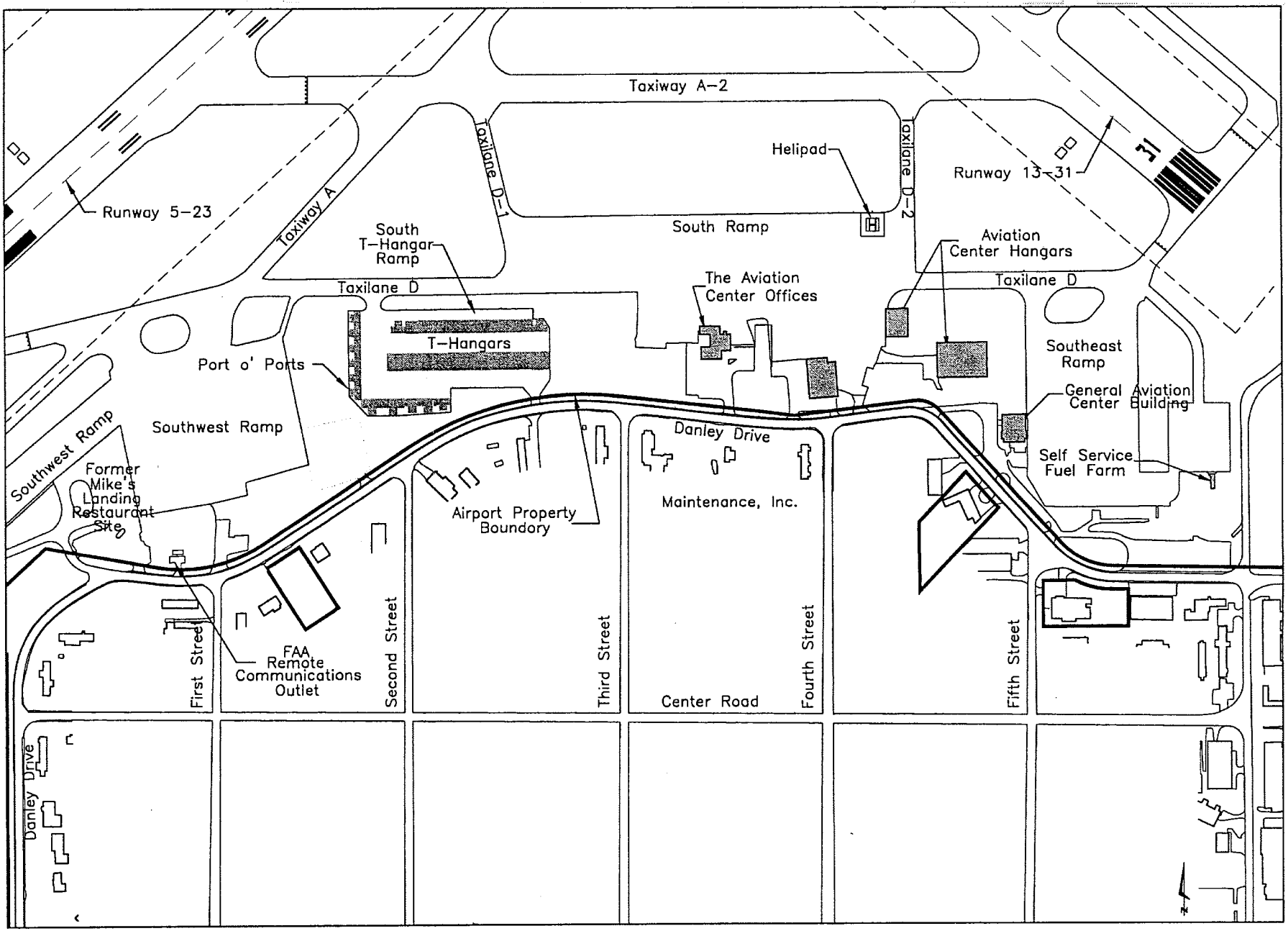
The Southwest ramp is the westernmost series of ramps located between the approach end of Runway 05 and the intersection of Danley Drive and First Street. Referred to as FBO Ramp #1 in the 1993 Master Plan, recent modifications as part of the Apron Rehabilitation Project – Phase 2 have expanded the Southwest ramp westward.

The Southwest ramp extends from the former Mike's Landing Bistro Restaurant site, westward accommodating an apron edge taxilane and 22 aircraft tie-down positions. The Southwest ramp also includes the apron adjacent to the old Mike's Landing Bistro Restaurant eastward, directly behind or North of the FAA RCO site. The entire southwest ramp can accommodate up to 80 tie-down positions depending on aircraft size.

Rehabilitation of the apron edge taxilane and 22 aircraft tie-down positions in 1998 consisted of full depth pavement removal, regrading and compacting of subgrade and a pavement cross section of: 1 ½'' bituminous surface course over 2 ½'' bituminous base course over 6'' limerock stabilized base course. The remaining Southwest ramp rehabilitation consisted of crack sealing followed by a slurry seal.

South T-Hangar Ramp

The South T-Hangar Ramp consists of the pavement areas serving the forty-one t-hangars located to the west of the Aviation Center. This pavement was rehabilitated as part of the 1998 Apron Rehabilitation – Phase 2 project. The rehabilitation consisted of full depth pavement removal, regrading and compacting of subgrade and a pavement cross section of: 1 ½'' bituminous surface course over 2 ½'' bituminous base course over 6'' limerock stabilized base course. With this rehabilitation the thirteen Port o' Ports located on the Southeast ramp where relocated adjacent to the South T-Hangar Ramp to provide for construction of the new self fuel facility on the Southeast ramp.



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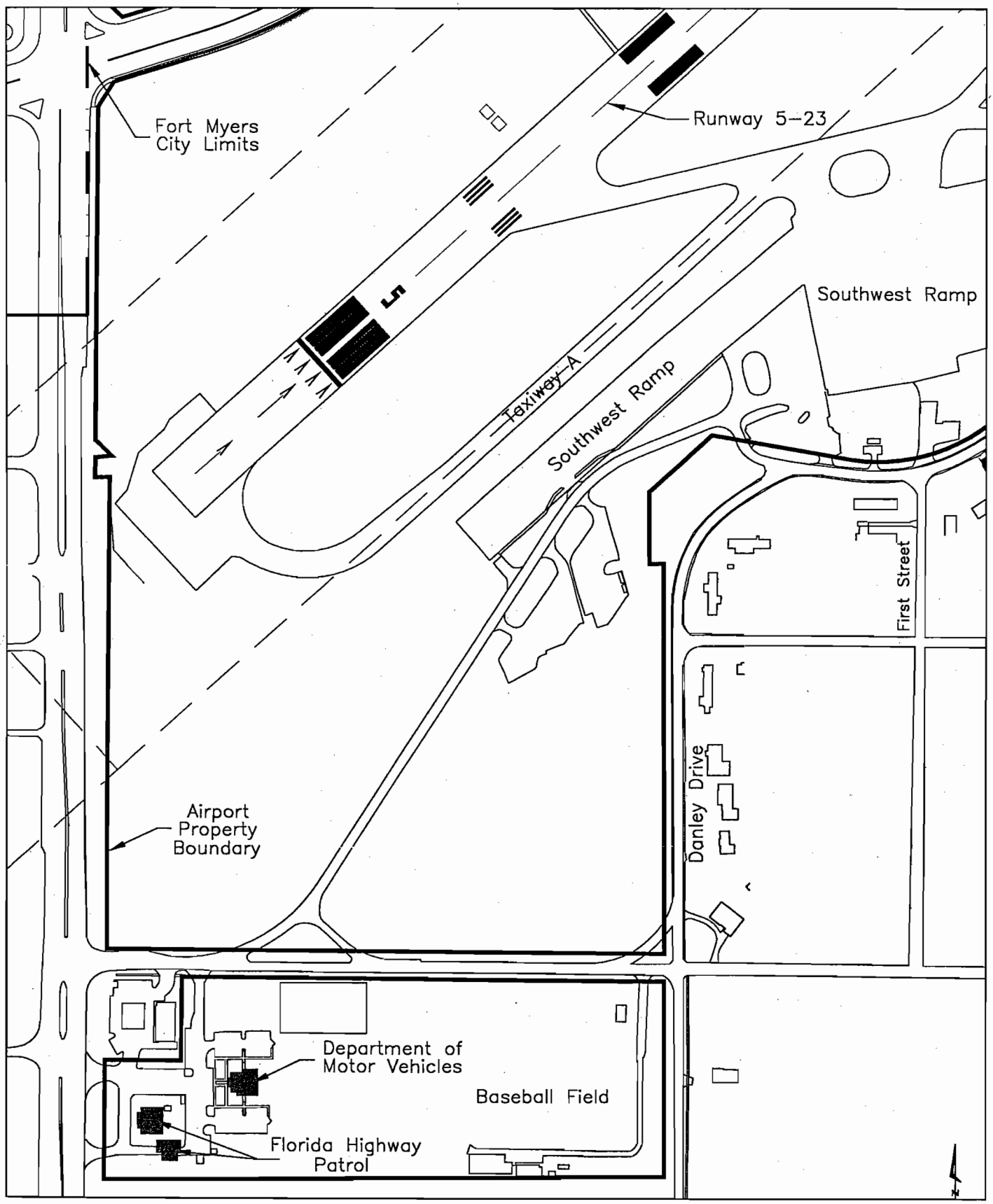
Fort Myers, Florida

GRAPHIC SCALE
0 150 300
SCALE IN FEET

FMY-Existing Southern Quadrant
Exhibit 2-15



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Fort Myers, Florida

GRAPHIC SCALE
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SCALE IN FEET

FMY–Southwestern Quadrant
Exhibit 2-16

South Ramp

South Ramp, previously referred to as FBO Ramp #2, is the center ramp located north of Danley Drive and First Street and the intersection of Danley Drive and Fourth Street. As with the Southwest ramp, the South Ramp has a taxilane that traverses through the center of the ramp. Two taxilane connectors, D-1 and D-2 connect the South ramp to taxiway A-2. Following the 1998 Apron Rehabilitation – Phase 2 project, the portion of the south ramp directly north of the Aviation Center accommodates approximately 53 tie-down positions in addition to a helipad. The portion of the South Ramp directly North of Switlik Aviation accommodates approximately 14 tie-down positions.

Rehabilitation of the northern portion of the South Ramp consisted of: crack sealing and then 3'' bituminous surface course placed in two lifts. Rehabilitation of the southern portion of the South Ramp consisted of: 1" milling of bituminous surface, crack sealing and then overlay with 2 ½" bituminous surface course. Rehabilitation of the apron taxilane, taxilane D consisted of: crack sealing and then overlay with 2" bituminous surface course.

Southeast Ramp

The Southeast Ramp, previously referenced as FBO Ramp #3, is the easternmost ramp on the south airfield, located north of Danley Drive and Fourth Street and the intersection of Danley Drive and Sixth Street. It used to accommodate a row of The Aviation Center T-Hangars (Port o' Ports), which were relocated to the South T-Hangar Ramp, as well as the old Fuel Farm. The General Aviation Center (GAC) is located along the ramp's western edge and is the primary facility with access to this ramp. The ramp was rehabilitated and reconfigured as part of the Apron Rehabilitation – Phase 2 project to accommodate 37 tie-downs. Rehabilitation of Ramp D consisted of: crack sealing and then overlay with 2" bituminous surface course. However, portions of the east and west edges of the ramp received full depth replacement. The easternmost area of pavement, located northeast of the old fuel farm, used to accommodate nine t-hangars or Port o' Port. After relocation of these t-hangars to the Aviation Center t-hangar Ramp, the ramp was rehabilitated as part of the Phase 2 Apron project. The ramp now can accommodate six tie-down positions and houses the airport's only aircraft self-fueling facility. Rehabilitation of the ramp consisted of full depth pavement removal, regrading and compacting of subgrade and a pavement cross section of: 1 ½'' bituminous surface course over a 2 ½'' bituminous base course over a 6'' limerock stabilized base course.

South T-Hangars

The South T-Hangar Ramp accommodates forty-one aircraft in t-hangars, shade hangars and Port o' Port hangars. The Ramp accommodates two rows of t-hangars with a total of twenty-two t-hangar and six shade hangar positions, occupying a total of 52,500 ft² of space. The two rows of hangars are located approximately 65 feet apart. The northern hangar is located approximately 77 feet south of Taxiway D. These facilities were refurbished and painted in 1999. A total of eleven Port o' Port hangars are located along the westernmost and southernmost edge of the t-hangar ramp. These hangars accommodate most small twin-engine aircraft and almost all types of single engine aircraft. Two additional Port o' Port hangars are located at both ends of the north t-hangar unit.

Aviation Center Hangars (conventional)
The first of the three conventional hangars, referred to Aviation Center Hangar #1, is located east of The Aviation Center terminal facility and accommodates the Switlik Aviation aircraft maintenance operation (refer to Support Facilities section). Located about 70 feet to the east of this structure is the above ground fuel farm.

Tomlinson Avionics (Aviation Center Hangar #2) is located just north of the fuel farm adjacent the east edge of the South Ramp. It occupies an area of about 5,200 ft² and is leased to one of the helicopter operators on the airport. This hangar houses between six and eight helicopters. Aviation Center Hangar #3 is located east of the fuel farm and southeast of Hangar #2. This large hangar has a total area of approximately 15,350 ft². The hangar is used for itinerant and local aircraft storage and operated by Lee County Port Authority.

Southern Quadrant – Landside

The Aviation Center
The Aviation Center is located fairly central to the south side of the airport, north of Danley Drive, between Third and Forth street. The building provides the primary FBO functions for the airport with weather briefing equipment, a pilot's lounge and sleep room, conference room, etc. This facility also houses the on-site airport management staff. The facility is operated by Lee County Port Authority.

General Aviation Center (GAC) Building
The GAC is located north of the intersection of Danley Drive and Fifth Street, adjacent to the west edge of the southeast Ramp. The facility acts as a small office building with a number of aviation related tenants.

Florida Highway Patrol & Department of Motor Vehicles
The Florida Highway Patrol and Department of Motor Vehicles each operate out of buildings located on airport property. They are located to the east of US 41 and south of South Street on a non-contiguous parcel of airport land.

Southern Quadrant - Other

Additional facilities located in this quadrant which will be discussed in subsequent sections of this chapter include:

- Former Above Ground Fuel Farm (Support Facilities Section)
- Aviation Center Above Ground Fuel Farm (Support Facilities Section)
- FAA Remote Communications Outlet

Western Quadrant – Airside

There are no ramps, tie-downs or hangars located in the Western Quadrant of the airport.

Western Quadrant - Landside

Each facility outlined in the western quadrant is graphically depicted in **Exhibit 2-17**.

Page Field Commons

Page Field Commons is a series of facilities located in the airport's west quadrant. The commercial development is located west of the extension of Fowler Street and east of Cleveland Ave. (U.S. 41). Construction on this facility was initiated in late 1998 and will be completed by mid to late 2000.

All Quadrant Tie-Down/Hangar Summary

The following tables, **Table 2-3**, **2-4** and **2-5**, present summary information for aprons/tie-downs and hangars, whether T-hangars or conventional.

TABLE 2-3
AIRCRAFT PARKING APRON

Apron	Quadrant	Size(sy)	Tie Downs
North Ramp	North	44,872 sy	40
Southwest Ramp	South	38,879 sy	78
South Ramp	South	44,326 sy	66
Southeast Ramp	South	22,873 sy	49
Total		**150,950 sy**	**233**

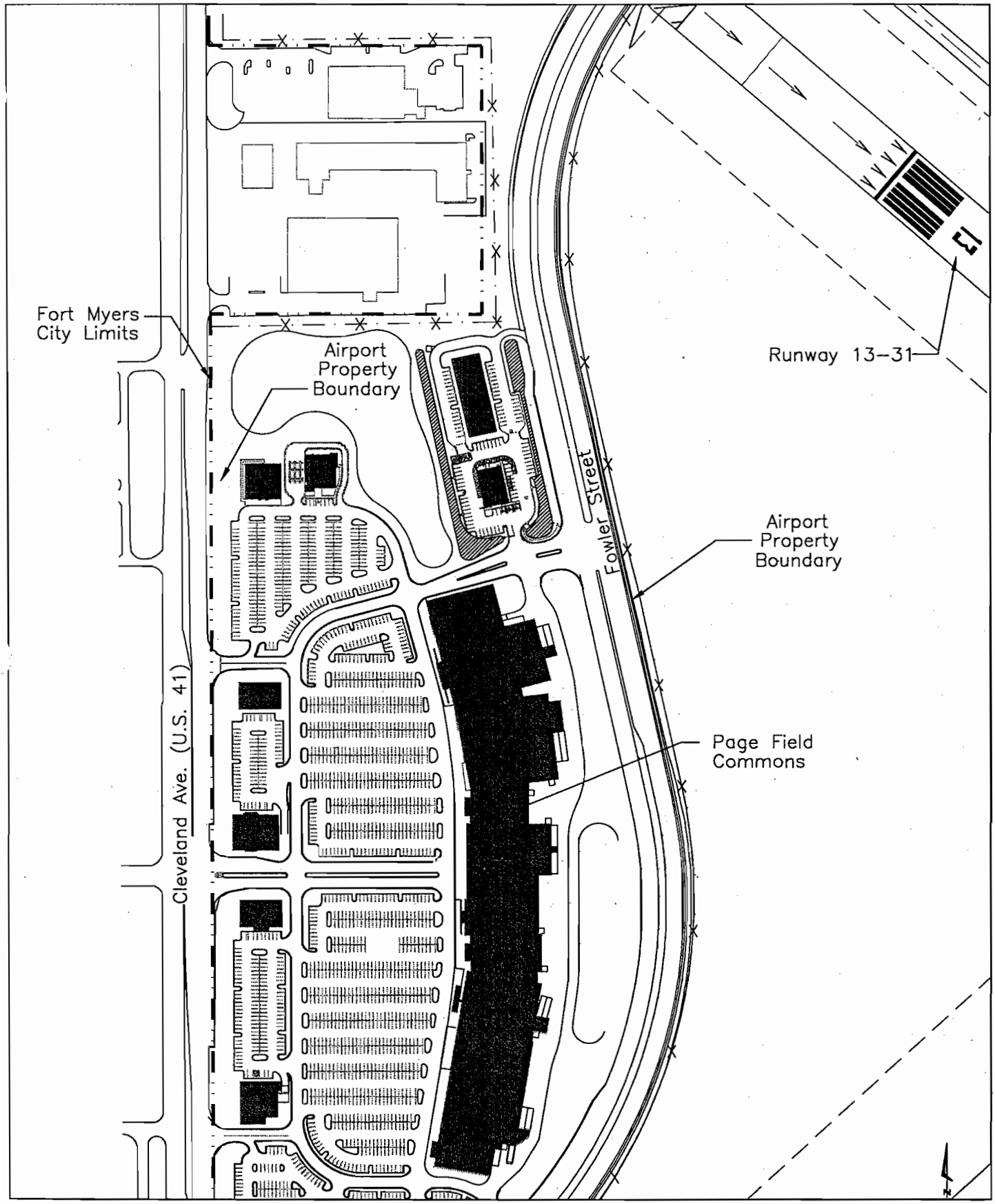
The term sy stands for square yards.

TABLE 2-4
T-HANGARS

Facility	Quadrant	Positions
Aviation Center T-Hangars I and J	East	16 small, 2 medium
T-Hangars – B (includes Shade Hangars)	South	32
Aviation Center Hangars (Port o' Ports)	South	13
Total		63

TABLE 2-5
CONVENTIONAL HANGARS

Facility	Quadrant	Size
SMS Corporate Hangar	East	11,000 ft²
Aviation Center Hangar #2	South	5,200 ft²
Aviation Center Hangar #3	South	15,400 ft²
Total		31,600 ft²



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GRAPHIC SCALE
0 150 300
SCALE IN FEET
Date: 04/07/2000

FMY–Western Quadrant

Exhibit 2–17

Support Facilities

Fueling Facilities

Currently, there is one operational fuel farm at Page Field and one aircraft self-fueling facility. The Aviation Center above ground Fuel Farm is located on a roughly 25,000 ft² site north of Danley Drive and east of Fourth Street at the southeast edge of the South Ramp. The facility has three existing fuel storage tanks consisting of two 12,000 gallon Jet A-1 fuel tanks and one 12,000 gallon 100LL tank. Tanker trucks currently are required for the fueling of all aircraft, while a self-fueling facility was commissioned in 1999. The self-fueling facility is located adjacent to the Southeast ramp and stores 12,000 gallons of only 100LL.

The former Fort Myers Airways Above Ground Fuel Farm was located at a site north of Danley Drive between Fifth and Sixth Street. This facility has been decommissioned and the tanks have been removed. However, the concrete wall that surrounded the tanks still exists. Environmental concerns have been raised regarding this site and are currently being further explored for potential petroleum contamination.

Fire Station

The fire station is located west of the Air Traffic Control Tower with access directly onto Taxiway B just east of the B-2 connector. The 3-double bay facility has a flow through configuration allowing up to six fire fighting vehicles to be stored. The total footprint of the building is roughly 10,000 ft² in area. This included a hangar which was added to the south end of the facility to accommodate the Emergency Medical Service (EMS) helicopter.

Aircraft Maintenance Facilities

Switlik Aviation Maintenance Hangar

Switlik Aviation leases a conventional hangar from the airport located east of The Aviation Center and adjacent the south ramp edge for an aircraft maintenance operation. This hangar is approximately 9,000 ft² in area and is in good condition.

AIRPORT INFRASTRUCTURE

Utilities

This section overviews each of the primary utilities at the airport including electrical power, water, sanitary sewer and stormwater. More detailed information will be developed as part of the utility mapping component of this study.

Electrical Power

Power at the airport is provided by Florida Power and Light (FPL) through a variety of substations and transmission lines extending north, south, east and west sides of the airport. Power is provided in the northern quadrant by a single substation with lines that access the airport at three different locations. The remote receiver, Air Traffic Control Tower and electrical vault are powered from the westernmost line which enters the airport just east of the Fowler Street/North Airport Road intersection. Further east, a

second leg of this line enters the airport and provides power to the old terminal facility. Finally, the third line enters near the northeast corner of the airport providing power for the Runway 05 localizer. Power is provided in the eastern quadrant by a transmission line that transits Ten Mile Canal at Idlewild road connecting to a main transmission line along Metro Parkway. Power is provided to the south quadrant by a series of transmission lines that transit each north-south street northward to Danley Road. In the west quadrant the glideslope is powered by a line that crosses the Fowler Street extension and then continues northward on the roadway's west side.

The airfield electrical vault, constructed in 1976/77, is a 400 ft² building located just northwest of the Air Traffic Control Tower. The facility provides power for all of the airfield lighting and is equipped with an emergency backup generator, as is the fire station.

Water

Potable water to the old terminal complex and ARFF enter the airport along Airport Road via an 8" PVC pipe. This 8" PVC line then turns south at the airport's eastern boundary supplying water to the airport eastern quadrant facilities with 6" PVC connectors. The 8" PVC switches to a 6" cast iron line along the airports southeast corner. A 6" cast iron line transits the airport's southern boundary westward supplying water to all the facilities in the southern quadrant. An 8" asbestos cement water line transits the airport's west property boundary just east of US 41. The city of Fort Myers is the supplier of water to the airport.

Sanitary Sewer

Limited sanitary sewer service exists at the airport save some of the facilities in the northern quadrant that have access into the City of Fort Myers sewer system. The Air Traffic Control Tower and old terminal facility have a lift to sewer while the ARFF facility has a gravity septic system. Most newer facilites throughout the airport such as The Aviation Center terminal and the SMS corporate hangar have lift to septic systems. The prior master plan noted that an old red-brick sanitary sewer line traverses the entire airport, extending to Page Park which is south of Danley Drive. The abandoned line, discovered in the late 1980's or early 1990's was noted in good condition and was capped by the County.

Stormwater

Stormwater at Page Field drains Northward and Southward, away from Ten Mile Canal which is located just east of the airport. Most of the on-airport drainage is above ground and flow is via a series of ditches and piping. Flow is north on the northernmost portion of the airfield, west from the west-central portion of the airfield, and south from the south portion of the airfield. Stormwater just west of the canal flows south along the east side of the airport, around the Runway 31 end and then south. Few retention/detention ponds exist on the airport, the majority of which have been developed recently to accommodate the Phase I Apron Expansion Project and T-hangar development located in the east quadrant. Stormwater drainage problems have been noted in the area of the glideslope facility. A full list of stormwater permits is included in the environmental chapter of this report.

Ground Access & Circulation

Ground access to Page Field and its various facilities is primarily via Colonial Boulevard (S.R. 884), located north of the airport, Cleveland Avenue (US 41), west of the airport, and Metro Parkway (C.R. 439) to the east. Colonial Boulevard located north of and parallel to North Airport Road becomes a six lane divided arterial just east of the airport and is the primary connector to I-75 located roughly 3 ½ miles east of the airport. It also extends westward providing access across the Caloosahatchee River via the Midpoint Memorial Bridge.

Cleveland Avenue (US 41) is the primary north-south arterial extending across the Caloosahatchee to the north through North Ft. Myers, Punta Gorda and ultimately, South Venice. US 41 extends south past Daniels Parkway and into Collier County. Metro Parkway also provides access from the north and south along the east side of the airport extending from Daniels Parkway past the airport to Hanson Street.

The recent Fowler Road extension across the west and northwest sections of the airport, when combined with Boyscout Road which extends to the west to County Road 869 improves the airport access from the south and southwest. Fowler Street also provides access north into downtown Ft. Myers.

In the vicinity of the airport, North Airport Road provides access to the old terminal area from US 41 and Fowler. Danley Road provides access to the south quadrant facilities via South Street or Metro Parkway. Idlewild provides access to the east quadrant facilities via Metro Parkway.

Currently, there is no on-airport roadway that connects the various airport facilities. This requires that external surface roads be used to transit the airport or to move from one facility to another. This adds to congestion on the roadways and makes many of the facilities, such as those in the airport's east quadrant, extremely hard to find for those unfamiliar with the airport.

Auto Parking

Automobile parking is provided in the north, east and south quadrants of the airport. **Table 2-6** outlines the parking spots available for the various airport facilities in each quadrant.

TABLE 2-6
AUTOMOBILE PARKING

Facility	Quadrant	Spaces
Old Terminal Facility (After FDLE Project)	North	508
Air Traffic Control Tower (ATCT)	North	16
Fire Station	North	21
EAA Building and T- Hangars	East	15
General Aviation Center	South	25
FBO, Employees & Private Tenants	South	90
Total		**700**

AIRSPACE

The FAA has six classifications of airspace for the national airspace system. These classifications, which are designated as Class A, B, C, D, E, and G, are critical to the safety of all flights and to the efficient operation of all air traffic control facilities. Based on the level and type of operations, airports receive either a classification of B, C, D or E. Class A airspace only exists above 18,000 feet and Class G airspace is simply uncontrolled airspace.

Because Page Field has an active contract air traffic control tower (ATCT), the airspace for the airport has been designated as Class D. This type of airspace encompasses an area around the airport of five nautical miles and includes everything from the surface up to 1,200 feet above the airport elevation. Class D airspace requires each person to establish two-way radio communication with the ATCT at Page Field prior to entering the airspace and to maintain this communication while in the airspace. Although considered a controlled airspace, Class D airspace does not provide any separation service to visual flight rules (VFR) aircraft. When the ATCT is closed, the airspace at the airport is designated as Class G.

The airport also has a small portion of Class E airspace. Typically, this airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. Around airports, Class E airspace is used to provide additional safety to those aircraft transiting to and from the airport. The small portion of Class E airspace at Page Field exists in order to provide additional control to the precision and non-precision instrument approaches into Runway 5 and the non-precision instrument approach into Runway 13. This airspace has a floor beginning at 700 feet and extends up to 17,999 feet. Only a small portion of Class E airspace is required because most of the area surrounding Page Field is encompassed by the Class C airspace of the SFIA.

Class C airspace will only be found at airports that have an operational control tower, are serviced by a radar approach control, and have a certain number of instrument flight rules (IFR) operations. In the Class C airspace for Southwest Florida International, pilots must establish and maintain two-way radio communications with the ATCT at that airport, prior to entering the Class C airspace. In addition, the aircraft must be equipped with a Mode C transponder. This type of transponder provides information about the altitude of the aircraft. In Class C airspace, aircraft under Visual Flight Rules (VFR) are separated from the aircraft under IFR. VFR aircraft must still see and avoid other VFR aircraft.

Although Class C airspace can be individually tailored to meet the needs of the airport, the airspace usually consists of two columns of airspace. The Class C airspace for Southwest Florida International has no modifications to the standard airspace coverage. The inner column of airspace encompasses an area that has a 5 nautical mile radius from the airport and extends from the surface up to 4,000 feet above the airport elevation. The outer column of airspace encompasses an area that has a 10 nautical mile radius, but begins at 1,200 feet above the airport elevation and extends up to 4,000 feet above the airport elevation. The simplest way to visualize Class C airspace is to envision a two-layer wedding cake turned upside down and centered on the airport.

Exhibit 2-18 has been taken from the Miami Sectional Aeronautical Chart to illustrate the airspace relationships in the Ft. Myers area. The two large magenta circles represent the inner and outer columns of Class C airspace for Southwest Florida International. Page Field falls between these two circles. This is why the ceiling for Page Field's Class D airspace only goes up to 1,200 feet. At 1,200 feet, the Class D meets the overlaying Class C airspace which is more restrictive. Although it is nearly hidden, the Class D airspace for Page Field is represented by a dashed blue circle. However, the southeast portion of that circle is missing because it meets with the inner column of Class C airspace. The Class E airspace mentioned before is depicted with a wide magenta line that fades from the outside in towards the airport it serves. The small portion of Class E for Page Field is located on the northwest side of the airport. It is only an arc that is truncated by the outer column of Class C airspace.

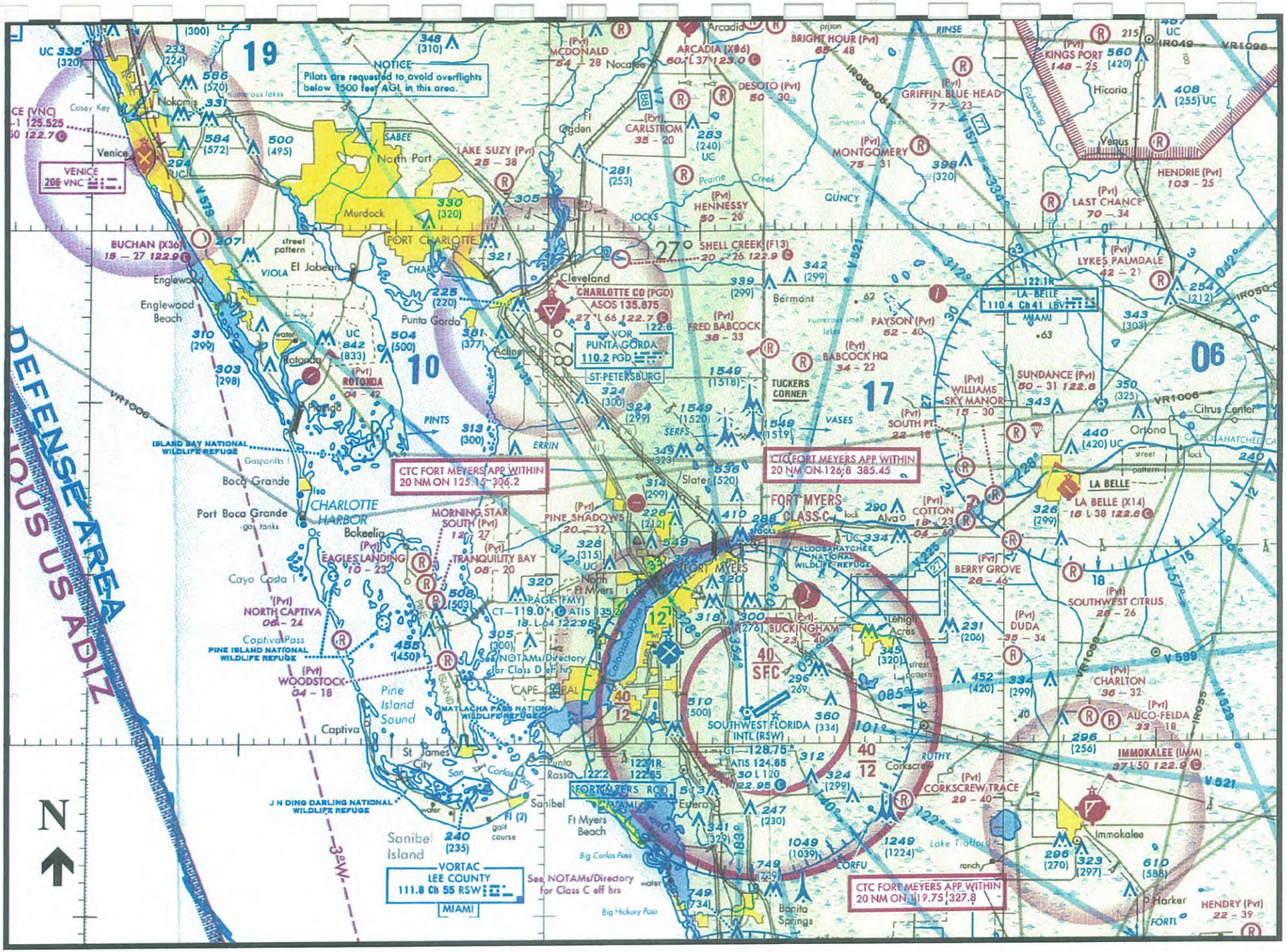


EXHIBIT 2-18

Aeronautical Chart

Southwest Florida

AIR TRAFFIC CONTROL TOWER AND COMMUNICATIONS

Presently Page Field has a contract ATCT which is operated by trained personnel from 7 a.m. to 10 p.m. every day of the week. The ATCT is located approximately 982 feet to the northwest of the Runway 5-23 centerline and approximately 995 feet to the northeast of the Runway 13-31 centerline. The Page Field ATCT provides two primary functions for the airport: local control and ground control operations. These services are handled through two separate frequencies, 119.0 MHz and 121.7 MHz respectively. Additional air traffic services are provided to the users of Page Field via the air traffic control facilities at Southwest Florida International.

Local Control

The local controller of the Page Field ATCT is primarily responsible for the separation of aircraft operating within the airport traffic area and those landing on any of the active runways. The primary responsibility of the local controller is arranging inbound aircraft into a smooth and orderly flow while at the same time sequencing departing aircraft into this flow. This coordination of arriving and departing traffic is limited to the areas of the Class D and Class E airspace for Page Field.

Ground Control

The ground controller is responsible for the separation of aircraft and vehicles operating on the ramp, taxiways, and any inactive runway. This responsibility includes aircraft taxiing out for takeoff, aircraft taxiing into the terminal areas, and any ground vehicles operating on airport movement areas. Page Field ground control is responsible for coordination of traffic in designated movement areas. Line of sight problems on the east end of Taxiway B due to the development of new hangars have resulted in the removal of this section of taxiway from the designated movement area classification. These areas are designated as non-movement areas and are discussed later under non-movement areas.

Approach and Departure Control

Because Page Field lies within the Air Route Traffic Control Center (ARTCC) area of responsibility for Southwest Florida International, the radar facilities at the international airport retain control of all arriving and departing aircraft on an IFR flight plan. This control is retained until either the aircraft departs the Class C airspace, the Ft. Myers ARTCC hands the aircraft over to the Page Field ATCT local control, or until they have the airport in sight and the pilot cancels the IFR clearance. On departure, if Page Field is under IFR conditions and if the control tower is operating, a pilot may pick up his IFR clearance from the ARTCC after he has become airborne. The center retains control of all arriving and departing IFR traffic within its jurisdiction.

Automatic Terminal Information Service

Automatic Terminal Information Service (ATIS) is available to pilots operating into or out of Page Field. The ATIS information provides pilots with required airport and meteorological information. This information, which is updated every time there is a significant change, is continuously broadcast on a separate frequency (135.2

MHz). The use of ATIS information greatly reduces the workload and radio time required by the air traffic controllers at the airport.

Non-Movement Areas

Due to line of sight issues, there are a number of areas at Page Field that have been designated as non-movement areas by the ATCT. As mentioned previously, one of these areas includes the portions of Taxiway B that are southeast of Taxiway A. In addition, all of the portions of Taxilane E in this quadrant of the airport are also considered a non-movement area.

Taxilane A-4 located on the northwest side of Runway 5-23 is also a non-movement area, as well as the former air carrier apron. In this portion of the airfield, the half of Taxiway B-3 that connects the former air carrier apron to Taxiway B is also designated as a non-movement area.

The final non-movement area designation at Page Field includes all portions of Taxilane D, including D-1 and D-2, and each of the aircraft parking aprons located off of Taxiway D (on the south side of the airport).

Remote Transmitter/Receiver Facility

A Remote Transmitter/Receiver (RTR) facility is located on the north side of the airfield. This facility is approximately 909 feet to the northeast of the Runway 13-31 centerline, almost directly abeam the Runway 13 threshold. RTRs are unmanned communications facilities that can be remotely controlled by ATCT personnel. This facility serves to extend the communication range of the ATCT facilities at Page Field.

Remote Communications Outlet

There is an FAA Remote Communications Outlet (RCO) located on the south side of the airfield. This facility is approximately 1,025 feet to the southeast of the Runway 5-23 centerline and just north of Danley Drive. Like RTRs, RCOs are unmanned communications facilities that can be remotely controlled by ATCT personnel. However, this facility, which is named the Ft. Myers RCO, helps extend the communication range of the Miami Flight Service Station to better serve the Southwest Florida area.

AIRPORT IMAGINARY SURFACES (FAR Part 77 Surfaces)

All airports in the country have a three dimensional imaginary surfaces plan that represents each airport's navigable airspace requirements as dictated by Federal Aviation Regulation (FAR) Part 77. Part 77 establishes standards for determining obstructions and publishes the design criteria used to construct the surfaces tailored for each specific airport. This plan is designed to preserve safety for aircraft flight operations and is used to keep the designated airspace free from all natural or manmade objects. The surfaces are like a bowl above the airport with long approach surfaces extending up and out from the runway ends. These surfaces surrounding the airport are also used to analyze all existing, future or proposed tall structures as to their potential for creating a hazard for aircraft operating at Page Field. If a structure does penetrate these surfaces, then it must be identified and either properly painted or equipped with approved obstruction lights. A FAR Part 77 Imaginary Surfaces Plan is

included as part of the airport plan set. Page Field has a local agreement with the City of Fort Myers to help control obstacle penetrations to these surfaces. The two agencies work together to protect the airspace environment around the airport. (also see "Airport Hazard District")

AIRPORT ENVIRONMENT

Information pertaining to the airport environment of Page Field is provided in the following sections. This information has been divided into the three categories of airport property boundary, land use, and environmental data. Later chapters of this master plan incorporate greater detail pertaining to these elements of Page Field, including an updated Airport Property Map, Land Use Plan, and an Environmental Overview chapter.

Airport Property Boundary

The airport property of Page Field encompasses approximately 616 acres. The northern portion of this property falls within the limits of the City of Ft. Myers while the southern portion lies within an unincorporated portion of Lee County.

The airport is situated to the south of downtown Ft. Myers, west of Interstate 75 (approximately 3.5 miles via Colonial Boulevard), and just east of Cleveland Avenue (U.S. 41). The northern boundary of the airport essentially runs along North Airport Road, between U.S. 41 and the Ten Mile Canal. There is a 600 foot by 2,600 foot track of undeveloped land on the north side of North Airport Road that belongs to the airport. U.S. 41 bounds the airport to the west, with the exception of a 600 foot by 600 foot tract of land to the west of the runway protection zone for Runway 13. The eastern side has no significant road bounding it. Instead, the Ten Mile Canal and Seminole Gulf Railroad provide the eastern boundary of the airport property. Finally, the southern boundary follows the curved alignment of Danley Drive. There is also a 500 foot by 1,300 foot parcel owned by the county as part of the airport expansion to the south of Danley Drive at the corner created with U.S. 41. Additionally, there are three smaller parcels located along Danley Drive on the south side of the road.

Land Use

The City of Ft. Myers and Lee County have assigned land use and zoning designations to property within their respective jurisdictions. Existing and future land uses on and off airport property are important considerations with respect to the current and future development of the airport and community. Compatible land use issues and considerations will be utilized in the development of later chapters in this master plan. For now the following sections provide a brief overview of the land use features that can be found on airport property and in the areas surrounding Page Field.

On Airport

There are currently five different land use categories for the 616 acres that make up Page Field. These include:

- Airfield Operational
- Aeronautical
- Commercial
- Public Facilities
- Recreational

The most prominent land use for the airport is Airfield Operational. This category of land use covers all of the area around the two runways, within the building restriction line (BRL) and the runway visibility zone (RVZ). The various BRLs for Page Field are reflected on the Airport Layout Plan. Aeronautical land is found between North Airport Road and the BRL in the north quadrant with an area of non-aviation commercial depicted where the former terminal building exists. Aeronautical land is also found between Fowler Street and the BRL in the west quadrant and in the south quadrant from Danley Drive north to the BRL. In the east quadrant Aeronautical land includes an area from Ten Mile Canal west to the BRL. Between Fowler Street and U.S. 41, the land is designated as Commercial where Page Field Commons exists. The area north of North Airport Road, adjacent to Fowler Street is shown as public facilities. This area includes the Shady Rest Care Pavilion and Children's Center. To the South on the corner of South Road and US 41 the other public facilities land is shown which depicts the Florida Highway Patrol offices. To the east of the FHP offices adjacent to South Road, the only recreational land on airport property exists. This area includes a couple of baseball fields and tennis courts.

Foreign Trade Zone

Foreign Trade Zones have emerged as an important economic development tool used by many localities to attract and retain new business and industry. Both Page Field and the Southwest Florida International Airport have been included in the Ft. Myers Foreign Trade Zone (No. 213). A Foreign Trade Zone is a site within the United States, in or in proximity to a United States Customs port of entry, where foreign and domestic merchandise is considered to be in international commerce. Foreign or domestic merchandise may enter a zone absent formal customs entry or payment of custom duties or government excise taxes. No duties are paid on goods that are rejected, damaged, destroyed or discarded, and no duties are paid on goods that are re-exported directly from the trade zone.

Storage, testing, relabeling, repackaging, repairing, assembling, and manufacturing are just seven of a number of processes that merchandise entering a trade zone may undergo. In cases where a final product is imported into the United States, customs duty, and excise taxes are due, but only at the time of transfer from the zone and formal entry in the United States. In fact, the National Association of Foreign Trade Zones (NAFTZ) points out that the duty paid is the lower of that applicable to the product itself or its components. Zones therefore give users opportunities to realize customs duty savings while, at the same time, benefiting from flexible methods of handling merchandise.

Off Airport

There are four primary land use designations for the area surrounding Page Field. These include:

- Mixed Use
- Industrial
- Public/Utility/Institutional
- Residential

The most predominant of these land uses around the airport property is Mixed Use. With the exception of two Industrial areas, all of the land immediately surrounding the airport property line is Mixed Use. Typically, Mixed Use areas around the airport have high intensity commercial and residential development. The first of the two Industrial areas is located off of the northeast corner of the airport. It begins on the north side of North Airport Road, and then runs east, primarily on the north side of Colonial Boulevard. The second Industrial area extends off the southeast corner of the airport property and primarily extends south centered along the Ten Mile Canal and the Seminole Gulf Railroad. A block of Public/Utility/Institutional use land lies to the west of the airport, on the opposite side of U.S. 41.

Airport Hazard District

Subdivision III of the Lee County Land Development Code creates an Airport Hazard District. This Airport Hazard District was created to protect the airspace, noise, and zoning regulations involved with Page Field, the Southwest Florida International Airport and all other existing state licensed airports and heliports (public or private) within the county's jurisdiction.

Based on the Lee County Land Development Code, the specific purpose and intent of the Airport Hazard District is to:

- Promote the maximum safety of aircraft arriving and departing from county airports.
- Promote the maximum safety of residents and property within areas surrounding the county airports.
- Promote the full utility of county airports, so as to ensure the maximum prosperity, welfare, and convenience to the Lee County and surrounding county area and their residents.
- Provide building height standards within the imaginary (FAR Part 77) surfaces of the airports.
- Provide development standards for those land uses within prescribed noise zones.
- Provide guidelines for prevention of airspace obstructions and incompatible land uses in the areas surrounding the county airports.

The Airport Hazard District was updated on August 31, 1994. Because a portion of Page Field's operational airspace overlies the City of Ft. Myers, Lee County and the City have worked out an inter local agreement to ensure continued protection of Page Field's airspace.

Environmental Data

Construction improvement projects at the airport will require environmental permitting through numerous agencies, each with its own criteria and focus. Future development of the airport and the integration of environmental permitting will be critical to the success of each project as well as to the success of the airport. Coordination with the appropriate agencies for permitting requirements will be made as projects are funded. Page Field falls under the jurisdiction of the South Florida Water Management District. This agency will review and permit all construction projects at the airport to ensure compliance with the Conceptual Permit Application for the airport.

The Environmental Overview chapter of this study will provide greater details related to the environment of the airport. This portion of the study will analyze the following topics:

- Vegetative, Wildlife, and Endangered Species
- Water Resources (including surface and ground water)
- Flood Hazards
- Air Quality
- Wetlands and Biotic Communities
- Section 4(f) Lands
- Historical and Archaeological Sites
- Energy Supply and Natural Resources
- Construction Impacts
- Drainage and Hydrology

The Environmental Overview portion of this study will also prepare an assessment of the existing and potential noise impacts at the airport.

Chapter Three - Aviation Activity Forecasts

INTRODUCTION

This chapter identifies the forecast level of aviation activity for Fort Myers Page Field (FMY) to be used as a foundation for subsequent planning activities in the Master Plan Update. Aviation activity forecasts provide the benchmark against which the adequacy of existing airport facilities are evaluated.

Forecasting future activity remains both an analytical and subjective process. This is particularly true of forecasts that deal with general aviation activity. The ability to develop mathematical projections of future activity levels has been complicated by the failure of general aviation to fully correlate to general socioeconomic factors at many of the nation's airports. This has often required the identification of alternative projection techniques to identify the potential level of general aviation activity at individual airports. Regardless of the projection methodology employed, assumptions must be made as a part of the forecast process about how activities might change in the future. This chapter outlines socioeconomic conditions in the Page Field market area, discusses general aviation industry trends, overviews projection techniques and presents projections of aviation activity for a twenty-year planning period covering the following items.

Based Aircraft
- Total Based Aircraft
- Fleet Mix

Annual Operations
- General Aviation
- Military
- Instrument
- Local / Itinerant

Peak Activity
- Peak Month
- Average Day
- Peak Hour

FORECAST CONSIDERATIONS

Preparation of activity forecasts for Page Field must take into consideration a variety of factors that influence the level and nature of aviation. The Airport is affected by a number of local as well as regional and national trends and considerations that combine to influence the type and level of airport activity at the facility. These considerations provide the basis for the development of a set of assumptions that are key elements of the overall forecast process. The following sections present general information relative to inputs and considerations that have been used in the process.

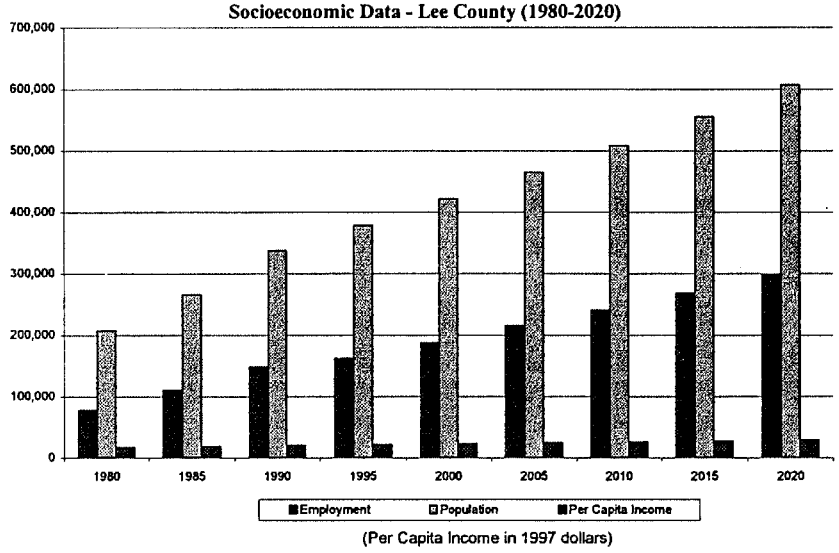
Socioeconomic Factors

Local fluctuations in population, employment and per capita income have been found to sometimes be a key consideration in the identification of existing and future aviation activity trends. Intuitively it is apparent that the level of airport activity is higher in areas having large population concentrations than it is in smaller more rural

communities. Further, it has also been found that higher disposable income or per capita income has also sometimes been a factor in the rate of growth in activity. These considerations are often a key to the preparation of aviation forecasts as they frequently have a highly correlative relationship to aviation activity. For instance, a growing population with increased disposable income may spend more on air travel, increasing the business potential of airport and aircraft services.

As such, review of historical socioeconomic trends along with anticipated changes in these trends is an often-used approach in forecasting an indication of future aviation activity. As an initial step in the forecast process a variety of data relating to key socioeconomic indices were identified and analyzed in the projection process. This information included population, employment patterns and per capita income for Lee County as a whole. A summary of these historic variables and future projections for each variable is included in **Figure 3-1**.

Figure 3-1
Socioeconomic Data - Lee County (1980-2020)



(Per Capita Income in 1997 dollars)

Historic and Projected Population

Historic and projected population information for Lee County and the City of Fort Myers was obtained from data compiled by the University of Florida's Bureau of Economic and Business Research (BEBR).

Historic Population

Lee County has experienced significant population growth over the last 30 to 40 years. The population of Lee County in 1960 was 54,539 people. By 1980 the County had grown by nearly four times to 207,907. The following ten years saw the resident population grow by 62.4 percent to 337,618 in 1990. Since 1990 the rate of population growth in Lee County registered an overall growth of 12.2 percent with population estimated to reach 412,860 people in 1999, up 8,754 from the 1998 population.

Age Distribution

The 40-54 age group has shown a high overall increase (138%) from 1980 (28,993) to 1995 (68,868) and accounted for approximately 18 percent of the total population of Lee

County in 1995. The age group of 55-64 years comprised 23.1 percent of the total Lee County population in 1995. Approximately 15 percent (55,692) of the Lee County population fell between the years of 65-74 in the same year while the population of senior citizens, aged 75 and over, accounted for 11 percent of the entire County population in 1995. The smallest segment of the population in 1995 (4.6 percent) was between 15 and 19 years of age. In short, the population of Lee County displays a higher percentage of persons in the older age cohorts than the statewide or national average. While individuals in the 45-64 age group are often at their highest income potential the influence that the age distribution has on the propensity for growth in general aviation activity may need to be considered in the forecast process.

County Distribution

According to data gathered from the Lee County Economic Development Office, Lee County's 1997 population of 394,244 people accounted for 51.5 percent of the combined populations of Lee, Collier, Charlotte, Hendry and Glades Counties. These five counties generally comprise the Southwest Florida region and can be considered the area within which Page Field must compete for market share. Within Lee County, about 62 percent of the population resides in unincorporated areas and roughly 23 percent or 90,026 in Cape Coral. Fort Myers showed a 1997 population of 46,522 people, about 12 percent of the total population of Lee County. Fort Myers Beach (6,034) and Sanibel (5,884) comprise roughly three percent of the County's total population.

Projected Population

According to the BEBR, by 2005 the population of Lee County will increase to 465,336 persons, rising by 10.3 percent from the estimated 421,804 persons for the Year 2000. Extended forecasts by the BEBR estimated the population of Lee County to reach 508,261 by 2010 and increase overall 9.2 percent by the Year 2015 to 555,146 people. The population of Lee County is estimated to reach 606,355 by the Year 2020, which represents an increase of nearly 50 percent over the current level of population in Lee County. Thus, it is anticipated that Lee County will experience a significant level of population increase over the course of the airport planning period, and this could impact the level of aviation activity at the area airports.

Age Distribution

There are currently about 82,767 (1999) people within the 40 to 54 age group. This group is expected to increase to about 86,660 by the Year 2000. This age group typically has the propensity to have a significant impact on the level of general aviation activity and the use of general aviation services. This particular age group is expected to experience a continuous increase over the course of the planning period reaching 102,091 by the Year 2010 and 109,355 by the end of the planning period.

The population of people aged between 55 to 64 is expected to increase by 4.3 percent over the current level based on data provided by the BEBR. There are currently 47,417 people in this age group, and are estimated to reach 51,172 individuals by the Year 2000. This group will continue to increase over the planning period reaching 66,381 by 2005, 82,517 in 2010 and 127,510 by the end of the planning period. Overall the percentage of persons in the 55 to 64 age group will increase from 12.1 percent of total population to roughly 21 percent by the end of the planning period. The rate of growth in this age group is roughly twice the national average for this population cohort.

Employment

Historic Employment

Based on data contained in the Lee County Demographic Profile for 1998, the Fort Myers-Cape Coral metro area ranks high among the nation's job growth areas. An October 1996, Forbes Magazine study indicated that over the six-year period 1990 to 1996, the metro area had a 23 percent net increase in jobs. The Lee County unemployment rate of 3.4 percent in 1997 was lower than the U.S. national average of 4.9 percent.

Based on the BEBR statistics the total employment in 1980 was 78,187 people and increased to 110,641 people over the following five-year period. Employment continued to grow reaching 148,202 people in 1990 and growing by 9.8 percent to reach 162,798 by 1995.

Projected Employment

Total employment in Lee County was estimated to be 177,247 in 1998 with a projected increase to 187,585 by the Year 2000. Total persons employed are forecast to show a 2.8 percent annual rate of growth between 2001 to 2005 reaching 215,750 by the end of this period. Between 2005 and the end of the planning period, the annual rate of growth in employment is estimated to be 2.2 percent with total employment expected to reach 240,647 in 2010, 268,417 in 2015 and 299,392 employed persons by 2020. Although the annual rate of employment growth is expected to decline, overall employment will continue rising and depict an average growth of 2.4 percent from the Year 2000 to 2020. Thus the overall employment picture displays steady growth indicating an expanding economy and a growing business base. Given the utilization of general aviation by corporate and business entities, this growth in employment could result in increased demand in the Page Field market area.

The Lee County Economic Development Office estimates government employment to show the largest percentage increase (31.7 percent) from 1995 to 2005 of any of the employment categories in Lee County. Unfortunately, growth in government employment does not necessarily translate into significantly increased demand for general aviation services. Retail Trade and the Services sectors are projected to increase from 36,102 and 46,754 employees to 46,390 jobs (up 28.5 percent) and 60,313 jobs (up 29 percent) respectively by 2005. Employment in the Finance, Insurance and Real Estate sector is expected to increase from 8,308 jobs in 1995 to 9,103 jobs in 2005. The 10 year forecast shows a 9.6 percent increase in jobs for this professional employment sector. The forecast of Service industry employment projects the largest numerical expansion of new jobs of any sector with this category comprising a total of 30.1 percent of total employment in Lee County by 2005. The manufacturing sector is also expected to see a 19.3 percent increase in employment to 7,491 people by 2005. The overall annual growth rate in total employment is expected to be 2.45 percent in Lee County from 1995 to 2005, which is close to double the national average of 1.3 percent. A growth in total employment as well as in individual sectors are likely to use general aviation services will be evaluated to determine if there is a basis for development of a forecast.

Per Capita Income

Demand for aviation services and airport facilities can often be correlated to per capita income. Per capita income is the estimated average amount per person of total money income received during the calendar year for all persons residing in a given political jurisdiction. Obviously the utilization of aviation services including such things as aircraft ownership or the propensity to charter an aircraft can significantly be affected by the level of income available to defray the costs of these services. The basic assumption being that as income increases there is a corresponding increase in the potential for a portion of that income to be spent on general aviation aircraft or services rendered by general aviation.

Historic Per Capita Income

Data derived from BEBR reports placed the level of Per Capita Income for Lee County in 1980 at $17,364. Per Capita Income grew between 1980 and 1995 to $21,523. Based on BEBR estimates growth in per capita income has been under one percent annually through the mid-1990's with the level of per capita projected to reach $22,835 by the end of 1999.

Projected Per Capita Income

Per capita income is forecast by the BEBR to reach approximately $23,175 (in 1997 dollars) by the Year 2000 displaying an annual increase of 1.5 percent. Overall a six percent increase is forecast between 2005 to 2010 with total per capita income reaching an estimated $26,035 by the end of the period. This reflects a 1.2 percent annual increase for the period 2005 through 2010. This 1.2 percent growth rate is forecast to continue through the end of the planning period (2020) with per capita income projected to reach $29,192 (1997 dollars).

In addition to socioeconomic factors, occurrences within the general aviation industry can influence forecast activity levels at an airport. Industry related considerations can include national trends, legislation as well as regional and local considerations. The influence that these factors play at a particular airport need to be considered separately since they may not be displayed in the historic trend data.

General Aviation Industry Trends

The FAA's Fiscal Year Forecast 1998-2009 defines "General Aviation" as a "diverse range of aviation activities and includes segments of the aviation industry except commercial air carriers (including commuter/regional aircraft) and military. Its activities include the training of new pilots, sightseeing, the movement of large heavy loads by helicopter and flying for corporate/business or personal reasons. Its aircraft range from a one-seat single engine piston to the long-range corporate jet. General aviation (GA) provides on the spot efficient and direct aviation services that commercial aviation cannot or will not provide. GA has provided efficient aviation services and it is important for policy makers, opinion leaders and the general public to understand the vital role general aviation plays in the national economy and air transportation system."

Trends in the overall general aviation industry along with changes in local demographics, conditions, and facilities will be utilized in the development of the activity forecasts at FMY. For this reason it is important to overview in general terms the factors and considerations that have influenced general aviation nationally as well as in the immediate Page Field market area. The last 15 to 20 years has been a difficult period for the general aviation industry. During this time frame the industry saw the cessation of production of single engine aircraft

and light twins by the major manufacturers and also saw an overall decline in the total number of general aviation aircraft. The industry was battered by a number of factors. These included two major economic recessions, the impact of product liability and litigation, which contributed significantly to a rapid rise in the cost of purchasing an aircraft. The effect of these factors most significantly impacted two segments of the industry consisting of the single engine piston market and the multi (twin) piston market. The period of the eighties also saw the first time that the industry failed to rebound with improving economic conditions. Unlike previous recessionary cycles where the industry saw a downturn and then returned to a period of growth with economic recovery, the general aviation industry did not experience such a return after the recession of the early 1980's nor did it show recovery after the recession of the early 1990's. A clear indicator of this is the fact that U.S. Gross Domestic Product during the eighties and early nineties grew at an average annual rate of 2.0 percent, while domestic piston engine aircraft shipments declined by 95 percent. Several other indicators of the distress that typified the industry up through the early 1990's include:

- General aviation aircraft shipments fell from a high of 17,811 in 1979 to just 811 in 1993. This significant downturn was the basis used to suggest legislation to aid the industry in 1994.
- The active general aviation fleet fell from a high of 213,300 in 1984 to 176,006 in 1994.
- The FAA noted in their Aviation Activity Forecasts 1995-2006 that "Over the last ten years, annual claims paid by manufacturers have increased from $24 million to over $210 million despite an improved safety record."
- The total number of student pilots, total private pilots and the number of hours flown by general aviation aircraft all experienced significant decline up through 1994.
- In 1980 there were 29 U.S. and 15 foreign manufacturers of piston aircraft, by 1994 there were none U.S. and 29 foreign manufacturers of these same aircraft types.

Despite these adverse considerations, it is important to remember that general aviation activity remains the most significant sector in the aviation industry. In 1991, the latest inventory available, there were 670 airports in the United States that had commercial service certificates in addition to serving the general aviation community. At the same time, there were an additional 17,647 active airports and heliports, including Page Field, used exclusively by general aviation aircraft. According to FAA documentation, there were a total of 187,312 active general aviation aircraft in 1997 compared to 7,028 commercial and 16,000 military aircraft. Additionally, general aviation's dominance in the overall aviation picture is further supported by the fact that of the 616,340 certificated pilots in 1996, with general aviation pilots accounting for over 79 percent of that total. General aviation also accounted for over 72 percent of the total 120.3 million aircraft operations that occurred in the United States and its territories in 1997. There is nothing to indicate that the overall dominance and importance of general aviation will undergo any significant or fundamental change in the future, particularly in light of the changes that have begun to emerge as a result of the passage of the General Aviation Revitalization Act of 1994. The signing of this act has provided a renewed era of optimism for the general aviation market, which led to a turnaround in the industry.

In 1999, with five years passing since the enactment of the General Aviation Revitalization Act, the GA industry has experienced an upturn in an array of activity categories. In 1996, the industry advanced its efforts and ideas into constructive actions to stimulate the much-needed demand of GA aircraft and supporting services. After passage of the General Aviation Revitalization Act, two of the largest manufacturers of small aircraft resumed production. The Cessna Aircraft Corporation reentered the single-engine piston aircraft market for the first time since 1986. Also, the New Piper Aircraft Corporation emerged from Chapter 11bankruptcy protection to restart

and increase its production schedule. Other aircraft manufacturers and aviation suppliers also began hiring and expanding their production.

In 1997, there was an increase in the activity recorded at the FAA and contract towers combined, resulting in the highest level of activity since 1990. GA activity had much to contribute to this effect with operations totalling 36.6 million, an increase of 3.8 percent over 1996. According to the FAA the active GA aircraft fleet increased for the first time since 1992. In addition, the number of hours flown by GA aircraft recorded its first increase since 1989. The active GA fleet totaled 181,341 on January 1, 1996, an increase of 6.3 percent over the 1994 estimate. These aircraft flew an estimated 25.5 million hours in CY 1995, an increase of 6.7 percent. Based on the data compiled by the General Aviation Manufacturers Association (GAMA) for the first three-quarters of 1998, there were a total of 1,495 GA aircraft deliveries at $3.86 billion. In 1997, the first three-quarters recorded $3.19 billion through 960 GA aircraft shipments. The FAA projects the GA active fleet will total 212,960 in 2009, an increase of almost 24,000 aircraft (1.0 percent annual growth) over the 12-year forecast period.

The current FAA Aviation Activity forecast (1998-2009) assumes that the business use of GA aircraft will expand at a more rapid pace than personal use of GA aircraft. This is largely reflected in the changing character of the GA fleet mix. The more expensive and sophisticated turbine-powered part of the fixed wing fleet is expected to grow at a faster rate than are the piston aircraft categories. Overall, revitalization of the industry has had a positive effect on the number of active general aviation aircraft and the operations these aircraft conduct in the United States. This has been significantly facilitated by the strong economic cycle of the mid to late 1990s. In addition to the TAF, the FAA also publishes an annual report of forecasts for aviation activity as a whole for the nation. The most recent edition of this report, FAA Aviation Forecasts, includes the fiscal years 1998 through 2009. In this edition the FAA states, "The commercial aviation industry recorded its fourth consecutive year of strong traffic growth, while the general aviation industry sustained its recovery by registering its third consecutive increase in aircraft shipments." It is interesting to note that while the decline in the general aviation industry affected the nation as a whole, its impact on Page Field coupled with a decline in market share has had a significant impact on the Airport, and it is only now recovering.

Regional Market Considerations

Page Field is situated in an area that has a number of other aviation facilities providing services to general aviation users. Not the least of these is the increasing role that Southwest Florida International Airport has been playing in providing facilities and services to general aviation aircraft users. A review of the capability of Page Field to capture its share of general aviation activity versus other competing airports in Southwest Florida was prepared based on annual general aviation operations from 1980 through 1997. This analysis provides a comparison of general aviation activity trends occurring at other airports in the region. The market share technique compared general aviation activity at Page Field to that of five other regional public use airports; Southwest Florida International, Immokalee, Charlotte County, La Belle, and Naples. Historic data for each of the airports was obtained from the Florida Aviation System Plan's database and supplemented with the historic Terminal Area Forecast (TAF) numbers generated by the Federal Aviation Administration. The total GA aviation activity for all six airports was compared to that of each individual airport to determine the respective percentage of the overall GA activity for which each accounted, as outlined in **Table 3-1**. The table denotes strictly general aviation activity. Military, commuter, air taxi and air carrier activity was not included in the operation totals.

TABLE 3-1
AIRPORT MARKET SHARE (GA only)

Year	Page Field	Immokalee	Southwest International	Charlotte Co.	La Belle	Naples
1980	43%	8%	0%	16%	4%	28%
1981	41%	9%	0%	16%	5%	29%
1982	44%	8%	0%	12%	5%	32%
1983	42%	8%	1%	11%	6%	32%
1984	42%	9%	2%	10%	6%	32%
1985	37%	8%	1%	16%	5%	33%
1986	36%	8%	2%	16%	5%	33%
1987	34%	8%	1%	22%	4%	31%
1988	38%	10%	2%	28%	6%	17%
1989	35%	8%	1%	26%	5%	25%
1990	31%	8%	2%	23%	4%	31%
1991	32%	7%	2%	21%	5%	34%
1992	29%	7%	2%	19%	5%	37%
*1993	30%	7%	3%	19%	5%	37%
*1994	30%	7%	3%	19%	5%	37%
*1995	34%	8%	3%	24%	6%	24%
*1996	28%	10%	4%	22%	6%	31%
*1997	27%	10%	4%	21%	6%	32%

Total may not add up to 100% because of rounding
* Numbers from TAF
Source: Florida Aviation System Plan

In 1980, Page Field was a dominant force in the general aviation market in Southwest Florida accounting for 43 percent of the market. Naples airport had the next largest share of traffic with 28 percent. Between 1980 and 1990, Page Field experienced a decrease in its share of the general aviation market dropping by roughly 12 percent over this time frame and accounting for 31 percent of the activity by 1990. The opening of Southwest International Airport and a sharp jump in GA activity at Charlotte County between 1987 and 1990 accounted for most of this decrease in market share. By 1990, Page Field no longer accounted for the largest share of GA activity in Southwest Florida and tied with Naples at 31 percent during this year.

The reduction in Page Field's share of operational activity has continued through 1997 with the Airport's share of total GA operational activity totaling 27 percent of the regional market, down 16 percent from the share experienced in 1980. During this period Naples' market share varied substantially ending in a slight increase at 32 percent. Southwest Florida International increased its share from 2 to 4 percent, attracting larger corporate and business jet activity. Labelle increased from 4 to 6 percent, and Immokolee increased from 8 to 10 percent while Charlotte County decreased slightly from 23 to 21 percent.

In order to kick-start growth at the Airport, allow the Airport to compete in the region and effectively relieve activity at regional airports with scheduled commercial service such as Naples and Southwest Florida International, improvements to Page Field were inevitable. Over the past couple of years Page Field has made a significant effort towards modernizing the Airport and improving the facilities to capture more of the Southwest Florida market share. These airfield improvements have included but are not limited to rehabilitating the aircraft aprons, taxiways and taxilanes, expanding aircraft ramps, adding additional aircraft tie-downs, building new hangar facilities, and adding a self-service fueling facility. Many of these projects have been completed, and some are on going, which should be completed before the end of this Master Plan Update.

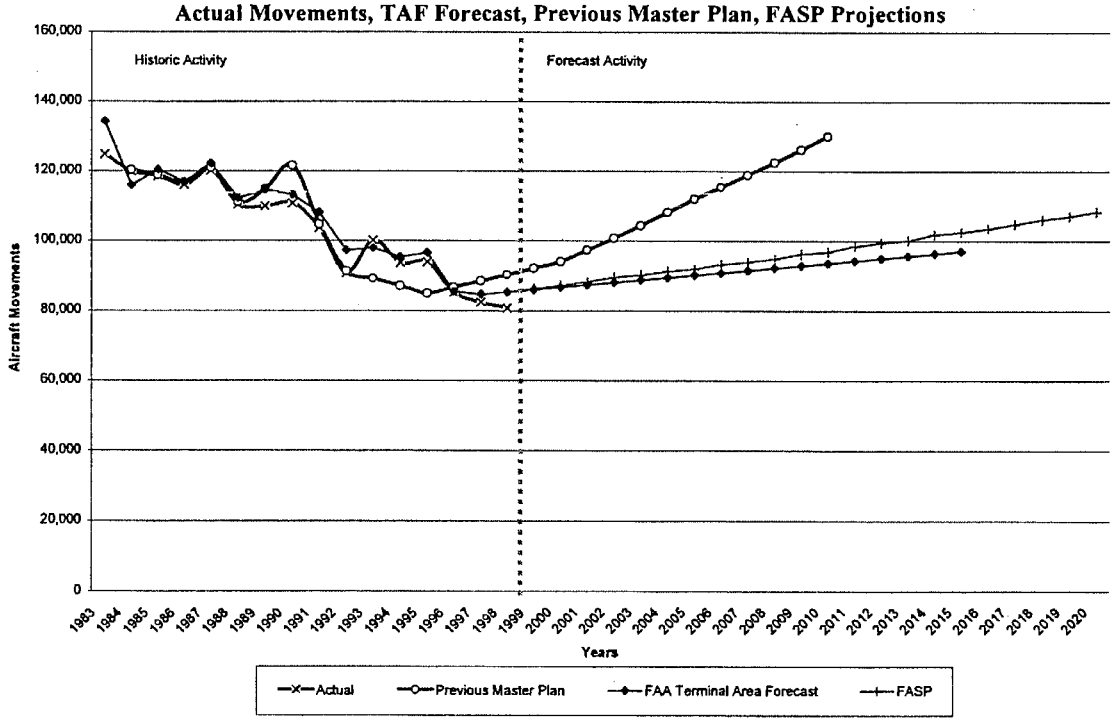
In the first seven months of 1999, operations at the Airport were approximately 22 percent higher than last year. In the opinion of airport officials, the increased number of tie-downs and improvements completed at the Airport has accounted for some of the increase in traffic. Of the five regional airports, excluding Southwest International Airport, Page Field is the only airport in which pilots can make an Instrument Landing System (ILS) approach, a Non-Directional Beacon (NDB) approach, a Very High Omni-directional Range (VOR) approach and Global Positioning System (GPS) stand alone non-precision approaches. Due to the variety of approaches available at Page Field and the increased number of flight training activity, many pilots are flying from Naples and Charlotte County to Page Field to practice the various precision and non-precision approaches. Local operations have also increased since the beginning of the year due to the well-established flight schools at Page Field.

PREVIOUS AVIATION ACTIVITY FORECASTS

Three separate aviation activity forecasts have been prepared for Page Field over the past several years. These forecasts consist of those developed in the 1993 Airport Master Plan, the Florida Aviation System Plan, and the Federal Aviation Administration's (FAA) Terminal Area Forecast.

In 1995, Leigh Fisher Associates updated the forecasts for Southwest International (RSW) and included the results of the Page Field Master Plan update done in 1993 as the current forecasts for this airport. Although new forecasts are generated as part of this master plan update, the data contained in previous studies proves valuable basis for comparison purposes. **Figure 3-2** shows the historic annual aircraft operations at Page Field along with the forecast activity outlined in the 1993 Airport Master Plan, the 1997 FAA Terminal Area Forecast, and the 1998/99 revised FASP forecast.

Figure 3-2
Actual Movements, TAF Forecast, Previous Master Plan, FASP Projections



1993 Page Field Airport Master Plan

The last master plan developed for Page Field was completed in 1993. This study included forecasts of aviation activity which were projected for an 18 year planning period. The base year for these forecasts was 1992. A summary of the 1993 Master Plan forecasts, outlining total annual operations and based aircraft, are presented in **Table 3-2**.

TABLE 3-2
1993 MASTER PLAN FORECASTS

Year	Annual Operations	Based Aircraft
Base Year		
1992	91,349	226
Forecast		
1995	85,000	185
2000	94,000	205
2005	112,000	245
2010	130,000	285

Source: 1993 Airport Master Plan.

The 1993 Airport Master Plan indicated an expected decrease between the 1992 total of 91,349 to 85,000 annual operations in 1995. Similarly, the number of total based aircraft was projected to decrease from 226 in 1992 to 185 in 1995. Beyond 1995, the previous Airport Master Plan projected an average annual growth rate of 2.0 percent and 1.3 percent respectively for annual operations and based aircraft.

Following an initial increase in traffic in 1993, actual operations have decreased to 81,046 annually in 1998. Based aircraft, however, have increased from the 1992 level of 226 to a current level of 255 rather than experiencing the decrease that was projected in the previous master plan for this period.

Florida Aviation System Plan

The Florida Aviation System Plan (FASP) is a broad blueprint that guides the development of Florida's public airports. This plan is necessary to ensure that airports work together effectively as a statewide transportation system, provide a link to the global air transportation network, and effectively interface with any regional surface transportation.

The latest comprehensive version of the FASP (1992 - 2010) was based on data collected up to and including 1991. The forecasts associated with this version of the FASP appeared to have been very optimistic for FMY. The 1995 projections included 140,000 annual operations and 255 based aircraft. While the forecast of based aircraft contained in the FASP is relatively accurate, the operational projections significantly exceed the actual operational activity being experienced at FMY. The Florida Department of Transportation (FDOT) Aviation Office initiated an update to the FASP in late 1998 to early 1999. FASP forecasts were revised recently using the FAA's historical TAF data through 1997 as outlined in **Table 3-3**.

TABLE 3-3 1998/99 FASP FORECASTS	
Year	**Annual Operations**
Base Year	
1997	84,624
Forecast	
2000	87,270
2005	91,902
2010	96,863
2020	108,442

Source: FDOT Aviation Office Non-Official Forecast

The updated FASP forecast indicates an increase in activity from 87,270 annual operations projected in 2000 to 108,442 operations by 2020 for an overall increase of 28 percent or an average annual compounded growth rate of approximately 1.1 percent. Based aircraft are projected to increase from 255 to 337 during the same period for an overall increase of 32 percent or an average annual compounded growth rate of 1.2 percent.

FAA Terminal Area Forecasts

Terminal Area Forecasts (TAF) are prepared by the FAA to meet the planning needs of their offices concerned with future traffic levels at the nation's airport facilities. Except for specific regional or state requests, the airports included in the FAA's TAF report must meet at least one of the following criteria:

- Have an existing FAA tower.
- Have an existing FAA Contract tower.
- Be a candidate for an FAA tower.
- Currently receive or expected to receive scheduled air carrier or regional/commuter service.
- Currently exceed 60,000 itinerant or 100,000 total aircraft operations.
- Report 10 or more based aircraft on the latest available Airport Master Record (FAA 5010 form).

Page Field currently has a FAA contract tower and more than 10 based aircraft

Table 3-4 depicts the projections contained in the 1997 TAF for Page Field. The FAA-TAF projections were developed based on a top down forecast technique employing a regression-based analysis using various national economic indicators as the independent variables.

TABLE 3-4 FAA TERMINAL AREA FORECASTS	
Year	**Annual Operations**
Base Year	
1997	84,624
Forecast	
2000	86,691
2005	90,139
2010	93,586
2015	97,034

Source: FAA Terminal Area Forecast, 1997.

Based on the TAF, annual operations for Page Field are projected to increase from 84,624 annually in 1997 to 97,034 total operations by the Year 2015. This represents an annual growth rate of roughly less than .75 percent.

PROJECTION TECHNIQUES AND PROJECTIONS

Projection Techniques

The development of aviation activity forecasts involves the utilization of various analytical techniques and the subjective judgement of the forecaster to identify trends and their relationship to fluctuations in aviation activity in given markets. Simple projection of past trends is often not enough to realistically estimate what may or may not occur in a market. If past trends had been employed solely for projecting future general aviation activity the impact of the General Aviation Revitalization Act would have been completely missed as a significant variable in the process. As a result there is the necessity to subjectively evaluate the outcome of the trend data and compare the results of the analytical stage with an evaluation of factors and considerations that may not be reflected in the trend data.

The analytical phase of the forecast process employs various trend analysis techniques using different assumptions and variables. Typically, these forecast approaches will employ a variety of local or market area socioeconomic characteristics in an attempt to determine if there is a correlation between trends in the community and the level of aviation activity. Information relating to changes in population, employment, income and/or business patterns will be compared against a variety of aviation indicators. Aviation factors most often used in analytical approaches include operations and based aircraft. Often comparisons between various indicators of community transition and aviation activity results in strong relationships commonly referred to as correlation, between these trends in the local market area. These relationships can then be extended into the future to provide a projection of future activity levels.

Preparing activity forecasts seldom relies on just one analytical process. By far the most reliable approach to estimating aviation demand is to apply a variety of analytical methods using different assumptions and variables. In so doing it is possible to develop a forecast envelope within which future activity levels are most likely to occur. The analytical techniques most often employed in aviation forecasting consist of historical trend line analyses (often called a time series projection), and multiple regression analyses which analyzes a variety of different local indicators and then compares these to historic aviation activity levels. Another commonly used technique for forecasting activity at general aviation airports is the operations/based aircraft technique. This approach relates to the FAA's identification of the nationwide trend of an increasing number of operations per each based aircraft.

Based Aircraft

A key indicator of demand at an airport is tied to the number of aircraft that base at the facility. Based aircraft levels and projections of how these levels are going to change over the course of the planning period provide the basis of assessing the adequacy of a number of airport facilities including the sizing of aircraft parking aprons and the sizing and number of aircraft hangar space. To provide for subsequent planning analyses the based aircraft fleet mix is divided into single engine, multi engine, jet aircraft and rotorcraft categories.

Historic Based Aircraft

Historical based aircraft figures for FMY have fluctuated considerably over the past 15 years at Page Field. These fluctuations are due in part to a seasonal influx or persons and aircraft that is attributable to the desirable weather in the FMY vicinity during the winter months. The historic information for based aircraft at Page Field has been compiled from data contained in the Florida Aviation System Plan (1983-1994) and FAA Airport Master Record (1995-1998). **Table 3-5** delineates the level of based aircraft for the period 1983 through 1998.

The historic based aircraft data presented in **Table 3-5** is the only available data that provides a historic view of aircraft being based at Page Field. A review of the Table results in some concern relative to the accuracy of the listed totals. Very seldom do most airports experience consistent levels of based aircraft for multiple years. Further, the fluctuations occurring in several of the years, such as the jump from 228 in 1995 to 304 in 1996 or the drop from 304 in 1997 to 255 in 1998 appear to be somewhat extreme. While it can not be absolutely ascertained that these are counting anomalies, consideration was given to this potential in the development of based aircraft forecasting.

Table 3-5
HISTORICAL BASED AIRCRAFT

Year	Single-Engine	Twin-Engine	Jet	Rotor	Total
1983	200	40	0	3	243
1984	186	33	0	6	225
1985	212	49	1	2	264
1986	212	49	1	2	264
1987	212	49	1	2	264
1988	212	49	1	2	264
1989	183	25	6	2	216
1990	198	25	3	2	228
1991	198	25	3	2	228
1992	198	25	3	2	228
1993	198	25	3	2	228
1994	198	25	3	2	228
1995	198	25	3	2	228
1996	260	45	8	7	320
1997	275	21	4	4	304
1998	211	30	7	7	255

Source: Florida Aviation System Plan (1983 – 1994).
* FAA Airport Master Record (5010 form, 1995 –1998).

Projected Based Aircraft

As a starting point in developing a projection of based aircraft, regression analyses were performed comparing historical based aircraft levels against various Lee County socioeconomic indicators such as employment, population and per capita income, both individually as well as cumulatively. A total of four regression analyses were created for each category of aircraft in an effort to project the total based aircraft level for the planning period at Page Field. These regressions consisted of: aircraft type, (single engine, multi engine, etc.), versus employment, population and per capita income; aircraft type versus

employment; aircraft type versus population and aircraft type versus per capita income. The dependent variable in all regressions was based aircraft and the independent variables are employment, population and per capita income. The socioeconomic variables are derived from BEBR historical information and projections from 1983 to the Year 2020 previously discussed in this chapter.

Similar to the relationship of general aviation activity and Gross Domestic Product the level of correlation that was obtained from the regressions using local socioeconomic data were not sufficient to support a relationship between socioeconomic factors and based aircraft levels. While impossible to definitively determine, a possible factor contributing to this lack of correlation may be the reliability of the based aircraft data. This concern was noted earlier in this analysis. While employment, population and per capita income do not reflect a correlation with based aircraft, increases in these factors intuitively influence the level of demand for aviation facilities in a community. Airports in metropolitan areas routinely experience higher levels of based aircraft than those situated in small rural communities. As a result, subjective judgement suggests that these considerations can not be totally discounted in the examination of potential demand at Page Field. The lack of correlation between socioeconomic growth and GA activity is not uncommon particularly due to the past impacts of product liability and rising costs on the general aviation industry. Condition of the facilities and loss of regional market share is also a contributing factor. Several trends in the Lee County area could combine to provide a basis for growth in aviation demand. The County is projected to experience substantial population growth most of which will be the result of in-migration from other locales. This could also lead to the in-migration of additional aircraft that come with these new residents. Additionally, the age structure of Lee County with higher percentages of persons in the 40 and above age cohorts means that many of these individuals possess the potential to have higher disposable incomes. With this higher income there logically is the potential to see a greater propensity to have some of this income spent in the aviation sector. Thus, while there were not strong correlation, this may be due to anomalies in the based aircraft levels that tended to skew the analyses. With this in mind other factors require consideration in determining the future based aircraft potential.

Based on discussions with airport management, Page Field has experienced constant and significant demand for additional aircraft hangar facilities. Although t-hangar improvements have been implemented at Page Field in the recent past, demand for new hangar construction continues to exceed supply. Additionally, the major Ramp Rehabilitation project, which was being implemented through early 1999, resulted in major improvements to all parking ramps on both the Airport's north and south sides. Prior to this project many of the aircraft parking areas were exhibiting signs of severe distress with the increasing potential of foreign object damage to aircraft. Clearly, the condition of basic facilities that are required by aircraft owners can be a significant factor in their decision to base at a particular facility, particularly given today's cost of aircraft and in an area where other aviation facilities exist.

Based on the substantial improvements currently being undertaken at the Airport, and assumptions relative to management's efforts to attract additional aviation services, based aircraft are projected to increase through 2020 at a rate just under one percent annually. Overall, the total number of based aircraft at FMY are expected to increase over the planning period from the current 255 based aircraft level to 315 by 2020 or growth of roughly 23.5 percent over the planning period. This level of based aircraft growth considered the impact that Southwest Florida International Airport would have, particularly on the potential expansion of the turbo-prop and turbo-jet aircraft categories. These figures are reflected in **Figure 3-3** and depicted in **Table 3-6**. It should be noted that the base year for the forecast of based aircraft is 1998.

Figure 3-3
HIstoric & Forecast based Aircraft - FMY (1983-2020)

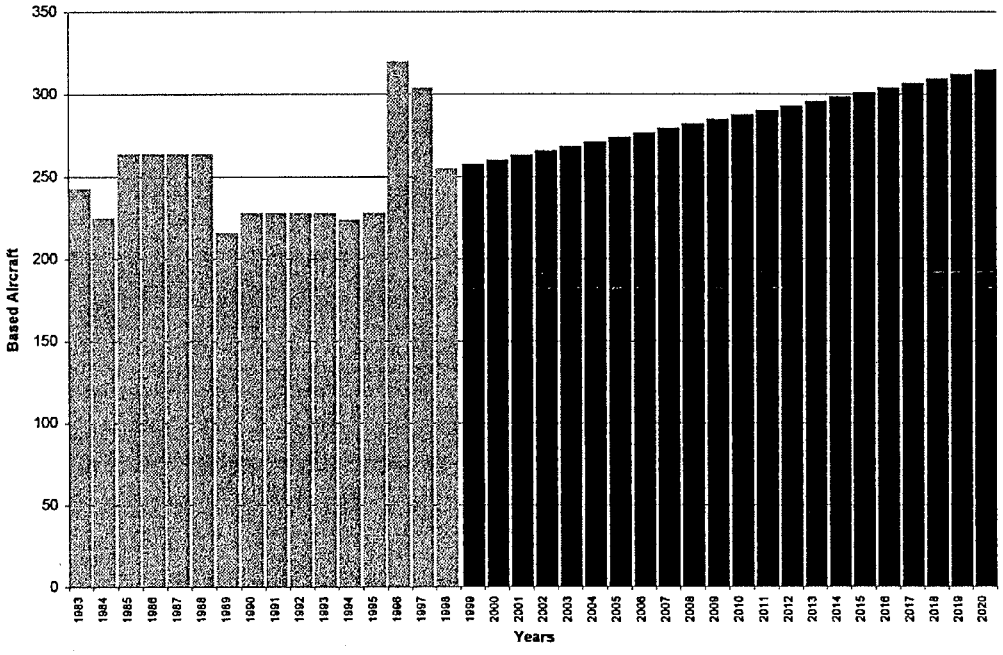


TABLE 3-6
FORECAST BASED AIRCRAFT

Year	Total
Base Year	
1998	255
Forecast	
2005	273
2010	286
2020	315

Source: Birk Hillman Consultants, Inc., 2000.

Projected Fleet Mix

In addition to projecting the level of total based aircraft, it is also important to the planning process to project the fleet mix of those aircraft. A breakdown of the based aircraft fleet mix is necessary because different types of aircraft require different facilities. For example, jet aircraft typically need larger hangars, require greater wing-tip clearances, and have different fuel requirements than single-engine piston aircraft. Therefore, a projection of the anticipated fleet mix is necessary to determine the type and size of facilities necessary at the Airport over the course of the planning period. The based aircraft fleet mix is determined by studying the historic fleet mix,

examining national trends, and interviewing airport users. It is important to reiterate that some concern over the accuracy of historic based aircraft data exists. The lack of any fluctuation in the total number of aircraft or in the distribution of aircraft within that total displayed in the data for two extended periods is not a typical occurrence at most general aviation airports. However, given the fact that this is the only historic based aircraft data available, it has had to form the basis of the fleet mix analysis.

As a starting point in the analysis a review of the nation's general aviation fleet distribution was undertaken. Every year, an estimate of the fleet mix for the nation's active general aviation aircraft is published as part of the FAA's fiscal year forecasts. Based on the FAA's data, the projected mix of general aviation aircraft types for the nation will increase through the Year 2009. Leading these increases are jet aircraft (up 2.6 percent), followed by rotorcraft (up 0.7 percent), single-engine (up 0.3 percent), and twin-engine aircraft (up 0.1 percent). The FAA's projection of continued growth in these segments of the general aviation fleet has been most recently re-affirmed in presentations made at their Aviation Forecast conference conducted on March 24 and 25, 1999. As noted at this conference there continues to be strong optimism associated with the continued strength and growth in all segments of the general aviation fleet with the exception of piston rotorcraft. Strong growth is expected in the turbojet fleet displaying the continued importance of business and corporate applications of general aviation aircraft. Page Field is expected to be a recipient of a portion of the growth in all components of the expanding general aviation fleet in the U.S.

A review of the available historic fleet mix data for Page Field shows that currently 82.8 percent of the based fleet consists of single-engine, 11.8 percent are twin-engine, 2.7 percent are jet, and 2.7 percent are rotorcraft. This compares to the national fleet mix that is comprised of 74.3 percent single engine piston, 8.4 percent multi engine piston, 3.0 percent turboprop, 2.9 percent turbojet and roughly 3.6 percent in the rotorcraft category. A direct cross comparison between the categories used in the Page Field data and the FAA's database is difficult due to differences in the way the FAA defines some of the aircraft classes, however some conclusions can be drawn. Page Field has consistently seen a higher percentage of single engine aircraft in its fleet than displayed in the national data running between nine and eleven percent higher in this category over the past seven years. Comparison of the twin engine data at Page Field to the FAA's statistics is complicated by differing aircraft class definitions. However, assuming that the vast majority of the turbo-prop fleet is twin engine and adding that to the multi engine piston category a rough comparison can be made. Based on this approach Page Field's based twins have remained slightly below the national average over the last seven years. Based turbojet aircraft at Page Field were well below the national fleet average over most of the last seven years. It is believed that some of this condition is attributable to the influence that facilities at RSW may have exerted in the market area with RSW capturing a portion of the turbojet fleet and particularly the large components of that fleet. By 1998 Page Field's level of based turbojets was essentially equal to the level in the national general aviation fleet. A very similar trend to that of the turbojet category has also displayed itself in the rotorcraft category. The FAA national growth rates for each type of aircraft provided the primary basis of fleet mix growth and were applied to the forecast of future aircraft projected to be based at FMY. Additionally, information gathered from the airport management staff was utilized to adjust the based aircraft fleet mix percentages where such adjustments appeared warranted.

Several assumptions have guided the development of the aircraft fleet mix numbers and percentages. These include the following:

- Single Engine Piston aircraft will continue to exceed the national fleet percentages at Page Field. This will be driven by the influx (migration) of new aircraft, replacement of existing aircraft and by the availability of facilities at the Airport.

- Twin Engine based aircraft will grow driven by the strength of the turbo-prop fleet and as a result of new in migration of new aircraft.
- The Airport level of based turbojet aircraft is anticipated to follow the national fleet growth trend with the number based at Page equaling the national fleet percentages over the planning period.
- Of the based jets at Page Field, it is anticipated that the fleet will be typified by the smaller components of the business/corporate jet fleet such as the Cessna Citation II, and III, Lear 35 and Beechjet to name a few. Large based jets are anticipated to opt for RSW. These aircraft could include such models as the Falcon 900B, Canadair Globemaster and Gulfstream G-V. This is consistent with information obtained through airport management and staff interviews.
- Page Field will see continued strength in the rotorcraft category, due in part to its proximity to many of the potential users of helicopters including the media and potential governmental agencies

These based aircraft fleet mix projections are presented in **Table 3-7**.

TABLE 3-7
FORECAST BASED AIRCRAFT FLEET MIX

Year	Single-Engine		Twin-Engine		Jet		Rotor		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Aircraft
Base Year									
1998	211	82.8%	30	11.8%	7	2.7%	7	2.7%	255
Forecast									
2005	223	81.7%	34	12.5%	8	2.9%	8	2.9%	273
2010	230	80.4%	37	12.9%	10	3.5%	9	3.1%	286
2020	249	79.2%	42	13.3%	13	4.1%	11	3.5%	315

Source: Birk Hillman Consultants, Inc., 2000.

Operations

The FAA defines an operation as either a single aircraft landing or a single aircraft takeoff. The level of aircraft operational activity is a primary consideration in determining the adequacy of key portions of the airfield. As such, it is important to define the level of future operational activity so that a determination of the adequacy of the Airport to meet future demand can be determined in subsequent portions of the planning process.

Historic Operations

Historic total operations data was obtained primarily from the Airport Activity Reports, and was compared to information from the TAF and from the 1993 Master Plan Study. The total number of annual operations at FMY has been divided into three categories of activity, consisting of:

- General Aviation (Local Operations & Itinerant Operations)
- Air Taxi
- Military

It is also necessary to define the extent to which the general aviation activity consist of local operations (within the immediate airport vicinity and most often training activity) versus those operations that arrive at the airport from outside the area, commonly referred to as Itinerant Operations. This information is a necessary element of calculating the level of airfield capacity.

General Aviation aircraft are defined as all civil aviation operations other than scheduled air services and non-scheduled air transport operations held for either remuneration or hire. Since 1984, following the opening of Southwest Florida International, general aviation operations (including air taxi), have accounted for over 99% of FMY's activity. Air Taxi aircraft are defined as aircraft with a maximum seating capacity of 60 seats or less or a maximum payload capacity of 18,000 pounds or less carrying passengers or cargo for hire or compensation. In the case of most general aviation airports the air taxi component generally consists of typical general aviation aircraft that have been chartered for passenger or cargo activity. In fact the casual observer would not be likely to differentiate an aircraft used for air taxi purposes from any other aircraft at the Airport. The FAA states that typical air taxi load factors range from one to three people.

Military aircraft movements can be defined as any US Armed Forces or US Coast Guard aircraft operation at the Airport. According to the FAA 5010 data, historical TAF and airport activity records maintained by the tower, over the past ten years, FMY has experienced activity in all but the commercial categories of commuter and air carrier classifications. The FAA defines air carrier operations as those operations conducted by scheduled and nonscheduled (charter) commercial service air carriers operating aircraft with more than 60 seats. Commuter operations cover those operations conducted by regional/commuter airlines with aircraft having 60 seats or less. The remaining operations, such as private or business operations, fall under local and itinerant general aviation. **Table 3-8** outlines the total operational activity for all categories of aircraft activity that has taken place at Page Field since 1983.

TABLE 3-8
HISTORICAL AIRCRAFT OPERATIONS

Year	Annual Operations
1983*	147,458
1984	120,353
1985	119,078
1986	116,855
1987	120,921
1988	111,086
1989	110,610
1990	111,380
1991	103,997
1992	91,349
1993	100,656
1994	94,273
1995	94,243
1996	85,443
1997	82,619
1998	81,046

* Includes Air Carrier operations
Source: Airport Activity records.

As outlined in **Table 3-8** the level of total operational activity at Page Field has tended to mirror the trends in the overall general aviation industry through the 1980's and 1990's. While activity has decreased over the time frame presented in the table, it is important to note that Page Field remains a highly active general aviation reliever facility. The impact of opening Southwest Florida International Airport in May of 1983 is apparent in the above Table. When compared with the growth of market share by RSW as discussed earlier, much of the initial drop in total operational activity can be directly attributed to the impact of opening this facility.

Historical General Aviation Operations

By far the most significant component of total aviation activity at Page Field consists of General Aviation activity. Overall general aviation (GA) activity at Page Field has decreased from a high in 1983 of 124,760 operations (before the opening of RSW) to 80,851 operations in 1998. The decrease in activity may be attributed to the overall state of the general aviation industry during much of the period and the impact that opening RSW and its growth in regional general aviation market share, and the greater competition for market share by other airports in southwest Florida. **Table 3-9** depicts the historic general aviation operations at Page Field including the air taxi operations from 1983 to 1988.

TABLE 3-9
HISTORICAL GA OPERATIONS (inc. air taxi)

Year	Annual Operations
1983	124,760
1984	119,885
1985	118,518
1986	115,940
1987	120,063
1988	110,397
1989	109,871
1990	110,787
1991	103,618
1992	90,758
1993	100,093
1994	93,627
1995	93,891
1996	85,221
1997	82,337
1998	80,851

Source: Airport Activity record

Projected General Aviation Operations

Development of projections of future general aviation activity levels is a fundamental element of the planning process and a requirement for assessing existing facilities and determining what, if any, future facilities are required. A variety of techniques are available for developing these projections and one of the most common approaches employed involves the use of mathematical regression analysis. A variety

of regression based forecast approaches were attempted. However, it was somewhat apparent that, due to the external influence of the opening and growth of RSW and its affect on Page Field, use of traditional mathematical trend analysis might not fully identify potential market activity. Further, it was also believed that the use of historic data dating back as far as 1983 tends to significantly downplay the emergence of a turnaround in the general aviation industry stemming from the General Aviation Revitalization Act of 1994. Based on FAA forecasts of future general aviation indicators this consideration must be an element in any projection of future general aviation activity. Thus, while a variety of regression-based analyses were developed each showed either marginal or no correlation and a continuation of the decline in activity over the course of the planning period. It is strongly believed that there are factors that are not addressed by historic trend data that are emerging in both the industry and specifically at Page Field that will have a positive influence on activity levels. The regression based analyses included:

- **Total Air Taxi and General Aviation Activity versus Population and Per Capita Income**
- **Total Air Taxi and General Aviation Activity versus Population and Employment**
- **Total Air Taxi and General Aviation Activity versus Population, Employment and Per Capita Income**

The results of the regression analyses may prove useful, defining a no-action scenario at Page Field. However, they are not believed to be indicative of the Airport's potential, nor do they incorporate the impact that a number of positive improvements at the Airport will have on future growth. For this reason, alternate projection techniques were identified and employed.

A commonly used technique for determining expected levels of aircraft operations at general aviation airports relates directly to the number of aircraft based at the Airport. Knowing the historical basis for both based aircraft and operations, relationships can be determined to give an indication of future activity. The historical annual movements for the past ten (1989-1998) and five year (1994-1998) periods were compared to the based aircraft statistics for each period. It was determined that during the ten-year period from 1989 through 1998, there were an average of approximately 397 operations per each based aircraft. During the five-year period from 1994 through 1998, the operations per based aircraft averaged 337. This compares to a 1998 average of 317 operations per based aircraft. Comparing this data to projections of future FAA activity workloads at towered airports, to the projections of active general aviation fleets and to the projections of general aviation hours flown, an indication of future growth or contraction in operations per based aircraft can be defined. This information can then be used as a basis of projecting future activity over the course of the planning period. It is noted that the FAA outlines an estimate of 492 operations per based aircraft as an estimate of total GA operations in AC 150/5300-13, Appendix 5, paragraph 2a, when specific data is not available.

This technique was employed in conjunction with the assumption that the drop in airport traffic has bottomed out in 1998 and will begin a slow upward trend. This assumption is based on the reemergence of the general aviation industry as defined in FAA forecasts and the following Page Field specific factors:

- The decrease of General Aviation activity at Page Field is partially attributable to the condition of the facilities. Major improvements have been implemented over the last 2-3 years, which greatly improve the operational environment. The major ramp rehabilitation project will be completed by mid 1999 and these improved facilities will increase the competitiveness of Page Field.

- The privately operated FBO located at the Airport ceased operation in the June 1998 timeframe. A substantial dip in operations was noted shortly thereafter but activity rebounded sharply and is anticipated to continue to do so.
- The Lee County Port Authority is now operating the only FBO at the Airport and is strongly focussed on improving facilities and upgrading services. FBO services have been proven to be a significant factor influencing decisions by general aviation aircraft owners to base and operate at one airport versus another.
- Activity during the seven month period beginning January 1999 and ending July 1999 increased by roughly 22% as compared to the same period in 1998.
- The potential addition of a General Aviation Federal Inspection Station (GAF) at the Airport will likely fuel additional growth at the Airport.

Further, the FAA has indicated that their upcoming Aerospace Forecasts 1999 – 2010 will project an increase in general aviation and air taxi hours flown of 1.4% annually, from 26,520 in 1997 to 31,414 by 2009. During the same period active pilots in the United States are expected to increase from 618,298 to 735,025 or roughly 1.5% annually. Additionally, active general aviation and air taxi aircraft are expected to grow from 194,826 in 1998 to 220,804 in 2010, an increase of roughly 1.1% annually, which is slightly higher than the previous years estimate of just under one percent annually.

With the projection of hours flown by general aviation aircraft increasing at a rate faster than the growth in the number of aircraft, a national trend of increased operations per based aircraft is expected. This, coupled with on-going actions by the Lee County Port Authority to improving the quality of facilities and services at the Airport will significantly improve the Airport's competitive position in the Southwest Florida area. These factors are used as a basis for developing projections tied to levels of operations per based aircraft. This analysis identifies the historic level of operational activity on a per based aircraft basis, quantifies any trends displayed in the historic information and based on a set of planning assumptions projects the level of operations per based aircraft over the course of the planning period. Based on a review of the historic data two operational scenarios were developed.

Historically operations per based aircraft have fallen over the past ten years. This is due to the influence of product liability considerations, a deep recession in the early 1990's and the fact that the industry is just now beginning to see the benefits of the General Aviation Revitalization Act. **Table 3-10** presents the level of operations per based aircraft over the past ten years at Page Field. It should also be noted that the historic operations per based aircraft values are affected by the same concern over the accuracy of the historic based aircraft numbers as discussed in a previous section.

TABLE 3-10
OPERATIONS PER BASED AIRCRAFT

Year	Operations	Based Aircraft	Operations Per Based Aircraft
1989	109,871	216	509
1990	110,787	228	486
1991	103,618	228	454
1992	90,758	228	398
1993	100,093	228	439
1994	93,627	224	418

TABLE 3-10
OPERATIONS PER BASED AIRCRAFT

Year	Operations	Based Aircraft	Operations Per Based Aircraft
1995	93,891	228	412
1996	85,221	320	266
1997	82,337	304	271
1998	80,851	255	317

Source: Airport Activity Records.

With the considerable increase in activity being experienced in the first part of 1999 and every indication that this level will continue throughout the year, a more reasonable starting point was investigated for the general aviation operations forecast. Reviewing year to date operational statistics through July 1999 two estimates were developed relative to the 1999 activity level. The first estimate assumes the balance of activity for the remaining 5 months of 1999 will match the 1998 levels for the same period. Based on the 1999 year to date information available thus far, this would be the more conservative of the two estimates. The general aviation activity level resulting from this analysis indicates the potential for 91,923 total general aviation operations. This conservative or 'low' estimate would represent an increase of almost 14% over the 1999 activity levels. On the basis of the 'low' 1999 projection, this estimate indicates the potential for 356 operations per based aircraft.

The second estimate assumes that the balance of the 1999 calendar year activity would exceed the 1998 levels during the last five months of the year by the same percentage as the first seven months. This would result in a high estimate of 98,676 total general aviation operations. The 'high' estimate would result in an increase of roughly 22% over the 1998 activity level. This estimate of the 1999 activity also exceeds the FAA's TAF for the entire forecast period (relative to the TAF) through 2015. On the basis of the 'high' 1999 projection, this estimate indicates the potential for 382 general aviation operations per based aircraft which approaches the 10 year average of 397 operations per based aircraft.

Recognizing that a forecast represents a projection of a long-term trend, and that a trend of growth is relatively new at the Airport, a fairly conservative starting point for the GA operations forecast of 94,170 was identified for 1999. This represents 365 operations per based aircraft or roughly one third of the difference between the conservative 'low' estimate and the 'high' estimate. Although this represents a substantial increase from the 1998 operations per based aircraft levels, it is considered reasonable due to the extent of airport infrastructure and service improvements that have been implemented over the past year and a half. It is not expected that the Airport will continue to experience such explosive growth. Rather, it is felt that it is returning to the levels it would likely be experiencing had the facilities and services been upgraded in a manner to allow a level of service similar to those at other airports in the region. Ultimately, with a continued aggressive approach to improving facilities and services at the Airport, it is anticipated that the Airport will reach its ten-year average of 397 operations per based aircraft by the Year 2020. This represents an annual growth rate of roughly .4% in operations per based aircraft through the end of the planning period from the projected 1999 level or just over 1% annually relative to the 1998 level.

Total general aviation operations would grow as a result of both the increase in operations per based aircraft and as a result of the projected increase in based aircraft. When applied to the based aircraft forecasts, total operations in 2005 are estimated at 102,510, increasing to 124,898 by the end of the planning period. The total general aviation operations growth for this forecast is estimated at 32.6%, or a

growth rate of just over 1.3% annually relative to the 1999 projected levels. This compares to a total general aviation operations increase relative to 1998 of 54.5%. While an overall increase of 54.5% from the 1998 levels might normally be considered an overly optimistic assessment based on Page Field's recent activity history, it appears that the considerable improvements undertaken at Page field in the recent past will account for up to 22% of this amount (and possibly even more) in 1999 alone. **Table 3-11** presents the results of this first projection technique. This is considered the 'average' forecast.

A second estimate of total operations can be developed assuming no growth would be experienced in operations per based aircraft from the levels estimated for 1999. Based on this, operational growth would be driven primarily through the addition of based aircraft at the Airport. Since this is contrary to the trend forecast by the FAA relative to increasing operations per based aircraft, this would be considered a conservative estimate of future activity. Assuming the 365 operations per based aircraft estimate for 1999 carries through to 2020, total GA operations in 2005 are estimated at 100,043 and in 2020, 114,975. This relates to an overall increase from the estimated 1999 baseline of 22.1% by 2020 or just under 1% annually from the 1999 levels. The 365 operations per aircraft value also represent the approximate midpoint between the average 10 year and 5 year operations per based aircraft levels. This is considered the 'low' forecast.

The third and final projection employing operations per based aircraft utilizes a more aggressive assumption. This projection assumes that the aggressive approach being undertaken in improving the Airport results in activity levels exceeding the ten year average of operations per based aircraft (it was noted that the first seven of the last ten years exceeded this value). A value of 428 operations per based aircraft was used for this estimate which reflects roughly the same variation above the ten year average as the 365 estimate was below. This more aggressive forecast results in an estimated 104,977 annual GA operations by 2005 and 134,820 GA operations by 2020. This represents a 43.1% increase over the estimated 1999 activity level and a annual growth rate of just under 1.8% annually. This is considered the 'high' forecast.

TABLE 3-11
PROJECTED GA AIRCRAFT OPERATIONS (inc. air taxi)

Year	Annual Operations High Forecast	Annual Operations Low Forecast	Annual Operations Average
Base Year			
1998	80,851	80,851	80,851
1999*	94,170	94,170	94,170
Forecast			
2005	104,977	100,043	102,510
2010	114,515	105,020	109,768
2020	134,820	114,975	124,898

Source: Birk Hillman Consultants, Inc. 2000.
*Estimated

For the purposes of planning, the 'average' forecast falling midway between the low and high projections of activity will be used. As noted, the average forecast is based on the assumption that operations per based aircraft will return to its ten-year historic average by 2020. The average forecast is expected to represent the most likely future activity scenario representing neither the most conservative nor the more aggressive approach.

Figure 3-4
Annual Aircraft Operations - FMY (1983-2020)

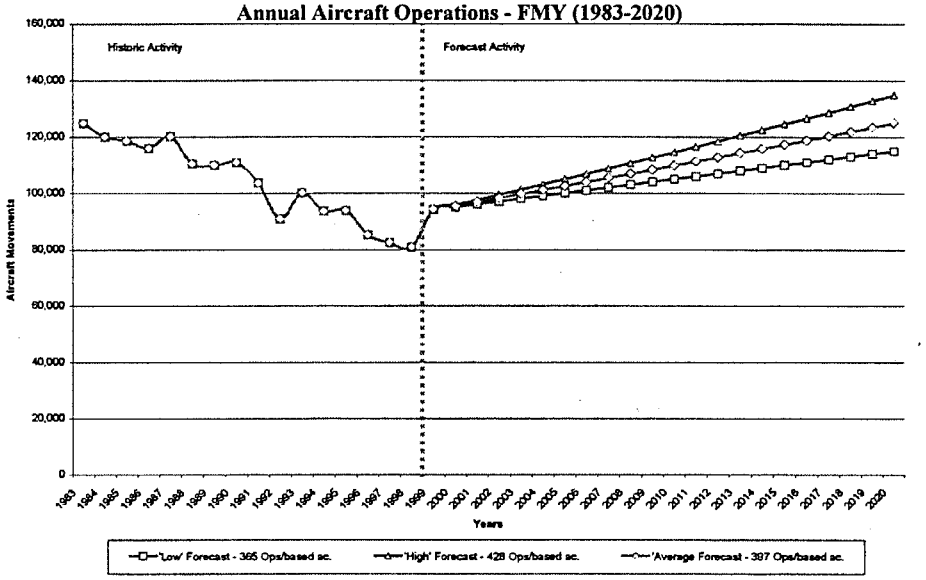


Figure 3-4 shows the trend lines for the forecasted annual aircraft operations expected at Page Field over the planning period.

Air Taxi Operations

Air taxi operations are essentially general aviation flights that are conducted on a commercial or "for hire" basis. Typically, these are non-scheduled flights, carrying a small number of passengers, to destination cities without scheduled airline service, although air taxi operations also can and do serve clients going to cities with scheduled service.

Historic Air Taxi Activity

Air taxi activity has fluctuated substantially over the last fifteen years. From an all-time high of 20,520 in 1983, operational activity dropped sharply. At no point since 1983 has the level of air taxi activity at Page Field approached the 1983 level. After dropping to 7,293 operations in 1985, air taxi operations increased, and fluctuated between 10,000 and 12,000 operations between 1988 and 1992. Air taxi activity dropped back sharply in 1993 to 6,954, continuing to decrease to 3,498 in 1996. This was followed by small increases in both 1997 and 1998 to a total of 4,160 operations. Much of the decrease in air taxi operations during the 1990's has been attributed to the impact of bank mergers that has translated into reduced utilization of general aviation air taxi operators for the transfer of bank paper and for use by bank executives. **Table 3-12** delineates the historic fluctuations in air taxi activity since 1983.

TABLE 3-12 HISTORICAL AIR TAXI OPERATIONS	
Year	**Air Taxi Operations**
1983	20,520
1984	6,021
1985	7,293
1986	9,175
1987	9,677
1988	12,024
1989	10,904
1990	10,788
1991	11,480
1992	10,099
1993	6,954
1994	5,251
1995	4,644
1996	3,498
1997	3,625
1998	4,160

Source: Airport Activity Statistics

Forecast Air Taxi Operations

From 1988 through 1992, air taxi activity represented between 9.7 and 11.1 percent of total operations or between 15.1 and 17.3 percent of total itinerant operations. Air taxi activity decreased to 4.1 percent of overall GA operations by 1996 before increasing to 5.1 percent by the end of 1998. Similarly, air taxi decreased to a low of 6.2 percent of itinerant operations in 1996 before increasing to 8.1 percent in 1998. A distinct demarcation in the level of air taxi operational activity is clearly discernable between 1992 and 1998. Over this six-year period, air taxi operations average slightly over five percent of the total annual operations.

As airport management continues to improve services at the Airport and attracts additional aviation service providers coupled with the growth projected for the Lee County vicinity, it is anticipated that Page Field based air taxi services will experience growth as a percentage of overall general aviation and itinerant traffic. However, it is not anticipated that the Airport will return to the levels of air taxi activity typified by the 1988 to 1992 time frame. The effect of increasing level of services provided at Southwest International Airport and the effect of changes in business practices in banking and other potential users of air taxi will result in a slower rate of air taxi operational growth. With this in mind, a relatively conservative growth of air taxi activity is projected beginning at the current ratio of 5.1 percent air taxi versus total operations and grow over the forecast time frame to a 7% ratio by the end of the planning period. The resultant air taxi operational levels are depicted in **Table 3-13**.

TABLE 3-13 FORECAST AIR TAXI ACTIVITY	
Year	**Annual Operations**
Base Year	
1998	4,160
1999*	4,897
Forecast	
2005	5,782
2010	6,654
2020	8,743

Source: Birk Hillman Consultants, Inc., 2000.
* Estimated

Local and Itinerant General Aviation Traffic

Local operations are those arrivals or departures performed by aircraft that remain in the Airport traffic pattern, or are within sight of the Airport. This covers an area within a 20 nautical mile radius of the airfield. Local operations are most often associated with training activity and flight instruction. Itinerant operations are arrivals or departures other than local operations, performed by either based or transient aircraft, which do not remain in the Airport traffic pattern or within a 20 nautical mile radius.

Historical and Projected Local and Itinerant Operational Split

Flight training activities at FMY have comprised the vast majority of local general aviation operations. Flight training includes student pilots who are getting started in aviation, pilots continuing their training for additional ratings, and pilots conducting the recurrent training required to maintain their rating. Itinerant general aviation operations are typically made up of business and corporate activity, air taxi operations, and private operations. Itinerant operations are most often associated with either personal pleasure flying or business and corporate aviation. Increasingly the growth in business use of aircraft has been a major force in the general aviation segment of U.S domestic aviation.

Historically, the local and itinerant activity split at FMY for the period 1989 through 1998 has averaged 37 percent local and 63 percent itinerant operations. The highest relative level of local operations occurred in 1997 with 39% while the lowest occurred in 1992 with 33%. The local itinerant split in 1998 was just under the level identified for the past ten years. Based on the historical data for the last ten years it is apparent that the level of local versus itinerant activity has remained very constant in spite of the fluctuations that have been experienced in total operational levels. For this reason it has been assumed that this pattern will continue through the planning period. Historical and projected local and itinerant operations are delineated in **Table 3-14.**

TABLE 3-14 TOTAL HISTORICAL LOCAL/ITINERANT ACTIVITY				
Year	**Local Operations**	**Local as % of Total**	**Itinerant Operations**	**Itinerant as % of Total**
1989	42,090	38%	67,781	62%
1990	42,110	38%	68,677	62%
1991	37,583	36%	66,035	64%
1992	29,964	33%	60,794	67%
1993	39,328	39%	60,765	61%
1994	34,330	37%	59,297	63%
1995	32,356	34%	61,535	66%
1996	29,006	34%	56,215	66%
1997	31,756	39%	50,581	61%
1998	29,492	36%	51,359	64%
1999*	34,843	37%	59,327	63%
PROJECTED LOCAL AND ITINERANT OPERATIONS				
2005	37,929	37%	64,581	63%
2010	40,614	37%	69,154	63%
2020	46,212	37%	78,685	63%

Source: Airport Activity Reports – Does not include military, splits based on FAA Form 7230-1.
Projections Source: Birk Hillman Consultants, Inc., 2000.
*Estimated

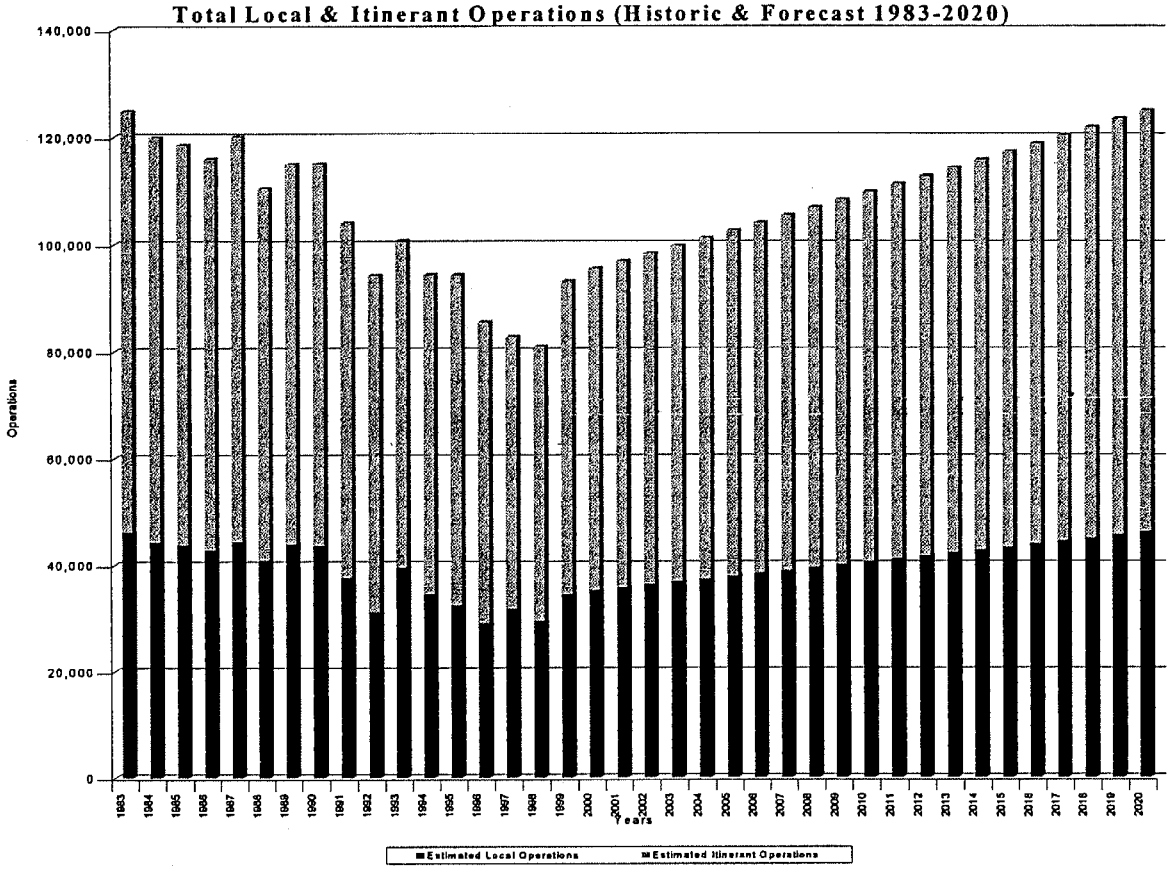
General Aviation Operations Summary

The combined total of the local and itinerant general aviation operations, forecast for the FMY are depicted in the bar chart **Figure 3-5** and shown in **Table 3-15.**

TABLE 3-15 FORECAST GENERAL AVIATION OPERATIONS			
Year	**Local Operations**	**Itinerant Operations**	**Annual General Aviation Operations**
Base Year			
1998	29,492	51,359	80,851
1999*	34,843	59,327	94,170
Forecast			
2005	37,929	64,581	102,510
2010	40,614	69,154	109,768
2020	46,212	78,685	124,898

Source: Birk Hillman Consultants, Inc., 2000.

Figure 3-5
Total Local & Itinerant Operations (Historic & Forecast 1983-2020)



Historic and Projected Military Operations

Military activity is difficult to accurately predict since it has no relationship to local market or demographic conditions. Congressional actions through much of the 1990's resulting in the downsizing of the military have influenced operations at a number of civil airports. This is certainly the case in Lee County, which has seen overall military activity decline at both FMY and RSW due to downsizing at McDill Air Force Base in Tampa and Homestead Air Force Base south of Miami. Historically, military operations over the past 16 years at Page Field have been a small portion of total aircraft activity ranging from a high of 1,053 operations in 1983 and a low of 195 operations in 1998.

Military flight activity at Page Field historically included such large aircraft as the P3 Orion and the C-130 Hercules. However, successful implementation of a voluntary restriction of four-engine aircraft at Page Field has resulted in these aircraft opting to use RSW. Military operations over the past several years have been associated primarily with Coast Guard helicopters and an occasional King Air twin-engine turboprop. Historic military operational activity is delineated in **Table 3-16**. As shown in the Table, military activity has experienced a number of sharp fluctuations over the past 16 years.

TABLE 3-16 HISTORICAL MILITARY ACTIVITY	
Year	**Annual Operations**
1983	1,053
1984	468
1985	560
1986	915
1987	858
1988	689
1989	739
1990	593
1991	379
1992	591
1993	563
1994	646
1995	352
1996	222
1997	282
1998	195

Source: Airport Activity Reports.

A review of **Table 3-16** does show one distinct change in the pattern of military activity at the Airport between 1994 and 1995 there was a sharp drop in military activity. Unlike previous occurrences the level of activity has remained distinctly lower than the pattern of the previous twelve years. To estimate future military activity at the Airport, the military activity over the past four years was averaged. This average has been extended over the course of the planning period. **Table 3-17** displays projected military operations.

TABLE 3-17 FORECAST MILITARY OPERATIONS	
Year	**Annual Operations**
Base Year	
1998	195
1999*	195
Forecast	
2005	250
2010	250
2020	250

Source: Birk Hillman Consultants, Inc., 2000.
* Estimated

Instrument Operations

Instrument operations include both those operations at Page Field that were filed under instrument flight rules (IFR) as well as instrument training activity. Thus, it should be noted that instrument operations do not just represent operations under actual instrument meteorological conditions.

Historic Instrument Operations

Over the past 10 years, instrument operations have averaged 17% of the overall activity at Page Field. The 20,880 instrument operations occurring in 1989 accounted for roughly 18% of overall operations decreasing to 14% in the 1994-1996 timeframe. Instrument activity as a percent of overall operations rebounded to 19% in both 1997 and 1998. In 1998, instrument activity accounted for 15,101 total operations. Historic instrument activity and the percentage of instrument operations to total operations at Page Field are depicted in **Table 3-18**.

TABLE 3-18
HISTORICAL INSTRUMENT ACTIVITY

Year	Instrument Operations	% of Total Operations
1989	20,880	18.2%
1990	19,557	17.0%
1991	18,878	18.2%
1992	16,494	17.5%
1993	13,989	13.9%
1994	14,790	15.7%
1995	12,967	13.8%
1996	13,291	15.6%
1997	15,546	18.8%
1998	15,101	18.6%

Source: Airport Activity records.

Forecast Instrument Operations

As noted, instrument operations as a percentage of total operations (17 percent) have remained relatively consistent over the past eleven years, although for the past two years there has been a slight jump in this percentage. This recent increase has been attributed by increased instrument training activity according to the Air Traffic Control Tower (ATCT) staff. It has been noted that flight instructors from Charlotte County Airport, as well as some from Vero Beach and Naples bring their students to Page Field for instrument flight instruction and to become familiar with operating in an ATCT controlled environment.

It is anticipated that several factors will combine to keep the level of instrument operations generally consist with the 17 percent, eleven year average. These consist of factors that could contribute to growth in instrument operations and several that act to inhibit growth, thereby fending to counter balance one another. Some of the positive things include:

- The number of student pilots has increased and instrument rated pilots have in the past been the fastest growing segment of the pilot population.
- General aviation aircraft are becoming increasingly sophisticated and capable of instrument operations.

- FMY will continue to draw in flight instruction activity due to its ILS and ATCT, without having to directly interact with large commercial aircraft as at RSW.
- With the projected growth in annual operations there will come associated numerical growth in operations both in IFR conditions and under instrument flight plans.
- Counter balancing these factors are the following considerations.
- RSW will capture a segment of the area's GA activity (particularly corporate and business jet operations) that are often inclined to operate under instrument flight rules.
- With the movement toward GPS CAT 1 and above flight procedures, several of the airports in the Region and beyond could see the development of instrument approach capabilities, potentially impact instrument flight training from other airports at FMY.

Based in part on these considerations as well as the historical trend, the projection of future instrument operations at FMY assumes a continuation of the ten-year trend over the course of the planning period. Applying the 17 percent historical factor to the projection of total operations results in instrument operations increasing from 15,101 in 1998 to 20,882 by the Year 2020. **Table 3-19** presents the forecast of future instrument operations.

TABLE 3-19
FORECAST INSTRUMENT OPERATIONS

Year	Annual Operations
Base Year	
1998	15,101
1999*	16,009
Forecast	
2005	17,139
2010	18,352
2020	20,882

Source: Birk Hillman Consultants, Inc., 2000.
*Estimated

Other Activity Categories

Scheduled passenger activity at Page Field has been prohibited since 1984 through Lee County Ordinance Number 84-12 and, more recently, Lee County Ordnance 94-09 which replaced/rescinded the earlier ordinance. Lee County Ordinance Number 94-09 prohibits "scheduled aircraft passenger traffic of any sort" at Page Field. This restriction applies "regardless of the type or size of aircraft, and regardless of the type of license or certificate held by the aircraft operator." The forecast outlined herein assumes that this restriction will extend throughout the planning period. Therefore, no consideration has been given to the potential for, or the implications of, such service.

Table 3-20 summarizes the projected operational levels for general aviation, air taxi and military activity over the course of the planning period.

TABLE 3-20
PROJECTED ANNUAL OPERATIONS

Year	General Aviation Operations[1]	Air Taxi Operations	Military Operations	Total Annual Operations
Base Year				
1998	76,691	4,160	195	81,046
1999[2]	89,273	4,897	195	94,365
Forecast				
2005	96,728	5,782	250	102,760
2010	103,114	6,654	250	110,018
2020	116,155	8,743	250	125,148

Source: Birk Hillman Consultants, Inc., 2000.
[1] Air taxi has been desegregated from the General Aviation totals.
[2] Estimated

Comparison to Previous Forecasts

Total annual operations forecast in the previous sections and reflected in **Table 3-20**, represent an average annual growth rate of just over 1.3 percent from the 1999 estimated activity level and just under 2% from the 1998 levels. Base data utilized in the forecast process, originated from the FAA 5010 form, Airport Activity Reports and were supplemented with data from the FAA Terminal Area Forecast (TAF) and the 1993 Master Plan. Annual operations as projected in the FAA's most recent TAF reflect a .75 percent average annual growth while the previous master plan reflected an average annual growth rate of 2 percent. The 1998/99 FASP revised forecast reflects an average annual growth rate of 1.1%.

The projected operations contained in this analysis indicate a reverse in the declining activity trends that the Airport has been experiencing for several years up through 1998 to an increasing trend from 1999 onward. This trend is similarly reflected in the 1993 Master Plan, the 1997 TAF and the revised FASP projections. The 1993 Master Plan indicated that the declining activity of the 1990's would bottom out in 1995 at 85,000 annual operations and increase to 94,000 by 2000. It appears that traffic has bottomed out in 1998 and is beginning to turn around putting the actual data a bit behind the previous forecast. The forecast growth in the previous master plan indicated the potential for 130,000 annual operations in 2010 versus the 110,018 projected in this analysis. Finally, the FASP reflects an increase to 96,863 by 2010 and 108,442 by 2020.

The projected rate outlined in the 1997 TAF of .75 percent average annual growth is more conservative than the growth rate 1.4 percent growth rate (from the estimated 1999 activity level) calculated in this analysis. This equates to a difference of 20,446 operations or approximately 21 percent by the Year 2015. The difference in growth rates between the TAF and this analysis is tied to the assumptions of the impact to activity that the substantial efforts that airport management has undertaken to improve the facilities and service. These improvements include the expansion of aviation related commercial development at the Airport, which has the potential to attract not only based aircraft but additional aviation activity. It should further be noted that, if the balance of 1999 experiences the same increase in activity as did the first seven months, the 1999 activity level will exceed the TAF projections for the Year 2015. Similarly, the 1999 traffic levels could easily approach the

projected activity level for 2015 outlined in the TAF. With this in mind a more aggressive estimate of activity at the Airport is required to ensure that facilities and expansion plans adequately accommodate this potential.

A comparison of the trend lines of the four projections is depicted in **Figure 3-6** and summarized in **Table 3-21.**

Figure 3-6
Annual Aircraft Operations - FMY (1983-2020)

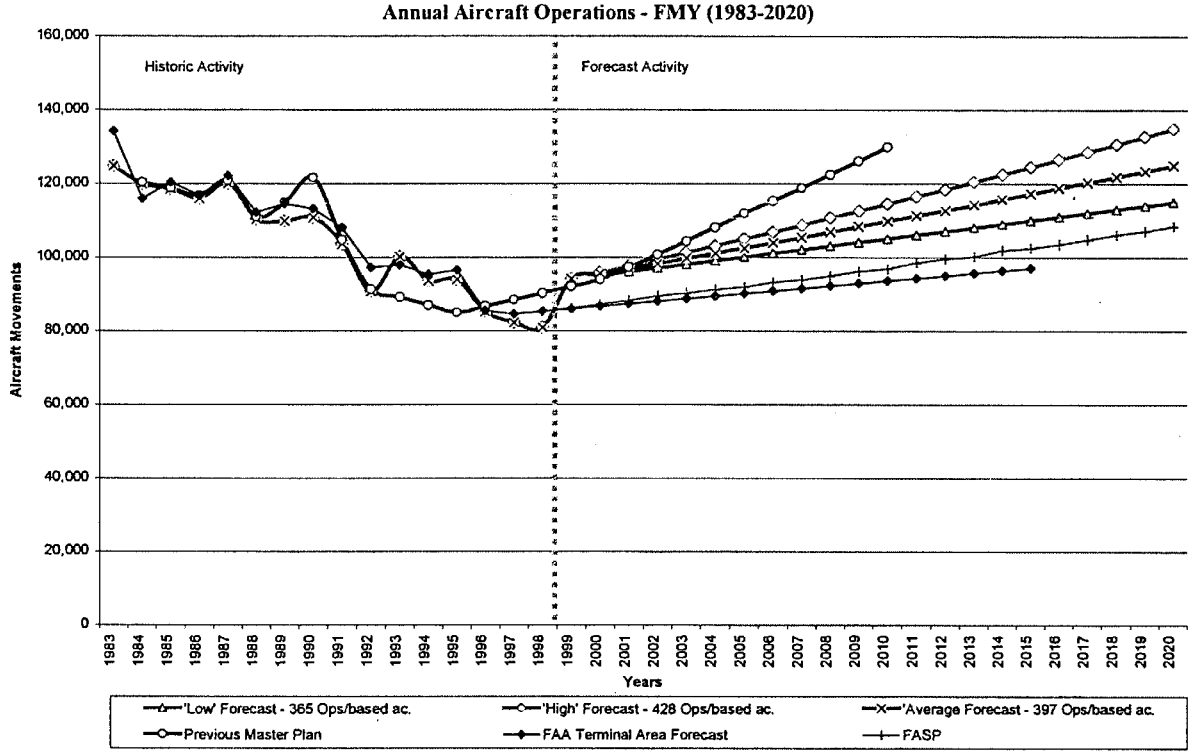


TABLE 3-21
ANNUAL OPERATIONS FORECAST COMPARISON (through 2010)

Year	1997 FAA TAF	Master Plan Update Model ("average" forecast)	1993 Master Plan	1998/99 FASP
2005	86,691	102,760	112,000	91,902
2010	93,586	110,018	130,000	96,863
2015	97,034	117,230	N/A	102,487
2020	N/A	125,148	N/A	108,442

Source: Birk Hillman Consultants, Inc., 2000.

Peak Activity Projections

Peak operational activity including peak month, peak day, and peak hour forecasts are used in the planning and sizing of future facilities and determining the Airport's ability to accommodate projected demand. Page Field experiences the highest traffic levels during the spring months of February, March and April. Of these, the month of March appeared to best represent the busiest month of operations for the Airport. Total operations were analyzed on a monthly basis for the ten-year period ending 1998. It was determined that the peak month of March accounted for an average of 10.2 percent of annual operations over this ten-year period. For planning purposes this 10.2 percent average was applied to the forecast of annual operations through the Year 2020 to estimate the peak month operations for each year.

The values for an average day of the peak month and for the peak hour were calculated using the FAA's methodology found in Advisory Circular 150/5360-7, "Planning and Design Considerations for Airport Terminal Building Development." Under this methodology, the average day of the peak month was derived by taking the number of operations calculated for the peak month and dividing that figure by the number of days in the peak month, which in this case is 31. No historical data was available to determine the peak hour operations at Page Field. A general rule of thumb is that peak hour operations at typical general aviation airports tend to range around 15 percent of the daily activity level. Thus, for planning purposes it was estimated that 15 percent of the peak month average day would be used to represent peak hour operations. Projections of future peak operations at the Airport are shown in **Table 3-22**.

TABLE 3-22
FORECAST PEAK ACTIVITY

Year	Total Annual	Peak Month	Average Day	Peak Hour
Base Year				
1998	81,046	8,267	267	40
1999*	94,365	9,625	310	47
Forecast				
2005	102,760	10,482	338	51
2010	110,018	11,222	362	54
2020	125,148	12,765	412	62

Source: Birk Hillman Consultants, Inc., 2000.
* Estimated

SUMMARY OF AVIATION ACTIVITY FORECASTS

Table 3-23 summarizes the projections of aviation activity developed for this master plan update. Activity at Page Field is expected to show growth throughout the forecast period. The overall rate of growth is not overly aggressive, but will be a departure from the experience of the Airport over the past several years. Because of improvements at the Airport based aircraft are also forecast to increase. Military activity and air taxi activity are not forecast to grow substantially, but will remain components of overall activity at the Airport. The forecasts that are delineated in the previous analysis and summarized below will be used in subsequent sections of the master plan update as input to analyze airfield capacity, define facility needs and assess facility costs and revenues.

TABLE 3-23
SUMMARY OF AVIATION ACTIVITY FORECASTS

Forecast	1998	1999*	2005	2010	2020
Annual Operations					
Total	81,046	94,365	102,760	110,018	125,148
Local	29,492	34,843	37,929	40,614	46,212
Itinerant	51,359	59,327	64,581	69,154	78,685
Military	195	195	250	250	250
Individual Operations					
Air Taxi	4,150	4,816	5,782	6,654	8,743
Instrument	15,101	15,561	17,139	18,352	20,882
Based Aircraft					
Total	255	258	273	286	315
Single-Engine	211	213	223	230	249
Twin-Engine	30	31	34	37	42
Jet	7	7	8	10	13
Rotor	7	7	8	9	11
Peak Activity					
Peak Month	8,267	9,625	10,482	11,222	12,765
Average Day	267	310	338	362	412
Peak Hour	40	47	51	54	62

Source: Birk Hillman Consultants, Inc., 2000.
* Estimated based on January through July 1999.

Chapter Four – Demand/Capacity

INTRODUCTION

The projection of aviation demand was presented through the year 2020 in Chapter Three, "Aviation Activity Forecasts." These forecasts, which included aircraft operations, based aircraft, fleet mix, and peak activity, are a part of the basis for determining whether the existing airport facilities at Page Field can meet the future demands of the users. Basic airport components such as the runways, taxiways, airspace and ground access can then be reviewed to determine their capability to accommodate the forecast of aviation demand. Subsequent analysis will address specific improvements required to improve not only the function and capability of the basic facilities to support the projected activity, but also the requirements for improvements to support these facilities. Such facilities include the apron/ramp, hangars, aircraft tiedowns, aviation fuel capacity and storage, the Fixed Base Operator (FBO), and other airport support services.

To determine whether basic airfield capacity deficiencies currently exist or might be expected in the future, the airfield was evaluated relative to the number of operations that can be reasonably handled over both an hourly and annual basis. This analysis proceeds the assessment of the various support facilities since it is usually most important to the long term viability of an airport. The outcome can have considerable impact on the location and layout of support facilities and problems associated with it are often among the most expensive to resolve. If potential deficiencies in the capacity of airfield facilities are identified, specific recommendations, including size and phasing of any new facilities will be identified in the following chapter, "Facility Requirements." Additionally, this chapter addresses the ability of the airspace to accommodate the projected activity as well as the transportation infrastructure which connects the airport with the surrounding community.

AIRFIELD CAPACITY FACTORS

A number of techniques have been developed for the analysis of airfield capacity. The method recommended by the Federal Aviation Administration (FAA) can be found in Advisory Circular (AC) 150/5060-5 Change 2, "Airport Capacity and Delay." Airfield capacity was computed using this methodology in the previous Master Plan and is the methodology also recommended by the Florida Department of Transportation (FDOT). Because of it's wide acceptance in determining airfield capacity and aircraft delay it was the methodology used in this Master Plan Update for Page Field (FMY). The following definitions are presented in AC 150/5060-5 Change 2 and will be used throughout this chapter:

- **Hourly Capacity of Runways** – The basic measure of capacity related to peak hour activity and is defined as the maximum number of aircraft operations that can take place in one hour.
- **Annual Service Volume (ASV)** – ASV is the annual capacity or a maximum level of aircraft operations that may be used as a reference in planning the runway system. ASV is used as a particularly valuable tool for long range planning of airfield facilities.
- **Annual Aircraft Delay** – Total delay incurred by all aircraft on the airfield in one year.

Airfield capacity is affected by a number of elements including airfield layout, aircraft mix index, meteorological conditions, runway use, percent arrivals, the percentage of touch and go activity, and the location of exit taxiways along the runways. When analyzed collectively, the above factors provide the basis for establishing the operational capacity of an airport. The following sections will evaluate each of these capacity characteristics with respect to FMY.

Airfield Layout

The airfield layout refers to the location and orientation of the runways, taxiways and apron areas. The runway system at Page Field Airport consists of two paved landing strips. The primary runway, Runway 5-23, has a northeast to southwest orientation. The total pavement length is 6,406 feet long by 150 feet wide, with a 459 foot displaced threshold at the approach end of Runway 5 and a 399 foot displacement of the threshold at the approach end of Runway 23. Runway 5-23 is served by a full length parallel taxiway, Taxiway A, that provides 400 feet of separation from the runway centerline to the taxiway centerline and is located on the east side of the runway. Taxiway A also provides access to the Fixed Base Operator (FBO), conventional hangars, t-hangars, and shade hangars via a variety of taxilanes and taxiway connectors. There are a total of seven exits connecting the parallel taxiway to Runway 5-23, including the exits located at each runway end. Based on the FAA's criteria and the fleet mix at FMY, the optimum exit factor relative to capacity is maximized when a runway has two or three exit taxiways within a range determined by the operations using that runway. At FMY, this operational range would be between 2,000 feet to 4,000 feet from the landing threshold. According to this criteria, Page Field has two taxiway exits for both Runway 5 and Runway 23 within this acceptable range.

Runway 13-31, the crosswind runway, has a southeast to northwest alignment. The runway is 4,912 feet long by 150 feet wide with a 700 foot displaced threshold at the approach end of Runway 13. Runway 13-31 is served by Taxiway B, a full length parallel taxiway located along the north side of Runway 13-31. The distance from the runway centerline to the centerline of parallel Taxiway B is 325 feet. Taxiway B has a total of six exits connecting the parallel taxiway to the runway. Based on the guidelines outlined in the advisory circular, Runway 13 and Runway 31 each have two exits within the respective operational range for each runway end.

The two runways at FMY are laid out in a criss-cross configuration. The intersection of Runway 13-31 is approximately 3,405 feet from the threshold of Runway 5, more than half the length of Runway 5. From the threshold of Runway 13 the intersection of Runway 5-23 occurs at approximately 2,265 feet, just about the midpoint of Runway 13-31. Until recently, FMY had land and hold short operations available on Runway 5. Under this procedure, pilots landing on Runway 5 could exit the runway before, or hold short of the intersection of Runway 13-31, thus allowing Air Traffic Control to release an aircraft departing on Runway 31. The purpose of this operation was to decrease the time between departures and increase the airfield capacity. This procedure is no longer in affect and according to Air Traffic Control Tower personnel at Page Field there are no plans to reinstate this operational procedure in the future. The procedure was indefinitely suspended due to a number of runway incursions that occurred in 1998 and 1999 throughout the U.S.

The majority of aviation development at FMY is located in the southern quadrant of the airport, between the approach ends of Runway 5 and Runway 31. This area includes conventional hangars, T-hangars, shade hangars, public parking aprons, the FBO, and other miscellaneous flight schools and aircraft maintenance facilities. The north side of the airfield consists of the newly renovated Florida Department of Law Enforcement (FDLE) office, and the newly rehabilitated aircraft tie down ramp. East of this facility, across Runway 5-23, is the Experimental Aircraft Association's facility, two rows of new t-hangars, and the SMS corporate hangar.

Instrument Approaches

Runway 5 at Page Field has an instrument landing system (ILS) for precision approaches (both vertical and horizontal guidance) to the runway. ILS allows for operations with approach minimums of 256 feet (decision

height) and one mile visibility for all aircraft at any approach speed. Because Runway 5 has no approach lighting system (ALS), the visibility requirements for the ILS approach are higher than other typical ILS approaches. According to the United States Standards Terminal Instrument Procedures (TERPS), an ALS would reduce the visibility requirements for most classes of landing aircraft to half a mile. The ILS also provides a straight-in non-precision approach to Runway 5 using just the localizer. This approach can be made with a minimum descent altitude (MDA) of 440 feet and visibility as low as one mile for aircraft with approach speeds less than 121 knots (Class A and B). Higher approach speeds require one and a quarter mile visibility. Runway 5 has a non-precision instrument approaches using the Non-Directional Beacon (NDB). The MDA for the straight-in NDB approach is 480 feet with visibility minimums of one mile for Class A and B aircraft, one and a quarter miles for aircraft having approach speeds of between 121 and 141 knots (Class C), and one and a half miles for aircraft with approach speeds of above 141 knots (Class D). Runway 5 also has a Global Positioning System (GPS) non-precision approach. For a straight-in landing on Runway 5 the MDA is 380 feet and visibility as low as one mile.

Runway 13 has two types of non-precision instrument approaches, a very high frequency omni-directional range Station (VOR) and a GPS. A straight-in VOR approach can be made with a MDA of 440 feet MSL and one mile visibility for Class A and B aircraft and one and a quarter miles for Class C and D aircraft. This approach requires either distance measuring equipment (DME) or automatic direction finder (ADF) to execute the approach to the published minimums. A straight-in GPS approach can be made with a MDA of 420 feet with one mile of visibility is required for Class A and B aircraft and one and a quarter miles for Class C aircraft.

Runways 23 and 31 both have GPS non-precision approaches. A straight-in approach to Runway 23 can be made with a MDA of 420 feet MSL and one mile visibility for Class A and B aircraft, and one and a quarter miles for Class C aircraft. A straight-in GPS approach for Runway 31 can be made with a MDA of 380 feet MSL and one mile visibility for Class A, B and C aircraft.

FMY also has radar approaches for all four runways. These approaches are considered non-precision with MDAs ranging from 440 to 480 feet MSL. The visibility minimums also vary from one to one and a half miles depending on the runway and the approach speed of the aircraft.

Aircraft Mix Index

With knowledge of the operational fleet mix, it is possible to establish the index value required to compute an airfield's capacity. This index value, simply known as the aircraft mix index, is calculated based on the type or class of aircraft expected to serve an airfield. **Exhibit 4-1** provides examples of typical aircraft for each of the FAA's four capacity classifications. The formula for finding the mix index is %(C + 3D) where C is the percentage of aircraft over 12,500 pounds, but less than 300,000 pounds and D is the percentage of aircraft over 300,000 pounds. At FMY, the current aircraft mix includes Class A and B aircraft, along with some Class C aircraft. No Class D aircraft are expected to operate at FMY during the planning period. Because of the county ordinance passed that prohibits air carrier operations at Page Field, the percentage of Class C aircraft will be small and consist of mainly corporate aviation and some military activity.

Typical class A and B aircraft operating into and out of FMY include single engine aircraft such as the Cessna 172, Cessna 210, Piper Warrior, Piper Arrow, Grumman Tiger, and the Beechcraft Bonanza. Multi engine aircraft in these categories include the Cessna 310 and 414, Piper Seminole, Piper Aztec, Piper Commanche, Beechcraft Baron, and the Beechcraft King Air. These aircraft fall into A and B classifications due to their maximum certified takeoff weight. Only a limited number of jets are included in these categories, among the most notable is the Cessna Citation Jet Series 525/ Citation I.

EXHIBIT 4-1

AIRCRAFT CLASSIFICATION

TYPICAL AIRCRAFT, BY CLASS FOR AIRFIELD CAPACITY

Class A Small single-engine, gross wt. 12,500 lbs. or less.

Mooney Ovation

Cessna 152/172
Beechcraft Bonanza
Cessna 182/210
Mooney 201/231/Ovation
Piper Warrior
Grumman Tiger

Class B Small twin-engine, gross wt. 12,500 lbs. or less.

King Air 350

Beechcraft Baron
Mitsubishi MU-2
Cessna Citation I
Cessna 310/414
Piper Seminole
Beech King Air 90/100/200/350

Class C Large aircraft, gross wt. 12,500 lbs. to 300,000 lbs.

Challenger 604

Lear 35/55
Cessna Citation II
Boeing 727/737
Douglas DC-9/MD-80
Falcon 20/50/90
Gulfstream III/IV/V
Challenger 604

Class D Large aircraft, gross wt. more than 300,000 lbs.

Boeing 747

Airbus A300/310
Boeing 747
Airbus A-340
Douglas DC-8
Lockheed L-1011
Douglas MD-11

Based on the analysis of existing activity in the prior chapter, it is estimated that during visual flight conditions approximately 2 percent of the aircraft operations at FMY are currently conducted by Class C aircraft and 98 percent by Class A and B aircraft. During instrument meteorological conditions at peak periods, it is estimated that the Class C percentages will increase to approximately 6 percent. The current fleet mix is projected to shift slightly in terms of Class C aircraft throughout the planning period. This shift is a result of an increasing business jet market. Nationwide business jets are projected to increase with more companies purchasing aircraft or opting for fractional ownership in an aircraft. As a result, an aircraft mix of roughly 95 percent Class A and B aircraft and 5 percent Class C aircraft during VFR conditions is projected. Class C aircraft are estimated to be 15 percent during IFR periods by the year 2020. The aircraft mix data is presented in **Table 4-1.**

TABLE 4-1
AIRCRAFT OPERATIONAL MIX

Year	Percent Class		
	A and B	C	D
VFR			
1998-Base Year	98	2	0
2005	97	3	0
2010	96	4	0
2020	95	5	0
IFR			
1998-Base Year	94	6	0
2005	91	9	0
2010	88	12	0
2020	85	15	0

Source: Birk Hillman Consultants, Inc., 2000.

Meteorological Conditions

Weather conditions often dictate which runway is utilized by pilots, and can significantly affect the overall capacity of the airfield. Wind conditions, cloud ceilings, and visibility all factor into the direction in which take-offs and landings at an airport generally occur, but the majority of the time it is solely determined by the prevailing winds. The type of instrumentation and the adequacy of the associated instrument approaches for the runway system will influence which runway is active during inclement weather conditions.

As the ceiling and horizontal visibility diminishes the required spacing between aircraft departing and arriving an airport increases. The increase in spacing provides the desired margins of operational safety into or out of the airport. However, aircraft operations cease entirely when conditions have deteriorated below the specified approach minimums. As the distance between aircraft increases, the number of aircraft that can operate at the airport during a given time period is reduced, thereby adversely affecting the capacity of the airfield. There are four primary measures of cloud ceiling and visibility conditions recognized by the FAA in calculating airfield capacity. These include:

- Visual Flight Rules (VFR) – Cloud ceiling is greater than 1,000 feet above ground level (AGL) and the visibility is greater than three statute miles.
- Instrument Flight Rules (IFR) – Cloud ceiling is at least 500 feet AGL but less than 1,000 feet AGL and/or the visibility is at least one statute mile but less than three statute miles.
- Poor Visibility and Ceiling (PVC) – Cloud ceiling is less than 500 feet AGL and/or the visibility is less than one statute mile.
- Below Minimums- Cloud ceiling and visibility is below stated minimums for the airport. The airport is closed for landing operations.

Based on weather data received from National Oceanic and Atmospheric Administration (NOAA) and the National Climatic Data Center, a meteorological analysis was prepared for Page Field. Hourly observations between 1990-1995 from NOAA's weather station located at Page Field were used to determine the percentage of time the airport is operated under VFR, IFR, and PVC conditions. At FMY, VFR conditions were found to occur approximately 95 percent of the time, while IFR conditions occur approximately 3 percent of the time, PVC conditions less than 1 percent of the time, and weather conditions below the published approach minimums 2 percent of the time. The percentage of IFR and below minimum conditions can have a considerable negative impact on the overall capacity of the airport from an annual service volume perspective. However, Page Field's percentage of IFR and below minimum conditions is low when compared to many other airports in the United States.

Airfield Operational Characteristics

A number of operational characteristics will also affect an airfield's overall capacity. These include the percentage of aircraft arrivals, the sequencing of aircraft departures, and the percentage of touch and go operations at an airport.

Percentage of Aircraft Arrivals

The percentage of aircraft arrivals is the ratio of landing operations to the total operations of the airport. This percentage is considered due to the fact that aircraft approaching an airport for landing require more runway occupancy time than an aircraft departing the airfield. Except in unique circumstances, the aircraft arrival-departure split is typically 50/50 at general aviation airports. The FAA methodology was used for computing airfield capacity with 40, 50, or 60 percent arrivals to measure the sensitivity of the ASV to this factor.

The 40 and 60 percent figures result in an average annual service volume variance of ±11 percent when compared to the 50 percent level, with the lower percentage (40) having the highest capacity. Discussions with airport management and airport users have indicated that arrivals were estimated to account for 50 percent of the peak period operations at FMY and that figure is not expected to change over the planning period.

Sequencing of Aircraft Departures

The ability to sequence arriving and departing operations or departures on both runways provides an increase in airport capacity that is factored into the FAA's capacity method. To facilitate this, all four runway ends have run-up provisions. However, expanded run-up areas for Runway 5, 23 and Runway 31 are needed, especially since traffic has increased and larger business jets are utilizing Page Field.

Unfortunately, the size constraint of these particular run-up areas cannot be modeled using the FAA's methodology for airfield capacity. Therefore, the airfield is considered to have no constraints with respect to sequencing aircraft departures.

Percentage of Touch and Go Operations

The percentage of touch and go operations to total operations plays a significant role in the determination of airport capacity. Touch and go operations are counted as one landing and one takeoff (i.e., two operations). These types of operations require less time and capacity than full stop operations. The higher the percent of touch and go operations, the higher the theoretical annual capacity at the airport. These types of operations are normally associated with flight training activities. FAA guidelines for calculating annual service volume require an estimate of the percent of touch and go operations occurring at the airport. Based on historical counts, the level of touch and go operations at FMY were estimated to be approximately 37 percent of the annual operations, slightly higher than the number used in the 1993 Master Plan. This percentage has been applied throughout the planning period and appears to be a good representation of touch and go activity.

Runway Utilization

Based on wind rose analysis and runway operating configurations from the previous Master Plan it was determined that the runway utilization had not changed significantly at Page Field in the past 5 years. For the capacity calculations in this analysis, 2 percent was factored into the runway utilization equation as the percentage of time the airport was closed do to inclement weather, such as fog, rain, and even thunderstorms. In both VFR and IFR conditions, Runway 5-23 is the most utilized runway accounting for approximately 55 percent utilization during VFR conditions and 95 percent during IFR conditions. Runway 13-31 is utilized approximately 25 percent during VFR and only 1 percent during IFR weather. Both runways are used approximately 20 percent during VFR and 4 percent during IFR, with Air Traffic Control sequencing aircraft for arrivals and departures. These percentages are important in computing the weighted capacity and annual service volume for the airport.

AIRFIELD CAPACITY ANALYSIS

The preceding characteristics of Page Field's capacity were used in conjunction with the methodology developed by the FAA to determine airfield capacity. As mentioned previously, this FAA methodology generates three different values for measuring airfield capacity. These include the hourly capacity of runways, annual service volume, and annual aircraft delay.

Hourly Capacity of Runways

Hourly capacity of the runways measures the maximum number of aircraft operations that can be accommodated by the airport's runway configuration in one hour. Based on the FAA methodology, hourly capacity for runways is calculated by analyzing the appropriate VFR and IFR figures in Advisory Circular AC150-5060-5 for the airport's runway configuration. From these figures the hourly capacity base (C*) is calculated by applying the aircraft mix index and percent of aircraft arrivals, the touch and go factor (T), is determined based on the percentage of touch and go operations combined with the aircraft mix index, and the exit factor (E) is calculated by applying the aircraft mix index, percent of aircraft arrivals, and the actual number of exit taxiways within the specified exit range. The calculations from the AC 150-5060-5 figures are delineated in **Table 4-2**.

TABLE 4-2 HOURLY CAPACITY OF RUNWAY SYSTEM		
	VFR	IFR
Hourly Capacity Base (C*)	102	61
Touch and Go Factor (T)	1.31	1.00
Exit Factor (E)	.94	.99

Source: Birk Hillman Consultants, Inc., 2000.

The wind direction, the percentage of IFR operations and below minimum weather conditions therefore become important factors in determining the weighted hourly capacity of the airfield. For both VFR and IFR conditions, the hourly capacity for runways is calculated by multiplying the hourly capacity base, exit factor, and touch and go factor. This equation is (Hourly Capacity = C* x T x E).

When analyzing the runway system with an aircraft mix of 2 percent Class C operations in VFR and 6 percent in IFR, 37 percent touch and go operations in VFR conditions, and a taxiway exit rating of two, existing hourly runway capacity was developed for both VFR and IFR conditions. Based on the equation above and the information included in Table 4-2, the hourly runway capacity is estimated to be 126 operations per hour under VFR conditions and 60 operations per hour under IFR conditions. The percentage of Class C aircraft activity in the future is expected to increase slightly during both VFR and IFR conditions. Changes in fleet mix can have an impact on the airport's capacity and as a result weighted hourly capacities were developed.

For calculation of annual capacity a single weighted hourly capacity is determined which incorporates VFR and IFR hourly capacities as well as periods of airport closure into a single number that better represents an "average" condition. The weighted hourly capacities, which include both VFR and IFR conditions, were calculated for the base year and for each of the three planning periods. These figures are included in **Table 4-3**.

TABLE 4-3 WEIGHTED HOURLY CAPACITY OF RUNWAY SYSTEM	
Year	**Operations per Hour**
Base Year	
1998	106
Forecast	
2005	105
2010	104
2020	103

Source: Birk Hillman Consultants, Inc., 2000.

Annual Service Volume

In order to understand the overall capacity at an airport, the Annual Service Volume (ASV) is necessary to calculate for long range planning purposes. The ASV represents a measure of the approximate number of total operations that the airport can support annually given its profile of traffic, weather, etc. In other words, the ASV represents a reasonable theoretical limit of operations that the airport can accommodate safely and with minimal delay. Using the FAA's methodology to estimate ASV, the ratio of annual demand to average daily demand

during the peak month is calculated, along with the ratio of average daily demand to average peak hour demand during the peak month. These values are then multiplied together, the result of which is multiplied by the weighted hourly capacity to compute ASV. This equation is:

Annual Service Volume = Cw x D x H

where: Cw = weighted hourly capacity
D = ratio of annual demand to average daily demand, during the peak month
H = ratio of daily demand to average peak hour demand during the peak month

The calculated ASV accounts for differences in runway use, aircraft mix, weather conditions, and other factors that occur over a single year. The ratio of annual demand to average daily demand in the peak month for Page Field was estimated at between 303.5 and 304.1 for the existing and future activity levels. For the purpose of this analysis, an average value of 303.79 was used. The ratio of daily demand to average peak hour demand during the peak month was estimated between 6.65 and 6.68. Again for this analysis an average value of 6.66 was used. The results of the calculations for ASV are included in **Table 4-4**.

ASV is the approximate measure of an airport's capability in terms of annual throughput capacity. A demand that approaches or exceeds the ASV will typically result in increasingly significant delays on the airfield. No matter how substantial an airport's capacity may appear, delays will occur even before an airport reaches its stated capacity. Capacity, in fact, is a measure of activity that does not exceed an acceptable level of delay. A number of projects that would increase the capacity at an airport are eligible for funding from the Federal Aviation Administration (FAA). According to FAA Order 5090.3B, "Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)," this eligibility is achieved once the airfield has reached 60 percent of its current capacity. This allows improvements to be made before demand levels exceed the capacity of the facility in order to avoid lengthy delays normally associated with larger scale construction projects. Future capacity levels for the airport have been calculated based on the forecasted annual operations and the respective ASV for each year. These levels are compared to the forecast of operational activity and are depicted in **Table 4-5** and can be seen graphically as **Exhibit 4-2**.

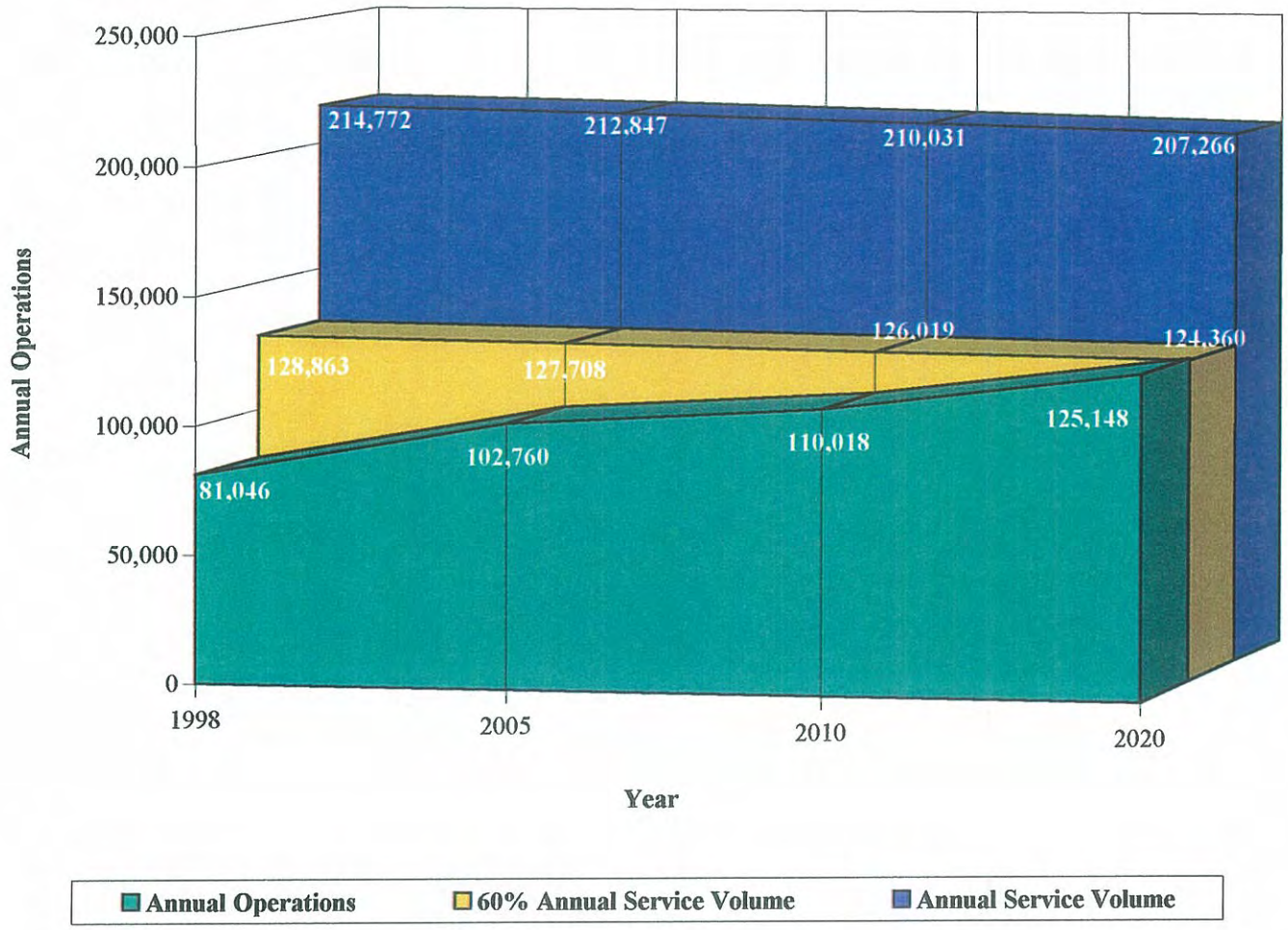
TABLE 4-4
CALCULATED ANNUAL SERVICE VOLUME

Year	Annual Service Volume
Base Year	
1998	214,777
Forecast	
2005	212,751
2010	210,725
2020	206,673

Source: Birk Hillman Consultants, Inc., 2000.

Table 4-5 and **Exhibit 4-2** both show that as demand grows at the projected levels and no improvements are made to the airfield. FMY is not expected to experience significant capacity related problems during the short and intermediate planning periods. By the year 2020, FMY may begin to experience capacity problems if demand grows as projected or exceeds the projections. As mentioned previously, projects that would increase capacity at an airport are eligible for FAA funds once the airfield has reached 60 percent of its ASV. It is recommended that actual improvements should commence before the operational activity reaches 80 percent.

Exhibit 4-2
Demand vs. Airfield Capacity



As conditions change over the years, the capacity of the airfield will need to increase. For this to occur, future projects need to be planned that will enhance the overall capacity of the airfield. The best capacity related improvements would be to develop better access to both runways. These improvements alone would enhance the safety of the airfield while at the same time decrease the runway occupancy time.

TABLE 4-5
AIRFIELD CAPACITY LEVELS

Year	Annual Operations	Annual Service Volume	Capacity Level
Base Year			
1998	81,046	214,777	38%
Forecast			
2005	102,760	212,751	48%
2010	110,018	210,725	52%
2020	125,148	206,673	61%

Source: Birk Hillman Consultants, Inc., 2000.

Annual Aircraft Delay

As annual airport operations approach the ASV, the airfield is likely to experience periods of delay. The FAA methodology allows for the determination of average delay per operation as well as total hours of aircraft delay on an annual basis. The estimate of annual delay includes arriving and departing aircraft operations under both VFR and IFR conditions. Essentially the ratio of projected demand to ASV is utilized in the FAA's charts in AC 150/5060-5, change 2 to determine a conservative estimate of the average delay per aircraft. This value is then applied back to the annual demand to estimate the total amount of annual aircraft delay. The results of the delay calculations are included in **Table 4-6**.

TABLE 4-6
ANNUAL AIRCRAFT DELAY

Year	Average Delay per Aircraft Operation (minutes)	Total Annual Delay (hours)
Base Year		
1998	0.12	162
Forecast		
2005	0.16	243
2010	0.18	297
2020	0.20	386

Source: Birk Hillman Consultants, Inc., 2000.

In the base year, 1998, the average delay per aircraft operation was estimated at 7.2 seconds (0.12 minutes) which equates to approximately 162 total annual hours of delay. By 2020 the average delay per operation is projected to increase to 12 seconds (0.20 minutes) or 386 total annual hours of delay assuming no alterations or improvements

are done to the airfield. The average delay per aircraft by 2020 is less than a quarter of a minute, which is not expected to significantly impact airport operations or capacity.

AIRSPACE CAPACITY

Airspace capacity is an essential element of any airport, especially with respect to maintaining the existing and proposed operational characteristics. As discussed in Chapter 2, "Inventory of Existing Conditions", the airfield does have an Air Traffic Control Tower and the airspace surrounding the airport is designated as Class D airspace from the surface up to 1,200 feet Mean Sea Level (MSL). Above 1,200 feet MSL, up to 4,000 feet MSL the airspace is part of the Class C airspace for Southwest Florida International Airport (RSW). Above 4,000 feet MSL, Class E airspace begins and continues up to 17,999 feet above MSL where it intersects the overlying Class A airspace. **Table 4-7** delineates the features of each airspace classification and depicts what requirements, services, and equipment is necessary for use in the different airspaces.

TABLE 4-7
FEDERAL AVIATION REGULATION AIRSPACE CLASSIFICATIONS

Airspace Features	Class A	Class B	Class C	Class D	Class E	Class G
Operations Permitted	IFR	IFR and VFR	IFR and VFR	IFR and VFR	IFR and VFR	IFR and VFR
Entry Requirements	ATC Clearance	ATC Clearance	ATC Clearance for IFR	ATC Clearance for IFR	ATC Clearance for IFR	None
Minimum Pilot Rating	Instrument	Private / Student	Student	Student	Student	Student
Two-way Radio Communication	Yes	Yes	Yes	Yes	Yes for IFR	No
VFR Visibility Minimums	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	3 Statute Miles	1 Statute Mile
Aircraft Separation	All	All	IFR, SVFR and Runway Ops	IFR, SVFR and Runway Ops	IFR and SVFR	None
Conflict Resolution	N/A	N/A	Between IFR and VFR Ops	No	No	No
Traffic Advisories	N/A	N/A	Yes	Workload Permitting	Workload Permitting	Workload Permitting
Safety Advisories	Yes	Yes	Yes	Yes	Yes	Yes
Special Equipment	N/A	Mode C Transponder	Mode C Transponder	N/A	N/A	N/A

Source: Birk Hillman Consultants, Inc., 2000.
Abbreviations: SVFR = Special VFR.

Essentially, the Class D airspace facilitates the air traffic control service provided to all VFR and IFR traffic below 1,200 feet MSL within a 5 mile radius of Page Field. As mentioned in the inventory, the airport also lies within the jurisdiction of the Fort Myers Approach Control facility and Miami Air Route Traffic Control Center (ARTCC). Together the two facilities provide approach and departure control for Page Field, depending on the time of day. Radar coverage of the airspace surrounding FMY is provided via the Southwest Florida International Airport Surveillance Radar (ASR).

The airspace for FMY is not significantly impacted or constrained by any of the other airports in the region. However, this does not remove the airspace from the potential of some occasional conflicts with other airports or obstructions in the region. As mentioned in the inventory chapter, there are a number of public use airports in the vicinity of FMY. The fact that RSW and Page Field are only 7 nautical miles apart, could provide some potential

airspace conflicts in the future as the demand at both of these airports increases. Fortunately, the alignment of the primary instrument runways at both airports are almost identical minimizing such conflicts. The primary runway at FMY is oriented at 05-23 and both the existing and future runways at Southwest International are expected to be oriented at 06-24. Therefore, arriving and departing traffic can follow similar procedures when entering or leaving either airport environment. IFR traffic on arrival to Page Field can utilize the Sarasota Three Arrival procedure, which is a general use Standard Terminal Arrival (STAR) procedure for the area. The Sarasota Three STAR serves Page Field, Southwest International Airport, Marco Island Airport, and Naples Municipal Airport. As IFR aircraft approach the Ft. Myer's area, radar vectors are provided by approach control at RSW to set the aircraft up on one of Page Field's instrument runways. Similarly, IFR aircraft departing FMY will receive their clearance delivery from RSW before leaving the ground at Page Field. Upon takeoff, the aircraft will switch from the FMY tower frequency to that of RSW's departure control to safely depart the area.

As demand increases in this area for air traffic control services, so does the potential for capacity related conflicts. In addition, there are also a number of private airports and helipads located in close proximity to FMY. The closest of these private strips is the Lee Memorial Hospital helistop, located approximately three nautical miles north of the approach to Runway 13. There are also a number of helipads to the south and southwest of Page Field and while these small facilities are in close proximity to FMY, they do not restrict the capacity of the airport's airspace.

ACCESS ROADWAY CAPACITY

Roadway capacity is typically defined as the maximum number of vehicles that can pass over a given section of a lane or roadway during a given period of time. This capacity is affected by a number of factors including, the characteristics of the roadway, traffic factors, type of use, etc. The previous master plan provided a detailed analysis of the airport access roadway system at that time and what improvements were slated in the next few years. Since then, Fowler Road was extended through the airport property to where it intersects with US 41 at Boy Scout Drive. Additionally, the intersection of North Airport Road with Fowler Road was reconfigured as a part of the roadway extension. Other than the road extension, there has been little change to the area's roads, especially those roads providing access to the south airport facilities including The Aviation Center, and the adjacent commercial properties. Therefore, much of the information contained in the 1993 Master Plan is still considered valid.

It is preferred that a roadway should operate below its capacity. This ensures that it will be able to provide the vehicles using it with reasonable flow while at the same time minimizing delay. As mentioned in the previous master plan, the Highway Capacity Manual defines different operating conditions, known as levels of service. The levels of service are functions of the volume and composition of the traffic and the speeds attained. The Highway Capacity Manual defines six levels of service defined A-F, providing for the best to worst in driver satisfaction. Level of service 'F' defines a road segment operating beyond maximum capacity and well beyond an acceptable level of service. A level of service 'C' is the preferred minimum level of service on most roadways. At this level of service, traffic flow is stable and delays are minimal.

Primary access to FMY is provided via US 41 (Cleveland Avenue). This roadway runs north-south and intersects Colonial Boulevard on the north side of the airfield and Daniels Parkway on the southern end. Both of these roads run east -west with access to Interstate 75. US 41, Colonial Boulevard, and Daniels Parkway are all six lane asphalt divided arterials. US 41 and Colonial are maintained by the state while Daniels Parkway is maintained by Lee county (**Table 4-8**). The Fowler Street extension transits the airport's northwest side extending from the

southwest at the intersection of Boy Scout Drive and SR 41 north and east to the revamped Fowler/ Colonial intersection. Fowler is a county maintained arterial developed to relieve the pressure on the primary north - south connector (US 41) into the City of Fort Myers.

Between Daniels Parkway and Page Field, a number of two lane roadways run east-west and intersect or end at Metro Parkway. Metro Parkway runs north-south and provides the eastern boundary arterial access to the airport. It is a state maintained four lane divided roadway that terminates at Hanson Road to the north and Gladiolus Drive to the south. One of the crossroads that connect US 41 and Metro Parkway is Danley Drive. This road connects the two north-south arterials and is the only access to the airport's southern facilities. Page Airport Road located just north of Danley Drive runs east-west and intersects and ends at Danley Drive just to the southwest of the old airport restaurant. Both these roads are two lane undivided collectors maintained by the county.

TABLE 4-8
PRIMARY ACCESS ROADWAYS

Roadway	Classification	Maintenance Responsibilities
Cleveland Avenue (US 41)	Arterial	State
Colonial Boulevard	Arterial	State
Metro Parkway	Arterial	State
Fowler Rd.	Arterial	County
Danley Drive	Collector	County
Daniels Parkway	Arterial	County

Source: The Lee Plan, 1998.

The previous master plan suggested closing Page Airport Road and utilizing Danley Drive as the only access road to the south airport facilities. It should be noted the existing right-of-way along both of the aforementioned streets is not consistent with those normally desired for a collector street system. Further, the pattern of development along both these roads is not compatible with that of a primary access roadway to the airport. This incompatibility is related to the significant number of residential dwellings located along this road, which ideally should be reserved for commercial/industrial activity. The mix of residential uses, with their associated driveways, impact the traffic flow and increases the potential for conflicts with pedestrians.

North Airport Road provides access to the facilities on the north side of the airfield which includes the Air Traffic Control Tower, the Page Field Commerce Center, the Airport Fire Station, and a number of commercial properties. This road is an undivided two lane roadway with direct access from either Fowler or US 41. Idlewild Road provides access to the facilities on the east side of the airport which includes the T-hangar and corporate hangar facilities. This road is also an undivided two lane roadway with direct access to Metro Parkway.

It was noted through a review of the Lee Plan that a number of improvements were planned through the year 2020 for the major arterials serving Page Field. Expansion of Metro Parkway to a six lane divided arterial with a grade separated intersection at Colonial Boulevard is currently included in the 2020 Financially Feasible Plan. This includes the extension of Metro Parkway south to US 41 with a grade separated interchange at the intersection of US 41 and Alico Rd. This is expected to improve Metro Parkway's ability to function as a second primary north south connector into the City of Fort Myers. Improvements are also planned for Colonial Boulevard between US 41 and Metro Parkway with the potential for a grade separated intersection at SR 41.

While a number of surface road improvements have either been recently implemented or are planned to improve access to the airport, access in and around the airport environment is extremely constrained. Currently, users must leave airport property and access a major arterial to move between facilities located on the north, east or south sides of the airport. This will also be true if and when facilities are developed on the airport's west side. Improved movement between these areas without accessing surface roads would substantially enhance the airport operation.

Chapter Five – Facility Requirements

INTRODUCTION

To ensure that Page Field Airport will be able to adequately accommodate the various demands that are expected to be placed on it during the 20 year planning period, this chapter will establish the general facility requirements for the future development of the airport. One of the principle challenges facing any airport is development. Airport development can be particularly costly and since each project is typically planned to last many years, care must be taken to ensure that each development project will help satisfy the airport's needs and enhance the capability and quality of the airport. Analyzing future requirements of the airport with respect to safety standards, capacity shortfalls and the demand for services provides a guide as to the operational, airfield, building, infrastructure and land requirements that must be addressed to meet demand. Once these requirements have been identified, different development alternatives can be created and analyzed to address each facility need. Assessment of relative benefits or disadvantages of each development option can then be undertaken in such a way to ensure that the greatest benefits are provided to the users, tenants, local community, and of course, to the airport itself. The objective of any development plan should be to optimize the available resources and construct airport facilities that achieves the greatest overall benefit in an efficient and economical manner.

It is important that airport owners and managers do not overlook valuable opportunities to maximize the development of the airport's facilities and resources. When these opportunities are missed, the airport loses potential revenues, the tenants do not receive maximum benefit from their leases, and the airport users tend to experience a lower level of service than might otherwise be obtainable. Conversely, it is equally important that airport owners consider the quality of life of the local residents in planning airport development. Meeting the demands of the airport's users must consider the community's desire for aesthetics, controlled development, and environmental conservation.

Finally, an airport must be developed in the context of air safety. Improvements to the airport must allow for continued safe operation of aircraft into and out of the airport as well as maneuvering on the ground. Accommodating these capabilities safely is the most basic function of an airport facility and, as such, the needs associated with this task are most commonly addressed first.

Airport Role and Service Level

The FAA, through the National Plan of Integrated Airport System (NPIAS), establishes the role and service level of each airport included within that plan. The role for each airport identifies one of five basic service levels which describe the type of public service the airport is expected to provide to the community. The role and service level also represents the funding categories set up by Congress to assist in airport development. A former military training base and air carrier airport, there are no longer any regularly scheduled flights operating into FMY. The airport is now designated as a public use General Aviation – Reliever airport according to the most recent (1999) NPIAS. As noted in the Inventory section of this report, the NPIAS identifies 88 General Aviation Airports in the State of Florida, of which 32 are classified as relievers.

Airport Reference Code and Critical Aircraft

An initial step in identifying an airport's potential facility requirements is the establishment of fundamental development guidelines. By examining the types of aircraft expected to use the airport, it is possible to establish the critical aircraft for design purposes. This critical aircraft is usually the most demanding aircraft using the airport. The FAA defines this as the largest, heaviest, and fastest aircraft forecast to have more than 500 annual itinerant operations at the airfield. Itinerant operations are flights which originate or terminate at an airport more than 25 miles from the aircraft's base airport.

After the critical aircraft has been determined, an Airport Reference Code (ARC) is established based on the characteristics of that aircraft. The two primary characteristics of a critical aircraft are the aircraft's wingspan and approach speed. Because some aircraft may have large wingspans and relatively slow approach speeds, while others may have high approach speeds with shorter wingspans, it is sometimes necessary to establish more than one critical aircraft. Additionally, it may be necessary in some instances to design certain areas to a higher design standard than the rest of the airport so as to accommodate certain operations.

This ARC is made up of two components, a letter designation followed by a Roman numeral. The letter indicates the approach category (approach speed) of the most demanding aircraft and the Roman numeral designates the Design Group (wingspan) of the most demanding aircraft. Below, **Table 5-1** and **Table 5-2** delineate the Aircraft Approach Categories and Aircraft Design Groups according to FAA Advisory Circular (AC) 150/5300-13 Change 5, "Airport Design."

TABLE 5-1
AIRCRAFT APPROACH CATEGORIES

Category	Approach Speed (knots)
A	< 91
B	91 – 121
C	121 – 141
D	141 – 166
E	> 166

Source: FAA AC 150/5300-13 Change 5.

TABLE 5-2
AIRCRAFT DESIGN GROUPS

Design Group	Wingspan (feet)
I	< 49
II	50 – 79
III	80 – 118
IV	119 – 171
V	172 – 214
VI	215 – 262

Source: FAA AC 150/5300-13 Change 5.

According to the 1993 Airport Master Plan, Runway 5-23 had both an existing and future ARC of C-III while Runway 13-31 had an ARC of B-II for both the existing and future period. The current and projected fleet mix at FMY were reviewed to identify critical aircraft types for airport design purposes.

Runway 5-23's prior ARC designation of C-III was based on the combination of multi engine piston, turboprop, and jet aircraft with 10 or more passenger seats. The previous master plan identified the P-3 Orion as the design aircraft due to the coast guard operating in and out of FMY in the early 90's. There was no discussion of existing business jet aircraft serving the airport at the time of the study and since then the coast guard has moved its operation to RSW. It was assumed that because the airport serviced commercial aircraft such as the Boeing 727 and the DC-9 in the eighties, which are designated ARC C-III, that the initial ARC has carried throughout the years to the present. The most critical aircraft operating on Runway 5-23 on a regular basis presently at FMY is the Canadair Challenger (CL-604). According to discussions with the Air Traffic Control Tower this aircraft frequents Page Field often and operates regularly enough to justify it as the critical aircraft for the airport. This aircraft has an ARC designation of C-II. The other popular aircraft occasionally operating into FMY is the Gulfstream IV (G-IV). This aircraft has an ARC designation of D-II and this aircraft's approach speed category exceeds that for which the runway was designed, although its wingspan is well within the existing runway's service capabilities. However, it is not projected that G-IV traffic at the airport will approach the 500 annual operation guideline set by the FAA to justify an increase in the ARC.

The FAA's 1999 forecasts noted that a significant amount of larger business jet and regional jet aircraft are currently being manufactured. The business version of these aircraft, which include the Gulfstream V and the Canadair Global Express, are capable of serving the more global requirements of today's business environment. These larger business jets, which can seat up to 19 passengers, have an ARC as high as D-III. As reflected in the forecasts, although the possibility that some of these aircraft may conduct operations at FMY during the next 20 years, their level of operations is not expected to justify them as a critical aircraft for the airport. However, since the airport already accommodates the dimensional requirements of the Design Group III category, the potential future use by these aircraft supports maintaining the C-III classification.

With a majority of the traffic falling in the B-II category and the percentage of time that Runway 5-23 is available to larger piston and jet aircraft, an increase in the ARC for Runway 13-31 does not appear to be warranted. Therefore, it is recommended that the Airport Reference Codes of C-III for Runway 5-23 and B-II for Runway 13-31 be maintained. The future airport facility layout will be undertaken in accordance with FAA design criteria established in Advisory Circular 150/5300-13 Airport Design, Changes 1-5. The specific design criteria associated with Airport Reference Code C-III and B-II are compared and delineated in **Table 5-3**.

TABLE 5-3
AIRPORT DESIGN – AIRPLANE AND AIRPORT DATA

Criteria	ADG B–II (Ft.)	ADG C–III (Ft.)
Runway to Parallel Taxiway/Taxilane Centerline	240	400
Runway Centerline to aircraft parking area	250	500
Runway Width	75	100
Runway Shoulder Width	10	20
Runway Blast Pad Width	95	140
Runway Blast Pad Length	150	200
Runway Safety Area Width	150	500
Runway Safety Area Length Beyond each Runway End	300	1,000

TABLE 5-3 AIRPORT DESIGN – AIRPLANE AND AIRPORT DATA		
Criteria	**ADG B–II (Ft.)**	**ADG C–III (Ft.)**
Runway Object Free Area (ROFA) Width	500	800
ROFA Length Beyond Each Runway End	300	1,000
Clearway Width	500	500
Stopway Width	150	150
Runway Obstacle Free Zone (OFZ)	250	250
Runway OFZ Length Beyond Runway End	200	200
Taxiway Centerline to Parallel Taxiway/Lane Centerline	105	152
Taxiway Centerline to Fixed or Movable Object	65.5	93
Taxilane Centerline to Parallel Taxiway/Lane Centerline	97	140
Taxilane Centerline to Fixed or Movable Object	57.5	81
Taxiway Width	35	50
Taxiway Shoulder Width	10	20
Taxiway Safety Area Width	79	118
Taxiway Object Free Area Width	131	186
Taxilane Object Free Area Width	115	162
Taxiway Edge Safety Margin	7.5	10
Taxiway Wingtip Clearance	26	34
Taxilane Wingtip Clearance	18	22

Source: Airport Design AC 150/5300-13 Change 5.

AIRFIELD REQUIREMENTS

Airfield Capacity

The airport's annual service volume (ASV) as delineated in Chapter Four is estimated at just under 215,000 annual operations. Over the planning period the ASV at FMY will decline slightly as the fleet mix shifts to a slightly higher percentage of larger aircraft. The ASV is projected to be just over 207,000 in the year 2020, based on the current configuration of the airfield.

The airport is presently operating at approximately 38 percent of its calculated ASV. FAA Order 5090.3B **Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)** indicates that an airport should begin planning for capacity enhancements when an airports operations reach 60 percent of the annual capacity. By the year 2020, annual operations are projected to reach approximately 56 percent of the annual service volume, thus indicating that FMY should not experience numerical capacity problems related to the airfield through the long term planning period. However, this does not mean that airport improvements may not be necessary to address other key concerns.

Runway Requirements

Runway requirements at general aviation airports can vary substantially due to the range in types and operational requirements of the general aviation aircraft that may use the facility. As the primary airfield facility at any

airport, a runway must have the proper width, length, and strength to safely accommodate the critical aircraft expected to use the airfield.

Runway width requirements for airport design are included in FAA AC 150/5300 Change 5. The design standards are based on the critical aircraft's Approach Category, Design Group, and the airport's approach visibility minimums.

FAA AC 150/5325-4A, "Runway Length Requirements for Airport Design" and the FAA "Airport Design" software, Version 4.2D, provide guidelines to determine the ultimate runway length required at an airport facility. These guidelines consider airfield conditions such as the elevation, mean daily maximum temperature, and effective runway gradient. Length determinations also consider critical aircraft data such as takeoff weight, length of haul and payload.

Airport pavement strength is evaluated for several reasons. Evaluations are needed to establish load carrying capacity for expected operations, to assess the ability of pavements to support significant changes from expected volumes or types of traffic, and to determine the condition of existing pavements for use in the planning or design of improvements which may be required to upgrade a facility. Along these lines, projects to rehabilitate runway pavements are routinely conducted every 15 to 20 years after the previous major rehabilitation, strengthening, and/or new construction. These projects need to be conducted even at airports with regular maintenance programs that include crack sealing and pavement rejuvenations.

Runway 5-23

The current width for Runway 5-23 is 150 feet. Criteria contained in FAA AC 150/5300-13, Change 5, states that for the C-III designation, a runway width of 100 feet is adequate. Therefore, the current width of Runway 5-23 exceeds the standards for the current and future critical aircraft. It is felt that the runway maintain the width of 150 feet for a number of reasons. The runway edge lighting system is in good condition and the cost of relocating them is a big expense. The potential for a change in the runway width could require relocation of the runway's navigational aids. The full width of the runway was recently rehabilitated and is in good condition. The potential for new larger business jet aircraft to operate at Page Field cannot be ruled out and the added flexibility requires little additional cost.

Using FAA AC 150/5325-4A and the FAA's Airport Design software, runway length requirements were calculated for the critical aircraft of Runway 5-23. The runway length analysis was conducted using the following airport and runway data:

Airport Elevation:	17 feet
Mean Daily Maximum Temperature of the Hottest Month:	91.4°F
Maximum Difference in Runway Centerline Elevation:	5 feet
Average Length of Haul	1,000 miles
Runway Conditions	Wet and Slippery

In applying the conditions above, the FAA's computer software resulted in a number of recommended runway lengths based on specific aircraft characteristics. These results and the criteria used to determine the results are presented in **Table 5-4.** In order to calculate an approximate length for Runway 5-23 that would comply with runway length requirements for a variety of aircraft, an average was used for large

aircraft with operating weights of 60,000 pounds or less. These operations, large aircraft with heavy loads, typically require longer runways and are going to set the runway length requirements at FMY.

TABLE 5-4
RUNWAY 5-23 LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots	300 feet
Small airplanes with approach speeds of less than 50 knots	800 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,520 feet
95 percent of these small airplanes	3,090 feet
100 percent of these small airplanes	3,660 feet
Small airplanes with 10 or more passenger seats	4,280 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5,370 feet
75 percent of these large airplanes at 90 percent useful load	7,000 feet
100 percent of these large airplanes at 60 percent useful load	5,530 feet
100 percent of these large airplanes at 90 percent useful load	8,550 feet

Source: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design.

Presently, the larger aircraft operating at FMY on a regular basis tend to be the business jets. A recommended runway length was derived from averaging three of the numbers calculated by the FAA's program. The numbers which were included are shown below:

75 percent of the large aircraft at 60 percent useful load	5,370 feet
100 percent of the large aircraft at 60 percent useful load	5,530 feet
75 percent of the large aircraft at 90 percent useful load	7,000 feet
Recommended Runway Length for Runway 5-23	**5,970 feet**

The recommended length of 5,970 feet is 436 feet less than the actual length of Runway 5-23. Therefore, at 6,406 feet, Runway 5-23 will provide adequate length for the operations of aircraft 60,000 pounds or less forecast during this planning period, based on FAA criteria. The category of 60,000 pounds or more represents those aircraft over 60,000 pounds, such as the G-II or G-IV, for which the FAA does not provide individual performance curves in AC 150/5325-4A. Thus it is difficult to break out these aircraft in the FAA methodology from the much heavier commercial aircraft.

Aircraft performance software was utilized to further analyze the runway length requirements for both the CL-604 and G-IV aircraft to compare with the numbers with the FAA's recommended runway lengths. The same airport and runway data for the FAA's Airport Design Software was applied to this program. The software program, which provides a limited number of takeoff weights for each aircraft produced the runway length requirements shown in **Table 5-5**.

TABLE 5-5 CRITICAL AIRCRAFT RUNWAY LENGTH REQUIREMENTS		
Critical Aircraft	**Takeoff Weight (pounds)**	**Calculated Runway Length (feet)**
Canadair Challanger CL-604	(85% MTOW) 41,100	5,000
Gulfstream IV	(75% MTOW) 55,000	3,553
	(86% MTOW) 63,000	4,853
	(88% MTOW) 65,000	5,210
	(MTOW) 73,600	7,114

Source: BHC Performance Software.

Based on the performance software calculations, the current length of Runway 5-23 will be able to accommodate nearly all of the weight conditions for the CL-604 and G-IV aircraft, under the given conditions. The two programs computed similar runway lengths for the two aircraft in question. It should be noted that some weight restrictions may be required for these aircraft depending upon specific conditions (MTOW).

The maximum pavement strengths, based on landing gear configurations, for Runway 5-23 are published by the U.S. Department of Commerce in the current edition of the Southeast U.S. Airport Facility Directory as:

- Single wheel 125,000 lbs.
- Dual wheel 155,000 lbs.
- Dual-tandem wheel 350,000 lbs.

Both the CL-604 and the G-IV have a dual landing gear wheel configuration with a maximum allowable takeoff weight well below 155,000 pounds. Therefore, the existing weight bearing capacity for Runway 5-23 meets the requirements for the current and future critical aircraft. Page Field is unique in that the pavement strengths are relatively high for a general aviation airport. This is due to the fact that the airport operated as Ft. Myer's primary air carrier airport prior to the opening of Southwest Florida International Airport. Technically the runway is capable of handling large dual wheel landing gear aircraft such as the Boeing 737 and MD-80 / DC-9 aircraft as well as larger aircraft with dual-tandum gear.

URS Greiner and Eckrose/Green conducted a Florida statewide airport pavement project study in 1998 and FMY was one of the airports examined in this study. This study was done to provide an inventory, pavement condition index (PCI), and a pavement management tool to identify the condition of each section of pavement at almost every airport within the State of Florida. The rankings for the study range from 0 being the worst to 100 being the best for pavement indexes. Runway 5-23 at FMY had a number of spot samples taken at both runway ends and numerous locations between the runway ends, and the runway shoulder. All of the samples inspected along the runway and runway shoulder had rankings between 95 and 100. According to the rankings of pavement conditions, the runway and runway shoulder are in excellent or near excellent condition.

During the intermediate planning phase (through 2010), Runway 5-23, is not anticipated to require any major pavement improvements or reconstruction. The strength of Runway 5-23 is adequate, and is anticipated to fully accommodate the existing and future aircraft fleet mixes. However, pavement rehabilitation will probably be required towards the end of the long term planning period to repair damage from normal wear.

Runway 13-31

Runway 13-31 provides the required crosswind coverage for the light singles and smaller multi-engine aircraft that operate at the airport. The runway is also utilized by a few of the smaller business jet aircraft, although Runway 5-23 provides adequate wind coverage for these types of jet aircraft.

Runway 13-31 has a current width of 150 feet. The criteria set forth in FAA AC 150/5300-13, Change 5, recommends that runways serving aircraft with an ARC of B-II and that do not have approach visibility minimums less than ¾ of a statute mile, need a runway width of 75 feet. Therefore, the current width of Runway 13-31 exceeds the standards required for its current and future critical aircraft.

As with Runway 5-23, AC 150/5325-4A along with the FAA's Airport Design software was utilized to determine the recommended runway lengths for Runway 13-31. The analysis was conducted using the following airport and runway criteria:

Airport Elevation:	17 feet
Mean Daily Maximum Temperature of the Hottest Month:	91.4°F
Maximum Difference in Runway Centerline Elevation:	1 feet
Average Length of Haul	500 miles
Runway Conditions	Wet and Slippery

The current length of Runway 13-31 is 4,909 feet and satisfies the recommended runway lengths for all small aircraft as outlined in **Table 5-6**. Runway 13-31 is approximately 460 feet short of the recommended 5,370 feet for 75 percent of the aircraft of 60,000 pounds or less, having a 60 percent useful load. However, as previously mentioned, although some business jets utilize this runway, it is on an occasional basis and assumed under the more ideal conditions. The results of the runway analysis were based on a wet runway condition to present a worse case scenario. If the analysis is conducted using the criteria for dry runway conditions, only 4,680 feet is recommended for 75 percent of the large airplanes of 60,000 pounds or less, with a 60 percent useful load. Therefore, the current length of Runway 13-31 is considered adequate for the traffic it is expected to serve during the planning period.

TABLE 5-6
RUNWAY 13-31 LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots	300 feet
Small airplanes with approach speeds of less than 50 knots	800 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,520 feet
95 percent of these small airplanes	3,090 feet
100 percent of these small airplanes	3,660 feet
Small airplanes with 10 or more passenger seats	4,280 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5,370 feet
75 percent of these large airplanes at 90 percent useful load	7,000 feet
100 percent of these large airplanes at 60 percent useful load	5,500 feet
100 percent of these large airplanes at 90 percent useful load	8,510 feet

Source: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design.

The maximum pavement strengths, based on landing gear configurations, for Runway 13-31 are published in the current edition of the Southeast U.S. Airport Facility Directory as:

- Single wheel 30,000 lbs.
- Dual wheel 35,000 lbs.

The existing weight bearing capacity for Runway 13-31 is sufficient to meet the requirements for all small aircraft with takeoff weight of less than 30,000 lbs. single wheel configuration, or 35,000 lbs. for any dual wheel configuration. The critical aircraft, the (CL-604) or the G-IV can use this runway but will incur a weight restriction due to the pavement strength limitations on dual wheeled aircraft; in addition to the restrictions incurred from the takeoff distance required on 4,909 feet of runway. In analyzing the all weather wind rose, Runway 5-23 offers Page Field close to 99 percent wind coverage for a cross wind component of sixteen knots which is the cross wind requirement for the CL-604 and G-IV. This provides the critical aircraft the necessary runway length, strength, and wind coverage to support both the CL-604 and G-IV aircraft at various takeoff weights. Therefore, it not necessary for Runway 13-31 to be improved to provide for such aircraft. It is recommended that the runway continue to be used for the smaller aircraft when crosswind conditions exceed the recommended crosswind component published by the aircraft manufacturer. It is also important to note that the CL-604 and G-IV can operate with higher crosswind components, in as much as 6.5 knots higher than the smaller single and multi engine aircraft.

According to the URS Greiner-Eckrose/Green study, Runway 13-31 pavement appears to be in good condition. Samples were taken from the runway and runway shoulder and rankings ranged from the mid 80's to 100. Based on this, it is anticipated that sometime during the intermediate phase the runway pavement will need to be restored and rehabilitated due to normal wear.

Runway Safety Area

The runway safety area (RSA) is described as an imaginary surface which is centered on the runway centerline and has a defined length and width and extends a specified distance beyond each runway end. The dimensional standards associated with the RSA varies depending on the type of approach category aircraft using the runway and the approach visibility minimums. The design standards for a RSA can be found in FAA AC 150/5300-13 Change 5. According to these design standards the RSA beyond both ends of Runway 5-23 do not meet the requirements for an Approach Category C aircraft as determined from previous analysis. In August of 1989, the FAA's Orlando Airports District Office issued an adaptation to standards for Page Field regarding the length of the RSA. This adaptation to standards applied to all four runway ends. However, the subsequent Fowler Street extension dictated the displacement of the threshold on Runway 13, and the shortening of the overall runway length for Runway 13, and resulted in a decrease in the approach category to Category B. This reduced the RSA requirements and met the criteria specified in AC 150/5300-13 change 5. As for Runway 5-23 the adaptation to standards still applies and the RSA remains less than the 1,000 foot requirement beyond both runway ends. (Subsequent to this analysis, a detailed Runway Safety Area Assessment Report was prepared at the request of the FAA to determine if the potential existed for the removal of the Runway 5/23 waivers. This report has been included in its entirety as **Appendix B.**)

Based on the FAA's definition "the RSA shall be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations. It needs to be drained by grading or storm sewers to prevent water accumulation, and must be capable under dry conditions of supporting aircraft rescue and fire fighting

equipment, and the occasional passage of aircraft without causing structural damage to the aircraft. It needs to be free of objects, except those which are located in the RSA because of their function. Objects higher than 3 inches above grade should be constructed on frangible mounted structures with the frangible point no higher than 3 inches above grade. Other objects like manholes should be constructed at grade and in no case should they exceed 3 inches in height above ground."

Declared Distance Calculations

The FAA's Declared Distance concept is limited to cases of existing constrained airports where it is impractical to provide the runway safety area, runway object free area or the runway protection zone in accordance with design standards. The calculation of declared distances at FMY requires that a portion of the full strength pavement on the north end of Runway 13-31 be dedicated to use as Runway Safety Area. As a result, the available pavement length for aircraft operations is effectively reduced depending upon the direction of operational flow. As mentioned above Runway 5-23 has an adaptation to standard in which the FAA has determined no substantial impact to safety and has waived the RSA dimensional requirements to allow for a smaller defined safety area.

The review of the declared distances methodology has been based on guidance delineated in Appendix 14 of FAA's AC 150/5300-13, Airport Design and was further refined by Policy and Procedures Memorandum 5300.2 from the FAA Great Lakes Region. The following provides definitions of key terms used in the declared distance approach which require definition and will be used throughout this section:

Takeoff Runway Available (TORA) - the distance to accelerate from brake release to lift off, plus safety factors and defines the length of runway declared available and suitable for satisfying takeoff run requirements.

Landing Distance Available (LDA) - the distance from the threshold to complete the approach, touchdown and decelerate to a stop plus safety factors and defines the length of runway declared available and suitable for satisfying landing distance requirements.

Accelerate-Stop Distance Available (ASDA) - the distance to accelerate from brake release to V1 and then decelerate to a stop, plus safety factors which defines the runway plus stopway declared available and suitable for satisfying ASDA requirements.

Takeoff Distance Available (TODA) - the distance to accelerate from brake release past lift off to start the takeoff climb, plus safety factors. The TODA consists of the TORA plus the length of any remaining runway or clearway beyond the far end of the TORA available for satisfying takeoff distance requirements.

Based on the above guidance, the following declared distances were calculated for north and south operational flows on Runway 5-23 and Runway 13-31 at FMY.

	Runway 05	Runway 23
TORA	6,406	6,406
LDA	5,947	6,007
ASDA	6,406	6,406
TODA	6,406	6,406

	Runway 13	Runway 31
TORA	4,912	4,707
LDA	4,297	4,707
ASDA	4,912	4,707
TODA	4,912	4,912

(Subsequent to this analysis, a detailed Runway Safety Area Assessment Report was prepared at the request of the FAA to determine if the potential existed for the removal of the Runway 5/23 RSA waivers. The final determination of this report resulted in a change in the declared distances from those initially calculated above. The revised distances as per the RSA Assessment Report, attached as Appendix B, are accurately reflected on approved Airport Layout Plan as per the FAA's final determination.)

Taxiway System Requirements

A well designed taxiway system should provide freedom of movement to and from the runways of an airport under a variety of operating conditions. This includes entrance and exit taxiways, taxiway run-up areas, apron taxiways, and taxilanes. Some of the basic design principles for a good taxiway system include the following:

- Provide each active runway with a full parallel taxiway.
- Construct as many by-pass, multiple access, or connector taxiways as possible to each runway and runway end.
- Provide taxiway run-up areas for each runway end.
- Build all taxiway routes as direct as possible.
- Provide adequate curve and fillet radii.
- Avoid developing areas which might create ground traffic congestion.
- Ensure appropriate taxiways are adequate to serve projected aircraft ARC.

The demand/capacity assessment indicated that the overall airfield capacity was adequate to meet the numerical capacity demand for the planning period. This is due, in part, to the existing parallel taxiways and the system of exit taxiways at the airport. The capacity assessment indicates no major capacity enhancement needs at the airport. This does not mean, however, that improvements to the taxiway system should not be considered. Improvements to a taxiway system can be warranted for more than just capacity enhancement reasons. A key consideration for taxiway enhancements is the safety of aircraft movements as well as the efficiency of aircraft movements on the airfield and to access developing portions of the airport.

Because Runway 5-23 and Runway 13-31 have different ARC's with Design Group designations of III and II respectively, the discussion below details each taxiway servicing the appropriate runway and ARC based on the design criteria set fourth in FAA AC 150/5300-13, Change 5. The following sections outline requirements

needed for the existing taxiway system at FMY. As with runway pavements, more extensive rehabilitation of taxiway pavements should be conducted every 15 to 20 years.

Taxiway 'A'

Taxiway 'A' is the full length parallel taxiway serving Runway 5-23. This taxiway, which is located on the southeast side of Runway 5-23, has been constructed to a width of 50 feet which meets the design Group III's minimum taxiway width. Because this taxiway was rehabilitated in 1992 and remains in excellent condition, the pavement surface should not require reconditioning until the intermediate to long term planning period. The FDOT study performed by Eckrose/Green confirms that the condition of the pavement for Taxiway 'A' is still in excellent condition with pavement rankings from the mid 90's to 100. Additionally, the four taxiway connectors which link Runway 5-23 to Taxiway 'A' have been identified as being in good to excellent condition. Taxiway 'A' and all the connectors have Medium Intensity Taxiway Lighting (MITL) and the system is in good condition.

Currently, Taxiway 'A' has a runway centerline to taxiway centerline spacing of 400 feet. According to the standards in FAA AC 150/5300-13, Change 5, the separation standard for Design Group III aircraft on a runway with approach visibility minimums no less than ¾ of a statute mile requires 400 feet. Therefore the FAA Airport Design Standards criteria has been met for the runway to taxiway separation and taxiway width.

Taxiway 'B'

Taxiway 'B' provides a full length parallel taxiway to Runway 13-31, and is located on the northeast side of the runway. It was constructed to a width of 40 feet, and has five connector taxiways to Runway 13-31. The required width for a design Group II taxiway is 35 feet which is 5 feet less than that provided by Taxiway 'B'. As mentioned in the inventory, portions of Taxiway 'B' have deteriorated significantly enough to close a portion of the taxiway between Runway 5-23 and Taxiway 'A' to certain larger types of aircraft with high gross weights such as the DC-9 and Boeing 727. A rehabilitation of Taxiway 'B' is recommended in the short term. The MITL system along the edges of Taxiway 'B' were noted as being in good condition and should not require improvement.

Taxiway 'B' has a runway centerline to taxiway centerline spacing of 325 feet. According to the standards in FAA AC 150/5300-13, Change 5, the separation standard for Design Group II aircraft on a runway with approach visibility minimums no less than ¾ of a statute mile requires 240 feet. Therefore the FAA Airport Design Standards criteria has been meet for the runway to taxiway separation and taxiway width requirement for Design Group II standards. Further, there appears to be no rationale for a reduction in the runway to taxiway separation.

Taxiway 'D'

Taxiway 'D' connects Taxiway 'A' to the approach end of Runway 31. It has two connector taxiways, 'D1' and 'D2', connecting to Taxiway 'D' and Taxiway 'A2'. Taxiway 'D' as well as the two connector taxiways were all constructed to a width of 50 feet which meets the minimum taxiway width for Design Group III aircraft. This taxiway provides the only existing access to the large amount of hangar and fixed base operator (FBO) development in the south quadrant of the airfield. Because of the location of the

FBO and potential traffic by large business jets including the CL-604 and GIV, a 50 foot width is appropriate. All portions of Taxiway 'D' have MITLs except the portion that runs through the middle of the aircraft parking apron. The pavement is in excellent condition due to the rehabilitation and improvements made to the south side airfield pavements in 1998. It is not anticipated that any pavement improvements will be required for this taxiway until late in the planning period.

Taxiway 'E'

Taxiway 'E' is a connector taxiway between Taxiway 'A.' and Taxiway 'B4'. This taxiway is the newest at Page Field and was built to provide for additional apron and hangar development on the eastside of the airfield. It was constructed at a width of 40 feet wide which is five feet more than required for a Design Group II and it is equipped with MITL's. Taxiway 'E' runs parallel to Taxiway 'B', and both the pavement and the taxiway lighting is in excellent condition.

A summary of the taxiway characteristics including the width, aircraft design group, pavement condition and distance to parallel runway are depicted in **Table 5-7.**

TABLE 5-7
TAXIWAY SUMMARY

Taxiway/Taxilane Segment	Taxiway/Taxilane Width	Pavement Condition	Distance to Parallel Runway	Maximum Airport Design Group (ADG)
A	50 feet	Excellent	400 feet	ADG III
B	40 feet	Good/Poor*	325 feet	ADG II
D	50 feet	Excellent	N/A	ADG III
E	40 feet	Excellent	N/A	ADG II

* Some portions of Taxiway/Taxilane B are in poor condition.
Source: Birk Hillman Consultants, Inc., 2000.

Taxiway and Taxilane Recommendations

A portion of Taxiway 'A', between Taxiway 'A1' and 'A2' was identified in the previous Master Plan and by the Port Authority for realignment to alleviate an unnecessary jog in Runway 5-23's parallel taxiway. The realignment will help minimize congestion in this area and will improve the operational flow of the airfield as well as improve the overall safety. Consideration of this improvement will depend on the cost versus benefit of this action. The alternatives associated with this realignment will be discussed in the following chapter, Airport Alternatives.

In addition to the improvements to the taxiway parallel to Runway 5-23, additional taxiways and taxilanes will be required to provide access to areas of the airfield developed during the planning period. This is likely to include development in the north and east quadrants at a minimum. The location and extent of these taxiway and taxilane improvements will be dependent upon the selected airport development plan. As with the previous taxiways, any proposed access taxiways will require a width of at least 35 feet to accommodate Design Group II aircraft. Likewise, all of the proposed taxiways will require a Taxiway Object Free Area that is at least 131 feet wide. Future taxiways or taxilanes may need to be a width of greater than 35 feet wide depending upon the type of aircraft they are expected to serve. None of the

proposed taxilanes should be less than 25 feet in width and all require a Taxilane Object Free Area with a width of at least 115 feet centered on the taxilane. Taxiway and taxilane markings should all meet the standards specified in FAA Advisory Circular 150/5340-1G. **Table 5-8** delineates the differences in the taxiway and taxilane requirements based on the various Aircraft Design Groups that would affect FMY. The ultimate layout of these additional taxiways and taxilanes will depend on the selected alternative for airport development in the subsequent chapters of this master plan study.

TABLE 5-8
DESIGN GROUP CRITERIA

Criteria	Airport Design Group I	Airport Design Group II	Airport Design Group III
Taxiway Width	25 feet	35 feet	50 feet*
Taxiway Object Free Area	89 feet	131 feet	186 feet
Taxilane Object Free Area	79 feet	115 feet	162 feet
Taxiway Wingtip Clearance	20 feet	26 feet	34 feet
Taxilane Wingtip Clearance	15 feet	18 feet	22 feet

* 50 Feet with an aircraft wheelbase less than 60 feet.
Source: Birk Hillman Consultants, Inc., 2000.

Run-Up Areas

Runway ends 13 and 31 have designated areas for aircraft run-ups. These run-up areas are important because they allow pilots to increase throttle settings and make a final check of the aircraft systems before actually taking the active runway and preparing for takeoff. This reduces runway occupancy times, improves capacity and enhances safety. In discussions with Air Traffic Controllers both of these run-up areas need to be improved and enlarged to decrease the amount of delay incurred for departing aircraft. Currently, these areas act as choke points on the airfield, and decrease the operational effectiveness of the entire runway/taxiway system. Additionally, it was recommended that a run-up area be constructed at both ends of Runway 5 and 23. Both of these areas have been identified as bottlenecks and run-up areas will help improve the overall efficiency and operational flow of the airfield. Whether these are constructed in the short term or part of the long term development, all of these run-up areas should be constructed to a size capable of accommodating the wingspan and length of a single Gulfstream IV or multiple smaller aircraft..

Helipad

Rotorcraft operations have steadily increased over the past couple of years, not only at Page Field but also in the State of Florida. Currently, there are no "official" helipads at the airport. The Lee County Emergency Management Service uses an area located adjacent to the Fire Station, and the other temporary helipad is located on the south ramp. An official helipad provides a controlled area for a rotorcraft to takeoff from and land on. Both a helipad and a helicopter parking area are important facilities for the safe operation of helicopters at a GA airport. It is anticipated that rotorcraft operations will continue to grow at Page Field. There are two helicopter training schools that operate out of FMY presently, and the number of flight students continues to grow for rotorcraft training.

According to the FAA AC 150/5390-2A, **Heliport Design,** it is required that a public use general aviation heliport have at least one Final Approach and Takeoff Area (FATO). It should be graded to assure proper drainage but should not exceed two percent in any area where a helicopter is expected to land. The Touchdown and Lift-off

Area (TLOF) is centered in the FATO. It is a paved section and is sized to at least ¾ of the design helicopter's overall length measured from the FATO boundaries. The size of the FATO, TLOF, the safety area surrounding the FATO and the pavement strength is all dependant on the design helicopter.

The design rotorcraft by definition is a generic helicopter which represents the maximum weight, overall length, skid/wheel base and rotor diameter of all the helicopters expected to operate at the facility. Presently there are seven based helicopters at FMY, and the design helicopter can be readily represented by the Bell Jet Ranger. The dimensional characteristics of this helicopter are as follows:

Max Takeoff Weight	4,450 lbs
Overall Length	43 feet
Rotor Diameter	37 feet
Undercarriage skid length	9.9 feet
Undercarriage skid width	7.2 feet

Based on heliport design criteria found in AC 150/5390-2A and the design helicopter characteristics, the area for a heliport at FMY should be approximately 10,921 square feet. This includes the safety area, the FATO and the TLOF. Due to the operational activity it was felt that one, or even two helipads were needed solely for the purpose to serve local and itinerant rotorcraft operations to and from FMY. The parking requirements will be addressed later in this chapter for both aircraft and helicopters. Further options and locations including a helicopter parking area will be discussed and explored in the Alternatives sections of this report.

Pavement Markings

Runway pavements are marked with painted lines and numbers in order to aid in the identification of the runways from the air and to provide information to the pilot during the approach to a runway phase of flight. There are three standard sets of markings used depending on the type of runway:

1. Basic - For runways with only visual or circle to land procedures. These markings consist of runway designation markers and a centerline stripe.

2. Non-precision - For runways to which a straight-in, non-precision instrument approach has been approved. These markings consist of runway designation markers, a centerline stripe, threshold bars, threshold markings, and aiming point markers.

3. Precision - For runways with a precision instrument approach. These markings consist of the non-precision markings plus touchdown zone stripes and side stripes indicating the extent of the full strength pavement.

Runway pavement and displaced threshold markings are painted white, while taxiway pavement markings are painted yellow. Taxiways generally have a centerline and pavement edge stripes, plus hold line markings at the entrance to a runway. FAA AC 150/5340-1G, "Standards for Airport Markings," contains the precise details of all these markings and will be used in the development of the Airport Layout Plan. All runway and taxiway markings periodically need to be remarked so that they remain visible to the users of the airport.

Runway 5 is currently marked as a precision instrument runway with a threshold bar that depicts where the usable landing pavement surface begins because of the 459 foot displaced threshold. The opposite end, Runway 23, is

marked the same as Runway 5 with a 399 foot displaced threshold. It is anticipated that through the use of Global Positioning System satellites, Runway 23 will ultimately have a precision instrument approach as well. Since the markings for Runway 5-23 comply with FAA standards set fourth in AC 150/5340-1G it is not anticipated that they will change over the course of the planning period.

Both runways at FMY will require hold position markings for taxiway/runway and runway/runway intersections. For a visual or non-precision instrument runway such as Runway 13-31, serving approach category A and B aircraft with design group designations of I-III the perpendicular distance from the runway centerline to intersecting runway or taxiway centerline is 200 feet for all hold short markings. For a precision approach runway such as Runway 5-23 serving approach category C and D aircraft with design group designations of I-IV, the hold short positions must be 250 feet perpendicular from the runway centerline to the intersecting taxiway or runway. It appears that these markings conform to the FAA standards but they will be field verified and corrective action recommended if needed.

Runway 13 is marked as a non-precision runway. As with the primary runway, Runway 13 has a threshold bar that marks the beginning of the usable landing pavement relative to the location of the 700 foot threshold displacement. Included in the 700 foot displaced threshold is an 85 foot blast pad that is marked and striped to FAA standards. The blast pad along with the blast fence acts as a buffer from jet blast for aircraft taking off Runway 13. Due to the location of the Fowler Street extension relative to the Runway 31 end, this displacement was a necessity. For the approach end of Runway 31, no threshold bar or threshold markings are required. However, the runway is missing the aiming point markings and as such, this runway does not conform to the runway marking standards set forth in the FAA Advisory Circular AC 150/5340-1G for a non-precision runway. A non-precision approach runway should have basic markings which include designation numbers, centerline markings, and aiming point markings. The addition of aiming point markings will assist pilots with a visual aiming point for landing operations and are required for even visual runways. Threshold markings are only required if the runway is used or intended to be used by international commercial transport aircraft. Runway markings may be upgraded to include elements that are not required but still must meet the minimum requirements for the type of approach that the runway has been designated. Any upgraded approaches would require markings in accordance with the aforementioned standards.

Signage

Currently the airport is in the process of implementing a new comprehensive runway, taxiway and apron lighted airfield signage plan to allow pilots the ability to locate things on the airfield, particularly during nighttime operations. The signage plan has been completed by Hole, Montes & Associates and the first phase of the signage plan will be installed sometime in 2000. The signage plan will be included in the Airport Layout Plan.

Pavement Lighting

The current runway system at FMY has sufficient pavement lighting for existing and anticipated future aircraft operations. Taxiway and apron lighting, however, is somewhat sporadic or nonexistent on some portions of the airfield. It is recommended that all existing as well as future taxiways and apron areas be equipped with Medium Intensity Taxiway Lighting.

Precision Instrument Approach

Presently FMY is equipped with a Category I instrument landing system (CAT I ILS) for Runway 5, consisting of a glideslope and localizer, but no approach lighting system is available. The FAA standards for CAT I ILS approaches provide for minimums down to 200 feet and visibility of one-half mile. Due to terrain features and obstacles within the approach and airport vicinity at FMY, these minimums may not be feasible without significant modifications of procedures and the removal of buildings off the runway ends to provide for the required approach lighting systems.

There are two types of precision instrument approach systems that should be considered relative to airports: an ILS, which is the conventional system used at airports around the world today including Page Field, and a state-of-the-art precision Global Positioning System (GPS), which will be available in the foreseeable future. Although the precision GPS systems have not yet been approved for stand alone CAT I approaches, it is anticipated that they will eventually replace ILS's due to the numerous technological and economic advantages associated with this type of approach.

GPS is a satellite based navigation system that consists of a network of satellites known as a constellation. This constellation provides a celestial reference for determining the position of any point on or above the Earth's surface. By analyzing the time delays of signals received from several of these satellites, a ground or air based receiver is able to determine latitude, longitude, and altitude. Although the ILS is still the most widely used instrument approach throughout the world, conversion to a GPS based system is occurring and provisions for GPS approach capabilities should be made at FMY. The ILS is an extremely old system and the technology improvements to navigation and precision approaches through the use of GPS provide for improved approaches to multiple runway ends utilizing a single differential receiver at substantial cost savings for the airport.

Since there exists a precision approach for Runway 5, the need for an approach lighting system also exists. Based on the Aviation Activity Forecasts, there were 15,101 annual instrument operations conducted at FMY in 1998. Because of the procedure used by the Air Traffic Control Tower (ATCT) at FMY, an accurate count of the instrument approaches under actual instrument meteorological conditions (IMC) is not known. Assuming the airport only operates at 2 percent of the time under IFR conditions, actual instrument operations would be around 303 annual operations. With an operational Approach Lighting System the visibility requirements could be lowered by as much as ¼ of a mile for the Runway 5 approach. Given the cost of the land and equipment as well as the environmental considerations, further study would be required to prove that the addition of an ALS is justified.

Non-precision Instrument Approach

Runway 5-23 alone does not provide adequate wind coverage for the smaller and light aircraft (10.5 knot cross wind component) during periods of instrument meteorological conditions. Adequate wind coverage at FMY for this group of aircraft is provided through the use of the crosswind runway, Runway 13-31. As such, the crosswind runway should provide for some type of enhanced approach capability. Since Runway 5-23 supports a precision and non-precision approach, a similar type of approach procedure would be desirable for the crosswind runway. Currently, there is a straight-in VOR non-precision approach published for Runway 13. There is a chance with the initiation of enroute GPS capability that VOR's may be de-commissioned thus eventually eliminating the VOR approach at FMY. However, non-precision GPS approaches have been published for all four runways at FMY and have been in place since 1999.

Visual Landing Aids

The airport is not equipped with Runway End Identifier Light (REIL) systems for any of the approaches to runway ends at FMY currently. This was a recommendation in the previous Master Plan which had not been implemented. If an ALS is not installed for Runway 5, it recommended that REIL's be installed at the end of Runway 5 as well as the other three runway ends. According to the FAA, all four runway ends meet the criteria for REIL's. In a discussion with numerous pilots they all stated that REIL's are beneficial in identifying the runway ends in areas where there are large concentration of lights, such as the area surrounding Fort Myers. The airport is located along one of the busiest traffic corridors, U.S. 41 in Ft. Myers, where there are a number of malls and restaurants and lighted facilities.

All four runway ends at FMY are served by four box Visual Approach Slope Indicators (VASIs) located on the left side of the runways. These visual approach slope indicators are relatively old and the FAA has recommended that all existing VASIs be replaced with Precision Approach Path Indicators (PAPIs) when their useful life has expired. This is largely due to the fact that VASIs are no longer produced and replacement parts are very hard to obtain. It is recommended that the replacement of the VASI's take place at the same time the airfield signage program is implemented.

LANDSIDE REQUIREMENTS

Landside facilities are those necessary for the handling of aircraft, passengers and cargo while on the ground. These facilities provide for the essential interface between the air and ground transportation modes. For the purposes of this analysis these areas will be subdivided into two parts: general aviation facilities and support facilities. The capacities of the various components of each area were examined relative to projected demand to identify future landside facility needs. In addition a tenant and users survey was developed, providing useful feedback and insight as to the demand for various types of facilities and services at Page Field. The results from the survey are ranked and the responses from many of the tenants and users are delineated in **Appendix A.**

Demand for General Aviation Pilot and Passenger Terminal Space

As overall general aviation activity increases, so too will the demand for pilot support space and passenger terminal facilities. Currently, the majority of the local and itinerant traffic is supported by The Aviation Center. The remaining local and itinerant traffic is either handled by the other, smaller General Aviation Center facility or they operate from their own based facilities such as hangars.

The space required for general aviation pilot and passenger terminal space differs from that of commercial operations. Typically, general aviation or FBO terminal areas require space for a pilot's lounge, flight planning room, concessions/vending area, passenger waiting area, and FBO management offices. It is difficult to estimate the amount of space required for such facilities as they are typically determined by the individual FBOs. The size of these facilities is more a business decision and are based on the experience of the FBO operator, the market demand, and the level of service they wish to provide.

Based on the demand relative to the existing FBO operation, additional FBO terminal space will be required to handle the future demand of general aviation pilots and passengers. Although the operational demand is expected

to increase by forty-three percent overall during the long term, the need for FBO space is expected to exceed the growth due to the presently perceived deficit. Additional pilot and passenger facilities, offices and meeting facilities are currently desired to meet the existing and anticipated demand. The facility also requires good landside and airfield access, and improved parking capacity. For the purpose of the analysis a future facility 15,000 ft2 in size should be provided for in future planning. This represents a little more than double the 6,702 ft2 currently available.

GENERAL AVIATION AIRCRAFT FACILITIES

The General Aviation Aircraft Facilities component addresses the aircraft parking and storage requirements for the airport. For planning purposes, based and itinerant aircraft requirements are usually considered separately since they serve different functions and have some varying requirements. At FMY, some aircraft parking areas accommodate both itinerant and based aircraft. However for this study, the two will be analyzed separately and then the total requirements of each combined together as a summary of the total aircraft apron required.

In general, the aircraft parking and storage requirements at an airport are typically provided through the combination of some or all of the following facilities:

Apron Area

Small aircraft - an outdoor parking space with tie-down capability, sized to accommodate single-engine and light twin-engine aircraft.

Large aircraft - spaces on a paved apron suitable for parking the larger business jets, such as the Challenger, Gulfstream, Learjet, and Falcon aircraft fleets.

Hangars

T-hangars - a fully enclosed building housing individual stalls, each capable of storing one aircraft, typically a single-engine or a light twin-engine aircraft.

Shade hangars - a structure with a protective roof but no walls, typically capable of holding numerous aircraft each, these are often referred to as aircraft shelters or shade ports. They can house both single engine aircraft or multi engine aircraft, and are often similar in configuration to T-hangars.

Cabin Class hangars- built as a stand alone structure or with a group of T-hangars. These hangars are built for the larger multi engine aircraft or smaller jet aircraft. Depending on size these hangars can also accommodate two smaller single engine aircraft simultaneously.

Multi-use hangars - a fully enclosed building typically capable of holding between six to eight aircraft each (sometime more), these are often referred to as storage hangars.

Corporate hangars - similar to multi-use hangars, but typically have an attached office. These hangars are assumed to hold one large jet or turboprop aircraft but may hold more depending on size.

Page Field currently has all of the types of facilities described above to accommodate aircraft parking and storage.

Itinerant Aircraft Parking Apron Area Requirements

The majority of GA itinerant aircraft utilize parking positions located on the South Ramp in the vicinity of The Aviation Center. This area provides approximately 60 aircraft tiedowns with access to the airport's FBO facilities. The South Ramp area can be broken down into two readily definable apron areas. Directly in front of the FBO, south of Taxilane D, up to 5 itinerant parking positions exist for larger twin engine aircraft of business jet aircraft. These positions are used mainly for aircraft staying at FMY for a short time period. Just north of Taxilane D approximately 54 tiedown positions exist. These are used for itinerant aircraft of any size staying for a couple of days to a couple of months.

The South Apron is a newly constructed itinerant and seasonal aircraft parking ramp designed for a variety of aircraft, including business jets that frequent FMY. The South Apron is situated south of Taxiway A-2 and between Taxilane D-1 and D-2. Taxilane D runs through the middle of the apron providing easy access to the departure ends of Runway 5 and Runway 31. An estimated 44,326 square yards of paved apron is available for itinerant aircraft parking. The apron can provide as many as six jet parking positions directly in front of the FBO facility, with additional positions available if necessary elsewhere on this ramp. On the north side of Taxilane D there are approximately 54 striped aircraft parking positions for both single engine or twin engine aircraft. To the east of The Aviation Center, directly north of Switlik Aviation there are an additional twelve striped parking positions that could be used for itinerant aircraft.

The requirement for itinerant aircraft parking can be derived by using the guidelines provided in FAA AC 150/5300-13 Change 5, "Airport Design." Based on these FAA guidelines, the itinerant parking demands for FMY were computed using the following steps:

1. Determine the peak month average day itinerant operations.
2. Add 10 percent to the above value to find peak day itinerant operations.
3. Find the total number of peak day itinerant aircraft. This is half of the peak day itinerant operations since it is assumed that each aircraft will make two operations.
4. Assume that 60 percent of the total number of peak day itinerant aircraft will need to be accommodated at one time.
5. Increase the final calculated amount by 10 percent. The FAA suggests that the value should be increased by 10 percent to accommodate expansion for at least the next two year period.

The final value is the total calculated demand for itinerant aircraft ramp area. More ramp area is generally required for itinerant aircraft parking than for based aircraft parking. Planning criterion of 700 square yards per peak itinerant aircraft as taken from the ramp dimension and diagrams contained in AC 150/5300-13, Appendix 5 Airport Design guide and were applied to the number of projected itinerant aircraft to determine future itinerant ramp requirements. This figure also takes into account the associated taxilane in front of the tiedown position. **Table 5-9** reflects the results of these calculations.

TABLE 5-9 ITINERANT AIRCRAFT APRON AREA REQUIREMENTS			
Year	**Required Apron Area (SY)**	**Existing Apron Area (SY)**	**Deficient/Surplus Apron Area (SY)**
Base Year			
1998	42,700	44,300	1,600
Forecast			
2005	54,000	44,300	(9,700)
2010	58,000	44,300	(13,700)
2020	66,000	44,300	(21,700)

Source: Birk Hillman Consultants, Inc., 2000.

The ramp requirements presented in **Table 5-9** assume that only the South Ramp is available for itinerant aircraft parking. The Southeast and Southwest ramps areas were not included in the existing apron for itinerant aircraft due to the necessity for these ramps to be utilized for local or based aircraft parking. Additionally, these two ramp areas are well to either side of the FBO and do not provide easy access to the facilities and services provided by the Fixed Base Operator.

The analysis indicates that the size of the current ramp areas will be adequate to handle the itinerant aircraft growth through the year 2010. It should be noted, however, that 50 percent of this ramp is currently used for seasonal or longer stay itinerant aircraft (6-9 months), which results in a severe shortage of itinerant ramp space during peak itinerant activity. It is important to note that the need for an expanded FBO facility will have a major bearing on the actual location or configuration of the future itinerant ramp. This will be further addressed in the alternatives section of this report.

Based Aircraft Parking Apron Area Requirements

Based aircraft demand was developed in the forecast chapter, Chapter 3, of this study. **Table 5-10** presents the total based aircraft required to be accommodated by tiedown and hangar facilities at the airport.

TABLE 5-10 TOTAL BASED AIRCRAFT					
Year	**Single Engine**	**Twin Engine**	**Jet**	**Rotor**	**Total Based Parking Spaces**
Base Year					
1998	211	30	7	7	255
Forecast					
2005	222	34	8	8	273
2010	230	37	10	9	286
2020	249	42	13	11	315

Source: Birk Hillman Consultants, Inc., 2000.

To determine the amount of apron area required for based aircraft parking, a few considerations must be made. First, it has been estimated that the t-hangar and clearspan hangar facilities at FMY accommodate approximately 30 percent of the current based aircraft. This estimate takes into consideration the annual flux of seasonal aircraft. Of the 255 based aircraft counted at FMY, approximately 179 were observed to be stored outside. Second, the weather in Florida is hot and wet year round. This fact, when taken into consideration with the cost to own and operate private aircraft, supports Florida's trend of a high demand for private aircraft hangars. In the past five years, the demand for hangars at airports throughout Florida has continued to increase. This was echoed throughout the sampling of pilot responses to the user survey. It is not unrealistic for airports even in tropical regions to have anywhere between 50-70 percent of the based aircraft stored in hangars. In fact, there are some airports in the state that have between 80 and 90 percent of the based aircraft in hangars. When analyzing other airports in the region it was noted that Naples Municipal Airport accommodates 229 of its 305 based aircraft, or approximately 75 percent in hangar facilities. The previous considerations coupled with the fact that there is currently a long waiting list for hangars at FMY and the airport receives numerous inquiries about available hangar space, a target of 67 percent or 2/3 of the based aircraft parking demand was set as that to be met through the use of hangar facilities by the end of the planning period.

To calculate the apron requirements for the remaining 33 percent of the based aircraft, a planning criterion of 600 square yards per based aircraft as taken from the ramp dimension and diagrams contained in AC 150/5300-13, Appendix 5 Airport Design guide and were applied to the number of projected tiedown based aircraft to determine future ramp requirements. This figure is slightly less than that used for the itinerant aircraft because it is assumed that a tighter spacing between based aircraft can be achieved. The actual area per aircraft on the apron will most likely vary, depending on the configuration and layout of the parking positions. It is also assumed that all of the existing and future based business jet aircraft will be stored in the hangar facilities. As with the itinerant aircraft calculations, the 600 square yards per based aircraft allows for clearance of wing-tips and maneuvering. Based on this 600 square yard guideline, **Table 5-11** shows the amount of apron area that will be needed to accommodate the remaining based aircraft.

TABLE 5-11
BASED AIRCRAFT APRON AREA REQUIREMENTS

Year	Percent of Based Aircraft Stored Outdoors	Required Based Aircraft Apron Parking Spaces	Total Based Aircraft Apron Area (SY)
Base Year			
1998	70%	179	107,400
Forecast			
2005	48%	131	78,600
2010	38%	109	65,400
2020	33%	103	61,800

Source: Birk Hillman Consultants, Inc., 2000.

Summary of Itinerant and Based Aircraft Apron Area Requirements

Table 5-12 provides a summary of the total apron area requirements for itinerant and based aircraft at FMY. Again, while itinerant apron demand increases in the future, based aircraft demand for apron actually decreases due to the storage of an increasing percentage of based aircraft in hangars.

TABLE 5-12 TOTAL APRON AREA REQUIREMENTS			
Year	**Total Itinerant Aircraft Apron Area (SY)**	**Total Based Aircraft Apron Area (SY)**	**Total Aircraft Apron Area Required (SY)**
Base Year			
1998	42,700	107,400	150,100
Forecast			
2005	54,000	78,600	132,600
2010	58,000	65,400	123,400
2020	66,000	61,400	127,400

Source: Birk Hillman Consultants, Inc., 2000.

As mentioned in the Inventory, there are four existing areas for apron expansion at FMY. These include the South Ramp Area, Southeast Ramp Area, Southwest Ramp Area, and the North Ramp Area, which is currently unused. An estimate of the total amount of existing apron space for these areas, in square yards, is reflected in **Table 5-13**. These areas do not include the individual aprons located in front of private hangars, which includes the large apron adjacent to Southern Machine and Steel (SMS), or the ramp associated with the t-hangars.

TABLE 5-13 TOTAL EXISTING APRON SPACE	
Airport Area	**Apron Area (SY)**
North Ramp Area	44,872
South Ramp Area	44,326
Southeast Ramp Area	22,873
Southwest Ramp Area	38,879
Total	150,950

Source: Birk Hillman Consultants, Inc., 2000.

While the total ramp currently available is roughly equal to the current ramp demand, the current inability to easily utilize the North Ramp results in a considerable existing shortfall approaching 45,000 yd2. Assuming all ramp areas are used in the future, the sum of the existing apron areas is approximately 23,550 square yards more than what has been calculated as being required by the end of the planning period. Additionally, it appears that the airport's demand for itinerant apron area beyond 2010 would be deficient due to the lack of sufficient itinerant ramp on the South Apron even if the entire apron was dedicated to itinerant activity. It should be also noted that the manner in which the future FBO demand is accommodated will have a direct bearing on the need and location for additional ramp.

As all of the aircraft parking aprons have just undergone major rehabilitation, no major ramp improvements are anticipated relative to pavement condition. However, standard annual and periodic pavement maintenance programs will be required throughout the planning period.

Hangar Demand

As for the existing hangars, all of the corporate/private hangars are occupied as are all of the FBO/large clearspan hangars. The demand for based aircraft hangar space at FMY is expected to increase from the current level of 30

percent to 67 percent by the end of the planning period. Since only a very small percentage of itinerant traffic (maintenance and occasional overnights) utilize an airport's hangar facilities, only based aircraft demand has been used to plan hangar space requirements. **Table 5-14** reflects the number of based aircraft that will require hangar space in the future.

TABLE 5-14
TOTAL HANGAR REQUIREMENTS

Year	Percent of Based Aircraft Stored in Hangars	Total Number of Based Aircraft	Total Number of Hangar Spaces
Base Year			
1998	30%	255	77
Forecast			
2003	52%	273	142
2008	62%	286	177
2018	67%	315	212

Source: Birk Hillman Consultants, Inc., 2000.

During a field visit to the airport, there were approximately 77 of the 255 based aircraft stored in hangars. Of these 77 aircraft, 57 were stored in T-hangars, 14 in corporate/multi-use hangars, and the remaining 6 aircraft were in shade hangars.

This distribution has been modified from what currently exists for the future requirements to show a larger percentage of aircraft moving from the Multi-use hangars to individual type t-hangars and shade hangars. This is based on the pilot survey and expressed demand of aircraft owners. Aircraft owners right now just want their aircraft protected from the weather and are willing to keep their aircraft in bulk storage. As additional t-hangars come on line the multi-use demand will decrease somewhat. Because of this, the future hangar demand is projected to be about 75 percent in t-hangars, 11 percent in shade hangars, and 13 percent in corporate/multi-use hangars and approximately 1 percent shifting towards private cabin class hangars. **Table 5-15** reflects the number of hangars required during the planning period along with the number of facilities required in the future.

TABLE 5-15
REQUIREMENT FOR HANGAR SPACE BY TYPE

Year	T-Hangars		Shade Hangars (6 aircraft per hangar)		Stand Alone Cabin Class Hangars		Corporate / Multi-Use Hangars	
	Based Aircraft to Use (75%)	Additional Units Required*	Based Aircraft to Use (11%)	Additional Units Required*	Based Aircraft to Use (1%)	Additional Units Required*	Based Aircraft to Use (13%)	Additional Units Required*
Base Year								
1998	57	0	6	0	0	0	14	0
Forecast								
2005	107	50	16	10	0	0	19	1
2010	133	26	20	4	2	2	23	1
2020	159	26	23	3	2	2	28	1
Total		**102**		**17**		**4**		**3**

Source: Birk Hillman Consultants, Inc., 2000.
*Note: Column represents the number of additional facilities required during that planning period.

The need for an additional 102 t-hangars is projected by the end of the planning period. If demand for aircraft hangars grows faster than anticipated during the planning period additional t-hangars or multi-use hangars may be required to meet this demand. According to the Lee County Port Authority the design for 3 new t-hangar buildings with a total of 26 units to be located in the east quadrant is completed and construction is anticipated to begin once state funding becomes available. The site for these buildings, which will accommodate 8-10 aircraft each in a nested configuration, is adjacent to Taxiway 'A', between the end of Runway 23 and Taxiway 'B'. In addition to these, 24 new t-hangars will need to be designed and constructed in order to meet the projected demand anticipated by 2005.

A more affordable solution to t-hangars are shade hangars, which were suggested by many of the local aircraft owners in the 1999 pilot and tenant survey. These are an alternative to T-hangars but it is understood that the FAA and the state will not fund shade hangar projects. Because of the high demand for shade hangars at FMY it was felt that a percentage of them should be provided for. By the end of the planning period 17 additional units will be required based on the percentage breakdown and anticipated demand. Typically, these hangars house 8-10 aircraft each. Based on the demand two additional shade hangars would be required by the end of the planning period.

By 2020, four stand alone cabin class hangars are anticipated to be required based on demand. From the pilot/tenant survey there seemed to be some interest in these types of hangars for the twin engine and small jet pilots. These could also accommodate two or more smaller single engine aircraft or even helicopters and could be leased to these pilots as well.

With the ever emerging presence of corporate and business jets, larger twin engine aircraft, as well as the special needs of helicopters, at least three additional corporate /multi-use hangars should be considered to meet the demand through the end of the planning period. This appears in line with the forecast for 24 jet/rotor aircraft by 2020.

In the Alternatives section a number of locations and options will be discussed further regarding the development of additional hangars.

SUPPORT FACILITIES

A number of facilities that do not logically fall within the above classifications of airfield, landside, or general aviation requirements, have been identified for inclusion in this master plan. The remaining facilities have been included and analyzed as support facilities.

FIS / Customs

The FIS/Customs will be used to process international arrival GA aircraft as a U.S. Port of Entry. This facility will provide a service that does not already exist on the west coast of Florida and will result in improved levels of service for the region and increased activity and revenues for the airport. Based on other airports of this size on the east coast of Florida with FIS/Customs facilities, a facility of 3,000 ft2 should be adequate to serve the demand for this type of service.

Restaurant

Restaurants have become ever more popular at GA airports by proving good food and a relaxing atmosphere for both the local and itinerant pilots. Many airports around Florida such as Space Coast Regional, Vero Beach, Sarasota Bradenton, Orlando Executive, and Charlotte County have restaurants located on the airfield. Based on the survey conducted during the Master Plan Update, which asked both local and itinerant pilots what facilities or services they would like to see developed at FMY, a restaurant received among the highest responses. In speaking with Air Traffic Control and the airport management, pilots and passengers continually ask if there is a restaurant located on the airport. A restaurant did exist at FMY a few years ago called Mike's Landing but unfortunately it went out of business. There is an immediate demand for a snack bar which could be accommodated in the GA terminal. Provision should be made for a future on-site restaurant but timing, and other factors suggest a restaurant be left to a private developer.

Self Maintenance Area

Pilots at FMY expressed an interest in a maintenance area designed to allow aircraft owners to perform minor maintenance on their aircraft. This was an improvement noted repeatedly in the user's survey and during the tenant user meetings. More general aviation airports are beginning to design areas for this purpose because it keeps hangars cleaner by encouraging aircraft owners to all do basic maintenance in the same designated area. Moreover it allows for environmental mitigation through the use of oil/water separators and consolidated collection of waste that might otherwise not be disposed of properly. Based on demand it is estimated that the facility be designed to accommodate two single engine aircraft simultaneously or one twin engine aircraft with ample space to expand in the future. It is suggested that at least one site on the airport have an area for self maintenance.

Wash Rack

Wash racks provide pilots a designated area to wash and care for their personal aircraft. The 1999 survey provided good insight as to the need for such a facility and it was a favorite among the facilities desired. Currently there is no designated area or facility where aircraft owners can wash their own aircraft. Provisions were made for such a facility in the east quadrant of the airport near the SMS hangar. Although the septic field for the SMS hangar was sized to accommodate the construction of a wash facility, it has yet to be developed. The wash racks should be designed to accommodate two single engine aircraft simultaneously or one twin engine aircraft with ample space for expansion in the future.

Fire Station

The fire station located on the airport does not have an ARFF index rating because the airport does not serve any air carrier aircraft with 5 or more average daily departures or more than 30 passenger seats. These requirements were set forth by the FAA in establishing Part 139 –Certification and Operations: Land Airports Servicing Certain Air Carriers. From the days of a commercial service airport, Page Field still operates some fire fighting equipment from when it carried an ARFF index and the facility does house a rescue helicopter. The equipment was noted as being in good condition and no additional fire fighting equipment is anticipated through the end of the planning period.

Restrooms

Currently, no restroom facilities exist on the eastside of the airfield. The survey and tenant user presentations commented on the fact that a facility such as this must be provided for these users. Based on this it is recommend that restroom facilities be incorporated in the immediate term of the development plan for the airport.

Fuel Storage Requirements

As outlined in **Table 2-7**, there are a number of above ground storage tanks at FMY for both Avgas and Jet fuel. In analyzing the fuel storage requirements for the airport, only The Aviation Center's fuel supply and the self-service fueling facility was considered. The Self-Serve Fueling facility was commissioned in 1999 and holds approximately 12,000 gallons of 100LL fuel. It is located on the southeast ramp for easy accessibility both airside and landside. The Avaition Center's fuel storage tanks consist of two 12,000 gallon Jet A-1 fuel tanks and one 12,000 gallon 100LL tank. The fuel supplies currently available to the public at FMY are regarded as adequate in terms of capacity. The future demand for aircraft fuel is driven primarily by the expected number of aircraft operations. Because no historical fuel sales information was provided, an estimate of the approximate gallons of fuel per flight was used. The ratio used for this study equals five gallons of fuel per each peak month piston operation and 125 gallons per peak month jet operation. This value is based on information from other airports with operations similar to that at FMY. To determine the existing supply in days the following formula was used:

Peak Month Demand / 30 (avg. # of days in a month) = peak day demand.
Existing Capacity / Peak Day Demand = Existing Supply (in days)

The peak month operations for piston and jet aircraft demand, existing capacity, and existing supply of fuel are shown in **Table 5-16.**

TABLE 5-16
FUEL STORAGE REQUIREMENTS

Year	Peak Month Operations	Peak Month Demand (gallons)	Existing Capacity (gallons)	Existing Supply (days)
Avgas Demand (Piston Operations)				
Base Year				
1998	8,052	40,260	12,000	9
Forecast				
2005	9,070	45,350	24,000	16
2010	9,729	48,645	24,000	15
2020	11,340	56,700	24,000	13
Jet Demand (Turbine Operations)				
Base Year				
1998	215	26,875	24,000	27
Forecast				
2005	233	29,125	24,000	25
2010	363	45,375	24,000	16
2020	473	59,125	24,000	12

Source: Birk Hillman Consultants, Inc., 2000.

Although it is anticipated no additional fuel storage is needed during the planning period, the tenants of the airport may want to improve or expand their current facilities. Future capacity expansions can be accommodated by additional trucks, installation of larger tanks at the existing facilities, or development of additional fueling facilities. There is space available to add additional facilities to the fuel farm in the future but space is limited.

Automobile Parking

A shortage of adequate parking is an existing problem with many of the airport's southside facilities. Currently, 115 parking spaces support a combined 195 tiedown positions, 45 T-hangar positions, over 20,000 ft² of multi-use hangar, a 9,000ft² maintenance hangar, 11,600 ft² of FBO and office buildings, as well as a number of currently unoccupied structures. Parking is accommodated in the grass field between the FBO building and Switlik aviation maintenance as well as the T-hangars, but overflow parking is often accommodated by other grass areas and portions of the ramp in and around the FBO. Additionally, up to 25 rental cars per day are used on a busy Friday, Saturday, Sunday during peak season.

Parking should be provided to accommodate 1 spot for 40% of the total tiedowns. Additionally, at least 1 spot for every 200 ft² of FBO and office space should be available. T-hangars should have at least 1 spot available for 40% of the hangars while clearspan hangars should have 1 spot available for every 600 ft² of space. Maintenance hangars should have 1 spot available for every 450 ft² of space.

TABLE 5-17
Current Vehicle Parking Requirement – South Airfield

Facility	Space Requirement
Tiedowns	78
T-Hangars	18
Multi-use Hangars	33
Maintenance Hangar	20
FBO/Office Buildings	58
Rental Car	10
Total	217

Source: Birk Hillman Consultants, Inc. 2000.

Table 5-17 outlines an estimate of the existing parking demand based on the current operational facilities on the airport's south side. The parking requirement is roughly twice that currently available on the airport's southside reflecting the perceived facility shortfall. Although the ability does exist to park vehicles in tiedown positions hangars, etc., the ability to accommodate a greater portion of this requirement with specific automobile facilities will reduce vehicles on the ramp resulting in a cleaner and safer operational environment.

FACILITY REQUIREMENTS SUMMARY TABLE

Exhibit 5-1 provides a summary of the facility requirements that were determined necessary to satisfy the forecasts of aviation demand presented in Chapter 4 of this study. These proposed facilities do not include any additional facilities which may be planned to enhance the airport.

Exhibit 5-1
Facility Requirement Summary
Page Field General Aviation Airport
Mater Plan Update

Airport Reference Code	Existing B-II/C-III	2005 B-II/C-III	2010 B-II/C-III	Through 2020 B-II/C-III
Runways		Add runup to both runway ends PAPI's – All runway ends REILS – All runway ends		
Runway 5/23			Stand Alone Cat I GPS capability – Runway 5 Runway 5 ALS (requires land acquisition)	Rehabilitate Runway
Runway 13/31		Upgrade marking on Runway 31	Rehabilitate Runway	
Taxiways				
Taxiway A		Potential reorientation between A1 and A2		Rehabilitate Taxiway
Taxiway B		Rehabilitate Taxiway		
Taxiway C		Extend Taxiway C to Runway 5 end		
Taxiway D				Rehabilitate Taxiway
Taxiway E				Rehabilitate Taxiway
Partial Parallel Taxiway				Add Partial Parallel T/W South Side of 13/31
Various		Replace Reflective Cans with MITL on Taxilanes D and E		
Helipad		10,951 ft² Helipad		
Signage		Upgrade Vault/Implement Signage Program		
General Aviation Terminal	6,072 ft²	15,000 ft²		
Apron				
Itinerant Apron	44,300 yd²	54,000 yd² required	58,000 yd² required	66,000 yd² required
Based Aircraft	255	273	286	315
Parking Apron	107,400 yd²	78,600 yd² required	65,400 yd² required	61,400 yd² required
Total Apron	150,100 yd² required	132,600 yd² required	123,400 yd² required	127,400 yd² required
Hangers				
Total Based Hangar	77 aircraft	115	148	163
T-Hangars	57 aircraft	79	103	114
Shade Hangars	6 aircraft	12	14	16
Corporate	1	2	3	3
Cabin Class	5 aircraft	8	9	10
Multi-Use Based	8 aircraft (→ 0)	14	19	20
Multi-Use Itinerant	0 aircraft (→ 7)	8 to 10	12 to 14	18 to 20
Supplemental Facilities				
GA FIS		3,000 ft² building		
Restaurant		4,000 ft² building		
Aircraft Maintenance Area		1,200 yd²		2,000 yd²
Wash Rack	730 yd² (60% des.)	1,200 yd²		2,000 yd²
Fuel Storage	24k g Jet A-1 24k g 100 LL			
Service Road		Connect South, East & North Quads		
Restroom		East Quad		
Airport Maintenance Facility	2,000 ft² building, 1 acre	2,000 ft² building, 1 acre		

*Apron area requirements for based aircraft decreases due to an increase in hangar storage.

Chapter Six – Airport Alternatives

INTRODUCTION

The previous chapter of the Master Plan identified a number of facilities that were determined necessary for Page Field (FMY) to adequately accommodate the aviation demands expected over the course of the twenty-year planning period. While the Facilities Requirements chapter identified the most favorable airport improvements that would be desired, it is the alternatives section that analyzes both the viability of meeting the identified needs as well as how best to undertake the improvements from an operational, environmental, political, and construction perspective. This chapter will identify potential concepts for meeting each major facility enhancement needed and will evaluate the positive and negative aspects of each concept.

DEVELOPMENT CONCEPT

The result of the Master Plan Update will be an organized development plan for the future configuration of FMY as presented on the Airport Layout Plan (ALP). The ALP will be presented in a subsequent chapter. In addition to being an essential guide for future development at the airport, the ALP is the key document for state and federal funding, with both the Florida Department of Transportation (FDOT) and Federal Aviation Administration (FAA) referring to the ALP for project eligibility determinations.

To develop this conceptual plan, it is necessary to conduct a complete and thorough review of the airport's role in the community. The best overall approach for the development of the facilities can then be planned in order to maintain the airport's required level of public service. However, level-of –service must be weighed against the cost of providing the services and their requisite facilities.

Ideally, an economically self-sufficient facility is the goal of any well-planned airport. To achieve that goal, it is not only necessary to satisfy the anticipated aviation demands, but also to manage the land use for both non-aviation and aviation developments, to minimize adverse impacts and costs, and maximum revenue for the airport.

Essentially, there are four primary components of the airport that will be addressed in the alternative analysis that follows. These airport components include:

- Terminal Area Alternatives
- Airfield Alternatives
- Navigational Aids Alternatives
- General Aviation Alternatives

The alternatives review not only considers these four key elements of the airport individually, but also must factor the interrelationships between these elements of the airport and the options for development within each component. Defining the future development configuration of facilities at FMY must also consider the phasing of development activities within the areas that are available, both now and in the future. Proper development phasing to avoid unnecessary or premature construction of costly infrastructure must also be considered in the planning process. Location and infrastructure service related considerations also play a large part in the alternatives analysis.

There are four primary areas for development at FMY. These areas include the East Quadrant, South Quadrant, West Quadrant, and the North Quadrant. Each of these will be considered as potential locations for the development of future aeronautical and non-aeronautical facilities.

Key considerations and issues must be factored into the analysis of alternatives. A number of these issues, which are directly related to the needs and specific characteristics of FMY, were identified prior to the start of the Master Plan Update. They include:

- The desire to utilize the newly rehabilitated North Apron adjacent to Page Field Commerce Center.
- Identification of future impacts to airfield navigational aids. The critical areas associated with the ILS can significantly impact the viability of each alternative.
- Maximizing the use of the North Apron without losing ramp to aircraft circulation including taxilanes to the terminal and hangars.
- The impact that site features, such as the low lying area near the southwest end of Runway 5-23, have on taxiway and other aviation related development alternatives.
- Provisions for an improved/expanded full service corporate/general aviation terminal facility that reflects the needs of the local community.
- Location of facilities and a strategy for accommodating the increasing demand of Design Group III aircraft.
- Immediate and future land acquisitions required for airport development or protection of airport approaches and imaginary surfaces.
- The requirements for achieving reduced visibility minimums on the primary landing runway, Runway 5.
- Consideration of land use compatibility with adjacent uses of land.
- The potential for revenue enhancement to support the development and upgrade of the required facilities.
- To better serve the specific needs of the local users (more T-hangars, etc.) at or above the minimum level of service being experienced throughout the region.
- Aesthetic improvements to the airport facilities in line with the increased service/quality level being experienced in the surrounding community.
- To design a development plan which effectively maximizes potential revenue and provides for the best use of available land for aviation and non-aviation development.
- To provide for the existing and future needs of the airport users.

In a more general sense, all of the alternatives were considered and developed to:

- fit into the long term airfield development plan identified by the Lee County Port Authority.
- maximize the utilization of existing property.
- conform with terminal area navigation aids and their associated critical areas (ILS as an example).
- minimize impacts related to known modifications of FAA airport design standards.
- avoid additional deviations to FAA airport design standards.
- evaluate impacts to airport operations resulting from construction phasing.
- provide expandability and flexibility.
- consider impacts to, and the need for, infrastructure, including: stormwater and basic public utilities.

Each of the alternatives in this chapter have also been developed so that they are compatible with one another. Upon completion of this chapter, each alternative, or component thereof, that is recommended for implementation will be modified to their final form to provide a concise development plan.

TERMINAL AREA ALTERNATIVES

The Facility Requirements analysis identified several areas where airside and landside improvements and enhancements were considered to be either necessary or beneficial to the overall operational efficiency of the airport. Many of these improvements and enhancements have direct interrelationships, based on their function, with other improvements. The need for, and location of, a new General Aviation Terminal was addressed first as a driving factor for many other improvements at FMY.

The general aviation terminal facility is intended to serve a variety of general aviation users. A survey conducted by Louis Harris & Associates ranked Florida in the top three states nationwide, behind California and Texas in total U.S. turbine business aircraft and operators. Product liability reforms, the promotion of "learn to fly" programs, and the addition of many new aircraft types, from smaller single engine jets to tilt-rotor aircraft, all seem to be affecting general aviation flying positively. Page Field is the only designated reliever in Southwest Florida, and the airport accounts for approximately twenty-seven percent of the region's general aviation market share. However, it should be noted that the airport is coming out of a long period of neglect during which many of its facilities fell into severe disrepair resulting in a loss of market share from the forty-plus percent that the airport was once responsible for. The Port Authority has taken considerable steps during the past few years to upgrade and improve the facilities, as well as the services provided and the impacts of these improvements are beginning to be observed in the traffic levels at the airport. The airport must meet the needs of the aviation community with better based aircraft facilities and meet the needs of the itinerant growth and demand. In keeping with this continued approach to change the airport's image and return a higher level of service to the surrounding community, the General Aviation Terminal becomes a major factor as it is the primary interface between the surrounding community and the airport itself.

Currently, based and itinerant users operate out of the small (6,000ft²) Aviation Center building in the South Quadrant. Although this building has provided the airport with an adequate facility for accommodating both itinerant and based aircraft, from turbine business jets to single engine aircraft, for almost twelve years, the building and area surrounding the Aviation Center including the adjacent aircraft apron has reached full capacity. The Aviation Center is undersized and in marginal condition. For this reason, the level of service and types of services offered at other general aviation reliever airports of this size are far beyond those available at Page Field. Additionally, there is a severe shortage of automobile parking in the entire South Quadrant of the airport and landside access is difficult. The location is not desirable for future expansion, nor does it provide the infrastructure needed to accommodate the traffic projected in the future. As traffic is projected to increase, the adjacent residential area becomes an increasing concern relative to aircraft noise.

In order to compete with other general aviation airports, serve the local business community and relieve the larger primary airports in the area of GA traffic, the airport and Port Authority recognizes it must move forward with the development of a new general aviation terminal elsewhere on the airport. This will open up the south quadrant area for other future aviation related uses. The airport has an on-going shortage of itinerant ramp space for seasonal pilots who base their aircraft at Page Field for only six to eight months out of the year especially during the winter months. Moving the terminal, thus moving a majority of itinerant operations, will help alleviate some of the mixing of based and itinerant operations. The taxiing congestion that occurs in south quadrant during peak season will be substantially less with moving the larger jet aircraft and itinerant aircraft to another part of the airfield. This move will also

segregate the jet aircraft from the smaller single engine and multi-engine piston aircraft. Additionally, a move will allow for the entire south quadrant to be dedicated to the based aircraft customer and their needs.

The general aviation terminal facility may be planned in any one of the three remaining development areas (North, East or West). However, due to the construction of new t-hangar facilities, the existing corporate hangar, and the poor landside access, the East Quadrant was considered undesirable for a terminal facility. Additionally, the Port Authority has already moved forward with designing additional hangars along the east side of the airport and, after further analysis, it was felt this represents the best use of the land. Therefore, only the North and West areas were considered for future terminal development. Because of the newly rehabilitated ramp on the north side and the improved access and vehicular parking area associated with the Florida Department of Law Enforcement project, any terminal development in the North Quadrant would benefit from the existing infrastructure located in this area.

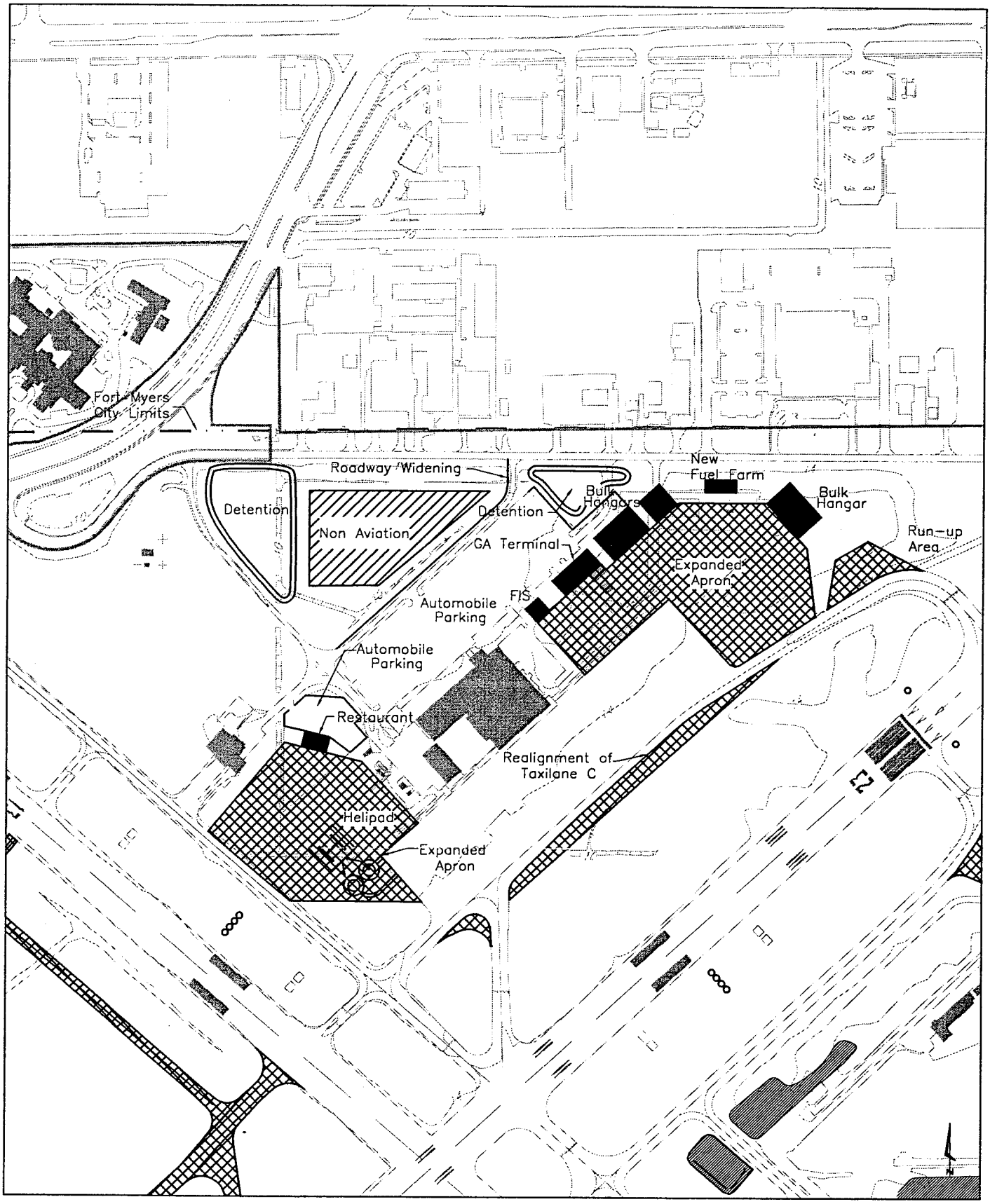
To assess the best option for the future 15,000 ft² GA Terminal, four alternatives were developed and analyzed relative to the specified requirements, and the option that best met the needs of FMY throughout the planning period was identified. The development and potential relocation of a new GA terminal will require that several other support facilities be relocated, or constructed, within close proximity to the new facility. These facilities include itinerant ramp, large "Bulk" hangars for itinerant aircraft storage, a fuel farm, an FIS/customs facility, and a helipad. It is estimated based on the calculated facility requirements that these ancillary facilities would require close to 15 acres. These ancillary facilities are critical to the function of each alternative and, as such, were incorporated into the assessment of each alternative.

To summarize the positive and negative features of each alternative, a number of attributes and drawbacks were identified. From these attributes and drawbacks a ranked and weighted matrix was developed that scored each alternative relative to various criteria. The sum of the scores for each was then compared to identify the best solution. The airport staff was instrumental in providing extensive input in determining the available courses of action as well as the positive and negative features of each alternative. Once the location and layout of the General Aviation Terminal were resolved, the analysis of alternatives designed to address airfield access, airfield alternatives, other general aviation alternatives, and non-aviation development alternatives at FMY could be evaluated.

Each of the four alternatives offers unique features that have been recognized and recommended in the layout of a terminal facility. These alternatives are discussed below:

Terminal Alternative One

Terminal Alternative One is the first of three options proposing terminal development on the north side of the airfield. Terminal Alternative One is located northeast of the Page Field Commerce Center building and south of North Airport Drive. **Exhibit 6-1** shows a conceptual layout of the terminal and ancillary support facilities associated with this alternative. This alternative maximizes use of the existing infrastructure, presents an efficient and expandable facility layout, provides an efficient airfield layout, is compatible with ADG-III aircraft, and provides adequate landside access.



Birk Hillman
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PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

GRAPHIC SCALE
0 200 400
SCALE IN FEET
Date: 04/07/2000

Terminal Alternative One

Exhibit 6-1

The layout of Terminal Alternative One was intended to maximize the use of the existing airside and landside infrastructure to their fullest extent without sacrificing flexibility. This includes using the existing north aircraft apron for aircraft parking rather than for circulation/parking, as required in some of the other terminal alternatives, and preserving a majority of the automobile parking that was recently rehabilitated as part of the FDLE project. Therefore, the terminal building is located closer to the North Apron capitalizing on both the available airside and landside facilities, as well as allowing additional space for other facilities in the North Quadrant.

Between the terminal building and the Page Field Commerce Center building is the FIS/customs facility. Its proximity to the GA Terminal will ensure a high level of service to inbound international activity, whether it is remaining at the airport or continuing onward to its final destination. The proposed building is a 3,000ft² one story building, which should provide ample space for the requirements of FIS/customs. To the east of the terminal is the first phase "Bulk" hangar which could accommodate eight to ten aircraft depending on their size. Two additional hangars are proposed in this area, one on either side of the fuel farm, to provide for the forecasted demand of itinerant aircraft. The fuel farm is located between the second and third phase bulk hangars. This facility has excellent access from both the airside and landside.

Utilities are presently in place on the north side of the airport with power, telephone, water, and sanitary sewage all currently servicing the Page Field Commerce Center building. Discussions with the utility companies indicated that the sizing and line capacity of the existing utilities should be adequate to handle the type of facility and expansion proposed with any development on the north side of the airport. However, utility coordination should be conducted during the design of the terminal and terminal support facilities to verify that no further upgrades are necessary.

The location of the terminal provides direct access to the existing North Apron for itinerant parking and is immediately accessible for aircraft landing on Runway 5. However, it would likely require the extension of Taxiway C to the Runway 5 approach/departure end to reduce the need for departing itinerant aircraft to cross Runway 5/23 to gain access to the primary departure runway end (Runway 5).

All of the taxiways and taxilanes currently serving the North Apron are designed for Aircraft Design Group (ADG) III, which makes this location very desirable for the new terminal. ADG III aircraft are an increasing concern for Page Field and general aviation airports nationwide because there is a trend towards larger corporate aircraft that is expected to eventually filter down to general aviation markets such as Page Field. This alternative will provide the flexibility to service ADG III aircraft without widening taxiways/taxilanes to service these types of aircraft. The remaining three alternatives were also developed so as to provide this flexibility.

Access for Terminal Alternative One would be served by North Airport Road, an existing dual lane roadway that intersects with both Fowler Street and, further to the west, US 41. A new intersection was constructed during the realignment and extension of Fowler Street. This intersection provides improved access into the north quadrant of the airport. A one-way loop road currently accesses the ATCT, the Page Field Commerce Center, and the Airport Fire Station. This road will need to be widened, and the intersection with north Terminal road upgraded, to provide two-way traffic to the new terminal and hangar facilities. This alternative further provides the opportunity for a high profile access road with a circular pick-up and drop-off area.

A summary of the attributes and drawbacks for Terminal Alternative One are listed below:

Attributes

- Utilizes existing aircraft apron most effectively over the other north alternatives
- Utilizes all of the existing automobile parking and roadway access
- Good access to GA terminal from Runway 5 arrivals
- Aircraft Design Group (ADG) III compatible
- Good fuel farm location (including accessibility and space for expansion)
- Compatible adjacent land uses (limited noise concerns)
- Least expensive of the four alternatives
- Utilizes existing utilities
- Provides potential for commercial development northwest of the terminal facility

Drawbacks

- Longer taxi to Runway 5 departure end
- Provides the least long-term itinerant ramp
- FIS/customs facility will impact usable ramp
- Potential for head to head taxiing
- Eliminates some commercial development potential
- Must construct parallel Taxiway C to avoid ADG III conflicts with Taxiway B
- Increases runway crossings on Runway 5-23 for departures, unless west parallel is constructed

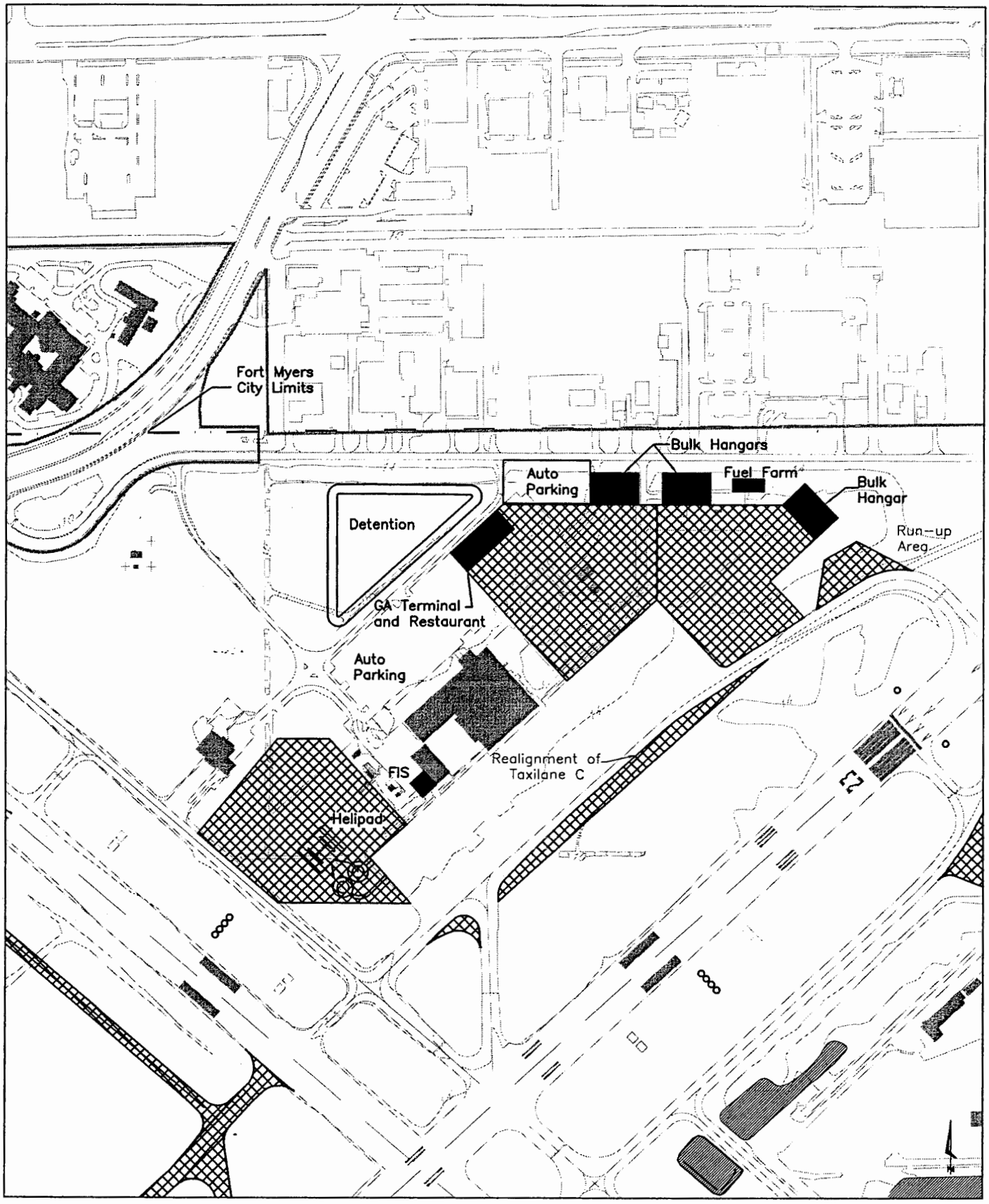
Terminal Alternative Two

Terminal Alternative Two also involves development of the terminal on the North side of the airfield. Similar to Terminal Alternative One, the location proposed by this alternative is northeast of the Page Field Commerce Center building, between the Runway 23 end and North Airport Road. **Exhibit 6-2** displays a conceptual layout of the terminal and ancillary support facilities associated with the new general aviation terminal. The focus of this alternative was to maximize the expansion of the North Apron to provide for the maximum ability to accommodate itinerant aircraft while utilizing existing infrastructure to the extent possible.

This maximum expansion of the North Apron places the terminal directly adjacent to the existing access road that currently serves all the facilities on the north side of the airfield. The bulk hangars and fuel farm are located to the east, directly adjacent the North Airport Road. Although more new apron is provided in this alternative, the depth of the apron area will require that much of it be used for the ingress and egress of aircraft to and from the hangars and terminal. This will have an additional impact when considering the wingspan and maneuvering requirements of ADG-III aircraft.

With this alternative an FIS/customs facility is located southwest of the Page Field Commerce Center adjacent to the existing air cargo building. This location allows for a designated sterile apron area directly in front of the facility for international flights to park and clear customs. The building is a one-story facility, approximately 3,000ft² and has potential for expansion if necessary.

Similar to Terminal Alternative One, vehicular access to Terminal Alternative Two would be served by North Airport Road. Currently, access from North Airport Road allows for a one-way loop circulation to the existing facilities on the north side. Modifications and improvements to this access road will be necessary to allow for more efficient circulation with this option. A new parking lot would be required to accommodate the vehicular parking requirements since the ramp expansion impacts almost half of the available parking in the newly rehabilitated parking lot. Additionally, provision of a circular drop-off area to the main entrance would impact the potential for parking further.



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Terminal Alternative Two
Exhibit 6-2

A summary of the attributes and drawbacks for Terminal Alternative Two are listed below.

Attributes

- Expands area available over any of the other North side alternatives
- Provides expansion potential beyond existing concept
- Good accessibility to the fuel farm (both landside and airside)
- Expands available aircraft parking/ allowing more apron development
- Reasonable access to new and existing infrastructure
- Good access to GA terminal from Runway 5 arrivals
- Limited noise impact concerns to surrounding property
- Utilizes existing access to North Quadrant
- Utilizes existing utilities including sanitary sewer, water, electric and telephone

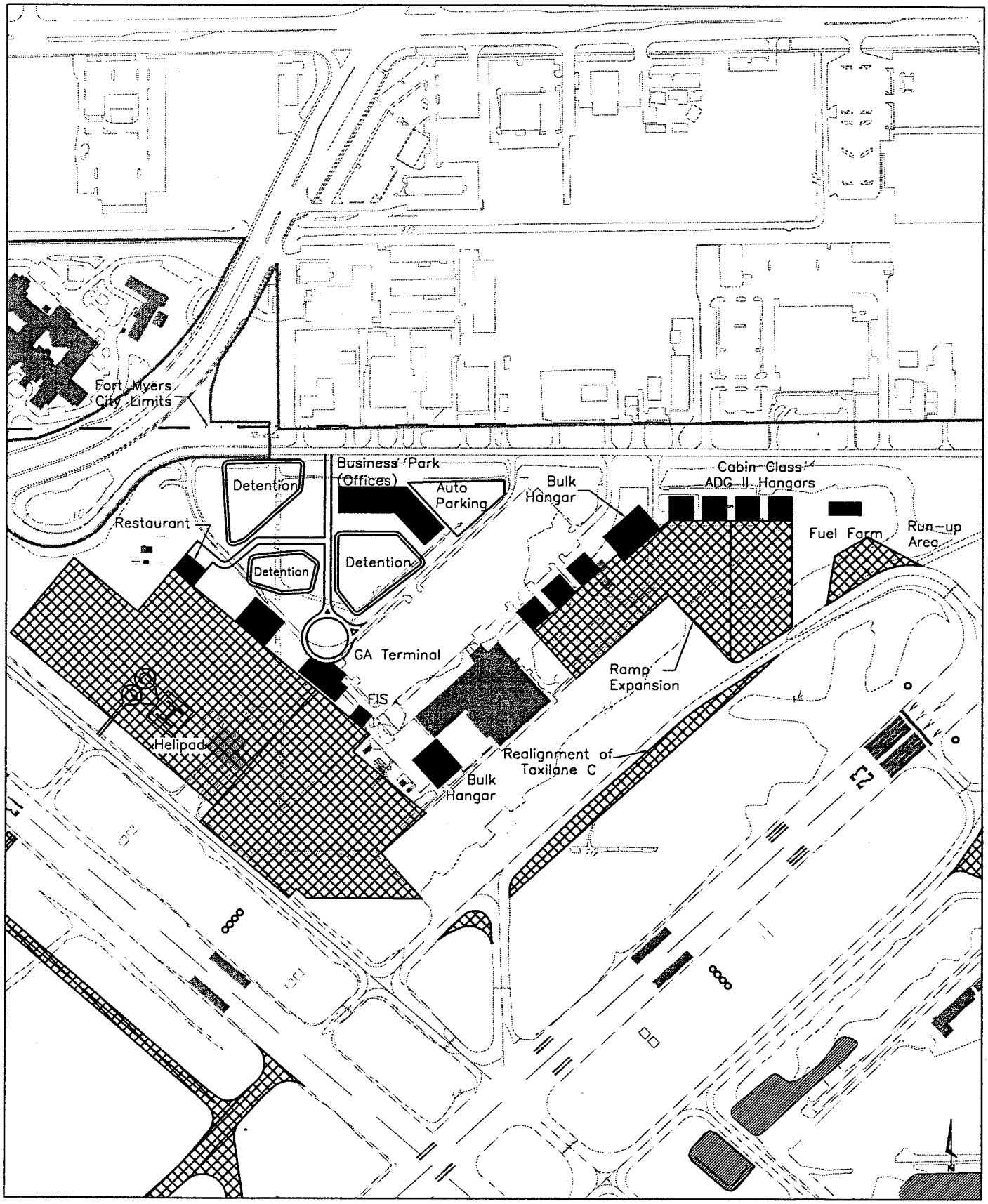
Drawbacks

- Increases runway crossings on Runway 5-23 for departures, unless west partial parallel is constructed
- Calls for need to extend west side partial parallel
- Taxi movement areas significantly impact available ramp
- Long walking distances to some aircraft parked on the existing North Apron
- ADG III more difficult to accommodate compared to other alternatives
- Ramp expansion is angular creating potential limitations
- Longest taxi to Runway 5 for departures
- Requires removal and relocation of a number of tiedowns on the existing ramp
- Impacts existing vehicle parking
- Access to terminal provides little improvement over existing south terminal
- Requires considerable stormwater mitigation
- FIS facility may impact usable apron

Terminal Alternative Three

Terminal Alternative Three is the third option that proposes development of the General Aviation Terminal on the north side of the airfield. The proposed location of the terminal is west of the Page Field Commerce Center building, east of the airport fire station, and northwest of the air traffic control tower. **Exhibit 6-3** depicts the location of the terminal and ancillary support facilities. This alternative proposes a terminal on the north side that will be central to the ultimate aviation development potential as compared to the previous two options.

The first phase of apron expansion will occur south of the proposed terminal and FIS, and east of the fire station to allow aircraft access to the terminal and FIS facilities. The FIS/customs facility would be located southeast of the terminal building in this alternative. Similar to Terminal Alternative One, the location provides convenience for users of the FIS facility due to the close proximity to the terminal. However, because of the configuration of the ramp and the location of FIS, access to the FIS apron may be difficult and may result in a reduction of itinerant aircraft parking in the immediate vicinity of the terminal.



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Terminal Alternative Three

Exhibit 6-3

East of the ATCT will be one of the two bulk hangars used to accommodate itinerant aircraft. This bulk hangar is located at the site of the existing cargo building. The second large bulk hangar required to meet the projected demand of itinerant aircraft would be added during the second phase of development at a site northeast of the Page Field Commerce Center. With the GA Terminal and one bulk hangar located west of the Commerce Center, considerable space remains available to the east to support additional hangar development. On either side of the second bulk hangar Terminal Alternative Three identifies the potential for "cabin class" ADG II hangars. This was an option shown in the North Quadrant for extended stay itinerant aircraft owners to have the ability to hangar their aircraft in a private or semi private hangar. These cabin class hangars could be used as overflow for the bulk hangars, or they could be leased to extended stay itinerant users. Five cabin class hangars are outlined during the planning period, with an additional two hangars that could be constructed beyond the twenty-year period.

A new vehicle access road will be designed to allow for a circular loop at the terminal building to provide for passenger drop-off. It will also allow access to the automobile parking area as well as access to other commercial and aviation related facilities on the north side of the airport.

A summary of the attributes and drawbacks for Terminal Alternative Three are listed below.

Attributes

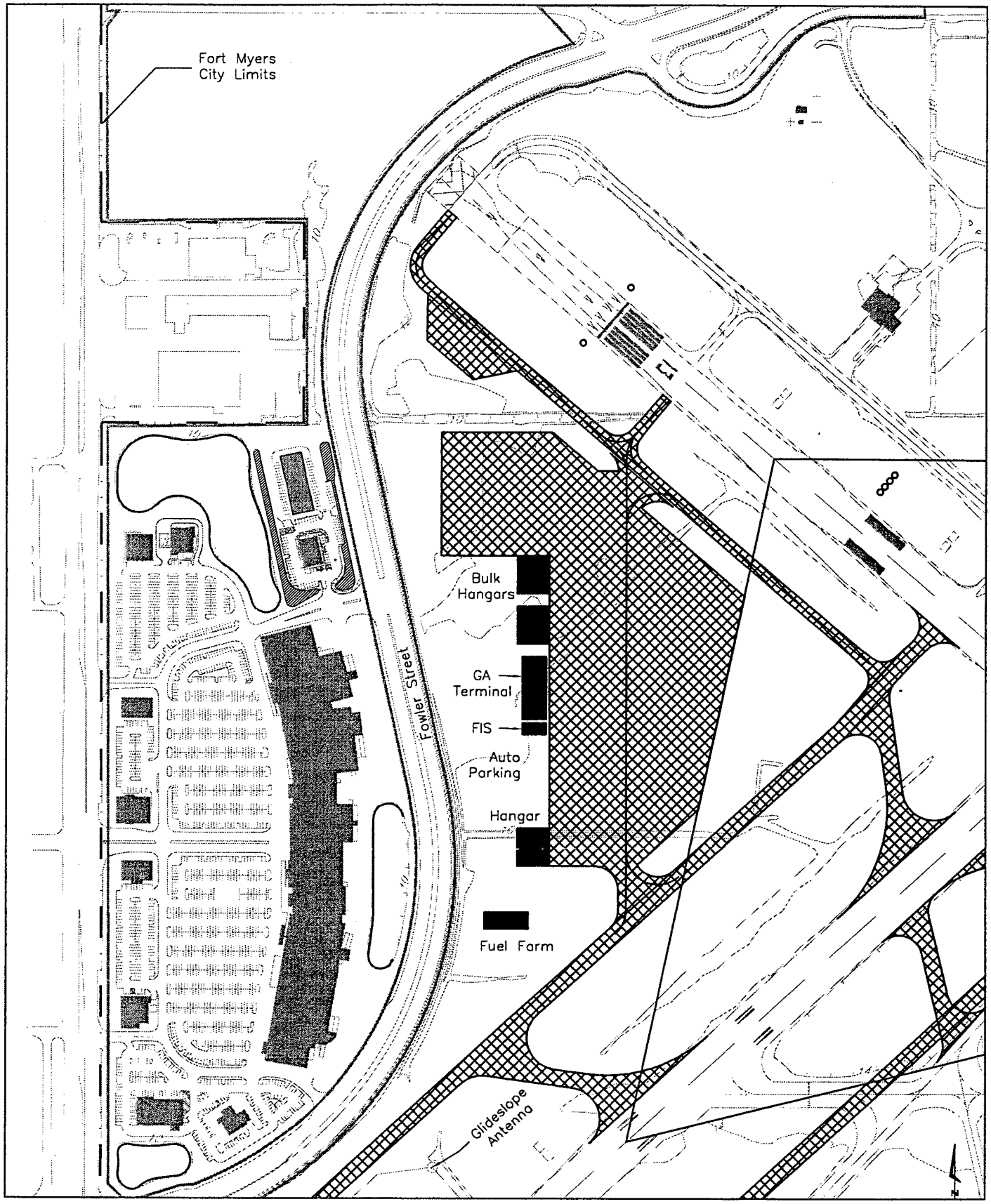
- Better ADG III handling than Alternative One or Two
- Good utilization of existing north ramp area
- Utilizes all of the existing auto parking associated with FDLE project
- Ultimately provides central access to apron areas from GA terminal
- Taxilane circulation more efficient on ramp – less head to head taxiing
- Allows for some commercial development potential on north side
- Alternative can be conveniently phased
- Potential for long term itinerant parking and storage on north side
- High profile access point and terminal drop-off area

Drawbacks

- Increases runway crossings on Runway 5-23 over other alternatives
- Ultimate expansion impacts fire station
- Runway crossings may call for west side parallel and glideslope relocation
- Potential drainage impacts
- ADG III problem with Taxiway B unless west parallel is constructed
- FIS facility may impact usable apron
- Most costly of any alternative for the north airfield
- Undesirable location of fuel farm

Terminal Alternative Four

Terminal Alternative Four outlines an option for the development of the GA Terminal and support facilities on the west side of the airfield. This pie shaped piece of property consists of approximately 52 acres of total land area located between Runway 5 and Runway 13. **Exhibit 6-4** outlines a conceptual layout of the terminal and support facilities associated with the development. Terminal Alternative Four represents a true greenfield concept. The site has no existing buildings or facilities other than the glideslope facility located at the southern end of the site. All infrastructure and utilities for the facilities would have to be constructed or extended into the site.



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Terminal Alternative Four

Exhibit 6-4

Since the site has no existing facilities, it does allow for an ideal layout of the GA terminal and support facilities. The terminal building for this alternative is centrally located with two bulk hangars located north of the proposed terminal to handle the demand through the planning period. Just south of the proposed terminal is the FIS/customs facility. It is anticipated that the FIS/customs facility will work in a similar fashion to Terminal Alternative One and Three, with a walkway connecting the terminal building to the FIS facility. Further to the south is the fuel farm, which will serve the West Quadrant only. Because of the lack of an access road on the west side of the airfield and no realistic means of accommodating one, it would be difficult to service the entire airfield from this single fuel farm. Vehicular access to the facility however, is excellent. An existing traffic light on Fowler Street adjacent the Page Field Commons shopping center provides a high profile access point with a major arterial connection to both Colonial and US 41.

While the site is ideal from a "start from scratch" perspective, a number of constraints limit the level of activity that this quadrant can support. Development in this quadrant is restricted by the runway visibility zone, the glideslope critical area, and the FAR Part 77 airspace surfaces, as well as by Fowler Street to the west. The site is relatively flat but tends to be low lying and, although it does have a number of deep drainage swales, standing water in this area after a major storm events are not uncommon. The flow of these swales is toward the west, away from the airport. Considerable provisions for the accommodation and treatment of stormwater can be expected with this alternative. Each of the referenced zones/critical areas etc., as well as the considerable drainage requirements, will work to reduce the amount of developable land in the West Quadrant.

In reviewing the itinerant ramp requirements throughout the 2020 planning period it can be determined that Terminal Alternative Four will be borderline in its ability to provide the required pavement. If itinerant demand were to exceed the level projected, the west side could, in fact, reach capacity prior to the end of the planning period with little or no opportunity for expansion.

A summary of the attributes and drawbacks for Terminal Alternative Four are listed below.

Attributes

- High profile access point with traffic light
- No impacts to existing facilities
- Taxilane circulation more efficient on ramp
- Minimizes head to head taxiing
- Opportunity to start from scratch
- Entire quadrant dedicated GA terminal and support facilities
- Leaves north side for commercial development

Drawbacks

- Considerable drainage impacts
- Most expensive of any of the alternatives
- May not meet the long term itinerant requirements
- Lack of available utilities, roadways and infrastructure
- Limited access to other portions of the airfield
- Limited expansion capability beyond the planning period
- Does not allow for use of existing North Apron and auto parking

Terminal Alternative Comparison Matrix

To assess the best GA terminal alternative for future consideration and refinement, a weighted comparison matrix was developed to provide an overall quantitative comparison of the alternatives based on individual factors having varying relative importance. These factors outline key areas of concern relative to operational, functional, environmental, cost and other considerations which assess the benefit of a given alternative while also considering potential negative aspects. The purpose of a weighted comparison matrix is to provide for an objective non-biased analysis that appropriately addresses the airport's local concerns and priorities.

There were twenty factors identified in the assessment of terminal alternatives for FMY, covering a broad range of items. The weighted value for each matrix factor was determined by selecting those areas deemed most significant to the community, the local environment, and the safety of aircraft operations. The following is a discussion of each of the factors or criteria used to determine the recommended alternative along with its relative weight. Factors with a higher weight are of higher importance.

Factors with a weighting of 12

- Noise concerns with adjacent land uses
  As the larger types of aircraft and frequency of aircraft visiting FMY increases, this factor relates to the potential noise impacts associated with the location of the proposed alternative.
- Expansion Potential
  This factor addresses the adequacy of land available to meet possible facility expansion such as terminal, apron, or the addition of hangars.
- Cost of Construction
  This element considers the relative costs of constructing the alternative.
- Meet projected itinerant aircraft demand
  This factor addresses how the proposed alternative meets the demand for the twenty year period in addition to how well it accommodates ADG III aircraft.

Factors with a weighting of 8

- Best utilization of north side infrastructure (includes aircraft apron, access, auto parking)
  This element addresses how effectively the alternative utilizes the new construction on the north side of the airfield.
- Use of existing utilities
  This factor is measured in terms of ease of obtaining power, water, sanitary sewage and telephone.
- Landside facilities / parking meets demand
  Evaluates whether the landside facilities, including automobile parking meet the demand placed on them by the projected forecasts.
- Potential for taxiing incursions
  This factor evaluates whether the aircraft taxiing incursions and conflicts are more likely to occur with the location of each alternative.

- Crossing of the primary runway for departures
  This factor evaluates taxiing delays as they pertain to the length of taxiing to the active runway as well as the requirement to cross the active runway for departure.
- Potential drainage impacts
  This factor addresses the level of stormwater management improvements required by the alternative.

  Fuel Farm accessibility
  Fuel farm accessibility addresses both landside and airside fuel farm access as well as how conveniently located the facilities are relative to servicing other areas of the airport.
- Commercial development potential
  This factor evaluates the potential for commercial development on airport property to provide an increased revenue stream.
- Aircraft circulation on ramp
  Assesses whether the ramp provides for ample circulation of aircraft including taxilanes to access the terminal and support facilities without eliminating aircraft tiedown positions.
- Phasing options
  Addresses how well the option can be phased and what flexibility the option offers as far as phasing alternatives.
- Environmental Impacts (animals and plants)
  This factor relates the potential environmental impacts to the proposed airport alternative.
- Accessibility to major arterial roadway
  Assesses how accessible the airport terminal alternative is from the major arterial roadways.

Factors with a weighting of 2

- Utilizes existing roadway access
  Addresses how well the alternative utilizes existing access roadways to access the terminal.
- Easy accessibility to apron for Runway 5 arrivals
  This factor evaluates taxiing to the apron and delays associated with arrival aircraft on Runway 5.
- Centrally located General Aviation Terminal
  Addresses the location of the terminal relative to other facilities and the aircraft parking apron.
- Potential for accommodating based aircraft
  Assesses the potential for the apron to provide for based aircraft parking, or long term (6 months or longer) itinerant parking.

Although it is not always easy to measure or quantify many of the criteria, alternatives can be evaluated based on the criteria and ranked relative to one another. The alternatives are rated against the criteria as: (5) best or highest rating, (4) second best or good rating, (3) third best or average rating, (2) fourth best or poor rating and (1) fifth best or worst rating. In certain circumstances more than one alternative might receive the same rating if they are perceived to have similar characteristics. An alternative was given a rating of three if there was nothing particularly positive or negative relative to the identified criteria. Each rating is then multiplied by the weighted value to arrive at the score for that alternative's factor. The scores for each criteria are summed to arrive at a total score. The alternative with the highest total score is considered the preferred alternative. **Table 6-1** presents the completed Terminal Comparison Matrix.

Table 6-1
Terminal Comparison Matrix through 2020

Review Criteria	Weighting Factor	Terminal Alternative 1		Terminal Alternative 2		Terminal Alternative 3		Terminal Alternative 4		South Alternative	
Operational											
Utilizes existing north side infrastructure effectively (aircraft apron, access, auto parking)	*8*	5	40	3	24	4	32	1	8	1	8
Best use of existing utilities	*8*	4	32	3	24	3	24	1	8	4	32
Utilizes existing roadway access	*2*	4	8	4	8	3	6	1	2	4	8
Accessibility from Runway 5 by arrival aircraft	*2*	5	10	5	10	5	10	3	6	2	4
Expansion Potential (beyond 20 year concept)	*12*	3	36	4	48	5	60	1	12	3	36
Noise concerns with adjacent land uses	*12*	5	60	4	48	4	48	3	36	2	24
Landside facilities / parking meets demand	*8*	5	40	4	32	4	32	3	24	3	24
Cost of construction	*12*	4	48	3	36	2	24	1	12	5	60
Potential for aircraft taxiing incursions	*8*	3	24	3	24	4	32	4	32	5	40
Crossing of primary runway for departures	*8*	2	16	2	16	3	24	4	32	5	40
Meets projected itinerant demand	*12*	3	36	3	36	4	48	1	12	3	36
Potential drainage impacts	*8*	4	32	3	24	3	24	1	8	4	32
Fuel farm accessibility from both airside and landside	*8*	5	40	5	40	4	32	3	24	3	24
Commercial development potential	*8*	4	32	4	32	4	32	4	32	5	40
Centrally located GA terminal (ultimate phase)	*2*	4	8	2	4	5	10	5	10	4	8
Aircraft circulation on ramp	*8*	4	32	2	16	3	24	4	32	4	32
Phasing options	*8*	5	40	4	32	5	40	2	16	3	24
Potential for accommodating based aircraft	*2*	1	2	2	4	4	8	1	2	3	6
Environmental Impacts (plants and animals)	*8*	4	32	4	32	4	32	1	8	5	40
Accessibility to major arterial roadway	*8*	4	32	4	32	4	32	5	40	5	40
TOTALS		78	**600**	68	**522**	76	**574**	49	**356**	73	**558**

Source: BHC Analysis 2000.

Table 6-1 indicates that Terminal Alternative One, with an overall point total of **600**, is the preferred alternative. Based on total points, the alternatives can be ranked as follows:

1. Terminal Alternative One (600 points)
2. Terminal Alternative Three (574 points)
3. South Alternative (558 points)
4. Terminal Alternative Two (522 points)
5. Terminal Alternative Four (356 points)

Preferred Terminal Layout

Based on a review of the layout, functionality, ease of expansion, and the comparative matrix, Terminal Alternative One appears to be the recommended, or preferred alternative, for further consideration and refinement. As such, the remaining facilities reviewed in this alternatives analysis will assume relocation of the existing GA terminal facility to a location and general configuration outlined for this alternative.

AIRFIELD ALTERNATIVES

The primary runway at Page Field, Runway 5-23, is not served by a full length parallel taxiway. Although a taxiway currently exists on the south side of Runway 5-23 and extends along its full length, its configuration is not ideal, reducing its efficiency and creating the potential for pilot confusion while taxiing. Given the considerable increase in traffic in 1999 and the projected increase throughout the 2020 planning period, parallel taxiway improvements will be required to maximize the capacity of the runway and airfield, as well as improve operational safety. The relocated general aviation terminal facility will be served by a partial parallel taxiway located in the North Quadrant, parallel to Runway 5-23. However, with the planned relocation of itinerant activity to the north, a full length north parallel taxiway would be desirable to limit the crossing of Runway 5-23 and provide itinerant aircraft access to the airport's primary departure runway end, Runway 5. Additionally, a full length north parallel taxiway is required to support the potential for aviation development in the West Quadrant of the airport.

It should be noted that the final Airport Layout Plan will reflect the build out of both parallel taxiways. However, with the separation of aircraft operations on the airfield, itinerant to the north and based to the south, the need for full improvements both north and south of the runway will not likely be needed until later in the planning period. As such, this analysis will serve to identify the best path for the phasing and development of these taxiways.

There are essentially three options for the initial parallel taxiway development. These include a reconfigured parallel taxiway on the south side of Runway 5-23, extension of the parallel taxiway on the north side of Runway 5-23, or a combination of the two. No matter which option is selected, any parallel taxiway to Runway 5-23 will need to be constructed with a minimum runway centerline to parallel taxiway centerline separation of 400 feet. This is based on the criteria contained in **FAA AC 150/5300-13 Change 5 "Airport Design"** for aircraft in Approach Category C and Design Group III. Likewise, whether the proposed parallel taxiway for Runway 5-23 is constructed on the north or south side of the runway, it should be constructed to a width of 50 feet and provide access to the existing taxiway system of the airport.

Alternative A – Straighten Parallel Taxiway "A"

Taxiway A runs along the south side of Runway 5-23 connecting the Runway 5 end to the Runway 23 end. The taxiway runs parallel to the runway with a 400-foot spacing north of the Runway 13-31 intersection but begins to diverge from its parallel orientation just south of the intersection. As it reaches a point west of the GA terminal area, at the westernmost point of Taxiway D, Taxiway A jogs back to a 400-foot spacing and continues to the Runway 5 end. While the divergence of the taxiway provides improved access for Runway 5 arrivals when transiting to the terminal area, it does create some confusion for pilots transitioning from the terminal area to the Runway 5 departure end since Taxiway A is encountered twice. Additionally the jog does create confusion and reduced efficiency for pilots from the east quadrant that are departing Runway 5. It also has the potential to create a bottleneck at the west ramp. Additional facilities are planned for this portion of the airfield that will result in

increased activity from this quadrant, thus the problems associated with the orientation of the taxiway can be expected to get worse with time. Alternative A, depicted in **Exhibit 6-5**, proposes the reorientation of the parallel taxiway to allow for an improved parallel taxiway configuration that no longer requires the jog and reduces the potential for pilot confusion and bottlenecks. Specifically, the reorientation would affect the portion of Taxiway A between its intersection with Runway 13-31 and Taxiway D. This section would be reoriented so that is parallel to the runway with the same 400-foot spacing of the balance of the taxiway.

A summary of the attributes and drawbacks for Alternative A follows:

Attributes

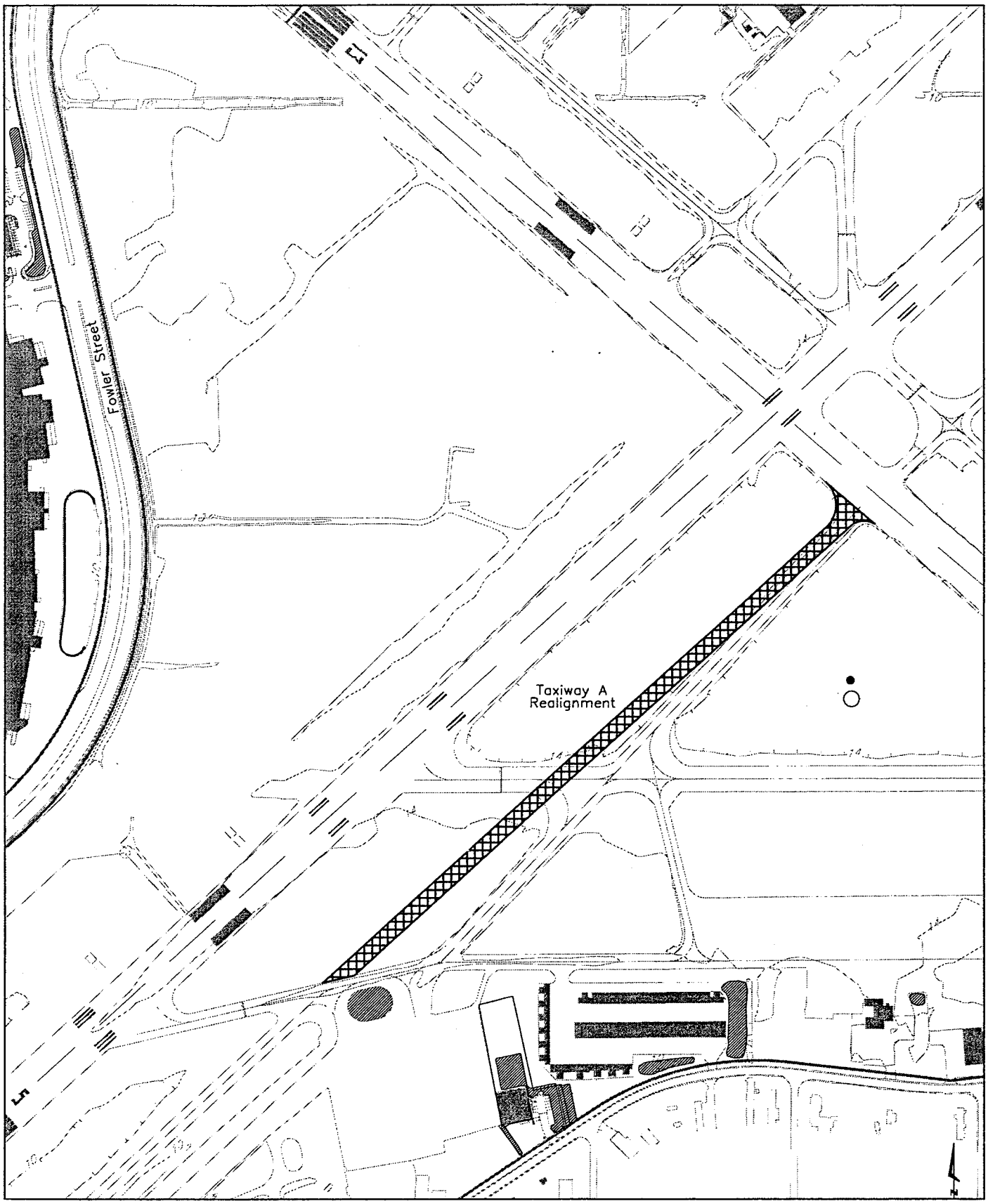
- Enhances access to Runway 5 departure queue for training activity
- Improves access to Runway 5 for the increased activity coming from the expanding t-hangar facilities in the East Quadrant
- Reduces pilot confusion when transitioning from Taxiway D to A-2/A
- Least costly approach
- Little or no storm water or drainage implications

Drawbacks

- With relocation of new terminal to the north, itinerant aircraft would benefit from reorientation only if the north parallel taxiway is not built
- New terminal location will result in added demand for Runway 23 departures over noise sensitive areas
- Would require the crossing of Runway 5-23 for itinerant departures on Runway 5, reducing airport capacity
- Long taxi distance for itinerant departures on Runway 5 and arrivals on Runway 23

Alternative B – Extend Taxiway "C" to Runway 5 End

Taxiway C is a partial parallel taxiway serving Runway 5-23 in the North Quadrant of the airport. The taxiway currently starts at the approach end of Runway 23 and extends along the south edge of the North Apron to Runway 13-31 while maintaining a parallel spacing of approximately 540 feet. Alternative B, outlined in **Exhibit 6-6**, recognizes the relocation of the GA terminal to the North Apron and provides a direct link between the North Quadrant and the primary runway, Runway 5, for departures. This direct link would consist of the extension of Taxiway C to the Runway 5 end. Although Category C-III would normally only require a 400' parallel spacing for this extension, the location of the glideslope antenna and its associated critical area requires a greater spacing to ensure aircraft taxiing past the glideslope do not affect its signal. In this case, providing the maximum possible clearance will also help to ensure that the glideslope grading requirements can be accommodated so that the height and location of the taxiway itself does not create a signal problem. Due to the location of Fowler Street connector, and the desire to accommodate ADG III aircraft, the maximum taxiway/runway spacing that can be maintained as it passes the most critical point of the roadway is 510 feet. This point is also directly adjacent the glideslope which is located 350 feet from the runway centerline. This would provide 160 feet of clearance between the taxiway and the glideslope antenna. Based on **FAA Order 6750.16C, *Siting Criteria for Instrument Landing Systems***, the glideslope critical area for a Category I ILS, with small aircraft, would extend 100 feet beyond the glideslope in the direction away from the runway. This is the "minimum allowable distance form the nearest point on the aircraft longitudinal axis (line from nose to tail) to the glideslope antenna". Small aircraft are defined as "aircraft with dimensions less than 60'in length or 20' in height; i.e. King air." Therefore, the 160 foot clearance provided by the 510 foot spacing would be sufficient for a vast majority of aircraft expected to serve FMY.



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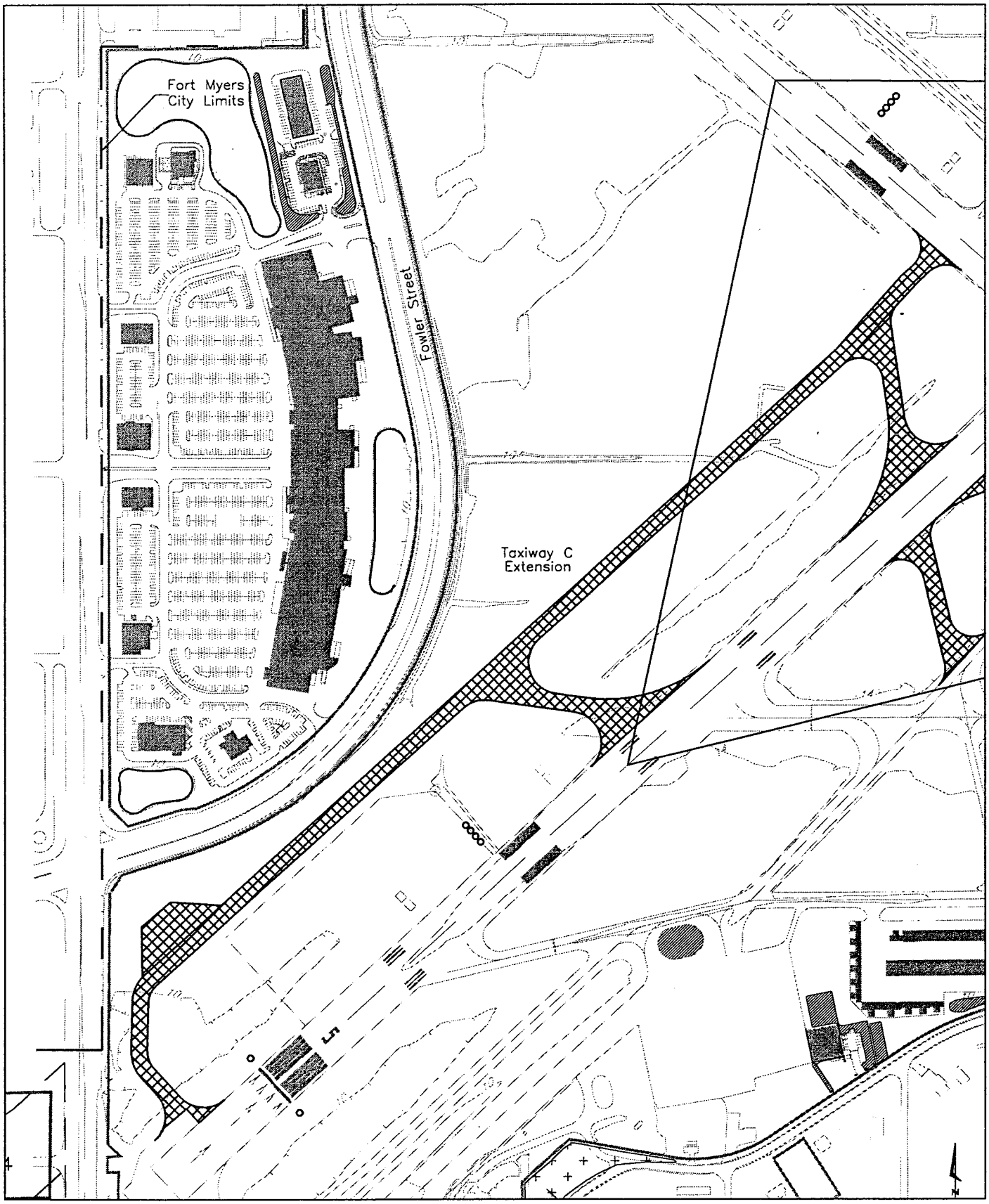
Airfield Alternative
A
Exhibit 6-5



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Airfield Alternative B
Exhibit 6-6

When medium aircraft are using the taxiway operational restrictions may be required. Medium aircraft require that the critical area extend 200 feet beyond the glideslope versus the 100 feet identified for small aircraft. Medium aircraft are identified "as aircraft larger than small aircraft but less than 160 feet in length or 38 feet in height (i.e. B-727, MD-80). Some large business aircraft will fall into this category. Operational procedures should be put in place to ensure that these aircraft do not impact instrument operations

A summary of the attributes and drawbacks for Alternative B follows:

Attributes

- No crossing of Runway 5 for itinerant departures resulting in reduced delays
- Reduced potential for runway incursions
- Minimizes potential for noise impacts to southwest (minimizes need for Runway 23 departures)
- Provides ADG-III capability on both sides of 5-23
- Provides impetus for West Quadrant aviation related development
- Limits the mixing of itinerant and based aircraft
- Provides shortest taxiing route for both arriving and departing itinerant aircraft.
- Balances airfield capacity between both the north and south portions of the airport

Drawbacks

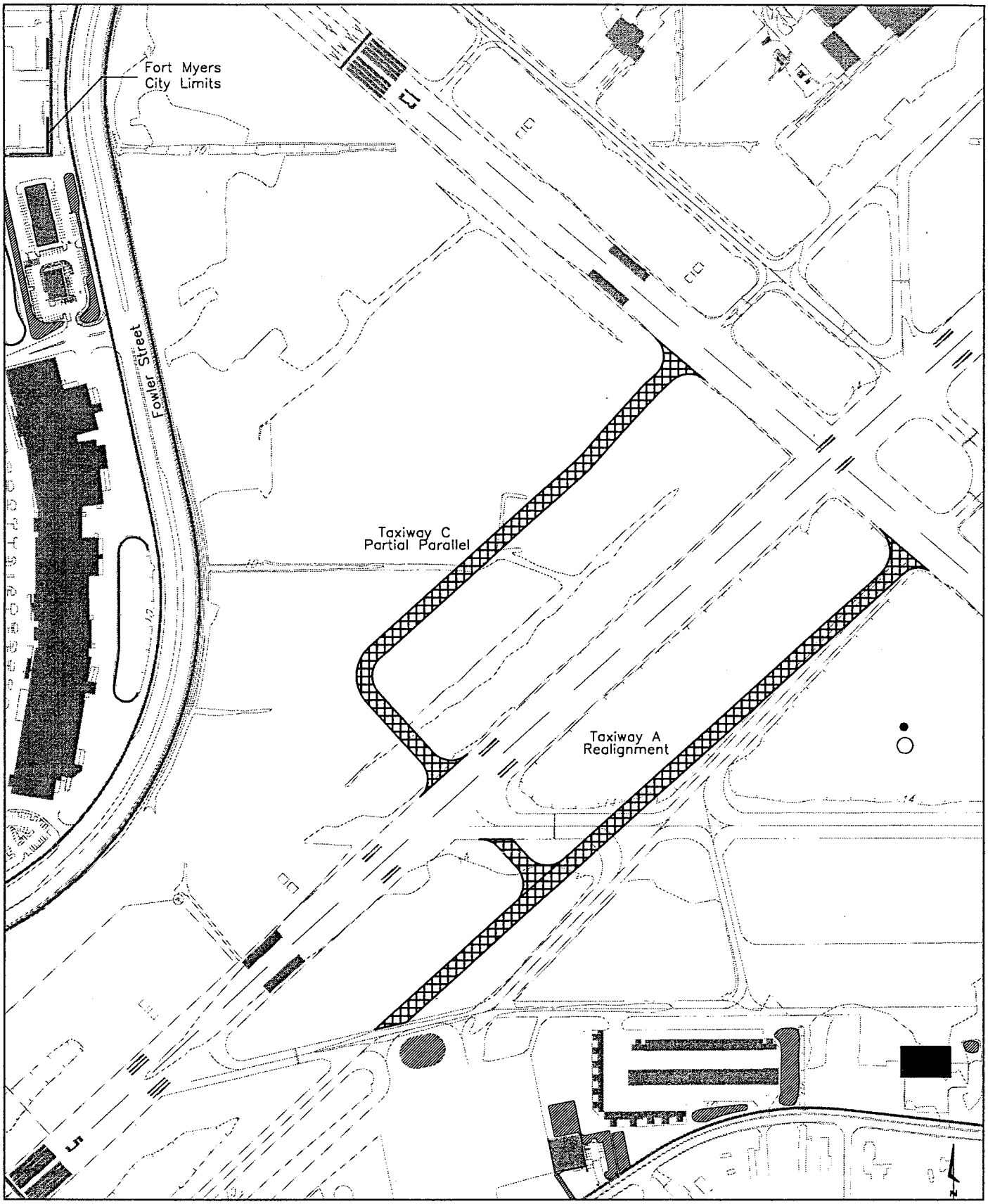
- Will require glideslope critical area improvements
- The glideslope not be available for approaches during a period of the construction
- Most costly approach
- Has stormwater and drainage implications

Alternative C – Realignment of Taxiway "A" and Partial Extension of Taxiway "C"

Alternative C, the third and final alternative, is a hybrid of the first two alternatives. In this alternative, Taxiway C is partially extended beyond Runway 13-31 delaying the need to extend the taxiway to a full length parallel taxiway on the north side of the runway. This alternative must be coordinated so that the realignment of Taxiway A occurs first. This will allow for the partial extension of Taxiway C to connect with Taxiway A, allowing for a smooth and straight transition when crossing Runway 5. This alternative is viable only if it is phased properly with the taxiway realignment improvement. Alternative C is presented in **Exhibit 6-7**.

Attributes

- Enhances access to Runway 5 departure queue for training activity
- Improves access to Runway 5 for the increased activity coming from the expanding t-hangar facilities in the east quadrant
- Reduces pilot confusion when transitioning from Taxiway D to A-2/A
- Second least costly approach
- Minimal stormwater management implications
- Improves flow and access to the north GA terminal area



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Airfield Alternative C
Exhibit 6-7

Drawbacks

- Still requires crossing of Runway 5-23 to get to Runway 5 departure end
- Itinerant demand may increase for Runway 23 departures
- With relocation of new terminal to the north, itinerant aircraft would benefit from reorientation only if the north parallel taxiway is not built.
- New terminal location could still result in added demand for Runway 23 departures over noise sensitive areas
- Would require the crossing of Runway 5-23 for itinerant departures on Runway 5 and arrivals on Runway 23, reducing airport capacity.
- Longer taxi distance for itinerant departures on Runway 5 and arrivals on Runway 23 than with Alternative B

Preferred Alternative

As indicated prior, all of the development outlined by the alternatives in this section is planned for construction at some point during the planning period. However, the phasing and timing of implementation is the primary issue. Alternative A, reorientation of a portion of Taxiway A, is the least beneficial improvement from a capacity perspective due to the fact that the alternative represents a step enhancement to a taxiway that already exists. Alternative B, extension of Taxiway C to the approach end of Runway 05, is the most beneficial alternative. This alternative balances the capacity of the north and south airfield to support of the relocation of two-thirds of the airport's operations to the north airfield. Alternative C, the realignment of Taxiway A and partial extension of Taxiway C, represents a step improvement to Alternative A falling well short of the capacity improvements offered by Alternative B. Alternative C would still require the crossing of the runway by two thirds of the airport's activity presenting the opportunity for delays, congestion and runway incursions.

Finally, if Alternative B were constructed first, it will likely delay the need for Alternative A construction until later in the planning period, between 2011 and 2015. However, if Alternatives A or C were constructed first, Alternative B would likely be required early in the intermediate timeframe, between 2005 and 2007. In consideration of the issues outlined in the analysis, the preferred alternative for short term development is Alternative B. Alternative A improvements would follow early in the long term development period (2010 – 2020).

NAVIGATIONAL AIDS

The airport currently has a Cat I ILS approach to the primary runway end (Runway 05), and ASR, VOR and stand-alone non-precision GPS approaches to a number of the runway ends. No requirements for improvements to ceiling minimums are currently projected for any of the approaches although a reduction in visibility minimums relative to the CAT I approach would be desirable. Currently, the only opportunity to reduce visibility minimums for the primary approach would be through the addition of an approach lighting system (ALS) to serve Runway 5. Because of the extent of development in the area that would be required for siting of the lighting system, this will likely be a long and expensive undertaking. As such, other alternatives for visibility minimum reduction should be fully explored as they are made available through new technology.

When considering the long term outlook of navigational aids and the projected trend from land based navigational aids to satellite based navigational aids, the question arises as to how long the land based aids should be kept in service. Based on discussions with FAA personnel in the Southern Region, it does not appear that stand alone precision GPS approach capabilities will be available at an airport such as Page Field for approximately 8 to 10 years. Noting that the GPS equipment approved for CAT I use is still relatively expensive and that few aircraft in the general aviation fleet are equipped to perform stand-alone operations, it will likely be some time before a transition from CAT I ILS to GPS stand-alone precision equipment can be made. In all likelihood, if the installation of stand-alone precision capability proceeds in accordance with the FAA's schedule the earliest the ground based system could be decommissioned is ten years. However, providing an overlap between the two technologies for pilots to complete the transition may add as many as five or more years on to this period. Much will depend on the cost of the technology and the speed with which pilots incorporate it into their aircraft. Additionally, the cost of maintaining the ground based equipment will factor into this decision, as will the availability of parts. Based on existing available information, it is recommended that the ground based CAT I ILS equipment, along with its associated critical areas, be maintained in long range facility planning until the middle of the long term development program (between 2010 and 2020).

GENERAL AVIATION ALTERNATIVES

Overall, each of the Terminal Alternatives identified earlier include the required amount of apron space and hangars needed to accommodate the itinerant demand identified in the Facility Requirements. However, additional general aviation facilities relative to aircraft storage and aviation related services are required to support the airport's based aircraft. A number of alternatives have been prepared which address these additional facilities. The facilities outlined in the alternatives may exceed the projected requirements but are included in the event that the demand forecasts are exceeded during the planning period. This assists in preparing a development strategy that ensures the orderly development of future airfield improvements. However, provision for only those facilities outlined in the Facility Requirements chapter will appear in the phased Capital Improvements Program. The remaining hangars, apron space, and other facilities are contingent upon the airport's future needs and, therefore, have only been included for planning purposes.

The following section delineates a number of potential development options for each quadrant of the airport and provides a brief description of the best use of each area. Each alternative will have a number of attributes and drawbacks identified to assist in determining the preferred alternative for that specific quadrant. At the end of each development section the preferred alternative will be identified and a brief discussion will describe why it was chosen as the best alternative.

East Quadrant Development

The Eastern Quadrant is constrained to the east by the access road, the Lee Trans facility and a canal. Westward expansion is limited by FAR Part 77 obstacle restrictions and the runway visibility zone. The limited land available in the Eastern Quadrant and the need to accommodate automobile parking and water detention for any improvements further constrain this site. The northern half of the Eastern Quadrant of the airport is currently occupied by the Lee County DOT Depot 7 maintenance yard, while the southern half accommodates a number of T-hangars, the EAA building, and the SMS corporate hangar.

According to recent discussions with the LCPA, the Depot 7 Maintenance yard will be relocating off airport property sometime early in the first phase of the planning period. The vacated area is highly desirable for the

continued development of similar aviation related uses that were established with the construction of two new sets of T-hangars in 1996. Recognizing this, the Port Authority recently approved the final design of twenty-six new T-hangars along Taxiway A in the northern half of the East Quadrant. Based on the considerable demand for additional inexpensive aircraft storage, a number of alternatives were developed which continue this established land use. A summary of the alternatives analyzed for the undeveloped portion of this quadrant include the following:

Alternative A – T-Hangars / Shade Hangars

Alternative A, depicted in **Exhibit 6-8,** continues the t-hangar development initiated by the LCPA, incorporating and expanding upon the recently designed twenty-six new t-hangars along Taxiway A. An additional twenty-six t-hangars, depicted as the three most northerly hangar buildings on **Exhibit 6-8,** are proposed, as well as an additional 8 t-hangars/shade hangars in a single building at the western side of the quadrant. Additional T-hangars to the south were not considered due to the location of the existing EAA facility and the potential for additional line-of-sight problems from the ATCT relative to Taxiway B. This concept proposes a total of sixty new hangars capable of accommodating a mix of ADG I and ADG II type aircraft.

Attributes

- Development is extension of existing land use
- Full design of twenty-six T-hangars is already complete
- Maximizes number of aircraft accommodated in hangars with sixty new hangars
- Provides for homogenous mix of aircraft
- Initial demand is higher for these types of hangar facilities
- Less expensive for tenants
- Provides direct access to Taxiway A

Drawbacks

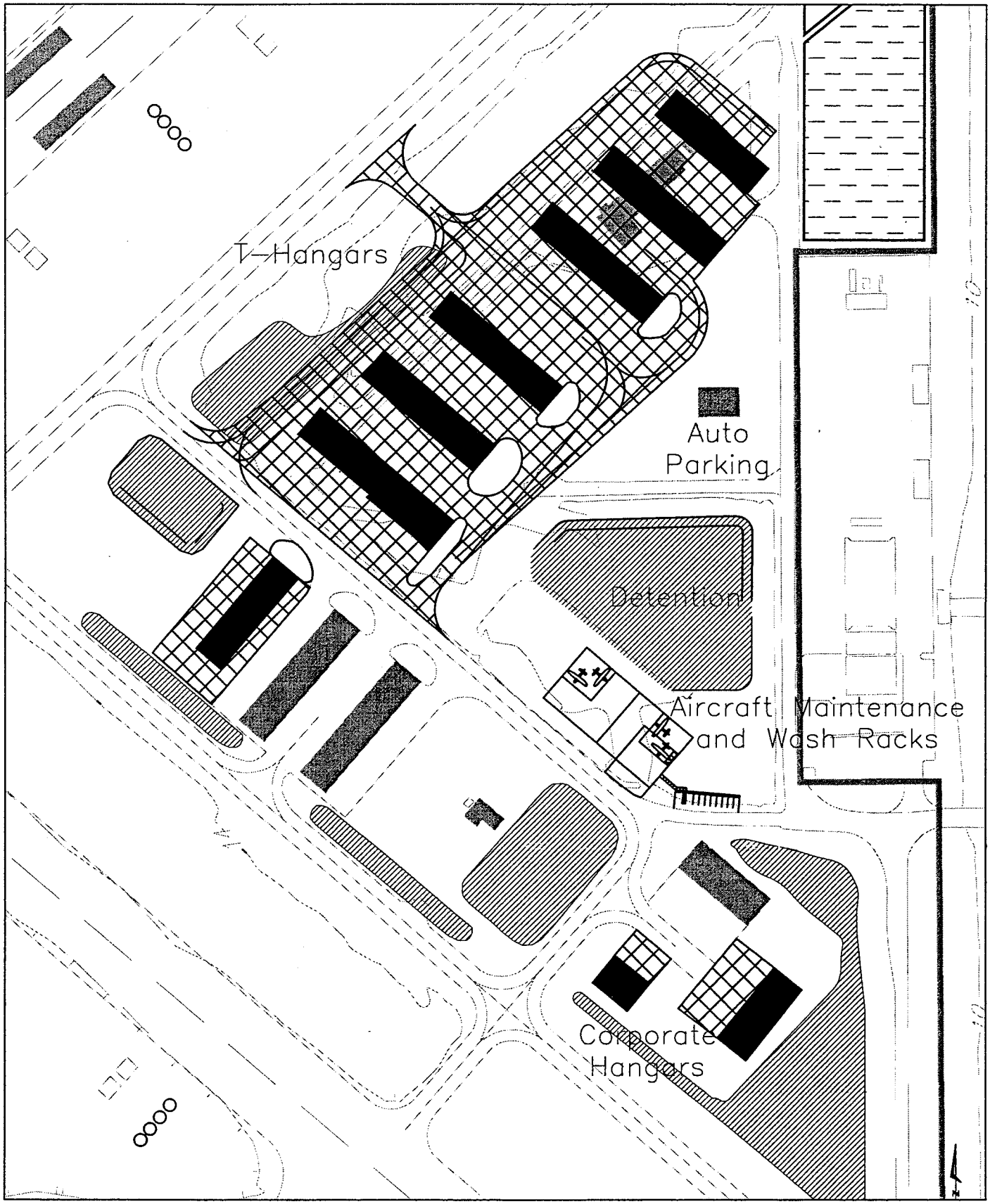
- Larger ADG III aircraft must be accommodated elsewhere
- More hangars result in potential for aircraft congestion for the East Quadrant

Alternative B – T-Hangar/Cabin Class Mix

Alternative B adds additional flexibility in the East Quadrant by providing two types of hangars. **Exhibit 6-9** depicts the layout of a T-hangar and cabin class hangar mix. While this layout can serve a greater number of larger ADG II type aircraft with a higher quality of service, it does not provide nearly the same volume of hangars due to the greater land area required for the larger hangars. The severe shortage of existing storage facilities and already established use in this quadrant of high density hangarage indicate that this may not represent the best use of the Eastern Quadrant.

Attributes

- Serves a range of aircraft sizes and types
- Gives customers some flexibility in choosing the type of hangar for storing their aircraft
- Airport can charge more for rental fees on a cabin class hangars
- Provides some higher quality, or top end, hangarage
- Direct access to parallel taxiway ("A")



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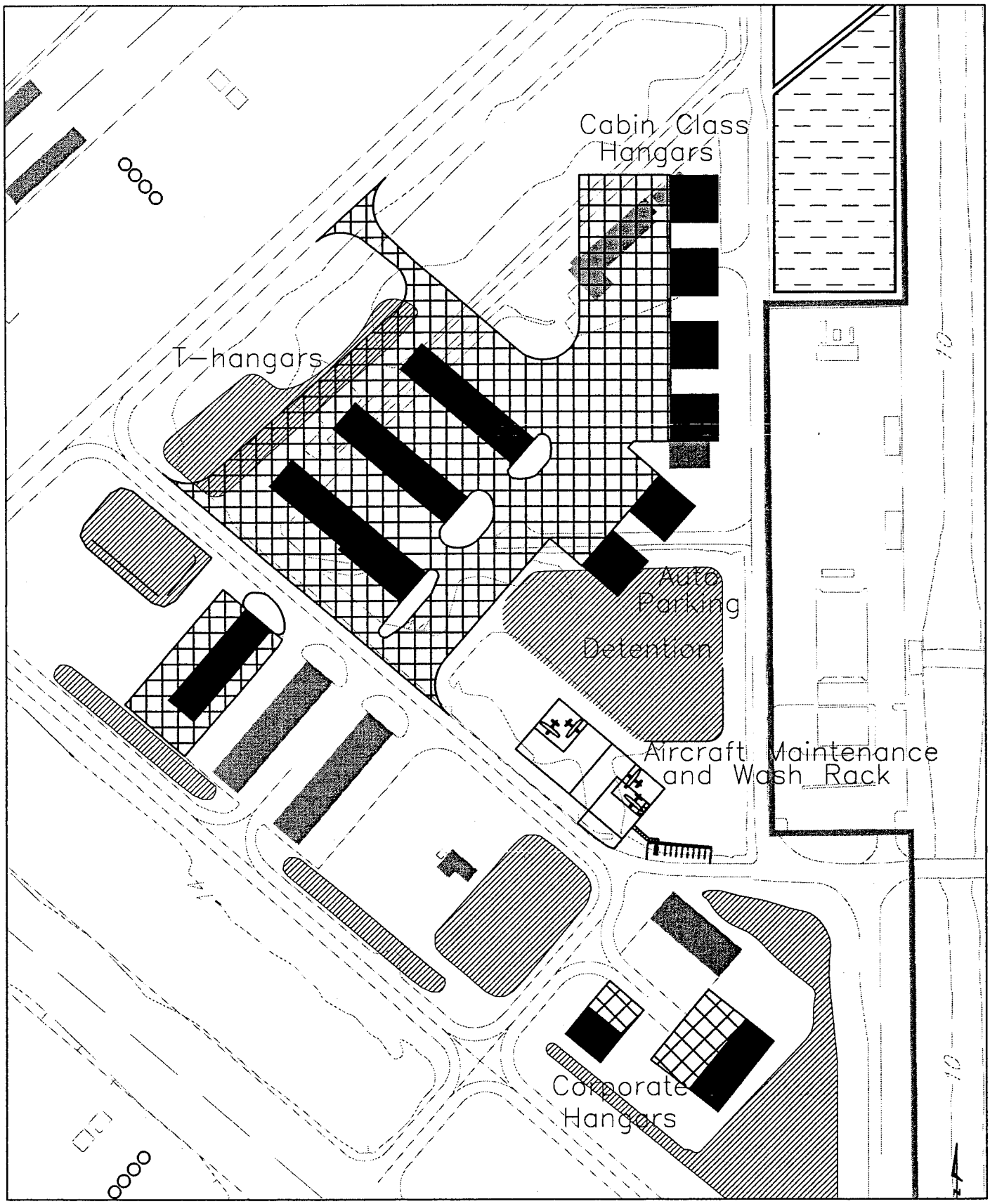
East Quadrant
Alternative A

Exhibit 6-8



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East Quadrant
Alternative B
Exhibit 6-9

Drawbacks

- Mixes large and small aircraft, and possibly some jet aircraft
- Can not serve ADG III aircraft
- Lower volume of aircraft stored relative to land required
- Impacts to detention area
- Limited automobile parking
- Most costly of the alternatives

Alternative C – Cabin Class Hangars

Alternative C was proposed to accommodate ADG III aircraft in the eastern quadrant as well as ADG I aircraft. The layout of an ADG III all cabin class hangar facility in the east quadrant is depicted in **Exhibit 6-10**. The main drawback of this alternative, as with Alternative B, is the large area requirement of the cabin class hangars. This alternative provides the lowest number of hangars of the three alternatives but, depending on the size of the aircraft, multiple smaller aircraft can be stored in one cabin class hangar. Additionally, there is not currently an established demand for this type of hangar in the near term and, because of the expense associated with these facilities, it will be more difficult to find or maintain tenants. As infrastructure in the East Quadrant becomes readily available to support additional hangar development, the land in this quadrant is better used to serve immediate demand.

Attributes

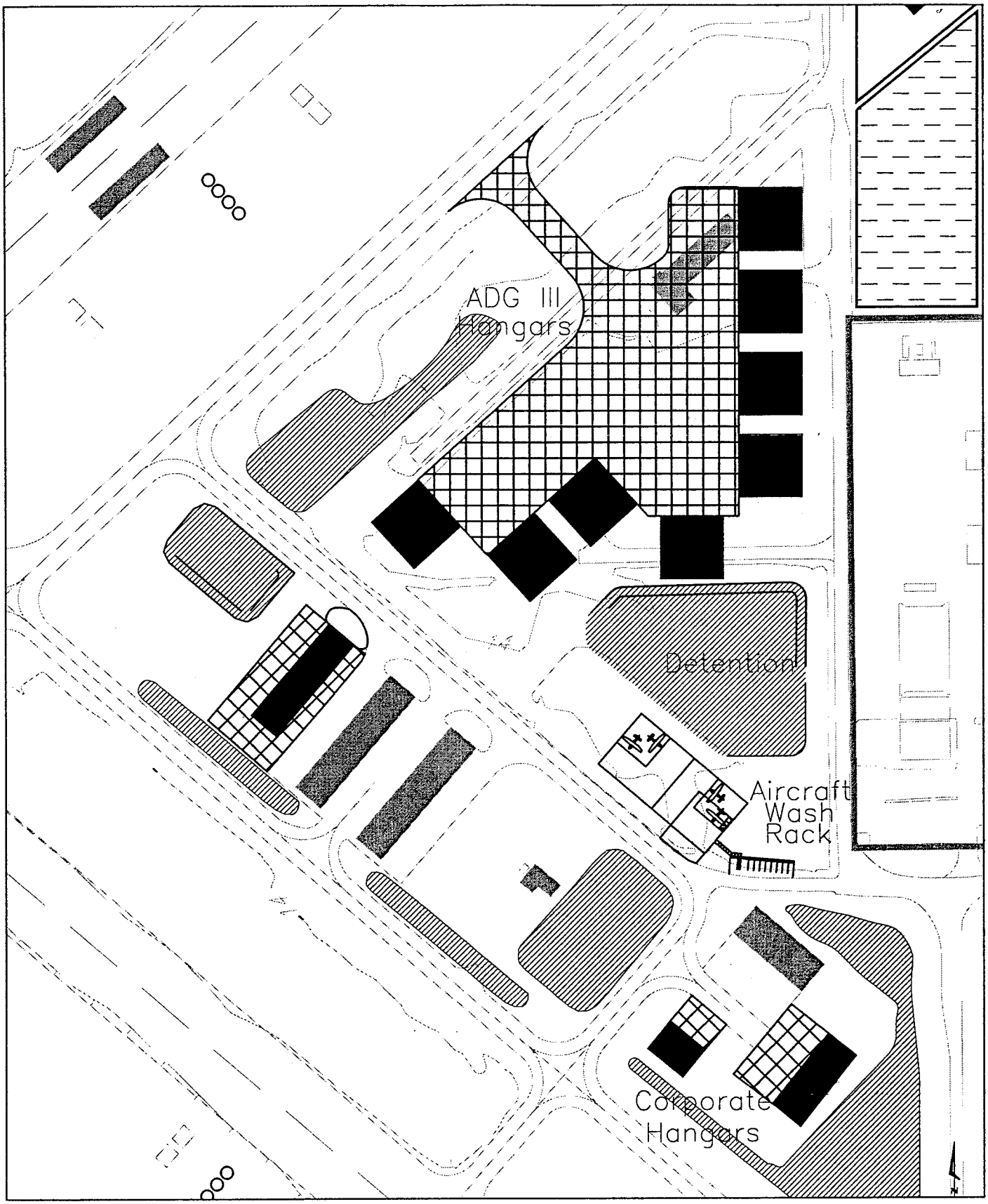
- Serves a range of aircraft sizes
- Can serve ADG III aircraft
- Potential direct access to the Group C-III parallel taxiway "A"
- High image

Drawbacks

- Full design already completed for next phase of T-hangars
- Limited number of aircraft that can be accommodated in hangars compared Alternatives A and B
- Expensive for customers to rent
- There is not yet an established demand for these types of hangars for based aircraft as compared to T-hangars
- Limited space to accommodate the size of hangars needed
- Mixes large jets with small piston aircraft
- Access to site is not high profile in line with image these hangars would present

Preferred Alternative-East Quadrant

The preferred alternative for the East Quadrant is Alternative A. This is based on a number of factors, which include the initial investment the Port Authority has already made in to the design of T-hangars on the east side of the airport as well as the extreme shortage of hangar facilities for the smaller ADG I and ADG II aircraft. The East Quadrant provides a location with the ability to address much of the immediate shortfall in aircraft hangar storage at the airport.



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East Quadrant
Alternative C
Exhibit 6-10

These facilities will also provide for a homogeneous mix aircraft mix in the East Quadrant limiting the potential for operational conflicts between jets and the smaller piston aircraft. Although the eastern portion of the South Quadrant also has the ability to accommodate similar hangars, they will impact the recently rehabilitated apron and newly constructed self-fueling facility (both in 1999), and that quadrant would be better served by delaying such development. It should be noted that the T-hangars outlined for both quadrants would require construction to meet the projected demand levels through the year 2020.

South Quadrant – Eastern Portion

The location of this parcel is west of the Ten Mile canal and just north of Danley Drive in the southeast corner of the airport property. Facilities in the east portion of Southern Quadrant currently include a 12,000 gallon self-serve Avgas fueling facility, with enough extra maneuvering ramp to accommodate six aircraft tie-down positions. The apron was recently rehabilitated in the Spring of 1999, and the fuel farm construction was completed shortly thereafter. However, due to its size and location, the site appears ideal to support additional hangar development to meet the large existing shortfall. The alternatives outlined in this section consider maintaining the existing facilities as well as the potential for new hangar development.

Alternative A – Maintain Tie-downs and Self Fueling Facility

Currently, aircraft do not utilize the available tie-down positions permanently, but they do serve as a holding area for aircraft waiting to be fueled. It has been noted that the self-fueling station is very popular among the based aircraft users and it is recommended that the airport continue this type of service. However, the location of the facility is not ideal. It is difficult to access and a long taxi is typical for aircraft coming from other areas of the airport. **Exhibit 6-11** depicts the current layout of the southeastern quadrant.

Attributes

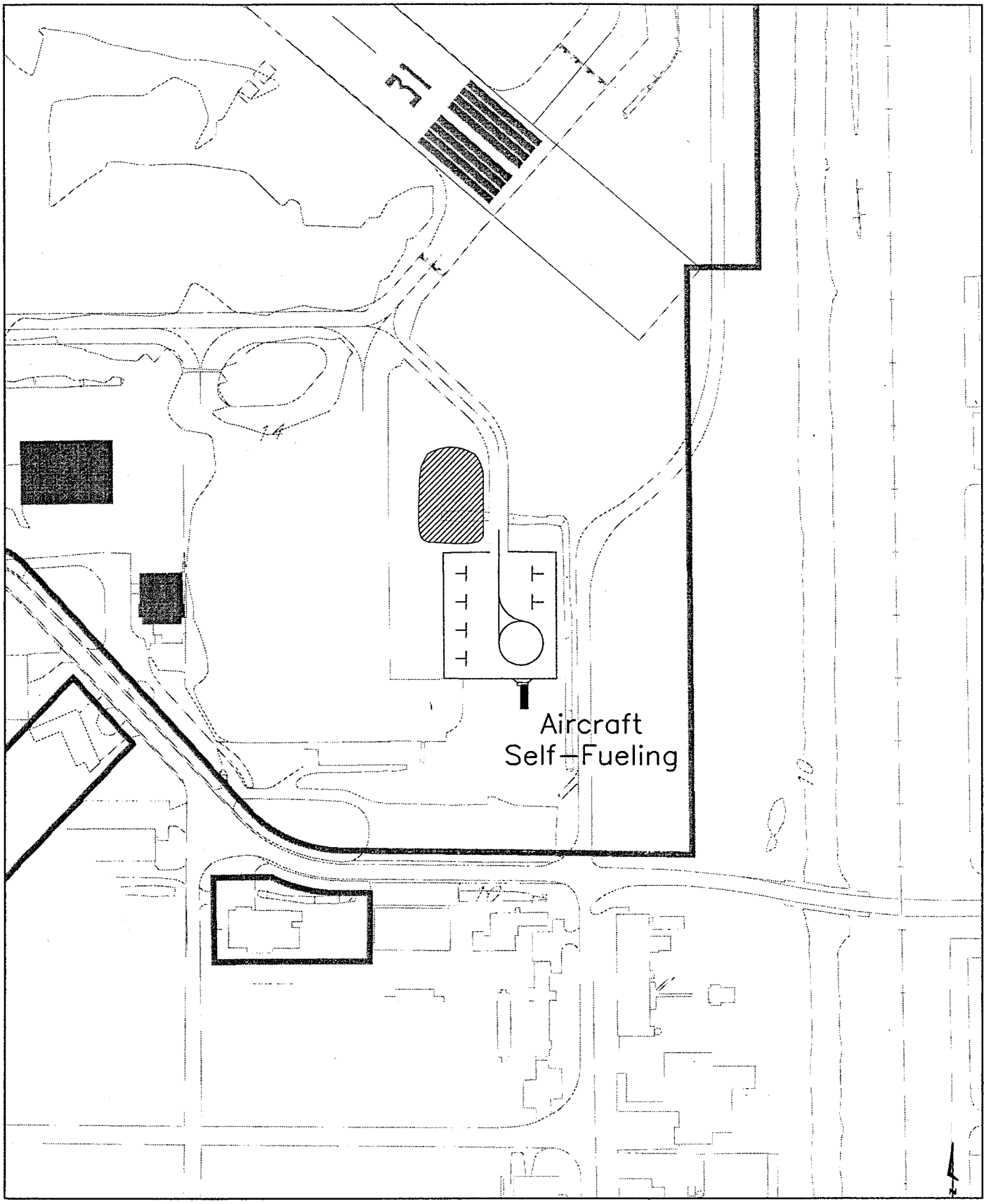
- Very little cost associated with this alternative
- Isolates self fueling facility from other activities in southern quadrant
- Expansion potential of ramp and fueling facility
- Good landside access to facility

Drawbacks

- Tie-downs are not currently being used
- Poor utilization of the land
- Facility is not centrally located / long taxi for customer on southwest side of airport
- Ideal location for additional T-hangars / shade hangars

Alternative B – T-Hangar and Ramp Expansion

Alternative B presents the first of two different options for T-hangar development and apron expansion in the Southeast Quadrant. The first option is depicted in **Exhibit 6-12** and proposes two rows of T-hangars / shade hangars with expanded apron for additional tie-downs. It is anticipated that approximately 22 aircraft could be accommodated with the two vertical sets of T-hangars and approximately 12-15 tie-down positions, depending upon the size of the aircraft.



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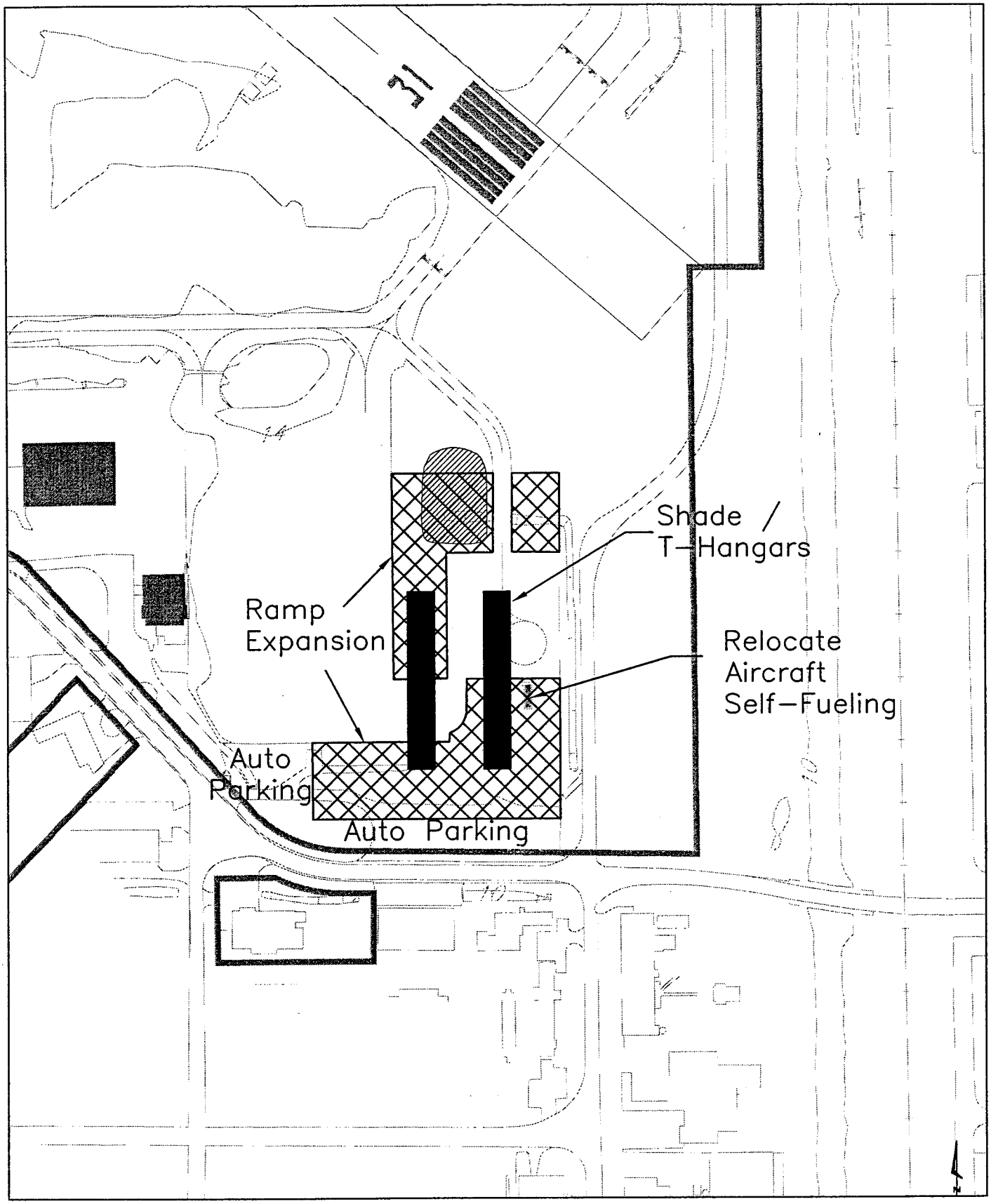
Southeast Quadrant
Alternative A

Exhibit 6-11



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Southeast Quadrant
Alternative B

Exhibit 6-12

The types of aircraft anticipated to utilize these hangars are the ADG I and smaller ADG II type aircraft which represent the majority of the aircraft mix at Page Field. Between Danley Drive and the edge of apron, a single row parking lot can be developed to provide automobile parking for these facilities.

Attributes

- Adds 22 additional T-hangars
- Adds 12-15 additional tie-downs
- Site has good landside and airside access
- Space available to provide automobile parking for hangars
- High demand for type of hangars proposed
- Remaining locations on the airport with access and infrastructure that are suitable for hangar development require impacts to much larger portions of ramp and existing facilities.

Drawbacks

- Requires relocation of new self fueling facility
- Will require reorienting service road
- Requires building T-hangars on some existing apron
- Long taxi to Runway 5 for departures

Alternative C – T-Hangar and Ramp Expansion

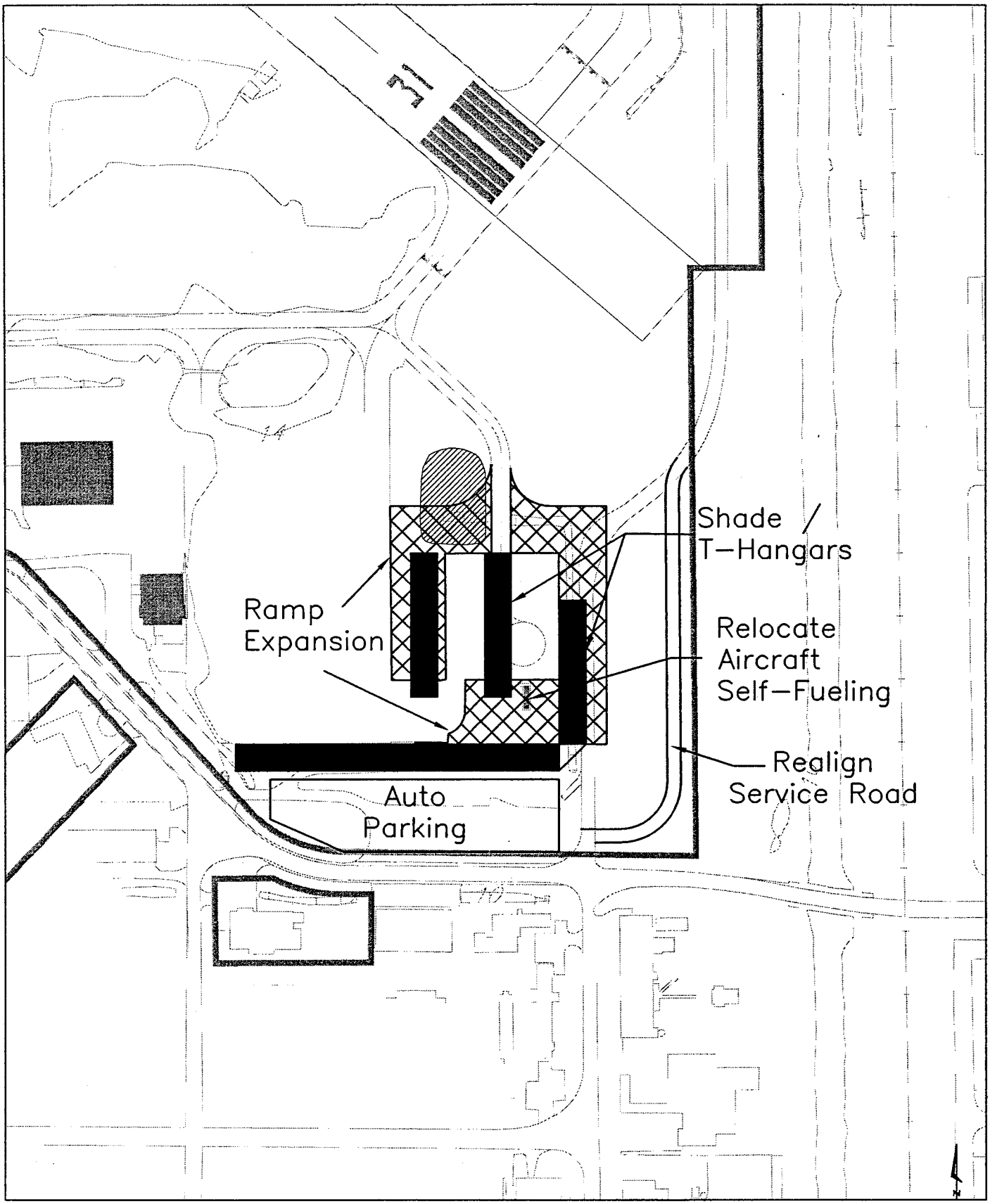
Alternative C, depicted in **Exhibit 6-13,** is the second option and proposes four buildings configured as T-hangers / shade hangars. The southernmost hangar is aligned in an east-west configuration, perpendicular to the other three hangar buildings, and will only be accessed from the north side. The number of aircraft it can accommodate as compared to the other nested hangar buildings is cut in half, but each hangar will have a larger interior space. Additional ramp expansion will be required with this option, but only to accommodate aircraft ingress and egress to the hangars, and will not accommodate additional tie-downs. It is anticipated that approximately 32 hangars could be accommodated with this option, depending upon the exact size of the hangars.

Attributes

- Adds 32 additional T-hangars
- Site has good landside and airside access
- Space to provide automobile parking for hangars
- High demand for type of hangars proposed
- Remaining locations on the airport with access and infrastructure that are suitable for hangar development require impacts to much larger portions of ramp and existing facilities.

Drawbacks

- Requires relocation of new self-fueling facility
- Will require reorienting service road
- Requires building T-hangars on existing apron
- Long taxi to Runway 5 for departures



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Southeast Quadrant
Alternative C

Exhibit 6-13

Preferred Alternative-South Quadrant East Portion

The preferred alternative for the Southeast Quadrant is Alternative C. This alternative maximizes the potential for t-hangars which are currently in short supply at the airport. Numerous options exist for the addition of tie-downs and aircraft parking ramp, as well as the accommodation of the aircraft self-fueling facility. In fact, relocation of the self-fueling facility to a central location will provide for better access by the users.

South Quadrant – Western Portion

The area reviewed in this analysis includes approximately 20 acres of vacant land located east of US 41 and just north of Danley Drive. The property is constrained on the north side by the requirements of FAR Part 77, so building heights will be restricted. Development in this parcel requires the closure of a small section of the south airport road and the re-routing of all traffic. A strip of land along the south portion of the site is currently used for parking for the baseball fields across the street. Any alternatives for this development parcel must either maintain or incorporate adequate parking to service those facilities. The property has excellent frontage to US 41, and is accessible from Danley Drive.

Alternative A – ADG II and III Hangars

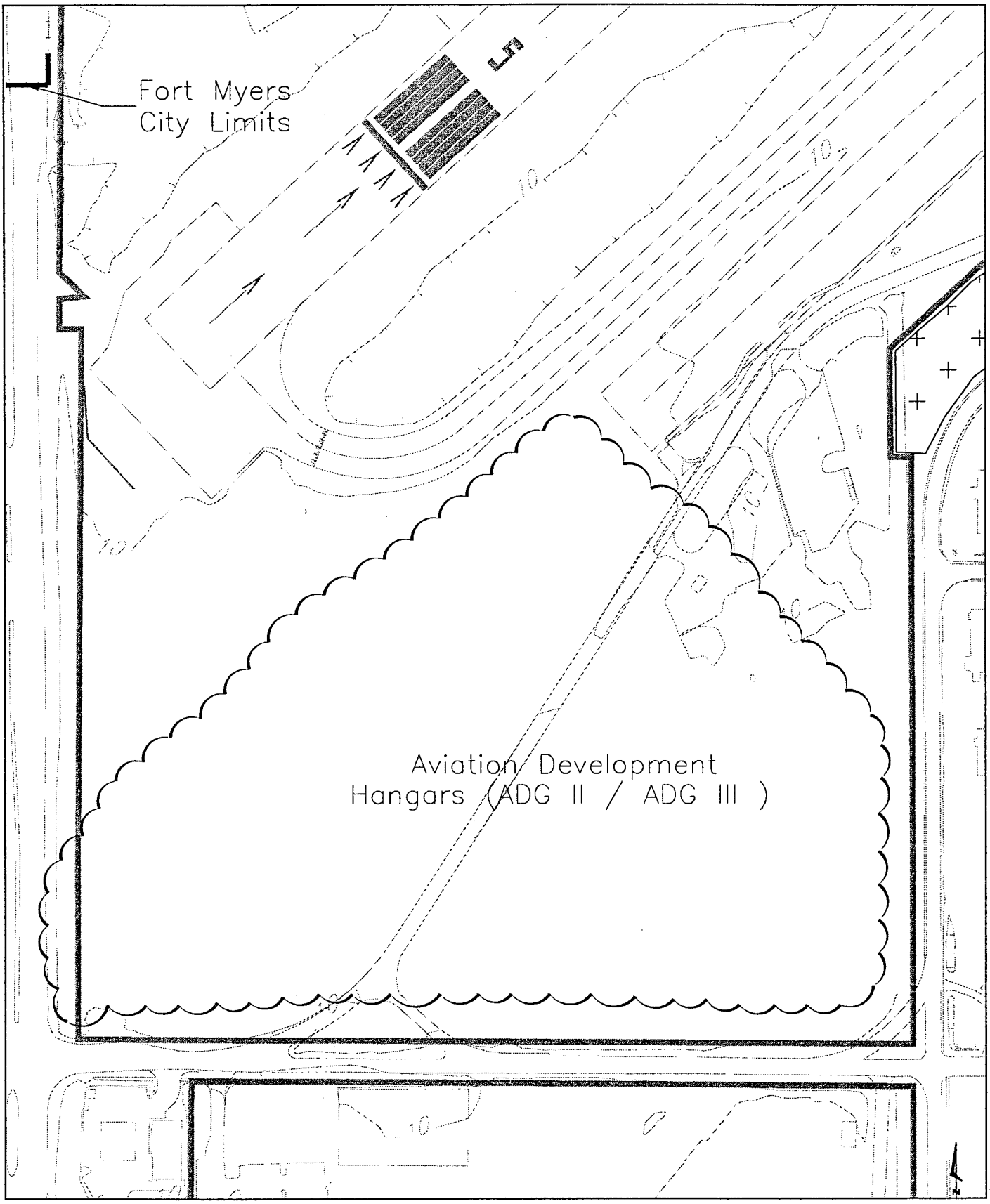
Alternative A utilizes approximately 17 acres for large cabin class hangars to service both ADG II and ADG III aircraft. Airside access is provided through a connector taxiway to the southwestern apron. Landside access is accommodated through two access roads connecting the facilities to Danley Drive. The layout of this proposed alternative is shown in **Exhibit 6-14**.

Attributes

- Good airside and landside access
- Site has a high profile
- Provides good access to the preferred runway for large jet aircraft
- Site is close to existing utility services
- No construction or modifications to existing taxiways required to accommodate ADG III aircraft

Drawbacks

- Proximity to residential neighborhood
- Requires closure or reorientation of a portion of Danley Drive
- No demand for these types of hangars
- Little expansion potential
- Access to site may be a problem due to aircraft departure queues for Runway 5
- Good commercial development site



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Southwest Quadrant
Alternative A

Exhibit 6-14

Alternative B – Mix of Hangars and Non-Aviation

This Alternative presents a mix of aviation and non-aviation development. The hangar development will be similar to Alternative A, although Alternative B proposes approximately 1.26 acres of hangar space as compared to 17 acres of facilities with Alternative A. The hangars will be capable of handling ADG III aircraft. Alternative B will also consist of the addition of 1.15 acres of commercial or retail space. Airside and landside access to both facilities is good. **Exhibit 6-15** outlines the potential layout of this land use.

Attributes
- Allows for both aviation and non aviation use of the property
- Good visibility from US 41 for retail or commercial uses
- Ability to accommodate ADG III if necessary

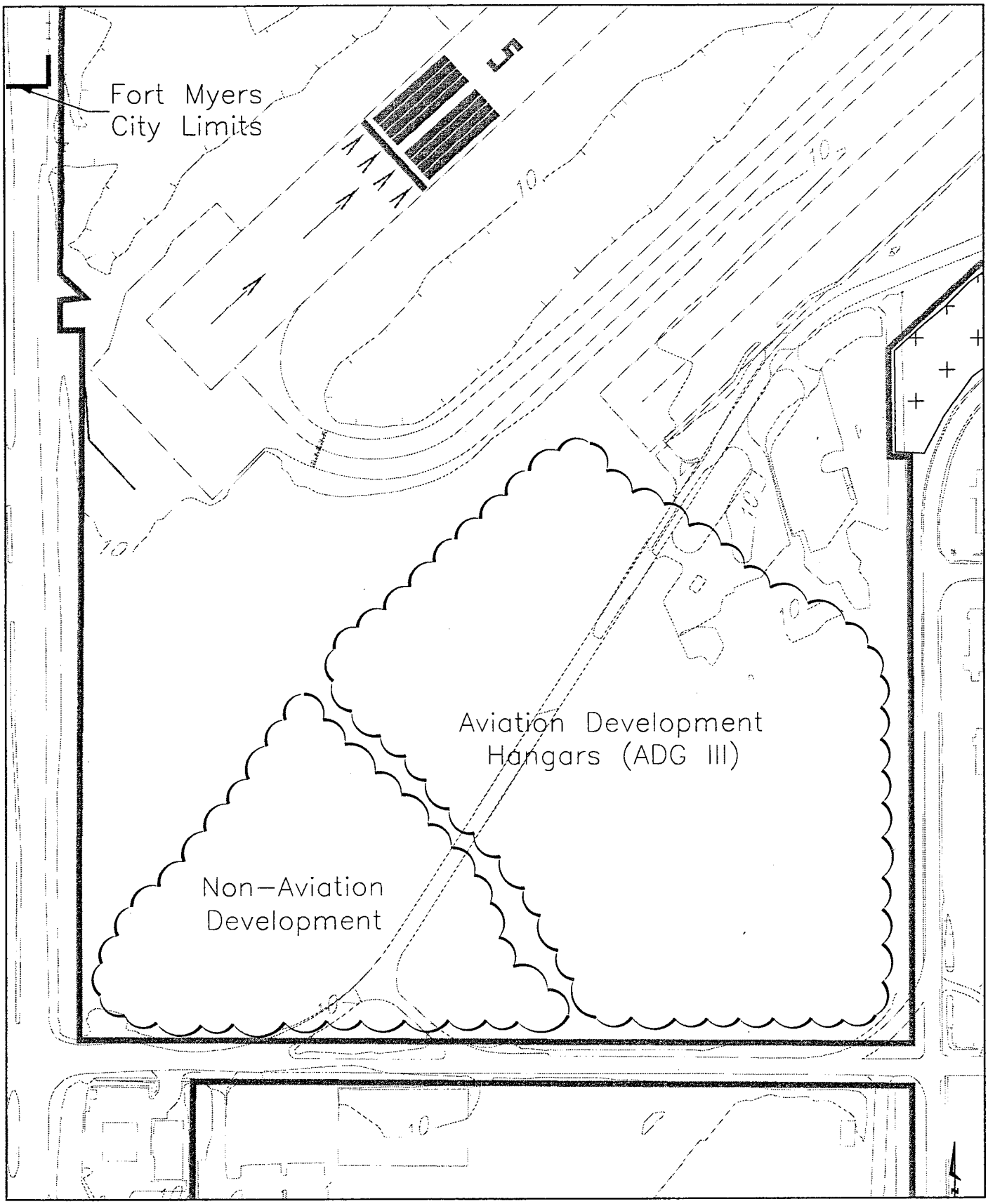
Drawbacks
- Small parcel to try to accommodate both types of activities
- Requires closure of roadway or reorientation
- No expansion ability for either use

Alternative C – Non-Aviation Development

Alternative C proposes 17 acres of commercial and retail development. This could include over 80,000ft² of single story building space (with the potential for more if multi-story). The site, located just east of US 41, has good frontage to US 41, which is a major arterial roadway. Additionally, the site is convenient to access from Danley Drive and provides ample automobile parking. This alternative is illustrated in **Exhibit 6-16**.

Attributes
- Offers considerable potential for revenue enhancement to support aviation development in other quadrants
- Compatible land use with adjacent properties
- Good visibility / frontage from US 41
- No expense for the airport if privately developed
- Site is close to existing utility services
- Airport already has interested parties

Drawbacks
- Perception of giving airport property away for non-aviation uses
- Requires limitations on building heights and setbacks associated with FAR Part 77
- Potential DRI issues may restrict amount of parcel that can be developed
- Will likely require improvements to Danley Drive



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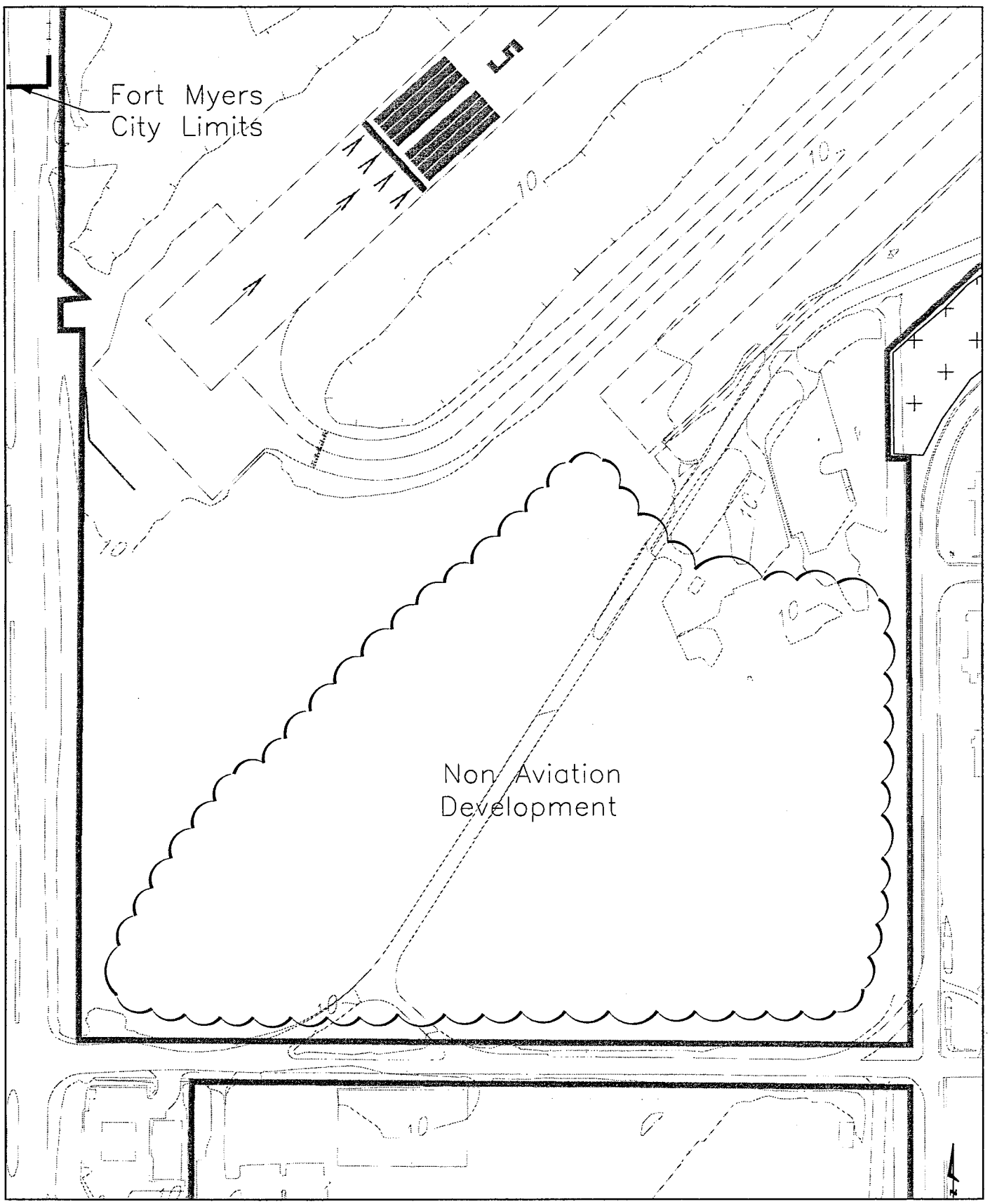
Southwest Quadrant
Alternative B
Exhibit 6-15



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Southwest Quadrant
Alternative C

Exhibit 6-16

Preferred Alternative - South Quadrant Western Portion

Few remaining options exist at the airport for revenue enhancement to support the construction of the aviation related facilities. The location and frontage to US 41 is so desirable for commercial and retail property that Alternative C is the preferred development alternative for this parcel of land. In fact, the airport already has parties interested in developing this parcel. ADG III aircraft can easily be accommodated in the West Quadrant of the airport which has more expansion capability and a high profile access. As there is no current demand for ADG III facilities, they are not critical to the medium or short term development program. Rather they can be accommodated along the south ramp or in the West Quadrant of the airport as demand dictates. More alternatives relative to the West Quadrant are outlined in the subsequent analysis.

West Quadrant

The West Quadrant of the airport is located east of Fowler Road and is presently a greenfield site, with no existing buildings and little infrastructure. A number of open ditches and drainage swales that provide storm water run-off from the airport's runways and taxiways currently transit the area. The area is fairly low lying so storm-water management will be a major issue when developing this area. Along the southern border of this quadrant is the glide slope antenna and glide slope critical area. Therefore, a small portion of the quadrant is restricted from development. No parallel taxiways exist on the west side of either runway so aviation development in this area will require additional infrastructure. An existing lighted intersection serving Page Field Commons shopping development offers the potential for good access into the site. Because of the frontage and access, the site offers a good opportunity for both aviation and non-aviation development.

Alternative A – ADG II and III Cabin Class Hangars

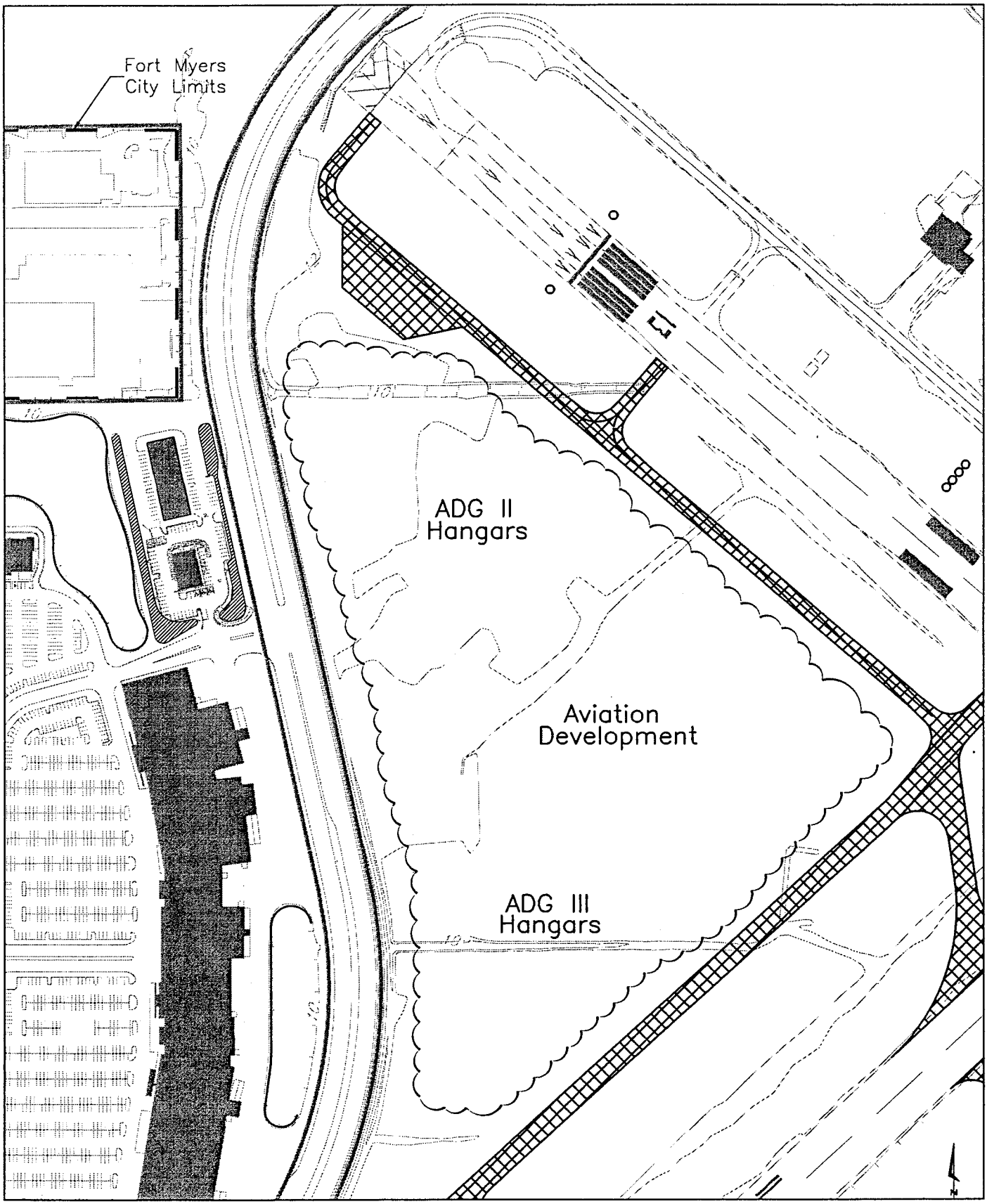
Alternative A proposes approximately 32 acres for a multi-hangar complex, including airside and landside access. This is more than any other hangar alternative previously discussed. The proposed land use for Alternative A is depicted in **Exhibit 6-17**.

Attributes

- Excellent location for hangar development, centrally located on airfield
- Good landside access with an existing signaled traffic light
- High profile access
- Good access to runway ends without a lot of runway crossings
- Incorporates ADG II and III activity efficiently into the traffic flow for Runway 5

Drawbacks

- Pushes need for taxiway infrastructure to be constructed on west side of airfield
- Utilities are limited
- Questionable demand and costly for airport to develop in short term
- Impacts to drainage swales
- Potential environmental impacts



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West Quadrant
Alternative A
Exhibit 6-17

Alternative B – Mix of Aviation and Non-Aviation uses

Alternative B is comprised of approximately six acres of commercial or retail property and 26 acres of future aviation related development. The property provides for excellent landside access with an existing lighted traffic signal on Fowler Road. This alternative combines the revenue generating potential of the site with the ability to meet the needs of aviation related demand well into the future. Similar to Alternative A, storm-water management will be a key issue with any development that occurs on the west side of the airport. **Exhibit 6-18** provides a layout of this proposed alternative.

Attributes

- Excellent frontage to Fowler and US 41for retail/commercial development
- Traffic light intersection already exists
- Can develop aviation facilities as demand requires
- High profile access
- Allows for considerable aviation related development
- Flexibility to develop non-aviation at any time during planning period
- Non aviation can build infrastructure base to help support aviation related expansion
- Good revenue generation potential to help support other airport development

Drawbacks

- Utilities are not presently available
- Site limitations due to runway visibility zone and taxiway OFA requirements
- Requires taxiway infrastructure to be in place before aviation development occurs
- Commercial development may require DRI study

Alternative C – Non-Aviation Development

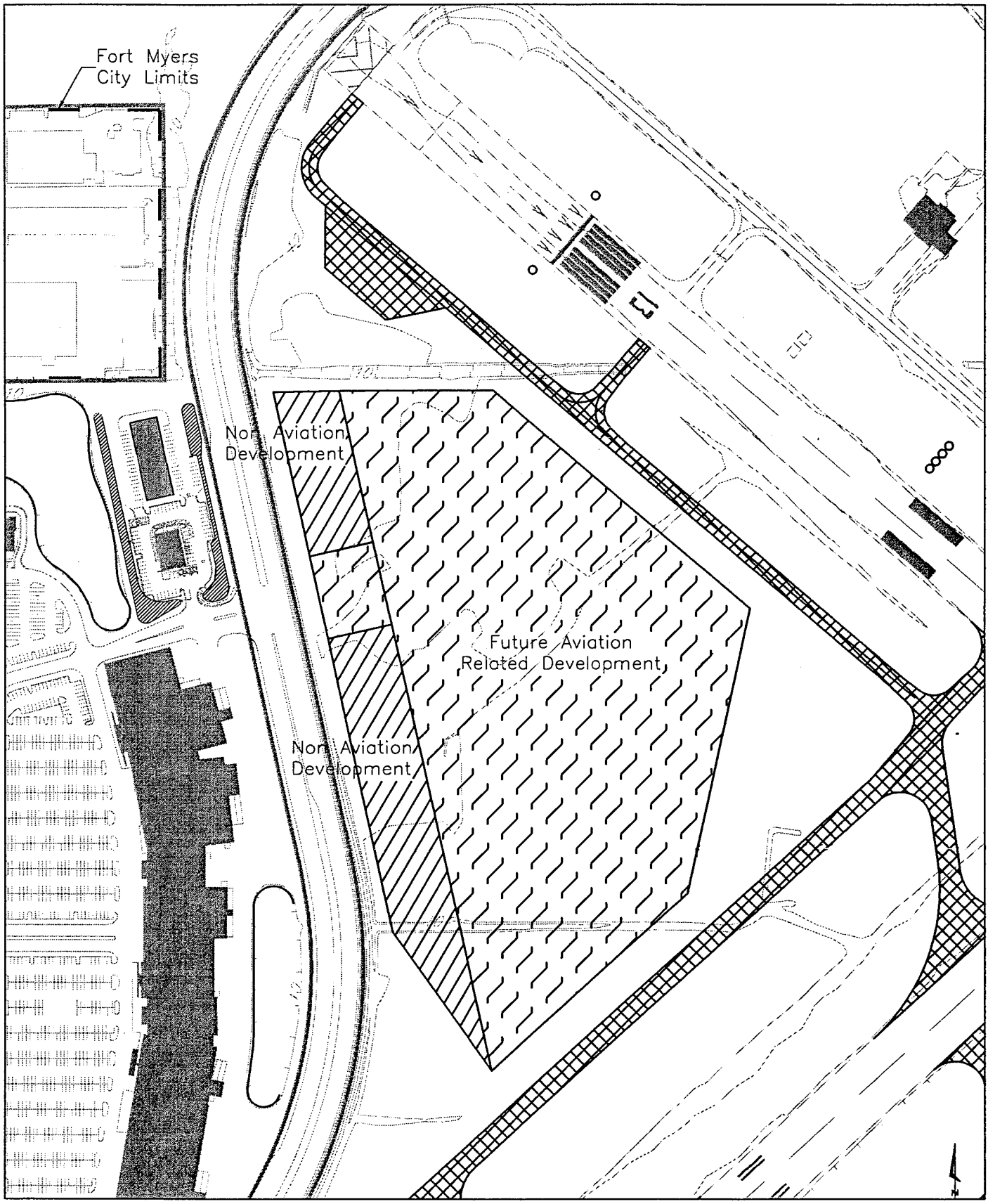
Alternative C consists of a commercial/industrial park. This alternative would give the airport extensive revenue potential but would potentially restrict the long-term aviation development of the airport. The location is ideal for commercial development, with good landside access to a major arterial road, and between 20 and 30 acres available for the development of multiple commercial or industrial buildings. Although revenue generating potential is a critical component of the feasibility of the development program for Page Field, this land is also well suited, as the infrastructure becomes available, to support a considerable amount of aviation development. A potential layout for the proposed land use is presented in **Exhibit 6-19**.

Attributes

- Little or no expense for the airport if a privately developed
- Good accessibility from Fowler road, a main arterial roadway
- Extensive revenue potential

Drawbacks

- Perception of "giving up" airport property for non aviation development
- May restrict long term aviation potential at the airport.
- Potential drainage and environmental impacts
- May never again be available for aviation
- Will likely require DRI study



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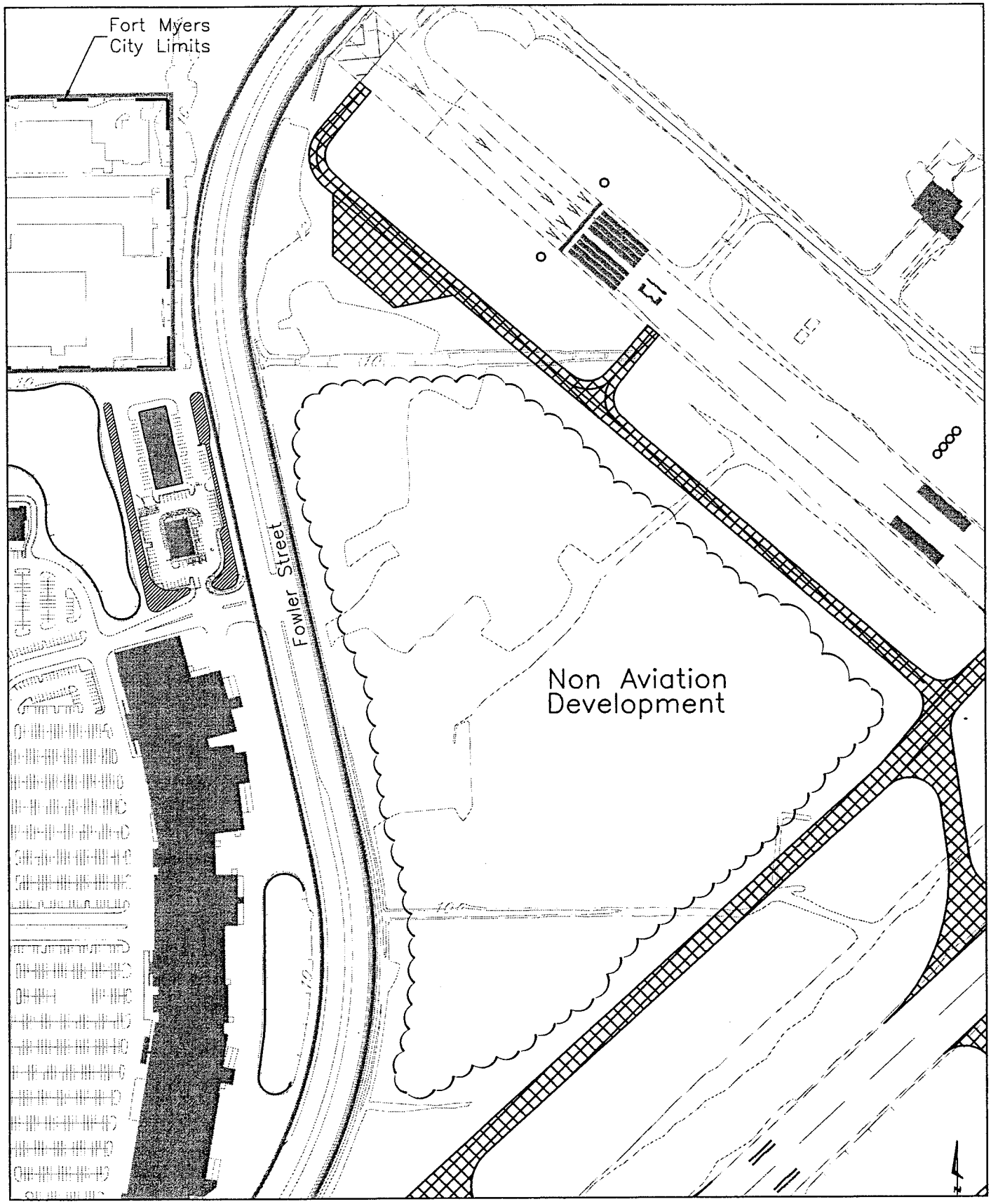
PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

GRAPHIC SCALE
0 150 300
SCALE IN FEET
Date: 04/07/2000

West Quadrant
Alternative B

Exhibit 6-18



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PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

GRAPHIC SCALE
0 150 300
SCALE IN FEET
Date: 04/07/2000

West Quadrant
Alternative C

Exhibit 6-19

Preferred Alternative-West Quadrant

The preferred alternative for the West Quadrant is Alternative B. Alternative B balances the need for additional revenue generation with the ultimate development requirements of aviation related facilities. It provides the airport the flexibility to develop this area when needed, as it is recommended that complete build out of the other quadrants occur before the aviation development commences on the west side (unless support infrastructure development and demand justifies otherwise).

SUMMARY

Preferred development alternatives were identified for each major facility and each area of the airport. The preferred alternative for the North Quadrant proposes the development of a GA Terminal and support facilities east of the Page Field Commerce Center. This allows the balance of the north side to support both aviation and non-aviation related development. The preferred alternative for the east quadrant of the airport proposes maximizing the development potential for T-hangars in support of the severe shortage that currently exists at the airport. The eastern portion of the South Quadrant is redeveloped to support the East Quadrant in meeting the demand for the T-hangars. The west portion of the South Quadrant is reconfigured to maximize the potential for commercial development while the balance of the South Quadrant remains available to support based aircraft parking and aviation related businesses. The proposed alternative for the West Quadrant of the airport provides for some additional revenue potential and the long term aviation development of the airport.

The combination of the preferred alternatives meets or exceeds all of the minimum requirements established in the Facility Requirements chapter. Additionally, the proposed improvements meet or satisfy the key requirements or issues for the strategic development of the airport, as put forth at the outset of this chapter. The preferred alternatives outlined herein will continue to be refined into the overall development program for the airport. Phasing of each component will be a key aspect of this program.

Chapter Seven – Environmental Overview

INTRODUCTION

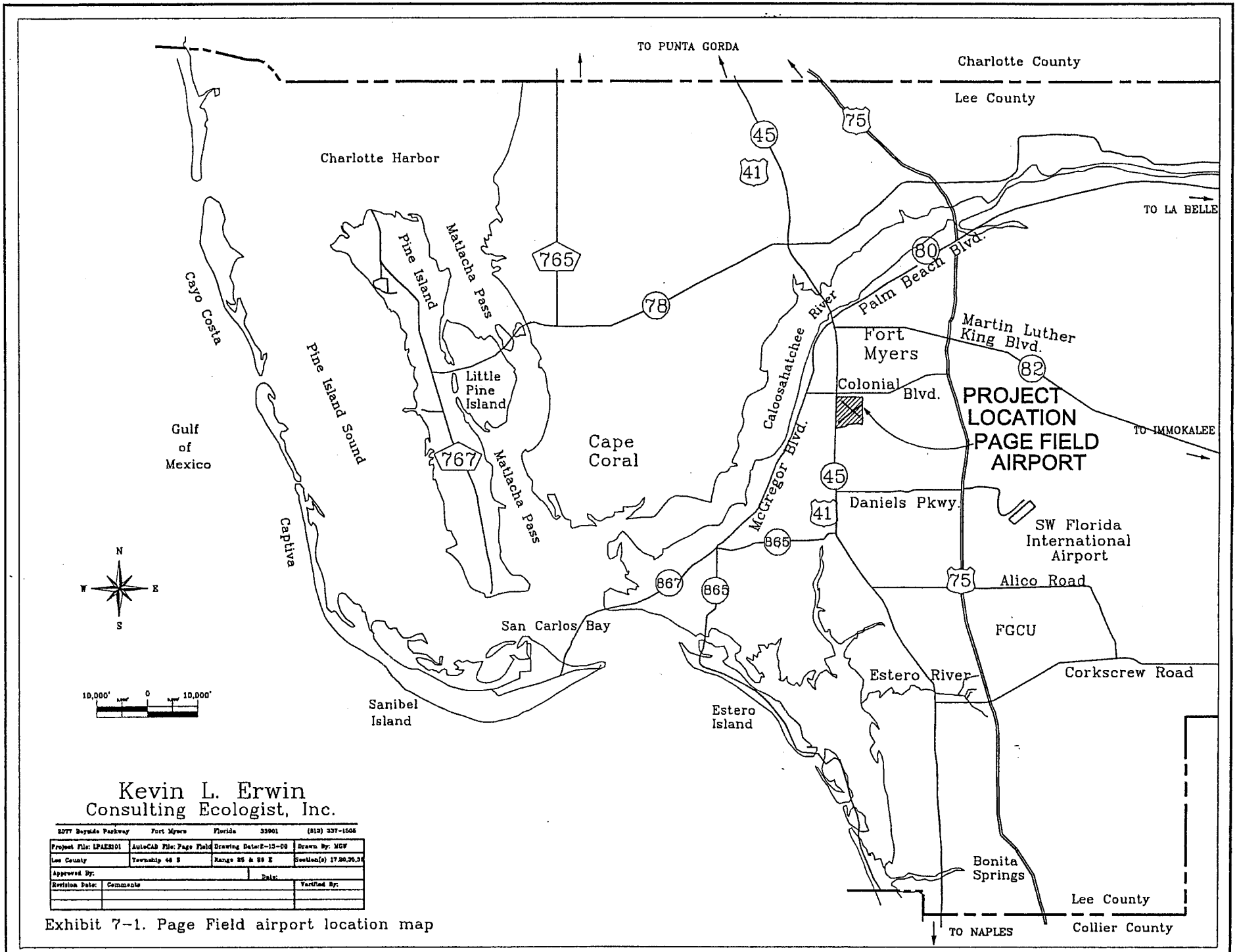
Page Field is located in portions of Sections 1 and 12, Township 45 South, Range 24 East in Fort Myers, Florida on the east side of U.S. 41 south of Colonial Blvd (**Exhibit 7-1**). The facility opened as an airport in 1927 with sod runways. Construction of three concrete runways by the Federal Work Projects Administration began on January 1, 1940. At this time the U.S. Army Air Corps used Page Field as a training facility. The airport was greatly expanded in late 1942, when the runways were extended and numerous buildings were constructed, mainly to the south of Danley Drive. The Army deactivated the airport shortly after the end of World War II. Further construction included development of the Fort Myers Airways AST Farm in the 1960's, the Fort Myers Airways Maintenance Building, and the construction of the Fort Myers Airways offices and Mike's Landing restaurant in the late 1950's. The airport served the commercial service transportation needs for Lee, Charlotte, Hendry, Collier, and Glades Counties until the Southwest Florida Regional Airport (RSW) opened in May of 1983. Page Field currently functions as a general aviation airport.

As part of the current Master Plan update, environmental conditions at Page Field were examined. The only modification that could have any environmental significance is the addition of an approach lighting system (ALS) to serve Runway 5. An approach lighting system represents an improvement to the operational capabilities of a runway that has the potential to result in a higher concentration of activity during nighttime hours. Further, the facility has equipment requirements that extend to either 1400 feet or 2400 feet prior to the landing threshold of a runway. The mounting structures for the lights as well as access and power requirements typically require that some site work be done along the extended centerline of the runway throughout this area. Finally, light emissions must be considered, particularly with respect to the Runway Alignment Indicator Lights (RAIL) which are located between 1400 feet and 2400 feet from the threshold and provide a progressive strobe effect which 'points' to the location of the runway end. These lights, primarily the strobe effect, have the potential to create a negative impact on homes or other light sensitive land uses near the lighting system.

The remainder of the proposed development is not expected to result in significant, if any, adverse environmental impact. Typically, non-runway development, that does not include land acquisition, rarely triggers the need for a formal environmental assessment.

Three categories of environmental review relevant to airport development are outlined in 40 Code of Federal Regulations (CFR), Parts 1500-1508. The three categories are:

- Categorical exclusions (CEQ 1508.4) - Projects categorically excluded are those actions that have been found under normal circumstances to have no potential for significant environmental impact.
- Actions normally requiring an Environmental Assessment (EA) (CEQ 1508.9) - Project normally requiring an EA are actions that have been found by experience to have significant environmental impacts.
- Actions normally requiring an Environmental Impact Statement (EIS) (CEQ 1508.11) - The purpose of an EA is to determine whether or not a project will have significant impacts. Based on the results reported in an EA, the Federal Aviation Administration (FAA) then prepares either a finding of no significant impact (FONSI) or an EIS.



Kevin L. Erwin
Consulting Ecologist, Inc.

2977 Bayside Parkway	Fort Myers	Florida	33901	(813) 337-1505
Project File: LPAES101	AutoCAD File: Page Field	Drawing Date: 8-15-00		Drawn By: MGW
Lee County	Township 46 S	Range 25 & 26 E		Section(s) 17,20,29,30
Approved By:		Date:		
Revision Date:	Comments			Verified By:

Exhibit 7-1. Page Field airport location map

According to FAA Order 5050.4A, an EA is needed to secure federal financial participation in, or airport layout plan approval of the following:

- New airport location
- New runway
- Major runway extension
- Runway strengthening what would result in 1.5 DNL or greater increase in noise over any other noise-sensitive area location within the 65 DNL contour.
- Construction or relocation of a service road that intersects public access road that affects the capacity of such public road.
- Land acquisitions in association with any of the above items plus land acquisition which results in a relocation of residential units when there is evidence of insufficient comparable replacement dwellings, major disruption of business activities, or acquisition that involves lands covered under U.S. Department of Transportation (DOT) Section 4 (f).
- Establishment or relocation of an instrument landing system (ILS) or an approach lighting system.
- An airport development action that falls within the scope of various extraordinary circumstances as defined by the FAA. These actions include properties protected by the Historic Preservation Act; controversial environmental impacts; significant impacts on natural, ecological, cultural or scenic resources; use of wetlands; conversion of prime farmlands; endangered species; etc.

Considering the recommended improvements at Page Field, it is anticipated that only one proposed project may require a formal EA. As noted prior, this project is the addition of an approach lighting system to serve Runway 5. However, the high cost of acquiring the required land for this system may delay its development indefinitely and possibly even threaten its feasibility altogether.

The proposed improvements to Page Field are not anticipated to either significantly increase the volume of traffic or change the characteristics of this traffic. These are the major FAA criteria that determine if a formal EA will be required. Chapter 5 of the *Airport Environmental Handbook* (FAA Order 5050.4) requires the evaluation of airport development projects based on 20 potential impact categories for an airport as they relate to recommended improvements to Page Field.

ENVIRONMENTAL OVERVIEW

This overview, while not prepared to the level of detail required for an EA, provides a preliminary analysis of the issues that are typically assessed during the EA process. Preliminary analysis of environmental conditions related to the recommended Page Field improvements were conducted for these impact categories:

- Vegetation and wetlands
- Listed species
- Drainage and hydrology
- Water quality
- Flood hazards
- Air quality
- DOT Section 4 (f) lands
- Historical and archeological sites
- Energy and natural resource use
- Construction impacts
- Noise

An Environmental Overview was prepared in 1993 by Carter Burgess as part of the previous Master Plan study. That analysis concluded that the areas of potential environmental concern consisted of noise impacts and ground water contamination from previous land uses.

The 1999 Master Plan (**Exhibit 7-2**) proposes many new improvements that will improve safety at the airport and meet the needs and demands of the growing general aviation community in Southwest Florida. The largest project in terms of infrastructure, development and cost will be the relocation of the General Aviation Terminal from the South side of the airfield to the North side.

The new terminal is proposed for development before the year 2005 and is located Northeast of the Page Field Commerce Center, where the airport maintenance facility is currently located. The north ramp, which was recently rehabilitated and currently remains unused, will serve the new GA Terminal. The move will allow for a segregation of itinerant and local based aircraft at the airport. Larger jet aircraft including all itinerant traffic will be parked on the north ramp, while the smaller propeller driven aircraft, operated mostly by local based customers, will occupy the South ramp. To provide for adequate circulation and movement to and from the primary runway and other service facilities on the airport a new parallel taxiway will need to be constructed to the northwest of Runway 5-23. Additional development on the North side proposes five cabin class hangars on an unoccupied site located between the FAA's remote air to ground communication site and the fire station.

On the east side of the airport, at a site currently occupied by the Department of Transportation's maintenance and storage yard, the plan proposes development of a combination of fifty-eight T-hangars and shade hangars as well as an aircraft wash facility and aircraft self-maintenance facility. Two additional corporate hangars and the relocated airport maintenance facility will also be located on the east side of the airport.

On the Southeast side of the airfield thirty-two T-hangars are proposed along with some ramp expansion to accommodate the ingress and egress associated with the T-hangar operations. The Aviation Center's bulk hangar is scheduled for expansion to accommodate the growing demand for hangar facilities at the airport. Thirty-two additional T-hangars are also proposed for development on the South side of the airfield between Taxiway A-3 and Taxilane D. The Southwest side of the airfield will include ramp expansion and aviation related business development, as well as some retail and commercial development along U.S. 41. The feasibility of the addition of an approach lighting system to serve Runway 5 will require considerable land acquisition and is being further explored. The west side of the airfield has been reserved for future aviation related businesses and some commercial development.

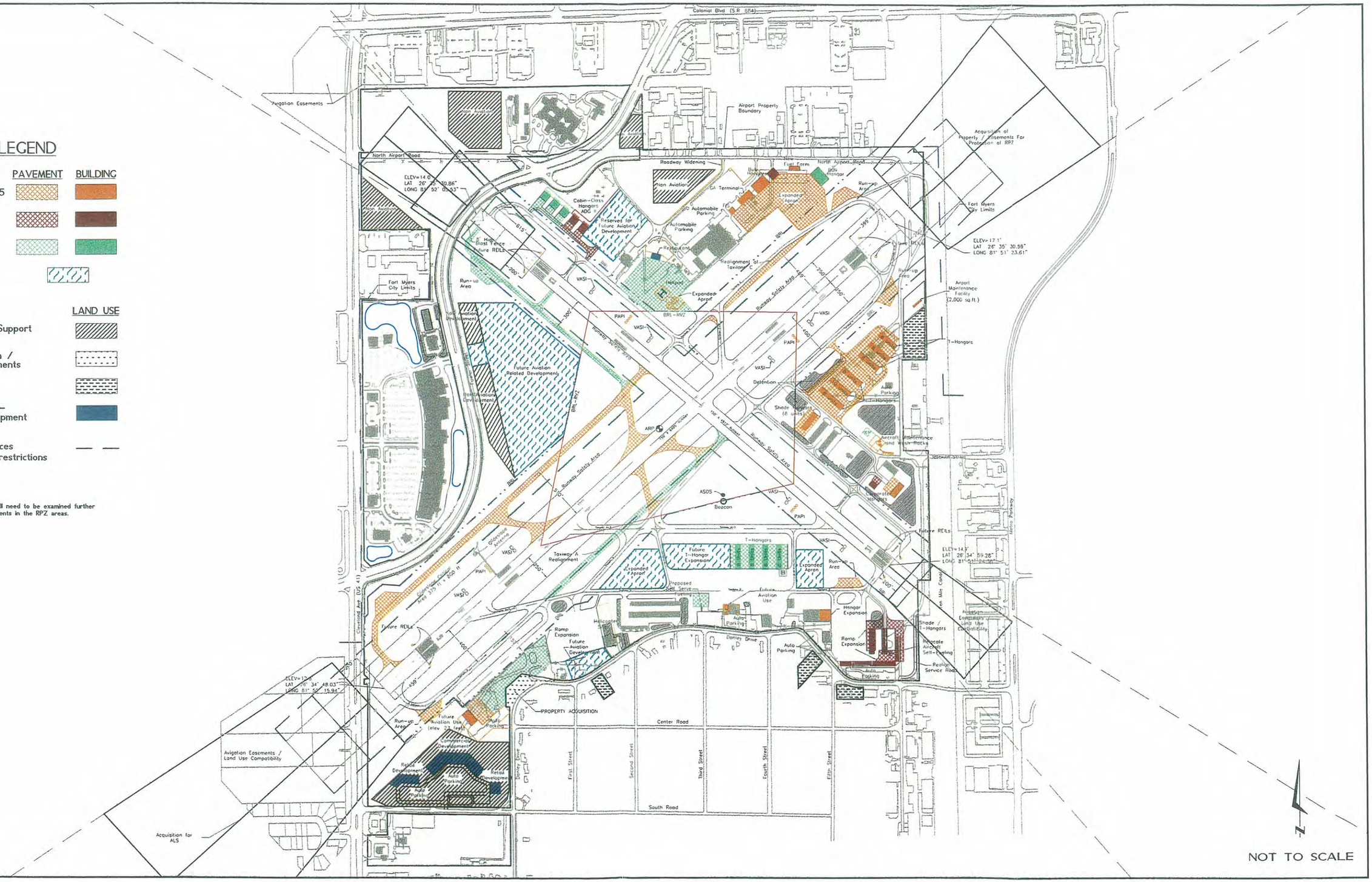
During the preparation of this Environmental Chapter, Kevin L. Erwin Consulting Ecologist, Inc. (KLECE) reviewed pertinent available documents and permits. This included the Environmental Overview, prepared in 1993, site assessment reports for Page Field and the Fort Myers Airways lease sites prepared by TKW Consulting Engineers, Inc. in 1999, and permits for existing airport facilities provided by the Lee County Port Authority (LCPA) (**Table 7-1**).

LEGEND

	PAVEMENT	BUILDING
Through – 2005		
2006 – 2010		
2011 – 2020		
ULTIMATE		

LAND USE	
Non– Aviation Support Development	
Land Acquisition / Avigation Easements	
Land Sale	
Conceptual Non– Aviation Development	
Approach Surfaces Building height restrictions may apply.	— —

Property acquisition will need to be examined further as it relates to easements in the RPZ areas.



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Page Field
Development Program

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

Exhibit 7-2

Table 7-1
Permits Issued For Airport Property And Adjacent Lands

Permit #	Date Issued	Location	Description
PRT-673842	1/1/90	Page Field	Take minimum number of migratory birds for depredation purposes, except listed species
AP 90-2	7/1/90	Page Field	Use of shotguns, Avitrol and other scare methods to take birds except listed species
PRT-808633 WN 95073	11/9/95 10/9/95	SE portion of airport	Removal of one inactive burrowing owl burrow
36-02961-S	9/21/95	Apron Expansion	No wetlands, no listed species
PRT-808282	10/27/95	Page Field	Take 9 inactive burrowing owl burrows
36-00110-D	11/9/95	Fowler Street Improvements	Impact 0.65 acres of manmade ditches, no natural wetlands Burrowing owls on site
PRT-808633	1/1/96	Page Field	Take one inactive burrowing owl burrow
AP 96-03	7/9/96	Page Field	Use of shotguns, Avitrol and other scare methods to take birds except listed species
36-02961-S	2/26/98	Page Field Ramp Rehabilitation	Modification of surface water management system Impact 0.27 acres of manmade ditches, no natural wetlands, No endangered species
WN 97121	8/20/97	Page Field	Take 3 inactive burrowing owl burrows
36-02961-S	3/9/99	Page Field Rehabilitation Ramp B Expansion	Modification of surface water management system No wetlands on site Suitable habitat for burrowing owl

Vegetation and Wetlands

A majority of the Page Field property consists of impervious surfaces (runways, taxiways, roads, and buildings) and maintained grass areas. Common species in these mowed grass areas include bahia grass (*Paspalum notatum*), broomsedge (*Andropogon* spp.), finger grass (*Chloris* sp.), spurge (*Chamaesyce* sp.), spemacoce (*Spermacoce* sp.), and frog-fruit (*Lippia nodiflora*). Less than one acre of remnant native upland habitat occurs in the southeast corner of the property. This area is a disturbed area of pine flatwoods that has become invaded by exotics. Common species in this area includes slash pine (*Pinus elliottii*), saw palmetto (*Sernoa repens*), melaleuca (*Melaleuca quinquenervia*), and Brazilian pepper (*Schinus terebinthifolius*) An area of scattered live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), slash pine, and laural oak (*Quercus larifolia*) in a mowed field is also present in the northwest corner of the property..

No natural state or federal jurisdictional wetlands occur on-site. However, the site does contain a network of upland cut drainage canals that convey surface water across the site. These ditches are vegetated by species such as cattail (*Typha* sp.), spike-rush (*Eleocharis* sp.), arrowhead,(*Sagittaria* sp.) and climbing hempvine (*Mikania scandens*). An area of mowed grasses, approximately 4 acres in size, located adjacent to the Fowler Street Extension currently ponds water after rainfall events. This area is slightly lower than the surrounding mowed area and may collect water due to drainage conditions associated with the adjacent roadway or commercial development to the northwest. This low spot does not currently meet the requirements of a jurisdictional wetland.

The ditches and the low spot adjacent to Fowler Street may or may not be considered to be jurisdictional wetlands or surface waters at the time of future airport expansion activities, depending on the condition of the areas and implementation of agency policies at that time of development. The South Florida Water Management District (SFWMD) did consider the portions of the man made ditches as jurisdictional surface waters (not wetlands) in their review and permitting of the Fowler Street improvements, Page Field Commons, and the Page Field Ramp Rehabilitation (**Table 7-1**).

The proposed development activities are not anticipated to have significant adverse impacts to the existing uplands and man made wetlands on the property. As discussed above, these features are highly disturbed and provide minimal ecological functions or values. An Environmental Resource Permit (ERP) from the State and/or a 404 Dredge and Fill Permit from the federal government may be required for impacts to the ditches and low area (if they are determined to be jurisdictional at the time of development). Wetland mitigation is not anticipated to be required for impacts to these areas.

Listed Species

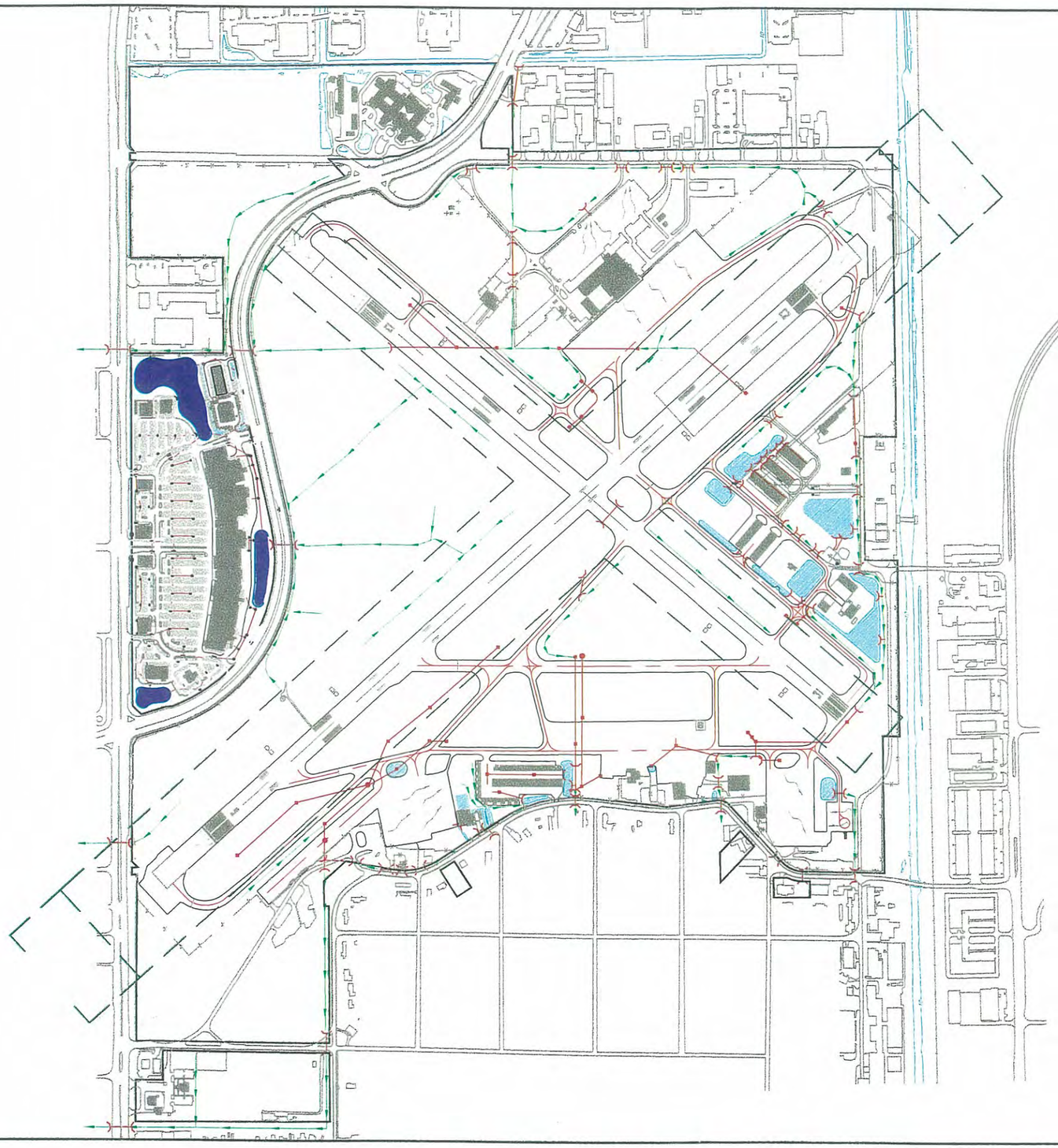
As described above, a majority of the Page Field property has been significantly disturbed and therefore provides minimal habitat for listed species. The upland grassed fields are regularly mowed and the ditches are periodically maintained. Therefore, the potential for listed plant species populations to become established is extremely low. No federally listed plant species have been reported to occur on-site.

The site does have the potential to provide limited habitat to listed bird species. Listed wading birds, such as the little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), and white ibis (*Eudocimus albus*) (all listed by the Florida Fish and Wildlife Conservation Commission (FWC) as a Species of Special Concern) may potentially forage in the ditches within the property. Burrowing owls (*Athene cunicularia*) (listed by the FWC as a Species of Special Concern) are known to nest on the property and adjacent lands. Nests have been observed in the maintained grass fields of the airport property. Burrowing owl nest removal permits have been issued for several areas on the airport property including the areas that are now Page Field Commons and the Fowler Street Extension (**Table 7-1**).

The proposed improvements to Page Field are not anticipated to have significant impacts to federally listed species. No nesting by federally listed species or critical habitat for federally listed species occur on the Page Field property. Periodic foraging by State listed wading birds will continue to occur in the man made canals. Continued maintenance of low growing grass areas associated with the airport runways will continue to provide potential burrowing owl habitat. Prior to development activities a survey for burrowing owls should be conducted and the required state and federal permits obtained to insure impacts to this species is minimized to the extent practicable. Permits to take inactive burrows outside of the nesting season (February through July 10th) can typically be obtained from the appropriate agencies.

Drainage and Hydrology

The existing property drains via a network of upland cut drainage ditches. Surface water flows in the ditches to the west, north, and south (depending on the portion of the property) and discharge off-site to existing drainage features (**Exhibit 7-3**). There is no direct connection between the drainage ditches on-site and the adjacent Ten Mile Canal to the east.



NOT TO SCALE

Note: This drawing was created by LCPA Planning department

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Existing Airfield
Drainage Plan

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

Exhibit 7-3

As expansion of the airport facilities occurs, a surface water management system will be required by the SFWMD in order to meet applicable current state surface water management standards.

Water Quality

Site assessment reports have been previously prepared for Page Field. The 1993 Environmental Paper describes pesticide contamination at the Link Duster site and that 100 cubic yards of material was removed from the site. The January 1999 Phase 1 Environmental Site Assessment of Page Field Airport and Lee County Port Authority Adjacent Properties, prepared by TKW, indicated that this area had been remediated to the satisfaction of the Florida Department of Environmental Protection. This report identified ten potential areas of concern. The potential contamination sources were primarily fuel storage facilities that had been closed but did not have a closure assessments and facilities with septic systems that stored or used hazardous substances. The revised Site Assessment Report for Fort Myers Airways Lease Sites, prepared by TKW indicated that soil and shallow ground water contamination by petroleum products had occurred at this location. The report recommended that the contaminated soils be removed and ground water be monitored.

Flood Hazards

Page Field is located outside of the 100 year flood plain and is located in hurricane storm surge risk Category 3. The proposed improvements to the airport facilities will include an appropriate surface water management system to insure that potential on-site and off-site flooding will not occur as a result of the expansion activities.

Air Quality

The 1993 Environmental Overview concluded that the ambient air quality in the Fort Myers area is considered to be good. That report also concluded that vehicular traffic was the primary source of air pollution in the vicinity of Page Field and that aviation activity would have to rise beyond predicted levels in order for the proposed improvements to cause significant reductions in ambient air quality. The increase in airport activity predicted by this current Master Plan update is also not anticipated to adversely impact ambient air quality.

Section 4 (f) Lands

The Department of Transportation Act, Section 4(f), recodified at 49 USC, Subtitle I, Section 303 defines Section 4(f) lands as public parks and recreational areas, or wildlife and waterfowl refuge of national, state of local significance, or land of a historic site of national, state of local significance. Contacts with the Lee County Division of Planning indicated that a single Section 4(f) land is located on the airport property. This consists of the 13.7 acre Jerry Brooks Park located near the southwest corner of Page Field. This park contains baseball, football, and tennis facilities. The existing use of this park will not be adversely affected by the proposed Master Plan revisions.

Historical and Archaeological Sites

As discussed above, the entire Page Field property has been highly disturbed by previous land use activities. A letter was submitted to Florida Site File, Division of Historical Resources requesting information on potential historical or archeological sites on the property. The response confirms that no historical or archeological sites (other than the airport itself) are known to exist on-site. The landowner may petition the Division of Historical Resources and request that the property be removed from the Florida Site File. It is recommended that the Lee County Port Authority file the petition to remove Page Field from the Florida Site File.

Energy Supply and Natural Resource Use

Energy consumption at Page Field results from three primary sources: terminal/airfield power requirements, surface vehicular traffic, and aircraft movement. The proposed improvements at Page Field are not anticipated to result in significant increases in energy demands for any of these three categories.

According to FAA Order 5050.4A Chapter 5 the evaluation of natural resource use (other than fuel) is required only if the proposed action requires materials that are unusual or in short supply. The proposed improvements will not be using materials that are unusual or in short supply.

Construction Impacts

Construction activities at Page Field may have a potential to create short term localized impacts. These impacts may include increased noise, dust and vehicular traffic typically associated with standard construction activities. The use of Best Management Practices and incorporation of the applicable provisions of Advisory Circular 150/5370 10 Standards for Specifying Construction of Airports, (change 10), Item P 156 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control will insure that construction activities do not significantly adversely affect the surrounding environment.

Aircraft Noise

This section provides information relative to existing and future noise conditions at Page Field General Aviation Airport. The noise analysis is based on the current flight operation procedures for Page Field with basic assumptions relative to future runway usage and overall fleet mix. Aircraft operational levels experienced in 1998 were used to represent the existing conditions while projected activity levels for 2010 were used to represent the future. Furthermore, the 2010 projected noise exposure contours were compared to those outlined for the same year in the previous master plan. This allowed for a determination of whether future noise exposure (2010) is expected to be greater or less than that originally anticipated. This section overviews the methodology for the measurement of noise, the general impact of noise on a community and details the existing and projected noise exposure relative to the operation of Page Field.

Noise Metric

Since 1981, the FAA has used the Day-Night Average Sound Level (DNL) as the primary means of defining aviation noise. DNL is better described as the average sound level occurring in a particular

geographical area during a standard 24-hour period. In order to effectively quantify noise and evaluate its effect on people, the DNL provides a current and thoroughly tested noise assessment methodology. The DNL metric further allows for frequency weighting to reflect the greater human tolerance for low-pitched sound and the reduced tolerance toward high-pitched sound. Accounting for the time-of-day, the DNL adds a 10-dB penalty to account for a greater sensitivity to noise and/or a lower background sound level at night. Additionally, the DNL reading provides a mean value for the sound energy level, which varies with time to accommodate an average community response.

Noise Contours

DNL noise levels are depicted by a series of contour lines superimposed on an airport layout map which outlines the airport and the surrounding areas. The noise levels are calculated for locations on the ground from the weighted summation of the airport flight operations for both the baseline and the future, in this case 2010, to allow for comparison. Certain operations have a profound effect and dominate the noise exposure relative to a particular location while other operations may pose a minimal impact due to their respective noise levels and/or location. A computer model is used to compile the noise information and develop the contour for insertion into digital base mapping.

Integrated Noise Model (INM) – Version 6.0

The FAA, Office of Environment and Energy, developed the Integrated Noise Model (INM) with assistance from ATAC Corporation, the Department of Transportation Volpe National Transportation System Center, and LeTech Incorporated. The INM is widely used and endorsed by the FAA for evaluating aircraft noise impacts in the vicinity of an airport. INM Version 6.0 was used for the analysis outlined herein.

INM 6.0, released September 30, 1999, is the first full INM release since INM 5.1 (January, 1997), and it is the first in a new series of releases since INM 5.0 (August, 1995). INM enhancements are based on user experience, advances in computation technology and recommendation by the noise modeling community including the Society of Automotive Engineers (SAE), Aviation Noise Committee (A-21). INM 6.0 represents the beginning of a major change in noise modeling practices for the FAA, in that the data and noise computation algorithms are moving to a system that considers the spectral shape of the noise produced by aircraft. This change will eventually allow INM to incorporate state-of-the-art noise propagation algorithms that account for acoustic effects currently not modeled. These include terrain shielding, various meteorological conditions, and excess attenuation effects that are currently under review by SAE A-21.

INM 6.0 is an effective noise model and the standard methodology currently used by the FAA. It assesses changes in noise impact resulting from:

1. New or extended runways or runway configurations
2. New traffic demand and changes in fleet mix
3. Revised routings and airspace structures
4. Alternative flight profiles
5. Modifications to other operational procedures

The fundamental components for computing noise in this model are a flight path segment and an "observer". For a given observer location, noise computations are performed on a flight segment However, the INM is not designed for single-event noise prediction. The INM is an average value model that estimates long-term average effects using average annual input conditions. The methods used to compute the flight path segments and the methods for computing noise levels at an observer position are compiled into a comprehensive annual average.

INM Program Input Assumptions

The aircraft fleet mix, airport operations, runway usage and airport activity based on the time-of-day were input into a computer model to generate the level of noise exposure at Page Field Airport. Runway usage information and the corresponding airport flight tracks are vital to the effect of noise on the airport. Aircraft flight procedures identified for the analysis are straight-in for aircraft arrivals and departures follow their respective runway headings. These flight procedures are expected to remain the same throughout the period from the baseline year to 2010.

Fleet Mix

In 1998, there were 248 based fixed wing aircraft at the airport. The mix comprised of 211 single-engine, 30 twin-engine and 7 jet aircraft. The most influential component of the mix on noise is typically the jet aircraft category. For the purpose of this analysis, estimated jet activity was split between the INM Learjet 25 and Learjet 35 aircraft categories. The INM Learjet 25 category, the nosier of GA jet aircraft, is estimated to account for approximately 20 percent of the jet operations during the base year. The remaining 80% were grouped in the INM jet aircraft category represented by the Learjet 35 aircraft. These aircraft are quieter than the previously mentioned Learjet 25 category and are more representative of the current jet fleet using Page Field. For 2010 this mix is expected to continue its trend away from the nosier Lear 25's toward the quieter Lear 35's. For the purpose of this analysis Lear 35 aircraft were used to represent 90% of the jet fleet operating at Page Field.

Airport Operations

The noise contours developed for the baseline year were reflective of the 1998 existing conditions with annual total operations of 81,046 while the 2010 projections were based on annual total operations of 110,018. The average daily airport operations at Page Field were estimated at 266, split on the basis of expected operations during the day or night. Ninety five percent of the operations at the airport were estimated to occur during the day (designated as between 7:00 am and 10:00 pm by FAA/INM) with the remaining five percent or, in this case 13 operations occuring during the night. This split was used for both the existing and future operational scenarios.

Runway Usage

For the purpose of this analysis Runway 05-23, the primary runway, accommodates 70% of all the airport traffic with 30% percent utilizing the crosswind, Runway 13-31. Jet operations were estimated at 90% on the primary ILS Runway 05-23 and 10% on Runway 31. Based on the operational splits estimated for 1998, Runway 05-23 accounts for a total of 188 operations with 179 operations during the day and 9 operations at night. Runway 13-31 accounts for a total of 79

operations with 75 operations during the day and 4 operations at night. Arrival activity was estimated equal to departure activity for both runways.

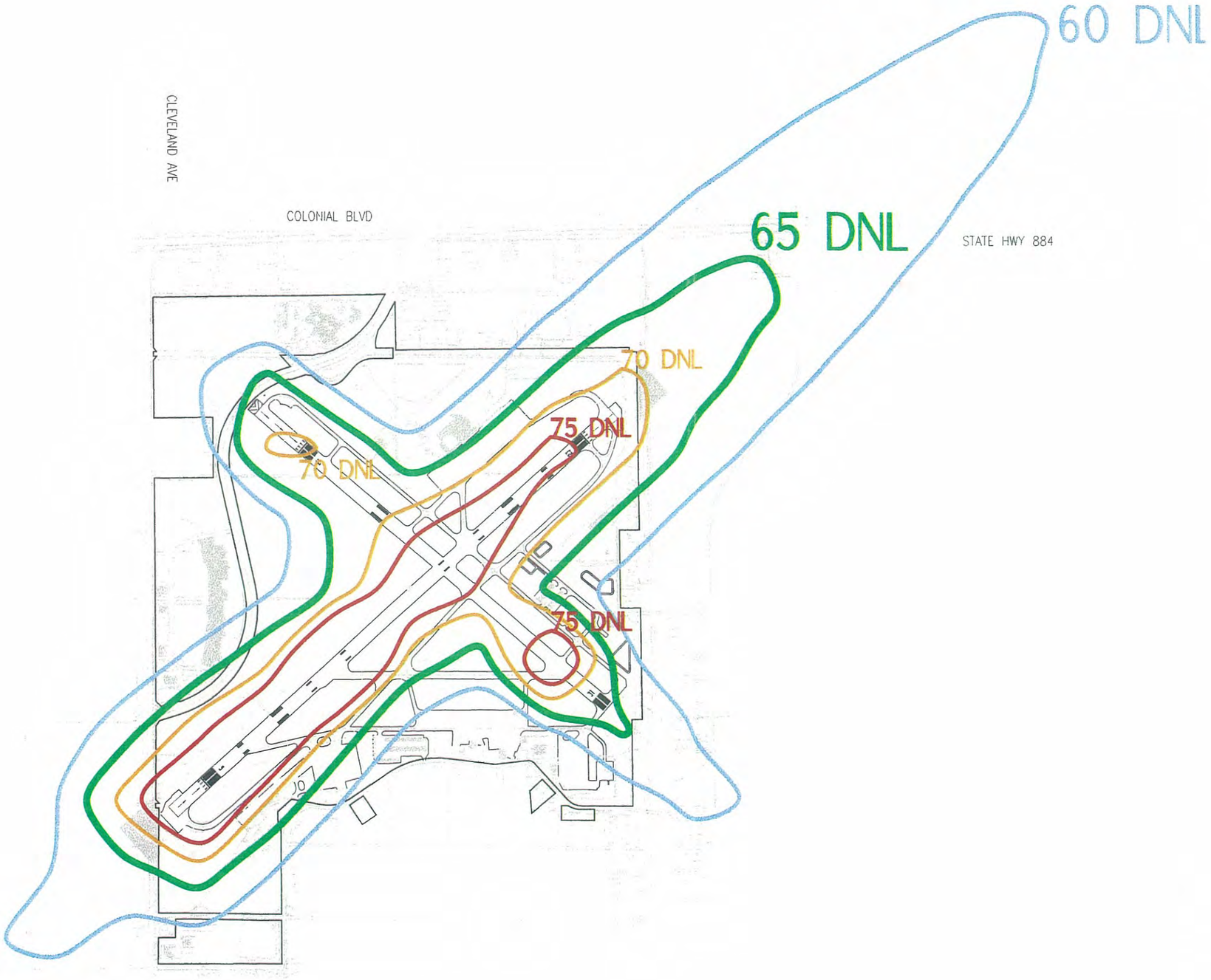
INM Program Output

Output from the INM program was generated in the form of graphical noise contours outlining the 60, 65, 70 and 75 DNL noise levels. **Exhibits 7-4** and **7-5** present noise exposure maps detailing the contours generated from the model for 1998 and 2010, respectively. As outlined in both the 1998 and the 2010 exhibits the noise contours extend farthest beyond airport property limits beyond the far end of Runway 5. This is due to the higher concentration of jet departures utilizing Runway 05. **Table 7-2** outlines the extent to which each contour extends beyond the runway end in both 1998 and 2010.

Table 7-2
Contour Extension Beyond Runway End

Runway End/Contour	1998	2010	Change
Runway 05 Approach			
60 DNL	2,228'	2,395'	167'
65 DNL	713'	713'	None
70 DNL	374'	321'	-53'
75 DNL	195'	149'	-46'
Runway 23 Approach			
60 DNL	6,287'	5,464'	-823'
65 DNL	2,272'	1,986''	-286'
70 DNL	454'	363'	-91'
75 DNL	-557'	-542'	15'
Runway 13 Approach			
60 DNL	675'	730'	55'
65 DNL	195'	273'	78'
70 DNL	723'	-177'	-900
75 DNL	N/A	N/A	N/A
Runway 31 Approach			
60 DNL	1,720'	1,844'	124'
65 DNL	336'	386'	50'
70 DNL	-398'	-371'	27'
75 DNL	-535'	-506'	29'

Table 7-2 also allows for a comparison of increases or decreases in noise exposure. As outlined in both the table and the graphical depiction in **Exhibit 7-6**, in 2010 there are slight increases in noise exposure off all runway ends with the exception of Runway 05 where a reduction in noise exposure occurs. These increases are due to increased aviation activity. The reduction of noise levels off Runway 05 is due to the reduction in Stage 2 Lear 25 departures. Although there is an increase in total jet departure activity on Runway 5 in 2010 compared to 1999, the reduction in noise exposure from the much larger Lear 25 more than offsets the increase in overall jet activity.



NOISE EXPOSURE CONTOUR SURFACE AREAS

DNL	ACRES	ACRES (WITHIN 5 DNL)
60	818.55	426.47 (60–65 DNL)
65	392.08	196.85 (65–70 DNL)
70	195.23	97.37 (70–75 DNL)
75	97.86	97.86 (75+ DNL)

N

600 0 300 600 1200

SCALE IN FEET

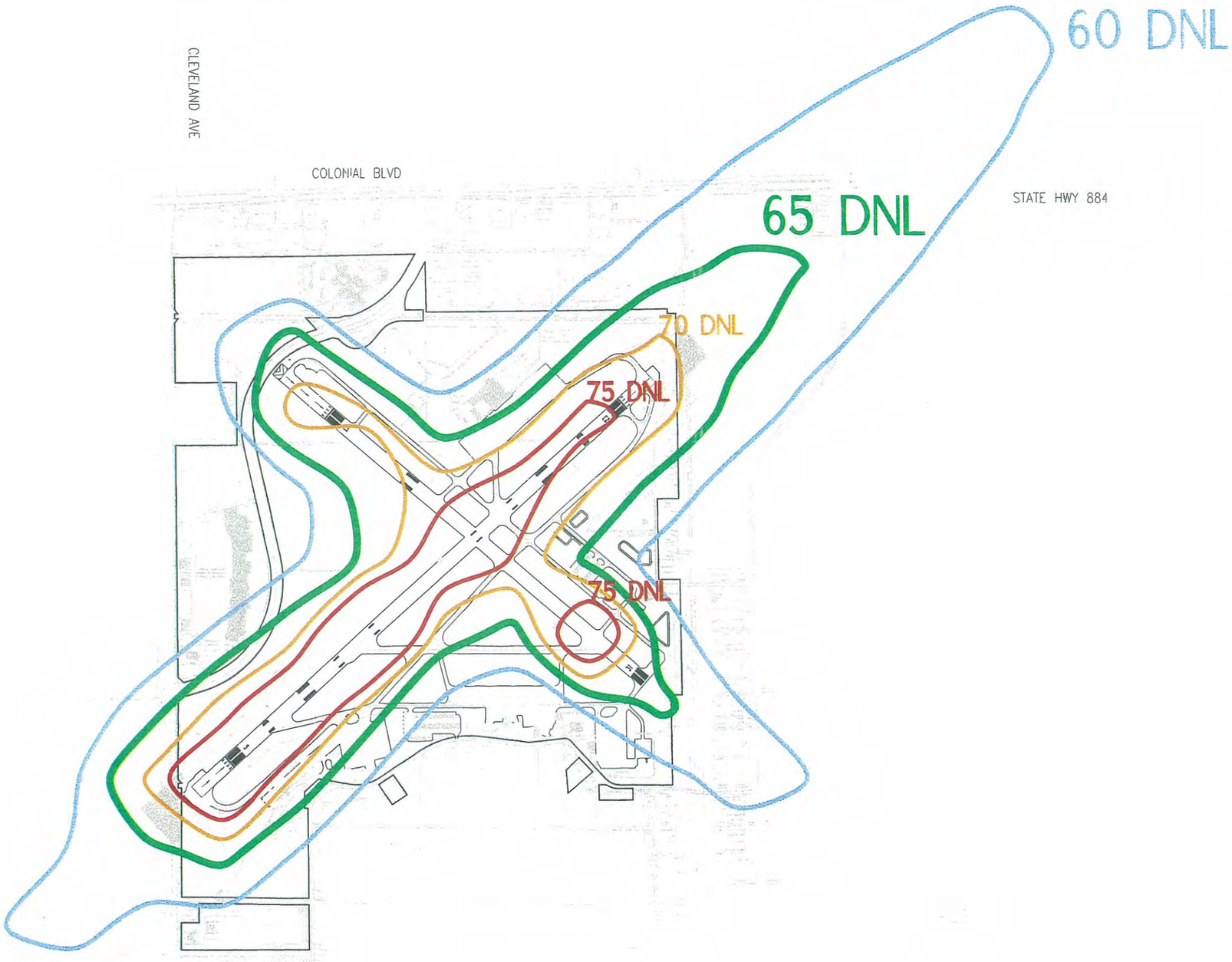
Date: 4/3/2000 Time: 18:12:29 Scale: 1=1(PS) Drawing File: Project Records\C0460101 Page Up\9-0 Documents\9-1 Dgns-ngt\Mnt\Exhibits\Exhibit 7-4.dwg (pmchetpar)

Birk Hillman
Orlando · Miami · Atlanta

NOISE EXPOSURE MAP
1998

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

Exhibit 7-4



2010
NOISE EXPOSURE CONTOUR SURFACE AREAS

DNL	ACRES	ACRES (WITHIN 5 DNL)
60	789.51	411.90 (60–65 DNL)
65	377.61	181.73 (65–70 DNL)
70	195.88	103.70 (70–75 DNL)
75	92.18	92.18 (75+ DNL)

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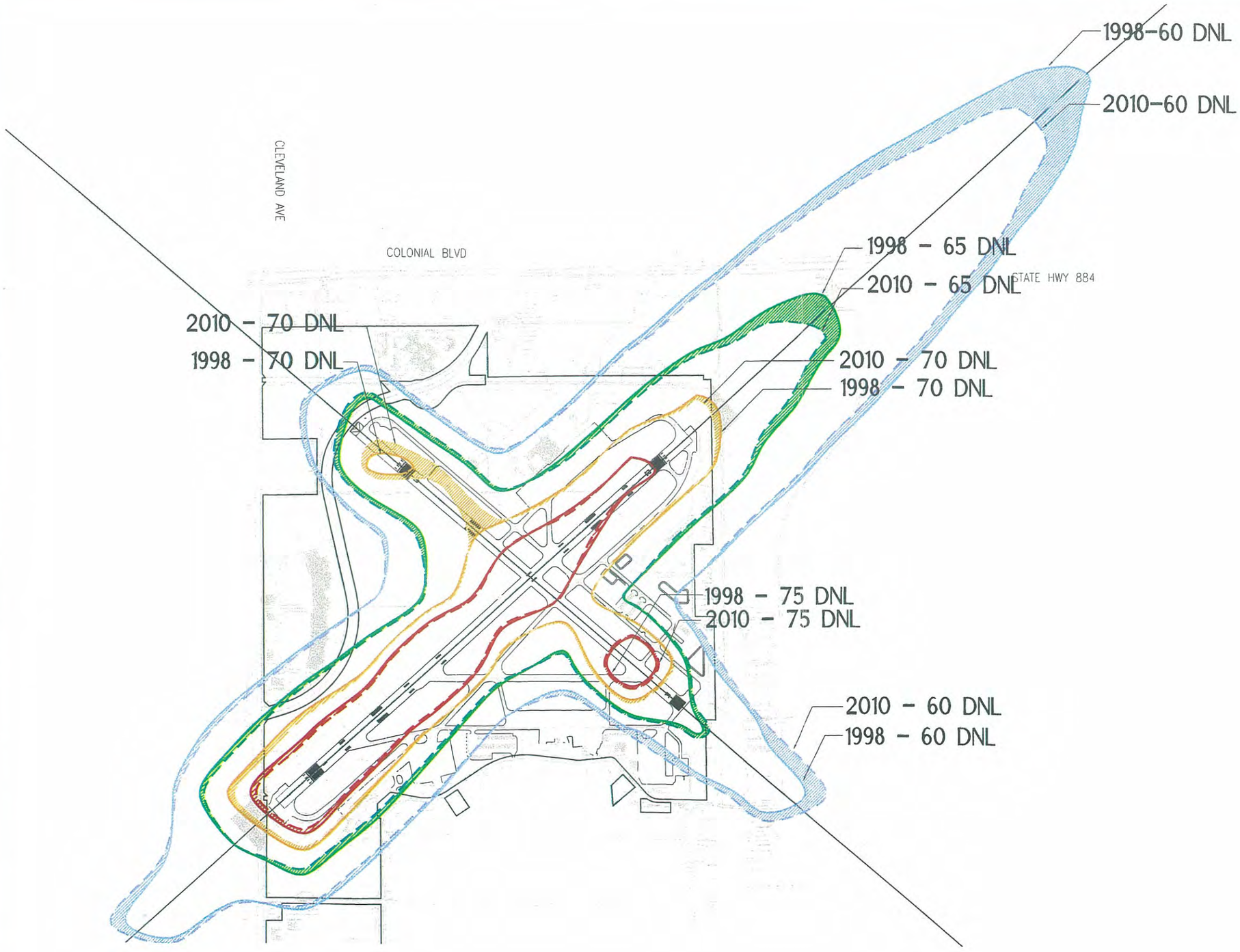
NOISE EXPOSURE MAP
2010

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

EXHIBIT 7-5

Date 4/3/2009 Time 18:13:4 Scale 1=1(PS) Drawing File Project Records\CO460101 Page \MP\9-0 Documents\9-1 Drawings\Exhibits\Exhibits 7-5 dwg dwg DWG (anonymous)



LEGEND

- 1998 – 60 DNL
- NOISE EXPOSURE CHANGE
- 2010 – 60 DNL
- 1998 – 65 DNL
- NOISE EXPOSURE CHANGE
- 2010 – 65 DNL
- 1998 – 70 DNL
- NOISE EXPOSURE CHANGE
- 2010 – 70 DNL
- 1998 – 75 DNL
- NOISE EXPOSURE CHANGE
- 2010 – 75 DNL

NOISE EXPOSURE SURFACE AREA (ACRES)

DNL	1998	2010
60	818.55	789.51
65	392.08	377.61
70	195.23	195.88
75	97.86	92.18

NOISE EXPOSURE ACREAGE (WITHIN 5 DNL)

DNL	1998	2010
60	426.47 (60–65 DNL)	411.90 (60–65 DNL)
65	196.85 (65–70 DNL)	181.73 (65–70 DNL)
70	97.37 (70–75 DNL)	103.70 (70–75 DNL)
75	97.86 (75+ DNL)	92.18 (75+ DNL)

N

600 0 300 600 1200

SCALE IN FEET

Date: 4/1/2009 Time: 18:21:35 Scale: 1=600(FS) Drawing File: Project Records\CONSBASE1 Page MP\9-0 Documents\9-1 Drawings\GMP\Exhibits\Exhibit 7-6 Exhibit 7-6.dwg dwg DWG (probably.pc)

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NOISE EXPOSURE MAP
(1998–2010)

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

EXHIBIT 7-6

Table 7-3 provides further information relative to the change in noise exposure between 1998 and 2010. This table outlines the total acreage falling within each contour as well as the incremental acreage between each contour.

Table 7-3
Area Within Contour Interval

	1998		2010		Difference	
DNL Contour	Acres	Acres (w/in 5 DNL Range)	Acres	Acres (w/in 5 DNL Range)	Acres	Acres (within 5 DNL Range)
60	818.55	426.47	789.51	411.90	-29.04	-14.57
65	392.08	196.85	377.61	181.73	-14.47	-15.12
70	195.23	195.23	195.88	195.88	.65	.65
75	97.86	97.86	92.18	92.18	-5.68	-5.68

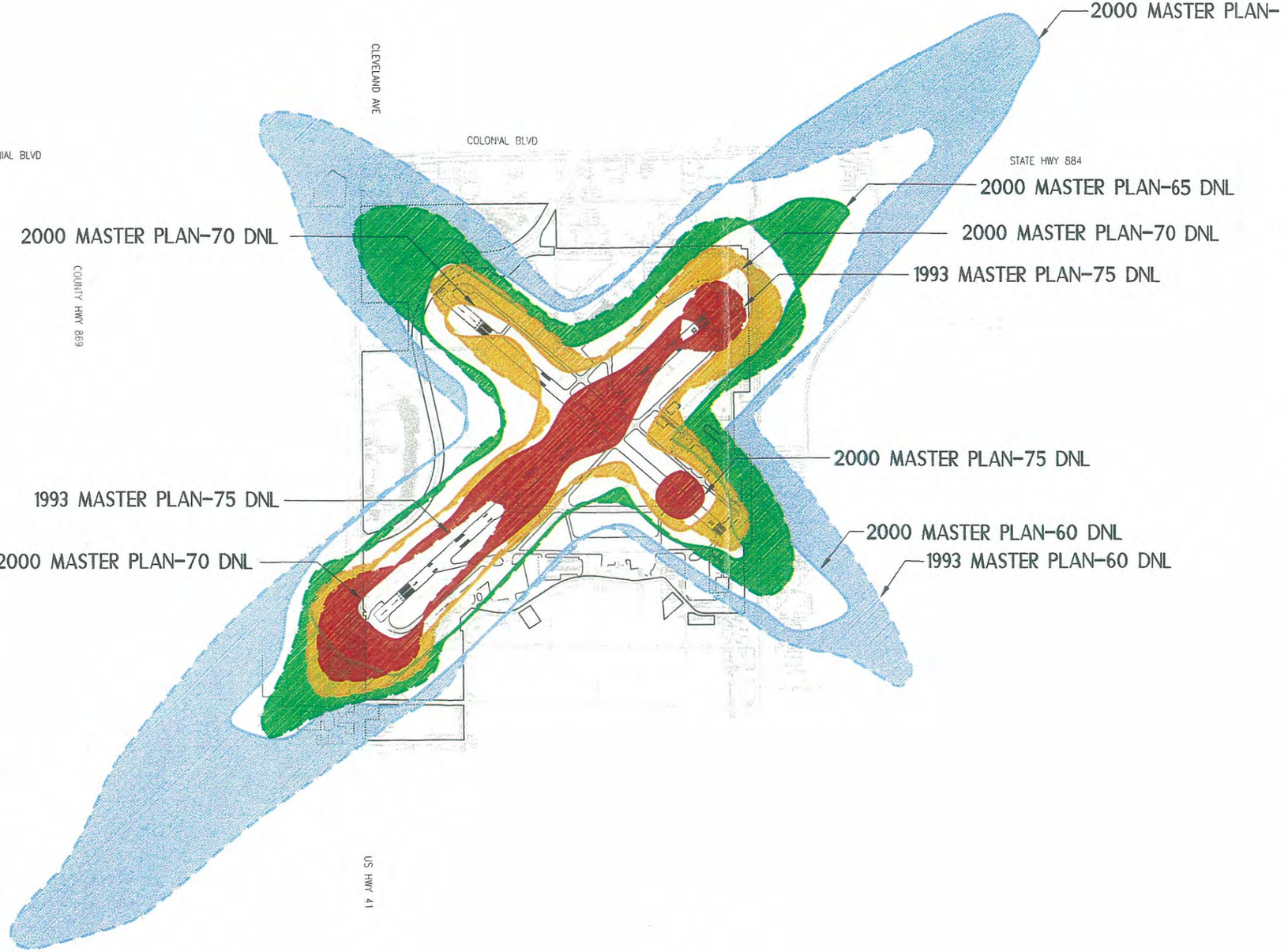
Table 7-3 indicates that, although the contours extend slightly on three of the four runway ends, the acreage falling within each of the contour intervals would, in most cases decrease. The overall acreage encompassed by the 60 DNL contour decreases from 818.55 acres in 1998 to 789.51 in 2010. Similarly, the 65 DNL decreases from just over 392 acres to just over 377 acres. The only contour that increases the acreage that it encompasses is the 70 DNL contour which increase by .65 acres to just under 196 acres of total coverage. This slight increase is contained within the airport boundary. Finally, the contour representing the highest noise level in this analysis, 75 DNL, decreases by over 5.5 acres for a reduction of roughly 5.5%.

Comparison to 1993 Master Plan

The 2010 noise exposure projection stemming from this study were compared to those identified in the 1993 Master Plan (using INM Version 3.9) to determine if the anticipated noise exposure was expected to be greater or less than that estimated in the previous study. **Exhibit 7-7** presents an overlay of the two noise exposure maps. It should be noted when comparing the two projections that the master plan update contours were based on a projected overall operational level of 110,018 in 2010, whereas the 1993 Master Plan was based on an annual activity level of 130,000 operations. As would be expected due to the higher activity levels, the area encompassed by the contours is considerably larger in the 1993 estimate of noise. Further, it can not be determined from the information available whether the 1993 Master Plan anticipated the considerable reduction in Stage 2 aircraft such as the Lear 25. All things considered, the projected noise exposure for 2010 outlined by this updated plan is considerably less than estimated in the approved version of the 1993 Master Plan.

Compatible Land Use

A review of the current use of land located in the vicinity of the airport combined with the anticipated future noise exposure provides guidance as to whether future mitigation will be required. Regardless of use, DNL levels below 65 are normally considered a compatible land use from a noise exposure perspective. It is important to note that land use compatibility relative to noise has no relation to land use compatibility relative to safety. That is, a land use can be deemed compatible from a noise perspective but incompatible due to safety considerations.



1999 PAGE FIELD MASTER PLAN
NOISE EXPOSURE CONTOUR SURFACE AREAS

DNL	ACRES	ACRES (WITHIN 5 DNL)
60	789.51	411.90 (60-65 DNL)
65	377.61	181.73 (65-70 DNL)
70	195.88	103.70 (70-75 DNL)
75	92.18	92.18 (75+ DNL)

1993 PAGE FIELD MASTER PLAN
NOISE EXPOSURE CONTOUR SURFACE AREAS

DNL	ACRES	ACRES (WITHIN 5 DNL)
60	1,069	562 (60-65 DNL)
65	507	214 (65-70 DNL)
70	294	222 (70-75 DNL)
75	72	72 (75+ DNL)

N

800 0 400 800 1,600

SCALE IN FEET

Birk Hillman
Orlando · Miami · Atlanta

1993 MASTER PLAN
2010 COMPARISON

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

EXHIBIT 7-7

Date: 4/3/2000 Time: 18:49:8 Scale: 1=1(FS) Drawing File: Project Records\0346101 Page Mfr\3-0 Documents\3-1 Drawings\MXR\Exhibits\Exhibit 7-7.dwg dwg DWG (Smallright)

As noise levels begin to exceed 65 DNL certain uses of land may be considered non-compatible or compatible with certain restrictions. These uses include residential, certain public uses such as schools, hospitals and churches, as well as certain agricultural and recreational uses. Commercial land uses and certain public, manufacturing and recreational uses are normally considered compatible with DNL levels below 70. As the noise levels begin to exceed 70 certain uses of land may be considered non compatible or compatible with certain restrictions.

When reviewing the contours for Page Field it can be determined that the 65 DNL level only extends off the airport boundary in two locations, beyond the Runway 23 approach end and the Runway 05 approach end. However, the current use of the land in these areas is considered compatible with the 65 DNL noise level. Land use falling within the 65 DNL contour beyond the Runway 23 end currently consists of pine and wet prairies, although a commercial shopping area is being considered for a portion of the land. Regardless, the use of the land is compatible with the 65 DNL level. Beyond the Runway 5 end, the 65 DNL level encompasses an area of commercial sales and service and light industrial development. Again, these uses are considered compatible with the 65 DNL level.

Reviewing the 70 DNL noise exposure level, it can be determined that the 70 DNL contour extends beyond the airport boundary at just one location, beyond the Runway 05 approach end. The small area of land encompassed by this contour has a use similar to that of the 65 DNL contour, namely commercial sales and service and light industrial development. Although this use is not automatically deemed compatible with the 70 DNL, it can be if proper construction techniques were used to minimize interior noise. It is important to note that the area falling within the 70 DNL area is expected to decrease by 2010.

Finally, although the 75 DNL contour does extend off the airport boundary slightly beyond the Runway 5 approach end, it barely crosses Cleveland Ave. and does not appear to impact any existing development nor any developable areas. As with the 70 DNL contour the area falling within the 75 DNL contour is expected to decrease by 2010.

Chapter Eight – Airport Layout Plan

INTRODUCTION

The airport layout plan chapter describes and graphically presents the recommended conceptual development at Page Field as delineated in the Alternatives Analysis chapter. The Airport Layout Plan (ALP) set consists of a number of drawings that depict the necessary information for the airport to show compliance with the FAA's design standards, airspace criteria, and overall safety requirements for a public use airport.

AIRPORT LAYOUT PLAN SET

The drawings included in the ALP set consist of the following:

- Cover Sheet
- Airport Layout Plan
- Airspace Drawing (with Approach Profiles)
- RPZ Plan and Profiles
- Land Use Map
- Property Map

All of the drawings are included at the end of this chapter.

Cover Sheet

The cover sheet is an introduction sheet for the ALP. It indicates the project name, airport name, names the airport sponsor, provides an index of sheets, the date the project was completed and approved, and provides a location and vicinity map.

Airport Layout Plan (ALP)

The ALP is a scaled graphic representation of the existing and ultimate airport facilities indicating their location and pertinent clearance as well as dimensional information to show conformance with applicable standards. The facilities and improvements on the ALP are identified by three colors; orange, red and green. The colors indicate the anticipated period during which demand will require each improvement. The first phase, 2000-2005, is depicted in orange, the second phase, 2006-2010, is depicted in red and the third phase, 2011-2020, is depicted in green. Two other colors are shown on the drawing. The brown hatch identifies non-aviation support or development which could occur anytime during the planning period. The light blue hatch indicates future aviation related development. Although the light blue areas are anticipated to occur after the planning period, they are outlined on the ALP to provide insight into to the potential ultimate use of the various areas.

The ALP consists of a number of data tables that include the Building Inventory, Runway Data, Declared Distances, Legend and Airport Data. These tables either provide supplemental information that could not easily

be depicted graphically on the ALP or further define and clarify what is included in the graphic representation. The ALP also includes an all-weather wind rose, the approval block, and the phasing plan legend.

A letter dated August 7, 1989 was sent from the FAA Orlando ADO to Lee County Port Authority stating that an adaptation to standard applies to the Runway 5-23 runway safety area as well as Runway 13-31 runway safety area. Since the Fowler Street extension and the shortening of Runway 13-31 the adaptation to the safety area for this runway no longer exists due to modifications required to extend Fowler Street. Per this letter it is understood that the adaptation to standard still applies to the Runway 5-23 runway safety area, and has been carried through this Master plan and is noted on the ALP as an adaptation to standard. However, the declared distances associated with this modification have been revised to reflect the results of the detailed RSA Assessment included in **Appendix B** of this document. As per the FAA's final determination outlined in this assessment, the LDA and ASDA calculations associated with Runway 5/23 have been reduced.

Because of the size of the RPZ's and the defined approach surface criteria, the approach surfaces are slightly larger in width than the RPZ's.

The runway protection zones (RPZs) for Runway 13-31 have been sized accordingly for an aircraft design group (ADG) II, aircraft approach categories A & B, and non-precision approach visibility minimums not lower than 1-mile. The dimensions of the RPZ associated with this runway classification are 1,000 feet in length, 500 feet for an inner width and 700 feet for an outer width.

The approach surfaces for both runway ends are defined as follows:

> *"The inner edge of the approach surface is the same width as the primary surface and it extends uniformly to a width of 3,500 feet for that end of a utility runway with a non-precision instrument approach. The approach surface extends for a horizontal distance of 10,000 feet at a slope of 34:1 for all non-precision instrument runways other than utility runways".*

According to FAR Part 77, Objects Affecting Navigable Airspace, Runway 13-31 is defined as non-precision runway. The definition of a utility runway is one that is constructed for the intended use by propeller driven aircraft of 12,000 pounds maximum gross weight and less. This runway can and does accommodate the Gulfstream G-I and Cessna Citation III jet aircraft, both of which have maximum gross weights considerably over 12,500 pounds and still fall in the aircraft design group B-II. This results in a case where the approach surfaces do not exactly overlay the RPZ's.

Airspace Drawing (with Approach Profiles)

The Airspace Drawing is an illustration of the Part 77 surfaces including the approach surfaces, transitional surfaces, horizontal surface, and the conical surface. It identifies the relationship between the FAR Part 77 surfaces and the physical feature and terrain in the areas adjacent to Page Field General Aviation Airport. Part 77 prescribes that the surfaces be free from penetrations that represent potential hazards to air navigation. No obstructions were noted to any of the outer areas of the Part 77 surfaces, the Airspace Plan depicts graphically the approximate locations of any obstacles located in these surfaces.

RPZ Plan and Profiles

The Runway Protection Zone (RPZ) drawings for each runway end have a plan and profile view to identify the location and size of the area off each runway that should be restricted in use. Existing obstacles penetrating the approach surfaces are depicted on the drawings in both the plan and profile views. An obstruction data table lists the obstructions that lie within the RPZ, the penetrations to the approach surface and the recommended mitigation for each.

Land Use Map

The Land Use Map provides the airport management with a depiction of the existing and recommended use of all the land within the airport boundary. The land uses are classified by general use categories and include airfield operational, aeronautical, commercial, recreational, public facilities, land sale, future acquisition / easements. The drawing can be used a general guideline for the planning of facilities as well as the revenue producing areas of the airport.

Property Map

The Airport Property map depicts the existing airport ownership, both fee simple and avigation easements, which lie within the airport boundary. The purpose of this drawing is to provide information to analyze the present and future aeronautical uses of land acquired with Federal funds. The property map details who originally owned the land and in what year it was acquired by the airport. A legal description of the Page Field Airport property has also been listed on the drawing.

PAGE FIELD
AIRPORT MASTER PLAN

LEE COUNTY PORT AUTHORITY
Fort Myers, Florida

Page Field
General Aviation Airport

PREPARED BY:

Birk Hillman
Orlando · Miami · Atlanta

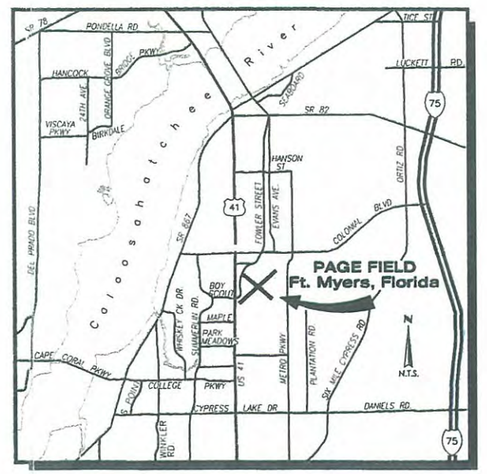
May, 2002

VICINITY MAP

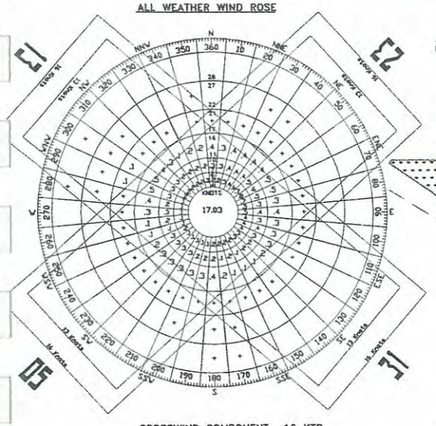
INDEX OF DRAWINGS

SHEET NO.	EXHIBIT TITLE
1	COVER SHEET
2	AIRPORT LAYOUT PLAN
3	AIRPORT AIRSPACE PLAN
4	INNER PORTION-APPROACH SURFACE PLAN & PROFILE R/W 5
5	INNER PORTION-APPROACH SURFACE PLAN & PROFILE R/W 23
6	INNER PORTION-APPROACH SURFACE PLAN & PROFILE R/W 13
7	INNER PORTION-APPROACH SURFACE PLAN & PROFILE R/W 31
8	LAND USE PLAN
9	AIRPORT PROPERTY MAP
10	AIRPORT PROPERTY LEGAL DESCRIPTION

LOCATION MAP



ALL WEATHER WIND ROSE



CROSSWIND COMPONENT: 16 KTS.

RUNWAY	COVERAGE
05/23	99.68%
13/31	99.67%

CROSSWIND COMPONENT: 13 KTS.

RUNWAY	COVERAGE
05/23	98.04%
13/31	97.31%

CROSSWIND COMPONENT: 10.5 KTS.

RUNWAY	COVERAGE
05/23	95.79%
13/31	94.61%

OBSERVATION PERIOD: 1990 – 1995
TOTAL OBSERVATIONS: 50,439

SOURCE: NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, N.C.

PHASING PLAN

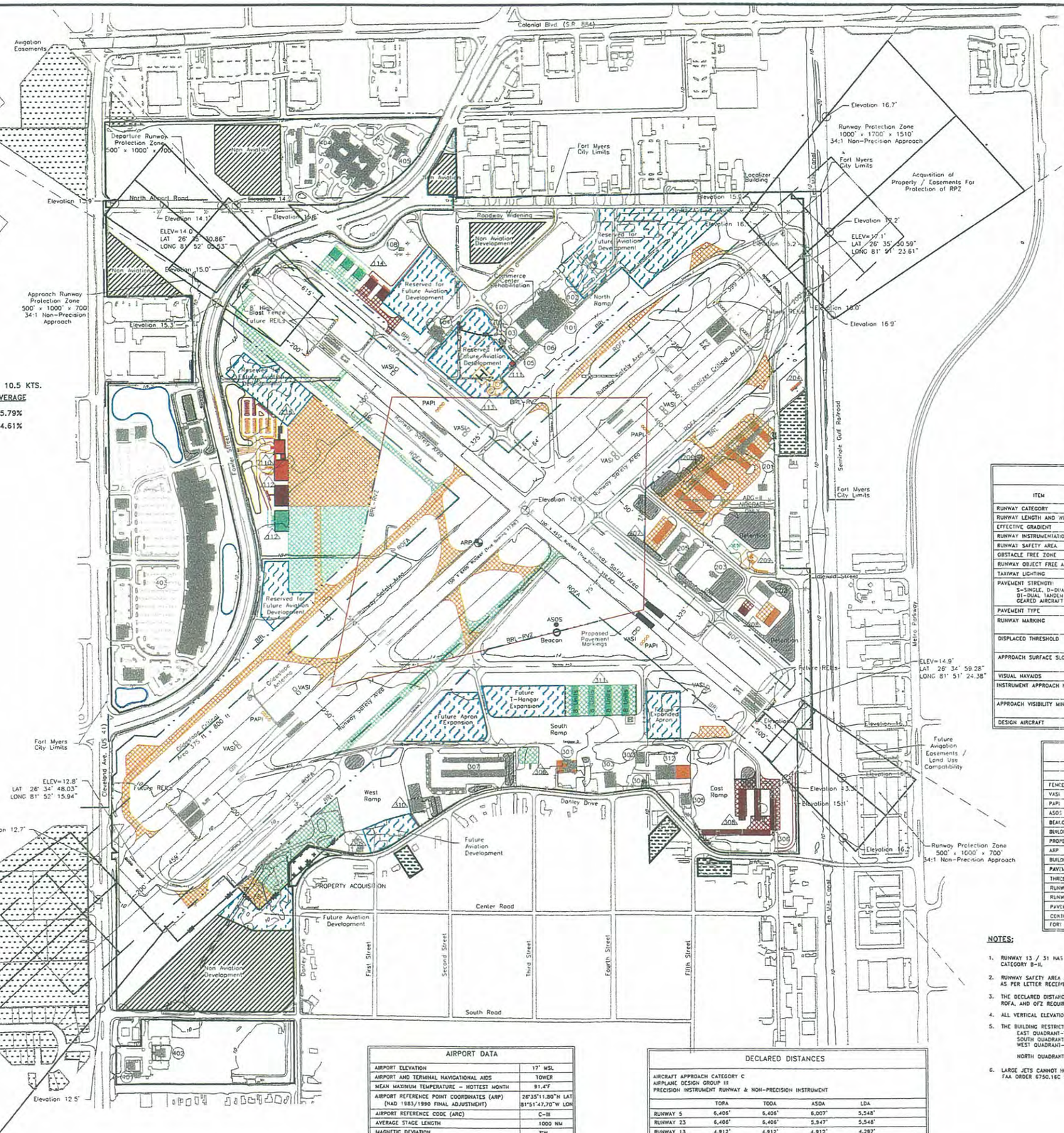
	PAVEMENT	BUILDING
Through – 2005		
2006 – 2010		
2011 – 2020		

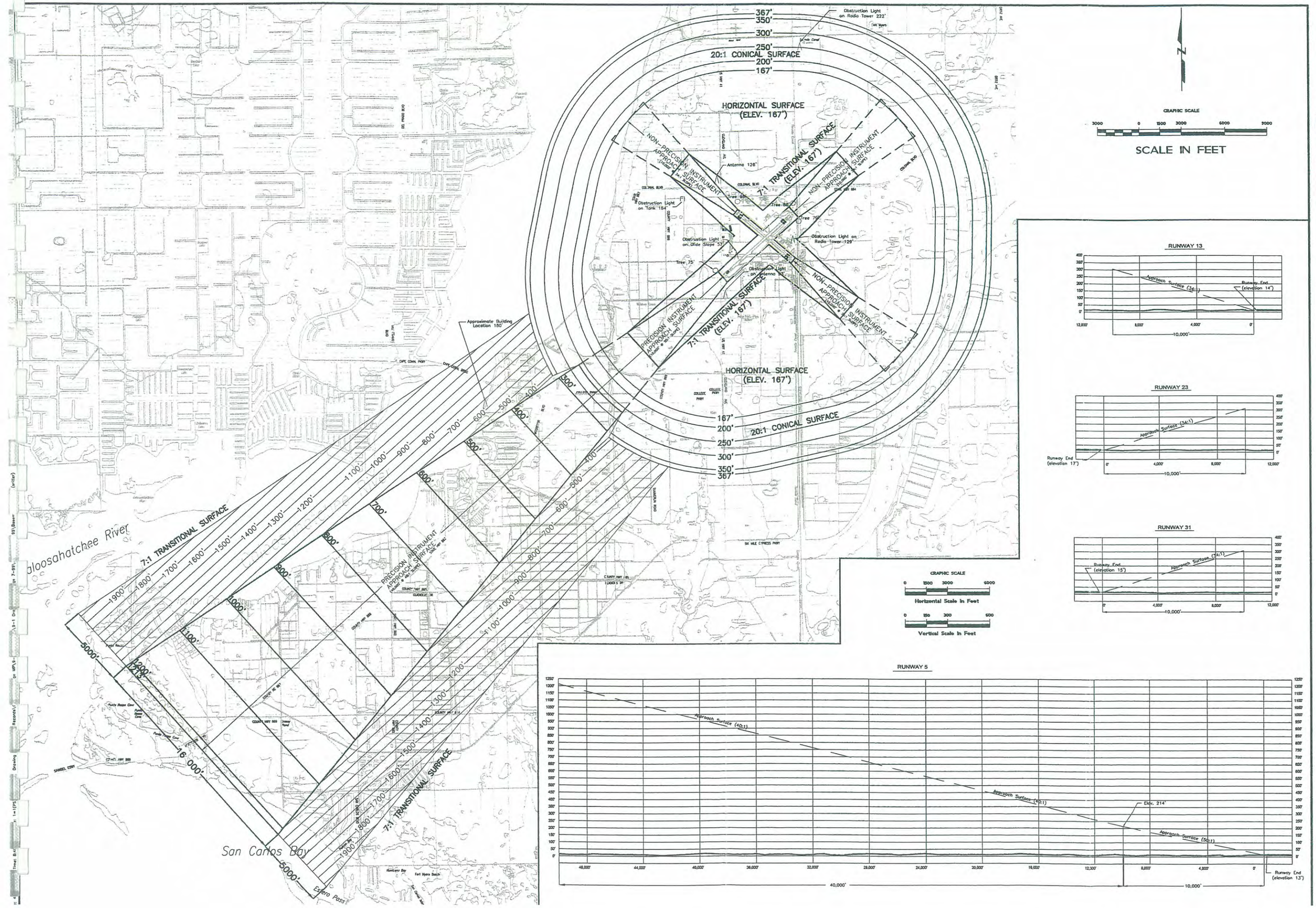
LAND USE

- Non– Aviation Support Development
- Existing Avigation Easements
- Surplus Land Sale
- Land Acquisition
- Future Aviation

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION. FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.


Colonial Blvd (S.R. 884)
Avigation Easements
Departure Runway Protection Zone 500' x 1000' x 700'
Non Aviation
North Airport Road
Elevation 14.1'
ELEV=14.0'
LAT 26° 35' 30.86"
LONG 81° 52' 05.53"
Elevation 15.0'
Approach Runway Protection Zone 500' x 1000' x 700' 34:1 Non-Precision Approach
Elevation 15.3'
Elevation 13.9'
Elevation 14.2'
Elevation 15.5'
Fort Myers City Limits
Localizer Building
Runway Widening
Non Aviation Development
Reserved for Future Aviation Development
Commerce Center Rehabilitation
North Ramp
Elevation 16.7'
Runway Protection Zone 1000' x 1700' x 1510' 34:1 Non-Precision Approach
Acquisition of Property / Easements For Protection of RPZ
Elevation 17.2'
ELEV=17.1'
LAT 26° 35' 30.59"
LONG 81° 51' 23.61"
Elevation 18.0'
Elevation 16.9'
Future REILs
Glideslope Critical Area
Runway Safety Area
Runway Object Free Area
Runway Protection Zone
Runway Obstacle Free Zone
Runway Safety Area
Runway Safety Area
Runway Safety Area



Lee County Port Authority

Page Field
General Aviation Airport

Birk Hillman

Orlando · Miami · Atlanta
8751 Forum Drive, Ste. #240, Orlando, FL 32821

PAGE FIELD AIRPORT MASTER PLAN

Fort Myers, Florida

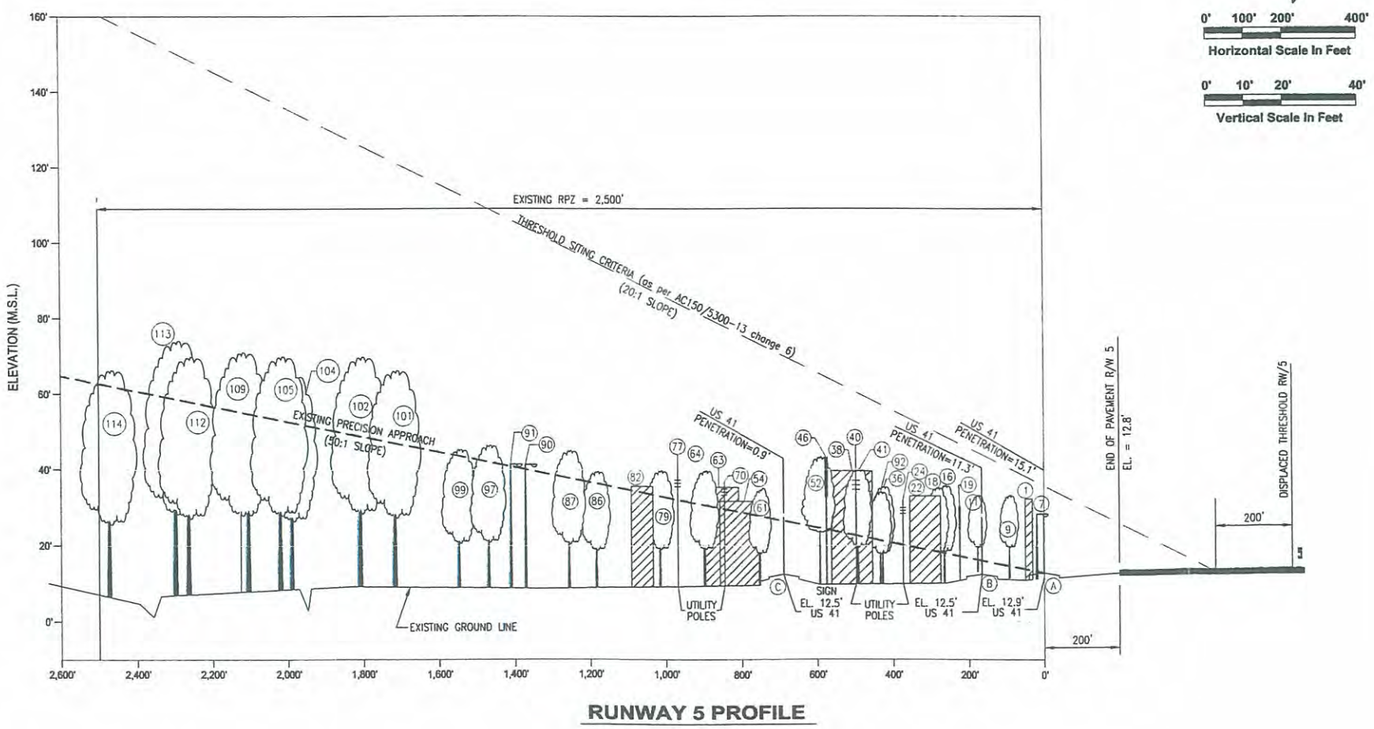
Airspace Drawing

NO.	DATE	REVISION

DATE:	MAY 2002
PROJECT NO.	C0460101
DESIGNED BY:	A.B.
DRAWN BY:	A.B.
CHECKED BY:	M.A.

SHEET
3
OF
10

RUNWAY 5 PLAN



RUNWAY 5 PROFILE

0' 100' 200' 400'
Horizontal Scale In Feet

0' 10' 20' 40'
Vertical Scale In Feet

RUNWAY 5 OBSTRUCTION DATA TABLE

OBSTRUCTION ID NO.	DESCRIPTION	HEIGHT (M.S.L.)	APPROACH SURFACE PENETRATION	MITIGATION
1	BUILDING	32.3'	18.1'	NONE
▪ 2	LIGHT POLE	29.7'	13.2'	NONE
▪ 3	LIGHT POLE	29.0'	12.7'	NONE
▪ 4	TREES	38.5'	22.3'	REMOVE/ REDUCE
▪ 5	TREES	30.8'	11.3'	REMOVE/ REDUCE
▪ 6	LIGHT POLE	29.1'	15.9'	NONE
7	LIGHT POLE	28.6'	15.5'	NONE
▪ 8	TREES	25.7'	12.4'	REMOVE/ REDUCE
▪ 9	TREES	33.5'	18.7'	REMOVE/ REDUCE
▪ 10	TREES	30.4'	14.7'	REMOVE/ REDUCE
11	TREES	33.5'	16.9'	REMOVE/ REDUCE
▪ 12	TREES	32.2'	14.9'	REMOVE/ REDUCE
▪ 13	UTILITY POLE	32.7'	15.5'	NONE
▪ 14	UTILITY POLE	30.9'	13.6'	NONE
▪ 15	UTILITY POLE	31.1'	12.4'	NONE
16	TREES	35.9'	17.6'	REMOVE/ REDUCE
▪ 17	BUILDING	35.6'	19.1'	NONE
▪ 18	TREES	35.3'	16.7'	REMOVE/ REDUCE
▪ 19	SIGN	30.4'	12.9'	NONE
▪ 20	TREES	33.6'	14.6'	REMOVE/ REDUCE
▪ 21	TREES	24.7'	5.0'	REMOVE/ REDUCE
22	BUILDING	33.3'	14.2'	NONE
▪ 23	BUILDING	29.0'	9.6'	NONE
24	UTILITY POLE	32.2'	11.7'	NONE
▪ 25	SIGN	26.7'	7.6'	NONE
▪ 26	TREES	29.2'	7.4'	REMOVE/ REDUCE
▪ 27	SIGN	29.5'	8.5'	NONE
▪ 28	UTILITY POLE	30.3'	9.3'	NONE
▪ 29	SIGN	30.6'	9.6'	NONE
▪ 30	BUILDING	22.8'	1.3'	NONE
▪ 31	FLAG POLE	33.4'	11.4'	NONE
▪ 32	TREES	27.7'	3.3'	REMOVE/ REDUCE
▪ 33	UTILITY POLE	28.6'	6.6'	NONE
▪ 34	UTILITY POLE	32.0'	9.5'	NONE
▪ 35	BUILDING	29.4'	7.2'	NONE
36	TREES	35.5'	14.0'	REMOVE/ REDUCE
▪ 37	TREES	29.1'	6.9'	REMOVE/ REDUCE
▪ 38	BUILDING	39.9'	16.5'	NONE
▪ 39	BUILDING	30.2'	7.5'	NONE
40	SIGN	30.5'	7.6'	NONE
41	TREES	40.2'	17.4'	REMOVE/ REDUCE
▪ 42	TREES	32.4'	9.0'	REMOVE/ REDUCE
▪ 43	BUILDING	25.0'	0.8'	NONE
▪ 44	TREES	32.7'	7.6'	REMOVE/ REDUCE
▪ 45	BUILDING	29.3'	5.7'	NONE
46	SIGN	31.9'	7.4'	NONE
▪ 47	UTILITY POLE	31.3'	6.6'	NONE
▪ 48	BUILDING	32.4'	5.8'	NONE
▪ 49	TREES	30.0'	5.1'	REMOVE/ REDUCE
▪ 50	BUILDING	28.8'	3.4'	NONE
▪ 51	TREES	34.4'	8.0'	REMOVE/ REDUCE
52	TREES	43.6'	18.8'	REMOVE/ REDUCE
▪ 53	BUILDING	31.6'	4.0'	NONE
54	BUILDING	33.1'	4.9'	NONE
▪ 55	TREES	34.8'	7.7'	REMOVE/ REDUCE
▪ 56	UTILITY POLE	32.4'	6.9'	NONE
▪ 57	TREES	32.2'	4.0'	REMOVE/ REDUCE
58	TREES	36.2'	8.5'	REMOVE/ REDUCE
▪ 59	TREES	29.5'	0.8'	REMOVE/ REDUCE
▪ 60	SIGN	32.5'	4.4'	NONE
61	TREES	35.9'	7.9'	REMOVE/ REDUCE
▪ 62	BUILDING	32.8'	4.4'	NONE
63	BUILDING	35.6'	5.5'	NONE
64	TREES	35.7'	4.8'	REMOVE/ REDUCE
▪ 65	UTILITY POLE	34.0'	4.3'	NONE
▪ 66	UTILITY POLE	30.7'	0.5'	NONE
▪ 67	UTILITY POLE	31.2'	0.6'	NONE
▪ 68	LIGHT POLE	33.9'	3.2'	NONE
▪ 69	LIGHT POLE	33.4'	2.1'	NONE
70	UTILITY POLE	37.1'	7.2'	NONE
▪ 71	UTILITY POLE	35.0'	4.0'	NONE
▪ 72	UTILITY POLE	31.7'	1.4'	NONE
▪ 73	UTILITY POLE	32.6'	2.1'	NONE
▪ 74	UTILITY POLE	36.9'	5.5'	NONE
▪ 75	LIGHT POLE	33.6'	1.4'	NONE
▪ 76	LIGHT POLE	33.3'	0.3'	NONE
77	UTILITY POLE	39.7'	7.2'	NONE
▪ 78	UTILITY POLE	34.8'	2.2'	NONE
79	TREES	39.8'	6.5'	REMOVE/ REDUCE
▪ 80	LIGHT POLE	36.0'	1.6'	NONE
▪ 81	TREES	39.2'	5.2'	REMOVE/ REDUCE
82	BUILDING	35.8'	1.6'	NONE
▪ 83	UTILITY POLE	35.4'	0.9'	NONE
▪ 84	TREES	40.7'	4.0'	REMOVE/ REDUCE
▪ 85	TREES	29.5'	8.4'	REMOVE/ REDUCE
86	TREES	40.2'	3.5'	REMOVE/ REDUCE
87	TREES	45.1'	6.8'	REMOVE/ REDUCE
▪ 88	TREES	41.7'	4.0'	REMOVE/ REDUCE
▪ 89	TREES	39.6'	0.5'	REMOVE/ REDUCE
▪ 90	LIGHT POLE	41.6'	1.2'	NONE
▪ 91	LIGHT POLE	41.8'	0.6'	NONE
▪ 92	TREES	34.2'	12.5'	REMOVE/ REDUCE
▪ 93	LIGHT POLE	38.7'	1.7'	NONE
▪ 94	TREES	47.0'	4.0'	REMOVE/ REDUCE
▪ 95	TREES	45.9'	4.1'	REMOVE/ REDUCE
▪ 96	TREES	47.7'	6.0'	REMOVE/ REDUCE
▪ 97	TREES	46.2'	3.9'	REMOVE/ REDUCE
▪ 98	TREES	47.2'	3.1'	REMOVE/ REDUCE
99	TREES	45.4'	1.5'	REMOVE/ REDUCE
▪ 100	TREES	49.0	3.8'	REMOVE/ REDUCE
101	TREES	66.5'	19.2'	REMOVE/ REDUCE
102	TREES	70.5'	21.3'	REMOVE/ REDUCE
▪ 103	TREES	59.1'	7.5'	REMOVE/ REDUCE
104	TREES	65.2'	12.3'	REMOVE/ REDUCE
105	TREES	70.2'	16.5'	REMOVE/ REDUCE
▪ 106	TREES	58.9'	4.9'	REMOVE/ REDUCE
▪ 107	TREES	66.9'	13.1'	REMOVE/ REDUCE
▪ 108	TREES	58.1'	3.8'	REMOVE/ REDUCE
109	TREES	71.1'	15.4'	REMOVE/ REDUCE
▪ 110	TREES	57.2'	1.5'	REMOVE/ REDUCE
▪ 111	TREES	71.5	16.4'	REMOVE/ REDUCE
112	TREES	70.0'	12.5'	REMOVE/ REDUCE
113	TREES	74.3'	15.3'	REMOVE/ REDUCE
114	TREES	66.6'	3.2'	REMOVE/ REDUCE
▪ 115	TREES	66.2'	2.4'	REMOVE/ REDUCE
* A	US41	12.9'	15.1'	NONE
* B	US41	12.5'	11.3'	NONE
* C	US41	12.5'	0.9'	NONE
▪ AA	US41	12.5'	2.4'	NONE

DOUBLE LETTER ID NO. DEPICT PENETRATIONS TO THE NEW THRESHOLD SITING CRITERIA
▪ NOT SHOWN IN PROFILE BUT LOCATION SHOWN IN PLAN
* BASED ON A 15' CLEARANCE FOR A PUBLIC ROADWAY AS PER REQUIREMENTS IN FAR PART 77.
NOTE: IN CASES WHERE TREES ARE SHIELDED BY BUILDINGS, UTILITY POLES AND SIGNS, NO MITIGATION MAY BE REQUIRED.

EXISTING AIRPORT REFERENCE POINT
26°35'11.80"N LAT.
81°51'47.70"W LONG.
EXISTING AIRPORT ELEVATION 17.1 FT. (M.S.L.)

NOTE:
OBSTRUCTION DATA INFORMATION OBTAINED FROM PDS

Lee County Port Authority
Page Field
General Aviation Airport

Birk Hillman
Orlando · Miami · Atlanta
6751 Forum Drive, Ste. #240, Orlando, FL 32821

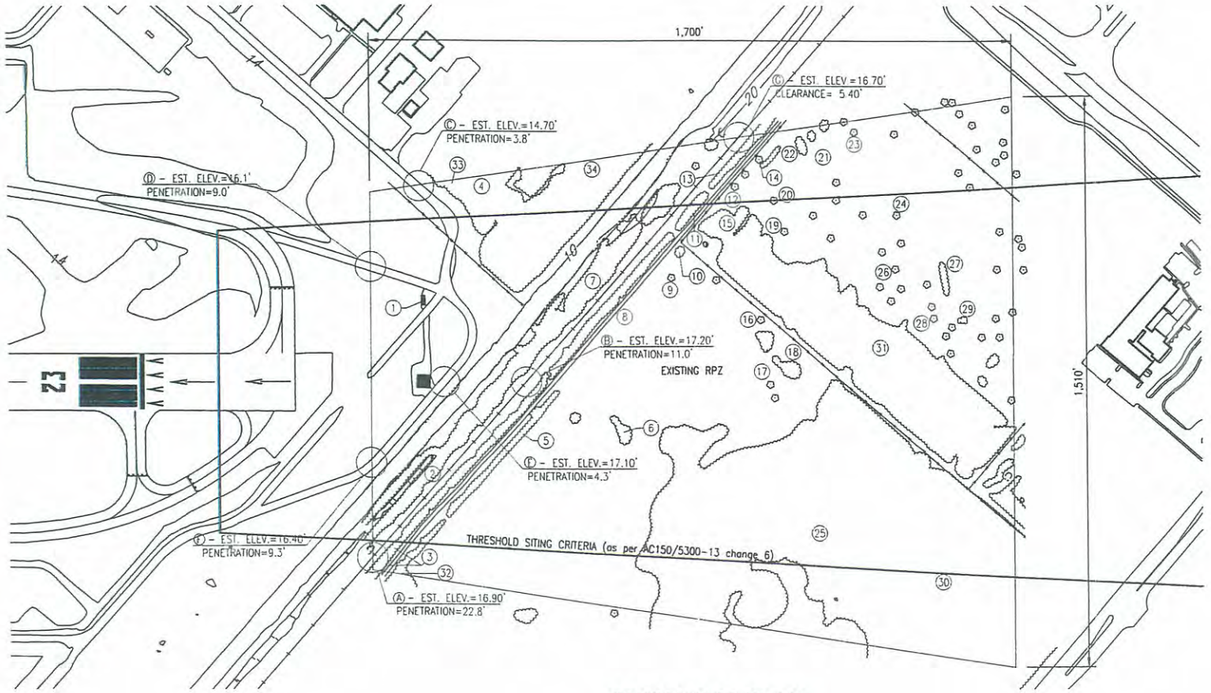
PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

Inner Portion-Approach Surface Plan & Profile
RUNWAY 5

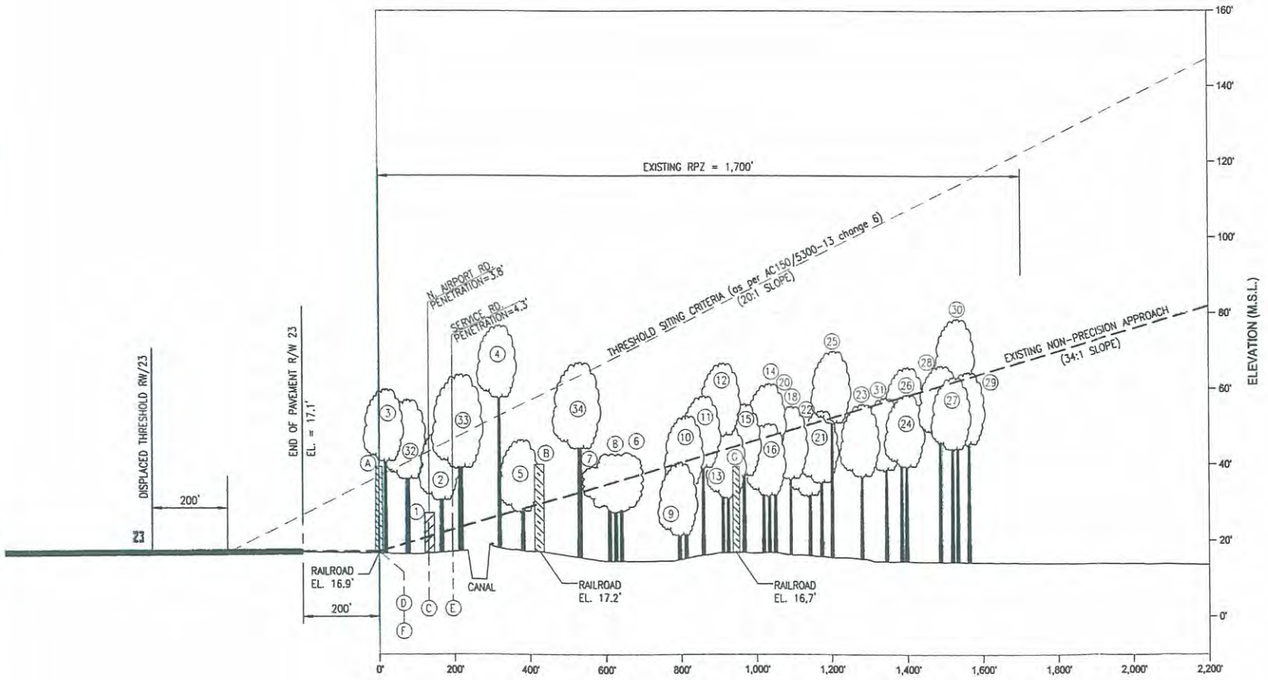
NO.	DATE	REVISION

DATE: MAY 2002
PROJECT NO. C0460101
DESIGNED BY: G.W.
DRAWN BY: A.B.
CHECKED BY: M.A.

SHEET
4
OF
10



RUNWAY 23 PLAN



RUNWAY 23 PROFILE

0' 100' 200' 400'
Horizontal Scale In Feet

0' 10' 20' 40'
Vertical Scale In Feet

RUNWAY 23 OBSTRUCTION DATA TABLE

OBSTRUCTION ID NO.	DESCRIPTION	HEIGHT (M.S.L.)	APPROACH SURFACE PENETRATION	MITIGATION
1	LOCALIZER SHED	27.6'	6.3'	FIXED BY FUNCTION
2	CLUSTER OF TREES	49.7'	27.6'	REMOVE/ REDUCE
3	CLUSTER OF TREES	60.2'	41.3'	REMOVE
4	CLUSTER OF TREES	76.7'	49.4'	REMOVE
5	CLUSTER OF TREES	46.8'	18.4'	REMOVE/ REDUCE
6	TREES	49.4'	13.4'	REMOVE/ REDUCE
7	CLUSTER OF TREES	35.9'	92'	REMOVE/ REDUCE
8	CLUSTER OF TREES	44.9'	9.3'	REMOVE/ REDUCE
9	TREES	42.4'	1.9'	REMOVE/ REDUCE
10	TREES	55.5'	14.5'	REMOVE/ REDUCE
11	TREES	60.6'	18.2'	REMOVE/ REDUCE
12	TREES	66.8'	21.2'	REMOVE/ REDUCE
13	TREES	50.1'	5.7'	REMOVE/ REDUCE
14	TREES	61.4'	13.9'	REMOVE/ REDUCE
15	CLUSTER OF TREES	56.2'	12.2'	REMOVE/ REDUCE
16	TREES	50.9'	3.4'	REMOVE/ REDUCE
■ 17	TREES	52.0'	4.0'	REMOVE/ REDUCE
18	TREES	55.4'	6.1'	REMOVE/ REDUCE
■ 19	TREES	56.0'	6.6'	REMOVE/ REDUCE
20	TREES	53.8'	5.3'	REMOVE/ REDUCE
21	TREES	54.7'	2.6'	REMOVE/ REDUCE
22	TREES	51.1'	.39'	REMOVE/ REDUCE
23	TREES	56.0'	1.1'	REMOVE/ REDUCE
24	TREES	58.4'	.28'	REMOVE/ REDUCE
25	CLUSTER OF TREES	70.2'	17.6'	REMOVE/ REDUCE
26	TREES	65.8'	7.8'	REMOVE/ REDUCE
27	TREES	63.1'	1.1'	REMOVE/ REDUCE
28	TREES	66.1'	5.2'	REMOVE/ REDUCE
29	TREES	64.7'	1.6'	REMOVE/ REDUCE
30	CLUSTER OF TREES	78.7'	16.5'	REMOVE/ REDUCE
31	CLUSTER OF TREES	57.4'	.75'	REMOVE/ REDUCE
32	TREES	57.2'	17.2'	REMOVE/ REDUCE
33	TREES	63.8'	40.3'	REMOVE/ REDUCE
34	TREES	67.1'	34.4'	REMOVE/ REDUCE
** A	RAILROAD	16.9'	22.8'	NONE
** B	RAILROAD	17.2'	11.0'	NONE
* C	NORTH AIRPORT ROAD	14.7'	3.8'	NONE
* D	SERVICE ROAD (LIMITED USE)	16.1'	9.0'	NONE
* E	SERVICE ROAD (LIMITED USE)	17.1'	4.3'	NONE
* F	SERVICE ROAD (LIMITED USE)	16.4'	9.3'	NONE

■ NOT SHOWN IN PROFILE

THE TERM CLUSTER OF TREES WAS USED TO DENOTE MORE THAN ONE ELEVATION WAS SURVEYED FOR THAT GROUPING OF TREES.
THE HIGHEST ELEVATION WAS USED TO DETERMINE APPROACH SURFACE PENETRATION.

* BASED ON A 10' CLEARANCE FOR A PRIVATE ROAD AS PER REQUIREMENTS IN FAR PART 77.

** BASED ON A 23' CLEARANCE FOR A RAILROAD AS PER REQUIREMENTS IN FAR PART 77.

EXISTING AIRPORT REFERENCE POINT
26°35'11.80"N LAT.
81°51'47.70"W LONG.
EXISTING AIRPORT ELEVATION 17.1 FT. (M.S.L.)

NOTE:
OBSTRUCTION DATA INFORMATION OBTAINED FROM PDS JULY, 1999 DETAILED GROUND SURVEY.

Lee County Port Authority
Page Field
General Aviation Airport

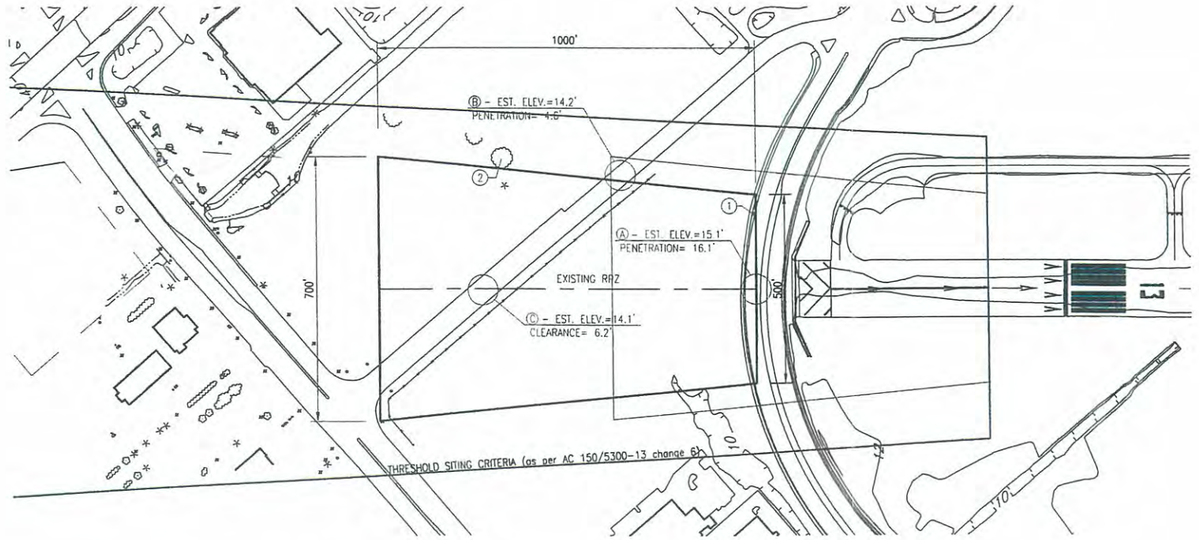
Birk Hillman
Orlando · Miami · Atlanta
6751 Forum Drive, Ste. #240, Orlando, FL 32821

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

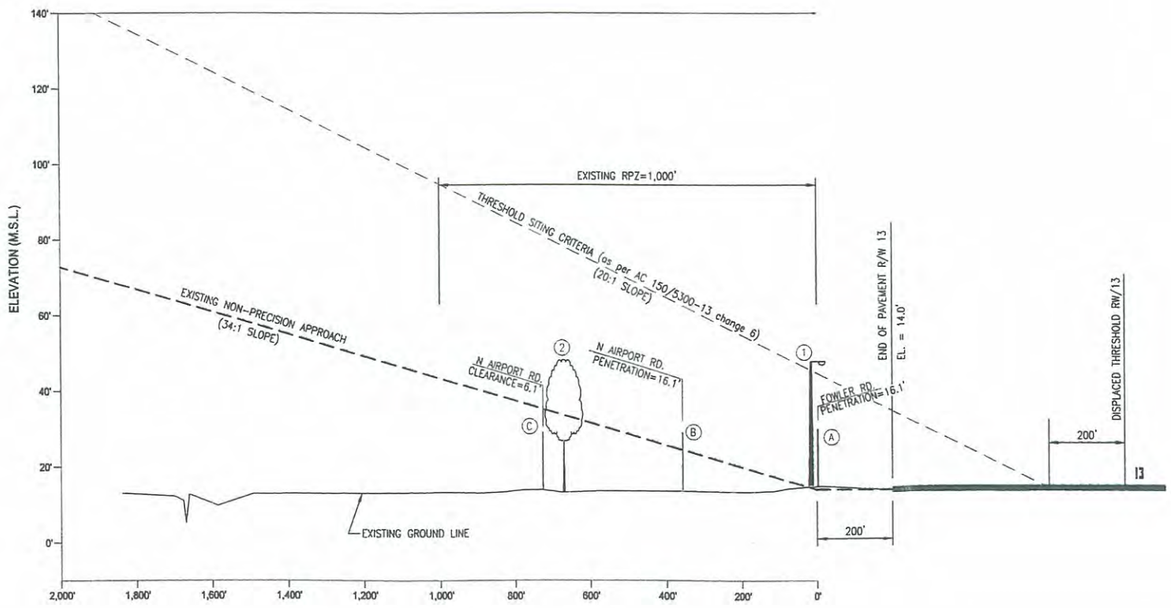
Inner Portion-Approach Surface Plan & Profile
RUNWAY 23

NO.	DATE	REVISION

DATE:	MAY 2002
PROJECT NO.	C0460101
DESIGNED BY:	S.R.
DRAWN BY:	P.M.
CHECKED BY:	M.A.



RUNWAY 13 PLAN



RUNWAY 13 PROFILE

RUNWAY 13 OBSTRUCTION DATA TABLE

OBSTRUCTION ID NO.	DESCRIPTION	HEIGHT (M.S.L.)	APPROACH SURFACE PENETRATION	MITIGATION
1	LIGHT POLE	47.9'	33.9'	SEE NOTE BELOW
2	TREES	48.3'	14.6'	REMOVE
* A	FOWLER STREET	15.1'	16.1'	NONE
* B	NORTH AIRPORT ROAD	14.2'	4.6'	NONE

* BASED ON 15' CLEARANCE FOR A PUBLIC ROADWAY AS PER REQUIREMENTS SET FORTH IN FAR PART 77.

NOTE: AIRSPACE ANALYSIS WAS CONDUCTED PRIOR TO FOWLER STREET REALIGNMENT. LIGHT POLE HEIGHT AND LOCATION WAS COORDINATED AND APPROVED AS PART OF THIS ANALYSIS. AS SUCH, NO MITIGATION WAS PROPOSED.

EXISTING AIRPORT REFERENCE POINT
26°35'11.80"N LAT.
81°51'47.70"W LONG.
EXISTING AIRPORT ELEVATION 17.1 FT. (M.S.L.)

NOTE:
OBSTRUCTION DATA INFORMATION OBTAINED FROM PDS JULY, 1999 DETAILED GROUND SURVEY.

0' 100' 200' 400'
Horizontal Scale In Feet

0' 10' 20' 40'
Vertical Scale In Feet

Lee County Port Authority
Page Field
General Aviation Airport

Birk Hillman
Orlando Miami Atlanta
6751 Forum Drive, Ste. 220, Orlando, FL 32821

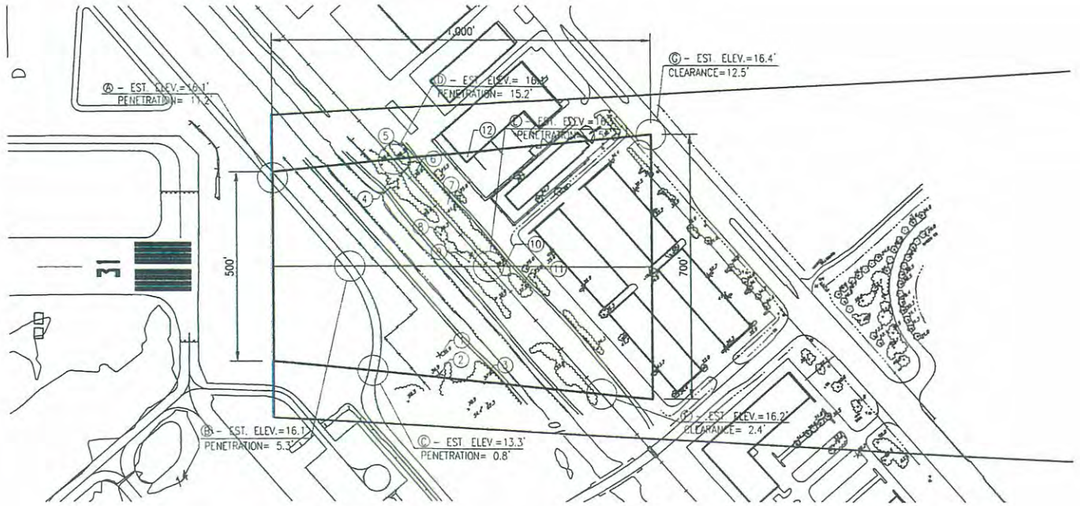
PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

Inner Portion-Approach Surface Plan & Profile
RUNWAY 13

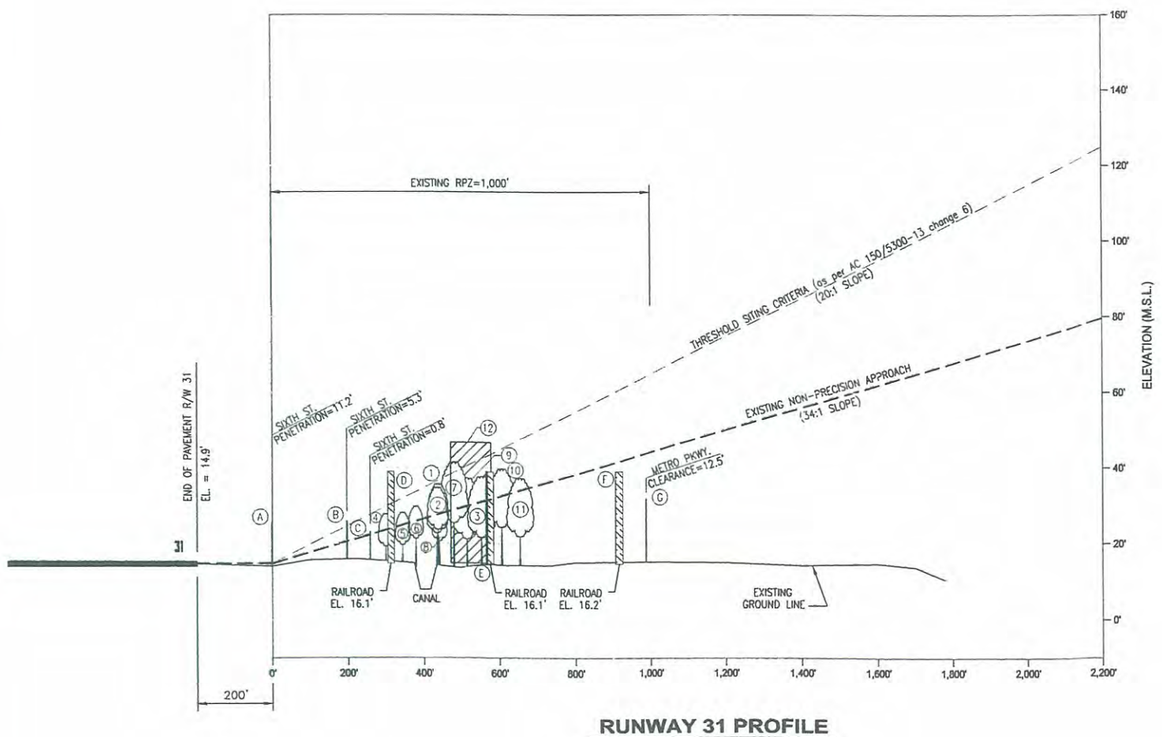
NO.	DATE	REVISION

DATE:	MAY 2002
PROJECT NO.	C0460101
DESIGNED BY:	P.M.
DRAWN BY:	P.M.
CHECKED BY:	M.A.

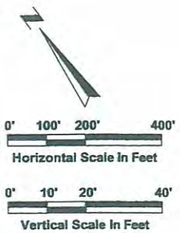
SHEET
6
OF
10



RUNWAY 31 PLAN



RUNWAY 31 PROFILE



RUNWAY 31 OBSTRUCTION DATA TABLE

OBSTRUCTION ID NO.	DESCRIPTION	HEIGHT (M.S.L.)	APPROACH SURFACE PENETRATION	MITIGATION
1	TREE	35.9'	8.1'	REMOVE/ REDUCE
2	TREE	34.9'	7.2'	REMOVE/ REDUCE
3	TREES	37.8'	6.6'	REMOVE/ REDUCE
4	TREES	28.0'	4.6'	REMOVE/ REDUCE
5	TREES	28.3'	3.3'	REMOVE/ REDUCE
6	TREES	30.0'	3.9'	REMOVE/ REDUCE
7	TREES	41.7'	12.6'	REMOVE/ REDUCE
8	TREES	29.5'	1.4'	REMOVE/ REDUCE
9	TREES	37.4'	7.4'	REMOVE/ REDUCE
10	TREES	39.9'	7.1'	REMOVE/ REDUCE
11	TREES	37.5'	3.2'	REMOVE/ REDUCE
12	BUILDING	46.9'	16.7'	NEEDS TO BE LIGHTED
* A	SERVICE ROAD (LIMITED USE)	16.1'	11.2'	NONE
* B	SERVICE ROAD (LIMITED USE)	16.1'	5.3'	NONE
* C	SERVICE ROAD (LIMITED USE)	13.3'	0.8'	NONE
** D	RAILROAD	16.1'	15.2'	NONE
** E	RAILROAD	16.1'	7.5'	NONE

* BASED ON A 10' CLEARANCE FOR A PRIVATE ROAD AS PER REQUIREMENTS IN FAR PART 77.
** BASED ON A 23' CLEARANCE FOR A RAILROAD AS PER REQUIREMENTS IN FAR PART 77.

EXISTING AIRPORT REFERENCE POINT
26°35'11.80"N LAT.
81°51'47.70"W LONG.
EXISTING AIRPORT ELEVATION 17.1 FT. (M.S.L.)

NOTE:
OBSTRUCTION DATA INFORMATION OBTAINED FROM PDS JULY, 1999 DETAILED GROUND SURVEY.

Lee County Port Authority
Page Field
General Aviation Airport

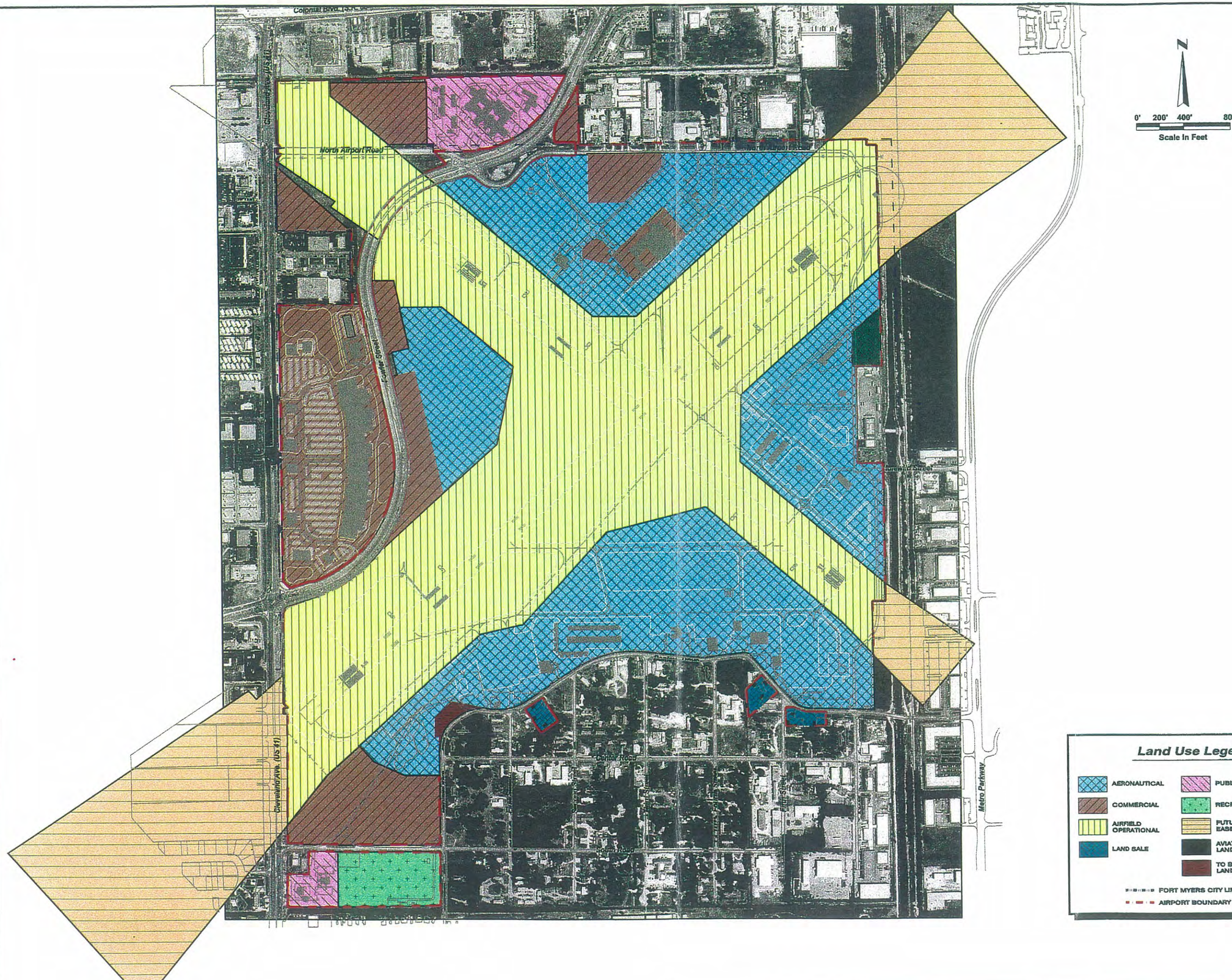
Birk Hillman
Orlando Miami Atlanta
6751 Forum Drive, Ste. #240, Orlando, FL 32821

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida

Inner Portion-Approach Surface Plan & Profile
RUNWAY 31

NO.	DATE	REVISION

DATE:	MAY 2002
PROJECT NO.	C0460101
DESIGNED BY:	S.R
DRAWN BY:	S.R
CHECKED BY:	M.A.



Lee County Port Authority
Page Field
General Aviation Airport

Birk Hillman
Orlando · Miami · Atlanta
6751 Forum Drive, Ste. #240, Orlando, FL 32821

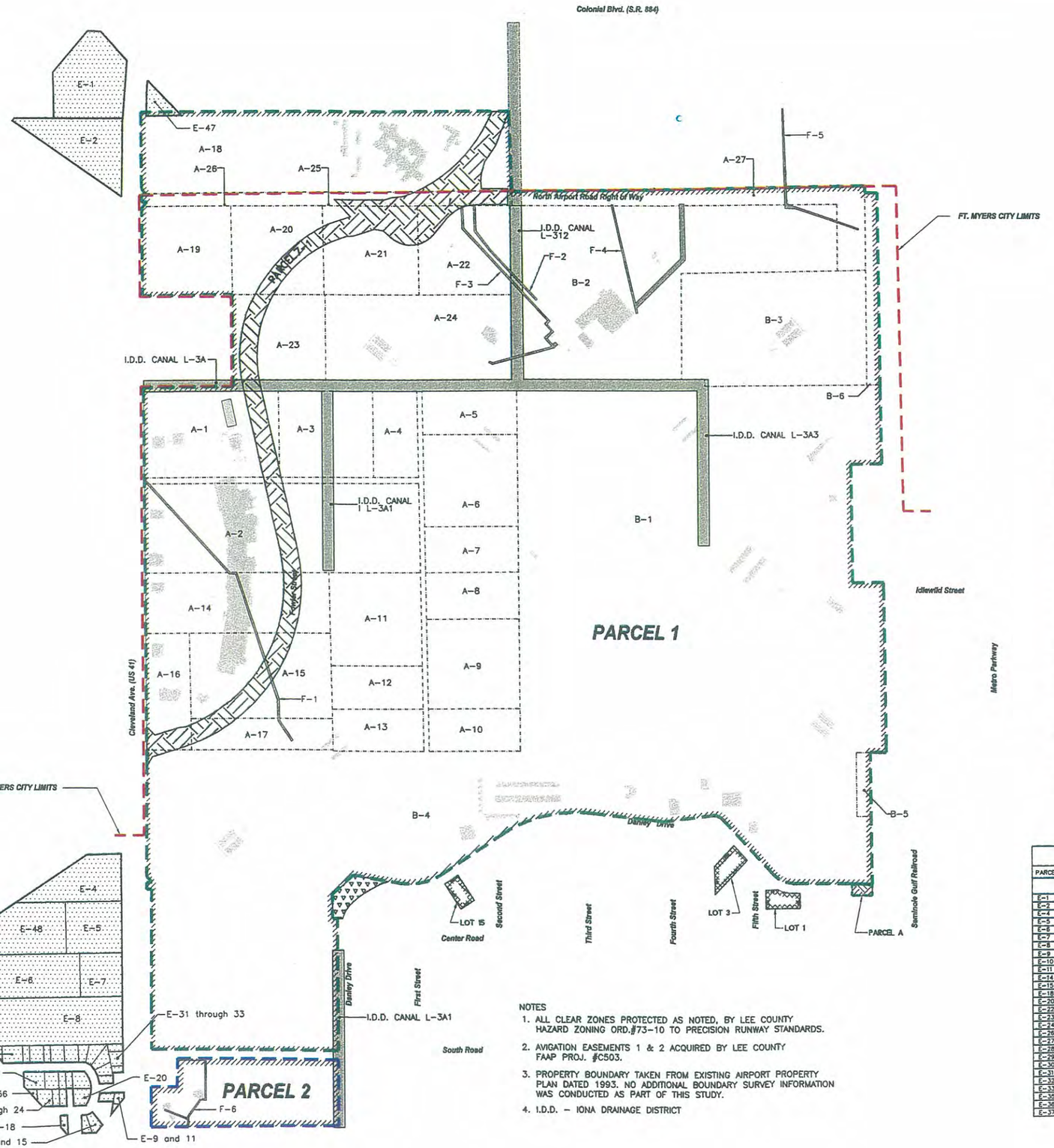
PAGE FIELD AIRPORT MASTER PLAN

Fort Myers, Florida

Land Use Map

NO.	DATE	REVISION

DATE:	MAY 2002
PROJECT NO.	C046010.1
DESIGNED BY:	G.W.
DRAWN BY:	G.W.
CHECKED BY:	M.A.



N

0' 200' 400' 800'

Scale in Feet

LEGEND

	AIRPORT REFERENCE POINT (ARP)
	FT MYERS CITY LIMITS
	PARCEL 1 BOUNDARY
	PARCEL 2 BOUNDARY
	SUB PARCEL BOUNDARIES

AREAS (ACRES)

PARCELS: 1 & 2	+633.61
LOTS: 1,3 & 15	+ 2.09
TAKE AWAY: PARCELS 7-1 & A	- 17.48
TOTAL AIRPORT PROPERTY	618.22

PROPERTY LEGEND

- ORIGINAL PROPERTY
- PROPERTY PURCHASED WITH GENERAL OPERATING REVENUES
- EASEMENT
- PROPOSED PROPERTY PURCHASE
- AVIGATION EASEMENTS
- RIGHT AWAY TAKE

PAGE FIELD AIRPORT PROPERTY

PARCEL ID	BOOK & PAGE	DATE RECORDED	PROPERTY INTEREST	PROJECT NUMBER	PRIOR OWNER	PURPOSE OF ACQUISITION
PARCEL 1						
A-1	MISC 25/260	1946	FEE SIMPLE	ORIGINAL PURCHASE		AERONAUTICAL
A-2	MISC 25/260	1946	FEE SIMPLE	ORIGINAL PURCHASE		AERONAUTICAL
A-3	L.P. 4/245	1942	FEE SIMPLE	ORIGINAL PURCHASE	DOUGLAS & TANNEHER	AERONAUTICAL
A-4	DEED 140/486	1940	FEE SIMPLE	ORIGINAL PURCHASE	WHISNANT	AERONAUTICAL
A-5	D.B. 141/307	1940	FEE SIMPLE	ORIGINAL PURCHASE	Mc WHORTER	AERONAUTICAL
A-6	DEED 142/392	1940	FEE SIMPLE	ORIGINAL PURCHASE	LAYCOCK	AERONAUTICAL
A-7	DEED 143/165	1941	FEE SIMPLE	ORIGINAL PURCHASE	MONROE	AERONAUTICAL
A-8	DEED 143/187	1941	FEE SIMPLE	ORIGINAL PURCHASE	MONROE	AERONAUTICAL
A-9	DEED 141/432	1940	FEE SIMPLE	----------	IONA CORP.	AERONAUTICAL
A-10	DEED 143/21	1941	FEE SIMPLE	----------	B & PWC	AERONAUTICAL
A-11	DEED 141/375	1940	FEE SIMPLE	----------	SUMMERS	AERONAUTICAL
A-12	DEED 143/187	1941	FEE SIMPLE	----------	MONROE	AERONAUTICAL
A-13	DEED 141/306	1940	FEE SIMPLE	----------	HILL	AERONAUTICAL
A-14	MISC 25/260	1946	FEE SIMPLE	----------	USA	AERONAUTICAL
A-15	DEED 142/105	1941	FEE SIMPLE	----------	McWHARTER	AERONAUTICAL
A-16	DEED 142/106	1941	FEE SIMPLE	----------	REAHARD	AERONAUTICAL
A-17	MISC 25/260	1946	FEE SIMPLE	----------	USA	AERONAUTICAL
A-18	MISC 25/260	1946	FEE SIMPLE	----------	REAHARD	AERONAUTICAL
A-19	MISC 25/260	1946	FEE SIMPLE	----------	USA	AERONAUTICAL
A-20	DEED 143/545	1941	FEE SIMPLE	----------	ENSMINGER	AERONAUTICAL
A-21	DEED 143/575	1941	FEE SIMPLE	----------	IONA CORP.	AERONAUTICAL
A-22	MISC 25/260	1946	FEE SIMPLE	----------	USA	AERONAUTICAL
A-23	DEED 143/550	1941	FEE SIMPLE	----------	GILLENTINE	AERONAUTICAL
A-24	DEED 142/499	1941	FEE SIMPLE	----------	IONA	AERONAUTICAL
A-25	DEED 143/545	1941	FEE SIMPLE	----------	ENSMINGER	AERONAUTICAL
A-26	DEED 143/576	1941	FEE SIMPLE	----------	IONA CORP.	AERONAUTICAL
A-27	DEED 145/225	1941	FEE SIMPLE	----------	DIXIE TROPICAL TRUCKING CO.	AERONAUTICAL
B-1	DB 139/506	1940	FEE SIMPLE	----------	CITY OF FT. MYERS	AERONAUTICAL
B-2	MISC 25/260	1946	FEE SIMPLE	----------	U.S.A	AERONAUTICAL
B-3	DB 140/513	1940	FEE SIMPLE	----------	DIXIE TROPICAL TRUCKING CO.	AERONAUTICAL
B-4	DB 140/513	1946	FEE SIMPLE	----------	U.S.A	AERONAUTICAL
B-5	DB 148/313	1943	FEE SIMPLE	----------	S.A.L. RR	AERONAUTICAL
B-6	O.R. 1358/333	1940	FEE SIMPLE			AERONAUTICAL
PARCEL 2						
	MISC 25/260	1947	FEE SIMPLE	----------	U.S. Govt.	AERONAUTICAL
MISCELLANEOUS PARCELS						
LOT 1	PB 8/92-97	1995	FEE SIMPLE			
LOT 3	PB 8/92-97	1995	FEE SIMPLE			
LOT 15	PB 8/92-97	1995	FEE SIMPLE			

NOTES

1. ALL CLEAR ZONES PROTECTED AS NOTED, BY LEE COUNTY HAZARD ZONING ORD.#73-10 TO PRECISION RUNWAY STANDARDS.
2. AVIGATION EASEMENTS 1 & 2 ACQUIRED BY LEE COUNTY FAAP PROJ. #C503.
3. PROPERTY BOUNDARY TAKEN FROM EXISTING AIRPORT PROPERTY PLAN DATED 1993. NO ADDITIONAL BOUNDARY SURVEY INFORMATION WAS CONDUCTED AS PART OF THIS STUDY.
4. I.D.D. – IONA DRAINAGE DISTRICT

EXISTING EASEMENTS

PARCEL ID	BOOK & PAGE	PURPOSE OF EASEMENT	EASEMENT HOLDER
ClearZone Airspace			
E-1	O.R. 333, PG. 143	AVIGATION	LEE COUNTY
E-2	O.R. 645, PG. 352	AVIGATION	LEE COUNTY
E-4	O.R. 350, PG. 174	AVIGATION	LEE COUNTY
E-5	O.R. 303, PG. 308	AVIGATION	LEE COUNTY
E-6	O.R. 310, PG. 605	AVIGATION	LEE COUNTY
E-7	O.R. 303, PG. 308	AVIGATION	LEE COUNTY
E-8	O.R. 347, PG. 63	AVIGATION	LEE COUNTY
E-9	O.R. 350, PG. 187	AVIGATION	LEE COUNTY
E-10	O.R. 340, PG. 248	AVIGATION	LEE COUNTY
E-11	O.R. 351, PG. 372	AVIGATION	LEE COUNTY
E-14	O.R. 340, PG. 235	AVIGATION	LEE COUNTY
E-15	O.R. 344, PG. 525	AVIGATION	LEE COUNTY
E-18	O.R. 354, PG. 647	AVIGATION	LEE COUNTY
E-20	O.R. 347, PG. 51	AVIGATION	LEE COUNTY
E-22	O.R. 347, PG. 57	AVIGATION	LEE COUNTY
E-23	O.R. 347, PG. 45	AVIGATION	LEE COUNTY
E-24	O.R. 344, PG. 538	AVIGATION	LEE COUNTY
E-26	O.R. 337, PG. 848	AVIGATION	LEE COUNTY
E-27	O.R. 340, PG. 241	AVIGATION	LEE COUNTY
E-28	O.R. 344, PG. 532	AVIGATION	LEE COUNTY
E-29	O.R. 337, PG. 841	AVIGATION	LEE COUNTY
E-30	O.R. 375, PG. 518	AVIGATION	LEE COUNTY
E-31	O.R. 340, PG. 222	AVIGATION	LEE COUNTY
E-32	O.R. 356, PG. 279	AVIGATION	LEE COUNTY
E-33	O.R. 337, PG. 829	AVIGATION	LEE COUNTY
E-35	O.R. 351, PG. 372	AVIGATION	LEE COUNTY
E-36	O.R. 363, PG. 516	AVIGATION	LEE COUNTY
E-37	O.R. 340, PG. 229	AVIGATION	LEE COUNTY

EXISTING EASEMENTS

PARCEL ID	BOOK & PAGE	PURPOSE OF EASEMENT	EASEMENT HOLDER
ClearZone Airspace			
E-38	O.R. 585, PG. 878	AVIGATION	LEE COUNTY
E-39	O.R. 340, PG. 216	AVIGATION	LEE COUNTY
E-40	O.R. 337, PG. 841	AVIGATION	LEE COUNTY
E-41	O.R. 337, PG. 854	AVIGATION	LEE COUNTY
E-42	O.R. 467, PG. 395	AVIGATION	LEE COUNTY
E-43	O.R. 344, PG. 544	AVIGATION	LEE COUNTY
E-44	O.R. 340, PG. 209	AVIGATION	LEE COUNTY
E-45	O.R. 337, PG. 835	AVIGATION	LEE COUNTY
E-46	O.R. 350, PG. 181	AVIGATION	LEE COUNTY
E-47	O.R. 385, PG. 306	AVIGATION	LEE COUNTY
E-48	O.R. 372, PG. 412	AVIGATION	LEE COUNTY
E-56	O.R. 403, PG. 741	AVIGATION	LEE COUNTY
Florida Power & Light Easements			
F-1	O.R. 1084, PG. 1302	UTILITY	F.P.L.
F-2	O.R. 1084, PG. 1303	UTILITY	F.P.L.
F-3	O.R. 1159, PG. 205	UTILITY	F.P.L.
	O.R. 1224, PG. 1350	UTILITY	F.P.L.
F-4	O.R. 1084, PG. 255	UTILITY	F.P.L.
F-5	O.R. 1714, PG. 1447	UTILITY	F.P.L.
F-6	O.R. 1128, PG. 678	UTILITY	F.P.L.
IONA Drainage District (IDD) Easements			
L-3A		WATER MANAGEMENT	I.D.D.
L-3A1		WATER MANAGEMENT	I.D.D.
L-3A3		WATER MANAGEMENT	I.D.D.
L12		WATER MANAGEMENT	I.D.D.

Lee County Port Authority

Page Field
General Aviation Airport

Birk Hillman

Orlando · Miami · Atlanta
6751 Forum Drive, Ste. #240, Orlando, FL 32821

PAGE FIELD AIRPORT MASTER PLAN

Fort Myers, Florida

Airport Property Map

NO.	DATE	REVISION

DATE: MAY 2002
PROJECT NO. C0460101
DESIGNED BY: K.P.
DRAWN BY: K.P.
CHECKED BY: S.R.

SHEET 9 OF 10

Deni Associates prepared the attached two page legal description for Page Field Airport's Parcel 1 (Airport and Shady Rest Care Pavilion area and Parcel 2 (Area south of South Street) as part of the Airport Master Plan Update on November 16, 1990. At that time, Parcel 1 contained 620.05± acres and Parcel 2 contained13.58± acres. The Airport then totaled 633.61± acres.

In 1995, parcel 7-1 (totaling 17.234± acres) was sold to Lee County DOT for the Fowler Street Extension right-of-way. Also in 1995, Parcel A (totaling 0.2517± acre) was sold to Lee County DOT for the Danley Drive Extension right-of-way. Legal descriptions for both of these parcels are attached.

The current area of Page Field Airport is therefore 616. 1243± acres. The Airport legal description is now the Deni Associates legal minus the right-of-way for Fowler Street Extension described under Parcel 7-1 and minus the right-of-way for Danley Drive described under Parcel A.

LEGAL DESCRIPTION
PARCEL 1

A TRACT OR PARCEL OF LAND LYING IN SECTIONS 1 AND 12, TOWNSHIP 45 SOUTH, RANGE 24 EAST, LEE COUNTY, FLORIDA. WHICH TRACT OR PARCEL IS DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST CORNER OF LOT 1, BLOCK U, PAGE PARK, AS SHOWN ON PLAT RECORDED IN PLAT BOOK 8 AT PAGES 92 THROUGH 97 OF THE PUBLIC RECORDS OF LEE COUNTY FLORIDA; THENCE N89°04'36" W (BASIS OF BEARINGS BEING THE FLORIDA STATE PLANE COORDINATE SYSTEM, WEST ZONE) ALONG THE NORTH LINE OF SAID LOT 1 FOR 137.16 FEET TO THE EAST RIGHT-OF-WAY LINE OF SIXTH STREET (65 FEET WIDE); THENCE N00°28'17" W ALONG SAID EAST LINE FOR 80.01 FEET TO THE NORTHEAST CORNER OF DANLEY DRIVE RIGHT-OF-WAY; THENCE N89°04'36" W ALONG THE NORTH RIGHT-OF-WAY LINE OF SAID DANLEY DRIVE (65 FEET WIDE) FOR 418.29 FEET TO A POINT OF CURVATURE; THENCE NORTHWESTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE NORTHEAST RADIUS = 205.00 FEET, INTERIOR ANGLE = 46°45'05", CHORD BEARING AND DISTANCE N65°42'04" W, 162.67 FEET) FOR 167.27 FEET TO A POINT OF TANGENCY; THENCE N42°19'31" W FOR 525.73 FEET TO A POINT OF CURVATURE; THENCE NORTHWESTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE SOUTHWEST (RADIUS = 85.00 FEET, INTERIOR ANGLE 53°58'31", CHORD BEARING AND DISTANCE= N69°18'47" W, 77.15 FEET) FOR 80.07 FEET TO A POINT OF TANGENCY; THENCE S83°41'58" W FOR 265.90 FEET TO A POINT OF CURVATURE; THENCE WESTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE NORTH (RADIUS = 900.00 FEET, INTERIOR ANGLE= 12°35'23", CHORD BEARING AND DISTANCE= S89°59'39" W, 197.36 FEET) FOR 197.76 FEET TO A POINT OF TANGENCY; THENCE N83°42'38" W FOR 406.20 FEET TO A POINT OF CURVATURE; THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE SOUTHEAST (RADIUS = 935.00 FEET, INTERIOR ANGLE = 39°46'38", CHORD BEARING AND DISTANCE= S76°24'03" W, 636.16 FEET) FOR 649.12 FEET TO A POINT OF TANGENCY; THENCE S56°30'44" W FOR 505.86 FEET TO A POINT OF CURVATURE; THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE NORTHWEST (RADIUS= 435.00 FEET, INTERIOR ANGLE = 41°19'00", CHORD BEARING AND DISTANCE= S77°10'14" W, 306.93 FEET) FOR 313.68 FEET TO A POINT OF TANGENCY; THENCE N82°10'16" W FOR 132.78 FEET; THENCE N76°42'08" W ALONG THE NORTHERLY RIGHT-OF-WAY LINE OF A ROADWAY 65 FEET WIDE FOR 207.77 FEET TO THE AIRPORT BUILDING RESTRICTION LINE AS SHOWN ON AFORESAID PLAT; THENCE S47°47'21" W ALONG SAID AIRPORT BUILDING RESTRICTION LINE FOR 200.66 FEET TO THE NORTHWEST CORNER OF LOT 2, BLOCK A OF AFORESAID PLAT; THENCE S00°21'46" E ALONG THE LINE COMMON TO LOT 2 AND LOT 1 OF SAID BLOCK A FOR 171.31 FEET; THENCE N89°38'14" E ALONG SAID COMMON LINE FOR 50.31 FEET TO THE WESTERLY RIGHT-OF-WAY LINE OF DANLEY DRIVE (65 FEET WIDE) TO A NON-TANGENT POINT OF CURVATURE; THENCE SOUTHWESTERLY ALONG SAID WESTERLY LINE AND ALONG THE ARC OF A CURVE CONCAVE TO THE SOUTHEAST (RADIUS= 337.50 FEET, INTERIOR ANGLE = 18°06'13", CHORD BEARING AND DISTANCE =S09°00'15" W, 106.20 FEET) FOR 106.64 FEET TO A POINT OF TANGENCY;THENCE S00°02'51 E FOR 658.41 FEET TO A POINT OF CURVATURE; THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE NORTHWEST (Radius=167.50 FEET, INTERIOR ANGLE = 90°31'05", CHORD BEARING AND DISTANCE = S45°12'41" W, 237.95 FEET) FOR 264.62 FEET TO A POINT OF TANGENCY ON THE NORTH RIGHT-OF-WAY LINE OF SOUTH ROAD (65 FEET WIDE);THENCE N89°31'46" W ALONG SAID NORTHERLY LINE FOR 1134.47 FEET TO THE EASTERLY RIGHT-OF-WAY LINE OF CLEVELAND AVENUE (STATE ROAD 45, U.S. 41, 200 FEET WIDE); THENCE N00°29'36" E ALONG SAID EASTERLY LINE FOR 9.99 FEET; THENCE N89°30'24" W FOR 16.50 FEET, THENCE N00°29'36" E PARALLEL WITH AND 68 FEET EASTERLY OF THE WEST LINE OF AFORESAID SECTION 12 FOR 1114.87 FEET; THENCE S89°38'43" W FOR 35.00 FEET; THENCE N00°29'36" E FOR 47.42 FEET; THENCE N83°54'36" E ALONG THE NORTH LINE OF A FORMER ROADWAY 66 FEET WIDE FOR 39.00 FEET; THENCE N45°25'07" W FOR 53.94 FEET TO THE AFORESAID EASTERLY RIGHT-OF-WAY LINE OF CLEVELAND AVENUE (184 FEET WIDE); THENCE N00°29'36" E ALONG SAID RIGHT-OF-WAY LINE , PARALLEL WITH AND 33 FEET EASTERLY OF THE WEST LINE OF AFORESAID SECTION 12 FOR 854.96 FEET TO THE SOUTH LINE OF AFORESAID SECTION 1; THENCE N00°07'11" W CONTINUING ALONG SAID RIGHT-OF-WAY LINE OF CLEVELAND AVENUE, PARALLEL WITH AND 33 FEET EASTERLY OF THE WEST LINE OF SAID SECTION 1 FOR 2603.66 FEET TO THE EAST-WEST QUARTER SECTION LINE OF SAID SECTION 1; THENCE N89°20'39" E ALONG SAID QUARTER SECTION LINE FOR 629.17 FEET TO THE SOUTHEAST CORNER OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 1; THENCE N00°11'03" W ALONG THE EAST LINE OF SAID FRACTION FOR 650.04 FEET, THENCE S89°13'54" W ALONG THE NORTH LINE OF SAID FRACTION FOR 628.74 FEET TO THE AFORESAID EASTERLY RIGHT-OF-WAY LINE OF CLEVELAND AVENUE; THENCE N00°08'41" W ALONG SAID RIGHT-OF-WAY LINE AND AFORESAID PARALLEL LINE FOR 598.48 FEET; THENCE N35°46'18" E FOR 57.96 FEET; THENCE S89°57'19" W FOR 34 FEET TO SAID RIGHT-OF-WAY LINE OF CLEVELAND AVENUE; THENCE N00°08'41" W ALONG SAID RIGHT-OF-WAY LINE FOR 50.02 FEET; THENCE N89°57'19" E FOR 34.00 FEET; THENCE N35°59'33" W FOR 58.06 FEET TO SAID RIGHT-OF-WAY LINE OF CLEVELAND AVENUE; THENCE N00°08'41" W ALONG SAID RIGHT-OF-WAY LINE AND SAID PARALLEL LINE FOR 555.13 FEET TO THE NORTH LINE OF THE SOUTH HALF OF THE NORTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION 1, THENCE N88° 59'49" E ALONG SAID NORTH LINE FOR 2610.49 FEET TO THE EAST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 1; THENCE S00°18'07" E ALONG SAID EAST LINE FOR 604.36 FEET TO THE NORTH RIGHT-OF-WAY LINE OF NORTH AIRPORT ROAD (70 FEET WIDE); THENCE N89°06'29" E ALONG SAID NORTH RIGHT-OF-WAY LINE, PARALLEL WITH AND 50.00 FEET NORTHERLY OF THE NORTH LINE OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF AFORESAID SECTION 1 FOR 2499.48 FEET TO THE WEST LINE OF THE FORMER SEABOARD AIR LINE RAILROAD RIGHT-OF-WAY; THENCE S00°25'44" E ALONG SAID RIGHT-OF-WAY LINE FOR 50.00 FEET TO THE NORTH LINE OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF AFORESAID SECTION 1; THENCE N89°06'29" E ALONG SAID NORTH LINE FOR 85.85 FEET TO THE WEST LINE OF TEN MILE CANAL (FORMER IONA DRAINAGE DISTRICT CANAL A); THENCE S00°35'46" E ALONG SAID WEST LINE FOR 1318.50 FEET TO THE EAST-WEST QUARTER SECTION LINE OF AFORESAID SECTION 1; THENCE S00°30'35" E CONTINUING ALONG SAID WEST LINE OF TEN MILE CANAL FOR 600.82 FEET TO THE NORTH LINE OF A PARCEL OF LAND AS DESCRIBED IN A DEED RECORDED IN O.R. 1348, P.G. 1981 OF AFORESAID PUBIC RECORDS; THENCE S89°29'25" W ALONG THE NORTH LINE OF SAID PARCEL FOR 220.00 FEET, THENCE S00°30'35" E ALONG THE WEST LINE OF SAID PARCEL FOR 840.00 FEET; THENCE N89°0'29'25" E ALONG THE SOUTH LINE OF SAID PARCEL TO THE WEST LINE OF AFORESAID TEN MILE CANAL; THENCE S00°30'35" E ALONG SAID WEST LINE FOR 1200.00 FEET TO THE NORTH LINE OF AFORESAID SECTION 12; THENCE S89°46'15" W ALONG SAID SOUTH LINE FOR 113.60 FEET TO THE WEST LINE OF AFORESAID FORMER SEABOARD AIR LINE RAILROAD RIGHT-OF-WAY; THENCE S00°28'16" E ALONG SAID WEST LINE FOR 1013.29 FEET TO THE POINT OF BEGINNING. TOGETHER WITH AND SUBJECT TO COVENANTS, EASEMENTS, AND RESTRICTIONS OF RECORD. SAID PROPERTY CONTAINS 620.05 ACRES, MORE OR LESS.

LEGAL DESCRIPTION
PARCEL 2

A TRACT OR PARCEL OF LAND LYING IN BLOCK B, PAGE PARK, SECTION 12, TOWNSHIP 45 SOUTH, RANGE 24 EAST, LEE COUNTY, FLORIDA AS SHOWN ON PLAT RECORDED IN PLAT BOOK 8 AT PAGES 92 THROUGH 97 OF THE PUBIC RECORDS OF LEE COUNTY, FLORIDA, WHICH TRACT OR PARCEL IS DESCRIBED AS FOLLOWS:
BEGINNING AT THE SOUTHEAST CORNER OF BLOCK B AS SHOWN ON SAID PLAT;
THENCE S89°33'23" W (BASIS OF BEARING BEING FLORIDA STATE PLANE COORDINATE SYSTEM, WEST ZONE) ALONG THE SOUTH LINE OF SAID BLOCK B FOR 1325.16 FEET TO THE EAST RIGHT-OF-WAY LINE OF CLEVELAND AVENUE (STATE ROAD 45, 200 FEET WIDE);
THENCE N00°29'36" E ALONG SAID RIGHT-OF-WAY LINE , PARALLEL WITH AND 68.00 FEET EAST OF THE WEST LINE OF AFORESAID SECTION 12, FOR 784.62 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH 200 FEET OF SAID BLOCK B;
THENCE S89°31'46" E ALONG SAID SOUTH LINE FOR 182.00 FEET;
THENCE N00°29'36" E FOR 200.00 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF SOUTH ROAD (65 FEET WIDE);
THENCE S89°31'46" E ALONG SAID RIGHT-OF-WAY LINE FOR 1118.78 FEET TO A POINT OF CURVATURE;
THENCE SOUTHEASTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE SOUTHWEST (RADIUS= 20.00 FEET, INTERIOR ANGLE= 89°28'55", CHORD BEARING AND DISTANCE= I4°47'19" E, 28.16 FEET) FOR 31.24 FEET TO A POINT OF TANGENCY ON THE WEST RIGHT-OF-WAY LINE OF DANLEY DRIVE (65 FEET WIDE);

THENCE S00°02'51" E ALONG SAID RIGHT-OF-WAY LINE FOR 443.68 FEET TO THE POINT OF BEGINNING.
TOGETHER WITH AND SUBJECT TO COVENANTS, EASEMENTS, AND RESTRICTIONS OF RECORD.

SAID PROPERTY CONTAINS 13.56 ACRES, MORE OR LESS.

HMA PROJECT #94.43
JULY 19, 1995
REF.DWG. #8-1736
PAGE 1 OF 2

LEGAL DESCRIPTION

606 DANLEY DRIVE,LOT 15, BLOCK O, PAGE PARK SUBDIVISION, AS RECORDED IN PLAT BOOK 8, PAGES 92 THROUGH 97,OF PUBLIC RECORDS OF LEE COUNTY OF FLORIDA.
ACQUISITION SETTLEMENT DATE: APRIL13,1995.

LEGAL DESCRIPTION

210 FIFTH STREET - LOT 1,BLOCK T, PAGE PARK SUBDIVISION AS RECORDED IN PLAT BOOK 8, PAGES 92 THROUGH 97, OF PUBLIC RECORDS OF LEE COUNTY, FLORIDA.
ACQUISITION SETTLEMENT DATE: APRIL13,1995.

LEGAL DESCRIPTION

320 DANLEY DRIVE - LOT 3,BLOCK H, PAGE PARK SUBDIVISION AS RECORDED IN PLAT BOOK 8, PAGES 92 THROUGH 97, OF PUBLIC RECORDS OF LEE COUNTY, FLORIDA.
ACQUISITION SETTLEMENT DATE: FEBRUARY 10,1995.

DESCRIPTION OF RIGHT OF WAY TAKE
PARCEL 7 -1

A PARCEL OF LAND LYING IN THE WEST ONE-HALF OF SECTIONS 1 AND 12, TOWNSHIP 45 SOUTH, RANGE 24 EAST, LEE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHWEST CORNER OF SECTION 12, TOWNSHIP 45 SOUTH, RANGE 24 EAST, THE SAME BEING THE SOUTHWEST CORNER OF SECTION 1, TOWNSHIP 45 SOUTH, RANGE 24 EAST, LEE COUNTY, FLORIDA; THENCE RUN S. 00°31'15"W., ALONG THE WEST LINE OF THE NORTHWEST 1/4 OF SAID SECTION 12, FOR A DISTANCE OF 65.85 FEET; THENCE RUN S. 89.28'45" E., PERPENDICULAR TO THE WEST LINE OF THE NORTHWEST 1/4 OF SAID SECTION 12, FOR A DISTANCE OF 33.00 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 41 (STATE ROAD NO. 45) AND THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED THENCE RUN N. 37°55'27" E FOR A DISTANCE OF 70.57 FEET; THENCE RUN N. 72.31'00" E. FOR A DISTANCE OF 224.29 FEET TO THE BEGINNING OF A TANGENTIAL CIRCULAR CURVE, CONCAVE NORTHWESTERLY THENCE RUN NORTHEASTERLY ALONG THE ARC OF SAID CURVE TO THE LEFT, HAVING A RADIUS OF 1208.92 FEET, THROUGH A CENTRAL ANGLE OF 17°54'26", SUBTENDED BY A CHORD OF 376.30 FEET AT A BEARING OF N 63°33'47" E., FOR A DISTANCE OP 377.83 FEET TO THE END OF SAID CURVE; THENCE RUN N. 50°29'49" E. FOR A DISTANCE OF 103.19 FEET TO A POINT OF INTERSECTION WITH A NON-TANGENTIAL CIRCULAR CURVE, CONCAVE WESTERLY, WHOSE RADIUS POINT BEARS N. 40°17'12" W. A DISTANCE OF 1205.92 FEET THEREFROM; THENCE RUN NORTHEASTERLY AND NORTHERLY ALONG THE ARC OF SAID CURVE TO THE LEFT, HAVING A RADIUS OF 1205.92 FEET, THROUGH A CENTRAL ANGLE OF 62°03'57", SUBTENDED BY A CHORD OF 1243.37 FEET AT A BEARING OF N. 18° 40'50" E., FOR A DISTANCE OF 1306.31 FEET TO A POINT OF TANGENCY; THENCE RUN N. 12°21'09" W FOR A DISTANCE OF 1182.45 FEET TO THE BEGINNING OF A TANGENTIAL CIRCULAR CURVE, CONCAVE SOUTHEASTERLY THENCE RUN NORTHERLY AND NORTHEASTERLY ALONG THE ARC OF SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 894.93 FEET, THROUGH A CENTRAL ANGLE OF 84°15'40", SUBTENDED BY A CHORD OF 1200.68 FEET AT A BEARING OF N. 29° 46'41" E., FOR A DISTANCE OF 1316.12 FEET TO A POINT OF TANGENCY; THENCE RUN N. 71° 54'32" E. FOR A DISTANCE OF 21.85 FEET; THENCE RUN N. 85°24'16" E., FOR A DISTANCE OF 51.42 FEET; THENCE RUN N. 71°54'32" E. FOR A DISTANCE OF 153.11 FEET, THENCE RUN S. 80°26'03" E. FOR A DISTANCE OF 63.55 FEET;THENCE RUN S. 48°05'28" E. FOR A DISTANCE OP 71.91 FEET TO THE BEGINNING OF A TANGENTIAL CIRCULAR CURVE, CONCAVE NORTHERLY; THENCE RUN SOUTHEASTERLY, EASTERLY AND NORTHEASTERLY, ALONG THE ARC OF SAID CURVE TO THE LEFT, HAVING A RADIUS OF 212.00 FEET, THROUGH A CENTRAL ANGLE OF 91°30'15", SUBTENDED BY A CHORD OF 303.72 FEET AT A BEARING OF N. 86°09'31" E., FOR A DISTANCE OF 338.57 FEET TO A POINT OF TARGENCY, THENCE RUN N. 40°24'32" E. FOR A DISTANCE OF 149.52 FEET TO THE BEGINNING OF A TANGENTIAL CIRCULAR CURVE, CONCAVE SOUTHEASTERLY; THENCE RUN NORTHEASTERLY AND EASTERLY, ALONG THE ARC OF SAID CURVE TO THE RIGHT HAVING A RADIUS OF 278.00 FEET, THROUGH A CENTRAL ANGLE OF 49°22'43", SUBTENDED BY A CHORD OF 232.24 FEET AT A BEARING OF N. 65° 05' 53" E., FOR A DISTANCE OF 239.59 FEET TO A POINT OF TANGENCY; THENCE RUN N. 89° 47'14" E. FOR A DISTANCE OF 219.38 FEET; THENCE RUN N. 00°18'07" W., FOR A DISTANCE OF 19.83 FEET TO A POINT 20.00 FEET SOUTHERLY OF, AS MEASURED AT RIGHT ANGLES TO, THE NORTH LINE OF THE SOUTH 1/2 OF THE NORTHWEST 1/4 OF SAD SECTION 1, THE SAME BEING A POINT ON THE SOUTHERLY BOUNDARY OF THAT PARCEL OF LAND DESCRIBED IN DEED BOOK 143 OF PAGE 576 OF THE PUBLIC RECORDS OF LEE COUNTY, FLORIDA; THENCE RUN S. 89° 06'35" W PARALLEL WITH THE NORTH LINE OF THE SOUTH 1/2 OF THE NORTHWEST 1/4 OF SAID SECTION 1 AND ALONG THE SOUTHERLY BOUNDARY OF SAID PARCEL OF LAND DESCRIBED IN SAID DEED BOOK 143 AT PAGE 576, FOR A DISTANCE OF 1193.27 FEET, THENCE RUN S. 42°46'42" E. FOR A DISTANCE OF 119.45 FEET; THENCE RUN S.71°54'32" W. FOR A DISTANCE OF 94.52 FEET TO THE BEGINNING OF A TANGENTIAL CIRCULAR CURVE, CONCAVE SOUTHEASTERLY; THENCE RUN SOUTHWESTERLY AND SOUTHERLY, ALONG THE ARC OF SAID CURVE TO THE LEFT, HAVING A RADIUS OF 1017.92 FEET, THROUGH A CENTRAL ANGLE OF 84°15'40", SUBTENDED BY A CHORD OF 1365.70 FEET AT A BEARING OF S. 29°46'41" W., FOR A DISTANCE OF 1497.00 FEET TO A POINT OF TANGENCY; THENCE RUN S. 12°21'09" E. FOR A DISTANCE OF 1182.45 FEET TO THE BEGINNING OF A TANGENTIAL CIRCULAR CURVE, CONCAVE NORTHWESTERLY; THENCE RUN SOUTHERLY AND SOUTHWESTERLY, ALONG THE ARC OF SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 1082.92 FEET, THROUGH A CENTRAL ANGLE OF 61°48'25", SUBTENDED BY A CHORD OF 1112.35 FEET AT A BEARING OF S.18°33'04" W., FOR A DISTANCE OF 1168.18 FEET TO THE END OF SAID CURVED THENCE RUN S. 53°48'02" W. FOR A DISTANCE OF 97.76 FEET TO A POINT OF INTERSECTION WITH A NON-TANGENTIAL CIRCULAR CURVE, CONCAVE NORTHWESTERLY WHOSE RADIUS POINT BEARS N 35°22'00" W. A DISTANCE OF 1079.92 FEET THEREFROM; THENCE RUN SOUTHWESTERLY, ALONG THE ARC OF SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 1079.92 FEET, THROUGH A CENTRAL ANGLE OF 14°32'14", SUBTENDED BY A CHORD OF 273.26 FEET AT A BEARING OF S.61°54'07" W., FOR A DISTANCE OF 274.00 FEET TO THE END OF SAID CURVE; THENCE RUN S. 85°05'58" W. FOR A DISTANCE OF 47.25 FEET TO A POINT OF INTERSECTION WITH A NON-TANGENTIAL CIRCULAR CURVE, CONCAVE NORTHWESTERLY WHOSE RADIUS POINT BEARS N. 18°23'28" W A DISTANCE OF 1067.92 FEET THEREFROM; THENCE RUN SOUTHWESTERLY, ALONG THE ARC OF SAID CURVE TO THE RIGHT, HAVING A RADIUS OF 1067.92 FEET, THROUGH A CENTRAL ANGLE OF 00°54'28", SUBTENDED BY A CHORD OF 16.92 FEET AT A BEARING OF S. 72°03'46" W., FOR A DISTANCE OF 16.92 FEET TO A POINT OF TANGENCY; THENCE RUN S. 72°31'00" W FOR A DISTANCE OF 158.58 FEET, THENCE RUN N. 45°59'18" W. FOR A DISTANCE OF 81.31 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY 41; THENCE RUN S.00°06'55" E., ALONG SAID EASTERLY RIGHT-OF-WAY LINE, FOR A DISTANCE OF 203.94 FEET; THENCE RUN S. 00°31'15" W., ALONG SAID EASTERLY RIGHT-OF-WAY LINE FOR A DISTANCE OF 66.03 FEET TO THE POINT OF BEGINNING, CONTAINING 17.234 ACRES, MORE OR LESS.

SUBJECT TO EASEMENT RESERVATIONS OR RESTRICTIONS OF RECORD.

BEARINGS REFER TO THE WEST LINE OF THE SOUTHWEST 1/4 OF SECTION 1, TOWNSHIP 45 SOUTH, RANGE 24 EAST, LEE COUNTY FLORIDA. AS BEING S. 00°06'55" E.

HOLE, MONTES & ASSOCIATES, INC

(PARCEL A)
DESCRIPTION OF

A tract or parcel of land lying in and being a part of Lee County Airport (Page Field) bounded on the south by Lot 1, Block U, on the west by the east right-of -way line of Sixth Street, on the north by the easterly prolongation of the north right-of-way line of Danley Drive, all of which are shown on the Plat of Page Park, a Subdivision recorded in Plat Book 8 at Pages 92 through 97, Public Records of Lee County, Florida, and on the east by a parcel recorded in Official Record Book 990 at Pages 290 and 291 Public Records of Lee County, Florida, Section 12, Township 45 South, Range 24 East being more particularly described as follows:

Commencing at the northeast corner of Lot 1, Block U at the northeast, corner of Page Park Subdivision as recorded in Plat Book 8 at Pages 92 through 97, Public Records of Lee County, Florida, said northeast corner being the point of beginning of the tract or parcel described herein; thence N89°04'46 " W (N89°04'20" W-Plat) along the north line of said lot 1, Block U for 137.20 feet (137.16 feet-Plat) to the northwest corner of said Lot 1 and the east right of way line of Sixth Street (65 feet in width); thence N00°28'27 " W (N00°28'01" W-Plat) for 79.94 feet (80.01 feet-Plat) to the north right of way line of Danley Drive; thence S89°04'46" E (S89°04'20" E-Plat) along the easterly prolongation of the north right of way line of Danley Drive for 137.20 feet to the westerly line of the former S.A.L. Railroad right of way as recorded in Official Record Book 990 at Pages 290 and 291, Public Records of Lee County, Florida, thence S00°28'38" E along said right of way line for 79.94 feet to the northeast, corner of said Lot 1, Block U of aforesaid Page Park Subdivision and the point of beginning, containing 10,964.72 square feet (0.2517 acres) more or less.

Bearings mentioned herein above are based on The Florida Coordinate System,. West Zone (NAD 83) 1990 Adjustment with the north line of the northeast quarter (NE 1/4) of Section 12, Township 45 south, 24 east as bearing N89°46'15" E.

Arthur W. Parsons, County Surveyor
Professional Surveyor and Mapper
Florida Certificate No. 2987

Page Field
General Aviation Airport

Birk Hillman
Orlando · Miami · Atlanta
8751 Forum Drive, Ste. #240, Orlando, FL 32821

PAGE FIELD AIRPORT MASTER PLAN
Fort Myers, Florida
Airport Property Map

NO.	DATE	REVISION

DATE:	MAY 2002
PROJECT NO.	C0460101
DESIGNED BY:	K.P.
DRAWN BY:	K.P.
CHECKED BY:	S.R.

SHEET
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OF
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Chapter Nine – Financial Plan

INTRODUCTION

The previous chapters of the Master Plan Update evaluate the existing facilities, project the future activity levels, identify potential facility shortfalls, and detail alternatives and recommendations for addressing these shortfalls throughout the 20 year planning period. The previous analysis is based on operational efficiency, safety, environmental factors and, to a lesser extent, cost, with a primary focus of identifying the need for specific improvements and identifying the general configuration of such. Regardless of the identified need for improvements, the ability to pay for a project will ultimately be a major factor influencing when it is implemented. This chapter addresses the financial implications of the various improvements.

Following an overview of both the state and federal grant programs and a general overview of potential funding sources, each project in the development program is summarized in this chapter along with its rough order of magnitude (ROM) cost for the short, medium and long term phases. Each project's eligibility relative to state and federal funding programs is also outlined. Finally, the net operating position of the airport is highlighted along with a review of future potential revenue sources that may assist in meeting the local funding share requirements.

SOURCES for FUNDING AIRPORT DEVELOPMENT

It is important to understand the FMY's development history and current condition in defining a future funding strategy for the airport. Following the opening of Southwest Florida International Airport and the shift of commercial activity from FMY in 1983, few improvements were made to FMY until the mid 1990's. By this time, activity at the airport had decreased considerably, not only due to the transfer of commercial activity, but also due to the loss of regional GA market share. A contributing factor to this loss of market share was the lack of ongoing maintenance of the facility which left many of the airport's facilities in extreme disrepair. This was exacerbated by the constraints of the GA terminal building and the severe shortage of adequate aircraft storage at the airport. While the airport had generally deteriorated since the early 1980's, by the mid 1990's, the LCPA was taking major strides to breath new life into the facility.

The first major improvement at the airport took place in 1996 with the design and construction of new t-hangar facilities on the east side of the airport which were funded with assistance from the Florida Department of Transportation (FDOT). Recognizing that considerable additional facility and service improvements were required to bring the airport in line with the expected service level of GA airports being developed today, in 1996, the LCPA took over the day-to-day operation of the PFAC. In 1998, the LCPA took over sole operation of fueling and property management. Beginning in 1998, and continuing through 1999, every aircraft parking apron on the airport was rehabilitated, with funding assistance from the FDOT and FAA. The services offered at the airport were also assessed and upgraded during this period in efforts to reestablish a loyal base of users. The recent development of surplus land has provided the airport with additional revenues for the operation and enhancement of the facilities and contributed to an operating surplus at FMY in 1999, the first such surplus since 1982.

Regardless of the strides made to date, additional improvements are required in the short term to bring FMY's facilities to the level required to adequately serve the local aviation and business community and to support its role as the region's only designated reliever airport.

Airports have historically depended heavily on non-local (state and federal) financial assistance for funding essential airport development projects. However, funding sources such as the Federal Aviation Administration's Airport Improvement Program (AIP) have increasingly lagged behind the growing nationwide demand for new or upgraded facilities. Additionally, the future of the AIP has been called into question as the FAA explores alternative methods for the funding of airport developments. While some alternative methods may supplement the AIP others could replace it outright. Reductions in the AIP over the past few years and the lack of a full year AIP bill (let alone a multi year bill) have caused airports to place a major emphasis on supplementing this assistance through the use of other funding sources. These sources include the development of non-aviation use airport lands to support commercial development. The various potential funding sources for development of facilities at FMY will be identified and detailed further in the following sections.

Airport Improvement Program (AIP)

One of the main sources for the funding of airport improvements is the Federal Airport Improvement Program (AIP). The AIP was authorized by the Airport and Airway Improvement Act of 1982 to assist in the funding of planning, development and noise compatibility projects at public-use airports nationwide in order to meet projections of civil aviation growth. To be eligible for funding assistance under the Airway Improvement Act, an airport must be included in the National Plan of Integrated Airport Systems (NPIAS).

Funding for the AIP comes from the Aviation Trust Fund which was established by the Airport and Airway Revenue Act of 1970. The Aviation Trust Fund derives its revenues through the levying of taxes and fees on aviation fuel and lubricants, airline tickets, international departure passengers, aircraft freight and other components of the aviation community. Funds collected and deposited in the Aviation Trust Fund are distributed to eligible airports throughout the United States and its trust territories through grants administrated by the Federal Aviation Administration under appropriations limits established by the United States Congress.

While AIP appropriations limits have included multi-year reauthorization approvals in the past, more recent history has exhibited a less stable funding environment. In 1999, although a record level of $1.95 billion in improvements was funded, it required four separate allocations, with the final allocation of $290 million distributed just 36 hours before the end of the fiscal year. This is by no means an ideal situation from the standpoint of planning and programming airport improvements. Estimates for funding in Fiscal Year (FY) 2000 have ranged as high as $2.475 billion although it now appears unlikely that the funding level will exceed $1.9 billion. Additionally, while potential funding levels ranging between $3.2 and $3.4 billion have been identified for FY 2001 through 2003, respectively, recent indications are that funding levels could be considerably lower in FY 2001, with a newly proposed level of $1.688 billion by the current administration. These fluctuations in funding levels and lack of a long term AIP program have presented a major challenge to the planning of improvements and timeframe in which funds are allocated to a specific project.

Allocation of funds from the FAA to the nation's airports is based upon a number of eligibility criteria and tied to a priority system that is used to rank each request and determine which projects will be funded and which will not during any given fiscal year. The priority system employed by the FAA has different criteria for different projects. For instance, planning projects are assessed using specific criteria that are applicable to planning types

of projects. Generally, projects that enhance the safety of aircraft operations and those that enhance capacity in the system are higher priority projects. The priority system also ranks projects based on the size of the airport and the number of aircraft and aircraft operations at the facility.

In addition to the use of the priority system for the evaluation of projects, the AIP has identified a number of projects that are either eligible or ineligible for Federal funding assistance. Even if a proposed airport improvement is considered to be eligible for Federal funding the airport must first conform to several requirements. These requirements are listed below (from FAA Order 5100.38A, *Airport Improvement Handbook*):

1. An airport development project must be shown on a current Airport Layout Plan (ALP) which has FAA approval from the standpoint of safety, utility and efficiency of the airport.
2. The project sponsorship requirements must have been met.
3. The proposed project will be reasonably consistent with the plans for planning agencies for the development of the area in which the airport is located.
4. Sufficient funds must be available for the portion of the project not paid for by the Federal government. (i.e. local and/or state matching share.)
5. The project will be completed without undue delay.
6. The airport location is included in the current version of the National Plan of Integrated Airport Systems (NPIAS).
7. The project involves more than $25,000 in AIP funds unless, in the judgement of the responsible airports office it would be in the best interest of the Government to award a lesser grant amount.
8. All AIP projects require either a determination that the project is categorically excluded from environmental requirements, an environmental assessment resulting in either a "Finding of No Significant Impact" (FONSI) or preparation of an Environmental Impact Statement (EIS).

Close agency coordination is often required to address more complex issues relative to project eligibility. Additionally, it is reasonable to assume that there may be changes in eligibility criteria over the course of the planning period. Guidance on issues of eligibility is provided in FAA Order 5100.38A, Airport Improvement Program Handbook. The Federal funding share for these projects is generally 90 percent for small commercial and GA airports and 75% for medium and large hub commercial airports. Based on current eligibility criteria, the following projects are generally considered eligible under FAA guidance:

- Ramps (non-exclusive)
- Land acquisition costs and costs incidental to the acquisition, including relocation assistance of displaced persons or businesses, of any property interest necessary for airport purposes. Reimbursement for land previously acquired is also eligible.
- The cost of planning and engineering services needed in connection with an airport development or noise implementation project.
- Site preparation for new facilities and for existing facilities where these facilities must be brought into compliance with applicable airport design standards.
- Construction, alteration and reconstruction of runways and taxiways available for general public use. This includes the surface friction treatments such as grooving, aggregate seal coats or porous friction coats.
- Initial marking of eligible runways, taxiways, helipads and portions of aprons associated with the taxiway system as well as the re-marking of these pavements under certain conditions.
- Airfield signs including destination, intersection, runway distance remaining markers and signs necessary to provide information to pilots.

- Installation, alternation and rehabilitation of airfield lighting including runways, taxiways and aprons conforming to FAA design and engineering standards. Retro-reflective markers are also eligible as long as they provide sufficient and safe guidance.
- Navaids are eligible for funding under the Airport Improvement Program, although most Navaids are funded through FAA's Facilities and Equipment program.
- Construction, reconstruction and alteration of airport roads and related facilities are eligible to varying degrees depending upon their designated use.
- Portions of terminal facilities devoted to use by the general public.
- Perimeter fencing and fencing between the airport property and public areas such as roads to discourage the access of wildlife on runways and taxiways.
- Removal and relocation of objects in the Runway Protection Zone or removal, lowering or relocation of an object constituting a hazard to air navigation.
- Environmental mitigation, if it is a condition of approval of an environmental action associated with an airport development project.

Projects which are specifically referenced (Appendix 2, FAA Order 5100.38A) as non-eligible for FAA AIP funding assistance include the following (although t-hangars are not specifically referenced in this appendix, they are also ineligible) :

- Fuel farms.
- Emergency Planning.
- Landscaping, unless an incidental part of an eligible project.
- Communication systems (except that which is used for safety/security).
- Training facilities except those which are included in an otherwise eligible project as an integral part of that project and which are of a relatively minor or incidental cost, i.e., less than 10% of the project cost. An example of exception would be would be a training room included as part of a new ARFF facility.
- Roads, whatever length, used exclusively for the purpose of connecting public parking facilities to an access road.
- Roads serving principally industrial or non-aviation related areas or facilities.
- Construction or relocation of Air Traffic Control Towers.
- General aviation terminals.
- Airport surface detection systems (ASDE).
- Maintenance/service facilities except for those allowed to service required ARFF equipment.
- Projects for the determination of latitude, longitude, and elevation except as an incidental part of master planning.
- Development of new flight procedures or demonstration programs for noise compatibility purposes.

The availability of AIP funding for projects at FMY will depend directly on the priority and the funding availability for reliever airport projects. In FY 1999, which was a record AIP funding year for the national airport system, Florida airports received $45.99 million in discretionary grants and $44.89 million in entitlement grants for a total AIP allocation of $90.9 million. Of this, $4.9 million in discretionary funding was allocated to reliever airport projects. With such a small funding allocation for reliever airports in 1999, even though it was a record year for national airport project funding, it is not clear to what level the eligible projects will receive AIP assistance.

Florida Department of Transportation (FDOT)

Similar to the AIP on the federal level, the FDOT Aviation Grant Program is funded from the state Transportation Trust Fund. The state Transportation Trust Fund consists, in part, of funds collected through the State's aviation fuel tax. The FDOT Aviation Office administers the aviation grant program to help provide a safe, cost-effective, and efficient statewide aviation system. The FDOT grant program supplements the AIP, providing a portion of the sponsors matching share when federal funding is available and 50 percent to 80 percent of the overall project cost when it is not. FDOT grant funds help airports build T-hangars, build and maintain runways and taxiways, eliminate airport hazards, protect the air space, and build terminals and other facilities. In 1998, FDOT spent more than $90 million in state grants for Florida's airports. In that same year, the FAA provided $60 million in federal grants developing Florida's public airport system.

FDOT participation in aviation projects can be summarized as follows

Commercial Service Airports – FDOT provides ½ of the local share of commercial service airport project costs when federal funding is available. Stated again, FDOT provides 12.5 percent of the project costs when the FAA funds 75 percent. If there is no FAA funding for a project, FDOT provides 50 percent of the project costs.

General Aviation Airports – FDOT provides ½ of the local share of GA airport project costs when FAA funding is available. Stated again, FDOT provides 5 percent of the project costs when the FAA provides 90 percent of the funding. If there is no FAA funding for a project, FDOT provides up to 80 percent of the project costs.

Economic Development – Airport economic development provides 50 percent of airport development funds to build on-airport revenue-producing capital improvements, like industrial/commercial parks.

Airport Loans – Airport loans are used to help airports acquire land in the near term and allows time to apply for FAA funding. FDOT provides interest free loans for 75 percent of the cost of airport land purchases for both commercial service and general aviation airports. These loans are repaid at the normal FDOT funding ratio when FAA funds become available, or in 10 years, whichever comes first.

All publicly owned Florida airports that are open for public use are eligible for state funding. In addition, privately owned airports that are classified with "reliever" status are eligible for FAA funding. Florida law generally allows the FDOT to fund any capital project on airport property and any service that leads to capital projects, such as planning and design services. The only off-airport projects allowed are the purchase of mitigation lands, the purchase of avigation easements, and the access projects for intercontinental airports. Airport capital equipment is eligible, except equipment closely related to the day-to-day operations (mowing machines, weed eaters, airport vehicles, etc.). In general, operational costs such as maintenance services, equipment, and supplies are not eligible for aviation grants. To be eligible for FDOT grants, each airport project must be consistent with the airport's role as defined in the Florida Aviation System Plan (FASP), and capital projects must be part of an FDOT approved airport master plan or airport layout plan. Additionally, for projects to be eligible for state funding, they must also be included in the Joint Automated Capital Improvement Plan (JACIP). This plan accepts requests from airports for project funding along with each airport's priority for individual projects. The JACIP does not represent a commitment by the FDOT or FAA to fund a particular project or projects. The Plan is intended to coordinate state and federal funding efforts and provide a realistic approach based on the best and most current information available of projects at Florida grant eligible airports.

As with the federal grant program the state program commits funds through its district offices to eligible airport projects according to a project priority system. The following is a summary of this system presented in order of priority:

A. **Federally Funded Projects.** The State's share will be up to one-half of the non-Federal share.

B. **Non-federally Funded Airside Projects – Priority Order**
1. Safety or security of the travelling public.
2. Preserve existing airfield infrastructure.
3. Increase capacity of Florida's airports.
4. Projects of significant importance that cannot be fully funded by the Federal government and can be funded per the provisions of F.S. Section 332.007(6)(a) 1 and 2, if State funds are available.

C. **Non-Federally Funded – Other**
1. Airport planning projects.
2. Land acquisition for airfield infrastructure.
3. Airport terminal projects.
4. Airport access projects, if Department intermodal funds are not available.
5. Navigational Aids (Navaids) projects under certain criteria.

D. **Economic Development Projects**

Local Funding Sources

Recognizing the major facility improvements required at FMY and the strained resources of the Federal and State funding programs, it is anticipated that local sources will be a primary component for the funding of the future development program. Local funding of airport improvements can come from several sources including fees for airport services, airport land and facility leases and other user charges, or from issuance of bonds to cover the cost of capital improvements. The LCPA is currently aggressively pursuing enhancement of local funding sources and this will be outlined further later in this chapter. Components that will be discussed in overviewing FMY's future revenue generation strategy include the following:

- Airport Land Leases
- Airport Facility Leases
- Hangar Rental
- Landing Fees
- Rental Car Fees
- Net Surplus from the Operation of the PFAC
- Other Miscellaneous Revenue Sources

CAPITAL IMPROVEMENT PROGRAM

The following sections detail the 20 year Capital Improvement Program (CIP) for the short, medium and long term development periods.

Ongoing Airport Improvements

Lighted Airfield Signage (Includes Upgrade to Vault) – Phase I ***ROM Cost = $970,000***

This project is the first phase of improvements to the airfield signage in support of the projected increase of aircraft activity at the airport. This project is a key component for improving operational safety at the airport, particularly during nighttime operations. An upgrade to the electrical vault is required a part of this project to accommodate the additional electrical requirements. This project is broken into a primary component and three bid alternates. The budget provides for the primary component and first of the bid alternates with the remaining two being deferred until the second phase. This project is currently under grant for 80% state funding participation.

East Ramp Expansion ***ROM Cost = $1,325,125***

This project includes expansion of the east ramp and addition a plane wash facility. The septic tank for the plane wash facility was added during construction of the earlier east quadrant t-hangar facilities. This project is currently under grant for 80% state funding participation.

Short Term Improvements – Year 2000 Through 2005

The following development projects are included in the short term development program for the airport. The eligibility of each project relative to state and federal funding assistance is outlined along with its rough order of magnitude (ROM) cost. It should be noted that the ROM cost estimates provide for a 10% design and administration cost and a 10% overall contingency. A summary of the projects, ROM costs and funding for the short term development program is outlined in **Table 9-1**.

East T-Hangars (26 units) ***ROM Cost = $1,007,000***

This project is the first of two t-hangar project during the short-term period of development. This project consists of the construction of 24 t-hangar units with 2 cabin class units configured in three parallel buildings in the eastern quadrant of the airport. Recognizing the severe shortage of t-hangars at the airport, the LCPA has moved forward with the design of these facilities (currently at 100%) in hopes that FDOT funding becomes available in the short term. This project is eligible for up to 50 percent state funding assistance.

East Shade Hangars (8 Units) ***ROM Cost = $407,831***

This project will provide a lower cost solution to the t-hangar shortage through the development of a row of 8 shade hangars to the west of the existing t-hangars in the East Quadrant. The shade hangar structure will provide protection from directly above relative to sun and rain allowing for some protection at a nominal cost to users. This project is ineligible for federal or state funding assistance.

Relocation of Airport Maintenance Facility ***ROM Cost = $181,500***

This project is the first step in providing for the relocation and expansion of the GA terminal on the north airfield. The existing airport maintenance facility occupies the future site of the GA terminal and the expanded itinerant parking ramp and requires relocation prior to the GA terminal's construction. The proposed site for the relocated airport maintenance facilities is a one acre parcel in the east quadrant of the airport, just south of the Runway 23 end. This project is eligible for up to 80 percent state funding assistance.

Development Costs and Funding by Phase

TABLE 9-1

Short Term - Year 2000 through 2005

Project Description	Total Cost (2000 Dollars)	Maximum Possible FAA Grants	Maximum Possible State Grants	Sponsor's Share Remaining Costs
Phase I Signage	$ 970,000	$ -	$ 776,000	$ 194,000
East T-Hangars - 24 Units Plus 2 Cabin Class Hangars	$ 1,007,000	$ -	$ 503,500	$ 503,500
East Ramp Expansion and Wash Rack	$ 1,325,125	$ -	$ 1,060,100	$ 265,025
East Shade Hangar (8 Units)	$ 407,831	$ -	$ -	$ 407,831
Relocate Airport Maintenance Facility	$ 181,500	$ -	$ 145,200	$ 36,300
North Ramp Expansion	$ 2,090,402	$ 1,881,362	$ 104,520	$ 104,520
New GA Terminal	$ 1,390,000	$ -	$ 1,112,000	$ 278,000
Helipad	$ 70,000	$ -	$ 56,000	$ 14,000
Taxilane "C" Widening	$ 363,000	$ 326,700	$ 18,150	$ 18,150
New Fuel Farm (Partial Relocation)	$ 187,500	$ -	$ 150,000	$ 37,500
Bulk/Multi Use Hangar - 120' x125 '	$ 1,089,000	$ -	$ 544,500	$ 544,500
FIS Facility	$ 635,250	$ -	$ 317,625	$ 317,625
Northside Entrance Road Improvements	$ 102,850	$ -	$ 82,280	$ 20,570
Miscellaneous Drainage Improvements	$ 242,000	$ -	$ 121,000	$ 121,000
Page Field Commerce Center Rehabilitation	$ 2,400,000	$ -	$ 1,200,000	$ 1,200,000
Expansion of South Bulk/Multi Use Hangar	$ 880,880	$ -	$ 440,440	$ 440,440
Runup Areas - Runway 23 (2) & Runway 31 (1)	$ 468,875	$ 421,988	$ 23,444	$ 23,444
Taxiway "B" Pavement Rehabilitation	$ 885,115	$ 796,604	$ 44,256	$ 44,256
Runway and Taxiway Lighting Improvements	$ 343,640	$ -	$ 171,820	$ 171,820
Lighted Airfield Signage (Includes Upgrade to Vault) - Phase II	$ 400,000	$ -	$ 320,000	$ 80,000
East T-Hangars - 24 Units	$ 824,494	$ -	$ 412,247	$ 412,247
East Ramp Expansion	$ 1,384,482	$ -	$ 692,241	$ 692,241
Upgrade Markings on Runway 31 to Non-precision	$ 10,890	$ -	$ 8,712	$ 2,178
Taxiway "C" Extension, High Speed Txwys and Runup Areas (2) for Runway 5	$ 4,291,386	$ 3,862,247	$ 214,569	$ 214,569
Service Road Construction (1 lane up to 1 lineal mile)	$ 553,696	$ 498,326	$ 27,685	$ 27,685
Environmental Cleanup	$ 574,750	$ -	$ 400,000	$ 174,750
Property Acquisition - Southwest Parcel Adjacent Danley Drive	$ 77,500	$ 69,750	$ 3,875	$ 3,875
Land Acquisition for ALS	$ 785,000	$ 706,500	$ 39,250	$ 39,250
Land Easements/Easements for RPZ's - Developed Land	$ 785,000	$ 706,500	$ 39,250	$ 39,250
Land Easements/Easements for RPZ' - Undeveloped Land	$ 432,000	$ 388,800	$ 21,600	$ 21,600
East Airfield Rest Rooms	$ 18,876	$ -	$ -	$ 18,876
Demolition of Depot 7 Buildings	$ 145,200	$ -	$ -	$ 145,200
Southwest Access Road Closure	$ 35,000	$ -	$ -	$ 35,000
Southwest Ramp Expansion	$ 349,388	$ 314,449	$ 17,469	$ 17,469
Total Investments (2000-2005)	*$ 24,737,628*	*$ 9,973,225*	*$ 8,291,733*	*$ 6,472,670*

Indicates that funding has been committed	$ 1,836,100
Indicates that project is programmed for future funding assistance	$ 1,778,000
Additional funding required to complete Short Term Program	$ 21,103,528

Note: Funding schedule assumes full federal and state participation for all eligible projects. Any funds not received by LCPA would cause the local share (remaining costs) to increase. These increases may cause the project(s) to be delayed or cancelled. Completion of any and\or all of the project shown are contingent upon receipt of federal or state grants and

North Apron Expansion ***ROM Cost = $2,090,402***

Expansion of the recently rehabilitated North Apron is required to provide for the existing and projected itinerant aircraft parking requirements in support of the relocated GA terminal. This expanded ramp will also provide access to the new terminal, the FIS, and the bulk hangar. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

New GA Terminal ***ROM Cost = $1,390,000***

This project involves the construction of a much larger 15,000 ft² facility on the north airfield, adjacent the expanded North Apron. Relocation of this facility to the north airfield allows for the airport to utilize the recently rehabilitated high strength North Apron and provides for considerable landside improvements and a general increase in level of service in line with the facilities at similar airports that are in development today. Along with the increase of capacity, in and around the GA terminal area, is the ability to generate increased airport revenues as the airport becomes better able to accommodate the demands of the local business and aviation community. This project is eligible for up to 80 percent state funding assistance.

Helipad ***ROM Cost = $70,000***

This facility is located on the North side of the airfield, adjacent to the North apron area, between Taxiway B and Taxiway C, just south of the ATCT. The helipad will consist of a Final Approach and Takeoff Area (FATO), a Touchdown and Lift-off Area (TLOF) and two designated helicopter parking positions. The proposed location will be convenient for itinerant helicopter operators to the general aviation terminal and the other support facilities located on the North side of the airfield. This project is eligible for up to 80 percent state funding assistance.

Taxilane "C" Widening ***ROM Cost = $363,000***

This project goes hand-in-hand with the North Apron expansion. By widening Taxilane "C" where it runs adjacent the North Apron and shifting the centerline and parking limit lines south, more ramp will become available as required to support the itinerant aircraft parking requirements. This relocation will not negatively impact the ADG C-III classification of the runway and will provide for deeper apron and more operational flexibility. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

New Fuel Farm (partial relocation) ***ROM Cost = $187,500***

With this project, a new fuel storage facility will be constructed north of the expanded ramp and east of the new GA terminal to support the relocated itinerant aircraft operations. The facility will consist of two 12,000 gallon Jet A-1 tanks and one 12,000 gallon 100LL tank. One of the 12,000 Jet A-1 tanks will be relocated from the existing fuel farm where a single 12,000 gallon Jet A-1 tank and 12,000 gallon 100LL tank will be maintained to serve the south and east quadrants of the airfield. This project is eligible for up to 80 percent state funding assistance.

Bulk/Multi-Use Hangar – 120'x 125' ***ROM Cost = $1,089,000***

This project includes construction of a 15,000 ft² bulk/multi-use hangar to provide for itinerant aircraft storage and servicing. The existing clearspan used for storage on the south airfield will only provide for based aircraft in the future, rather than the current mixed use. The improved storage and servicing capabilities for itinerant aircraft will result in a higher level of service as well as improved revenues. This project is eligible for up to 50 percent state funding assistance.

FIS Facility ***ROM Cost = $635,250***

This project consists of the construction of a 3000ft² general aviation federal inspection station (FIS or GAF). The FIS will be used to process international arrival GA aircraft as a U.S. Port of Entry. The facility will be located adjacent the GA terminal to allow for a high level of passenger service and efficient servicing of international aircraft. This facility will provide a service that does not already exist on the west coast of Florida and will result in improved level of service for the region and increased activity and revenues for the airport. This project is eligible for up to 50 percent state funding assistance.

Northside Entrance Road Improvements ***ROM Cost = $102,850***

Access in the vicinity of the future GA terminal area is currently provided by a single lane one-way road that serves the entire north quadrant. This project improves a portion of this roadway to allow for two way access into the immediate GA terminal area. This project is eligible for up to 80 percent state funding assistance.

Miscellaneous Drainage Improvements ***ROM Cost = $242,000***

This project is required to support the expansion and addition of facilities in the north quadrant. Facilities supported include expansion of the North Apron, the development of the new GA terminal, the development of the new fuel farm, construction of the new multi-use/bulk hangar, development of the FIS and the entrance road improvements. This project is eligible for up to 50 percent state funding assistance.

Page Field Commerce Center Rehabilitation ***ROM Cost = $2,400,000***

This project consists of the rehabilitation of roughly 50 plus percent of the Page Field Commerce Center which was not included in the FDLE leasehold. This will provide for completely reconditioning the balance of the building to provide for its lease to a future user(s). This un-leased portion of the building represents the largest revenue generation potential relative to investment cost of any facility on the airport. This project may be eligible for up to 50 percent state funding assistance.

Expansion of South Bulk/Multi-Use Hangar ***ROM Cost = $880,880***

The existing bulk /multi-use storage hangar on the south airfield is used to store based aircraft during the off-season and a mix of based and itinerant aircraft during the peak season. With the relocation of the itinerant aircraft to the north airfield and the severe shortage of hangar storage at the airport, this project includes the extension of the existing bulk hangar eastward adjacent the southeast aircraft parking apron. This expansion will allow for the storage and servicing of additional larger based aircraft or multiple smaller aircraft at the airport and provides considerable flexibility relative to aircraft size. This project will result in additional based aircraft and improved airport revenues and is eligible for up to 50 percent state funding assistance.

Run-up Areas – Runway 23 (2) and Runway 31 (1) ***ROM Cost = $468,875***

Lack of run-up areas at the runway ends has been cited as a major contributing factor to congestion and inefficient movement of aircraft in and around the terminal area. With activity levels increasing considerably in the short term and approaching historical highs in the long term, the addition of these run-up areas will result directly in improved airport capacity, efficiency and safety. It will also result in a reduction in delays and air traffic controller workload. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Taxiway "B" Pavement Rehabilitation ***ROM Cost = $885,115***

Based on the latest inspection of the pavements at FMY, Taxiway "B" should be rehabilitated during the short-term development program. This project allows for the full length rehabilitation of the taxiway and the reconstruction of areas exhibiting extreme deterioration. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Runway and Taxiway Lighting Improvements ***ROM Cost = $343,640***

This project includes the upgrade and enhancement of the runway and taxiway lighting at the airport. With this project, the existing visual approach slope indicators (VASI's) will be upgraded to precision approach path indicators (PAPI's) for each runway end. Additionally, runway end instrument lights (REIL's) will be added to each runway end to improve the pilot's orientation with respect to encroachment of surrounding development. Finally, this project includes the upgrade of reflective cans to medium intensity taxiway lighting (MITL). Although MITL does exist at a number of locations throughout the airfield, some areas are currently only equipped with reflective cans. This was due to either a lack of funds at the time the existing lights were added or the fact that many of the areas had very little nighttime activity. With the considerable expansion of the east quadrant of the airport and relocation of itinerant aircraft to the north airfield, many formerly low traffic areas will now experience increased activity. As such, this project will include the upgrade of the lighting on all taxiway movement areas to MITL as well as the resulting airfield electrical vault improvements. This project is eligible for up to 50 percent state funding assistance.

Lighted Airfield Signage (Includes Upgrade to Vault) – Phase II ***ROM Cost = $400,000***

This project is the second phase of improvements to the airfield signage in support of the projected increase of aircraft activity at the airport. The first phase was initiated in FY 2000. This project is a key component for improving operational safety at the airport, particularly during nighttime operations. An upgrade to the electrical vault will be required as a part of this project to accommodate the additional electrical requirements. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

East T-Hangars - 24 Units ***ROM Cost = $824,494***

This project is the second of two t-hangar projects during the short-term period of development. This project consists of the construction of 24 t-hangar units configured in three parallel buildings in the eastern quadrant of the airport. These t-hangars will be located parallel to and northeast of the initial set of t-hangars constructed during the short-term development period. This project is eligible for up to 50 percent state funding assistance.

East Ramp Expansion ***ROM Cost = $1,384,482***

This project is the second of two expansions of the east ramp during the 2005 development period. This project is eligible for up to 90 percent federal funding and five percent state funding assistance or 80 percent funding assistance in the case that federal funds are not available.

Upgrade Markings on Runway 31 to Non-precision ***ROM Cost = $10,890***

This project consists of the upgrade of the Runway 31 pavement markings from visual to non-precision. This project resulted from the addition, in July 1999, of a non-precision stand alone GPS approach procedure which provides Runway 31 with a decision height of less than 400 feet agl. This project is eligible for up to 90 percent federal funding and five percent state funding assistance. However, this

project does not meet the FAA's typical minimum grant threshold of $25,000. In this case, without federal participation the state may provide funding assistance up to 80 percent of the project value.

Taxiway "C" Extension, Highspeed Exits, and Runup Areas (2) for Runway 5 ROM = $4,291,386
This project provides for the extension of the parallel Taxiway "C" from its intersection with Runway 13-31 to the Runway 05 end in support of the large percentage of activity that will be relocated to the north airfield. This project will remove the need for itinerant departure activity to cross the primary runway, Runway 5-23. It will also reduce runway occupancy time and improve runway capacity through the addition of two highspeed exits, one serving the north airfield and one serving the south. Run-up areas will be added both north and south of the Runway 05 end to improve efficiency for the primary departure runway. This project also provides for the regrading of the glideslope critical area to ensure that the ILS signal is not impacted by the addition of the new taxiway. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Service Road Construction (1 lane up to 1 lineal mile) ROM Cost = $553,696
Construction of a service road connecting the north, east and south quadrants of the airport is a key project to facilitate servicing in all three quadrants of the airport. This service road will be a single lane restricted access service road due to its proximity to the Runway 23 and Runway 31 ends. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Environmental Cleanup ROM Cost = $574,750
Environmental audits of the airport have identified a number of sites that were occupied by former facilities that require cleanup. This project provides for the mitigation of each site and is eligible for state funding assistance (DEP).

Property Acquisition - Southwest Parcel Adjacent Danley Drive ROM Cost = $77,500
This project includes the acquisition of a parcel located on the north side of Danley Drive near the southwest airfield. This approximately 43,000 ft² parcel will allow for the closure of the existing southwest airport access road to provide for the future expansion of the southwest parking apron. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Land Acquisition for ALS ROM Cost = $785,000
This project consists of the acquisition of land to provide for the future development of an approach lighting system (ALS) to serve the Runway 5 approach. This project provides for acquisition of up to 4 acres of high density commercial property. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Land Acquisition/Easements for RPZ's - Developed Land ROM Cost = $785,000
This project consists of the acquisition of parcels and easements for developed land falling within the airport's runway protection zones (RPZ's). The purpose of this acquisition is to ensure that the airport obtains a means to control the future land use within the RPZ areas. The primary concentration of developed land falling within the RPZ's at FMY is located off the Runway 5 and 31 ends. This project provides for acquisition of up to 4 acres of this high density commercial property. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Land Acquisition/Easements for RPZ's - Undeveloped Land ***ROM Cost = $432,000***

This project consists of the acquisition of parcels and easements for undeveloped land falling within the airport's runway protection zones (RPZ's). As with the prior project, the purpose of this acquisition is to ensure that the airport obtains a means to control the future land use within the RPZ areas. The primary concentration of undeveloped land falling within the RPZ's at FMY is located off the Runway 23 end. This project provides for acquisition of up to 6 acres of undeveloped land. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

East Airfield Rest Rooms ***ROM Cost = $18,876***

With the recent development of t-hangars in the East Quadrant, and the pending expansion of the east ramp, the lack of restroom facilities in this quadrant of the airport is an inconvenience to an increasing number of pilots and their passengers. This project includes development of restroom facilities in the East Quadrant of the airport adjacent the future plane wash facility. This project may be eligible for federal or state funding assistance.

Demolition of Depot 7 Buildings ***ROM Cost = $145,200***

The existing Depot 7 lease, which encompasses the northern half of the East Quadrant of the airport, requires turnover of all buildings located on the site to the airport upon termination or expiration of the lease. In order to provide for the expansion of the east ramp planned for this area during the short term, demolition of these facilities will be required. This project may be eligible for federal or state funding assistance.

Southwest Access Road Closure ***ROM Cost = $35,000***

This project includes the closure of southwestern portion of the airport access road and diversion of traffic to South Road and Danley Drive. This portion of the road is not used as the single means of access to any of the existing facilities and isolates a portion of the developable airport property. This project provides for some pavement removal and signage modifications required to close the existing road. This project may be eligible for federal or state funding assistance.

Southwest Ramp Expansion ***ROM Cost = $349,388***

This project is the first phase of a ramp expansion project on the southwest side of the airport. This expansion project will provide additional aircraft parking and will support aviation related development in this area of the airfield. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Intermediate Term Improvements – Year 2006 Through 2010

The following development projects are included in the intermediate term development program for the airport. As with the short term improvements, the associated rough order of magnitude (ROM) cost estimates provide for 10% design and administration costs and a 10% overall contingency. A summary of the projects, ROM costs and funding for the intermediate term development program is outlined in **Table 9-2.**

Development Costs and Funding by Phase

TABLE 9-2

Intermediate - Year 2006 through 2010

Project Description	Estimated Cost (2000 Dollars)	Maximum Possible FAA Grants	Maximum Possible State Grants	Sponsor's Share Remaining Costs
Bulk/Multi Use Hangar - 75' x 100'	$ 408,375	$ -	$ 204,188	$ 204,188
2 North Cabin Class Hangars - 70' x 80' Units and Infrastructure	$ 901,450	$ -	$ 450,725	$ 450,725
Relocation of Self Fueling Facility	$ 50,000	$ -	$ 25,000	$ 25,000
Southeast T-Hangars - 32 Units	$ 1,213,509	$ -	$ 606,755	$ 606,755
Southeast Ramp Expansion	$ 871,805	$ 784,625	$ 43,590	$ 43,590
Rehabilitate Runway 13/31	$ 2,182,840	$ 1,964,556	$ 109,142	$ 109,142
Land Acquisition for ALS	$ 725,000	$ 652,500	$ 36,250	$ 36,250
Installation Of Approach Lighting System	$ 605,000	$ 544,500	$ 30,250	$ 30,250
Land Easements/Easements for RPZ's - Developed Land	$ 785,000	$ 706,500	$ 39,250	$ 39,250
Land Easements/Easements for RPZ's - Undeveloped Land	$ 576,000	$ 518,400	$ 28,800	$ 28,800
Master Plan Update	$ 150,000	$ 135,000	$ 7,500	$ 7,500
Total Investments (2006-2010)	*$ 8,468,979*	*$ 5,306,081*	*$ 1,581,449*	*$ 1,581,449*

Note: Funding schedule assumes full federal and state participation for all eligible projects. Any funds not received by LCPA would cause the local share (remaining costs) to increase. These increases may cause the project(s) to be delayed or cancelled. Completion of any and\or all of the project shown are contingent upon receipt of federal or state grants and Each line item includes 10% for design & administration and a 10 % contingency.

Bulk/Multi Use Hangar - 75' x 100' ***ROM Cost = $408,375***

This project consists of the development of a 7,500 ft² bulk/mutli-use hangar to support the storage and servicing of itinerant aircraft. The new facility will be developed adjacent the expanded north ramp, east of the short term bulk hangar and west of the new fuel farm. The improved storage and servicing capabilities for itinerant aircraft will result in an improved level of service, increase activity and increased airport revenues. This project is eligible for up to 50 percent state funding assistance.

2 North Cabin Class Hangars - 70' x 80' Units and Infrastructure ***ROM Cost = $901,450***

This project includes the development of two 70'x80'cabin class hangars and associated airfield pavement for the storage of larger corporate type aircraft on the north airfield northwest of the airport fire station. Each of these corporate style hangars will also have the capability to store multiple smaller aircraft. Development of these facilities will be based upon specific identified demand. This project is eligible for up to 50 percent state funding assistance.

Relocation of Self Fueling Facility ***ROM Cost = $50,000***

Relocation of the self fueling facility is required to provide for the development of t-hangars on the southeast parcel of the airport. This project relocates the self fueling facility to a more central location just west of the existing Page Field Aviation Center. Approximately 1925 yd² of apron will also be constructed to improve access to this facility. This project is eligible for up to 50 percent state funding.

Southeast T-Hangars - 32 units ***ROM Cost = $1,213,509***

This project consists of the development of 32 additional t-hangars in the southeastern area of the airport to continue to support the airport's hangar demand. The new t-hangars will require relocation of the existing self fueling facility and construction of additional apron area. The units will be configured in three sets of parallel north-south oriented t-hangars and one set of non-nested east-west oriented hangars. This project is eligible for up to 50 percent state funding assistance.

Southeast Ramp Expansion ***ROM Cost = $871,805***

This project includes expansion of the southeast ramp to allow for more efficiency and improved capacity in support of facilities being developed in this area of the airfield. This project is eligible for up to 90 percent federal funding and five percent state funding assistance or 80 percent funding assistance in the case that federal funds are not available.

Rehabilitate Runway 13/31 ***ROM Cost = $2,182,840***

The full length rehabilitation of Runway 13/31 is anticipated during the intermediate term based on the existing condition of the airfield pavement. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Land Acquisition for an Approach Lighting System (ALS) ***ROM Cost = $725,000***

This project consists of the acquisition of land to provide for the future development of an approach lighting system (ALS) to serve the Runway 5 approach. This project provides for acquisition of up to 3.7 acres of high density commercial land. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Installation Of Approach Lighting System ***ROM Cost = $605,000***

Runway 5 is the primary approach runway and is currently equipped with an instrument landing system (ILS) that consists of a glideslope and a localizer. While the ILS minimizes the decision height for this

approach, an approach lighting system (ALS) is required to reduce the visibility minimums below the current one mile requirement. This project consists of the addition of an ALS to supplement the existing ILS equipment and provide the primary approach with improved visibility minimums. This project is eligible for up to 90 percent federal funding and five percent state funding assistance with the remaining five percent to be funded by the sponsor.

Land Acquisition/Easements for RPZ's - Developed Land ***ROM Cost = $785,000***
This project consists of the acquisition of parcels and easements for developed land falling within the airport's runway protection zones (RPZ's). The purpose of this acquisition is to ensure that the airport obtains a means to control the future land use within the RPZ areas. The primary concentration of developed land falling within the RPZ's at FMY is located off the Runway 5 and 31 ends. This project provides for acquisition of up to 4 acres of this high density commercial property. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Land Acquisition/Easements for RPZ's - Undeveloped Land ***ROM Cost = $576,000***
This project consists of the acquisition of parcels and easements for undeveloped land falling within the airport's runway protection zones (RPZ's). As with the prior project, the purpose of this acquisition is to ensure that the airport obtains a means to control the future land use within the RPZ areas. The primary concentration of undeveloped land falling within the RPZ's at FMY is located off the Runway 23 end. This project provides for acquisition of up to 8 acres of undeveloped land. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Airport Master Plan Update ***ROM Cost = $150,000***
Airport Master Plans are typically updated every five to ten years depending on the validity of the prior planning analysis and assumptions. Changes occurring in aircraft activity levels, the local business community, the profile of the users, etc., will help to determine the need to revisit and update the plan. This project provides for the update of the existing plan, completed in the year 2000, during the intermediate development period of the airport. By revisiting the assumptions, projections and development accomplished to date, the existing plan can be modified and refocused to better address a continued strategy of development. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Long Term Improvements – Year 2011 Through 2020

The following development projects are included in the long term development program for the airport. As with the short and intermediate term improvements, the associated rough order of magnitude (ROM) cost estimates provide for 10% design and administration costs and a 10% overall contingency. A summary of the projects, ROM costs and funding for the long term development program is outlined in **Table 9-3**.

Bulk/Multi Use Hangar - 120' x 125' ***ROM Cost = $1,089,000***
This project consists of the development of a 15,000 ft² bulk/mutli-use hangar to support the storage and servicing of itinerant aircraft. The new facility will be third such hangar constructed during the 2020 developed program and will be located adjacent the east end of the expanded North Apron. The improved storage and servicing capabilities for itinerant aircraft will maintain an improved level of service, and result in an increase in activity and airport revenues. This project is eligible for up to 50 percent state funding assistance.

Development Costs and Funding by Phase

TABLE 9-3

Long Term - Year 2011 through 2020

Project Description	Estimated Cost (2000 Dollars)	Maximum Possible FAA Grants	Maximum Possible State Grants	Sponsor's Share Remaining Costs
Bulk/Multi Use Hangar - 120' x 125'	$ 1,089,000	$ -	$ 544,500	$ 544,500
North Ramp Expansion	$ 2,342,560	$ 2,108,304	$ 117,128	$ 117,128
3 North Cabin Class Hangars - 70' x 80' Units and Infrastructure	$ 1,146,778	$ -	$ 573,389	$ 573,389
Expand Wash Rack Facility and Self Maintenance Area	$ 53,240	$ -	$ 26,620	$ 26,620
South Central T-Hangars-32 Units	$ 1,145,628	$ -	$ 572,814	$ 572,814
Expansion of South Ramp	$ 620,549	$ 558,494	$ 31,027	$ 31,027
Expansion of Southwest Ramp	$ 2,089,295	$ 1,880,365	$ 104,465	$ 104,465
Construct section of Taxiway A	$ 1,101,100	$ 990,990	$ 55,055	$ 55,055
Construct 13/31 West Partial Parallel Taxiway	$ 1,694,000	$ 1,524,600	$ 84,700	$ 84,700
Rehabilitate Runway 5/23	$ 2,584,560	$ 2,326,104	$ 129,228	$ 129,228
Rehabilitate Taxiway A	$ 1,062,138	$ 955,924	$ 53,107	$ 53,107
Rehabilitate Taxiway D	$ 415,272	$ 373,745	$ 20,764	$ 20,764
Rehabilitate Taxilane E	$ 133,366	$ 120,030	$ 6,668	$ 6,668
Total Investments (2011-2020)	*$ 15,477,485*	*$ 10,838,556*	*$ 2,319,465*	*$ 2,319,465*
Total Investment Program	*$ 48,684,092*	*$ 26,117,862*	*$ 12,192,646*	*$ 10,373,584*

Note: Funding schedule assumes full federal and state participation for all eligible projects. Any funds not received by LCPA would cause the local share (remaining costs) to increase. These increases may cause the project(s) to be delayed or cancelled. Completion of any and\or all of the project shown are contingent upon receipt of federal or state grants and Each line item includes 10% for design & administration and a 10 % contingency.

North Ramp Expansion ***ROM Cost = $2,342,560***

This project involves the westward expansion of the North Apron to provide for the increased parking requirements of itinerant aircraft. The expansion of the ramp will displace the helipad which will be relocated to a location west of the airport fire station. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

3 North Cabin Class Hangars - 70' x 80' Units and Infrastructure ***ROM Cost = $1,146,778***

This project consists of Phase 2 of cabin class hangar development. Phase 2 consists of the addition of three 70'x80'cabin class hangars and associated airfield pavement for the storage of larger corporate type aircraft on the north airfield northwest of the airport fire station. Each of these corporate style hangars will also have the capability to store multiple smaller aircraft. Development of these facilities will continue to be based upon specific identified demand. This project is eligible for up to 50 percent state funding assistance.

Expand Wash Rack Facility and Self Maintenance Area ***ROM Cost = $53,240***

The wash rack facility and self maintenance area in the East Quadrant of the airport will be expanded during the long term development period to allow for the concurrent washing/servicing of four aircraft. This project is eligible for up to 50 percent state funding assistance.

South-Central T-Hangars - 32 units ***ROM Cost = $1,145,628***

This project consists of the development of 32 additional t-hangars in the south-central area of the airport to continue to support the airport's long term hangar demand. The 32 units will be configured in four sets of parallel north-south oriented t-hangars located adjacent and north of the existing itinerant parking apron. This project is eligible for up to 50 percent state funding assistance.

South-Central Ramp Expansion ***ROM Cost = $620,549***

The project will include the development of taxiways and infrastructure including drainage improvements adjacent to the north edge of the south ramp. This project is eligible for up to 90 percent federal funding and five percent state funding assistance or 80 percent funding assistance in the case that federal funds are not available.

Expansion of Southwest Ramp ***ROM Cost = $2,089,295***

This project consists of the expansion of the southwest ramp to accommodate the parking of based aircraft. Although a greater percentage of based aircraft will be utilizing storage hangars by this period, the considerable service improvements at the airport could impact the availability of ramp space for based aircraft and result in the need for an additional parking apron. This ramp expansion would provide flexibility in accommodating this demand with a large contiguous apron capable of accommodating numerous aircraft. If demand dictates, this project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Reorientation of Taxiway A (Demolish Existing) ***ROM Cost = $1,101,100***

This project consists of the reorientation of Taxiway A to a parallel configuration south of the intersection of the two runways. The current divergence of the taxiway creates confusion and reduced efficiency for pilots from the east quadrant that are departing Runway 5 as well as those that are transitioning from the based aircraft parking aprons. As activity increases at the airport, this has the potential to impact capacity and operational safety, providing the potential for runway and taxiway incursions. The reorientation of

Taxiway A between its intersection with Runway 13-31 and Taxiway D would remove this potential safety concern. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Construct 13/31 West Partial Parallel Taxiway ***ROM Cost = $1,694,000***

This project consists of the development of a partial parallel taxiway extending from the Runway 13 end to Taxiway C. The parallel taxiway will be spaced at 300 feet from the Runway 13-31 centerline and will include two connectors to the runway as well as construction of a run-up area serving Runway 13. The taxiway will be designed to accommodate ADG B-II aircraft. The taxiway will provide for improved access to and from the south airfield for aircraft operations on Runway 13-31. The taxiway will also improve access to the future aviation development parcels on the west side of the airport. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Rehabilitate Runway 5/23 ***ROM Cost = $2,584,560***

The full length rehabilitation of Runway 5/23 is anticipated during the long term based on the existing condition of the airfield pavement. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Rehabilitate Taxiway A ***ROM Cost = $1,062,138***

The full length rehabilitation of Taxiway A is anticipated during the long term based on the existing condition of the airfield pavement. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Rehabilitate Taxiway D ***ROM Cost = $415,272***

The full length rehabilitation of Taxiway D is anticipated during the long term based on the existing condition of the airfield pavement. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

Rehabilitate Taxilane E ***ROM Cost = $133,366***

The full length rehabilitation of Taxiway E is anticipated during the long term based on the existing condition of the airfield pavement. This project is eligible for up to 90 percent federal funding and five percent state funding assistance.

AIRPORT REVENUE SOURCES

With the LCPA taking over day-to-day operation of FMY in 1996, the airport essentially operates with two different cost centers. The Page Field Aviation Center (PFAC) cost center primarily consists of the components that fell under the purview of the prior fixed base operator. This cost center includes the revenue streams associated with most of the facilities in the south quadrant of the airport including the PFAC, the General Aviation Center, the t-hangars in the south quadrant of the airport, the aircraft maintenance shop, the bulk hangar, etc. This revenue stream directly supports the day-to-day costs of providing the services at the airport.

The Page Field Operating cost center encompasses the balance of facilities and land in the three remaining quadrants of the airport as well as the costs associated with maintaining the airfield and basic aviation infrastructure. This cost center relates more to the operation of the facility as a whole and accounts for the majority of revenues as well as the capital expenditures. It is this cost center that will be the primary component of the future expansion of facilities and from which the revenues outlined herein are directly related to.

As mentioned earlier, 1999 was the first year since 1982 in which FMY had a net operating surplus. This resulted from the considerable increase in revenue as the result of new leases that were started in 1999. The FY 1999 Page Field Operating revenues came from eight primary sources, four of which were land lease or facility lease related and accounted for 90 percent of the total airport revenues. Building rental was the largest of the income streams providing over 49 percent of the airport's total revenues. Land rental was the second highest accounting for 20 percent of revenues through various commercial sources and an additional 9 percent from the Depot 7 lease. Hangar rental accounted for 11.5 percent. Of the four non-lease related revenue streams, rental cars accounted for 4.6 percent and miscellaneous landing fees, provider permits and miscellaneous sources accounted for 2.5, 2.1, and .7 percent, respectively.

The future revenue streams at the airport will be influenced by a variety of factors. The primary factors include how quickly the construction of new leasable facilities is completed, the ability to attract and develop commercial use land, etc. and business cycles.

Airport Land Leases

Page Field currently generates revenue from five different airport parcels. Depot 7 occupies the northern half of the eastern quadrant of the airport and is used as an equipment and supply storage yard by the Lee County Department of Transportation. The Lee County Solid Waste facility, which is used as a collection point for household hazardous waste, occupies a parcel of land in the northern quadrant of the airport, northeast of the airport maintenance facility. Southern Machine leases a parcel of land in the eastern quadrant of the airport, which is partially occupied by their corporate hangar. The Experimental Aircraft Association also leases a small parcel in the eastern quadrant on which their facility is located. Finally, with construction completed near the end of FY 1999, the Page Field Commons commercial and retail development occupies the largest parcel of airport land under lease. The Page Field Commons parcel, located west of the primary airport parcel, was isolated from the contiguous airport property boundary with the extension of the Fowler Street connector.

Land leases, which accounted for revenues of $115,408 in FY 1999, are projected to increase to $354,528 in FY 2000, when Page Field Commons makes a full year of lease payments. Additionally, the Page Field Commons lease provides for the payment of additional revenues to the airport based on the net profit of the commercial development.

Projecting land lease revenues through 2020, a number of changes can be expected. Since Depot 7 currently occupies a site slated for short term t-hangar development, revenues from Depot 7 will not likely extend into FY 2001. Additionally, the Lee County Solid Waste facility will require removal in roughly the same timeframe to accommodate the expansion of the aircraft parking ramp and development of the new GA terminal and associated facilities. However, a number of land parcels have been identified with the potential to offset this loss.

Gulfshore Helicopters has signed a land lease to allow for the development of a helicopter storage hanger and offices at a site west of the PFAC.

Three parcels on the north side of the airport, two on the west and one on the southwest have the potential to be developed for non-aviation purposes. Each parcel has varying levels of attractiveness relative to location, access and infrastructure and a number of the parcels have already had a developer express interest in them. However, the implications and potential DRI requirements to allow development of these parcels may reduce the positive impact on the airport's revenue stream. This consideration is currently being further explored.

Airport Facility Leases

Revenues from building rents/leases has been fairly limited prior to 1999, with a single lease, accounting for $12,780 in 1998. This single lease was ABC Electric's lease of a building which occupies an airport owned parcel located south of Danley Drive. In 1999, the LCPA reconditioned a portion of the Page Field Commerce Center (former air carrier terminal) and starting leasing just over 24,000 ft² of space in the 64,000+ ft² facility to the Florida Department of Law Enforcement (FDLE). This lease resulted in an increase in building related gross revenues (the LCPA pays utilities, maintenance, etc.) to $194,411 in FY 1999. A further increase in total gross building rent/leases to $343,416 is projected for FY 2000 as FDLE makes the first full year of lease payments.

The primary opportunity to increase building related revenue would include leasing the remaining portion of the Page Field Commerce Center (PFCC). The PFCC has approximately 40,000 ft² of leasable space remaining beyond that which the FDLE has leased. This space has the generation potential of over $500,000 in additional gross revenues if leased at the same rate as the FDLE portion of the building.

The existing cargo building also has the potential to generate additional rental revenues for the airport. The condition and age of the building may require some minimal level of improvement and maintenance depending on the intended use. The LCPA has already repainted this facility and sealed the roof. NIC leases one bay at $3.25 ft² with an option for two more. All improvements relative to NIC are their responsibility.

Hangar Rental

The 16 single t-hangars and 2 cabin class t-hangars located in the east quadrant of the airport fall in the Page Field Operating cost center. These hangars generated revenue of $45,450 in FY 1999, up from $29,213 in FY 1998.

The short term development program provides for the construction of 48 single t-hangars and two cabin class hangars to be developed in two phases in the east quadrant of the airport. The short term program also includes construction of 8 shade hangars in the same quadrant. Both the intermediate and long term development programs include construction of an additional 32 single hangars each. The intermediate term hangars will be developed in the southeast portion of the airport, while the long term hangars will be developed in the south central area. Current t-hangar lease rates are $275 for single engine t-hangars and $325 for cabin class hangars.

Airport Land Sale

Four parcels at the airport are identified for potential land sale to generate additional revenues. Three of the four parcels were purchased in the early 1990's when the airport was considering an expansion to the south. This approach has since changed and the parcels, which are not located within the contiguous airport property boundary, are no longer required for airport development. Unless a good use for the land can be identified, the airport may wish to consider selling them to generate additional revenues for the development of the airport. If sufficient funds cannot be generated to justify the sale, it may be advisable to retain the parcels until a use can be determined.

The fourth parcel is located in the east quadrant, just north of the Lee Trans facilities. Lee Tran has expressed interest in purchasing land adjacent to their current site which was acquired from the airport in a similar transaction in the late 1980's.

It should be noted that proceeds from the sale of certain airport lands may be restricted for use in place of a portion of the federal funding share on an AIP eligible project.

Landing Fees

One of the user generated sources of airport revenues comes from the landing fees that are assessed on commercial aircraft operating at FMY. These fees, which do not apply to non-commercial public or training activity, accounted for $9,902 in revenues in FY 1999, down from $12,677 in FY 1998. However, increasing activity at the airport is expected to increase this component of revenues as well.

FIS Fees

A new general aviation Federal Inspection Station (FIS) will represent a considerable service enhancement for GA pilots on the west coast of Florida. However, establishment of such a facility may require the imposition of user fees to offset the construction and operating costs of this facility. These fees may be imposed by Federal agencies, the Authority or both. Fees imposed by Federal agencies would be retained by them and would not be available for investment into FMY.

Rental Car Fees

Rental car fees are privilege fees assessed to the rental car operators for the right to provide services to users of the airport. This fee allows the airport to recover some revenue from commercial users who achieve some benefit from the airport facilities. Rental car fees totaled $19,216 in FY 1999, up from $18,009 in FY 1998. FY 2000 projections for this category of revenue are $20,200.

Provider Permits

Provider permits are basically licensing fees to entities that utilize the airport facilities for commercial use. It basically confers the rights to conduct business using airport property. These miscellaneous fees totaled $8,325 in FY 1999, down from FY 1998 revenues of $12,645. Although it can be expected that these fees will increase as activity at the airport does, considerable fluctuation between FY 1998 and FY 1999 initially indicates the opposite.

Net Surplus from the Operation of the PFAC

The net surplus from the operation of the PFAC is a potentially major category of revenues to that can assist in offsetting the cost of operating the airport as well as providing for additional investment in airport facilities. The PFAC operation generates revenues from a number of sources including building and office leases, t-hangar leases, fuel flowage revenues and other revenues associated with the services provided as part of the PFAC

operation. Maintaining an efficient operation will improve the potential for growth of the net surplus revenues associated with this facility as activity at the airport increases.

Other

Other revenues include miscellaneous one time revenues for use of airport facilities, etc. The revenues from miscellaneous sources were almost identical in FY 1998 and FY 1999 accounting for $3,056 and $3,055, respectively.

AIRPORT OPERATING & MAINTENANCE EXPENDITURES

In FY 1999, FMY had a total operating and maintenance cost of $697,886, a 13 percent increase from FY 1998 expenditures of $617,508. Expenditures at FMY are broken into two primary categories, personnel expenditures and "other". In FY 1999, personnel expenditures accounted for 62 percent of the total airport expenditures, down from 74 percent in 1998, with "other" accounting for the balance.

Personnel Expenditures

Personnel expenditures at FMY, totaling $436,175 in FY 1999, fall into three groups which include administration, development, and aviation services. Of these, aviation services accounts for the majority of expenditures with $338,286 in FY 1999. In the same fiscal year, development and administration account for $55,064 and $42,825, respectively.

Other Expenditures

Other expenditures at FMY, accounting for $261,711 in FY 1999, fall into four groups which include material/supplies, contract maintenance, utilities and "other". Material/supplies accounted for the greatest expenditure of these groups in FY 1999, with an outlay of $131,990. The balance of expenditures was split between utilities, "other", and contract maintenance accounting for $91,631, $30,823, and $7,267, respectively.

Appendix A – Tenant/User Survey

INTRODUCTION

To ensure that the desires of the users of Page Field were adequately reflected in the Master Plan Update, a survey was distributed to pilots tenant and users early in the master plan process. The survey, which includes questions to provide insight into the users, shortfalls and strengths of Page Field, was forwarded to approximately 400 users, of which approximately 114 responses were received. Each response was compiled and tabulated and a summary of the results is provided in the attached exhibits.

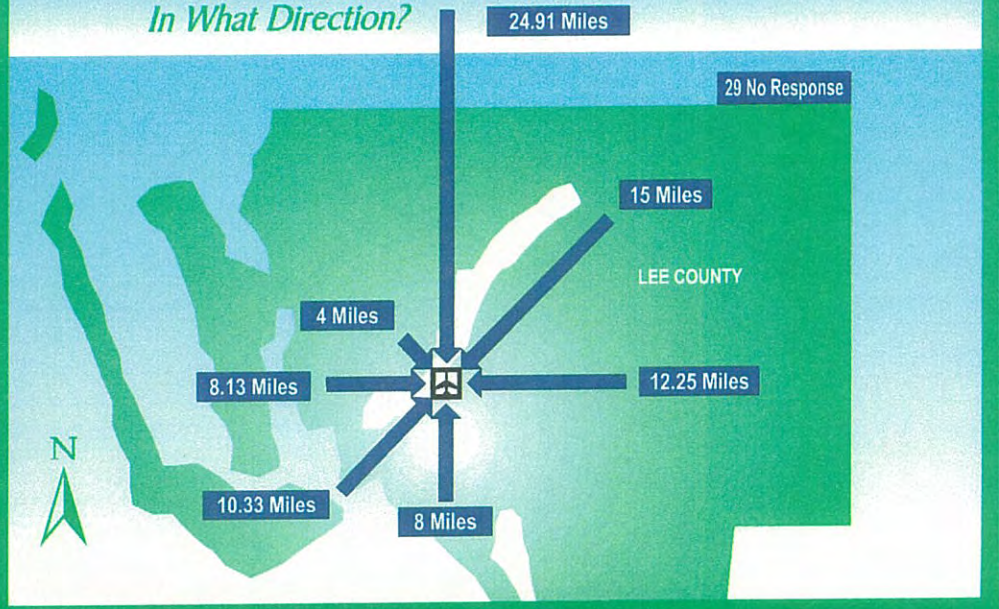
Subsequent to this survey, two workshops were held with the tenant and user groups at the airport. The first, on Wednesday, December 8, 1999, provided an overview of the user survey and detailed forecasts, facility requirements and alternatives analyzed to date. Comments and suggestions relative to this meeting were reviewed and incorporated into the overall plan as required. A second follow-up workshop took place on Wednesday, February 16, 2000 in which each comment stemming from the first workshop was addressed to identify how or if it was incorporated into the final development plan for the airport. At the conclusion of this meeting the Page Field Association (the group that represents Page Field's tenants and users) unanimously voted to endorse the final plan.

Pilot Survey Overview

Number of Respondents By Direction

How Many Miles Do You Live From Page Field?

In What Direction?

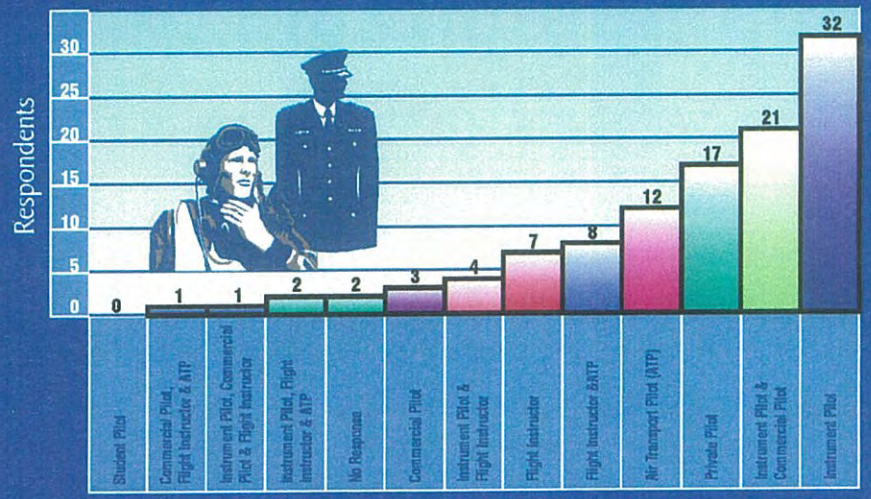


Lee County Port Authority

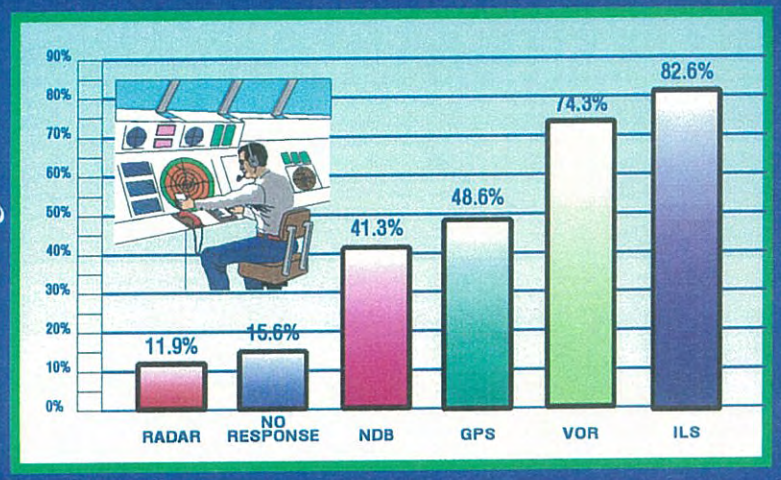
Page Field
General Aviation Airport

Pilot Survey Overview

What type of Pilot Certificate and Rating do you hold?



What Instrument Approaches Do You Use?

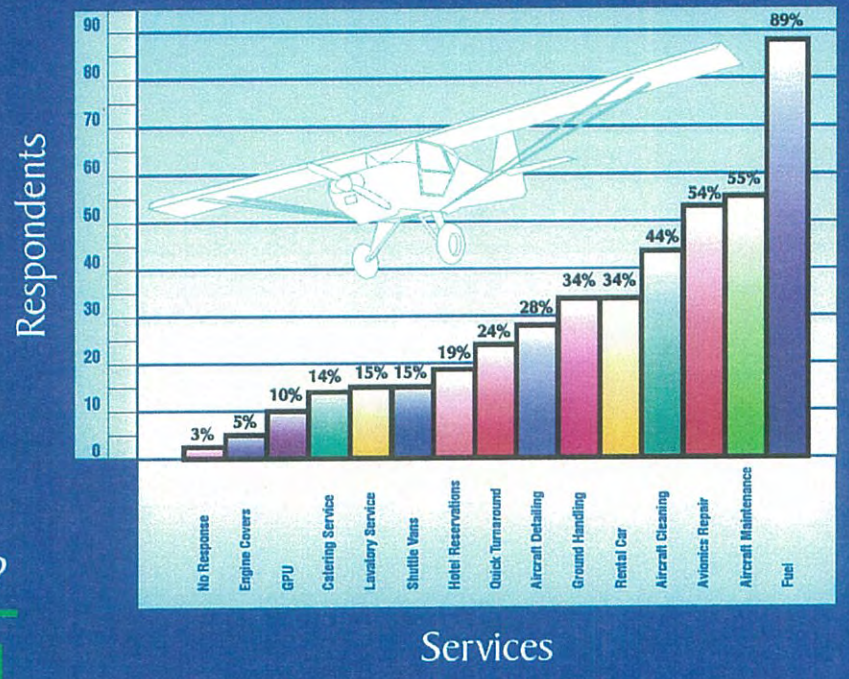


Lee County Port Authority

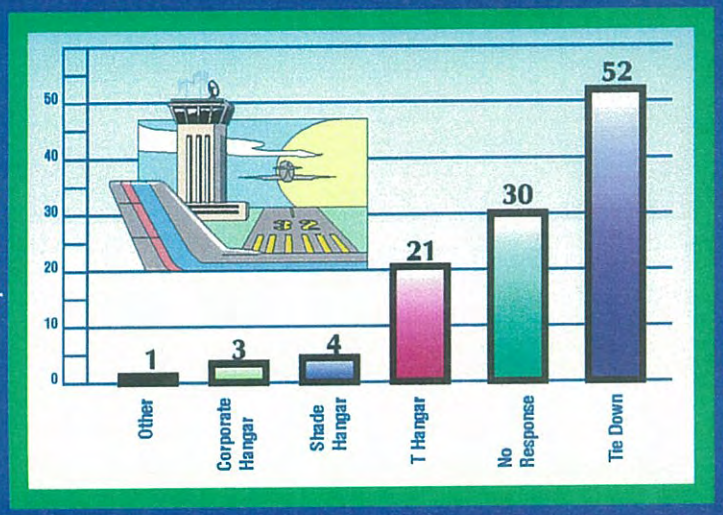
Page Field
General Aviation Airport

Pilot Survey Overview

What Aircraft Pilot Services would you use at Page Field?



How Is Your Aircraft Stored At Page Field?

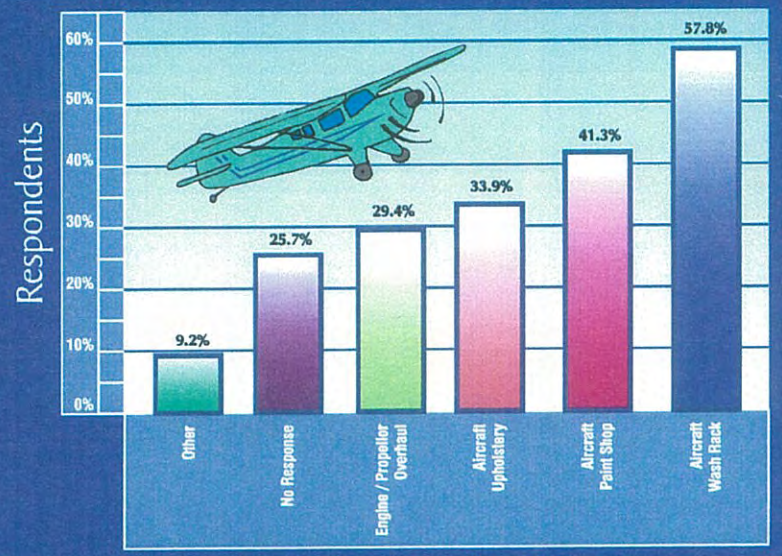


Lee County Port Authority

Page Field
General Aviation Airport

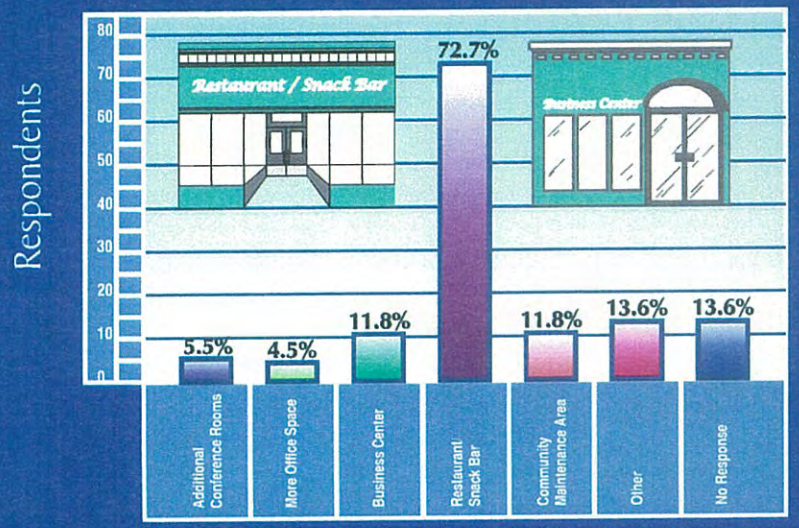
Pilot Survey Overview

What type of Maintenance Facilities would you like to see developed at Page Field?



Maintenance Facilities

What other type of Facilities would you like to see developed at Page Field?



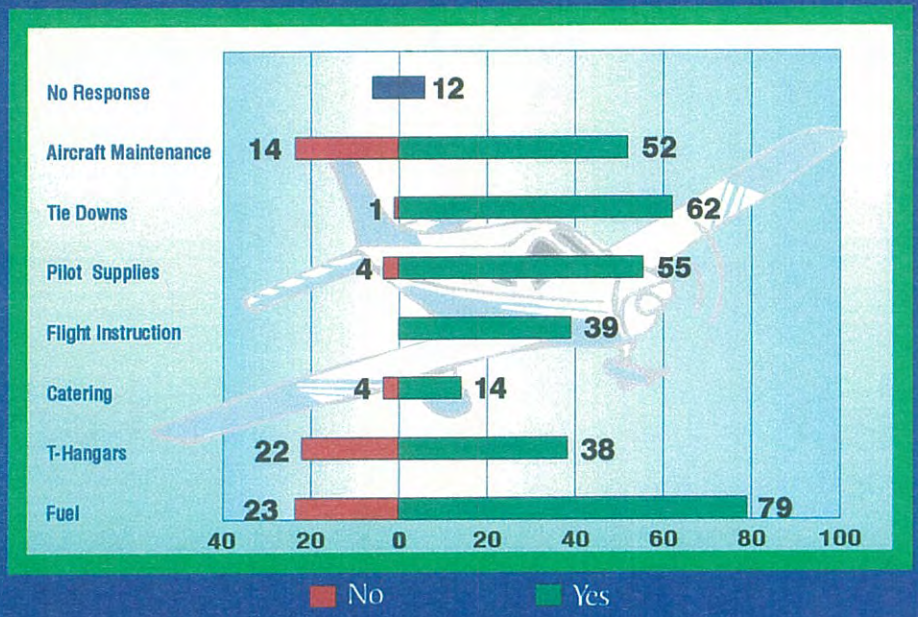
Facilities

Lee County Port Authority

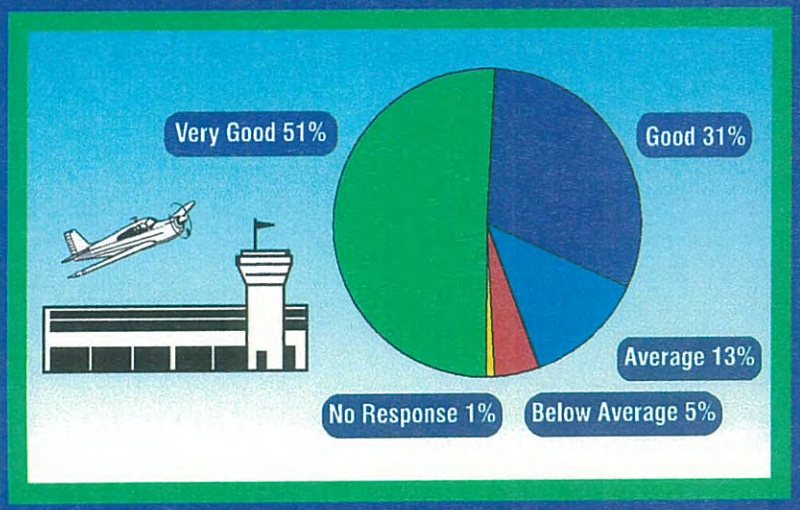
Page Field
General Aviation Airport

Pilot Survey Overview

Do You Feel the Goods and Services at the Airport Are Priced Competitively?



How Would You Rate Page Field Overall?



Lee County Port Authority

Page Field
General Aviation Airport

Pilot Survey Overview

Comments

"The changes that have occurred so far are wonderful. I brag to everyone what a great facility you have!"

"I think its great... New Tie-Downs... New T-Hangars ... we need to continue with the present trend."

"This airport will attract more corporate business to the area with the current positive direction that you are going. Thanks for your interest in aviation."

"Need more inexpensive T-Hangars."

"Our facilities are really starting to take shape."

"We need good quality hangar space fairly priced."

"Lower fuel prices"

"The Aviation Center has provided us with excellent courteous service."

"Friendly, trained staff willing to help."

"Excellent FBO."

"The lack of available hangar space is the main problem I have at Page."

"I have kept my airplane on the FBO property since 1981 and through many owners, The line crew is tops in my opinion."

"We need a nice restaurant at the field, everything else is excellent."

"For six years I have wintered at FMY. This facility is a pilot's dream."

Lee County Port Authority
Page Field
General Aviation Airport

Appendix B – Runway Safety Area Assessment

I. INTRODUCTION

In October 1999, the Federal Aviation Administration (FAA) adopted the Runway Safety Area Program (FAA Order 5200.8) requesting that all Runway Safety Areas (RSA) at airports certified under 14 CFR Part 139 conform to the standards set forth in AC 150/5300-13 Change 6, Airport Design, to the extent possible. As part of the Page Field Master Plan, the Lee County Port Authority was requested to conduct a more detailed runway safety area (RSA) assessment to ensure all options for compliance have been thoroughly considered.

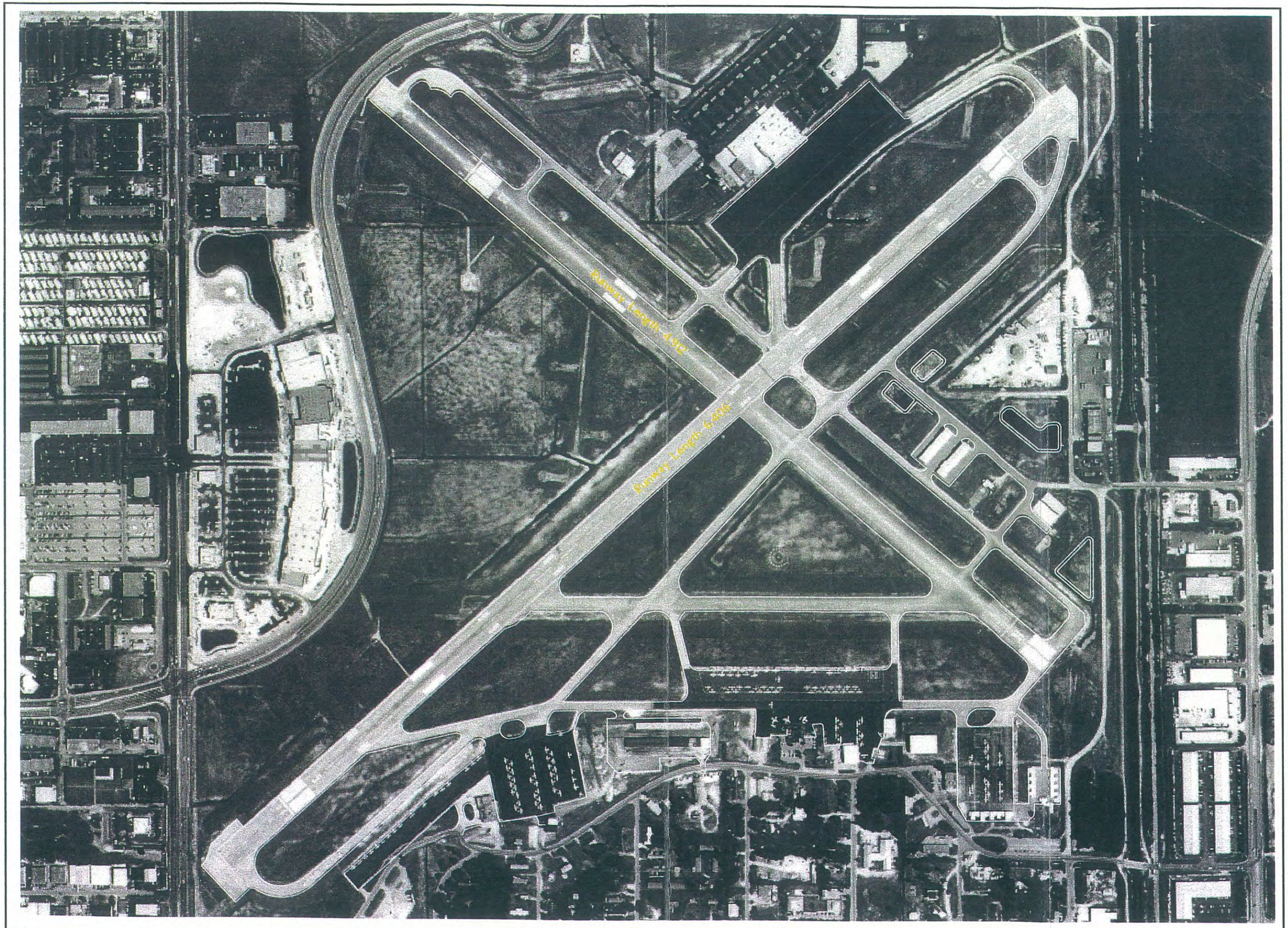
FAA regulations require airports to provide a safety area for every runway and taxiway. Runway safety areas (RSAs) reduce the hazard of structural damage to aircraft that deviate from runway surfaces. As aircraft have become larger and faster, dimensional standards for RSAs have increased in order to maintain an adequate level of safety. This text will identify the RSA requirements specific to each of the four runway ends and will identify which ends currently comply with RSA criteria and which do not. For those that do not comply with RSA criteria, a more detailed discussion will be provided relative to any existing waivers that may be in place and the extent to which the existing conditions do not comply. Where it has been determined that Page Field currently does not comply, alternatives will be identified and assessed to determine if there is a reasonable means of providing or improving compliance.

II. RSA INVENTORY, REQUIREMENTS & INITIAL DETERMINATION

Page Field General Aviation Airport is a two-runway general aviation "reliever" designated airport located 5 miles south of the City of Ft. Myers. It currently serves as the only reliever designated airport in southwest Florida. The Airport is bounded by Danley Drive to the south, the Ten Mile Canal and Seminole Gulf Railroad to the east, Airport Road to the north, and Fowler Street and U.S. 41 to the northwest and west. The Airport's two runways, 5-23 and 13-31, cross near their respective midpoints forming an "X" which separates the Airport into four quadrants (see **Exhibit 1**).

Runway 05-23, 6,406 feet in length, is the Airport's primary use runway with the majority of arrival and departure activity occurring on Runway 05 from the southwest to the northeast. The Runway 05 threshold is displaced by 459 feet, and the Runway 23 threshold is displaced by 399 feet. Runway 05 is equipped with both a localizer and glideslope and, although lacking an approach lighting system (ALS), provides the lowest approach minimums available at the Airport. This runway is classified as a Category C, Design Group III runway that accommodates aircraft with approach speeds up to 141 knots and wingspans up to but not including 118 feet. Runways serving airplanes of Category C, Design Group III, the design category and group of Runway 5-23, are required by the FAA to have a RSA 500 feet wide extending 1,000 feet in length beyond the runway end. Currently the runway does not comply with the regulation at either runway end and a waiver was issued by the FAA in 1989 relative to this (attachment RSA-1). Factors inhibiting compliance for the approach end of Runway 05 include a blast fence, 143 feet off the end of the runway, a six-lane highway 300 feet off of the Runway end along the extended runway centerline, and a commercial land site approximately 500 feet off the Runway end along the extended runway centerline. Factors restricting compliance for the approach end of Runway 23, include a canal approximately 435 feet off the Runway end along the extended runway centerline and railroad tracks approximately 620 feet from the end of the Runway along the extended runway centerline.

Runway 13-31, 4,912 feet in length, is the Airport's secondary runway, serving only smaller general aviation aircraft. Runway 13-31 was previously classified in the prior master plan as an Airport Design Group C-III as well, but was shortened due to the construction of the Fowler Street extension. In reviewing the available runway length and aircraft utilizing Runway 13-31 it was determined during the 2000 Master Plan Update that the runway was no longer sufficient to warrant a C-III classification. As such, this facility was downgraded to a Category B-II classification. The requirements for Runways 13-31 are less stringent as the aircraft operating on those runways are of a smaller category and group. Because of this, the RSAs are required to be 150 feet wide and extend 300 feet from the runway ends. The nearest obstacle off the end of Runway 31 is a blast fence located 710 feet from the Runway 13 threshold. The nearest obstacle for Runway 13 is the canal located 576 feet off the end of the runway. Therefore, no waivers are needed, nor are any changes required, for Runway 13-31 as each of the RSAs comply with current regulations.



Lee County Port Authority

Page Field
General Aviation Airport

Birk Hillman

Orlando · Miami · Atlanta
6751 Forum Drive, Ste. #240, Orlando, FL 32821

PAGE FIELD AIRPORT RSA

Fort Myers, Florida

EXISTING CONDITIONS

NO.	DATE	REVISION

DATE:	JUNE 2001
PROJECT NO.	C0460101
DESIGNED BY:	JH
DRAWN BY:	JH
CHECKED BY:	SR

EXHIBIT

1

Table 1 summarizes the RSA requirements and compliance of each runway end.

Table 1 – Existing RSA Requirements and Compliance

Runway End	Design Group	RSA Width Required	RSA Length Required (beyond runway end)	Does the existing RSA currently comply	Notes
Runway 5	C-III	500'	1,000'	No	1989 Waiver
Runway 23	C-III	500'	1,000'	No	1989 Waiver
Runway 13	B-II	150'	300'	Yes	
Runway 31	B-II	150'	300'	Yes	

The remaining sections of the report will review alternatives for the improved compliance of the Runway 05 and Runway 23 ends.

III. IDENTIFICATION OF ALTERNATIVES

Five alternatives were identified in addressing compliance with the RSA requirements for the Runway 05 and Runway 23 end. While some of the alternatives allow for full compliance, others provide a step improvement in an attempt to improve upon the existing conditions. By addressing a full range of options, the operational and economic feasibility of each can be better understood. The alternatives identified for further consideration as part of this analysis are as follows:

1. The relocation, shifting or realignment of the roadway, canal and railroad that currently constrain Runway 5-23.
2. The reduction of the runway length where the existing runway length exceeds that which is required for the most demanding of aircraft visiting Page Field regularly over the past five years.
3. The use of Declared Distances to shorten the runway length without physically removing pavement so that the RSA can comply with the requirements.
4. The use of the Engineered Materials Arresting Systems (EMAS) off the approach end of Runway 23 to gain the maximum RSA area possible.
5. The "Status Quo Approach" or do nothing alternative. As the impacts both economically and operationally are such that this alternative may be the only feasible option.

Each of these alternatives are further detailed as follows:

Alternative #1 – Relocate U.S. 41, Ten Mile Canal and Seminole Gulf Railroad

The first alternative considers the relocation, shifting or realignment of U.S. 41, the Ten Mile Canal and the Seminole Gulf Railroad in efforts to provide a standard RSA for each runway end while maximizing the ability to utilize the full 6,406' of the existing runway.

Runway 05 End

Exhibit 2 depicts the rerouting of approximately 2,750 lineal feet of the major six-lane arterial, US 41, to modify the Runway 05 RSA. It is estimated that this relocation would require acquisition of at least 22 acres of land. This land primarily functions as commercial use and is the site of approximately 25 commercial and 2 residential structures. To minimize the estimated cost of the relocation, this analysis assumes that the Fowler Street intersection would not require relocation/reconfiguration and that, to the south of the relocated section of roadway, the bridge over the canal would be maintained in its existing location. Further analysis may determine that this relocation is inadequate to provide for the speed and curve requirements for the given roadway section. This would likely result in additional land requirements thereby increasing the cost of this option.

This process could achieve the 1,000 feet of obstacle free clearance required of the RSA for the approach end of Runway 05.

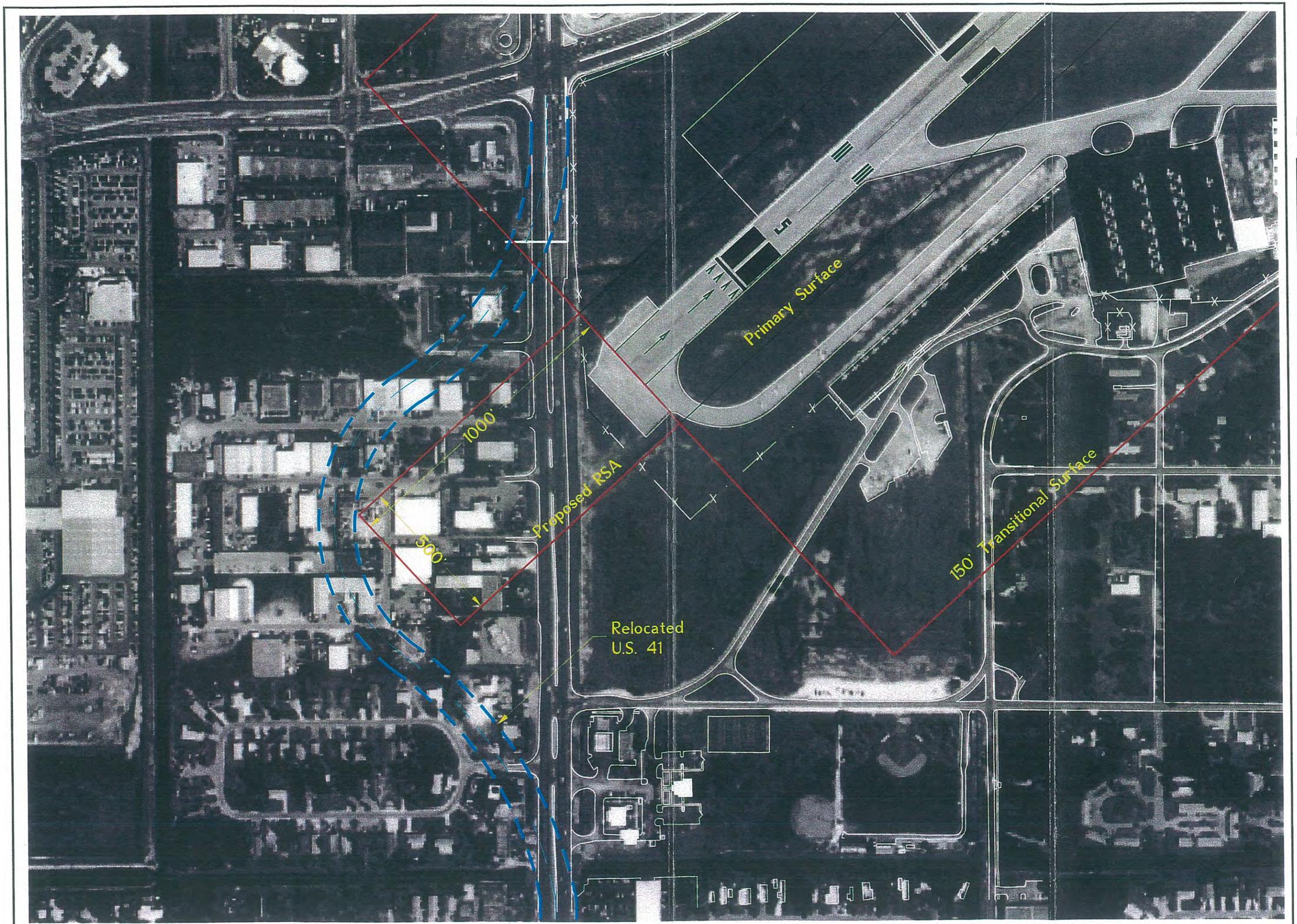
Runway 23 End

Exhibit 3 outlines potential modifications to the Runway 23 end. Shifting the location of the Ten Mile Canal can only be accomplished if the Seminole Gulf Railroad is realigned as the two parallel each other and are only separated by a distance of approximately 90 feet (varying). Relocation of both the Ten Mile Canal and Seminole Gulf Railroad would require land acquisition of approximately 50 acres of undeveloped commercial land for which development plans are pending. Another alternative to shifting the location of the canal is to culvert the canal in the section located within the RSA. This would entail placing drainage pipes in the canal and then provide fill over the pipes to make a level and reinforced surface capable of supporting an Aircraft Design Group C, Category III aircraft. By culverting alone, the Airport would achieve an incremental gain of 184 feet of RSA off the departure end of Runway 05, the most widely utilized runway at FMY.

Assuming that the Canal will be culverted or realigned, rerouting the railroad will still be required to provide a full RSA. This process would include the clearing of land needed for the new track, the laying of the new track and the demolition or removal of the unusable track segment. Once this process is complete, full compliance of the RSA 1,000 foot obstacle free clearance will be provided for the approach end of Runway 23.

Alternative #2 – Reduce Runway Length

This alternative considers the reduction in usable runway length as required to provide the minimum 1000'RSA replacement. It then considers various aircraft types currently operating or anticipated to operate at the airport and determines whether the reduction will result in a potential operational impact. Runway 5-23 is currently 6,406 feet long. To provide the 1,000' RSA areas would require a reduction in usable length by 1,787 feet or 1,005 feet from the approach end of Runway 05 and 782 feet from the approach end of Runway 23 (see **Exhibit 4**). The resulting 4,619 foot long runway then must be reviewed relative to the types of aircraft in the general aviation fleet.



Page Field
General Aviation Airport

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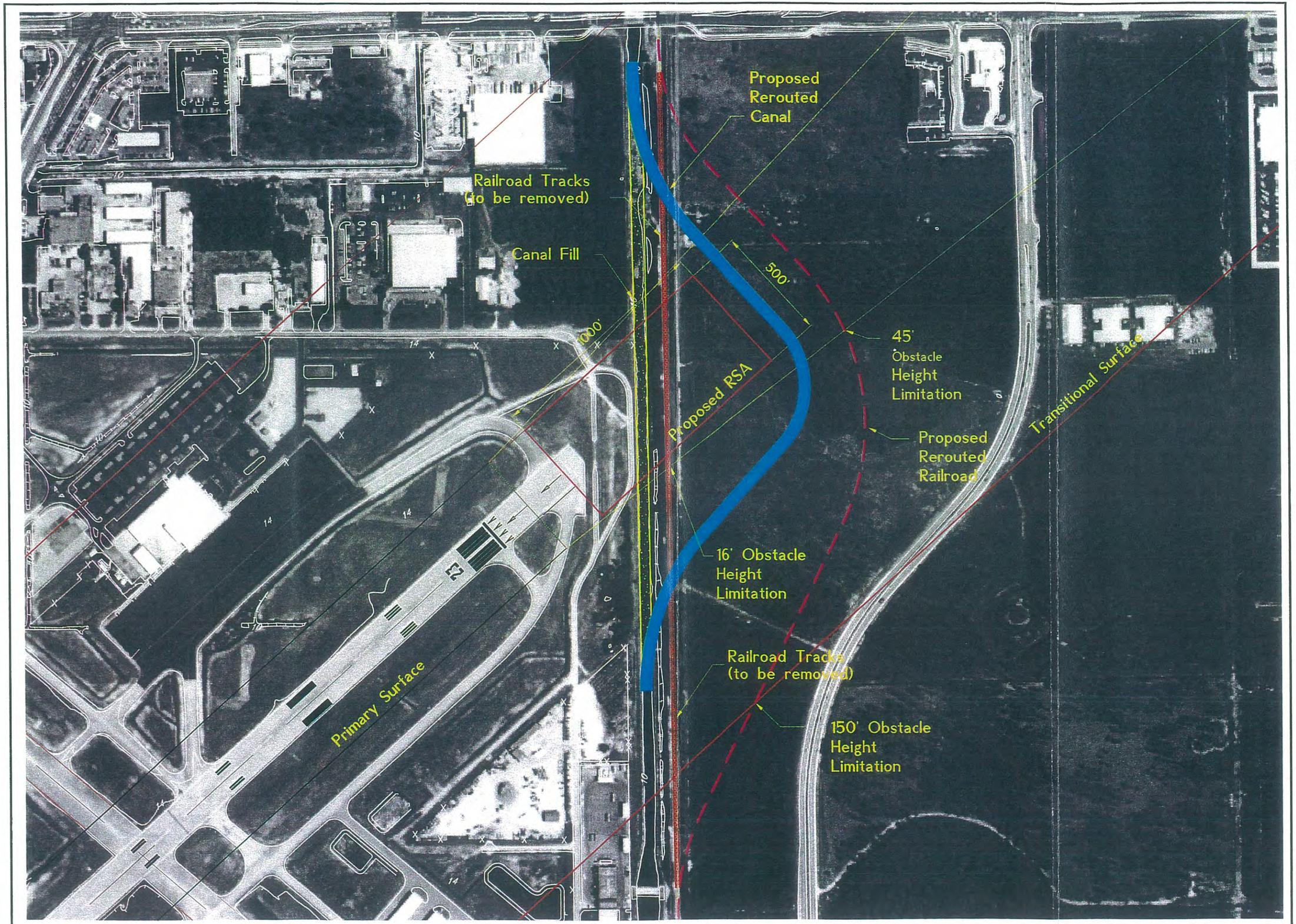
PAGE FIELD AIRPORT RSA
Fort Myers, Florida

ALT 1: U.S. 41 ROADWAY RELOCATION

NO.	DATE	REVISION

DATE:	JUNE 2001
PROJECT NO.	C0460103
DESIGNED BY:	JH
DRAWN BY:	JH
CHECKED BY:	SR

EXHIBIT
2



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General Aviation Airport

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6751 Forum Drive, Ste. #240, Orlando, FL 32821

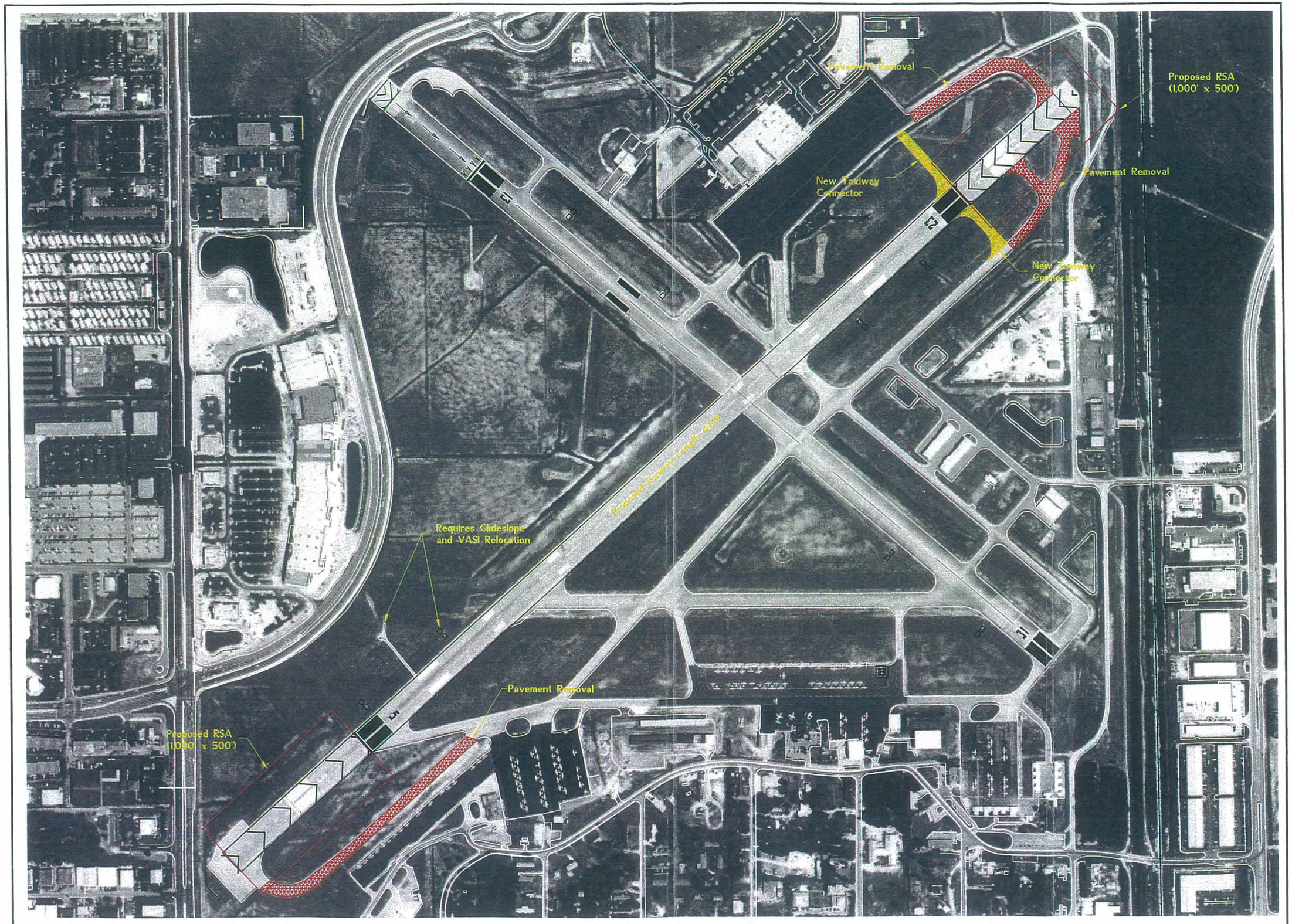
PAGE FIELD AIRPORT RSA
Fort Myers, Florida

ALT 1: CANAL AND RAILROAD RELOCATION

NO.	DATE	REVISION

DATE:	JUNE 2001
PROJECT NO.	C0460103
DESIGNED BY:	JH
DRAWN BY:	JH
CHECKED BY:	SR

EXHIBIT
3



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PAGE FIELD AIRPORT RSA
Fort Myers, Florida

ALT 2: REDUCE RUNWAY LENGTH

NO.	DATE	REVISION

DATE:	JUNE 2001
PROJECT NO.	C0460101
DESIGNED BY:	JH
DRAWN BY:	JH
CHECKED BY:	SR

EXHIBIT
4

Table 2 outlines some of the aircraft found in the fleet today or that have utilized Page Field over the past few years. The runway lengths are based on the performance characteristics specified by each aircraft manufacturer, and have been adjusted for various takeoff weights. The runway length analysis assumed a temperature of ISA plus 30 degrees Fahrenheit, and did not factor in runway slope or surface winds.

Table 2
Runway Length for Selected Aircraft
Page Field Airport

Aircraft & Engine Types		Takeoff Weight	Runway Length in Feet
Falcon 2000	CFE738-1-1B	35,800 lbs.	5,800
Falcon 2000	CFE738-1-1B	31,000 lbs.	4,700
Falcon 900	TFE731-3	45,500 lbs.	5,500
Falcon 900	TFE731-3	34,000 lbs.	3,200
GulfstreamIII	MK511-8	69,700 lbs.	5,600
GulfstreamIII	MK511-8	58,000 lbs.	4,100
GulfstreamIV	MK611-8	73,600 lbs.	7,100
GulfstreamIV	MK611-8	65,000 lbs.	5,200
GulfstreamIV	MK611-8	63,000 lbs.	4,900
GulfstreamV	BR710	86,000 lbs.	6,300
GulfstreamV	BR710	77,000 lbs.	4,700
Learjet 55	TFE731-3A-2B	21,500 lbs.	6,400
Learjet 55	TFE731-3A-2B	18,000 lbs.	4,000
Challenger 604	CF34-3B	47,600 lbs.	6,550
Challenger 604	CF34-3B	42,850 lbs.	5,800
Challenger 604	CF34-3B	41,000 lbs.	5,000
Sabreliner 80	CF700	24,000 lbs.	6,950
Sabreliner 80	CF700	20,000 lbs.	4,500
Sabreliner 65	TFE 731	20,000 lbs.	4,800

Analysis was based on 90° F, zero runway slope and zero wind

Table 2 confirms that business jets typical of the based and itinerant fleet using Page Field are faced with having to limit fuel and payloads in order to operate from the airport if a reduction in runway length is opted. Currently these aircraft do not operate under these restricted conditions and the reduction in runway length would likely impact local businesses and operators.

Alternative #3 – Declared Distances

This alternative considers the use of Declared Distances to provide RSA compliance while minimizing the actual loss of usable pavement. A compatible RSA can be established by adjusting the thresholds and distance calculations to provide the 1,000 feet clearance from the closest obstruction. This will also require that runways be re-stripped, that runway lighting be changed and that distance-to-go signs be changed. The ILS glideslope and VASIs would also need to be relocated based on the new operational areas. To comply with the RSA standards, the landing distance available (LDA) for both runway configurations would need to be reduced to 4,619 feet. The accelerate-stop distance available (ASDA) for Runway 5 would be 5,624 feet.

The ASDA for Runway 23 would be 5,401 feet. The takeoff distance available (TODA) and takeoff roll available (TORA) would be 6,406 feet for operations in both directions. **Exhibit 5** outlines the changes required to implement this alternative.

Alternative #4 – Engineered Materials Arrest System (EMAS)

A fairly recent concept that is helping airports address RSA problems is the use of an Engineered Materials Arresting System (EMAS). Engineered Materials are defined as high energy absorbing materials of selected strength, which will reliably and predictably crush under the weight of an aircraft. While EMAS does not replace having a standard RSA, it can be used as an effective strategy to improve safety over current conditions. Different EMAS are selected for runways serving different classes of aircraft. In other words, an EMAS for a runway serving Category D aircraft would be designed to crush under the weight of category D aircraft, where an EMAS for a runway with the critical aircraft being a Category C would be designed to crush under the weight of that design aircraft. Standards for planning, design, and installation of EMAS found in AC 150/5220-22 are included as an attachment to this report.

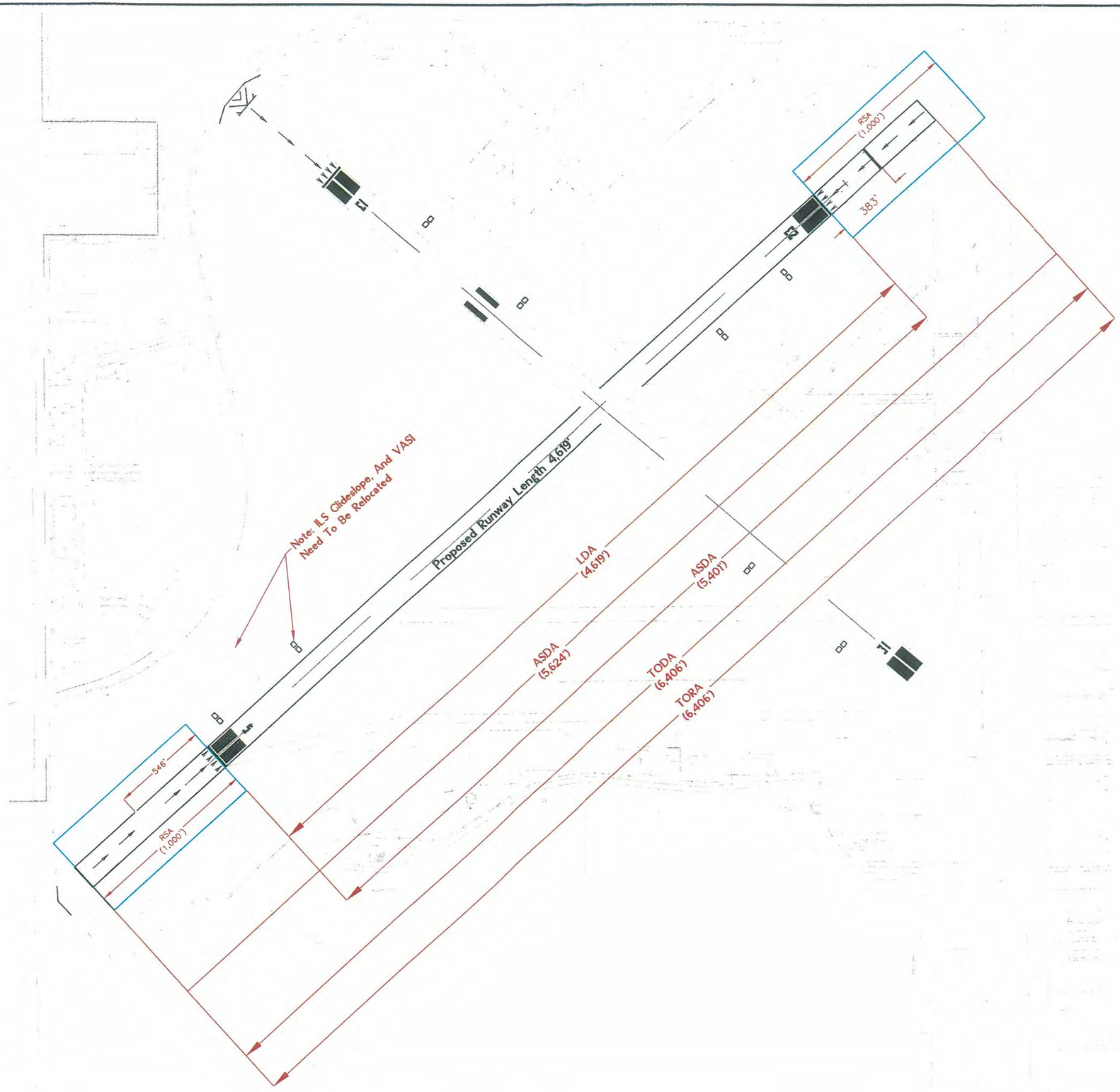
Safety of the runway ends with an installed EMAS can be enhanced. The calculated stopping distance of a McDonnell Douglas DC-9, a C-III design category aircraft, exiting a runway at 70 knots with the help of an EMAS is approximately 350 feet. All aircraft using Runway 05-23 are smaller based on design characteristics than a DC-9 and it is unlikely that an aircraft overshooting the runway would be at a speed faster than 70 knots. This demonstrates that a couple hundred feet of EMAS is an option for stopping aircraft that overshoot the runway. Please see **Figure A1-1**. (AC 150/5220-22 Appendix 1 Figure A1-1).

This alternative, outlined in **Exhibit 6,** can be combined with culverting the Ten Mile Canal to provide an additional improvement in safety relative to the Runway 23 end. The culverting of the canal would gain 163 feet in real safety area. The EMAS would be installed at the same width as the runway for a distance of 350 feet along the extended runway centerline. As indicated prior, although it does not meet the FAA's standards for RSA compliance, it does provide a step improvement in safety and an incremental gain in the total length of the RSA.

Alternative #5 – Status Quo Approach

The last approach is the "Status Quo" approach, as the operational and economic impacts of the previously mentioned alternatives may be such that this alternative may be the only reasonable option. The "status quo" option consists of maintaining the existing Runway 5-23 waiver, which allows for reduced compliance with current RSA requirements due to the type of aircraft, the level of activity by such aircraft and the critical nature of the existing configuration relative to the Airport's critical function in the region.

The attributes and drawbacks of each of the alternatives are further explored in the following section of the report.



Lee County Port Authority

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PAGE FIELD AIRPORT RSA

Fort Myers, Florida

ALT 3: DECLARED DISTANCES

REVISION	NO.	DATE

DATE:	JUNE 2001
PROJECT NO.	C0460101
DESIGNED BY:	JH
DRAWN BY:	JH
CHECKED BY:	SR

EXHIBIT

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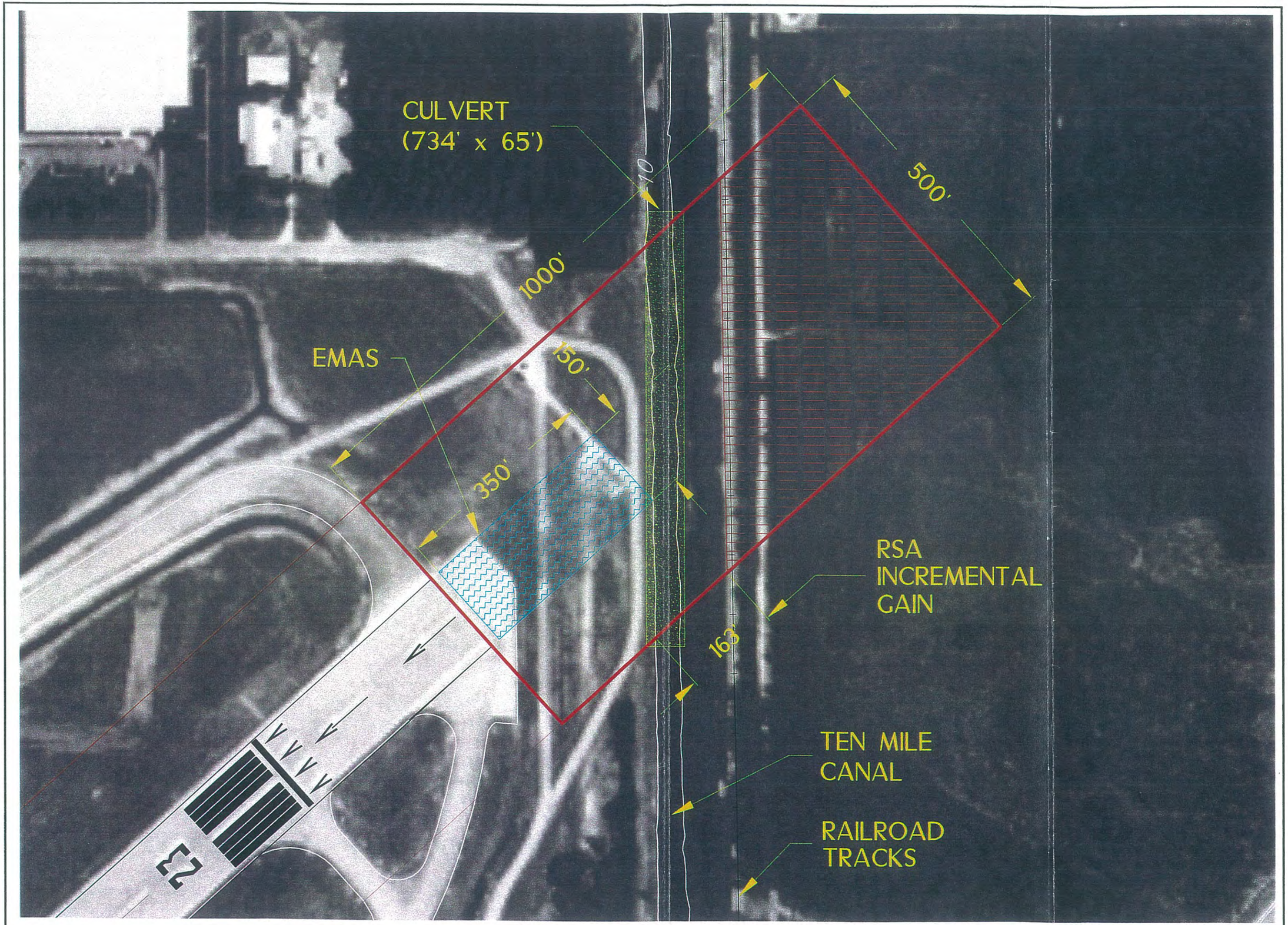

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PAGE FIELD AIRPORT RSA
Fort Myers, Florida

ALT 4: EMAS/CANAL CULVERT

NO.	DATE	REVISION

DATE:	JUNE 2001
PROJECT NO.	C0460103
DESIGNED BY:	JH
DRAWN BY:	JH
CHECKED BY:	SR

EXHIBIT
6

IV. ASSESSMENT OF THE ALTERNATIVES/BASIS OF DETERMINATION

Now that alternatives have been identified, it is necessary to evaluate the pros and cons, and rough order of magnitude (ROM) of each. This includes considering areas of concern such as operational, environmental or economic impacts of each alternative.

Assessment of Alternative #1 – Relocation of U.S. 41, Ten Mile Canal and Railroad

US 41 is one of the heaviest traveled sections of roadway in Lee County acting as a major north-south connector between the City of Ft. Myers and Naples. With the development of Page Field Commons and a major effort focussing on commercial redevelopment and improving the business climate in the immediate area, commercial land values along US 41 in the vicinity of Page Field have increased sharply in recent years.

Pros:

- Provides a fully compliant Runway Safety Area at each runway end.
- Would provide a portion of the land required for installation of an approach lighting system for Runway 5.
- Culverting the Ten Mile Canal and relocating the Seminole Gulf Railroad could be accomplished coincidentally.
- Provides best operational capabilities.

***Cons*:**

- A minimum of roughly 2,750 lineal feet of major six lane arterial roadway and 3,850 lineal feet of railroad track would require relocation. Further relocation may be required to accommodate proper layout for road and railway design speeds.
- The Ten Mile Canal would need to be culverted or shifted.
- Shifting of the Ten Mile Canal and Seminole Gulf Railroad cannot be accomplished coincidentally, potentially increasing operational impacts during construction.
- Requires acquisition of at least 22 acres of developed commercial and residential land and approximately 50 acres of undeveloped commercial land for which plans are pending.
- The acquisition process for the land would likely require considerable time and the value of the land will likely continue to increase.
- Culverting of the Ten Mile Canal could have considerable operational impacts.
- The Runway 5 localizer would require relocation outside the RSA.
- This is the most expensive of any of the Alternatives.
- The curves of both the railroad and roadway are shown as best case scenarios. Actual radius of curves may have to be larger, and may require a reduction in rail and motor vehicle speeds.

Alternative 1 ROM Costing

	Cost Item	Units	Unit Price	Cost
Runway 05				
	Acquire Land	22 ac.	$500,000	$11,000,000
	Business Impact Relocation	410,000 ft²	$95	$39,000,000
	Building Demolition	200,000 ft²	$25	$5,000,000
	Relocate Utilities	2,750 lf	$90	$247,500
	Relocate Roadway	2,750 lf	$300	$825,000
	Roadway Demolition	2,000 lf	$40	$80,000
	Contingency		*15%*	$8,422,875
			Total	**$64,575,375**
Runway 23				
	Acquire Land	50 ac.	$74,052	$3,702,600
	Clearing / Grubbing	12 ac.	$3,000	$36,000
	Relocate Railroad	3,825 lf	$250	$956,250
	Relocate Canal	ls	$1,200,000	$1,200,000
	Fill Canal and Grade RSA	ls	$200,000	$200,000
	Relocate Localizer	ls	$500,000	$500,000
	Contingency		*15%*	$989,228
			Total	**$7,584,078**
			Total (both runway ends)	***$72,159,453***

Note: Culverting the canal rather than relocating it would have an estimated cost of $800,000.

In summary, Alternative #1 would fully satisfy FAA requirements regarding RSAs and provide the greatest operational benefit. However, this alternative would also have considerably greater cost, ranging from $65 to $71.5 million higher than any of the other alternatives. The unit prices used for the land acquisition for all of the alternatives and business impact relocation were obtained from a local property appraiser working for the Lee County Port Authority. All other costs are an engineering rough order of magnitude estimate.

Assessment of Alternative #2 – Reduction of Runway Length

The pros, cons and ROM costs for this alternative are as follows:

Pros:

- Provides full RSA compliance for both runway ends.
- Does not require any additional land purchase.
- Relocating threshold provides for less of an impact to existing approach surface penetrations.

Cons:

- Since departures would start farther down the runway, less runway length would be available if a problem were to occur. As such, this doesn't necessarily result in a safer operation.
- Considerable existing usable pavement is lost.
- The resulting length would restrict the ability of some aircraft that regularly use the airport from continuing to operate.
- Alternative still costs in excess of $1 million.

- Potential for substantial economic impacts to the airport as it will not be able to serve large segments of business jet aircraft.

Alternative 2 ROM Costing

Cost Item	Units	Unit Price	Cost
Runway Markings	ls	$70,000	$70,000
Reconfigure Runway Lighting	ls	$50,000	$50,000
New Connector Taxiways	2,750 yd²	$110	$302,500
Demo Taxiways	17,556 yd²	$15	$263,340
Relocate Glideslope	ls	$500,000	$500,000
Contingency		*15%*	$177,876
		Total	***$1,363,716***

In summary, reducing the runway length would bring Runway 5-23 into full compliance with RSA requirements. However, safety would not necessarily be enhanced if this alternative were applied as the safety of aircraft operations are enhanced by having the most available runway for every operation.

Assessment of Alternative #3 – Declared Distances

The pros, cons and ROM costs for this alternative are as follows:

Pros:

- A compatible RSA would be achieved by relocating the runway thresholds 1,000 feet from the nearest obstruction.
- Physically removing runway pavement is unnecessary under this alternative.
- Costs of this alternative are minimal compared to the other alternatives considered.

Cons:

- Operations may be hindered as the LDA, and ASDA would be decreased which would limit certain aircraft operations.
- The relocation of the threshold would result in a reduction in safety margin for the majority of aircraft utilizing the airport.
- Requires relocation of Glideslope and VASI's.
- Potential economic impact if the airport is not able to serve a segment of general aviation aircraft.

Alternative 3 ROM Costing

Cost Item	Units	Unit Price	Cost
Runway Markings	ls	$60,000	$60,000
Reconfigure Runway Lighting	900 lf	$10	$9,000
Relocate Glideslope	ls	$500,000	$500,000
Contingency		*15%*	$85,350
		Total	***$654,350***

In summary, application of declared distances would allow for FAA RSA compliance. However, this alternative would still impact the operation of certain aircraft. The time and costs of this alternative would be significantly less than most of the other alternatives discussed.

Assessment of Alternative #4 – Use of EMAS

The pros, cons and ROM costs for this alternative are as follows:

Pros:

- Provides a definite improvement in operational safety.
- Maintains the airport's existing operational capabilities.
- Culverting the canal provides for an incremental gain of 163 feet in the RSA length.

Cons:

- The implementation of EMAS doesn't substitute for the RSA requirements of obstacle clearance for at least 1,000 feet from the runway end. As such, this would require that the existing waivers be maintained.
- EMAS is a new concept and extensive research is unavailable, particularly for smaller aircraft.

Alternative 4 ROM Costing

Cost Item	Units	Unit Price	Cost
Install EMAS	53,000 ft²	$65	$3,445,000
Contingency		*15%*	$516,750
Total			**$3,961,750**
*Culvert Canal	ls	$2,000,00	$2,000,000
*Relocate Localizer	ls	$500,000	$500,000
Contingency		*15%*	$375,000
Total			**$2,875,000**
		Total	***$6,836,750***

* Indicates optional improvements with this alternative.

In summary, while EMAS would not create a compliant RSA, it would result in a low cost alternative for improving operational safety at the airport without sacrificing runway length. If the canal were culverted and the localizer relocated with this alternative, improvements in the available RSA can be achieved. However, the costs associated with this small improvement in RSA are considerable.

Assessment of Alternative #5 – Status Quo

The pros and cons for this alternative are as follows:

Pros:

- Lowest cost
- Second best operational capabilities.

Cons:

- Does not provide any safety improvement upon existing conditions.

There is no construction cost associated with this alternative.

In summary, this alternative maintains the existing operation with the waiver remaining in place. Although this may not represent an improvement, given the costs, operational impacts and importance of the airport in the region, it warrants full consideration.

V. RECOMMENDATIONS

A number of key considerations need to be factored into the identification of a recommended alternative. These include balancing the improvement in the level of safety, the cost of the improvement and the impact to the aviation operational capabilities of the region.

Key Factors

Key factors to be considered include:

Reliever Status

As mentioned prior, a key consideration in assessing any of the alternatives is Page Field's status as a reliever airport. As the only reliever airport in southwest Florida, Page Field provides an attractive alternative to commercial service airports such as Naples and Southwest Florida International. Recently passed legislation relative to Naples Airport which creates the potential for restrictions on jet business aircraft further emphasizes Page Field's importance in serving the needs of business aircraft in the region. Further, Page Field's proximity to downtown Ft Myers often makes it the airport of choice for medium sized, and occasional large, business aircraft, allowing them to get in and out during peak commercial service periods with relative ease.

Activity Levels/Fleet Mix

Page Field has experienced a trend of decreasing operational activity since commercial service activity was transferred to Southwest Florida International Airport in early 1983. In 1982, Page Field handled approximately 1.2 million total passengers and over 139,000 operations. These included nearly 20,000 commercial service operations by aircraft such as the Boeing 727 as well as nearly 15,000 air taxi operations. Runway 5-23 operated as the primary runway for this activity in its current configuration. By 1998, traffic levels had decreased considerably with the airport handling just over 81,000 total operations. Air taxi operations had also decreased considerably to just over 4,150.

Major efforts by the Lee County Port Authority (LCPA) beginning with new t-hangars in 1996 and eventual rehabilitation of all airport parking aprons by year end 1999, coupled with the takeover of the FBO operation by the LCPA in 1998, have reversed this trend. With almost 98,000 operations in

1999, operations are expected to increase to roughly 125,000 by 2020. Air taxi is expected to account for a little over 8,700 of this total.

From a fleet mix perspective Class C aircraft are estimated to currently account for 2 percent of the annual activity under VFR conditions increasing to 5 percent by 2020. During IFR conditions, these aircraft are currently estimated to account for 6 percent of activity, increasing to 15 percent by 2020.

Restriction on Commercial Service Activity

Since 1984, Lee County Ordinance 84-12 (later replaced by ordinance 94-09) has prohibited "scheduled passenger aircraft service of any sort" at Page Field. This applies "regardless of the type or size of the aircraft, and regardless of the type of license or certificate held by the operator."

1993 Master Plan Update - Public Hearing Synopsis

Any reduction in the operational capabilities of Runway 5-23 as a result of runway safety area (RSA) compliance, brings to light the following argumentative summary based on public hearings regarding the shortening of Runway 13-31 that occurred on August 4 and 18, 1993 for the Fowler Street extension. The information was included as a supplement to the 1993 Page Field Master Plan Update. The purpose of this summary is to address issues that may result in possible economic impacts on Page Field and Fort Myers if shortening Runway 5-23 at Page Field Airport were to proceed as the fix for the RSA compliance.

When the shortening of Runway 13-31 was proposed in 1993, there were general concerns and strong public opposition by the aviation community. These concerns were eventually countered by positive factual data supported by the LCPA indicating that the shortening would have no effect on the Airport's businesses. This was because Runway 5-23 would remain the same in length and it had the ILS, which was attractive and sufficient to accommodate all aircraft using Page Field for business and other uses. With the potential impacts to the operation of Runway 5-23, many of the core issues raised by the public hearing in 1993 now provide for a very strong argument against this as there would be no other runway with appropriate length to support many of the Airport's aircraft and businesses. Any option to shorten the length or operational capability of Runway 05-23 could be devastating to businesses such as Switlik Aviation, Tomlinson Avionics, SMS, the Page Field Aviation Center and even other potential future tenants. The airport has begun to change their image recently with many new projects and enhancements and the growth at the airport over the past two years has been phenomenal. Impacting the operational capabilities of Runway 05-23 even slightly could be detrimental to aviation support and growth at Page Field.

Some key points and concerns brought about by the hearings included the following:

- The runway shortening limits certain business jets and feeder cargo aircraft from using the field, thus hindering business.
- By limiting the runway length, safety is also decreased and certain aircraft/companies may select other airports to operate from. Hence, this would also limit business and revenue generation at Page Field.
- The Port Authority, city and county are not looking out for the best interests of the aviation community by shortening the runway at Page Field.

Importance of FMY

On December 19, 2000, the National Air Transportation Association (NATA) released its list of the country's 100 Most Needed Airports. Page Field General Aviation Airport was selected from over 3,500 public use airports, to be included in this prestigious list. Being identified in this manner highlights FMY's value to the United States and Southwest Florida. This list was intended to identify where resources are most needed to strengthen the most vulnerable parts of the national air transportation system. Airports included on this list were chosen based on six criteria; forecast airport growth, utilization, regional significance, insufficient capacity, arbitrary limitations, and hostile political circumstances. NATA explains their criteria in detail in an article released along with the list, titled "America's 100 Most Needed Airports." Below is their explanation of criteria and one can see why FMY made the list.

> ***Forecast Airport Growth***
> *The forecast airport growth is the expected demand for aviation services and the likely economic expectation of the area the airport serves. This includes demand for both commercial and non-commercial aviation services. .*
>
> ***Utilization***
> *Utilization is the growing need for a wider variety of aircraft service and the impact a more capable airport would have on the region's future economic development.*
>
> ***Regional Significance***
> *Regional significance is an airport's essential role in the transportation goals of a state or metropolitan area and identification as an important component of state aviation plan.*
>
> ***Insufficient Capacity***
> *Insufficient Capacity is an inability to serve the range of airport users that would reasonably be expected in the future under likely load and weather conditions, runway width and length constraints, ramp and hangar space limitations, inadequate instrument approaches, inferior lighting and taxiways, and obstructions.*
>
> ***Arbitrary Limitations***
> *Arbitrary limitations are existing or proposed curfews, noise restrictions, slot controls, weight limits, or other rules and regulations limiting access to the airport.*
>
> ***Hostile Political Circumstances***
> *Hostile political circumstances are an organized public opposition to the airport, its continuing operation, or a necessary improvement that restricts present or future utilization of the airport and that is likely to reduce demand of aviation services.*

This recognition again emphasizes the importance of protecting the operational capabilities of the airport. This must be considered in addressing any potential impact to the airport's current operation. With the deterioration of the quality of service in scheduled airlines, travelers have realized the value and flexibility that on-demand air charter and private aircraft provide. Because of this, general aviation aircraft have become the travel method of choice by many. The business travel mode of choice for the 21st Century will be air transportation. It is important to maintain, if not improve, the airside capabilities at FMY in order to meet the needs of a wide range of aircraft that will have significant impacts on the economic well-being of the Nation.

Recommendations

The key issues presented prior appear to reinforce the validity of the FAA's decision to issue a waiver for non-standard safety areas in 1989. With only two percent of the current activity at Page requiring the more stringent RSA areas, it becomes hard to justify the cost or operational impacts associated with full compliance (Alt. 1 – Relocate US 41, Ten Mile Canal and Railroad and Alt.2 – reduce runway length, respectively). This is particularly true in light of the fact that the airport has operated in the past in this same configuration with almost double the current activity levels including considerable commercial passenger traffic. Although it is important to protect the ability to serve the larger business type aircraft which are expected to grow to five percent of the fleet by 2020, altering the current operation to improve RSA compliance for these aircraft will effectively result in a reduction in the margin of safety for the other 95 percent of the aircraft utilizing the airport. In other words, further displacing the thresholds (Alt. 2 -Runway Reduction and Alt. 3 - Declared Distance) will result in less useful pavement for landing operations, reducing the overall safety margin for all aircraft types to provide for 2 to 5 percent of the fleet. While step improvements in safety are possible by employing EMAS, no real increase in the RSA is actually achieved unless the canal is culverted and the localizer relocated. Again, the costs associated with this are considerable while the RSA length is extended by only 163 feet over that currently available.

Based on the information outlined above and the analysis contained herein, it is recommended that the current waivers remain in effect (do nothing alternative) and that no changes be made to the operation of the airport at this time.

It is further recommend that the fleet be reviewed and this issue be revisited during the next update of the master plan or if any major changes in the fleet mix are experienced.

VI. FINAL DETERMINATION

The study outlined in the previous sections was submitted to the FAA for an extended review and comment period which continued from midsummer 2001 through January 2002. During this period, a site visit was conducted by Airports District Office staff and extensive discussions were held both internal to the FAA and with the Lee County Port Authority. Based on additional requests, detailed information and performance data outlining the current and projected mix of aircraft using the airport was also provided to the FAA. This intensive effort culminated in a final determination which does improve the level to which the airport complies with existing RSA requirements while recognizing the severe operational, safety and cost implications associated with any of the primary alternatives outlined in this report.

The final determination consists of the following:

> **Incorporation of the existing displaced thresholds to provide additional RSA clearance for modified ASDA and LDA calculations. Specifically the area prior to each threshold will not be available for ASDA and LDA calculations of aircraft using the opposite runway end for either departure or arrival operations. The new lengths to be reflected are as outlined in Table 3 and Exhibit 7. These revised lengths will be reflected on the airport layout plan prior to approval by the FAA.**

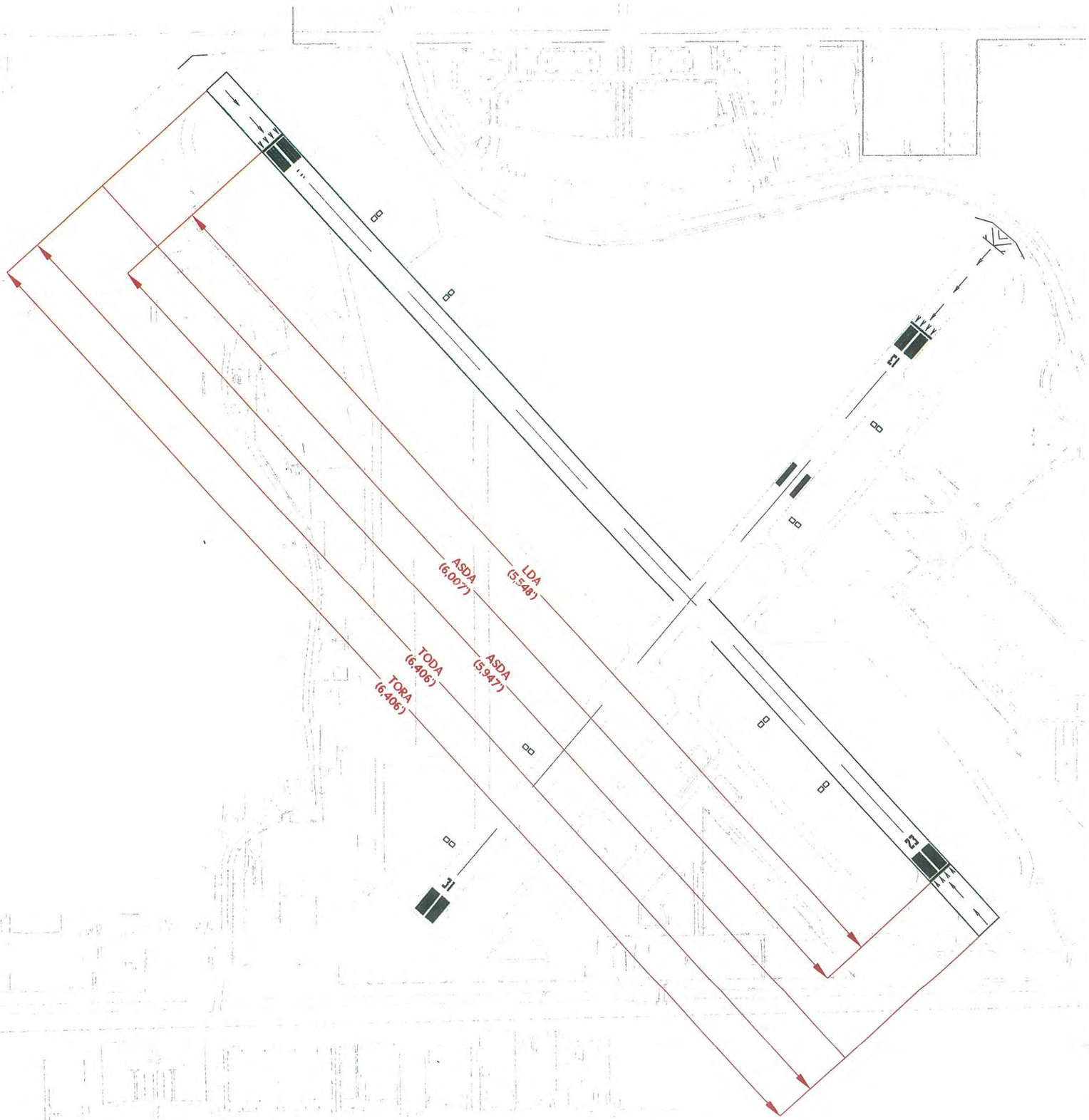

LDA
(5,548')
ASDA
(6,007')
ASDA
(5,947')
TODA
(6,406')
TORA
(6,406')
13
31
8
8
8

Table 3 Final Determination Declared Distance Adjustments Page Field Airport				
	Runway 5		Runway 23	
	Original	Revised	Original	Revised
Takeoff Runway Available (TORA)	6,406'	6,406'	6,406'	6,406'
Takeoff Distance Available (TODA)	6,406'	6,406'	6,406'	6,406'
Accelerate Stop Distance Available (ASDA)	6,406'	6,007'	6,406'	5,947'
Landing Distance Available (LDA)	5,947'	5,548'	6,007	5,548

Finally, no facility modifications are either recommended or required to comply with this determination.

The net effect of the final determination results in a reduction in the ASDA of 399 feet and 459 feet for the Runway 5 and 23 ends, respectively. Similarly, this results in a reduction in the LDA of 399 feet and 459 feet for the Runway 5 and 23 ends, respectively.

U.S. Department
of Transportation
**Federal Aviation
Administration**

ORLANDO AIRPORTS DISTRICT OFFICE
4100 Tradecenter Street
Orlando, Florida 32827-5096

RECEIVED AUG 0 7 1989 PSD
89 32 I 2,306

Mr. Paul Doherty
Executive Director
Lee County Port Authority
16000 Chamberlin Parkway, Suite 8671
Ft. Myers, FL 33913-8899

Dear Mr. Doherty:

The final project documents for Planning Project AIP 3-12-0027-01, transmitted by your letter, have been reviewed. The Master Plan documents for the Page Field Airport are acceptable from a contractual standpoint with respect to the terms and conditions of the Grant Agreement. The contents of the report reflect the views of Peat, Marwick, Mitchell & Co., who is responsible for the facts and accuracy of the data presented. The contents do not necessarily reflect the official views or policy of the Federal Aviation Administration (FAA), and our determination of acceptability does not imply that the FAA agrees with the conclusions and recommendations therein.

The Airport Layout Plan (ALP) has been conditionally approved subject to compliance with the requirements of the National Environmental Policy Act of 1969 (P.L. 91-190).

The Master Plan Report and ALP drawing depicted deviations to the Runway Safety Area Standard for both runways. Per your request, an adaptation to the standard has been approved. The adaptation should be noted on all future ALP updates until such time as it is rescinded.

Approval of the ALP is based on the safety, utility, and efficiency of the airport and signifies only that FAA has no objections based on these considerations. Our approval of the ALP does not infer or imply that the land uses shown in the vicinity of the airport are considered to be compatible with airport operations. This approval does not represent a commitment to provide financial assistance to implement the proposed plan. FAA approval of assistance in any development will be determined at the time of request for same, based upon existing regulations, project justifications, and availability of funds.

This approval does not negate notification and review requirements imposed by Federal Aviation Regulation, Part 77 and Part 157, as they pertain to all construction and/or alteration, whether shown on this plan or not. Further, the FAA cannot prevent erection of any structure in the vicinity of airports. Airport environs can only be adequately protected through such means as state and local zoning ordinances, building regulations, etc.

FAA approval of the ALP is considered valid until such time as the magnitude, nature or character of the airport operations and role changes from that envisioned during the preparation of the plan.

To preclude conflicts with future development, we recommend that you utilize the ALP when preparing leases. FAA review of requests for Airport Improvement Program (AIP) projects can be facilitated if they are in concurrence with the approved plan.

We recommend that you provide copies of the plan to all local planning and zoning boards and appropriate county and city officials for adoption. Copies should also be distributed to FBO's, affected political jurisdictions and other airport users. They should also be made available for continuous public review at convenient locations such the county courthouse, City Hall, public school libraries, and other appropriate places.

Sincerely,

James E. Sheppard
Manager

Enclosure (ALP)

cc: FDOT (ALP and MP)

ADAPTATION TO STANDARDS

PAGE FIELD AIRPORT

FORT MYERS, FLORIDA

Background

The Page Field Airport Master Plan/Airport Layout Plan (ALP) update currently underway, has indicated that the existing runway safety areas associated with both runways do not meet current standards as shown on attachment number 1. The airport is land-locked and the runway safety areas are crossed by a chain link fence and a public road and by a drainage canal. The sponsor has requested that an adaptation to standards be approved.

Adaptation to Design Standards

The runway safety area standard applies to all runway and runway extensions that are constructed or upgraded after February 24, 1983. However, in accordance with both AC 150/5300-4B, Change 7, and AC 150/5300-12, paragraph 19, for existing runways constructed prior to the adoption of this standard, as is applicable in this case, the maximum feasible length of runway safety area should be provided without reducing the existing length of the runway. Comparable conditions apply with respect to the width of the runway safety area.

Therefore, rather than require the construction of a runway safety area to meet standards, the deviation to the standards shown as attachment number 1 is recognized and approved.

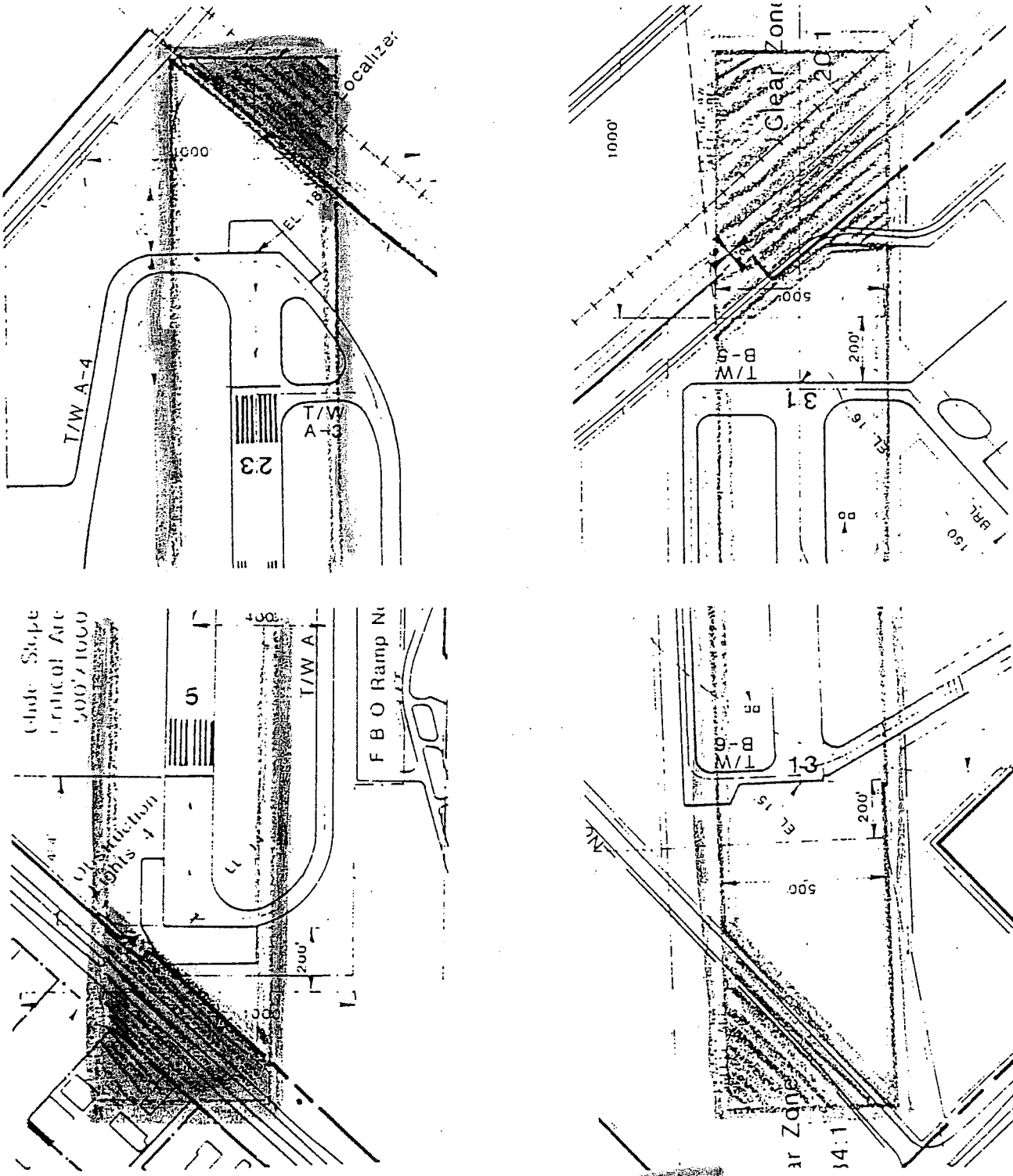
This adaptation should be noted on all future ALP updates until such time as it is rescinded.

APPROVED:

James E. Sheppard
Manager
Orlando Airports District Office

Date

ATTACHMENT NUMBER 1
ADAPTATION TO STANDARDS
PAGE FIELD AIRPORT
FORT MYERS, FLORIDA



Legend: Standard Runway Safety Area
Runway Safety Area Violation
Adapted Standard

Attachment RSA-2
Guidelines for the Planning and Design of an EMAS System
Taken directly from AC 150/5220-22

SYSTEM DESIGN REQUIREMENTS. *For purposes of design, the EMAS can be considered fixed by its function and frangible since it is designed to fail at a specified impact load. Therefore, an EMAS is not considered an obstruction under 14 CFR Part 77, Objects Affecting Navigable Airspace. The following system design requirements shall prevail for all EMAS installations.*

Concept. *An EMAS is designed to stop an overrunning aircraft by exerting predictable deceleration forces on its landing gear as the EMAS material crushes. It must be designed to minimize the potential for structural damage to aircraft, since such damage could result in injuries to passengers and/or affect the predictability of deceleration forces.*

Location. *An EMAS is located beyond the end of the runway, centered on the extended runway centerline. It will usually begin at some distance from the end of the runway to avoid damage due to jet blast and short landings (Figure 1). This distance will vary depending on the available area and the EMAS materials. Where the area available is longer than required for installation, the EMAS should be placed as far from the runway as practicable. Such placement decreases the possibility of damage to the system from short overruns or undershoots, and results in a more economical system by considering the deceleration capabilities of the existing runway safety area.*

Design Method. *An EMAS design shall be supported by a validated design method, which can predict the performance of the system. The design aircraft is defined as that aircraft using the associated runway that imposes the greatest demand upon the EMAS. To the extent practicable, however, the EMAS design should consider the range of aircraft expected to operate on the runway. In some instances, this may be preferable to optimizing the EMAS for the design aircraft. The design method shall be derived from field or laboratory test. Testing may be based on passage of either an actual aircraft or equivalent single wheel load through a test bed. The design must consider multiple aircraft parameters, including but not necessarily limited to allowable aircraft gear loads, gear configuration, tire contact pressure, aircraft center of gravity, and aircraft speed. The model must calculate imposed aircraft gear loads, g-forces on aircraft occupants, deceleration rates, and stopping distances within the arresting system. Any rebound of the crushed material that may serve to lessen its effectiveness must be considered.*

Operation. *The EMAS shall be a passive system.*

Width. *The minimum width of the EMAS shall be the width of the runway (plus any sloped area as necessary).*

Base. *The EMAS shall be constructed on a surface capable of supporting the occasional passage of the critical design aircraft using the runway and fully loaded Aircraft Rescue and Fire Fighting (ARFF) vehicles without deformation of the base surface or structural damage to the aircraft or vehicles. It shall be designed to perform satisfactorily under all local weather, temperature, and soil conditions. It shall provide sufficient support to facilitate removal of the aircraft from the EMAS. Full strength runway pavement is not required.*

Entrance Speed. *To the maximum extent possible within the available safety area, the EMAS shall be designed to decelerate all air carrier aircraft expected to use the runway at exit speeds of 70 knots or less without imposing loads that exceed the aircraft's design limits, causing major structural damage to the aircraft, or imposing excessive forces on its occupants. For design purposes, it shall be assumed that the aircraft has all of its landing gear in full contact with the runway and is traveling within the confines of the runway and parallel to the runway centerline.*

Aircraft Evacuation. *The EMAS shall be designed to enable safe ingress and egress as well as movement of ARFF equipment (not necessarily without damage to the EMAS) operating during an emergency. If the EMAS is to be built above*

existing grade, sloped areas sufficient to allow the entrance of ARFF vehicles from the front and sides must be provided. Provision for access from the back of the EMAS may be provided if desirable, but will result in a shorter effective length. Maximum slopes should be based on the EMAS material and performance characteristics of the airport's ARFF equipment.

Maintenance Access. *The EMAS shall be capable of supporting regular pedestrian traffic for the purposes of maintenance of the arresting material and co-located navigation aids without surface damage. An EMAS is not intended to support vehicular traffic for maintenance purposes.*

Undershoots. *The EMAS shall be designed so as not to cause control problems for aircraft undershoots touching down in the arresting system. Fulfillment of this requirement may be based solely on flight simulator tests. Materials of density and strength greater than those shown by flight simulator test not to cause control problems for aircraft undershoots will be deemed acceptable.*

Navigation Aids. *The EMAS shall be constructed to accommodate approach lighting structures and other approved facilities within its boundaries. It shall not cause visual or electronic interference with any air navigation aids. All navigation aids within the EMAS must be frangible as required by 14 CFR Part 139, Certification and Operation: Land Airports Serving Certain Air Carriers. To meet the intent of this regulation, approach light standards must be designed to fail at two points. The first point of frangibility shall be zero to three inches above the expected residual depth of the RMAS after passage of the design aircraft.*

Drainage. *The EMAS shall be designed such that water will not accumulate on its surface or any portion of the runway or runway safety area.*

Jet Blast. *The EMAS shall be designed and constructed so that it will not be damaged by expected jet blast.*

Repair. *The EMAS must be designed to be repaired to a usable condition within 45 days of use by the design aircraft at the design entrance speed. It should be noted that this is a design requirement only – not an operation requirement.*

Material Qualification. *The material comprising the EMAS shall have the following requirements and characteristics:*

a. ***Material Strength and Deformation Requirements.*** *Materials must meet a force vs. deformation profile within limits having been shown to assure uniform crushing characteristics, and therefore, predictable response to an aircraft entering the arresting system.*
b. ***Material Characteristics.*** *The materials comprising the EMAS must:*
    1. *Be water-resistant to the extent that the presence of water does not affect system performance.*
    2. *Not attract vermin, birds, or other creatures.*
    3. *Be non-sparking.*
    4. *Be non-flammable.*
    5. *Not promote combustion.*
    6. *Not emit toxic fumes or malodorous fumes in a fire environment after installation.*
    7. *Not support unintended plant growth with proper treatment.*
    8. *Have constant strength and density characteristics during all climatic conditions within a temperature range appropriate for the locale as specified by the airport owner.*
    9. *Be resistant to deterioration due to:*
        a. *Salt*
        b. *Typical aircraft and runway deicing fluids.*
        c. *Aircraft fuels, hydraulic fluids, and lubricating oils.*
        d. *Sunlight.*
        e. *Water.*
        f. *Freeze/thaw, if installed where freezing is possible.*
        g. *Blowing sand.*

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Southwest Florida International Airport

Final • Master Plan Update

March 2004

Lee County Port Authority

Southwest Florida International Airport

Master Plan Update

submitted to

Lee County Port Authority

Southwest Florida International Airport

Submitted by

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1 INTRODUCTION

This Airport Master Plan Update for Southwest Florida International Airport (RSW) was prepared in accordance with the requirements of both the Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT). All aspects and sections of this document are based on the criteria and standards set forth in the FAA Advisory Circulars (AC) 150/5070-6A, "Airport Master Plans", AC 150/5300-13, Change 6, "Airport Design", as well as the FDOT's "Guidebook for Airport Master Planning".

The elements of this Master Plan Update provide a comprehensive analysis of current airport facilities and a determination of trends and activities affecting the Airport and its environment. The Master Plan Update includes updated aviation forecasts, facility requirements, demand/capacity analyses, airside and landside alternative analyses, a financial plan, an environmental overview, and an Airport Layout Plan set that meets the FAA and FDOT criteria to guide future development on and around the Airport. An Environmental Assessment (EA) is being prepared in conjunction with this Master Plan. All of the recommendations made in this document are focused on maintaining a modern, safe, efficient, and reliable facility to meet the air transportation needs of the flying public, national and international commerce, the State of Florida, and the local community.

1.1 Goals and Objectives

The primary Master Plan Update goals and objectives include the following:

- Create a twenty-year development program that will maintain a safe, efficient, economical, and environmentally compatible airport facility for the five-county area.
- Provide the short-term and long-term guidance to successfully satisfy the aviation demand in a financially feasible and responsible manner, while addressing the aviation, environmental, and socioeconomic issues of the community.

In achieving the above-mentioned goals, the following objectives will be attained:

- Identify airside, landside, and airspace improvements and recommend options to optimize the economic aspects of the Airport while enhancing the safety and operational capacity.
- Establish an implementation schedule for financially feasible short, intermediate, and long-term airport improvements.
- Identify short-term airport requirements and recommend actions to optimize short-term funding opportunities.
- Ensure short-term recommendation and actions do not preclude long-term planning options.
- Incorporate the interests of the public, airport users and government agencies.
- Be sensitive to the overall environmental characteristics and needs of the area surrounding the Airport.
- Reflect current comprehensive land use (on and off property) and make recommendations for compatible land uses, zoning and noise impacts.

- Enhance operational efficiency and safety of the Airport through the review of airport maintenance programs, operating procedures, and minimum operating standards.

1.2 Key Issues

The Southwest Florida International Airport Master Plan Update is a guide for the control, maintenance, preservation, and growth of commercial and general aviation at Southwest Florida International Airport (RSW) to support public access to national and international air transportation systems in Fort Myers, Lee County and Southwest Florida. Key issues and study areas in the development of this Master Plan Update include the following:

- Potential Reuse of the Existing Terminal Building, FIS facility, Air Freight, Terminal Parking and Catering facilities
- Land Use Strategy for the North Airfield
- Land Use Strategy for the South and East Quadrants of the Airport
- Surface Roadway and Interstate Access to the New Midfield Terminal
- Best Strategy for Rehabilitation of the Existing Runway
- Future Cargo Facility Options
- Reconfirm New Parallel Runway Configuration and Taxiway Alternatives
- Reconfirm ultimate Midfield Terminal Configuration

1.3 Previous Studies

The last Master Plan Update for Southwest Florida International Airport (RSW) was completed by Coffman Associates, Inc. in February 1992. As with the current study, the 1992 Master Plan Update provided a comprehensive analysis of the airport needs and alternatives with the purpose of providing a 20-year outlook for the future development of the airport. The 1992 Master Plan Update was an update to the previous Master Plan conducted in 1986. In addition, the following planning studies have been conducted for the Airport:

- Terminal Facilities Study, March 30, 1989, Thompson Consultants International.
- Airport Master Plan Update, February 1992, Coffman Associates, Inc.
- Environmental Assessment, May 1992, CH2Mhill: Runway 6-24 extension.
- Parallel Runway Length and Separation Refinement Study: Supplement to the 1992 Master Plan Update, August 1993, Coffman Associates, Inc.
- Environmental Assessment, February 1994, Coffman Associates.
- Vision 2010 Implementation Plan, April 1998, Greiner, Inc.
- Midfield Terminal Development Study, January 2001, DMJM Aviation.

Southwest Florida International Airport is included in Lee County's Comprehensive Plan (The Lee Plan). This plan, which was updated late in 1998, considers the comprehensive development of Lee County through the Year 2020. The Lee Plan addresses future land use, as well as transportation, community facilities and services, parks, recreation and open space, capital improvements, housing, conservation and coastal management among other development considerations within the County.

The airport has also been included in the Florida Aviation System Plan (FASP). The latest FASP, compiled in 1992, is currently in the process of being updated. This document provides a planning and administrative tool which is used as an outline and guide for administering and directing the Aviation System Plan for the State of Florida. This plan classifies Southwest Florida International Airport as only one of three commercial service airports in the Southwest Florida Planning Area. The other two commercial service airports are Naples and Sarasota-Bradenton.

2 INVENTORY

2.1 INTRODUCTION

The development of a Master Plan Update for Southwest Florida International Airport (RSW) necessitates the collection and evaluation of information relating to the Airport and the surrounding areas. The information evaluated in this report includes an inventory of the facilities, structures and services provided by the Airport. Historical background of Lee County aviation and development over the years will provide an insight into the Airport and its setting. Information obtained through on-site investigations and interviews with officials at the airport will allow an accurate and thorough inventory for the successful implementation of the new Airport Master Plan. Information is broken down into a number of major categories:

- Airport Setting
- Climate
- Airside Facilities
- Airspace Configuration / Approach Procedures
- Air Traffic Control Tower
- Passenger Terminal Area
- Landside Facilities
- Utilities
- Airport Imaginary Surfaces
- Airport Environment
- Airport Access

2.2 AIRPORT SETTING

Southwest Florida International Airport (RSW) is located in the southwestern portion of the State of Florida approximately ten miles southeast of downtown Fort Myers. The Airport's reference elevation according to the FDOT Florida Airport Directory is 31 feet above mean sea level (MSL.). The Airport's Reference Point (ARP) coordinates are located latitude 26°32'10.2"N and longitude 081°45'18.6"W and the magnetic variation at the Airport is two (2) degrees west according to Year 2000 measurements. **Exhibit 2-1**, a general location map of the Airport, depicts the relationship of RSW to other major cities in the State.

Every year, the United States Department of Transportation publishes the National Plan of Integrated Airport Systems (NPIAS). The NPIAS is submitted to Congress in accordance with Section 47103 of Title 49 of United States Code and is utilized to define those airports which warrant Federal investment. The 1998-2002 NPIAS identifies 3,344 airports, including RSW, that are significant to national air transportation and estimates that $35.1 billion in infrastructure development will be needed over the five-year planning period to meet the needs of all segments of civil aviation. It is important to note that the introduction of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR 21) will dramatically increase Federal

Exhibit 2-1

Exhibit 2-1
Location Map

investment in the nation's aviation system to more than $10 billion spread over the next three years. The local impact of this legislation will hopefully improve the potential for Federal financial support for RSW in the short-term planning period.

In the NPIAS, the role of each airport is identified as one of five basic service levels: Commercial Service – Primary; Commercial Service – Non Primary; Commercial Service – Reliever Airport (included with Commercial Service – Non Primary in statistical summaries); Reliever Airport; and, General Aviation Airport. These levels describe the type of service that the Airport is expected to provide the community at the end of the NPIAS five-year planning period. Southwest Florida International Airport is designated as a public use commercial service-primary airport according to the most recent NPIAS. Commercial service airports are defined as public airports receiving scheduled passenger service and having 2,500 or more enplaned passengers per year. There are 540 commercial service airports throughout the United States. Of these, 413 have more than 10,000 enplanements and are classified as primary airports. Primary airports such as RSW receive an annual apportionment of at least $500,000 in Airport Improvement Program (AIP) funds, with the total amount determined by the number of enplaned passengers.

2.2.1 Locale

All of the property comprising Southwest Florida International Airport is located within an unincorporated portion of Lee County. Currently, the Airport occupies approximately 6,498 acres of land and is located off Daniels Parkway, approximately three miles east of Interstate 75. The airport is owned by Lee County and operated by the Lee County Port Authority. Lee County includes some of the fastest growing cities in the region, including Fort Myers, Cape Coral, Bonita Springs, and Fort Myers Beach. Additionally, the popular tourist destinations of Sanibel and Captiva Island are located within the county (see **Exhibit 2-2**). Lee County is bordered by Charlotte County to the north, Hendry County to the east, Collier County to the south and the Gulf of Mexico to the west. In 1999, the Airport handled 4,897,253 total passengers. This number accounted for more than 75 percent of passenger enplanements in southwest Florida. In addition, Airport Council International-North America's (ACI-NA) preliminary rankings for the year 2000 indicated that Southwest Florida International Airport ranked 7th in the State of Florida and 63rd in the nation in terms of primary airport passenger enplanement activity.

2.2.2 Airport History

Air carrier service has been available in some form in the Fort Myers/Southwest Florida area since 1937. After World War II, the U.S. Army Air Corps' Fort Myers training base (named Page Field in commemoration of World War I hero Captain Channing Page) was decommissioned and turned over to Lee County. For more than 25 years, Page Field offered local area residents and visitors a full-service air transportation facility. However, it was also recognized during this time that Page Field possessed insufficient space to meet potential expansion requirements for commercial jet aircraft operations and significantly increased passenger volumes.

The 1972 State of Florida Aviation System Plan documented Page Field's limitations and recommended that a new air carrier facility be constructed. This Plan also stated that the new airport should be adequate to serve the Southwest Florida region encompassing Lee, Collier,

Exhibit 2-2

Exhibit 2-2
Vicinity Map

Commercial Service Airport

General Aviation Airport

Charlotte, Glades and Hendry Countries. Shortly thereafter, a five-county advisory group was established to select a suitable site for the new aviation facility.

Planning for the new Southwest Florida Regional Airport (as Southwest Florida International Airport was originally named) began in 1973 when a five-county advisory group was established to select a suitable site for the new aviation facility. Lee County received a $195,000 Federal grant on November 4, 1974 to fund the site location process. The location of RSW is the result of a study that eventually considered 27 different sites, ultimately selecting the Daniels Road site on June 13, 1975.

Following a bid for routes stemming from new interest in serving the region, the Civil Aeronautics Board awarded Eastern Airlines routes into Fort Myers' Page Field Airport in 1975. Eastern Airlines was therefore included with National Airlines, who already served Page Field, in the decision-making process for the new airport. In addition to participating airlines, it was necessary to have the approval of the Federal Aviation Administration (FAA) and the Environmental Protection Agency (EPA). A study of the soil at the selected site by consulting engineers indicated it was satisfactory for construction. Safety, and road accessibility issues were approved and support from the environmental community was established. These factors, along with the combined support of the Lee County Board of Commissioners, the FAA, and the airlines, created the impetus to continue the project.

Throughout the late 1970's, while the Board of Commissioners and the FAA were moving ahead with airport development efforts, other positive factors were falling into place. Locally, essential airport access roads, including Daniels Road and I-75, were under construction. On the national scene, deregulation of the airline industry by the Civil Aeronatics Board (CAB) allowed airlines to select their own routes. Lee County, with its aggressive development and unlimited growth potential, was recognized as a profitable and desirable destination. Therefore, soon after deregulation, Delta, United and Northwest Orient joined Eastern and National Airlines in serving the Lee County area via Page Field.

Construction of the new regional airport was a complicated project. Funding was of prime concern and continual change to the development program resulted in an escalation of the initial project cost estimate of $31 million. By 1982, airport construction costs were estimated to be in excess of $93 million, or triple the original figure. This increase was primarily the result of three major changes during the development process. The terminal and the number of gates were expanded from the original design, aircraft-parking apron specifications were changed from asphalt to concrete by airline mandate, and finally, a Florida Power and Light right-of-way had to be relocated.

Despite numerous "start-up" obstacles, the Southwest Florida Regional Airport become a "trend setter" in the U.S. aviation industry and marketplace. Not only was it the nation's first full-scale new airport since the opening of the Dallas/Ft. Worth Regional Airport in 1974, it was the first airport to be built in compliance with National Environmental Protection Association (NEPA) regulations. These new regulations, an uncharted area for airport development, were also responsible for significant unanticipated research and construction costs.

The Airport was officially opened on Saturday, May 14, 1983 with the arrival of Delta Air Line's Flight 1677, the "Owly Bird, at 1:40 a.m. In 1984, Southwest Florida Regional Airport began serving Canadian charter flights. By 1992, the number of Canadian passengers served had increased from 8,000 to 88,000. In the early years, the Canadian visitors were pre-cleared

through Toronto. As the numbers foreign visitors soared, RSW officials petitioned the U. S. government to construct a Federal Inspections Station (FIS) at RSW to provide Customs, Immigration, Public Health and Agriculture services. Agreement was reached that the FIS would be a user-fee facility supported by the Airport Operations Revenue and on July 14, 1987, the RSW Federal Inspections Station opened.

Until 1983, Page Field had served as the only commercial service airport for Southwest Florida. With the opening of Southwest Florida International Airport, all air carrier and commercial operations were shifted to the new airport, relegating Page Field to a "reliever airport" role. A reliever airport is a FAA designated general aviation airport in the vicinity of a capacity impacted commercial service airport. The purpose of a reliever airport is to specifically serve general aviation traffic, thereby lessening the demand on the region's commercial service airports.

By 1990, the phenomenal growth of airport operations, the need for additional airport development, and the complexity of airport administrative requirements were overwhelming the Lee County Commission. To deal with this situation, on January 3, 1990, the Lee County Commission adopted Lee County Ordinance 90-02, which created the Lee County Port Authority, the Board of Port Commissioners of the Lee County Port Authority, and the Airports Special Management Committee. The Board of Port Commissioners is made up of County Commissioners but meets separately to deal with airport and aviation issues. The role of the Airports Special Advisory Committee is to provide general advisory responsibility to the Board of Port Commissioners. Each Commissioner appoints one member to the Airport Special Management Committee; plus one representative each is selected from Collier and Charlotte Counties. The Lee County Port Authority, the Board of Port Commissioners of the Lee County Port Authority, and the Airport Special Management Committee is the political structure that oversees the airport today.

While the Airport had served international passengers primarily traveling on Canadian charter flights since 1984, in the late 1980's the Lee County Port Authority initiated an expansion program to facilitate the airport accommodating direct-nonstop transcontinental as well as transatlantic international flights.

By 1992, two projects, crucial to the international air carrier traffic initiative, were underway. In the summer of 1992, work began to extend Runway 6-24 from 8,400 feet to 12,000 feet. This additional runway length allowed aircraft operating from RSW to increase fuel loads thereby increasing flight ranges to transcontinental and international-transatlantic distances. The $20 million runway project was completed in the fall of 1994. In November of 1992, construction began on a 48,211-square foot terminal addition that would house expanded FIS facilities and additional passenger ticketing and waiting areas. The new FIS facility design increased passenger-processing rates from 150 to 400 per hour and allowed the dual use of existing gates for both international and domestic flight operations. This expansion project reworked portions of the existing terminal while adding approximately 260 feet to its west end. This $6 million project also included terminal access roadway work. The expanded and improved facilities, together with the runway extension, proved to be the catalyst for RSW's entry, initially by charter operations, into new international passenger and cargo markets.

In 1993, the new name of Southwest Florida International Airport was selected to reflect RSW's emerging international status. This new name became official on May 14, 1993, which coincidently marked the ten-year anniversary of the official opening of the airport and the early morning arrival of Delta's "Owly Bird".

In the late 1990's, sustained passenger and aircraft operations increases at RSW necessitated further terminal expansion. This construction was completed in 1998 and included a Concourse B eastern wing that provided three new aircraft gates, passenger boarding bridges and additional office space. In that same year, construction of a commuter aircraft parking ramp was completed on the western side of Concourse B to facilitate commuter aircraft operations.

2.3 CLIMATE

Weather conditions play an important role in the planning and development of an airport. Temperature, along with aircraft other operating parameters, is an important factor in determining runway length. Wind direction and speed are essential in determining optimum runway orientation. The percent of time visible water vapor impairs or restricts visibility at an airport is a major factor in determining the need for aircraft navigational aids and runway lighting systems. Therefore, it is imperative that the meteorological conditions at RSW be analyzed.

Southwest Florida International Airport (RSW) is situated in the subtropical Southwest Florida climate. The airport is located approximately 13 miles from the Gulf of Mexico and the region is often influenced by the maritime air masses that move inland. Typical summertime weather conditions often include daily afternoon thunderstorms caused by rapid convective heating exacerbated by high temperatures and excessive humidity.

2.3.1 Temperature

Temperature is one of the most important factors affecting aircraft performance. High temperature conditions dramatically decrease aircraft performance. The direct impact of the high temperature is a marked increased in runway take-off distance requirements. Temperatures at RSW generally range from the low 60s (F) in winter to the low 90s (F) in summer. Winters are typically mild, with many bright, warm days and moderately cool nights. Occasional cold snaps bring temperatures in the 30s (F) but only rarely do temperatures drop into the 20s (F). However, occasional light frost and minor freeze conditions do occur in the rural-inland areas a few times each year. In the summer, temperatures have reached 100 degrees (F), but these occurrences are very rare. According to metrological data compiled by National Oceanic and Atmospheric Administration (NOAA) August is the hottest month of the year at RSW with an average maximum temperature of 91 degrees (F) and a mean temperature of 83 degrees (F). During the winter, RSW experiences the coldest average temperatures during the month of January, which has an average low temperature of 53 degrees Fahrenheit and a mean temperature of 64 degrees (F).

2.3.2 Precipitation

Precipitation in Southwest Florida occurs during all seasons, although rainfall is more abundant during the hotter summer months. The months of June, July, and August account for 11.30 inches of rainfall a month at RSW. The driest months are January, April, November, and December, accounting for an average of only 1.83 inches of rainfall during each of these months. The average annual rainfall for the RSW station is 57.86 inches.

The amount of precipitation experienced by any airport impacts aircraft operations because of reduced braking action on wet runways and limited ceiling and visibility during storm conditions. About two-thirds of the annual precipitation in Fort Myers occurs during June through September. There are frequent long periods during the winter when only very light, or no rain falls. Most of the summer rain occurs during late afternoon or early evening thunderstorms, which also bring welcome cooling. Although these showers seldom last long, they can yield large amounts of rain. During the late summer and early fall, tropical depressions, tropical storms or hurricanes may pass near the Fort Myers area. These storm tracks can result in heavy downpours that reach torrential proportions. Totals of 6 to over 10 inches of rainfall within a 24-hour period have been recorded. Thunderstorms can occur at any time of the year, but are typically infrequent from November to April. However, between June through September, thunderstorms occur every 2 out of 3 days on average. Heavy fog is rather infrequent and mainly confined to winter mornings. There is seldom a day without sunshine at some point during the day.

2.3.3 Wind

Wind is a primary factor that influences the runway orientation and can subsequently affect the capacity of the airside facilities. Under ideal conditions, aircraft takeoffs and landings are determined by the prevailing winds and conducted in the runway that provides the most head wind to operating aircraft. The FAA recommends that the runway orientation provided achieve 95 percent wind coverage. Wind coverage for a given runway is that percent of time when the crosswind component is below an acceptable velocity. The crosswind component can be defined as the maximum permissible wind velocity occurring at right angles (or 90 degrees left or right) of the heading of a landing or departing aircraft. This is calculated by using a 10.5 knot (12 mph) maximum cross wind component for the smaller, lighter aircraft, while a 13 knot (15 mph) and 16 knot (18 mph) maximum cross wind component is utilized for the larger and jet aircraft. When carrying out an evaluation of this type, the FAA suggests that historical weather information for a period of at least five years and ideally ten be used for determining runway wind coverage.

Wind data from the RSW weather station was not available for a ten-year data period. Due to the airport's close proximity to FMY, the weather station at Page Field was used to analyze historic wind data. Using this data provided by the National Climatic Data Center, wind conditions were analyzed for a 10-year period from 1991-2000. The existing wind distribution and associated velocities under all weather conditions are provided in **Table 2-1** and are assumed to remain consistent through the Year 2020, the period of this study. The primary runway orientation, Runway 6-24, provides 98.06 percent coverage at 13-knots under all weather conditions and 97.21 percent under Instrument Flight Rules (IFR) conditions. For comparison purposes, more typical of air carrier airports, a crosswind component of 16-knots was analyzed and resulted in coverage of 99.65 percent for all weather conditions and 99.29 percent for IFR conditions.

Exhibit 2-3 graphically displays the All Weather Wind Rose for the 13-knot crosswind component based upon ideal Visual Flight Rule (VFR) conditions. Each segment of the wind rose represents a wind direction and speed grouping based on a percentage of the total recorded hourly observations for the airport. **Exhibit 2-4** graphically displays the IFR Weather Wind Rose for the 13-knot crosswind component based upon instrument meteorological weather conditions.

TABLE 2-1
WIND VELOCITIES AND DIRECTION AS A % OF TIME

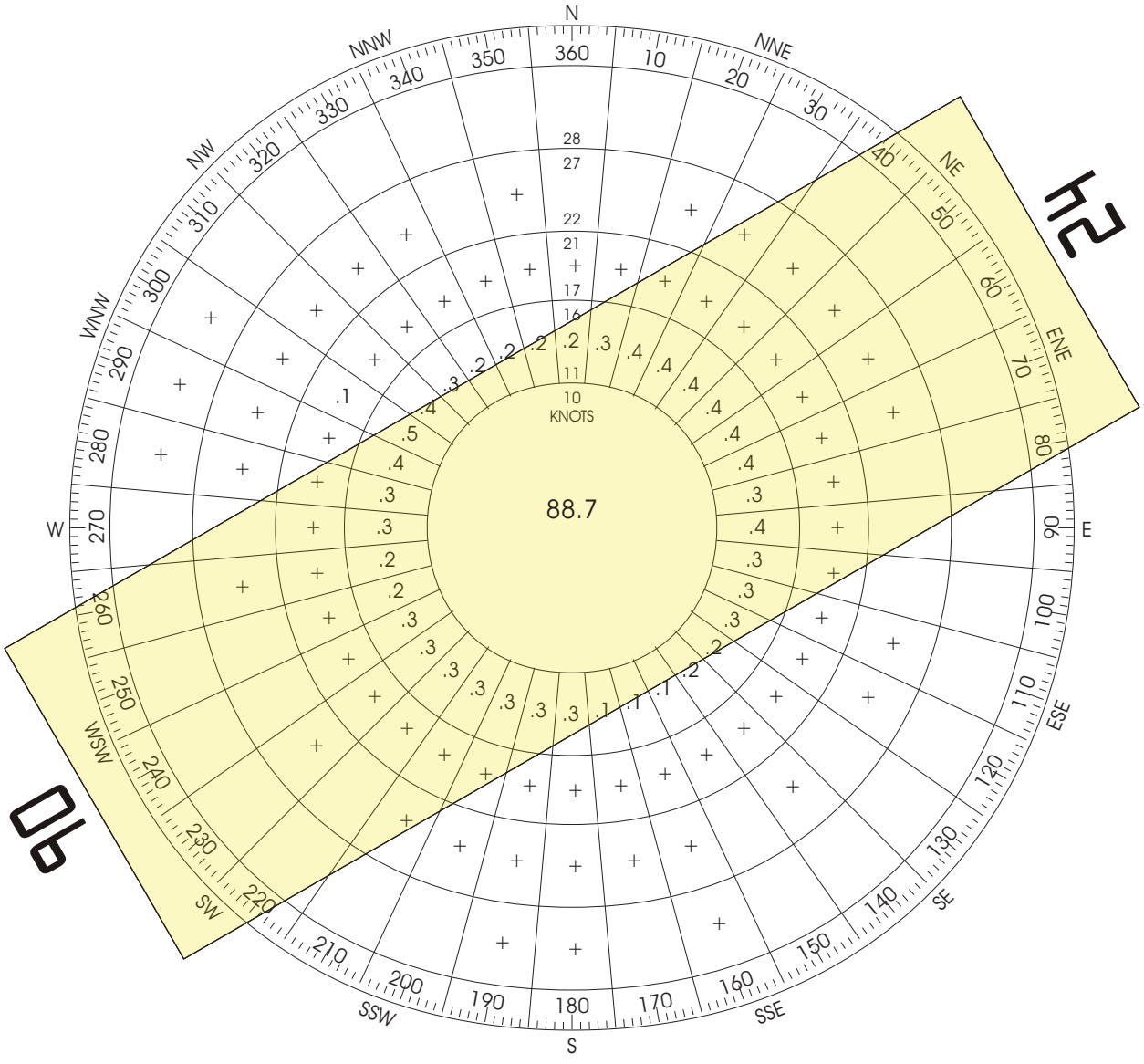
Average Wind Velocity (Kts.)										
Wind Direction	**0-3**	**4-6**	**7-10**	**11-16**	**17-21**	**22-27**	**28-33**	**38-40**	**41 Over**	**Total**
1	29	521	617	203	10	0	0	0	1	1381
2	43	744	939	296	10	1	0	0	0	2033
3	79	998	921	312	14	8	0	0	0	2332
4	99	1647	1171	320	16	1	0	0	0	3254
5	133	1977	1215	306	25	1	0	0	0	3657
6	179	2264	1319	319	17	1	0	0	0	4099
7	184	2332	1260	354	19	1	0	0	1	4151
8	200	1825	1023	265	13	0	0	0	0	3326
9	239	1779	964	283	4	0	0	0	1	3270
10	197	1494	844	245	6	0	0	0	2	2788
11	240	1414	866	212	7	1	0	0	0	2740
12	195	1404	820	206	10	2	0	0	1	2638
13	189	1057	649	168	3	0	0	0	0	2066
14	166	937	503	137	3	1	0	0	4	1751
15	109	776	390	102	3	0	0	0	2	1382
16	93	544	400	82	1	1	1	0	0	1122
17	83	548	301	104	3	1	0	0	1	1041
18	80	542	443	207	15	1	1	0	1	1290
19	44	407	393	204	7	1	1	0	0	1057
20	50	315	428	252	17	2	0	0	1	1065
21	31	315	529	267	15	1	0	0	0	1158
22	47	331	601	261	16	0	0	0	0	1256
23	45	366	626	274	7	1	0	0	1	1320
24	54	425	670	238	3	0	0	0	0	1390
25	26	362	552	144	8	0	0	0	0	1092
26	25	309	533	171	5	1	0	0	0	1044
27	21	317	611	250	8	0	0	0	0	1207
28	23	307	579	278	14	4	3	0	1	1209
29	28	395	639	352	35	12	1	1	1	1464
30	30	532	752	394	46	10	2	0	0	1766
31	29	588	722	358	35	5	0	0	0	1737
32	34	480	547	242	24	4	0	0	0	1331
33	31	501	511	163	16	3	0	0	0	1225
34	36	482	468	152	7	0	0	0	0	1145
35	34	442	489	160	7	1	0	0	0	1133
36	45	540	633	184	7	0	0	0	0	1409
Variable	12437	0	0	0	0	0	0	0	0	12437
TOTAL	15607	30217	24928	8465	456	65	9	1	18	79766

Reference: National Climatic Date Center (NCDC), 2001

Review of **Table 2-1** and the wind rose graphics determines that the existing Runway 6-24 at Southwest Florida International Airport provides wind coverage that exceeds the FAA's 95 percent guidance. Based on this, wind conditions at RSW do not appear to warrant a crosswind runway and any proposed runways should be oriented parallel to Runway 6-24.

Exhibit 2-3

Exhibit 2-3
All Weather Windrose

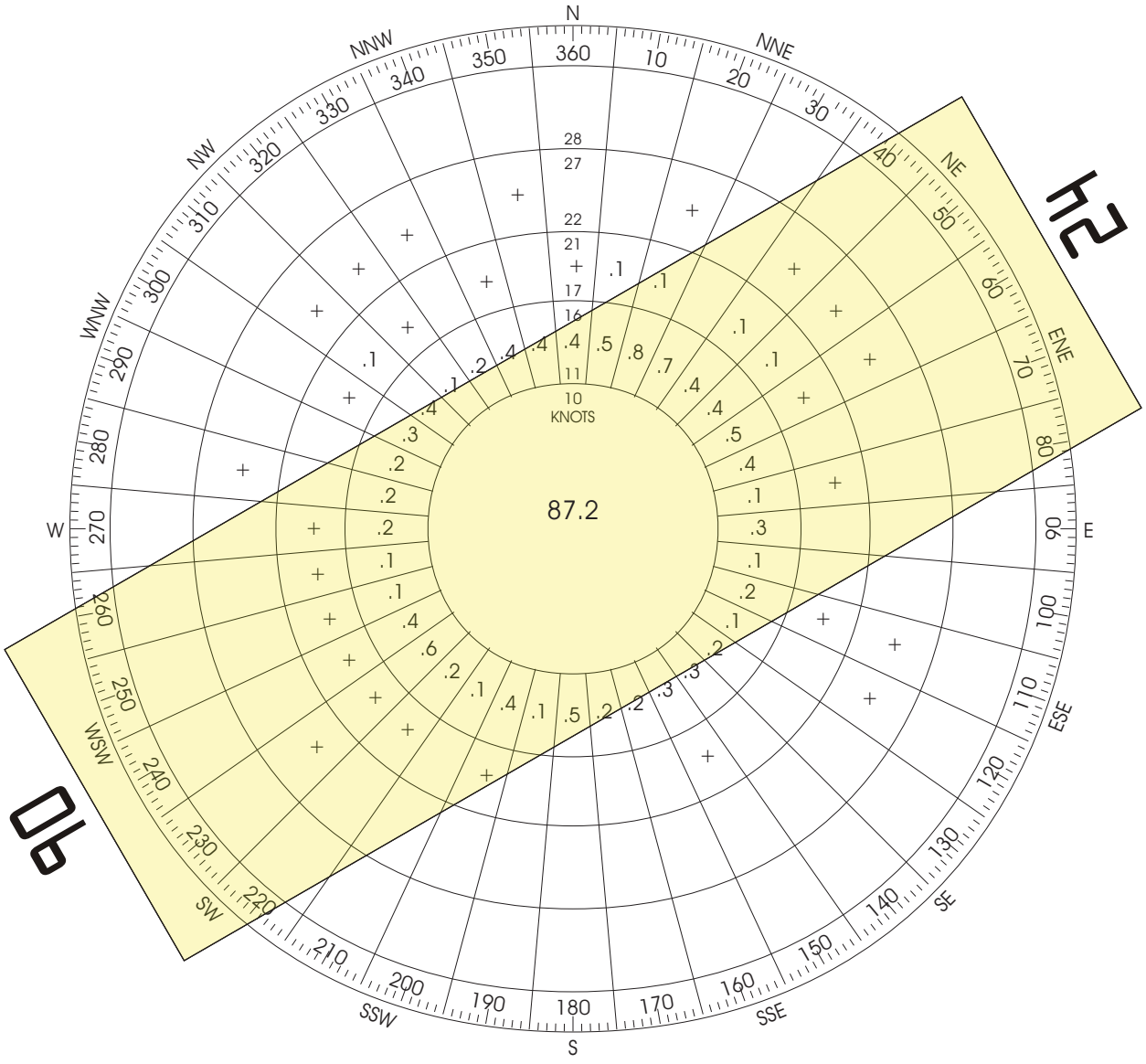


RUNWAY	COVERAGE
06/24	98.06 %
CROSSWIND COMPONENT:	13 KTS.
OBSERVATION PERIOD:	1991-2000
TOTAL OBSERVATIONS:	79,766
STATION:	Fort Myers (FMY)

Source: National Climatic Data Center, Asheville, N.C.

Exhibit 2-4

Exhibit 2-4
IFR Windrose



RUNWAY	COVERAGE
06/24	97.21%
CROSSWIND COMPONENT:	13 KTS.
OBSERVATION PERIOD:	1991-2000
TOTAL OBSERVATIONS:	79,586
STATION:	Fort Myers (FMY)

Source: National Climatic Data Center, Asheville, N.C.

2.4 AIRSIDE FACILITIES

This section presents a description of the existing airside facilities at Southwest Florida International Airport (RSW) and includes recent and currently on-going improvement projects. The description of the following facilities provides the basis for the airfield demand/capacity analysis and the determination of facility requirements to be presented in subsequent chapters.

The airside area of the Airport, also referred to as the "airport operating area" (AOA), is the area in which aircraft, support vehicles and equipment, and other aviation-specific operational activities take place (see **Exhibit 2-5**). The following facilities, equipment and procedures will be discussed in this section:

- Runways
- Apron Areas
- Taxiways / Taxilanes
- Airfield Lighting, Signage and Marking
- Navigational Aids (Navaids)
- Published Instrument Approach Procedures
- Standard Instrument Departures (SID)
- Standard Terminal Arrival Routes (STAR)

2.4.1 Runways

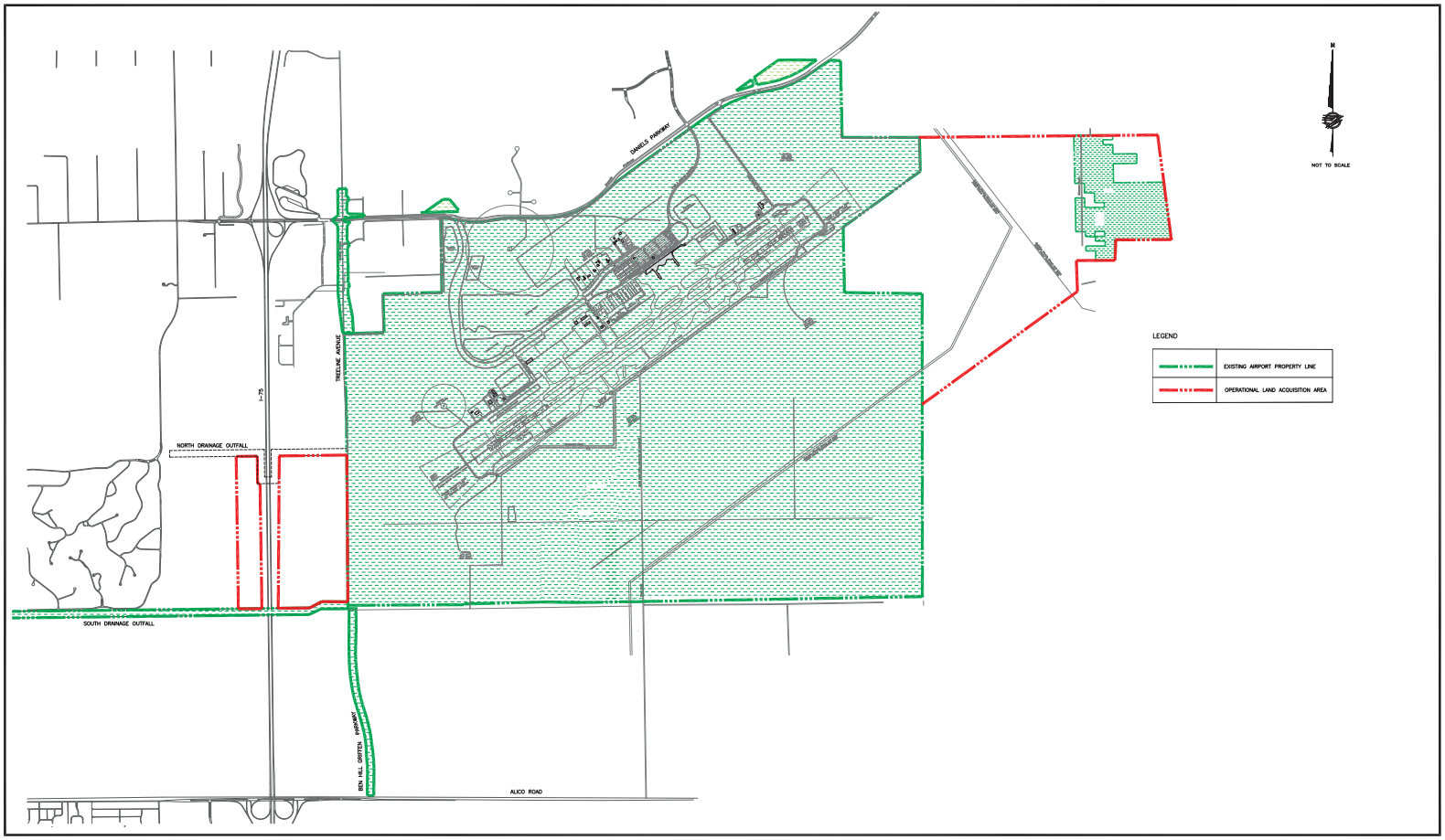
Currently, there is only one runway at Southwest Florida International Airport (RSW). Runway 6-24 is 12,000 feet long and 150 feet wide, constructed of asphalt concrete, and is grooved to help prevent aircraft hydroplaning when the runway is wet. In 1994, the runway was extended from 8,400 to 12,000 feet to accommodate the demand for larger, long-range aircraft associated with inter-continental and international-transatlantic flights. This 3,600-foot runway extension permits aircraft originating at RSW to operate non-stop flights from Fort Myers, Florida to many destinations in Europe and Canada. Runway 6-24 is considered to be in good to fair condition overall, although the need for a near-term rehabilitation is recognized. The estimated gross pavement weight bearing strength for Runway 6-24 is shown below:

Undercarriage Type	Weight (lbs.)
Single Wheel	30,000
Double Wheel	190,000
Double Tandem	430,000
Dual Double Tandem	840,000

Source: Airport Facilities Directory

The PCI index for Runway 6-24 at RSW varies at various points along its length. Both runway ends are rated by the Florida Department of Transportation (FDOT) at a PCI Index of 100 percent, indicating an excellent condition. However, the areas in between and towards the middle of the runway have PCI indexes ranging from 20 to 75, thus indicating fair to very poor pavement conditions. Plans have been made to rehabilitate and recondition the runway.

Exhibit 2-5



Lee County Port Authority	Brk Hillman Orlando Miami Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	**EXISTING OPERATIONAL AIRPORT PROPERTY PLAN**	DATE: MARCH 2004 PROJECT NO: C06901 FILE NAME: Exhibit 2-5 DESIGNED BY: S.R DRAWN BY: K.P CHECKED BY: S.R	EXHIBIT **2-5**

The Runway 6 approach end coordinates are latitude 26°31'35"N and longitude 81°46'12"W. Runway 6 is marked as a precision instrument runway and is served by an Instrument Landing System (ILS) with a Category I approach. Runway Visual Range (RVR) equipment is installed and is located at the touchdown zone of Runway 6. A visual glide path angle of 2.5° is provided by a 4-box Visual Approach Slope Indicator (VASI) located to the north of the runway edge at the approach end. The Runway 6 end is at an elevation of 26.5 feet mean sea level (MSL) and the threshold crossing height for the runway is 55 feet above ground level (AGL). The touchdown zone elevation is approximately 27.0 feet MSL.

Runway 24 is also marked as a precision instrument runway. The Runway 24 approach end coordinates are latitude 26°32'45"N and longitude 81°44'25"W. Runway 24 is served only by a non-precision approach procedure, which is defined as a standard instrument approach procedure with no electronic glide slope or vertical guidance to the runway. A 6-box VASI system with two visual glide path angles is installed at the approach end of the runway. The upper glide path angle (used for large aircraft with cockpits that sit high above the ground like the Boeing 747 and the MD-11) is set at 3.25°. The lower glide path angle used by the smaller aircraft is set at 3.0°. The Runway 24 approach end elevation is approximately 29.7 feet MSL and the lower and upper threshold crossing heights for the runway are 85 feet AGL and 52 feet AGL respectively. The touchdown point elevation for the Runway 24 is 30 feet MSL. All Runway 6 – 24 markings and striping are considered to be in good condition.

2.4.2 Apron Areas

Southwest Florida International Airport (RSW) has three designated aircraft parking aprons: the Passenger Terminal Apron, the General Aviation Apron, and the Cargo Apron. All parking aprons are located on the north side of the runway.

Passenger Terminal Apron

The Passenger Terminal Apron at Southwest Florida International Airport is located parallel to and northwest of Runway 6-24. It is the largest of the three aircraft parking aprons and is located closest to the approach end of Runway 24. Access to and from the terminal apron is provided by three connector taxiways, A-6, A-7 and A-8, which provide direct access between to the parallel taxiway, Taxiway "A", and the apron edge taxilane, Taxilane B. The apron taxiways and aircraft movement areas providing access to the aircraft gate positions were all designed to accommodate an aircraft the size of Boeing 747, which is designated as Aircraft Design Group (ADG) IV according to the Federal Aviation Administration (FAA). The apron is approximately 165,000 square yards (including Taxilane "B") in area and only serves the air carrier and charter airlines utilizing the terminal. The apron accommodates 17 gate positions served by passenger boarding bridges. Additional apron space is available to park up to two commuter aircraft adjacent to Concourse B and two commuter aircraft adjacent to Gate A1A depending on their size. The apron was generally noted to be in good condition.

General Aviation Apron

The General Aviation Apron is located west of the Passenger Terminal Apron and has a total area of approximately 26,000 square yards. This apron serves the FBO facility, and the associated general aviation maintenance hangar and provides approximately 25 to 30 tie-down spaces for

small single engine and multi engine prop aircraft. Additional space is designated for itinerant jet aircraft parking and aircraft movement and circulation. The pavement was noted to be in good condition and access to the apron is provided by Taxiway A-5 which connects directly to Taxiway A.

Cargo Area Apron

The Cargo Apron at RSW is located southwest of the Passenger Terminal and the general aviation facility, closer to the approach end of Runway 6. The Cargo Apron totals approximately 69,000 square yards and is capable of accommodating between 6-7 aircraft depending on their size. Aircraft serving the cargo facilities and utilizing the apron typically include the MD-80, Boeing 757 and Boeing 727. The Cargo Apron is served by two taxiway connectors, Taxiway A-3 and Taxiway A-4. Both taxiway connectors provide direct access to the parallel taxiway and are capable of handling Aircraft Design Group IV (ADG IV) aircraft.

2.4.3 Taxiways / Taxilanes

Taxiway A

As mentioned above, RSW has one full-length parallel taxiway, Taxiway "A", located on the north side of Runway 6-24. Taxiway A is 12,000 feet long and 75 feet wide and is in relatively good condition. The taxiway centerline to runway centerline separation distance is 400 feet, which complies with the FAA standards for an ADG V. There are a total of nine taxiway connectors, all of which provide access between the taxiway and the runway. Five of these taxiways, Taxiways A-4 through A-8, are high-speed exit taxiways. These taxiways are constructed at forty-five degree angles to the runway which allow aircraft to safely exit the runway at higher than normal speeds therefore decreasing runway occupancy times. The other four runway exits are the traditional ninety degree or perpendicular taxiway connectors.

The Passenger Terminal Apron is accessible by three connector taxiways A-6, A-7, and A-8, all of which connect to Taxiway A. Taxiway A-8 was observed to have severe cracking and a sealant has been applied as a temporary solution until the area can be resurfaced. Taxiway A-5 provides access to the general aviation ramp from Taxiway A, and Taxiway A-3 and A-4 provides access to the cargo apron area. All taxiways are designed for ADG V aircraft with the exception of Taxiway A-5, which was designed to accommodate ADG III aircraft or smaller.

Taxilane B

Taxilane B is the 1,580 foot long taxilane that runs both parallel to and adjacent to the Passenger Terminal apron. This taxilane serves as the terminal apron area for aircraft transitioning to and from the gate positions and to and from taxiways A-6, A-7, and A-8. The distance between the Taxilane B and Taxiway A centerlines is 435.5 feet. This separation distance exceeds the FAA minimum of 267 feet for ADG V type aircraft. Taxilane B is part of the aircraft movement area and an ATC clearance is required before aircraft can move onto the taxilane.

2.4.4 Airfield Lighting and Signage

Proper airfield lighting is required at all airports that are utilized for nighttime operations. As required per AC 150/5S40-24 Chg. 1 "Runway and Taxiway Edge Lighting System", edge and centerline lights are used to outline usable operational areas of airports during periods of darkness and low visibility weather conditions. The Southwest Florida International Airport is capable of accommodating night aircraft operations because appropriate airfield lighting has been installed on the airfield.

Runway Lighting

Runway edge lights define the lateral and longitudinal limits of the usable landing area. Runway 6-24 is equipped with white High Intensity Runway Lights (HIRL), which define the runway edges. The runway has no centerline lights or touchdown zone lights.

Taxiway Lighting

Taxiway lighting, similar to runway lighting but blue in color, is essential to safe operations during low visibility conditions and nighttime operations at an airport. Taxiway lights allow pilots to maneuver to and from the active runways, terminals and hangars. Taxiway edge lights also provide surface guidance to other ground vehicles on the airport.

Taxiway A, the five high-speed exit taxiways (A-4 through A-8) and Taxiways A-1, A-2, A-9 and A-10 have semi-flush mounted green taxiway centerline lights. The use of taxiway centerline lights has historically demonstrated that guidance from these types of lights is superior to that of taxiway edge lights, especially in low visibility conditions. Taxiway centerline lights are steady burning green lights inserted into the pavement along the taxiway centerline to provide visual guidance to aircraft and ground vehicle traffic.

Currently, the only taxiway edge lighting installed at RSW extends from the Terminal Apron and General Aviation Apron to Taxiway A. Other taxiways not supplied with edge lights are equipped with blue barrel, taxiway edge reflectors. Additionally, Taxilane B has blue taxiway edge lights installed on the southeast side of the taxilane to visually assist pilots transiting through the terminal area.

Pavement Markings

As stated above, both Runway 6 and Runway 24 are marked as precision instrument runways. Precision runway markings include number designation markers, a centerline stripe, runway side stripes, threshold markers, aiming point markers and touchdown zone markings. All of the runway striping was noted to be in good condition.

At RSW, all of the taxiways are properly marked with a yellow taxiway centerline stripe and taxiway edge stripes. Hold short markings are properly located at all taxiways/runway intersection. Additionally, all taxiway hold short markings are believed to be properly located at all taxiway/taxiway intersections but a hold bar upgrade project is currently ongoing in order to ensure compliance with the new FAA Advisory Circular, AC150/5340-1H Change 1.

On the terminal ramp, gate positions are marked with lead in lines and stop bars for the various aircraft serving that gate. A vehicle service road is properly marked on the terminal apron which promotes a safe operation for ground service equipment and other vehicles to maneuver around the aircraft parking positions. Additionally, ground service equipment restraint lines are marked at every gate, which denote equipment staging areas. An aircraft-parking envelope is also marked at each gate and represents equipment exclusion areas.

Signage

Currently, there are approximately eighty-two lighted signs on the taxiways and runway at RSW to safely guide aircraft and ground vehicles. These signs include mandatory instruction signs (such as holding positions for taxiway/runway intersections), location signs (for the runway and taxiways which identify the taxiway or runway upon which the aircraft is located), direction signs (which indicate directions of other taxiways leading out of an intersection), runway exit signs (directing where the aircraft is to exit the runway), and destination signs (such as outbound and inbound guidance to the terminal area). Additionally, the runway contains lighted distance remaining designators that depict the distance remaining to the end of the runway.

2.4.5 Navigational Aids (Navaids) – Electronic

For the purpose of this assessment, the term NAVAIDs (navigational aids) refers to any item intended to provide either visual or electronic guidance for pilots and their aircraft in the airport environment (excluding runway and taxiway lighting). These aids can have varied owners and operators, including but not limited to the Federal Aviation Administration (FAA), the military, private organizations, individual states and foreign governments. The FAA has the statutory authority to establish, operate, and maintain air navigation facilities and to prescribe standards for the operation of any of these aids that are used for instrument flight in United States government controlled airspace. These aids are tabulated in the Airport/Facility Directory, and the assessment of Southwest Florida International Airport's NAVAIDs includes the following.

- VORTAC/DME
- ILS
- NDB
- GPS
- ASR
- Visual Navaids (Airport Rotating Beacon, VASI, ALS, and Segmented Circle)

VHF Omnidirectional Range/Tactical Air Navigation Facility (VORTAC/DME)

A VHF Omni-Directional Range/Tactical Air Navigation (VORTAC) facility is one of the most fundamental electronic navaids serving the National Airspace System (NAS). A VORTAC collocates the equipment of a VOR and TACAN navigational facilities. The Fort Myers area is served by a VORTAC that is located on coordinates latitude 26°31'47"N and longitude 81°46'32"W, just northwest of Runway 6. This facility is identified as the Lee County VORTAC and operates on a frequency 111.80. The Lee County VORTAC is a low altitude facility, which provides directional service from 1,000 feet above ground level (AGL) up to and including 18,000 feet AGL, at radial distances out to 40 nautical miles. It also broadcasts a Hazardous In-

flight Weather Advisory (HIWAS) to aircraft in the vicinity of the Airport during periods of hazardous weather alerts.

The VOR is a ground-based facility that transmits a very high frequency (VHF) signal, oriented from magnetic north, on a 360-degree azimuth. The VOR signal provides accurate course alignment, which allows an aircraft in-flight to determine its bearing relative to the VOR station. This navaid is utilized to guide aircraft, under both instrument flight and visual flight conditions, into and out of an airport area. A system of high-altitude VOR facilities is used for enroute air navigational purposes and establishes the network of airways and jet routes throughout the world.

A Tactical Air Navigation (TACAN) station provides the same function as a VOR but combines azimuth and distance measuring equipment (DME) into one unit instead of two separate units. The DME provides compatible receivers with very reliable and accurate distance equipment up to 199 nautical miles away. The major difference between a VOR and TACAN is that VOR signals are in the Very High Frequency (VHF) range and TACAN's operate in the Ultra High Frequency (UHF) range that is used primarily by the United States military aircraft.

Since RSW has full TACAN station, that includes azimuth and distance measuring equipment, together with a collocated VOR, the station is considered a VORTAC. The FAA maintained equipment is in good condition and was transferred from Page Field Airport when RSW was opened. The housing for this facility was constructed in 1991 and was also noted to be in relatively good condition.

Instrument Landing System (ILS)

The standard Instrument Landing System (ILS) is composed of a runway approach lighting system, a localizer antenna array and glideslope transmitters to provide horizontal and vertical guidance information for a safe landing on the runway during times of adverse weather conditions or instrument meteorological conditions (IMC). Electronic beacons, known as outer markers and middle markers, provide information regarding the position of the aircraft during key portions of an ILS approach. Distance Measuring Equipment (DME) is also used at these markers to indicate the distance to or from the Airport.

At Southwest Florida International Airport, Runway 6 is the only runway equipped with an ILS Category I approach. The purpose of an ILS is to provide a method of precision instrument navigation, by means of horizontal and vertical guidance, to a point just beyond the approach end of the runway. Since the system provides both course and glideslope information, much lower weather minimums are possible than those provided for by a non-precision instrument approach.

Localizer

The localizer indicates whether the approaching aircraft is left or right of the correct alignment for approach to the runway. This component of an ILS approach only provides horizontal guidance to the runway. The localizer antenna is located approximately 1,050 feet from the approach end of Runway 24. The antenna coordinates are latitude 26°32'51"N and longitude 81°44'15"W. The antennas transmit between 108 and 118 MHz and the localizer frequency for the ILS Runway 6 is 111.5 MHz. The localizer antenna has a course width of 3.07°.

Glide Slope

The glide slope indicates vertical guidance or the correct angle of descent to the runway. At RSW the glide slope is located 1,050 feet from the approach end of Runway 6 and 140 feet west of the runway centerline. The glide slope is positioned at a latitude of 26°31'38"N and a longitude of 81°46'00"W. It is at a field elevation of 26.5 feet MSL and has a standard 3.00° glide slope angle. The glide slope antennas are positioned in close proximity of the intended touchdown point on the runway. The transmitting antennas transmit in the UHF band around 300 MHz. The glide slope will have to be relocated as part of the new Midfield Terminal project and will be discussed further in the Facility Requirements chapter of this report.

Outer Marker Beacon & Compass Locator (LOM)

The Outer Marker (LOM) is located at latitude 26°29'03"N and longitude 81°50'04"W, approximately 4.3 nautical miles (26,098 feet) from the approach end of Runway 6 and is identified by the name MUFFE. In addition, it is identified with a modulation of 336 kHz and a blue light which illuminates in the cockpit of an aircraft flying the ILS approach when over or in close proximity of the LOM. This marker is used to indicate that an aircraft should intercept the glide path when over the transmitter. The Outer Marker beacons are low-power VHF transmitters operating at 75 MHz.

Middle Marker (MM)

The Middle Marker (MM) at RSW is located at latitude 26°31'31"N and longitude 81°46'17"W and lies 0.4 nautical miles (2,600 feet) from the approach end of Runway 6. The MM is used to indicate that the aircraft is at the Decision Height (DH) for the approach to Runway 6. This is the altitude at which the pilot should visually see the runway. If the runway is not yet visible, the approach must be abandoned and a missed approach must be executed.

Non Directional Beacon (NDB)

A Non Directional Beacon (NDB) is a low or medium frequency radio beacon transmitting non-directional signals whereby the pilot of an aircraft equipped with airport direction finding (ADF) equipment can determine the bearing to or from the radio beacon and "home" in or track to or from the station. All radio beacons except the compass locators transmit a continuous three-letter identification in Morse code except during voice transmissions.

NDB's normally operate within the 190 to 535 kHz frequency band, and transmit a continuous carrier. Those NDB's that are not used as Compass Locators are frequently used for NDB approaches, and for homing purposes to help aircraft locate airports that have no published instrument approaches.

Currently, there is an NDB approach available for Runway 6 at RSW. This is a non-precision instrument approach and will likely be replaced or removed in the near future with the implementation of global positioning system (GPS) procedures.

Global Positioning System (GPS)

The Global Positioning System (GPS) is a satellite based radio positioning and navigation system designed to provide accurate position and velocity information on a continuous global basis. This system represents the future of air navigation. It is anticipated that NDB equipment and much of the VOR equipment currently in use will eventually be replaced by GPS. In addition, GPS based navigation, including precision approaches, is expected to become the standard in the future with the introduction of the Wide Area Augmentation System (WAAS) and the Local Area Augmentation System (LAAS).

The GPS operational policies that became effective in July 1998 state that pilots may substitute IFR certified GPS receivers for DME and ADF avionics for all operations except NDB approaches without GPS overlay. GPS can be used in lieu of DME and ADF on all localizer-type approaches as well as VOR/DME approaches, including when charted NDB or DME transmitters are temporarily out of service. These procedures and standards are described in detail in the Aeronautical Information Manual (AIM) and AC-90-94 entitled, "Guidelines for using global positioning system equipment for IFR en route and terminal operations and for non-precision instrument approaches in the U.S. National Airspace System."

GPS procedures have been implemented at Southwest Florida International Airport (RSW) for approaches to Runway 6 and Runway 24. Additional information concerning these approaches is included in Section 2.5.2, Published Instrument Approach Procedures Section.

Airport Surveillance Radar (ASR)

An ASR assists air traffic controllers by detecting and displaying an overall picture of what is going on within the airspace surrounding the terminal. The ASR rotates through 360 degrees and depending on local conditions, the typical coverage area for an ASR can extend out to 60 miles. Because ASR provides the position of aircraft in the vicinity of the airport the information is primarily utilized by air traffic controllers to facilitate the sequencing of both arriving and departing traffic. While the ASR does not provide vertical guidance to the pilot it is used for two published non-precision approaches for both Runway 6 and Runway 24 at RSW.

The ASR at RSW is located on airport property approximately 1.5 miles north-northwest of the airport reference point (ARP). The ASR is a FAA designated Series-8 radar facility and encompasses approximately 40,000 square feet of land. The FAA is proposing to install an ASR Series-11 at RSW at a location approximately 200 feet east-southeast of the existing ASR-8 facility. The new digital ASR-11 system will provide enhanced radar coverage and improved surveillance products for use by controllers. The new site will also require the same equipment installation area and identical external obstacle-free critical areas/zones.

2.4.6 Navaids – Visual/Supplemental

The following section addresses the visual and supplemental navigational aids that are provided at Southwest Florida International Airport.

Airport Rotating Beacon

An airport rotating beacon is a visual navigational aid that displays alternating flashes of high intensity white and green light to indicate the location of an airport. The flashes are sequenced 180 degrees apart as required by the FAA. At RSW the rotating beacon is located approximately 6,000 feet from the end of Runway 6 and 150 feet southeast of the runway centerline. The beacon is elevated to a height of 83 feet AGL, making it easier for pilots to see. The beacon, which is lighted daily from sunset to sunrise and during periods of Instrument Flight Rule (IFR) weather conditions, was noted to be in good condition.

Visual Approach Slope Indicators (VASI)

As noted previously, Runway 6 and Runway 24 at RSW both provide ground based visual aids known as Visual Approach Slope Indicators (VASI). Runway 6 provides a 4-box VASI configuration located on the left side of the Runway and Runway 24 utilizes a 6-box system of lights also located on the left side of the Runway. VASI lighting is provided to give visual descent guidance information during the final approach to a runway. These visual aids can only be used when the visibility is reasonably good. The visual glide path of the VASI provides safe obstruction clearance within plus or minus 10 degrees of the extended runway centerline and up to 4 NM from the runway threshold. Both sets of VASIs were noted to be in fair to good condition.

Medium Intensity Approach Lighting System (MALSR)

As part of the runway lighting system, the identification of the runway end, or threshold, is of critical importance to a pilot during landings and particularly during periods of reduced visibility and ceiling height. Therefore, runway ends and thresholds are equipped with special lighting to aid in the approach to or identification of the approach end of the runway. At RSW, the approach to Runway 6 has the most significant approach lighting that complements the ILS in providing a precision instrument approach system. The approach end of Runway 6 is equipped with a Medium Intensity Approach Lighting System (MALS) with Runway Alignment Indicator Lights (RAIL).

A MALSR is a MALS approved for ILS Category I precision approaches with decision heights as low as 200 feet. The MALS portion of the MALSR extends 1,400 feet from the end of the runway. The Runway Alignment Indicator Light (RAIL) portion of the system extends outward an additional 1,000 feet when the glide slope angle is 2.75 degrees or higher. This is the case at RSW since the precision instrument approach has a 3.0 degree glide slope. The purpose of the MALSR is to aid the pilot in identifying the runway environment and to facilitate a safe transition from the instrument flight phase to the visual phase of the landing. This system, referred to as "the rabbit" because of the sequenced strobe effect that "runs" toward the runway, provides pilots with early runway lineup, lead-in guidance, and runway end identification during landings and is extremely helpful during some periods of restricted visibility. The system at RSW is maintained by the FAA and is in good condition.

Runway End Identifier Lights (REIL)

Runway End Identification Lights (REIL) provides pilots with a rapid and positive visual identification of the approach end of the runway during night, instrument, and marginal weather

conditions. REILs also aid in identification of the runway end in areas having featureless terrain. The REIL system consists of a pair of synchronized white flashing lights facing the approaching aircraft, which are situated on each side and abeam of the runway end/threshold lights. The beam axis is orientated 15 degrees outward from a line parallel to the runway edge and inclined at an angle of 10 degrees upward. The REILs emit a white strobe light simultaneously at a rate of one per second. Runway 24 has a LCPA maintained REIL system that appears to be in good condition.

Automated Surface Observation System (ASOS)

The Automated Surface Observing System (ASOS) is the latest automated weather observation system sponsored by the Federal Aviation Administration (FAA). ASOS automatically provides temperature, dew point, wind, altimeter setting, visibility, sky condition, and precipitation information updated to the minute. A primary advantage of the ASOS system is that critical aviation weather parameters are measured in the vicinity of the runway touchdown zone. The ASOS program is a joint effort of the FAA, National Weather Service (NWS), and the Department of Defense (DOD). A similar system to the ASOS is the Automated Weather Observing System (AWOS). All automated observing systems are designed to provide the pilot, and other users, with daily minute-by-minute airport weather observations 24 hours a day. By providing near-real time information on atmosphere conditions at an increased number of reporting locations, automated systems improve the safety and efficiency of aviation operations as well as act as a key factor in designing better forecasting and warning systems.

The Automated Surface Observation System (ASOS) at RSW is an FAA designated Class II system. The system consists of a combined sensor group located on the airfield. The sensor group is located 1,102 feet northeast of the approach end of Runway 6 and 414 feet southeast of the Runway 6-24 centerline. The sensor group includes a wind sensor tower with a total obstruction height of 30 feet above ground level. An acquisition control unit (ACU) is located on the first floor of the air traffic control tower base building in the equipment room. The ACU collects the data from the sensor group. The communications link from the sensor group to the ACU (Acquisition Control Unit) is by UHF radio frequency 410.075 Mhz. The FAA provides power for the sensor group and the ACU.

RSW also provides ASOS weather information to pilots through a dial-in telephone. The telephone number for the RSW ASOS is 941-561-0966. Additionally, the Page Field (FMY) ASOS information is available by dialing 941-936-2318.

Runway Visual Range (RVR)

Runway Visual Range is defined as the visibility range measured on the runway. It is the distance over which pilots can see the high intensity runway edge lights. At RSW runway visibility is expressed in terms of RVR and miles as it relates to landing and takeoff visibility minimums for only Runway 6. The RVR is measured by transmissometers located along the side of the runway near the threshold. A light beam of a specific intensity is shot from a projector and measured by a receiver approximately 250 feet away. Any obscuring matter such as rain, snow, fog, smoke, haze, etc. reduces the intensity at the receiver and the measurement of the light intensity is converted to an RVR value. This information is displayed to the air traffic facility and updated approximately once every minute for controllers to relay to pilots operating at the airport.

Low Level Wind Shear Alert System (LLWAS)

The low-level wind shear alert system (LLWAS) is used to detect the presence of hazardous wind shear and microbursts in the vicinity of the airport. Six pole-mounted wind sensors are strategically located adjacent to the runway centerline, and on both sides of the approach end of Runway 6 and Runway 24. RSW is one of only thirty-nine airports throughout the United States to have this type of system. The LLWAS is controlled and maintained by the FAA and was noted to be in good condition. The new Midfield Terminal will require two or three of the LLWAS sensors to be relocated. Additional discussions of their exact location will be addressed in the Facility Requirements chapter of this report.

Segmented Circle and Windsocks

Southwest Florida International Airport has two lighted windsocks and a segmented circle. One windsock is located directly across from Taxiway A-8 on the south side of Runway 6-24. The primary windsock and segmented circle are located approximately 4,500 feet from the approach end of Runway 6, approximately 200 feet south of runway centerline. The standard aircraft traffic pattern at the Airport is a left pattern.

2.5 AIRSPACE CONFIGURATION / APPROACH PROCEDURES

2.5.1 Airspace Classifications

The FAA has six classifications of airspace under the National Airspace System (NAS). These classifications, which are designated as Class A, B, C, D, E, and G, are critical to the safety of all flights and to the efficient operation of all air traffic control facilities. Based on the level of activity and type of operations, airports receive either a classification of B, C, D or E. Class A airspace only exists above 18,000 feet and Class G airspace is designated as uncontrolled airspace.

Because Southwest Florida International Airport has an active FAA air traffic control tower (ATCT), is serviced by a radar approach control facility, and has a significant number of instrument flight rules (IFR) operations, the RSW airspace has been designated Class C. In Class C airspace, pilots must establish and maintain two-way radio communications with the ATCT at that airport, prior to entering the Class C airspace. In addition, the aircraft must be equipped with a Mode C transponder that automatically imprints aircraft altitude information on air traffic control radars. In Class C airspace, aircraft operating under Visual Flight Rules (VFR) are typically separated from the IFR aircraft and VFR aircraft must still see and avoid other VFR aircraft.

Although Class C airspace can be tailored to meet individual airport needs, the airspace usually consists of two columns of airspace. The Class C airspace at Southwest Florida International contains no modifications to the standard airspace configuration. The inner column of airspace encompasses an area that has a 5 nautical mile radius from the Airport and extends from the surface up to 4,000 feet above the airport elevation. The outer column of airspace encompasses an area that has a 10 nautical mile radius, but begins at 1,200 feet above the airport elevation and extends up to 4,000 feet above the airport elevation. The simplest way to visualize Class C airspace is to imagine a two-layer wedding cake turned upside down and centered on the airport.

RSW is in close proximity to the Class D airspace which surrounds Page Field Airport (FMY). The Class D airspace at Page Field encompasses a single column of airspace, 5 nautical miles in radius from the surface up to 1,200 feet above the airport elevation. Class D airspace requires each pilot to establish two-way radio communication with the ATCT prior to entering the airspace and to maintain this communication while in the airspace. Although considered controlled airspace, Class D airspace does not provide any separation service to visual flight rules (VFR) aircraft. When the ATCT is closed, the airspace at the airport is designated as Class G, or uncontrolled airspace.

The Page Field Airport (FMY) also has a small portion of Class E designated airspace. Typically, this classification of airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace and is used to provide additional safety to aircraft transiting to and from the airport. The small portion of Class E airspace at Page Field provides additional controlled airspace for precision and non-precision instrument approaches to Runway 5 and the non-precision instrument approach to Runway 13. These approaches are controlled by the FAA facilities at RSW. The Page Field Class E airspace has a floor beginning at 700 feet and extends up to 17,999 feet. Only a small portion of Class E airspace is required because most of the area surrounding Page Field is encompassed by the RSW Class C airspace.

Exhibit 2-6 has been taken from the Miami Sectional Aeronautical Chart to illustrate the airspace relationships in the Fort Myers area. The two large magenta circles represent the inner and outer columns of Class C airspace for RSW. Page Field falls between these two circles. This is why the ceiling for Page Field's Class D airspace is limited to 1,200 feet. At 1,200 feet, the Class D meets the overlaying RSW Class C airspace that is more restrictive. Although difficult to see, the Class D airspace for Page Field is represented by a dashed blue circle. However, the southeast portion of that circle is missing because it meets with the inner column of Class C airspace. The Class E airspace is depicted by a wide magenta line from the outside towards the airport it serves. The small portion of Class E is located on the northwest side of the Page Field Airport and is shown by a truncated arc intersecting the outer column of Class C airspace.

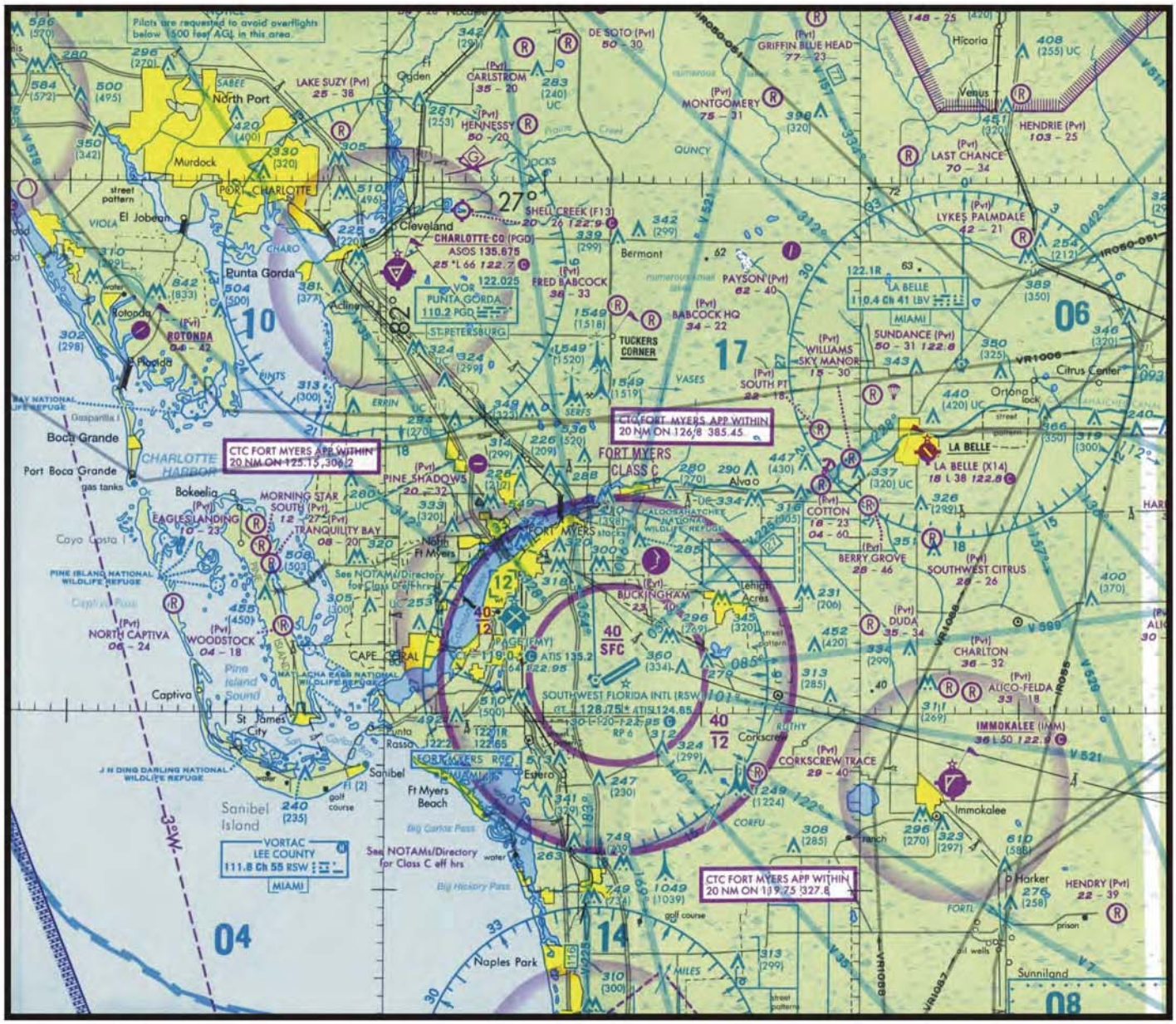
2.5.2 Published Instrument Approach Procedures

There are seven published instrument approach procedures at Southwest Florida International Airport. Although pilots may have options for visual approaches, only precision and non-precision instrument approaches are published in the United States Flight Information Publication – U.S. Terminal Procedures. The primary difference between a precision and a non-precision instrument approach is that the precision instrument approaches provide some form of electronic glide slope or glide path information for vertical guidance. It is important to note that the minimum approach descent altitudes expressed in the following paragraphs are for Category C aircraft (those aircraft with approach speeds near 140 knots) as these are the most common aircraft utilizing Southwest Florida International Airport.

At RSW, the Category I ILS system for Runway 6 is one of three classifications of ILS approach systems in use at airports today. The following delineates the typical approach minimums associated with the category of ILS approaches. These minimums may be adjusted higher based on specific circumstances at each individual airport.

Exhibit 2-6

Exhibit 2-6
Aeronautical Sectional Chart



** Not to be used for navigational purposes.*

Category I	-Decision Height ≥ 200 feet -Runway Visual Range = 2,400 feet -or Runway Visual Range = 1,800 feet (with touchdown zone and centerline lighting)
Category II	-Decision Height ≥ 100 feet -Runway Visual Range = 1,200 feet
Category III	-No Decision Height or below 50 feet -Runway Visual Range = between 700 and 150 feet

The Runway 6 Category I ILS provides instrument rated pilots with a decision height of 229 feet MSL and visibility minimums of ½ mile (RVR 2,400). The approach also provides a straight-in non-precision approach utilizing the localizer only with a minimum descent altitude (similar to the precision approach decision height) of 380 feet MSL and visibility minimums of ½ mile. There is also a circle to land approach (visual approach) that provides a decision height of 500 feet MSL and visibility minimums of 1 ½ miles for aircraft with approach speeds up to 140 knots. **Exhibit 2-7** provides additional details about these approaches.

A VOR straight-in instrument approach is available to Runway 6. This approach is created by the Lee County VORTAC and requires Automatic Direction Finding (ADF) or DME equipment. This straight-in approach provides pilots with a minimum descent altitude of 360 feet MSL and visibility minimums of 1 mile. The approach also provides a circle to land approach with a 500 feet minimum descent altitude and 1½ miles minimum visibility. If the DME equipment is used, the minimum descent altitudes for both the straight-in and visual approach decreases to 330 feet and 450 feet MSL respectively. **Exhibit 2-8** provides additional details about this approach.

An NDB non-precision straight-in instrument approach is available to Runway 6. This straight-in approach provides pilots with a minimum descent altitude of 440 feet MSL and visibility minimums of ¾ mile if the RVR is 4,000 feet or more. The approach also provides a circle to land approach with a 500 feet MSL minimum descent altitude and 1½ miles visibility minimums. **Exhibit 2-9** provides additional details about this approach.

Both Runway 6 and Runway 24 have non-precision global positioning system (GPS) approaches. These approaches have a minimum descent altitude of between 380 feet MSL to 400 feet MSL for Runways 6 and 24 respectively. Runway 6 has ¾ mile visibility minimum and a 2,400 Runway Visual Range, while Runway 24 measures visibility in miles because RVR measurements are not available for this runway. Therefore the visibility minimums for Runway 24 is 1 mile for aircraft categories A, B, and C. Category D aircraft require a visibility minimum of 1¼ miles. Both approaches have a circle-to-land approach with a minimum descent altitude of 500 feet MSL with a minimum visibility requirement of 1½ miles. The GPS approaches are depicted in **Exhibits 2-10** and **2-11**.

Airport Surveillance Radar (ASR) approaches are available for both Runways 6 and Runways 24. The minimum descent altitude of 380 feet MSL and visibility requirements of ½ mile with an RVR of 2,400 feet are the same for both runways. Circle to land approaches for both runways have a minimum descent altitude of 500 feet MSL with 1½ mile visibility. The ASR approaches are depicted in **Exhibit 2-12**.

Exhibit 2-7

Exhibit 2-7

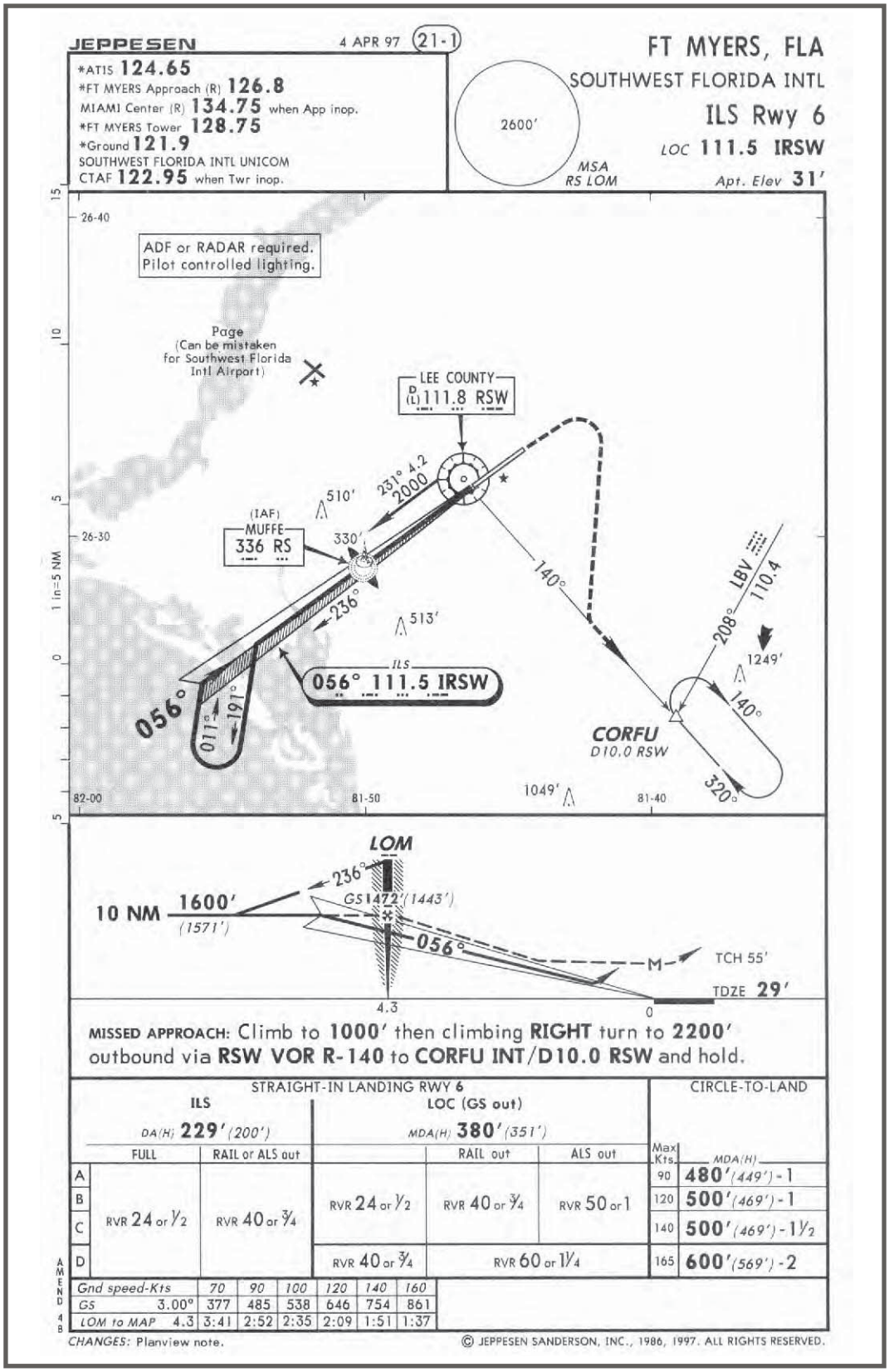

JEPPESEN
4 APR 97
21-1
FT MYERS, FLA
SOUTHWEST FLORIDA INTL
ILS Rwy 6
LOC 111.5 IRSW
Apt. Elev 31'
*ATIS 124.65
*FT MYERS Approach (R) 126.8
MIAMI Center (R) 134.75 when App inop.
*FT MYERS Tower 128.75
*Ground 121.9
SOUTHWEST FLORIDA INTL UNICOM
CTAF 122.95 when Twr inop.
2600'
MSA
RS LOM
ADF or RADAR required.
Pilot controlled lighting.
Page
(Can be mistaken for Southwest Florida Intl Airport)
LEE COUNTY
(L) 111.8 RSW
231° 4.2
2000
510'
(IAF)
MUFFE
336 RS
330'
140°
LBV
110.4
208°
1249'
236°
513'
ILS
056° 111.5 IRSW
056°
011°
191°
CORFU
D10.0 RSW
320°
1049'
26-40
26-30
82-00
81-50
81-40
1 in=5 NM
LOM
236°
10 NM
1600'
(1571')
GS 1472' (1443')
056°
M
TCH 55'
TDZE 29'
4.3
0
MISSED APPROACH: Climb to 1000' then climbing RIGHT turn to 2200' outbound via RSW VOR R-140 to CORFU INT/D10.0 RSW and hold.
STRAIGHT-IN LANDING RWY 6
ILS
DA(H) 229' (200')
FULL
RAIL or ALS out
LOC (GS out)
MDA(H) 380' (351')
RAIL out
ALS out
CIRCLE-TO-LAND
Max Kts.
MDA(H)
A
B
C
D
RVR 24 or 1/2
RVR 40 or 3/4
RVR 24 or 1/2
RVR 40 or 3/4
RVR 50 or 1
RVR 40 or 3/4
RVR 60 or 1 1/4
90 480' (449') - 1
120 500' (469') - 1
140 500' (469') - 1 1/2
165 600' (569') - 2
Gnd speed-Kts 70 90 100 120 140 160
GS 3.00° 377 485 538 646 754 861
LOM to MAP 4.3 3:41 2:52 2:35 2:09 1:51 1:37
AMEND 4B
CHANGES: Planview note.
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Exhibit 2-8

Exhibit 2-8

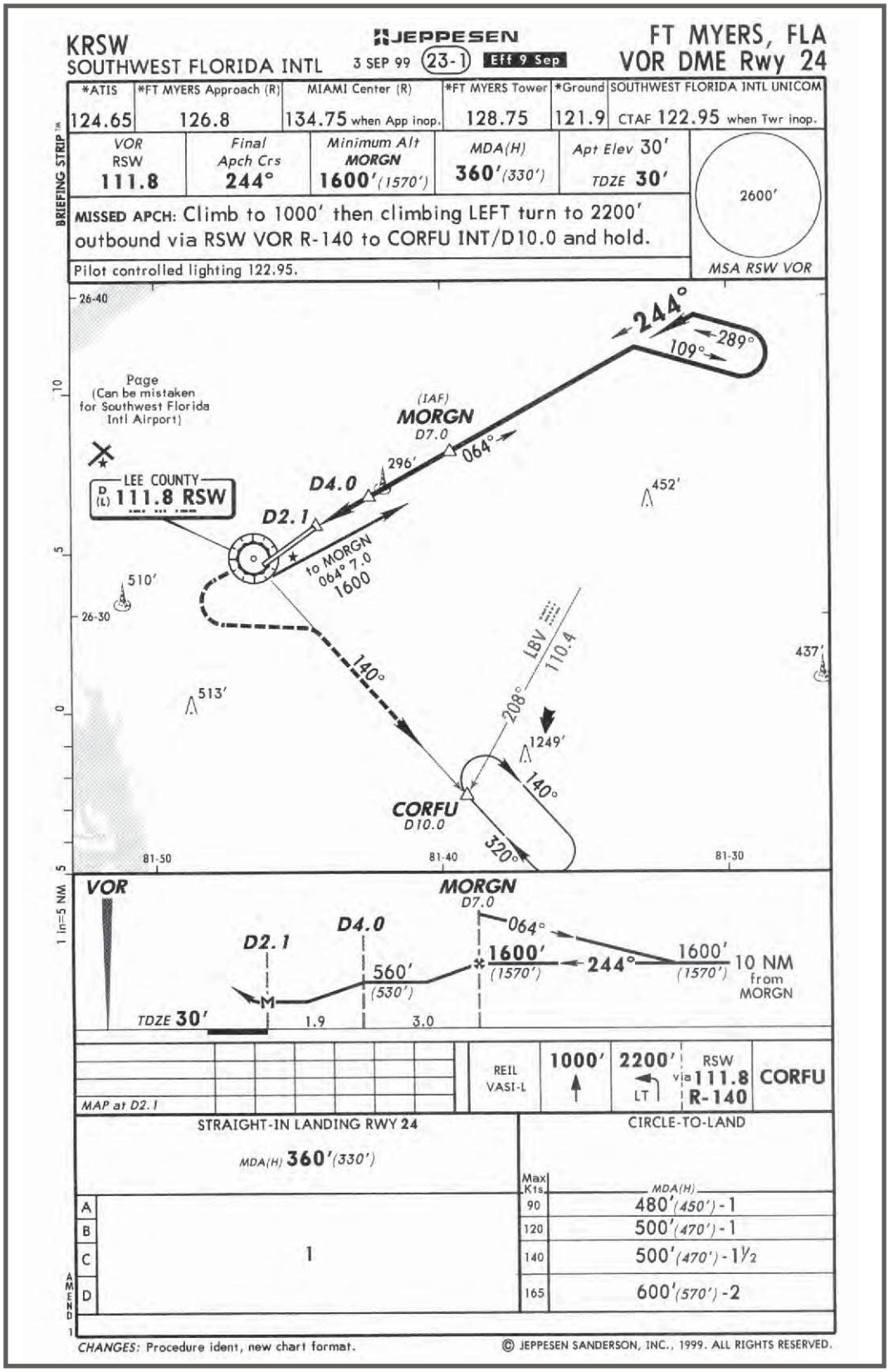
KRSW
SOUTHWEST FLORIDA INTL
JEPPESEN
3 SEP 99 (23-1) Eff 9 Sep
FT MYERS, FLA
VOR DME Rwy 24
*ATIS 124.65
*FT MYERS Approach (R) 126.8
MIAMI Center (R) 134.75 when App inop.
*FT MYERS Tower 128.75
*Ground 121.9
SOUTHWEST FLORIDA INTL UNICOM CTAF 122.95 when Twr inop.
VOR RSW 111.8
Final Apch Crs 244°
Minimum Alt MORGN 1600' (1570')
MDA(H) 360' (330')
Apt Elev 30'
TDZE 30'
2600'
MSA RSW VOR
MISSED APCH: Climb to 1000' then climbing LEFT turn to 2200' outbound via RSW VOR R-140 to CORFU INT/D10.0 and hold.
Pilot controlled lighting 122.95.
BRIEFING STRIP
Page (Can be mistaken for Southwest Florida Intl Airport)
LEE COUNTY
(L) 111.8 RSW
(IAF)
MORGN
D7.0
D4.0
D2.1
296'
064°
244°
109°
289°
to MORGN 064° 7.0 1600
452'
510'
513'
437'
1249'
LBV 110.4
208°
140°
320°
CORFU
D10.0
26-40
26-30
81-50
81-40
81-30
VOR
MORGN
D7.0
D4.0
D2.1
560' (530')
1600' (1570')
1600' (1570')
10 NM from MORGN
TDZE 30'
1.9
3.0
MAP at D2.1
REIL
VASI-L
1000'
2200'
LT
via RSW 111.8 R-140
CORFU
STRAIGHT-IN LANDING RWY 24
MDA(H) 360' (330')
CIRCLE-TO-LAND
Max Kts
MDA(H)
A 90 480' (450') - 1
B 120 500' (470') - 1
C 140 500' (470') - 1½
D 165 600' (570') - 2
1
AMDT 1
CHANGES: Procedure ident, new chart format.
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Exhibit 2-9

Exhibit 2-9

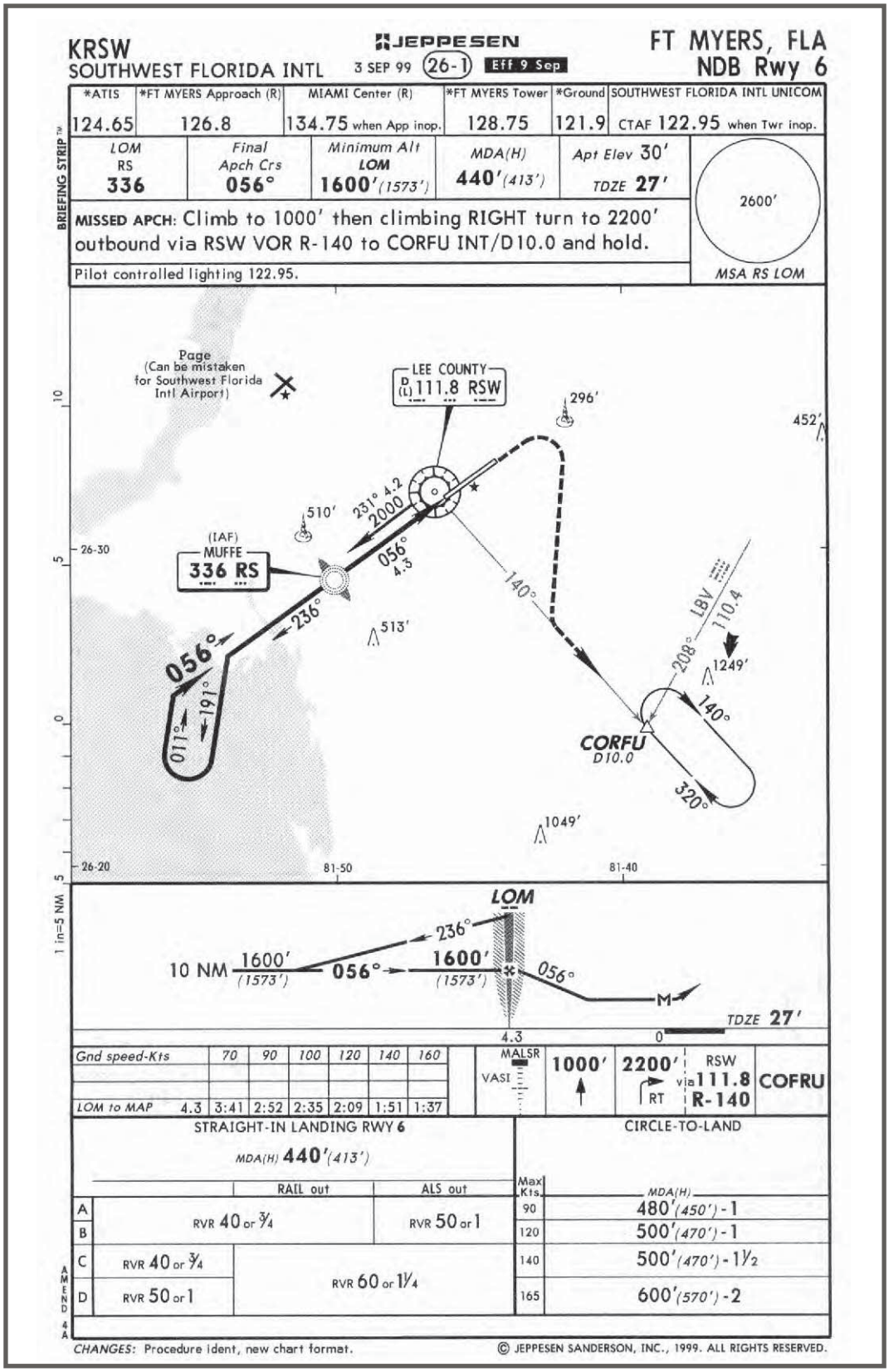
KRSW
SOUTHWEST FLORIDA INTL
JEPPESEN
3 SEP 99 (26-1) Eff 9 Sep
FT MYERS, FLA
NDB Rwy 6
*ATIS 124.65
*FT MYERS Approach (R) 126.8
MIAMI Center (R) 134.75 when App inop.
*FT MYERS Tower 128.75
*Ground 121.9
SOUTHWEST FLORIDA INTL UNICOM CTAF 122.95 when Twr inop.
BRIEFING STRIP™
LOM RS 336
Final Apch Crs 056°
Minimum Alt LOM 1600′(1573′)
MDA(H) 440′(413′)
Apt Elev 30′
TDZE 27′
2600′
MSA RS LOM
MISSED APCH: Climb to 1000′ then climbing RIGHT turn to 2200′ outbound via RSW VOR R-140 to CORFU INT/D10.0 and hold.
Pilot controlled lighting 122.95.
Page (Can be mistaken for Southwest Florida Intl Airport)
LEE COUNTY
D (L) 111.8 RSW
296′
452′
510′
231° 4.2
2000
(IAF)
MUFFE
336 RS
056°
4.3
140°
236°
513′
056°
011°
191°
LBV
110.4
208°
1249′
140°
CORFU
D10.0
320°
1049′
26-30
26-20
81-50
81-40
1 in=5 NM
LOM
10 NM
1600′ (1573′)
236°
056°
1600′ (1573′)
056°
M
TDZE 27′
4.3
0
Gnd speed-Kts 70 90 100 120 140 160
LOM to MAP 4.3 3:41 2:52 2:35 2:09 1:51 1:37
MALSR
VASI
1000′
2200′
RT
via
RSW
111.8
R-140
COFRU
STRAIGHT-IN LANDING RWY 6
MDA(H) 440′(413′)
RAIL out
ALS out
A
B
RVR 40 or 3/4
RVR 50 or 1
C
D
RVR 40 or 3/4
RVR 50 or 1
RVR 60 or 1 1/4
CIRCLE-TO-LAND
Max Kts
MDA(H)
90 480′(450′)-1
120 500′(470′)-1
140 500′(470′)-1 1/2
165 600′(570′)-2
AMEND 4A
CHANGES: Procedure ident, new chart format.
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Exhibit 2-10

Exhibit 2-10

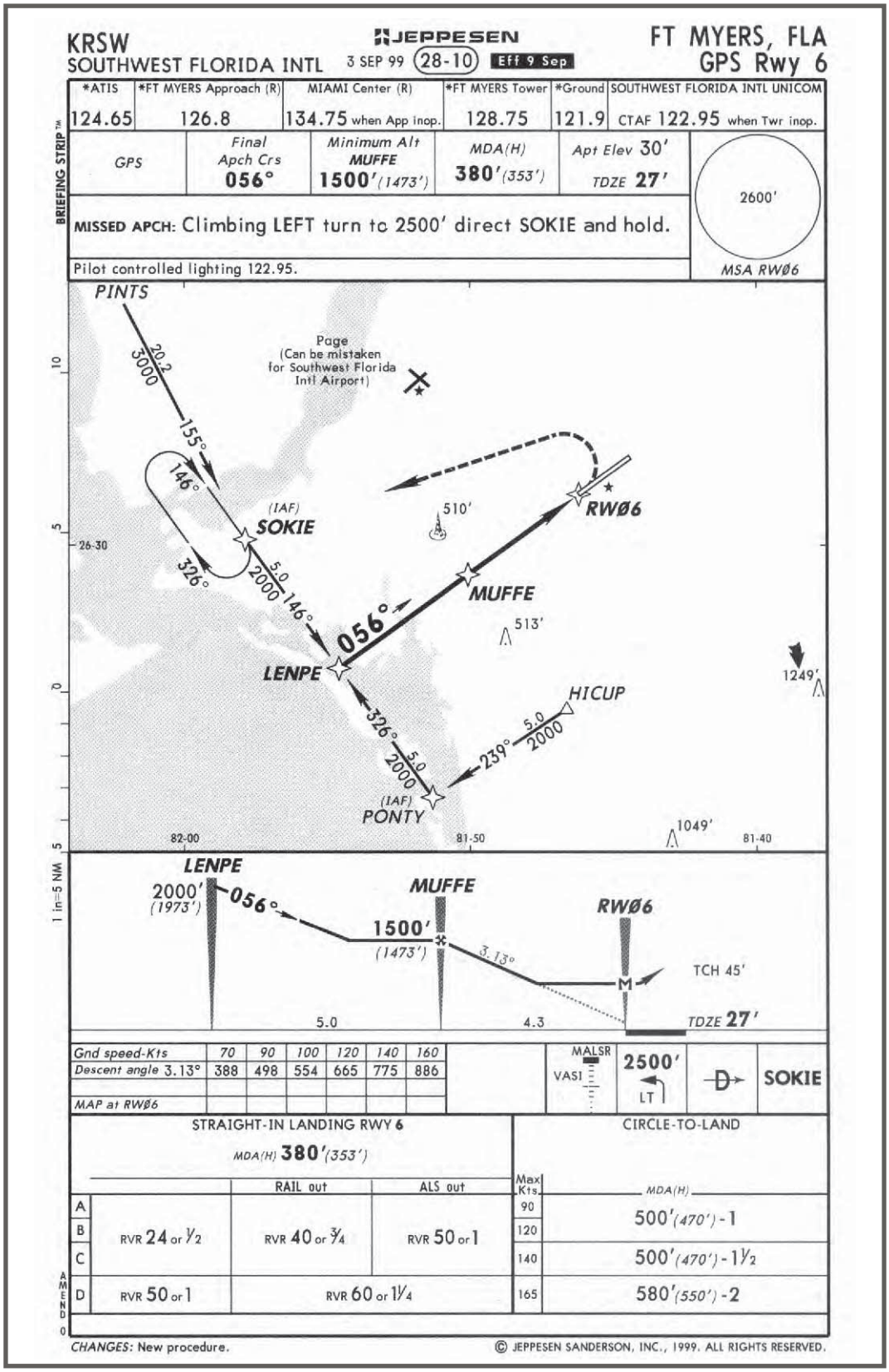
KRSW
SOUTHWEST FLORIDA INTL
JEPPESEN
3 SEP 99 (28-10) Eff 9 Sep
FT MYERS, FLA
GPS Rwy 6
*ATIS 124.65
*FT MYERS Approach (R) 126.8
MIAMI Center (R) 134.75 when App inop.
*FT MYERS Tower 128.75
*Ground 121.9
SOUTHWEST FLORIDA INTL UNICOM CTAF 122.95 when Twr inop.
GPS
Final Apch Crs 056°
Minimum Alt MUFFE 1500′ (1473′)
MDA(H) 380′ (353′)
Apt Elev 30′
TDZE 27′
2600′
MISSED APCH: Climbing LEFT turn to 2500′ direct SOKIE and hold.
Pilot controlled lighting 122.95.
MSA RWØ6
BRIEFING STRIP™
PINTS
20.2
3000
155°
146°
Page
(Can be mistaken for Southwest Florida Intl Airport)
(IAF)
SOKIE
510′
RWØ6
26-30
326°
5.0
2000
146°
056°
MUFFE
513′
LENPE
1249′
HICUP
326°
5.0
2000
239°
5.0
2000
(IAF)
PONTY
1049′
82-00
81-50
81-40
1 in–5 NM
LENPE
2000′
(1973′)
056°
MUFFE
1500′
(1473′)
3.13°
RWØ6
TCH 45′
5.0
4.3
TDZE 27′
Gnd speed-Kts 70 90 100 120 140 160
Descent angle 3.13° 388 498 554 665 775 886
MAP at RWØ6
MALSR
VASI
2500′
LT
SOKIE
STRAIGHT-IN LANDING RWY 6
MDA(H) 380′ (353′)
RAIL out
ALS out
A
B
C
D
RVR 24 or 1/2
RVR 40 or 3/4
RVR 50 or 1
RVR 50 or 1
RVR 60 or 1 1/4
CIRCLE-TO-LAND
Max Kts
MDA(H)
90
120
140
165
500′ (470′) - 1
500′ (470′) - 1 1/2
580′ (550′) - 2
AMENDED 0
CHANGES: New procedure.
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Exhibit 2-11

Exhibit 2-11

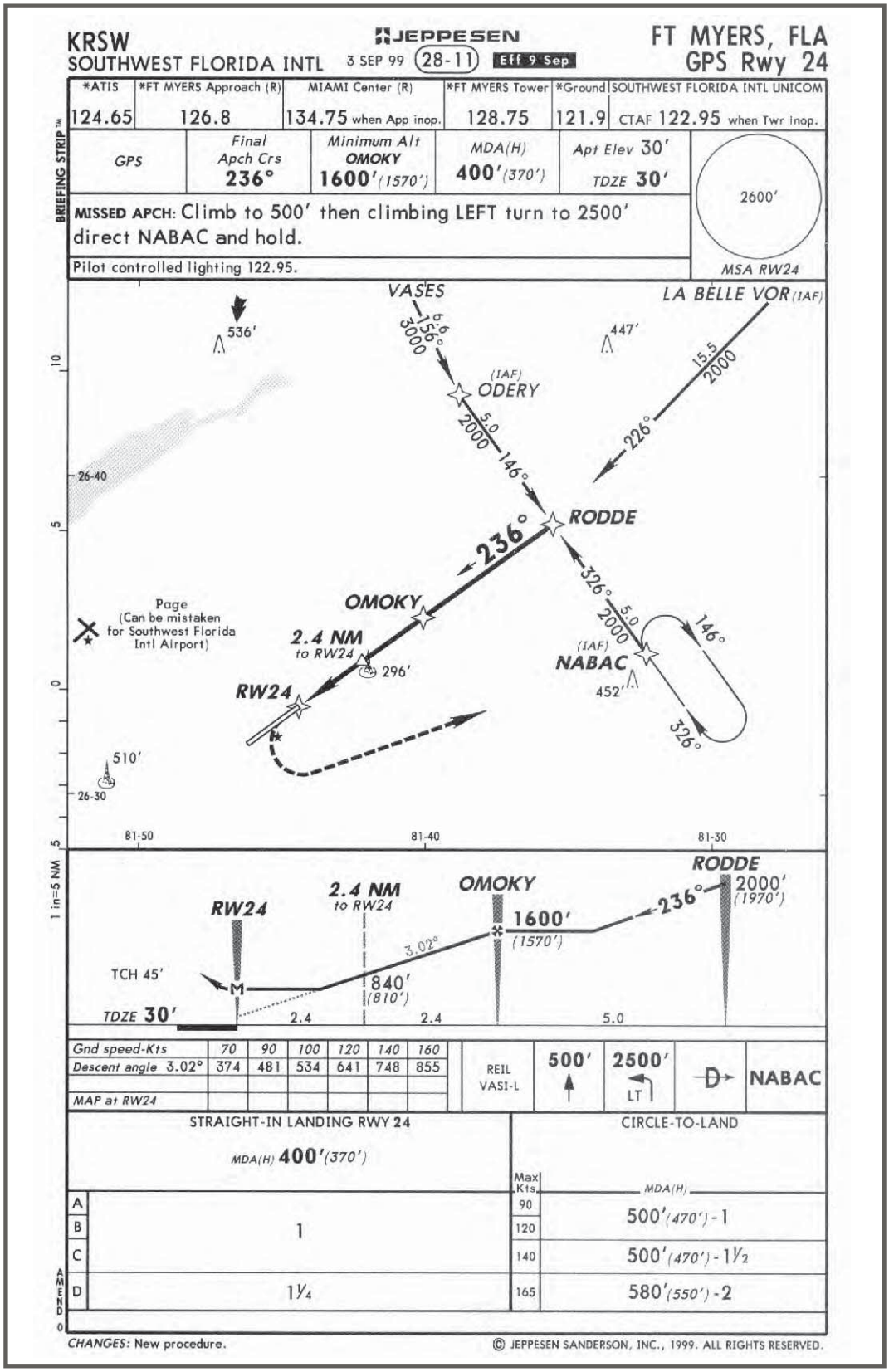
KRSW
SOUTHWEST FLORIDA INTL
JEPPESEN
3 SEP 99 (28-11) Eff 9 Sep
FT MYERS, FLA
GPS Rwy 24
*ATIS 124.65
*FT MYERS Approach (R) 126.8
MIAMI Center (R) 134.75 when App inop.
*FT MYERS Tower 128.75
*Ground 121.9
SOUTHWEST FLORIDA INTL UNICOM CTAF 122.95 when Twr inop.
BRIEFING STRIP
GPS
Final Apch Crs 236°
Minimum Alt OMOKY 1600'(1570')
MDA(H) 400'(370')
Apt Elev 30'
TDZE 30'
MISSED APCH: Climb to 500' then climbing LEFT turn to 2500' direct NABAC and hold.
Pilot controlled lighting 122.95.
2600'
MSA RW24
VASES
LA BELLE VOR (IAF)
ODERY (IAF)
RODDE
OMOKY
NABAC (IAF)
RW24
2.4 NM to RW24
Page (Can be mistaken for Southwest Florida Intl Airport)
536'
447'
452'
296'
510'
26-40
26-30
81-50
81-40
81-30
1 in=5 NM
3.02°
TCH 45'
840' (810')
1600' (1570')
2000' (1970')
TDZE 30'
Gnd speed-Kts 70 90 100 120 140 160
Descent angle 3.02° 374 481 534 641 748 855
MAP at RW24
REIL
VASI-L
500'
2500'
LT
NABAC
STRAIGHT-IN LANDING RWY 24
MDA(H) 400'(370')
CIRCLE-TO-LAND
Max Kts
MDA(H)
A 90 500'(470')-1
B 120 500'(470')-1
C 140 500'(470')-1½
D 165 580'(550')-2
1
1¼
CHANGES: New procedure.
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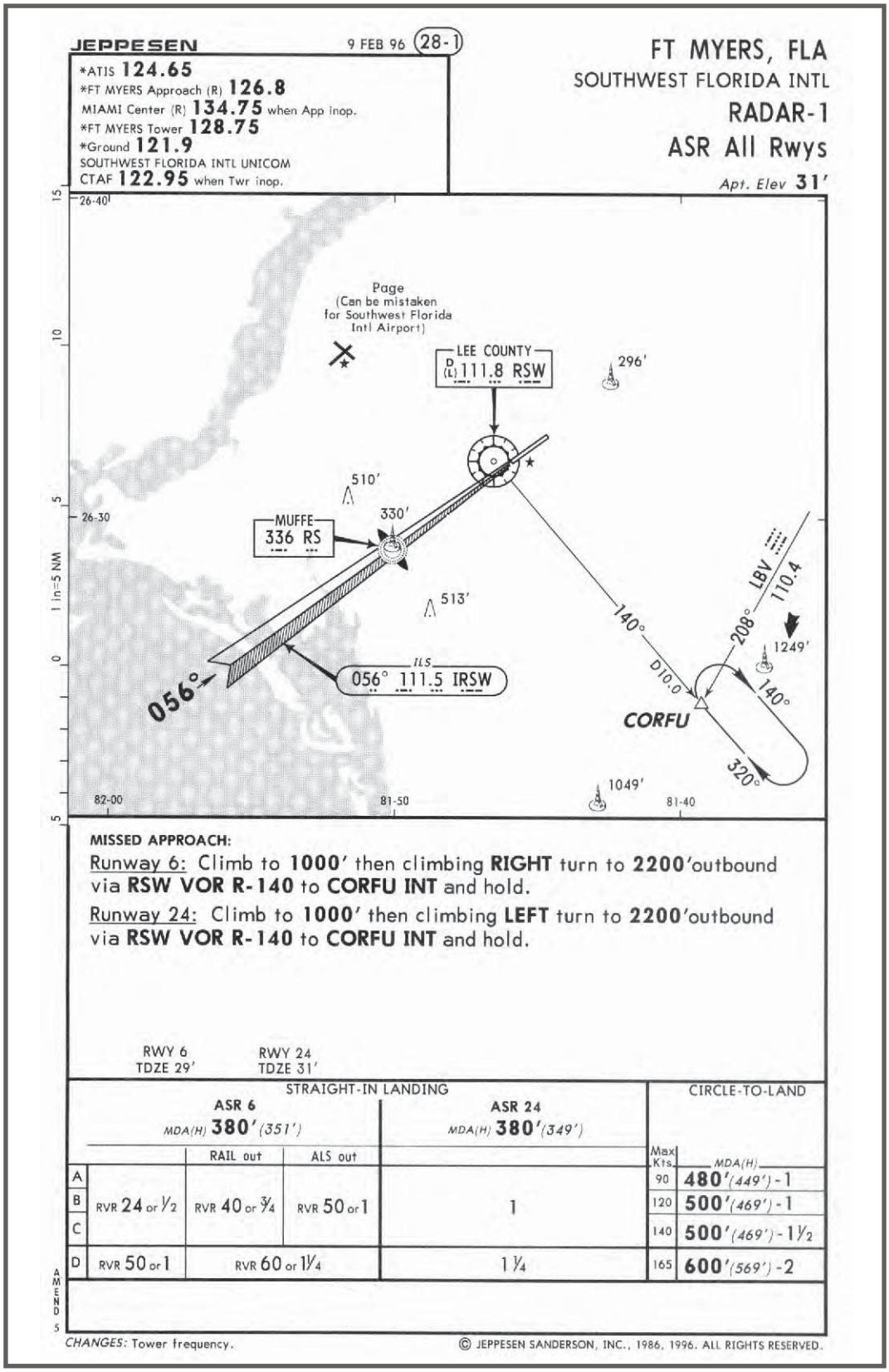
Exhibit 2-12

Exhibit 2-12


JEPPESEN
9 FEB 96 (28-1)
*ATIS 124.65
*FT MYERS Approach (R) 126.8
MIAMI Center (R) 134.75 when App inop.
*FT MYERS Tower 128.75
*Ground 121.9
SOUTHWEST FLORIDA INTL UNICOM
CTAF 122.95 when Twr inop.
FT MYERS, FLA
SOUTHWEST FLORIDA INTL
RADAR-1
ASR All Rwys
Apt. Elev 31'
Page
(Can be mistaken for Southwest Florida Intl Airport)
LEE COUNTY
D 111.8 RSW
296'
510'
330'
MUFFE
336 RS
513'
056°
ILS
056° 111.5 IRSW
140°
D10.0
CORFU
LBV
110.4
208°
1249'
140°
320°
1049'
26-40
26-30
82-00
81-50
81-40
1 in=5 NM
MISSED APPROACH:
Runway 6: Climb to 1000' then climbing RIGHT turn to 2200'outbound via RSW VOR R-140 to CORFU INT and hold.
Runway 24: Climb to 1000' then climbing LEFT turn to 2200'outbound via RSW VOR R-140 to CORFU INT and hold.
RWY 6 TDZE 29'
RWY 24 TDZE 31'
STRAIGHT-IN LANDING
ASR 6
MDA(H) 380' (351')
RAIL out
ALS out
ASR 24
MDA(H) 380' (349')
CIRCLE-TO-LAND
Max Kts.
MDA(H)
A
B
C
D
RVR 24 or 1/2
RVR 40 or 3/4
RVR 50 or 1
1
90
480' (449') - 1
120
500' (469') - 1
140
500' (469') - 1 1/2
RVR 50 or 1
RVR 60 or 1 1/4
1 1/4
165
600' (569') - 2
AMEND 5
CHANGES: Tower frequency.
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2.5.3 Standard Instrument Departures (SID)

A Standard Instrument Departure (SID) is an ATC coded departure procedure that has been established at certain airports to simplify clearance delivery procedures. SIDs are carried out by the pilot without vectors from ATC and are also established to assist pilots conducting IFR flight in avoiding obstacles during climb out to Minimum Enroute Altitudes (MEA). There are two SIDs at the RSW. The ALICO TWO DEPARTURE (designated (ALICO2.ALICO) and the SCUBY TWO DEPARTURE (designated SCUBY2.SCUBY) are depicted in **Exhibit 2-13** and **2-14** respectively.

2.5.4 Standard Terminal Arrival (STAR) Procedures

A Standard Terminal Arrival (STAR) is an ATC coded IFR arrival route established for application to arriving IFR aircraft destined for certain airports. The purpose of a STAR is to simplify clearance delivery and facilitate transition between enroute and instrument approach procedures. The one STAR available for use at RSW is identified as the SARASOTA THREE ARRIVAL (SRQ.SRQ3) and is shown in **Exhibit 2-15**.

2.6 AIR TRAFFIC CONTROL TOWER (ATCT)

The Air Traffic Control Tower (ATCT) at RSW and its related facilities are located approximately 2,500 feet southwest of the terminal building next to the ARFF facilities. The tower and the administration building encompass approximately 8,600 square feet. This includes 3,000 square feet of office space added on in 1998. The tower is a FAA facility with a cab floor height of 76.91 feet AGL. The RSW ATCT provides the following primary aircraft control functions for the Airport: local control, approach and departure control, and ground control operations. These services are handled through separate frequencies as shown in **Table 2-2.** In addition, the FAA facilities at RSW provide approach and departure control for Page Field, Naples, Punta Gorda, Charlotte County, Marco Island, and Immokalee airport.

TABLE 2-2
ATCT FREQUENCIES

Control Area	Frequency (MHz)
Automated Terminal Information System (ATIS)	124.65
Fort Myers Approach/Departure	126.80
Fort Myers Tower	128.75
Ground Control	121.90
Miami Center (When RSW tower is closed)	134.75
CTAF (Common Traffic Advisory Frequency)	122.95

Source: Airport Facility Directory

The tower is FAA staffed with a total of 36 air traffic controllers and 11 technicians, with two administrative personnel positions. The tower is attended by FAA personnel from 0600 hrs. to 0000 hrs. After closing hours, Miami Center provides radar coverage for IFR flight up to 3,000 feet.

Exhibit 2-13

Exhibit 2-13

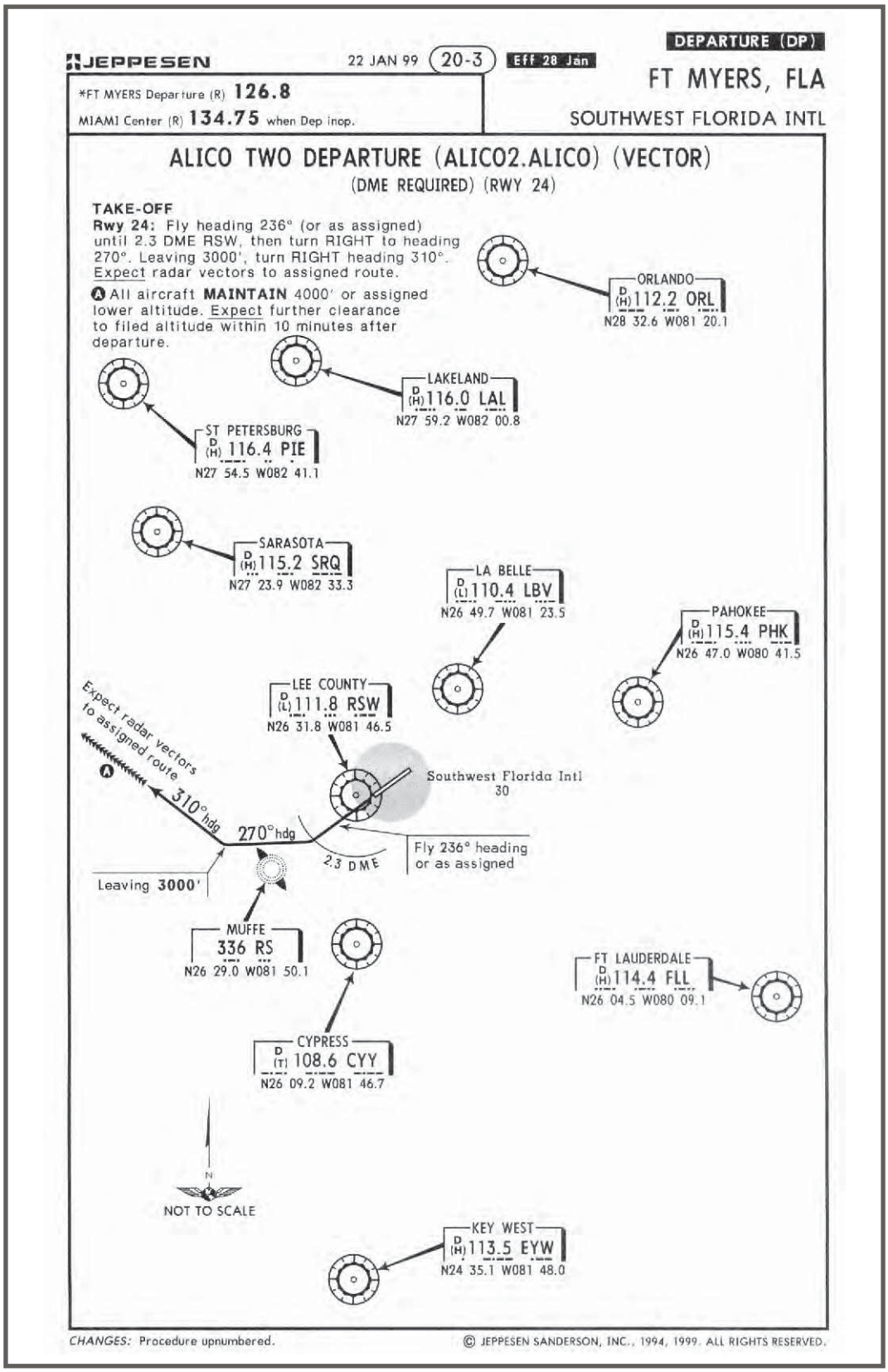
JEPPESEN
22 JAN 99
20-3
Eff 28 Jan
DEPARTURE (DP)
FT MYERS, FLA
SOUTHWEST FLORIDA INTL
*FT MYERS Departure (R) 126.8
MIAMI Center (R) 134.75 when Dep inop.
ALICO TWO DEPARTURE (ALICO2.ALICO) (VECTOR)
(DME REQUIRED) (RWY 24)
TAKE-OFF
Rwy 24: Fly heading 236° (or as assigned) until 2.3 DME RSW, then turn RIGHT to heading 270°. Leaving 3000', turn RIGHT heading 310°. Expect radar vectors to assigned route.
A All aircraft MAINTAIN 4000' or assigned lower altitude. Expect further clearance to filed altitude within 10 minutes after departure.
ORLANDO
D (H) 112.2 ORL
N28 32.6 W081 20.1
LAKELAND
D (H) 116.0 LAL
N27 59.2 W082 00.8
ST PETERSBURG
D (H) 116.4 PIE
N27 54.5 W082 41.1
SARASOTA
D (H) 115.2 SRQ
N27 23.9 W082 33.3
LA BELLE
D (L) 110.4 LBV
N26 49.7 W081 23.5
PAHOKEE
D (H) 115.4 PHK
N26 47.0 W080 41.5
LEE COUNTY
D (L) 111.8 RSW
N26 31.8 W081 46.5
Expect radar vectors to assigned route
A
310° hdg
270° hdg
2.3 DME
Southwest Florida Intl
30
Fly 236° heading or as assigned
Leaving 3000'
MUFFE
336 RS
N26 29.0 W081 50.1
FT LAUDERDALE
D (H) 114.4 FLL
N26 04.5 W080 09.1
CYPRESS
D (T) 108.6 CYY
N26 09.2 W081 46.7
N
NOT TO SCALE
KEY WEST
D (H) 113.5 EYW
N24 35.1 W081 48.0
CHANGES: Procedure upnumbered.
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Exhibit 2-14

Exhibit 2-14

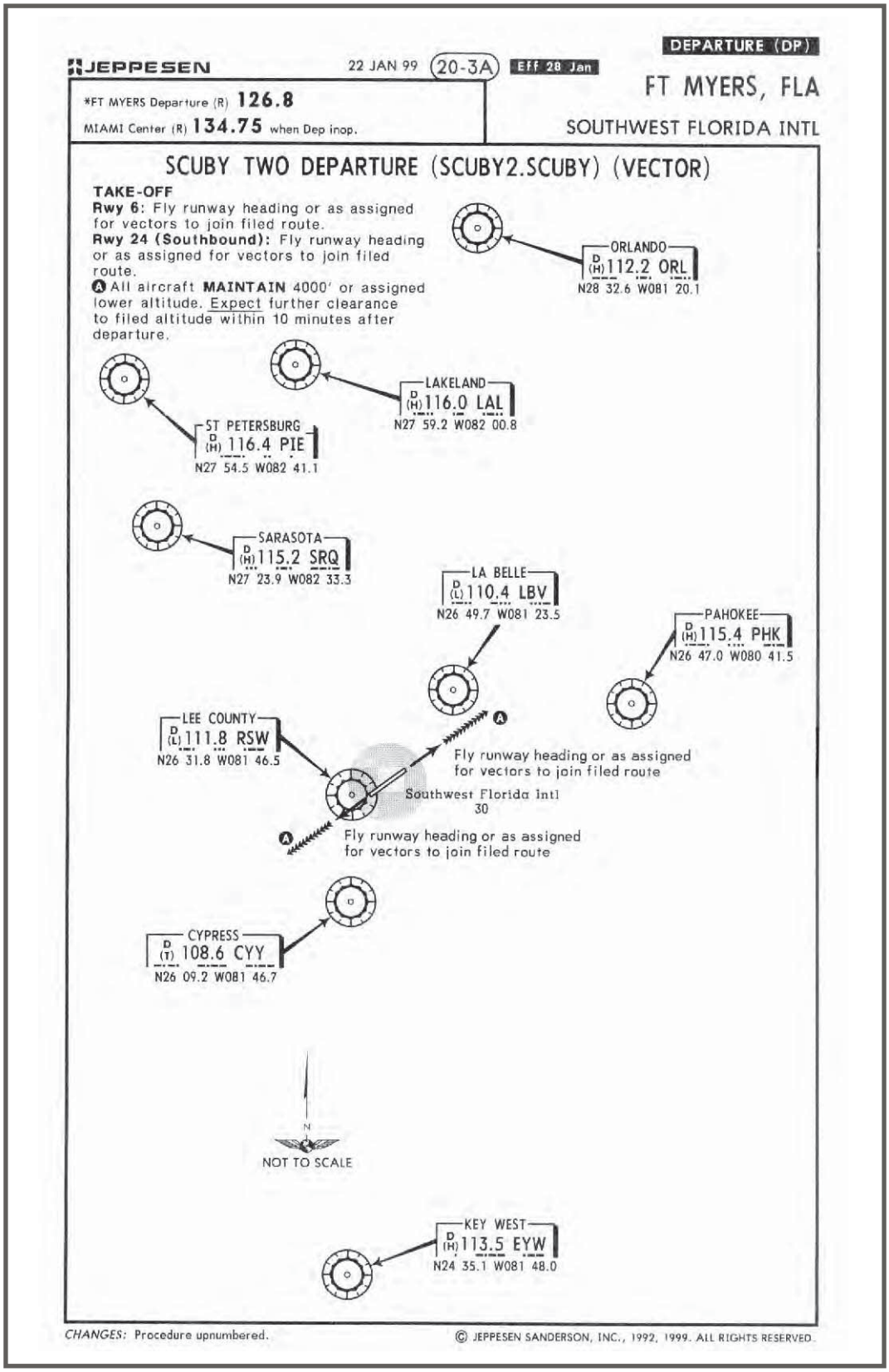
JEPPESEN
22 JAN 99
20-3A
Eff 28 Jan
DEPARTURE (DP)
FT MYERS, FLA
SOUTHWEST FLORIDA INTL
*FT MYERS Departure (R) 126.8
MIAMI Center (R) 134.75 when Dep inop.
SCUBY TWO DEPARTURE (SCUBY2.SCUBY) (VECTOR)
TAKE-OFF
Rwy 6: Fly runway heading or as assigned for vectors to join filed route.
Rwy 24 (Southbound): Fly runway heading or as assigned for vectors to join filed route.
A All aircraft MAINTAIN 4000' or assigned lower altitude. Expect further clearance to filed altitude within 10 minutes after departure.
ORLANDO
D (H) 112.2 ORL
N28 32.6 W081 20.1
LAKELAND
D (H) 116.0 LAL
N27 59.2 W082 00.8
ST PETERSBURG
D (H) 116.4 PIE
N27 54.5 W082 41.1
SARASOTA
D (H) 115.2 SRQ
N27 23.9 W082 33.3
LA BELLE
D (L) 110.4 LBV
N26 49.7 W081 23.5
PAHOKEE
D (H) 115.4 PHK
N26 47.0 W080 41.5
LEE COUNTY
D (L) 111.8 RSW
N26 31.8 W081 46.5
Fly runway heading or as assigned for vectors to join filed route
Southwest Florida Intl
30
Fly runway heading or as assigned for vectors to join filed route
CYPRESS
D (T) 108.6 CYY
N26 09.2 W081 46.7
N
NOT TO SCALE
KEY WEST
D (H) 113.5 EYW
N24 35.1 W081 48.0
CHANGES: Procedure upnumbered.
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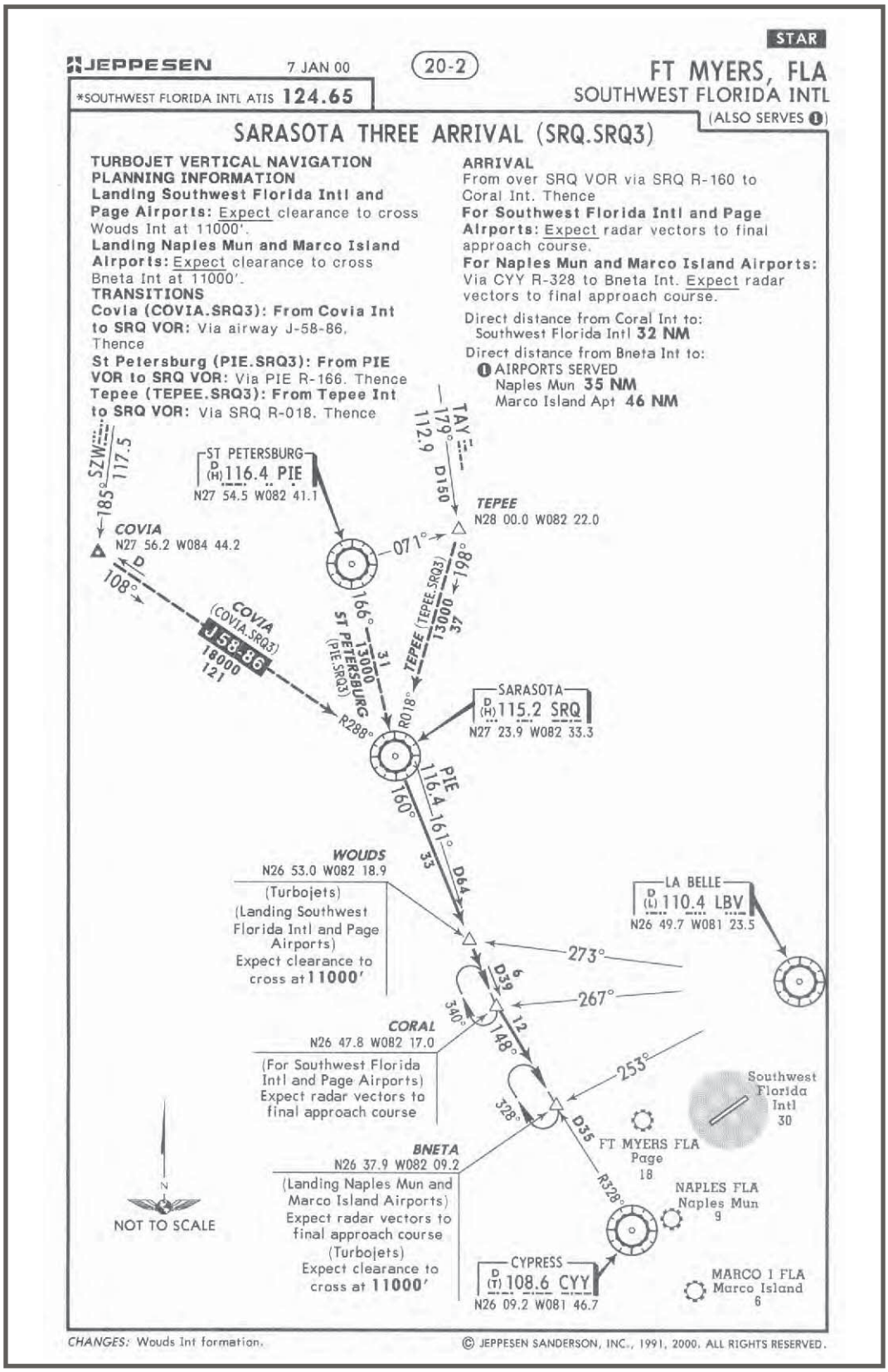
Exhibit 2-15

Exhibit 2-15


STAR
JEPPESEN
7 JAN 00
20-2
FT MYERS, FLA
SOUTHWEST FLORIDA INTL
*SOUTHWEST FLORIDA INTL ATIS 124.65
(ALSO SERVES)
SARASOTA THREE ARRIVAL (SRQ.SRQ3)
TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION
Landing Southwest Florida Intl and Page Airports: Expect clearance to cross Wouds Int at 11000'.
Landing Naples Mun and Marco Island Airports: Expect clearance to cross Bneta Int at 11000'.
TRANSITIONS
Covia (COVIA.SRQ3): From Covia Int to SRQ VOR: Via airway J-58-86. Thence
St Petersburg (PIE.SRQ3): From PIE VOR to SRQ VOR: Via PIE R-166. Thence
Tepee (TEPEE.SRQ3): From Tepee Int to SRQ VOR: Via SRQ R-018. Thence
ARRIVAL
From over SRQ VOR via SRQ R-160 to Coral Int. Thence
For Southwest Florida Intl and Page Airports: Expect radar vectors to final approach course.
For Naples Mun and Marco Island Airports: Via CYY R-328 to Bneta Int. Expect radar vectors to final approach course.
Direct distance from Coral Int to:
Southwest Florida Intl 32 NM
Direct distance from Bneta Int to:
AIRPORTS SERVED
Naples Mun 35 NM
Marco Island Apt 46 NM
ST PETERSBURG
D (H) 116.4 PIE
N27 54.5 W082 41.1
TAY
179° 112.9 D150
TEPEE
N28 00.0 W082 22.0
SZW
185° 117.5
COVIA
N27 56.2 W084 44.2
D 108°
COVIA (COVIA.SRQ3)
J58-86
18000
121
071°
166°
31
13000
ST PETERSBURG (PIE.SRQ3)
TEPEE (TEPEE.SRQ3)
13000
37
198°
R018°
R288°
SARASOTA
D (H) 115.2 SRQ
N27 23.9 W082 33.3
PIE
116.4
160°
161°
33
D64
WOUDS
N26 53.0 W082 18.9
(Turbojets)
(Landing Southwest Florida Intl and Page Airports)
Expect clearance to cross at 11000'
LA BELLE
D (L) 110.4 LBV
N26 49.7 W081 23.5
273°
267°
D39
6
340°
12
148°
CORAL
N26 47.8 W082 17.0
(For Southwest Florida Intl and Page Airports)
Expect radar vectors to final approach course
253°
328°
D35
Southwest Florida Intl
30
FT MYERS FLA
Page
18
BNETA
N26 37.9 W082 09.2
(Landing Naples Mun and Marco Island Airports)
Expect radar vectors to final approach course
(Turbojets)
Expect clearance to cross at 11000'
R328°
NAPLES FLA
Naples Mun
9
CYPRESS
D (T) 108.6 CYY
N26 09.2 W081 46.7
MARCO I FLA
Marco Island
6
N
NOT TO SCALE
CHANGES: Wouds Int formation.
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2.6.1 Local Control

The local controller of the RSW ATCT is primarily responsible for the separation of aircraft operating within the airport traffic area and the clearance for those aircraft landing and departing on any of the active runways. This occurs on the "Fort Myers Tower" frequency.

2.6.2 Ground Control

The ground controller is responsible for the separation of aircraft and vehicles operating on the ramp, taxiways, and any inactive runway. This responsibility includes aircraft taxiing out for takeoff, aircraft taxiing into the terminal areas, and any ground vehicles operating on airport movement areas. "Fort Myers" Ground Control is responsible for coordination of traffic in all designated aircraft movement areas.

2.6.3 Approach and Departure Control (ARTCC)

Approach/Departure Control at RSW controls all arriving and departing IFR aircraft traffic. This IFR traffic control is retained until the aircraft either departs the Class C airspace, is handed over to the local controller for landing, or reports the airport in sight and the pilot cancels the IFR clearance and lands visually. On departure, (under IFR conditions with the tower operating), an aircraft may obtain IFR clearance from the RSW ARTCC after becoming airborne. The center retains control of all arriving and departing IFR traffic within its jurisdiction.

2.6.4 Automatic Terminal Information Service

Automatic Terminal Information Service (ATIS) is available to pilots operating into or out of RSW. The ATIS information provides pilots with required airport and meteorological information. This information, which is updated every time there is a significant change, is continuously broadcast on a separate frequency (124.65 MHz). The use of ATIS information greatly reduces the workload and radio time required by the air traffic and ground controllers at the airport.

2.6.5 Non-Movement Areas

The only non-movement areas at RSW are the Terminal Apron, the GA Apron, and the Cargo Apron. Taxilane B is considered part of the aircraft movement area and is not part of the terminal apron.

2.6.6 Remote Communications Outlet Transmitter

There are five (5) FAA Remote Communications Outlets (RCO) for other Southwest Florida area airports serviced by the RSW ARTCC and radar facility. These facilities help extend the

communication range of the Miami Flight Service Station to better serve the Southwest Florida area. The remote transmitters for the RCOs are located next to the RSW ARFF and Police Training Facility.

2.7 PASSENGER TERMINAL AREA

The passenger terminal facilities at Southwest Florida International Airport are located on the northwest side of the runway. Included in the terminal area are the passenger terminal building, aircraft parking apron, automobile parking facilities, and airport support areas. The following paragraphs describe these facilities in more detail.

2.7.1 Passenger Terminal

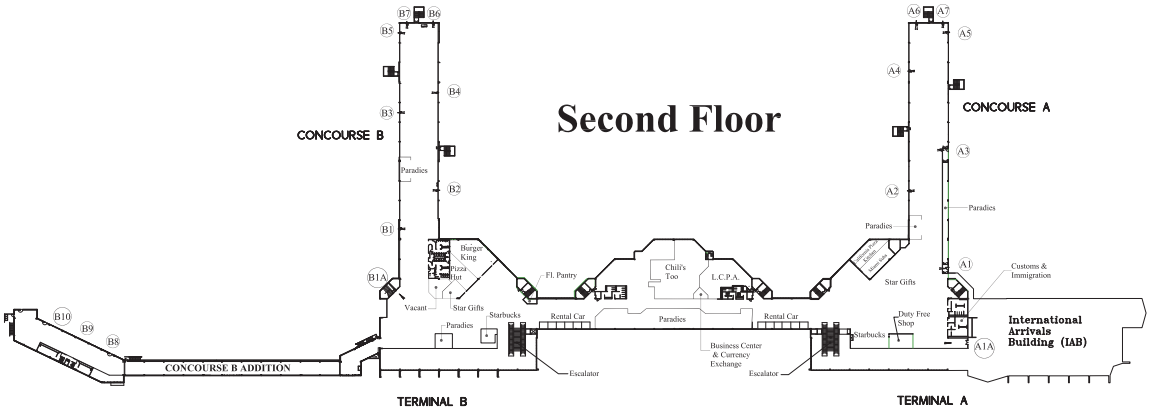
Pursuant to the Participating Airline Use Agreement, upon completion of the Midfield Terminal Complex, the current passenger terminal facilities discussed in this section will cease to be used for passenger service.

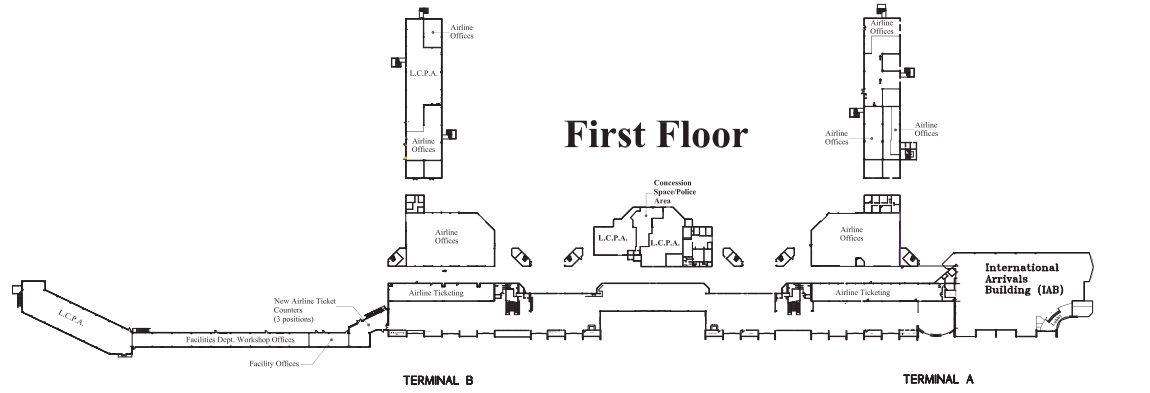
The existing passenger terminal building has a total footprint of approximately 380,915 square feet. Since the opening of the Airport in 1983, two main areas were added to the terminal. These areas include the 48,211 square foot International Arrivals Building (IAB) completed in 1993 and a 31,314 square foot Concourse B three-gate addition completed in March 1999.

The passenger terminal is a two-story structure with two main concourses extending south and perpendicular to the main terminal. The first floor of the terminal primarily consists of airline ticketing counters, the baggage claim area, and access to ground transportation. In addition, the first floor houses airline administrative offices and Lee County Port Authority offices in the Concourse B extension. The second floor contains the rental car check-in counters, concessions, public business centers, restaurants, passenger lounges and waiting areas for the 17 existing gates. Additionally, the main LCPA executive director's offices and administrative offices are located on the second floor.

The two concourse extensions are designated Concourse A and Concourse B. Concourse A is located on the western side of the terminal and extends perpendicularly from the terminal in a southerly direction for approximately 290 feet. Concourse A includes gates A-1 through A-7 in addition to Gate A1A which accommodates commuter aircraft. Concourse B is located on the eastern side of the terminal and also extends perpendicularly for approximately 290 feet. Concourse B has gates B-1 through B-10 with Gate B1A accommodating commuter aircraft. Gates B-8 through B-10 constitute the new eastern wing of the terminal building. The terminal's basic two-floor layout and related concourses are illustrated in **Exhibit 2-16**.

Exhibit 2-16





NOT TO SCALE

Lee County Port Authority	Birk Hillman Orlando Miami Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	TERMINAL FLOOR PLAN	DATE: MARCH 2004 PROJECT NO: C06901 FILE NAME: ALP/6901A-FL01 DESIGNED BY: S.R DRAWN BY: K.P CHECKED BY: S.R	EXHIBIT 2-16

For a rough representation of terminal space usage, the total terminal area was categorized into the following functional areas:

- Airline Space
- Public Space
- Concessions
- Management/Administration
- Utilities
- Additional Areas (Commuter Terminal and FIS)

The square footage amounts for each of the items above are depicted in **Table 2-3**.

TABLE 2-3
BREAKDOWN OF TERMINAL SPACE USAGE

Use	Area (s.f.)	Percentage of Total
Airline Space	102,045	27%
Public Space	113,130	30%
Concessions	28,405	8%
Management/Administration	21,705	5%
Utilities	36,105	10%
Additional Areas	79,525	20%
TOTAL	**380,915**	**100%**

Source: LCPA

Each of the space classifications mentioned above is further detailed in the following sections.

Airline Space

The majority of the airlines currently serving the airport are domestic airlines, however, several international flights operate out of RSW weekly. **Table 2-4** outlines the domestic and international airlines serving RSW.

Airline space includes those areas devoted to the day-to-day operations of these airlines. At the current terminal facility, there are 102,045 square feet (or 27 percent) of airline space, which includes the ticket counter area; airline ticket and administrative offices; the baggage area including outbound, inbound, claim, and baggage service offices; gate hold-rooms; operations space; and, club rooms or customer service rooms.

TABLE 2-4
AIRLINES SERVING SOUTHWEST FLORIDA INTERNATIONAL AIRPORT

Airline	Type of Service	Terminal
Air Canada	International	A
Air Tran	Domestic	A
Air Transat	International	A
America West	Domestic	A
America West Express	Domestic	A
American Airlines/American Eagle	Domestic	A
America Trans Air (ATA)	Domestic	A

Balair/CTA	International	A
Canada 3000	International	A
Cape Air c/o Delta Air Lines	Domestic	B
Comair	Domestic	B
Condor	International	A
Continental Airlines	Domestic	B
Continental Express	Domestic	B
Delta Air Lines	Domestic	B
Florida Air	Domestic	A
JetBlue	Domestic	A
LTU International Airways	International	A
Lynx Air International	Domestic	A
Metro Jet	Domestic	A
Midwest Express	Domestic	B
Northwest Airlines	Domestic	B
Spirit Airlines	Domestic	A
Sun Country	Domestic	A
TWA	Domestic	B
United Airlines	Domestic	A
US Airways	Domestic	A

Source: LCPA, 2001

Public Space

Public space includes those areas that do not contribute to the overall revenue of the airport and are available for use by the general public. These areas include public seating, waiting areas, ticket counter queuing areas for airline and rental car ticketing, secure circulation areas (including security screening areas), general circulation areas, and restrooms. The total area occupied by public space at RSW encompasses approximately 113,130 square feet or 30 percent of the total terminal space.

Concessions

Concession space includes all revenue producing areas other than airline space. Concession areas are located throughout the terminal primarily on the second floor. Existing concession space at RSW encompasses approximately 28,405 square feet or 8 percent of the total terminal space. General concessions include items such as candy/gift shops, automatic teller machines, currency exchange, newsstands, apparel shops, baggage carts, advertising, telephone areas, and ground transportation. In terms of food and beverage, concession items may include dining rooms, coffee shops, snack bars, cocktail lounges, and restaurants.

Management/Administration

Space for management and administration includes all areas devoted to day-to-day management, operations, and administration of the Airport. This area encompasses a total of 19,410 square feet, or five (5) percent of the total area, and applies to functions such as building maintenance, management/administration offices, employee facilities, security and police facilities, and general management services (i.e. lost and found, infirmary, information, chapel, etc.).

Utilities

Utility space at the RSW passenger terminal is comprised of mechanical and electrical equipment, and space for tug and service drives. The mechanical and electric equipment space is required to distribute utilities throughout the building. The tug and services drives are used for the delivery of baggage to the baggage input belts, as well as areas for service delivery. These areas encompass a total area of 36,105 square feet or 10 percent of the total area.

Additional Areas

The additional areas in the terminal include those areas recently added to the facility to accommodate increased airport operations and the need to efficiently process international passenger flights. The two additional areas at Southwest Florida International Airport include the International Arrivals Building (IAB), which houses the Federal Inspection Service (FIS), and the eastern Concourse B extension. The IAB encompasses 48,211 square feet and the Concourse B addition encompasses 31,314 square feet. Combined, these areas encompass 79,525 square feet encompassing 20 percent of the total terminal area. The Concourse B addition houses three gates and associated holding room areas on the second floor. The first floor is used by the Facilities Department for workshops. In addition, LCPA offices are also located on the first floor, under the concourse's public waiting areas. The IAB includes all the equipment and facilities for the FIS facility. The facility also includes a commuter terminal addition.

2.7.2 Terminal Curb

The terminal curb at RSW has two full length individual curb areas each of which serves both terminal facilities. The inner curb is 5 lanes, approximately 1,000 lineal feet in length, and located immediately adjacent to the terminal entrances. This inner curb functions as both an arrivals curb and departures curb serving all private automobile traffic. The outer curb is approximately 600 feet in length, centered outside the baggage claim area. The outer curb has 2 vehicle traffic lanes and is used solely by commercial vehicles dropping off and picking up passengers at the airport. Only in the event of inclement weather conditions the taxis, shuttles and buses may use the inner curb for passenger pick up and drop off.

The inner curb serves both arriving and departing passengers and is broken into multiple sections relative to such. The departure curb area is approximately 420 lineal feet split between two separate locations. The first is located at the beginning of the inner terminal curb and the second at the far end of the inner terminal curb. This is mainly due to the location of Concourse A and Concourse B. The departure curb for each is located directly in front of the airline ticket counters that serve each of the concourses for the convenience of the traveling public. Between the two departure curbs is the single arrivals curb, approximately 300 lineal feet and is located immediately outside of the baggage claim area. Again, the location is based upon passenger convenience so checked baggage can be picked up and the passenger can walk out the doors and get into a car, taxi, shuttle, or bus and be transported to their final destination. Additionally, the inner curb has approximately 280 linear feet of curb front dedicated for the FIS facility and the international passengers.
In front of the terminal where the inner and outer curbs are located a 6 foot wide median segregates the two curb areas. Both of these curb fronts have one way circulation of traffic in a

counter clockwise direction which begins well before entering the terminal area. The terminal area is clearly marked with numerous signs.

2.7.3 Terminal Automobile Parking

Parking for both passengers and employees is provided in the terminal area. The main passenger parking lot is located directly north of the terminal building. This lot is divided into both a short-term and a long-term parking lot. The short-term parking area contains approximately 735 paved parking spaces. The long-term parking area contains a total of 1,621 paved parking spaces. There is also an economy parking lot located directly west of the terminal. This lot is reserved for longer (overnight) parking times at lesser parking rates. This lot provides for an additional 1,935 parking spaces. Additional space, approximately 86 parking spaces are reserved specifically for taxis.

The employee parking spaces are located in several areas around the terminal parking lot. The total number of spaces available for employee parking is 614 spaces. During peak times around the Thanksgiving and Christmas holidays, the employee lot becomes part of the passenger parking lot and overflow public parking is provided during peak at the Lee County Sports Complex off of 6-Mile Cypress Parkway. This facility provides for approximately 2,400 parking spaces. The employee parking lot shifts to areas further removed from the terminal. **Table 2-5** provides a breakdown of the abovementioned parking areas.

TABLE 2-5
TERMINAL AUTOMOBILE PARKING

Facility	Total Spaces
Short-term parking	735
Long-term parking	1,621
Economy parking	1,935
Employee parking	614
Total	**4,905**

Source: LCPA

Additional parking will be provided upon completion of the "East/West Parking Area Expansion Project". This project will provide additional parking areas on the eastern and western sides of the existing main public parking lot at RSW. The new parking areas, and modifications to the existing parking lot provide approximately 817 additional parking spaces. This includes an additional 403 short term parking positions, 358 long term parking positions and 56 additional employee parking positions. Other project improvements consist of one (1) additional toll plaza land and booth; two (2) additional pass-thru gates and circulation improvements from the short-term parking area; two (2) bus shelters serving the western most long-term and employee parking areas; and, barrier fencing for the expanded parking areas.

2.7.4 Terminal Access

The terminal access road system at RSW is a one-way "return loop" type system and runs in a counter-clockwise direction. The entrance to the main terminal access road at RSW is located northwest of the terminal facility and extends south from Daniels Parkway. This road is named

Chamberlin Parkway. Chamberlin Parkway has two separate roadways, one for inbound vehicular traffic and one for outbound vehicular traffic. The inbound roadway runs from west to east and provides access to the terminal curbs. The road expands to four eastbound lanes in the terminal area. The roadway then loops back in an east to west direction around the terminal parking areas and south of the rental car facilities, and then exits back into Daniels Parkway.

In addition to the main Chamberlin Parkway loop roadway, there is another entry/exit road that extends from the northeast corner of the loop roadway to Daniels Parkway. This road is named the Paul J. Doherty Parkway. This road provides access to the terminal from the northeast quadrant of the Airport and provides access to future land development areas.

2.8 LANDSIDE/SUPPORT FACILITES

The existing landside facilities at Southwest Florida International Airport are listed below and depicted in **Exhibit 2-17.**

- General Aviation/Fixed Base Operator (FBO)
- Air Traffic Control
- Rental Car Facilities
- Cargo Facilities
- Fuel Facilities
- Airport Rescue and Fire-fighting
- Maintenance Facilities
- Other Facilities

2.8.1 General Aviation/Fixed Base Operator (FBO)

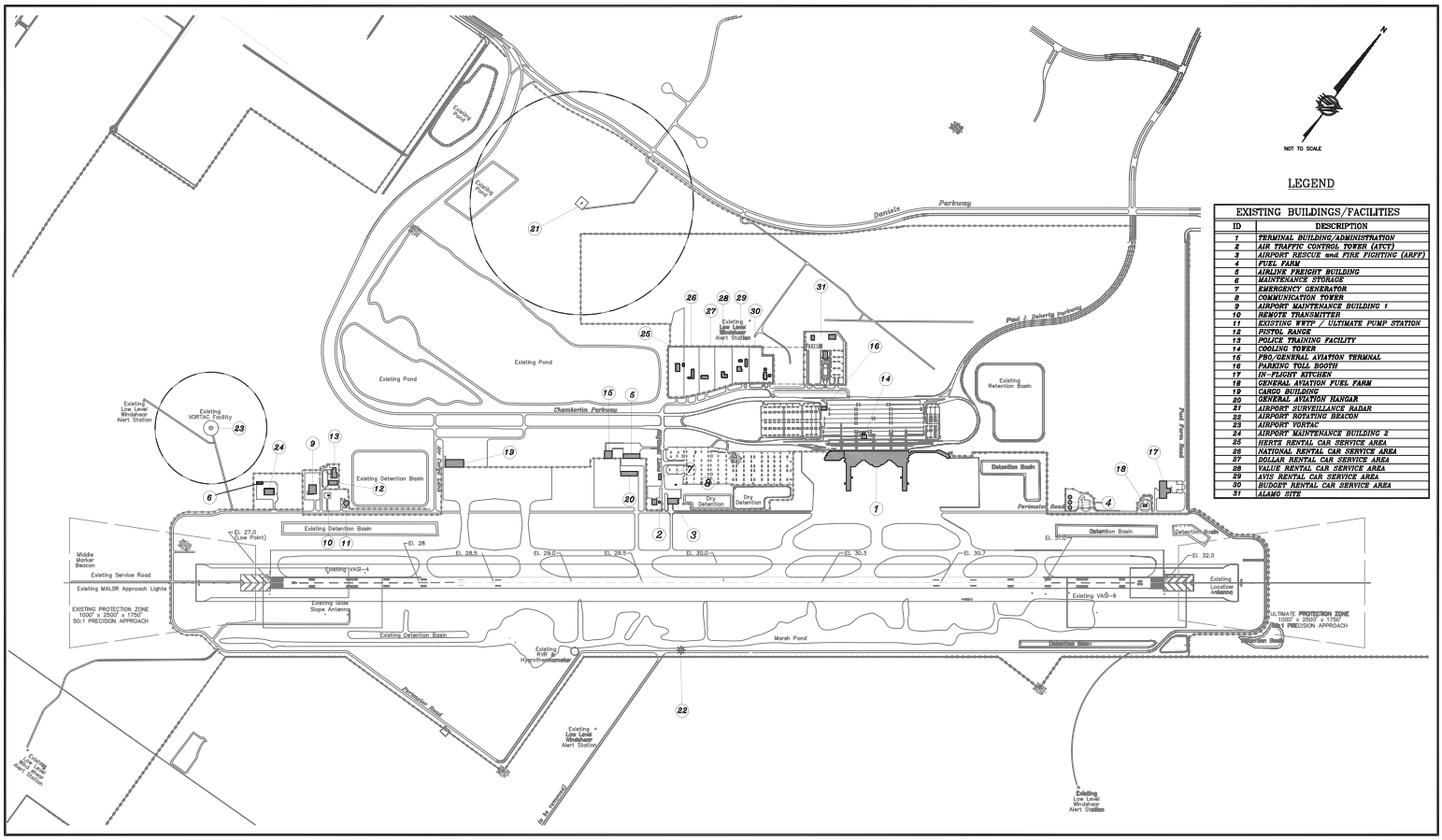
The General Aviation/Fixed Base Operator (FBO) at RSW is located on the north side of the Airport approximately 3,500 feet west of the passenger terminal. The facility is a full-service FBO providing hangar space; maintenance service for fixed-wing and helicopter aircraft; Jet A and Avgas fuel; on-call customs service; 24-hour security; pilot briefing, planning and conference rooms; and pilot supplies.

The two-story 8,000 square foot FBO building has pilot facilities and a service desk all located on the first floor and administration offices located on the second floor. The facility also includes a general aviation ramp encompassing approximately 26,000 square yards. The apron provides three sets of cable row tie-down lanes that can host a total of 25 to 30 general aviation light aircraft. Jet aircraft are usually parked in front of the FBO building and this area can accommodate up to ten jet aircraft of various sizes. Additional aircraft parking can be accommodated depending on the aircraft mix at a given time.

Initial planning is underway for the construction of a new general aviation facility some 800 feet west of the existing FBO. This new facility will include a modern terminal building and expande parking apron and hangar facilities to service corporate business jets and the general aviation aircraft community.

The existing 26,180 square foot FBO hangar was built in 1996. It is partitioned into two halves and can accommodate various types of general aviation aircraft. The hangar's primary purpose is to provide aircraft storage and support for aircraft maintenance operations.

Exhibit 2-17



EXISTING BUILDINGS/FACILITIES	
ID	DESCRIPTION
1	TERMINAL BUILDING/ADMINISTRATION
2	AIR TRAFFIC CONTROL TOWER (ATCT)
3	AIRPORT RESCUE and FIRE FIGHTING (ARFF)
4	FUEL FARM
5	AIRLINE FREIGHT BUILDING
6	MAINTENANCE STORAGE
7	EMERGENCY GENERATOR
8	COMMUNICATION TOWER
9	AIRPORT MAINTENANCE BUILDING 1
10	REMOTE TRANSMITTER
11	EXISTING WWTP / ULTIMATE PUMP STATION
12	PISTOL RANGE
13	POLICE TRAINING FACILITY
14	COOLING TOWER
15	PRO/GENERAL AVIATION TERMINAL
16	PARKING TOLL BOOTH
17	IN-FLIGHT KITCHEN
18	GENERAL AVIATION FUEL FARM
19	CARGO BUILDING
20	GENERAL AVIATION HANGAR
21	AIRPORT SURVEILLANCE RADAR
22	AIRPORT ROTATING BEACON
23	AIRPORT VORTAC
24	AIRPORT MAINTENANCE BUILDING 2
25	HERTZ RENTAL CAR SERVICE AREA
26	NATIONAL RENTAL CAR SERVICE AREA
27	DOLLAR RENTAL CAR SERVICE AREA
28	VALUE RENTAL CAR SERVICE AREA
29	AVIS RENTAL CAR SERVICE AREA
30	BUDGET RENTAL CAR SERVICE AREA
31	ALAMO SITE

Lee County Port Authority

Birk Hillman
Orlando · Miami · Atlanta

DMJM Aviation

RS&H

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA

MASTER PLAN UPDATE

EXISTING FACILITIES

DATE:	MARCH 2004
PROJECT NO:	C06901
FILE NAME:	ALP/6901N-AL01
DESIGNED BY:	F.B
DRAWN BY:	K.P
CHECKED BY:	S.R

EXHIBIT
2-17

The existing 26,180 square foot FBO hangar was built in 1996. It is partitioned into two halves and can accommodate various types of general aviation aircraft. The hangar's primary purpose is to provide aircraft storage and support for aircraft maintenance operations.

The General Aviation aircraft fuel supply comes from the FBO's fuel farm. The fuel farm is owned and operated by the FBO and is discussed in detail in the **Fueling Facilities** section.

2.8.2 Fueling Facilities

There are two fuel farms located at the Airport. Most of the commercial service airlines receive their fuel from the fueling storage and hydrant-fueling facility owned by the Lee County Port Authority and leased to a consortium of passenger airlines known as "The Fueling Airlines". The Fueling Airlines have contracted with Swissport Fueling, Inc. to operate the fuel farm and related facilities and equipment. The storage facilities are located approximately 1,000 feet east of the terminal apron's eastern edge. As of January 2001, Swissport Fueling, Inc. employed 14 personnel and operates from a 2,150 square foot (approximation) fuel farm building. The company owns three (3) 420,000 gallon Jet A fuel tanks, with additional expansion space to construct another 420,000 gallon tank. In addition, the company owns and operates three (3) fuel trucks with the following capacities:

- (2) 5,000 gallon trucks
- (1) 2,500 gallon truck
- (6) hydrant fueling carts

It should be noted that the vast majority of aircraft fueling at RSW is accomplished by use of the Swissport operated hydrant fueling system. Swissport's six (6) hydrant carts are used to deliver fuel from in-ramp parking gate hydrant fueling stations into parked aircraft. Additionally, 70,105 gallons of fuel are in the line fill.

The other fuel owner and operator is the FBO. The general aviation fuel farm is located north of the parallel taxiway on the northeast portion of the Airport approximately 3,000 feet east of the existing Airline Passenger Terminal. The FBO owns and operates four (4) 15,000 gallon Jet A fuel tanks and one (1) 12,000 gallon AvGas 100LL fuel tank. This fuel is dispensed by six (6) FBO operated fuel trucks which include:

- (1) 2,200 gallon AvGas Truck
- (1) 2,000 gallon Jet A Truck
- (1) 10,000 gallon Jet A Truck
- (1) 8,000 gallon Jet A Truck
- (2) 5,000 gallon Jet A Trucks

2.8.3 Airport Rescue and Fire-fighting (ARFF)

Facility

The Aircraft Rescue and Fire Fighting (ARFF) facility at RSW is located approximately 2,500 feet west of the passenger terminal and is located next to the air traffic control tower facility.

Southwest Florida International Airport's ARFF facilities meet a FAA ARFF Index "D" rating and have the potential to achieve an Index "E" rating as may be required by future airport expansion and air carrier utilization of increasingly larger aircraft. The RSW ARFF station is designated as "Station II", with "Station I" being located at Page Field (FMY). Station II is a 12,500 SF structure with an additional 590 SF expansion under construction at this time. There are eight (8) equipment/apparatus parking bays with four (4) having landside access and four (4) having airside access. On the west and east sides of the bays are gear lockers, storage, and work areas, and a 400 square foot mezzanine is used for storage. The living area encompasses approximately 6,700 square feet and includes offices, a locker room, employee and public restroom facilities, training room, A/V room, kitchen, bunkroom, dining and dayroom areas. The overall building condition is fair to poor and may require near future remodeling.

Parking Areas

ARFF employee and public automobile parking is located in a 10,388 square foot paved area on the north side of the building. This area provides 32 total parking spaces including two (2) handicapped spaces. The facility's total paved parking area, including ARFF vehicle landside parking in front of the apparatus/equipment bays is 4,410 square feet. On the south (airside) side of the building is an additional 4,914 square foot of paved ramp that will accommodate 12 passenger type vehicles.

Personnel

The ARFF department at RSW has both 40-hour and 56-hour/week of shift personnel. The 40-hour personnel includes the Fire Chief, the Fire Safety Enforcement Officer/Captain and one secretary. The 56-hour personnel work three (3) alternating shifts of 24-hour work days and average 56-hours per week. The 56-hour personnel are comprised of one (1) Battalion Chief, one (1) Captain and nine (9) fire fighting personnel, two (2) of which are based at Station I, Page Field Airport. Approximately 80% of the ARFF personnel are Florida State Certified EMTs (Emergency Medical Technician) with SAED (semi-automatic external defibrillators) and combi-tube qualification training endorsements.

Equipment

This section describes the equipment utilized by the ARFF department at RSW. The largest items on the equipment list consist of the ARFF vehicles. The total vehicle water storage capacity of these vehicles is 8,240 gallons. Additionally, the total fire fighting - foam storage capacity is 825 gallons and the total Halotron storage capacity is 1,000 pounds. The following is a list of ARFF vehicles utilized at Station II. Each vehicle is coded as per the ARFF station's vehicle inventory list.

Response and Firefighting Vehicles:

- CFR 220 is a 2000 General Safety Structural Pumper apparatus with a pumping capacity of 1500 gallons a minute, the water tank contains 750 gallons of water.
- CFR 221 is a rebuilt 1982 E-One Structural Pumper apparatus with a pumping capacity of 1500 gallons a minute, the water tank contains 750 gallons of water.

- CFR 400 is a 1989 Ford F-800 four wheel drive wild-land firefighting attack vehicle. It has a capacity of 740 gallons of water and 10 gallons of Class-A foam.
- CFR 901 is a 1998 Oshkosh T-1500 Rapid Intervention first out Aircraft Rescue and Firefighting emergency vehicle, which carries 1500 gallons of water 205 gallons of AFFF 3% foam and 500 pounds of Halontron chemical.
- CFR 903 is an Oshkosh T-1500 first out Aircraft Rescue and Firefighting emergency vehicle, which carries 1500 gallons of water, 205 gallons of AFFF 3% foam and 500 pounds of Halontron chemical.
- CFR 908 is an Oshkosh T-3000 first out Aircraft Rescue and Firefighting emergency vehicle, which carries 3000 gallons of water and 405 gallons of AFFF 3% foam.

Other ARFF Vehicles:

- CFR 500 is a Ford Crown Victoria used exclusively by the department Fire Chief. CFR 505 is a 2000 4 X 4 Ford Explorer used primarily by the Safety Enforcement Officer/Captain for responding to emergencies as well as general purpose use.
- CFR 520 is a 2000 4 X 4 Ford Explorer used primarily by the Station II shift Battalion Chief as a incident command vehicle, see the attached list for additional equipment.
- CFR 521 is a 1994 4 X 4 GMC Custom utility body used primary by the shift Captain, as a first in command response vehicle.
- CFR 522 is a 4 X 4 Dodge pickup truck used as a utility vehicle, not as a first in emergency response unit.

Additional ARFF equipment other than vehicles include the following:

- Wells Fargo Trailer - used for transporting large qualities of Hazardous Materials cleanup and spill containment supplies.
- Wells Fargo Trailer – used for transporting large quantities of Mass Casualty supplies and equipment.
- Utility Trailer - with an Ansul Fire Fighting Unit.

2.8.4 Air Cargo Facilities

RSW handled a total of approximately 35 million pounds of air cargo in the Year 2000. The cargo-only aircraft operated by Federal Express, United Parcel Service, and Airborne Express are handled by the Main Air Cargo Facility. Airline transported belly-haul cargo is processed through the Freight Forwarding Facility. Both these facilities are located on the north side of the Airport. The total area of air cargo processing facilities at RSW is currently 39,500 square feet and the two separate facilities are described below.

Main Air Cargo Facility

The 24,000 square foot Main Air Cargo Facility was built in 1992 and is designed for expandability to 50,000 square feet. This facility houses cargo make-up and processing areas, along with offices for Federal Express, United Parcel Service, and Airborne Express. The building has 10 cargo docks for truck supported pick-up and delivery operations. In addition,

security-cleared large trucks are allowed to enter the aircraft parking apron to facilitate cargo on-load and off-load operations.

The 69,000 square yard cargo aircraft apron has parking space for up to six (6) large cargo aircraft. The current cargo aircraft profile at RSW includes the following:

- Boeing 727 - Federal Express
- Douglas DC-9 - Airborne Express
- Boeing 757 – United Parcel Service.

The cargo apron has two connector taxiway entrances, located 800 feet apart, connecting the apron to the Runway 6-24 parallel taxiway, Taxiway A.

Passenger Airline Freight Forwarding Facility

The Freight Forwarding Facility at RSW is located just north of the FBO general aviation hangar and approximately 4,000 feet southwest of the Passenger Terminal. This 15,500 square foot structure is a common use belly-haul cargo processing facility for all the airlines. The structure is owned by the Lee County Port Authority and is leased out to tenants that include Delta Air Lines, Continental Airlines, Northwest Airlines, US Airways, TWA, United Airlines, and Aviation Ground Services, Inc. The landside portion facility includes five (5) inclined-recessed loading docks for large trucks and five (5) ground level loading docks. The southern side of the building contains eight (8) ground-level docks to support airside cargo operations. All loading docks have associated cargo bays. The following summarizes cargo dock utilization at this time:

- Delta Air Lines: One ground level dock, one recessed dock.
- Continental Airlines: One ground level dock, one recessed dock.
- Northwest Airlines: One ground level dock, one recessed dock.
- US Airways: One ground level dock.
- TWA: One ground level dock.
- United Airlines: One recessed dock.
- Aviation Ground Services: One recessed dock.

Currently, one recessed loading dock and one ground level loading dock are unassigned. This vacant cargo operating space is being temporarily utilized by Airport Terminal Services (ATS). The facility has 21 automobile parking spaces for employees and customers.

Since the new Midfield Terminal Complex project includes a Passenger Airline Freight Facility, the long-term use for the existing Freight Forwarding Facility building will probably change.

2.8.5 On-Airport Rental Car Facilities

The RSW rental car operating facilities are located approximately 200 feet north of the Passenger Terminal automobile parking area adjacent to Chamberlin Parkway, the main airport access road. Currently, there are currently six (6) car rental companies affiliated with Southwest Florida International Airport. All six companies have counters on the second floor of the Passenger Terminal building, between Concourse A and B. A list of currently affiliated on-airport rental car companies located at RSW include:

- Alamo
- Avis
- Budget
- Dollar
- Hertz
- National

The original rental car office and service facilities encompassed approximately 18 acres with each company leasing approximately three (3) acres from the Lee County Port Authority. The total area of the six rental car company office and administration buildings is 23,100 square feet.

Alamo, Budget, and Hertz have leased additional land for expansion of their facilities. In May 2001, Alamo opened a new facility on 11.9 acres of land that included 15,884 SF of administration and operations support/maintenance building space. Budget has leased five (5) acres east and immediately adjacent to it existing facilities for future expansion and Hertz has leased approximately three (3) additional acres to the rear and west of its existing facility for future expansion. As of May 2001, neither company has begun construction on these sites. During peak periods, rental car companies may, with the consent of the Authority, utilize other undeveloped areas on airport property to temporarily store vehicles on a month to month basis. With the aforementioned additions, the total car rental area encompasses approximately 38 acres and 38,984 SF of building space.

Rental car customer transportation to and from the Passenger Terminal is the responsibility of the individual rental car companies and typically involves the use of shuttle buses. As of Year 2000, the peak-season car rental fleet totaled 17,400 vehicles.

2.8.6 Other Ground Transportation

In addition to on-airport rental car companies, other ground transportation options that are available at RSW include off-airport rental car companies, taxis, hotel courtesy buses, limos, and the LeeTran bus system. Bus-type vehicles and taxis use the commercial curb in front of the terminal building for passenger pick-up and drop-off. The number and frequencies of operations by these entities varies by traffic demand and are authorized through the use of trip permits and other contracts.

2.8.7 Facilities Department

The Southwest Florida International Airport Facilities Department mission is to provide maintenance support to all LCPA owned and operated Airport facilities. The main Department administrative offices and warehouse are located on the western portion of the airfield 1.1 miles from the Passenger Terminal. The existing Facilities Department structure was constructed in 2001 and provides 11,000 SF administrative building space and 4,800 SF of covered storage area.

The Facilities Department is divided into five (5) sections with the following employment profiles:

- Terminal Section - eighteen (18) employees.
- Grounds Section – nine (9) employees.
- Airfield Section - eight (8) employees.
- Contracts Section - one (1) employee.
- Resources Section - seven (7) employees.

Terminal Section

The Terminal facility Section is responsible for maintaining the Airport's two 600-ton chillers, 26 air handlers, emergency electric generator; lighting systems; energy management systems, and all other terminal related subsystems. Terminal Section maintenance responsibilities require a 24-hour/day - 7 days/week personnel manning and response capability.

Airfield Section

The Airfield Section is responsible for maintaining the High Intensity Runway Lighting (HIRL) system, taxiway in-pavement centerline and edge lighting, airfield advisory signs, aircraft parking apron lighting, airport roadway lighting, and 1,900,000 square feet of automobile parking lot lighting.

Resource Section

The Resource Section manages the Department warehouse that is collocated with the Facilities Department Administrative offices. This effort includes the management of 2,134 line items to support 134 vehicles and specialized equipment. An Automated Maintenance Management System (AMMS) is used for work order control and time management/productivity control and monitoring.

Grounds Section

The Grounds Section is responsible for the upkeep and maintenance of 13,900 acres of Airport property, of which 6,500 acres are on-site and 6,986 acres are off-site mitigation areas. These grounds include 290 acres of lakes and waterways, 1,200 acres of turf with six irrigation systems, and 650 palm and ornamental trees. In addition, this section is also responsible for the eradication and control of exotic vegetation, mosquito control, perimeter security fence maintenance, vegetation control, and the fuel management system.

Contracts Section

The Contracts Section monitors and administers 11 separate contracts that utilize 103 personnel. This includes contracts for janitorial service, passenger boarding bridges and baggage belt maintenance, interior and exterior landscaping maintenance, parking lot management, public address system maintenance, chiller plant preventative maintenance, and pest control operations.

Of the terminal's 17 passenger boarding bridges, 10 are maintained by the Facilities Department and seven (7) are maintained by the contracting airlines.

2.8.8 Aircraft Maintenance Facilities

The Authority has entered into two agreements for aircraft maintenance facilities at the Airport. Each lease provides that the lessee construct certain facilities.

Large Aircraft Maintenance

The Authority has leased a seven (7) acre parcel to and east of the passenger aircraft parking apron. This site will be used for the eventual construction of a maintenance facility for large aircraft that will support Boeing 747 or equivalent sized aircraft. When completed, the project will include at least 20,000 square feet of office space and 75,000 square feet of hangar space. Parking areas and other permit required ancillary facilities will also be constructed.

General Aviation Jet Maintenance

As previously discussed in the section entitled **General Aviation/Fixed Base Operations (FBO)**, part of the anticipated FBO future construction includes hangar, ramp and other items required for expanded maintenance and support operations for general aviation jet aircraft. Some maintenance is already performed on the existing FBO leasehold.

2.8.9 Other Airport Facilities

Waste Water Treatment Plant

The Wastewater Treatment Facility is located on the west side of the Airport to the east of the Facilities Department buildings. The 10,000 square foot facility includes one tank that can treat 0.15 million gallons/day. The plant is owned and operated by Lee County. The plant will be converted to a pump station by 2002 and off-site treatment will be provided at a Lee County Treatment Facility. A new pump station will be built and sized to accept the increased flow associated with the new Midfield Terminal complex.

Airline Catering Facilities

There are two catering companies that service the Airport's airlines. LSG/Sky Chefs ~25,000 square foot facility is located on Airport property approximately 3,500 feet east of the Passenger Terminal. The site can be accessed by the northeast access road from Chamberlin Parkway. The other catering facility, Gate Gourmet, is located off Airport property near North Treeline Avenue.

Airport Police Department Pistol Range

The ~16,000 square foot pistol range is located across from the ARFF and Police Training Auditorium approximately one mile west from the Passenger Terminal. And is used primarily by the Airport's Security Department.

Police/ARFF Training Auditorium

The auditorium is located approximately one mile west of the Passenger Terminal and next to the pistol range. The facility encompasses approximately 8,500 SF and used for training purposes for the ARFF and police departments.

2.9 AIRPORT ACCESS

The main interstate in Southwest Florida is I-75, which runs north south through the Fort Myers area. This highway extends northward into Georgia along the western half of the Florida peninsula and southward to Naples before turning east and continuing to its terminus near Miami. According to the Florida Department of Transportation (FDOT), the section of I-75 between Alico Road and Daniels Parkway in Fort Myers is the most heavily traveled section of I-75 in Southwest Florida. RSW is located almost equidistant between these two interstate exits.

Daniels Parkway located north of the airport runs east west and intersects Chamberlin Parkway, which is currently the main access into the airport. Daniels Parkway is a six-lane divided arterial roadway with direct northbound and southbound I-75 access. In Year 2000, Daniels Parkway was extended to State Road 82 (Immokalee Road) northeast of RSW.

Treeline Avenue runs in a north-south direction parallel to I-75 and the Airport's western border. Treeline Avenue will be extended to connect Daniels Parkway to Alico Road, and expanded into a four- lane divided roadway, as part of the new Midfield Terminal development project. Alico Road runs east west and is located south of RSW and will be widened to six lanes in the future. Alico Road extends all the way to U.S. 41 (Cleveland Avenue) to the west. Additionally, it intersects I-75 and has multiple interchanges for both north and southbound interstate access.

2.10 UTILITIES

This section overviews each of the primary utilities at the Airport including electrical power, water and sanitary sewer. More detailed information will be developed as part of the Utility Mapping component of this study.

2.10.1 Electrical Power

Electrical power at RSW is provided by Florida Power and Light (FPL). The main line runs parallel to Daniels Parkway and into the Airport property in a southern direction. Four lines run south from the main Daniels Parkway line. The first three lines provide power for future facilities, and the ASR facility. The fourth line is a continuation of the main power line that runs along Daniels Parkway. It makes a 90-degree turn in a southern direction before the Paul J. Doherty Parkway exit. It then splits in eastern and western directions to provide power to all Airport facilities including the existing passenger terminal. The terminal has two electrical vaults located at the northern ends of the two concourses. A large, diesel-powered electrical power generator provides emergency power at the existing terminal. The emergency generator vault is located 350 feet north of the Passenger Terminal. In addition, several major FPL power lines that provide power to southern Lee and Collier Counties were routed around the existing runway complex during airport construction.

2.10.2 Water

Potable water lines run into the Airport from Lee County's Corkscrew Water Treatment Facility located at the corner of Alico Road and Corkscrew Road south of the Airport. The lines extend

east along Chamberlin Road and provide water to the Airport's existing terminal and eastern facilities. The line running into the Wastewater Treatment Facility and Facilities Department area continues west and turns 90 degrees south around the approach end of Runway 6 and extends further southeast. In the fiscal year of 1999/2000, the Airport consumed 22,923,002 gallons of water. An existing 30-inch waterline that crosses Airport property from south to north will be relocated as part of the Midfield Terminal project.

2.10.3 Sanitary Sewer

Sanitary sewer service exists at the Airport through the Wastewater Treatment Facility located one mile west of the terminal. The sewer line runs east to provide service to all Airport facilities, except the catering, fuel, and cargo facilities. The Wastewater Treatment Facility is scheduled to become a pump station and tied into a Lee County Wastewater Treatment Facility in Year 2002.

2.11 AIRPORT IMAGINARY SURFACES

All U.S. airports have a three-dimensional imaginary surfaces plan that identifies each airport's navigable airspace requirements as dictated by Federal Aviation Regulation (FAR) Title 14, Part 77. Part 77 establishes standards for determining obstructions and publishes the design criteria for use in constructing the imaginary surfaces profile for each specific airport. These criteria are designed to preserve safety for aircraft flight operations. The surfaces represent an imaginary "bowl" of airspace centered on the airport with long approach surfaces extending up and outward from the runway ends. The imaginary surfaces surrounding the airport are also used to analyze all existing, future or proposed tall structure construction as to their potential for creating a hazard for aircraft operating at the airport. If a structure such as a natural object (i.e. a tree) penetrates these surfaces, then it must be removed or modified. If the structure or obstacle intruding into the imaginary airspace defined by Part 77 criteria cannot be easily removed, the FAA may extend a waiver and the structure will need to be identified by either painting, installing an approved obstruction light, or both. A FAR Part 77 Imaginary Surfaces Plan is included as part of the RSW Airport Plan Set. The Lee County Port Authority has a local agreement with Lee County to help control obstacle penetrations into these surfaces. The two agencies work together to protect the airspace environment around the airport. (also see "Airport Hazard District").

2.12 AIRPORT ENVIRONMENT

Information pertaining to the airport environment of Southwest Florida International Airport is provided in the following sections. This information has been divided into the three categories, Airport Property Boundary, Land Use, and Environmental Data. Later chapters of this Master Plan Update will incorporate greater detail pertaining to these elements of RSW, including an updated Airport Property Map, Land Use Plan, and an Environmental Overview chapter.

2.12.1 Airport Property Boundary

Airport property encompasses approximately 6,498 acres within an unincorporated portion of Lee County. (See **Exhibit 2-5** for a depiction of the current and future Airport property boundary)

The Airport is located on Chamberlin Parkway, south of Daniels Parkway, approximately three miles east of Interstate 75. The northern boundary of the Airport runs along Daniels Parkway. The western boundaries run parallel to I-75 east of Treeline Avenue. The eastern and southern boundaries have no significant existing landmarks. Instead, these boundaries of the Airport property were formed by the necessary acquisition of land areas to accommodate future airport development.

2.12.2 Land Use

Lee County has assigned land use and zoning designations to property within its respective jurisdiction, including Airport lands. Existing and future land uses on and off airport property are important considerations with respect to the development of the airport and community. Compatible land use issues and considerations will be utilized in the development of later chapters in this Master Plan Update. For now, the following sections provide a brief overview of the land use features that can be found on airport property and in the areas surrounding RSW.

On Airport

There are currently eight (8) different land use categories for the 6,498 acres that make up Southwest Florida International Airport. These include:

- Airfield Operations (AO)
- Airline Terminal (AT)
- Air Cargo (AC)
- General Aviation (GA)
- Aviation Related Industry (ARI)
- Airport Support (AS)
- Undeveloped Area (UA)
- Environmental/Compatible Land Use Buffer (E/CLU)

The most prominent land uses for the airport are Airfield Operations (AO), Airport Support (AS), Undeveloped Area (UA), and Environmental/Compatible Land Use Buffer (E/CLU). The AO category of land use covers the area around the existing and known future runway footprints within the building restriction line (BRL) and the runway visibility zone (RVZ). The various BRLs for RSW are reflected on the Airport Layout Plan. Airfield Operations (AO) land is located in the center of the Airport's property and runs parallel along the runway from southwest to northwest. The majority of Airport Support (AS) areas are located to the northwest of the existing Passenger Terminal and to the southwest of Runway 6-24. The areas designated as Undeveloped Area (UA) are located on the southern portions of Airport property. The majority of UA is located southwest of the Runway and may be used for any further airport development.

Environmental/Compatible Land Use Buffer (E/CLU) areas are utilized for surface water and wetlands management. These lands have been designated accordingly and provide a buffer compatible with aircraft operations, including noise, which could adversely impact areas around the airport such as wildlife, wetlands, and other non-compatible lands. At RSW, these areas exist in three primary locations. The largest area is located on the western portion of the Airport. The second largest is located on the northeastern boundary of the Airport. The smallest designated buffer is a pond located to the south of the Airport.

Foreign Trade Zones have emerged as an important economic development tool used by many localities to attract and retain new business and industry. Both Southwest Florida International Airport and Page Field have been included in the Fort Myers Foreign Trade Zone (No. 213). A Foreign Trade Zone is a site within the United States, in or in proximity to a United States Customs Port-of-Entry, where foreign and domestic merchandise is considered to be in international commerce. Foreign or domestic merchandise may enter a Foreign Trade Zone without formal customs entry, payment of custom duties, or government excise taxes. No duties are paid on goods that are rejected, damaged, destroyed or discarded, and no duties are paid on goods that are re-exported directly from the Foreign Trade Zone.

Storage, testing, re-labeling, repackaging, repairing, assembling, and manufacturing are just a few of a number of processes that merchandise entering a trade zone may undergo. When a final product is imported into the United States from a Foreign Trade Zone, customs duties and excise taxes are only due at the time of transfer from the zone and formal entry in the United States. Zones therefore give users opportunities to realize reduced customs duties while benefiting from flexible methods of handling merchandise.

Off Airport

The designations for lands surrounding RSW that are identified in the Lee County Comprehensive Plan 2000 include:

- General Commercial (GC)
- Mixed Use (MU)
- New Community (NC)
- Airport Commerce (AC)
- Density Reduction/Groundwater Resource (DR/GR)
- Wetlands (W)
- Wetland Conservation Lands (WCL)

With the exception of relatively small Industrial Areas (IA), the land to the southwest of the airport is slated for Mixed Use (MU) planned development. Typically, Mixed Use (MU) areas adjacent to the airport have high intensity commercial and residential development. The areas directly east and south of the Airport remain undeveloped, designated as Wetlands (W), Wetland Conservation Lands (WCL) and Density Reduction/Groundwater Resource (DR/GR). These groupings of undeveloped land combine to make up the largest segment of land adjacent to the airport.

The New Community (NC) area is the second largest area surrounding the Airport and is located along Gateway Blvd. to the north of the Airport property and bordered by Immokalee Road (SR 82) to the north. The property is approximately the same size as that of the Airport.

Two of the five Industrial Areas (IA) are located approximately three miles northwest of the Airport and border I-75 to the west. Another Industrial Area (IA) is located on the northwest border of the Airport along Treeline Avenue. The remaining areas are located three and six miles southeast of the Airport along Alico Road.

There is one General Commercial area located north of the Airport. The site is very large, borders the Airport property boundary to the north and is located in the Gateway development. It extends all the way to SR 82 to the north and extends to Six Mile Cypress Parkway to the west.

2.12.3 Airport Hazard District

Southwest Florida International Airport falls under the Airport Hazard District Ordinance stipulated in Subdivision III of the Lee County Land Development Code. This Airport Hazard District was created to provide a level of protection for the airspace and zoning regulations involved with Southwest Florida International Airport, Page Field Airport, and all other existing State licensed airports and heliports (public or private) within the County's jurisdiction.

Based on the Lee County Land Development Code Section 34-1006, the specific purpose and intent of the Airport Hazard District is to:

- Promote the maximum safety of aircraft arriving and departing from county airports.
- Promote the maximum safety of residents and property within areas surrounding the county airports.
- Promote the full utility of county airports, so as to ensure the maximum prosperity, welfare, and convenience to the Lee County and surrounding county area and their residents.
- Provide building height standards within the imaginary (FAR Part 77) surfaces of the airports.
- Provide development standards for those land uses within prescribed noise zones.
- Provide guidelines for prevention of airspace obstructions and incompatible land uses in the areas surrounding the county airports.

2.12.4 Airport Noise Zones

A deciding factor in selecting the site for the Airport was that it had little noise impacts on existing development. During the late 1980's the Lee County Port Authority (LCPA) sponsored a Federal Aviation Administration FAR Part 150 Noise Compatibility Study in an effort to minimize the future impacts of aircraft noise at the facility and adjacent lands. After the approval of the Noise Compatibility Study in 1990, land use control measures, including Airport Noise Zones, were developed and adopted into the Lee County Comprehensive Plan and the Land Development Code.

The 1991 Master Plan Update initiated long term planning interest for the addition of a new parallel runway at RSW as well as a Midfield Terminal complex. An additional noise study was warranted after the completion of the Master Plan. A FAR Part 150 Noise Compatibility Study Update was completed and resulted in identifying an expanded zone to maintain off-airport land

use compatibility with the operation of this future runway. On February 1, 1995, the FAR Part 150 Update was adopted by the Board of County Commissioners and approved on November 28, 1995 by the Federal Aviation Administration.

The establishment of Airport Noise Zones for RSW were a result of FAR Part 150 studies initiated by the Airport. These zones were developed around the airport to promote land use compatibility based on aircraft noise and are maintained through the establishment of noise contours. The zones are No Noise Related Restrictions (Zone 1), No Mobile Homes (Zone 2), No Noise Sensitive Uses (Zone 3), and Airport Use Only (Zone 4). All four zones make up the Airport Noise Zone special zoning district and collectively are included as part of the local zoning ordinance.

2.12.5 Environmental Data

Construction improvement projects at the Airport will require environmental permitting through numerous agencies, each with its own criteria and focus. Future development of the Airport and the integration of environmental permitting will be critical to the success of each project. Coordination with the appropriate agencies for permitting requirements will be made as projects are funded. RSW falls under the jurisdiction of the South Florida Water Management District, Florida Department of Environmental Protection, Lee County and the U.S. Army Corps of Engineers. These agencies will review and permit all construction projects at the airport to ensure compliance with the Conceptual Permit Application for the airport.

The Environmental Overview chapter of this study will provide greater details related to the environment of the airport. This portion of the study will analyze the following topics:

- Vegetative, Wildlife, and Endangered Species
- Water Resources (including surface and ground water)
- Flood Hazards
- Air Quality
- Wetlands and Biotic Communities
- Section 4(f) Lands
- Historical and Archaeological Sites
- Energy Supply and Natural Resources
- Construction Impacts
- Drainage and Hydrology

The Environmental Overview portion of this study will also prepare an assessment of the existing and potential noise impacts at the airport.

3 AVIATION ACTIVITY FORECASTS

3.1 INTRODUCTION

Projections of aviation activity are an important element of the Master Plan Update, as they provide the basis for Southwest Florida International Airport (the Airport). These projections are essential for:

- Determining the future role of the Airport in both the type of aircraft to be accommodated and the type of aviation demand to be served in the future.
- Evaluating the capacity of existing Airport facilities and their ability to absorb projected aviation demand.
- Estimating the extent to which airside and landside facilities should be provided at the Airport in the future.

Forecasting future activity remains both an analytical and subjective process. As such, many of the factors influencing aviation demand cannot be readily quantified. Consequently, actual activity levels realized in future years may differ from this forecast due to unforeseen events or changes in the operational characteristics of the Airport. For these reasons, the forecast presented in this section should be viewed as an estimate of future aviation activity at the Airport.

This chapter outlines socioeconomic conditions in the Airport's market area; discusses assumptions and historical data underlying these demand forecasts; and presents projections of aviation activity for a twenty year planning period through the year 2020. The remainder of this chapter is presented in the following sections:

- Economic Base for Air Transportation
- Historical Activity
- Projection of Passenger Enplanements
- Projection of Airline Operations and Fleet Mix
- Projection of General Aviation Activity
- Projection of Air Cargo Activity
- Projection of Military Activity
- Summary of Projected Airport Operations
- Design Level Projections

3.2 ECONOMIC BASE FOR AIR TRANSPORTATION

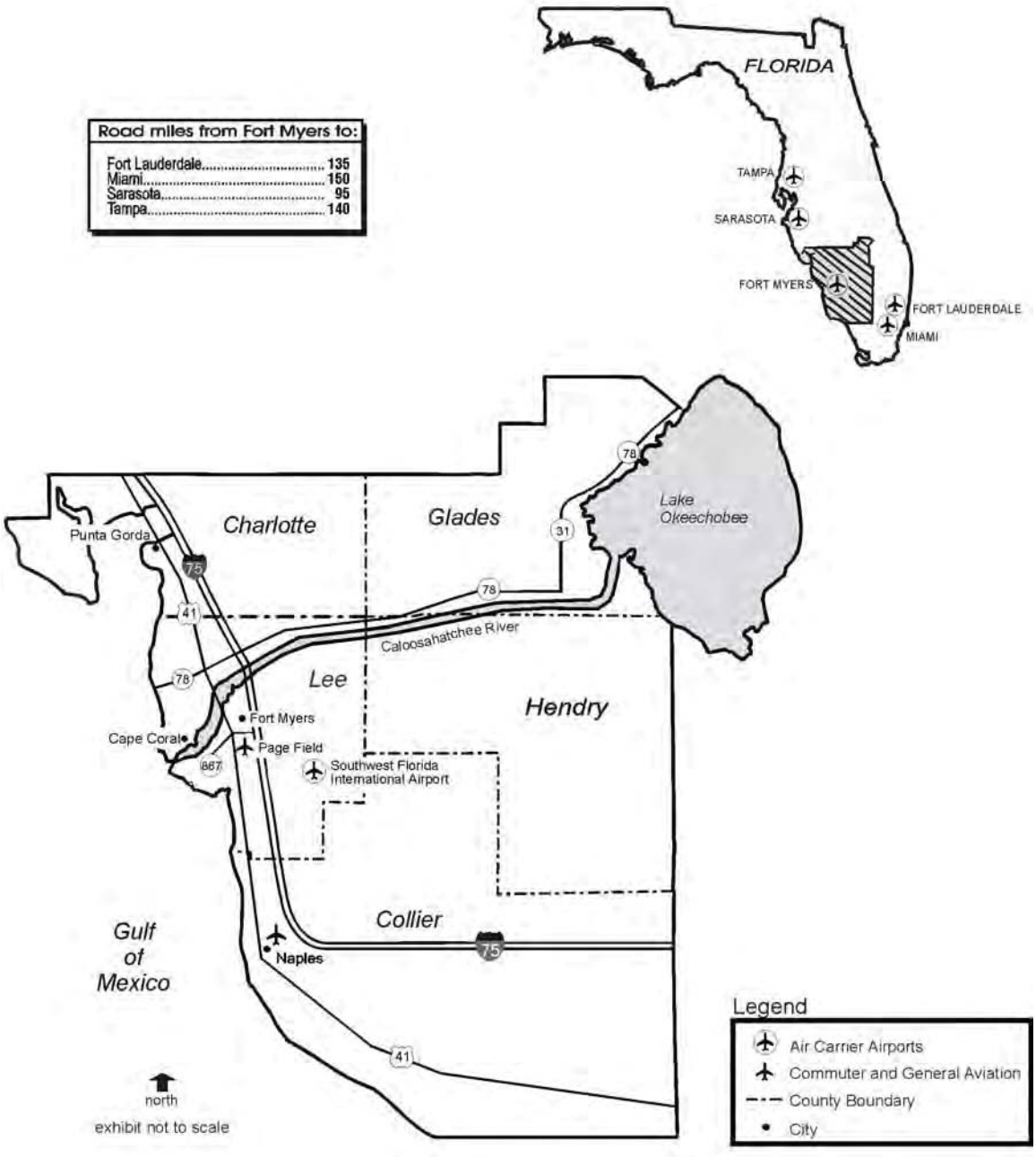
The Airport opened in 1983, replacing Page Field as the air carrier airport serving Fort Myers and the surrounding region. Today, the Airport provides both scheduled domestic and international

airline service and unscheduled charter service, in addition to serving the needs of corporate and leisure general aviation activity.

As shown in **Figure 3-1**, the geographical area served by the Airport primarily encompasses the five Florida counties of Charlotte, Collier, Glades, Hendry and Lee (the county in which the Airport is located). It is recognized that the Airport's total air trade area extends beyond this five-county area, but it is the economic strength of this area that provides the primary base for supporting air transportation at the Airport. Therefore, for these analyses, the primary air trade area (the "Air Trade Area") for the Airport is considered to be the five counties.

The Airport is relatively isolated from alternative commercial air service facilities, with minimal diversion of air traffic from its Air Trade Area. The air carrier airports in certain Florida cities are Fort Lauderdale (135 road miles), Miami (150 road miles), Tampa (140 road miles) and Sarasota (95 road miles). The mileage that separates the Airport from these various alternative facilities indicates that each facility serves a separate, distinct market and with few exceptions, each facility derives passengers primarily from its respective market area. The Naples Municipal Airport (36 road miles) is the only other airport providing commercial air service in the Air Trade Area and is served by three regional air carriers. Figure 3-1 also depicts the alternative general aviation airports in the Air Trade Area, including La Bell Municipal, Immokalee, and Charlotte County airports.

Figure 3-1
Air Trade Area



Prepared By: Ricondo & Associates, Inc., January 2000.

3.2.1 Population

Table 3-1 presents the historical and projected population for the Air Trade Area, the State of Florida, and the United States. As the table presents, the Air Trade Area's population increased at an annual compounded growth rate of 5.4 between 1980 and 1990. This growth in the Air Trade Area's population from 1980 to 1990, is nearly twice as high as the 2.9 percent growth in population for the State of Florida and five times as high as the 0.9 percent growth for the nation, during this same period.

Between 1990 and 2000, population growth in the Air Trade Area was 3.4 percent annually, which was lower than the growth experienced between 1980 and 1990 for the Air Trade Area, yet still higher than the growth experienced for the State of Florida and the nation during this same time period. Population growth in the State of Florida and the United States between 1990 and 2000 was 2.1 percent and 1.2 percent, respectively.

Also presented in Table 3-1 are projections of population for the year 2005, 2010, 2015, and 2020 for the Air Trade Area, the State of Florida, and the United States. As shown, projected population growth from 2000 to 2020 for the Air Trade Area is projected to increase from 880,700 in 2000 to approximately 1,233,800 in 2020, representing an annual compounded growth rate of 1.7 percent for the Air Trade Area. This exceeds the population growth projected for both the State of Florida and the U.S. of 1.3 percent and 0.7 percent, respectively, during this same time period.

These population projections for the Air Trade Area do not include the seasonal and transient population (winter residents, visitors in occupied housing units, hotel / motel occupants, and migrant / seasonal workers). According to the Southwest Florida Regional Planning Council, the peak population in the region could be as much as 20 percent to 25 percent higher than the resident population during the peak season.

3.2.2 Income

One measure of the relative income of an area is its Per Capita Income (PCI). PCI is a composite measurement of market potential and indicates the general ability to purchase an available product or service. **Table 3-2** presents PCI for the Air Trade Area, the State of Florida, and the United States between 1990 and 2000, as well as projected PCI through 2020. As presented, annual growth in PCI in the Air Trade Area between 1990 and 2000 was higher than the growth experienced in the State of Florida and the United States (2.4, 1.9 and 2.1 percent growth, respectively) during this same time period. PCI in 2000 for the Air Trade Area of $31,948 was higher than for both the State of Florida, $28,017 and for the U.S., $28,087, for that same year.

Projected PCI was obtained from the National Planning Association (NPA) Data Services. As shown in Table 3-2, according to NPA Data Services, projections of PCI through 2020 indicate annual growth in the Air Trade Area between 1999 and 2020 is expected to be 2.0 percent. By comparison, projected annual growth in PCI for both the State of Florida and the United States is expected to be 1.9 percent, during this same time period.

Table 3-1

TABLE 3-1
HISTORICAL AND PROJECTED RESIDENT POPULATION

	Historical			Projected				Annual Compounded Growth Rate			
AREA	1980	1990	2000	2005	2010	2015	2020	1980-1990	1990-2000	2000-2005	2000-2020
Charlotte County	58,460	110,975	141,627	159,513	170,400	186,150	201,900	6.6%	2.5%	2.4%	1.8%
Collier County	85,971	152,099	251,377	252,519	297,800	335,150	372,500	5.9%	5.2%	0.1%	2.0%
Glades County	5,992	7,591	10,576	10,943	11,800	12,600	13,400	2.4%	3.4%	0.7%	1.2%
Hendry County	18,599	25,773	36,210	34,802	35,600	37,850	40,100	3.3%	3.5%	-0.8%	0.5%
Lee County	205,266	335,113	440,888	465,346	514,500	560,200	605,900	5.0%	2.8%	1.1%	1.6%
Total Air Trade Area	374,288	631,551	880,678	923,123	1,030,100	1,131,950	1,233,800	5.4%	3.4%	0.9%	1.7%
State of Florida	9,746,959	12,937,926	15,982,378	16,651,000	17,927,835	19,326,418	20,725,000	2.9%	2.1%	0.8%	1.3%
United States	227,225,000	248,718,000	281,421,906	287,716,000	299,862,000	312,268,000	324,927,000	0.9%	1.2%	0.4%	0.7%

Sources: University of Florida, Bureau of Economic and Business Research
U.S Department of Commerce, Bureau of the Census
Compiled by Ricondo & Associates, Inc.

Table 3-2

TABLE 3-2
PER CAPITA INCOME

Year	Air Trade Area	State of Florida	United States
Historical			
1990	$25,317	$23,186	$22,873
1991	24,707	22,707	22,597
1992	25,313	22,556	23,013
1993	25,665	23,086	23,156
1994	26,388	23,357	23,599
1995	27,081	24,025	24,071
1996	27,663	24,619	24,654
1997	28,971	25,158	25,425
1998	29,745	26,016	26,420
1999	30,923	27,134	27,290
2000	31,948	28,017	28,087
Projected			
2005	$37,151	$32,527	$32,499
2010	41,094	35,843	35,818
2015	44,128	38,586	38,561
2020	47,042	41,141	41,128
Annual Compounded Growth Rate			
1990 - 2000	2.4%	1.9%	2.1%
2000 - 2005	3.1%	3.0%	3.0%
2005 - 2010	2.0%	2.0%	2.0%
2010 - 2015	1.4%	1.5%	1.5%
2015 - 2020	1.3%	1.3%	1.3%
2000 - 2020	2.0%	1.9%	1.9%

Sources: NPA Data Services
Compiled by Ricondo & Associates, Inc.

3.2.3 Employment

Table 3-3 presents the civilian labor force for the Air Trade Area, State of Florida, and the United States between 1990 and 2000. As the table presents, the civilian labor force in the Air Trade Area increased from 285,000 workers in 1990 to 351,000 workers in 2000, an increase of approximately 2.1 percent annually during this time period. This rate of growth was higher than the growth experienced both for the State of Florida (1.6 percent) and the United States (1.1 percent) for this same time period. Furthermore, the Florida Department of Labor and Employment Security is projecting that employment growth will continue through 2006 at an annual growth rate of 2.8 percent for the Air Trade Area which would result in approximately 414,000 workers in 2006.

Average annual unemployment rates between 1990 and 2000 are also presented in Table 3-3. As presented, unemployment rates for the Air Trade Area, the State of Florida, and the U.S. increased from 1990 to 1992 and then declined in each subsequent year. From 1992 to 1995, unemployment rates decreased by comparable percentages in each year, in the Air Trade Area, the State of Florida and in the nation. Over the last five years, however, the Air Trade Area experienced lower unemployment as compared to both the State of Florida and the U.S. Unemployment rates for the Air Trade Area continued to decrease from 5.6 percent in 1995 to 3.5 percent in 2000.

3.2.4 Tourism

Tourism represents a significant share of the economic activity in the Air Trade Area. In 1999, tourists spent nearly $1.0 billion in Lee County, and approximately $1.1 billion in visitor spending is expected in 2000. The winter season (i.e., January through April) represents the peak season for visitors to Lee County, accounting for 53.8 percent of the total visitors in 1999. In recent years, however, the spring/summer season (i.e., May through August) has experienced an increase in visitors, particularly with European travelers. In 1999, the spring/summer season accounted for 26.1 percent of the visitors to Lee County, while the fall season accounted for the remaining 20.1 percent of visitors.

Table 3-4 presents the number of visitors to Lee County by origin from 1989 to 1999. As shown, the majority of the visitors originate from the U.S. (81.8 percent), while Europe and Canada are also major originating markets for visitors to Lee County (12.1 percent and 2.4 percent, respectively). Overall, visitors to Lee County have increased from 1,501,554 in 1989 to 1,866,123 in 1999, representing an annual compounded growth rate of 2.2 percent. The European market in particular, has more than doubled since 1989, increasing from 105,177 visitors in 1989 to 226,084 in 1999, representing an annual compounded growth rate of 8.0 percent. This growth in the European market is reflected in the Authority's development of air service to and from Europe by LTU International Airways, Condor, and Balair.

One measure of the growth of tourism is in the performance of retail sales, which consists of all net sales (gross sales minus refunds and allowances for returns). As presented in **Table 3-5**, retail sales per household increased at an annual compounded growth rate of 5.2 percent in the Air Trade Area between 1995 and 1999, compared to increases of 4.4 percent, and 3.4 percent, for the State of Florida, and the U.S., respectively, during this same period. According to Sales and

Table 3-3

TABLE 3-3
CIVILIAN LABOR FORCE AND UNEMPLOYMENT RATES

Year	Civilian Labor Force (000)		
	Air Trade Area	State of Florida	United States
1990	285	6,468	125,840
1991	290	6,489	126,346
1992	297	6,559	128,105
1993	303	6,661	129,200
1994	312	6,811	131,056
1995	314	6,851	132,304
1996	318	6,956	133,943
1997	325	7,119	136,297
1998	331	7,230	137,673
1999	340	7,364	139,368
2000	351	7,593	140,863
Annual Compounded Growth Rate 1990 - 2000	2.1%	1.6%	1.1%

Year	Unemployment Rates		
	Air Trade Area	State of Florida	United States
1990	4.8%	6.0%	5.6%
1991	6.9%	7.4%	6.8%
1992	8.4%	8.3%	7.5%
1993	7.1%	7.0%	6.9%
1994	6.5%	6.6%	6.1%
1995	5.6%	5.5%	5.6%
1996	4.9%	5.1%	5.4%
1997	4.5%	4.8%	4.9%
1998	3.9%	4.3%	4.5%
1999	3.5%	3.9%	4.2%
2000	3.5%	3.7%	4.0%

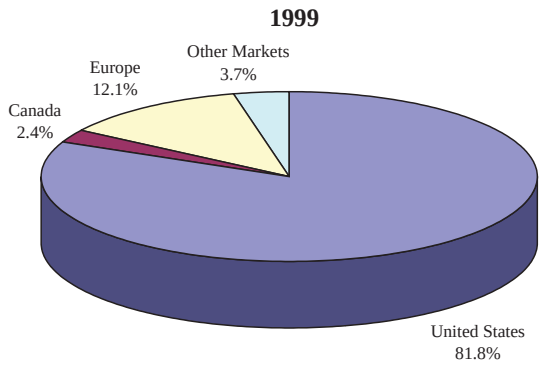
Sources: US. Department of Labor, Bureau of Labor Statistics
Compiled by Ricondo & Associates, Inc.

Table 3-4

TABLE 3-4
ORIGIN OF VISITORS TO LEE COUNTY

Year	United States		Canada		Europe		Other Markets		Total	
	Visitors	Growth	Visitors	Growth	Visitors	Growth	Visitors	Growth	Visitors	Growth
1989	1,229,084	-0.4%	86,528	9.0%	105,177	37.1%	80,765	-3.4%	1,501,554	1.9%
1990	1,240,720	0.9%	95,688	10.6%	140,814	33.9%	69,837	-13.5%	1,547,059	3.0%
1991	1,169,389	-5.7%	107,864	12.7%	157,820	12.1%	84,953	21.6%	1,520,026	-1.7%
1992	1,130,292	-3.3%	105,824	-1.9%	214,537	35.9%	82,426	-3.0%	1,533,079	0.9%
1993	1,198,956	6.1%	95,789	-9.5%	222,387	3.7%	81,893	-0.6%	1,599,025	4.3%
1994	1,318,990	10.0%	70,777	-26.1%	152,328	-31.5%	80,031	-2.3%	1,622,126	1.4%
1995	1,344,010	1.9%	57,188	-19.2%	188,568	23.8%	81,709	2.1%	1,671,475	3.0%
1996	1,372,780	2.1%	53,853	-5.8%	214,263	13.6%	74,194	-9.2%	1,715,090	2.6%
1997	1,434,121	4.5%	56,762	5.4%	211,774	-1.2%	79,565	7.2%	1,782,222	3.9%
1998	1,458,291	1.7%	54,503	-4.0%	215,473	1.7%	74,305	-6.6%	1,802,572	1.1%
1999	1,526,278	4.7%	44,859	-17.7%	226,084	4.9%	68,902	-7.3%	1,866,123	3.5%
Annual Compounded Growth Rate										
1989-1999		2.2%		-6.4%		8.0%		-1.6%		2.2%

PERCENT OF 1999 LEE COUNTY VISTORS BY ORIGIN



Sources: Annual Visitor Profile-Lee County, annual editions for 1990 through 1999
Compiled by Ricondo & Associates, Inc.

Table 3-5

TABLE 3-5
RETAIL SALES PER HOUSEHOLD

Year	Air Trade Area [1]	State of Florida	United States
Historical			
1995	$25,816	$24,703	$23,209
1996	$26,828	$25,688	$24,120
1997	$29,627	$27,505	$24,992
1998	$30,392	$28,015	$25,437
1999	$31,587	$29,313	$26,544
Projected			
2003	$38,746	$35,143	$31,301
Annual Compounded Growth Rate			
1995 - 1999	5.2%	4.4%	3.4%
1999 - 2003	5.2%	4.6%	4.2%

[1] Air Trade Area for this table only includes Charlotte, Collier, and Lee Counties due to unavailability of projected data for Glades and Hendry Counties.

Sources: Sales & Marketing Magazine, Survey of Buying Power, 1995-1999
Compiled by Ricondo & Associates, Inc.

Marketing Management, retail sales per household in the Air Trade Area for 1999 through 2003 are projected to continue to increase at an annual compounded growth rate of 5.2 percent, which is higher than the projected growth rate for both the State of Florida and the United States (4.6 and 4.2 percent, respectively).

3.3 HISTORICAL ACTIVITY

This section presents historical aviation activity at the Airport, and discusses key factors affecting these activity levels.

3.3.1 Airlines Serving the Airport

As of December 2000, the Airport had scheduled passenger service provided by 14 domestic air carrier airlines, five regionals/commuters, and six international charter air carriers.[1] In addition to these airlines, a number of other domestic charter airlines also operate at the Airport during the peak winter months. Three all-cargo carriers also provide scheduled cargo service at the Airport. **Table 3-6** lists the airlines serving the Airport as of December 2000.

Table 3-7 illustrates the historical airline base at the Airport since 1990. As shown, the Airport's scheduled commercial airline base has increased from 17 scheduled commercial airlines in 1990 to 26 in 2000. Specific points concerning the Airport's historical commercial airline base are presented below:

- Of the 14 domestic air carriers currently serving the Airport, nine (American, American Trans Air, Continental, Delta, Northwest, Sun Country, Trans World, United, and US Airways) have served the Airport during each of the years shown. In addition, five other domestic air carriers have initiated service at the Airport since 1990, including Midwest Express in 1992, Spirit Airlines in 1993, Valujet (now operating as AirTran) in 1994, America West in 1996, and JetBlue in 2000.

- After initiating service at the Airport in 1994, Valujet ceased operations entirely in June 1996 due to an operational mandate of the FAA. Valujet re-initiated service to the Airport in October 1996, and subsequently merged with AirTran, which continues to operate at the Airport today.

- Of the five regionals/commuters currently serving the Airport, one (American Eagle) has served the Airport during each of years depicted. In addition, in recent years, four other regionals/commuters have initiated service at the Airport since 1990, including Continental Express and Comair in 1993, Cape Air in 1996, and America West Express in 2000.

[1] As defined by the FAA, regionals/commuters are those airlines providing regularly scheduled passenger service and whose fleets are composed predominately of aircraft of 60 seats or less.

Table 3-6

TABLE 3-6
AIRLINES SERVING THE AIRPORT [1]

Domestic Air Carriers	International Charter Air Carriers
AirTran	Air Canada
American Airlines	Air Transat
American Trans Air	Balair/CTA [3]
America West	Canada 3000
Continental Airlines	LTU Int'l Airways
Delta Air Lines [2]	Condor
JetBlue	
Lynx Air International	
Metro Jet	
Midwest Express	
Northwest Airlines	
Spirit Airlines	
Sun Country	
Trans World Airlines	
United Airlines	
US Airways [4]	All Cargo Carriers
Regionals/Commuters	Airborne Express
	FedEx
American Eagle	United Parcel Service
America West Express	
Cape Air	
Comair	
Continental Express	

[1] As of December 2000. During the peak winter months, a number of other domestic and international charter

[2] Also operates Delta Express at the Airport.

[3] Provides summer seasonal service. (In 2000, not in 2001)

[4] Also operates Metrojet at the Airport.

Sources: Lee County Port Authority
Compiled by Ricondo & Associates, Inc.

Table 3-7

TABLE 3-7
HISTORICAL SCHEDULED COMMERCIAL AIRLINE BASE

Airline	YEAR										[1]
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
American Airlines	●	●	●	●	●	●	●	●	●	●	●
American Eagle	●	●	●	●	●	●	●	●	●	●	●
American Trans Air	●	●	●	●	●	●	●	●	●	●	●
Continental Airlines	●	●	●	●	●	●	●	●	●	●	●
Delta Air Lines	●	●	●	●	●	●	●	●	●	●	●
Northwest Airlines	●	●	●	●	●	●	●	●	●	●	●
Trans World Airlines	●	●	●	●	●	●	●	●	●	●	●
United Airlines	●	●	●	●	●	●	●	●	●	●	●
US Airways	●	●	●	●	●	●	●	●	●	●	●
Sun Country	●	●	●	●	●	●	●	●	●	●	●
Air Canada	●	●	●	●	●	●		●	●	●	●
Canada 3000	●	●	●	●	●	●	●	●	●	●	●
Midwest Express			●	●	●	●	●	●	●	●	●
Comair				●	●	●	●	●	●	●	●
Continental Express				●	●	●	●	●	●	●	●
Spirit Airlines				●	●	●	●	●	●	●	●
AirTran [2]					●	●	●	●	●	●	●
LTU International Airways					●	●	●	●	●	●	●
America West							●	●		●	●
Cape Air							●	●	●	●	●
Royal Air							●	●	●	●	●
Air Transat									●	●	●
Balair/CTA									●	●	●
America West Express											●
JetBlue											●
Condor											●
AIRLINES NO LONGER SERVING											
Eastern Airlines	●	●									
Eastern Express	●	●									
PanAm Express/TWA Express	●	●									
Midway Airlines	●	●	●			●	●				
Canadian Airlines Int'l	●	●	●	●	●	●	●	●	●		
Carnival Air\PanAm						●	●	●	●		
US Airways Express		●	●	●	●	●	●	●	●	●	
United Express				●	●			●	●	●	●

[1] As of December 2000.

[2] Operated as Valujet Airlines prior to FY 1997.

Sources: Lee County Port Authority
Compiled by Ricondo & Associates, Inc.

- Two international carriers (Air Canada and Canada 3000) have served the Airport during each of the years shown. In addition, in recent years, the Airport has been successful in attracting other international airlines to the Airport, including LTU International Airways, Air Transat, Balair/CTA, and Condor.

- Three air carrier airlines discontinued service at the Airport during the years depicted. These airlines were Eastern Airlines in FY 1991, Midway Airlines in FY 1995, and Canadian Airlines International. Midway served the Airport for only one winter season. Also, five regional/commuters airlines discontinued service at the Airport including; Eastern Express in FY 1991, PanAm Express/TWA Express in FY 1991, Carnival Air/Pan Am Express in FY 1998, US Airways Express in FY 1999, and United Express in FY 2000.

3.3.2 Enplaned Passengers

Table 3-8 presents historical data on enplaned passengers at the Airport and the nation between 1990 and 2000. As shown, enplanements at the Airport increased from 1,873,178 in 1990 to 2,632,088 in 2000. This increase represents an annual compounded growth rate of 3.5 percent during this period, compared to 3.4 percent growth experienced nationwide. Following a decrease in enplanements from 1,873,178 in 1990 to 1,738,338 in 1991, the Airport's annual enplanements increased each year to 2,632,088 in 2000, representing an annual compounded growth rate of 4.7 percent from 1991 to 2000. Overall, the Airport's share of total U.S. enplanements has remained relatively constant, increasing slightly from 0.410 percent of the nation's enplanements in 1990 to 0.412 percent in 2000.

Details concerning the Airport's historical growth in enplaned passengers are presented below:

- 1990 - 1991 – Enplanements at the Airport decreased in 1991, primarily due to the nationwide recession and the Persian Gulf War during this period. In addition, Eastern Airlines eliminated service at the Airport, as well as the rest of the U.S, in 1991.

- 1991 – 2000 – As mentioned previously, enplanements at the Airport have increased consistently since 1991, from 1,738,338 enplanements in 1991 to 2,632,088 enplanements in 2000. This enplanement growth is a result of the continued increases in visitor and tourist activity, as well as population growth in the Air Trade Area. Passenger traffic has also been stimulated by the increased availability of low-fare service by Spirit in FY 1993, AirTran in 1994, Delta Express in 1996, and Jet Blue in 2000.

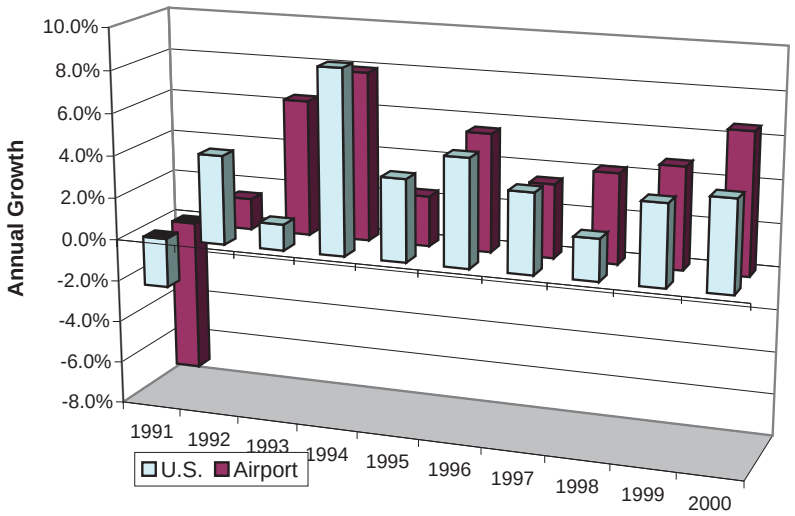
Figure 3-2 depicts the Airport's historical enplanements by carrier classification. Typically, air carrier airlines operate jet aircraft in the higher density and/or longer haul markets, while the regional/commuter airlines operate smaller aircraft in shorter haul markets. As shown in Figure 3-2, the domestic air carrier airlines comprise the majority of the Airport's activity, accounting for 91.2 percent of the Airport's enplanements in 2000, while the regional/commuter airlines accounted for 6.0 percent of the Airport's enplanements in 2000. The regional/commuter airlines' share of Airport enplanements has increased in recent years, from 2.3 percent in 2000 to 6.0 percent in 2000, while the domestic air carrier market share decreased by 4.3 percent. This

Table 3-8

TABLE 3-8
HISTORICAL PASSENGER ENPLANEMENTS

Year	Airport Enplanements	Airport Annual Growth	United States [1] Enplanements	United States [1] Annual Growth	Airport Market Share
1990	1,873,178	--	456,600,000	--	0.410%
1991	1,738,338	-7.2%	445,900,000	-2.3%	0.390%
1992	1,763,810	1.5%	464,700,000	4.2%	0.380%
1993	1,876,588	6.4%	470,400,000	1.2%	0.399%
1994	2,025,531	7.9%	511,300,000	8.7%	0.396%
1995	2,073,381	2.4%	531,100,000	3.9%	0.390%
1996	2,188,127	5.5%	558,100,000	5.1%	0.392%
1997	2,263,334	3.4%	579,100,000	3.8%	0.391%
1998	2,358,258	4.2%	590,400,000	2.0%	0.399%
1999	2,470,114	4.7%	612,900,000	3.8%	0.403%
2000	2,632,088	6.6%	639,100,000	4.3%	0.412%
Annual Compounded Growth Rate					
1990-2000		3.5%		3.4%	

Historical Growth Trends



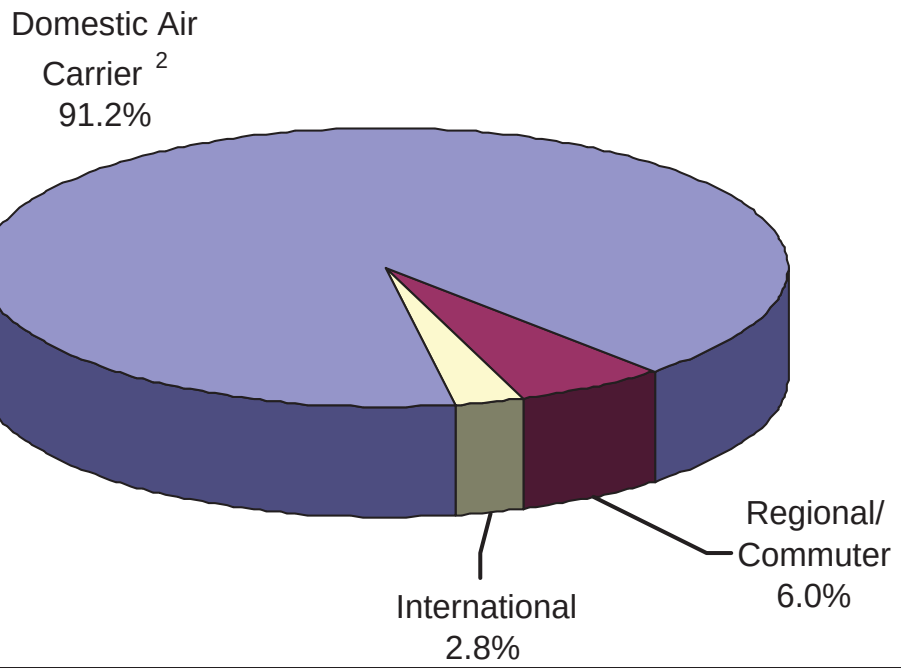
[1] U.S. enplanements for 2000 are estimated.

Sources: Lee County Port Authority
FAA Aerospace Forecasts, FY 2001 - 2012
Compiled by Ricondo & Associates, Inc.

Figure 3-2

Figure 3-2

Percentage of Enplanments by Carrier Classification [1]



[1] As of Decemember 2000.

[2] Consists of charter airlines, airlines with less than 20,000 enplanements, and International airlines.

Sources: Lee County Port Authority
Prepared by Ricondo & Associates, Inc.

shifting of enplanements from the air carriers to the regionals/commuters is attributable to the nationwide trend of regionals/commuters initiating service in shorter-haul, lower-density markets abandoned by the air carrier airlines. As also shown, the international airlines account for approximately 2.8 percent of the Airport's enplanements in 2000, and has remained relatively constant since 1990, increasing slightly from a 2.2 percent share in 1990.

3.3.3 Air Service

An airport's air service can be measured through the distribution of its O&D markets, which is a function of air travel demands and the airport's available nonstop service. **Table 3-9** presents historical data on the Airport's top 30 O&D markets for the years ended in 3rd quarter of 1995 and 2000, the most recent calendar year available. As shown, the Airport's top 30 markets represent approximately 74.1 percent of the total domestic O&D traffic at the Airport in the 3rd quarter of 2000.

The Airport is served by airlines providing service to primarily short- to medium-haul markets (less than 1,800 miles), with an average stage length of 1,104 and 1,100 miles for 1995 and 2000, respectively. The Airport's average stage lengths during these periods reflect the Airport's geographical location and strong local demand for major east coast (i.e., Boston, New York, and Philadelphia) and midwestern (i.e., Detroit, Chicago, and Indianapolis) markets in the U.S. As also shown in Table 3-9, while many of the Airport's top O&D markets experienced increases from 1995 to 2000, the Detroit market experienced significant increases in O&D passenger traffic. O&D passenger traffic to and from Detroit increased by nearly 40 percent from 1995 to 2000, which can be attributed to new service and lower fares by Northwest and Spirit airlines.

Nonstop scheduled air service available from the Airport is presented in **Table 3-10** for February 2001 based on Official Airline Guide (OAG) data. As shown, 31 airports are served with a total of 703 weekly nonstop flights. Of the Airport's top 30 O&D markets, 22 were provided with nonstop service, including the Airport's top 13 O&D markets, in February 2001. As mentioned previously, new international air service has been initiated at the Airport in recent years. As of February 2001, the Airport was provided a total of 20 weekly nonstop international flights to Dusseldorf, Frankfort, and Toronto.

3.3.4 Aircraft Operations

Historical aircraft operations, which are defined as the arrival or departure of an aircraft, are presented in **Table 3-11**. Total operations at the Airport increased between 1995 and 2000, largely due to increased general aviation activity at the Airport. Overall, total operations increased from 69,621 in 1995 to 77,042 in 2000, representing an annual compounded growth rate of 2.0 percent.

Table 3-9

TABLE 3-9
PRIMARY DOMESTIC O&D PASSENGER MARKETS

Year Ended 3rd Quarter 1995						Year Ended 3rd Quarter 2000					
Rank	Market	Nonstop Service	Nonstop Miles	Total O&D Passengers	Percent of Total	Rank	Market	Nonstop Service	Nonstop Miles	Total O&D Passengers	Percent of Total
1	Boston	●	1,249	255,200	7.0%	1	Detroit	●	1,085	309,150	6.8%
2	New York, (Newark)	●	1,068	238,600	6.5%	2	Boston	●	1,249	278,670	6.1%
3	Detroit	●	1,085	224,580	6.1%	3	New York (Newark)	●	1,068	252,470	5.6%
4	Indianapolis	●	946	168,080	4.6%	4	Chicago (O'Hare)	●	1,120	207,180	4.6%
5	Chicago, (Midway)		1,105	163,540	4.5%	5	Atlanta	●	515	182,990	4.0%
6	New York, (La Guardia)	●	1,080	162,280	4.4%	6	Chicago (Midway)	●	1,105	177,760	3.9%
7	Chicago, (O'Hare)	●	1,120	156,480	4.3%	7	Indianapolis	●	946	165,360	3.6%
8	Philadelphia	●	992	129,240	3.5%	8	New York (LaGuardia)	●	1,080	155,530	3.4%
9	Milwaukee	●	1,183	123,660	3.4%	9	Minneapolis	●	1,416	153,590	3.4%
10	Atlanta	●	515	120,800	3.3%	10	Philadelphia	●	992	144,010	3.2%
11	Cleveland	●	1,025	103,680	2.8%	11	Cleveland	●	1,025	128,150	2.8%
12	St. Louis	●	979	99,060	2.7%	12	Milwaukee	●	1,183	100,060	2.2%
13	Minneapolis	●	1,416	97,460	2.7%	13	Pittsburgh	●	966	91,210	2.0%
14	Pittsburgh	●	966	83,220	2.3%	14	Hartford		1,180	89,680	2.0%
15	Hartford		1,180	76,380	2.1%	15	Atlantic City	●	982	88,110	1.9%
16	Columbus		930	63,360	1.7%	16	Columbus	●	930	87,210	1.9%
17	Baltimore	●	919	60,060	1.6%	17	Long Island		1,101	86,440	1.9%
18	Cincinnati	●	879	58,720	1.6%	18	St. Louis	●	979	82,830	1.8%
19	Washington D.C. (National)	●	892	52,440	1.4%	19	Cincinnati	●	879	73,040	1.6%
20	Providence		1,201	43,600	1.2%	20	Dallas/Ft. Worth	●	1,017	53,770	1.2%
21	Dallas/Ft. Worth	●	1,017	34,660	0.9%	21	Washington, D.C. (National)	●	892	52,430	1.2%
22	Buffalo		1,144	32,940	0.9%	22	Providence		1,201	52,410	1.2%
23	Louisville		835	32,060	0.9%	23	Denver		1,606	50,450	1.1%
24	Kansas City		1,156	31,900	0.9%	24	Washington, D.C. (Dulles)	●	890	49,760	1.1%
25	Denver		1,606	31,740	0.9%	25	Buffalo		1,144	47,570	1.0%
26	Syracuse		1,186	27,380	0.7%	26	Kansas City		1,156	47,540	1.0%
27	Albany		1,204	26,820	0.7%	27	Baltimore	●	919	43,160	1.0%
28	Rochester		1,166	26,780	0.7%	28	Dayton		932	42,940	0.9%
29	Grand Rapids		1,147	25,720	0.7%	29	Louisville		835	37,420	0.8%
30	Nashville		722	25,540	0.7%	30	Charlotte	●	600	33,570	0.7%
Total - Top 30 Markets				2,775,980	75.6%	Total - Top 30 Markets				3,364,460	74.1%
Total - All Other Markets				894,660	24.4%	Total - All Other Markets				1,175,290	25.9%
Total - All Markets				3,670,640	100.0%	Total - All Markets				4,539,750	100.0%

Average Stage Length [1]		Average Stage Length [1]	
Airport	1,104 miles	Airport	1,100 miles
United States	940 miles	United States	990 miles

[1] Average passenger trip distance for all of the Airport's O&D markets.

Sources: USDOT Origin & Destination Survey of Airline Passenger Traffic
Compiled by Ricondo & Associates, Inc.

Table 3-10

TABLE 3-10
NONSTOP MARKETS [1]

Market	Weekly Nonstop Departures	Airline
Atlanta	99	Delta Air Lines
	21	Airtran Airways
Atlantic City	7	Spirit Airlines
Baltimore	7	US Airways
Boston	21	Delta Express
Charlotte	42	US Airways
Chicago - Midway	13	American Trans Air
Chicago - O'Hare	22	United Airlines
	14	Spirit Airlines
Cincinnati	28	Delta Air Lines
Cleveland	20	Continental Airlines
Columbus	7	America West Airlines
	1	American West Express/Mesa
Dallas\Ft. Worth	8	American Airlines
Detroit	21	Spirit Airlines
	35	Northwest Airlines
Dusseldorf (Germany)	2	LTU International Airways
Frankfurt (Germany)	2	Condor
Houston	10	Continental Airlines
Indianapolis	7	American Trans Air
Key West	28	Cape Air
Miami	7	Continental Express/Gulfstream
	49	American Eagle
	7	American Airlines
Milwaukee	3	Sun Country Airlines
	8	Midwest Express Airlines
Minneapolis\St. Paul	22	Northwest Airlines
	1	Sun Country Airlines
New York - Kennedy	7	JetBlue Airways
New York - LaGuardia	14	US Airways
	7	Spirit Airlines
New York - Newark	25	Continental Airlines
	6	Delta Express
Orlando	34	Comair
Philadelphia	22	US Airways
Pittsburgh	14	US Airways
St. Louis	21	Trans World Airlines
Tampa	22	Continental Express/Gulfstream
Toronto (Canada)	6	Air Canada
	7	Canada 3000
	3	Air Transat
Washington - Dulles	1	United Airlines
Washington - National	2	US Airways
TOTAL WEEKLY NONSTOP DEPARTURES	703	

[1] For the week of February 11 through February 17, 2001.

Sources: Official Airline Guide (OAG)
Compiled by Ricondo & Associates, Inc.

Table 3-11

TABLE 3-11
HISTORICAL AIRCRAFT OPERATIONS

Year	Domestic Air Carriers [1]	International Air Carriers	Regionals/ Commuters	General Aviation [2]	All-Cargo	Military	Airport Total
1995	37,210	826	17,004	12,261	1,622	698	69,621
1996	36,694	872	16,528	12,250	1,608	1,152	69,104
1997	36,476	774	11,956	13,714	1,632	1,442	65,994
1998	35,674	1,016	15,454	14,075	1,568	1,943	69,730
1999	35,556	842	15,954	18,664	1,620	1,866	74,502
2000	38,240	976	14,450	20,035	1,604	1,737	77,042
Annual Compounded Growth Rate							
1995 - 2000	0.5%	3.4%	-3.2%	10.3%	-0.2%	20.0%	2.0%

[1] Includes domestic scheduled and chartered activity.

[2] Also includes activity by miscellaneous air taxis.

Sources: Lee County Port Authority
Compiled by Ricondo & Associates, Inc.

- Domestic Air Carriers - Overall, domestic air carrier operations remained relatively constant since 1995, increasing only slightly from 37,210 in 1995 to 38,240 in 2000. This increase represents an annual compounded rate of negative 0.5 percent during this period, compared to the annual compounded growth rate of 2.1 percent experienced nationwide. As shown, air carrier operations decreased consistently from 1995 to 1999, primarily due to a shift to larger aircraft (i.e., from the B-727 to the B-757 and B-767 aircraft, and from the B-737-200 to the MD-80 aircraft) and decreased operations by American, Delta, TWA, and US Airways. The decrease in operations, however, was offset somewhat by an increase in operations by American Trans Air, Continental, and Northwest during this same timeframe. In 2000, air carrier operations once again increased, which indicates an end to the air carrier airline's shift toward larger aircraft in the market.

- International Air Carriers – Overall, operations by international air carrier airlines have remained relatively constant since 1995, increasing slightly from 826 annual operations to 976 operations in 2000.

- Regionals/Commuters – Overall, operations by regionals/commuters decreased from 17,004 in 1995 to 14,450 in 2000, representing an annual compounded decrease of –3.2 percent. Nationwide, activity by regionals/commuters increased at an annual compounded growth rate of 1.0 percent during this same period. The decrease in regional/commuter activity in 1997 was primarily due to discontinued service by Continental Express, as well as reduced service by Comair and US Airways Express. Since FY 1997, however, regional/commuter operations have increased, primarily as a result of new service by Comair with the Canadair Regional Jet, and by American Eagle with the ATR-72. Gulfstream International also began service at the Airport in 1998 with nonstop service to Tampa and Miami.

- General Aviation - General aviation activity (which also consists of takeoffs and landings by miscellaneous air taxi operators) have increased consistently at the Airport, from 12,261 in 1995 to 20,035 in 2000, representing an annual compounded growth rate of 10.3 percent. By comparison, general aviation operations nationwide have increased by an annual compounded growth rate of 2.1 percent since 1995.

- All-Cargo - Two of the Airport's three all-cargo carriers (i.e., FedEx and United Parcel Service) have operated at the Airport since 1989, while Airborne Express began serving the Airport in 1999. As shown in Table 3-11, operations by all-cargo carriers have remained relatively constant, averaging approximately 1,600 annual operations since 1995.

- Military – As shown in Table 3-11, military operations at the Airport increased from 698 in 1995 to 1,737 in 2000.

3.4 PROJECTION OF PASSENGER ENPLANEMENTS

This section presents projections of passenger enplanements for the Airport. Projections of passenger enplanements were prepared on the basis of local socioeconomic and demographic factors, the Airport's historical share of U.S. enplanements, and anticipated trends in activity at

the Airport. This section discusses the factors and assumptions made in projecting passenger enplanements at the Airport, and is organized as follows:

- Market Share Analysis
- Regression Analyses
- Enplanement Projection Scenarios
- Comparison of Enplanement Projections

3.4.1 Market Share Analysis

The market share methodology examines the Airport's historical and projected share of total U.S. enplanement activity and uses historical relationships between the Airport's enplanement traffic and total U.S. enplanements in order to derive projections of future enplanement levels at the Airport. The U.S. forecast provides a base, reflecting how industry traffic in general is anticipated to grow in the future. The U.S. forecast considers factors such as the nation's economic health, aviation industry trends, and airline fuel and fare pricing trends. The FAA's activity projections contained in FAA Aerospace Forecasts, Fiscal Years 2001-2012, were used as a basis for the market share analysis.

In the absence of significant local influences, activity at an airport would be expected to increase at a rate comparable to the national rate. The market share methodology allows local factors to be reflected in the forecast by showing an increase or decrease in the airport's share of the total U.S. market. This type of forecasting approach is common to most master plans and facility planning studies undertaken at commercial service airports.

- Domestic Air Carrier Enplanements - **Table 3-12** presents historical and projected domestic air carrier enplanements (including domestic charter enplanements) at the Airport using the market share approach. As shown, the Airport's share of total U.S. domestic air carrier enplanements decreased from 1990 to 1995, from 0.427 percent in 1990 to 0.397 percent in 1995. Since 1995, however, the Airport's share of total U.S. domestic air carrier enplanements has increased steadily to 0.429 percent in 2000. This increased growth relative to the U.S. for domestic air carrier enplanements is indicative of the economic and tourism growth in the Airport's Air Trade Area as discussed earlier.

Table 3-12 also presents expected domestic air carrier market shares for the Airport and the resulting domestic air carrier enplanements. As shown, the Airport's share of total U.S domestic enplanements is projected to continue to increase through 2010, and then remain relatively constant thereafter. Based on these assumptions, domestic air carrier enplanements are projected to increase from 2,400,345 in 2000 to approximately 5,089,300 in 2020. This projected increase represents an annual compounded growth rate of 3.8 percent during this period, compared to 3.4 percent projected for the nation by the FAA.

Table 3-12

TABLE 3-12
DOMESTIC AIR CARRIER ENPLANEMENT PROJECTION
MARKET SHARE METHODOLOGY

	Airport		United States		
Year	Enplanements	Annual Growth	Enplanements	Annual Growth	Market Share
Historical					
1990	1,789,652	--	419,400,000	--	0.427%
1991	1,646,924	-8.0%	406,600,000	-3.1%	0.405%
1992	1,653,057	0.4%	420,100,000	3.3%	0.393%
1993	1,760,409	6.5%	421,200,000	0.3%	0.418%
1994	1,864,370	5.9%	456,000,000	8.3%	0.409%
1995	1,886,675	1.2%	475,300,000	4.2%	0.397%
1996	1,997,588	5.9%	498,100,000	4.8%	0.401%
1997	2,100,532	5.2%	516,700,000	3.7%	0.407%
1998	2,131,747	1.5%	524,700,000	1.5%	0.406%
1999	2,234,330	4.8%	538,600,000	2.6%	0.415%
2000	2,400,345	7.4%	559,400,000	3.9%	0.429%
Projected					
2005	3,015,700		645,100,000		0.467%
2010	3,623,500		771,000,000		0.470%
2015	4,333,700		922,100,000		0.470%
2020	5,089,300		1,087,500,000		0.468%
Annual Compounded Growth Rate					
1990- 2000	3.0%		2.9%		
2000 - 2005	4.7%		2.9%		
2005 - 2010	3.7%		3.6%		
2010 - 2015	3.6%		3.6%		
2015 - 2020	3.3%		3.4%		
2000 - 2020	3.8%		3.4%		

Sources: Lee County Port Authority
Ricondo & Associates, Inc.
FAA Aerospace Forecasts, Fiscal Years 2001 - 2012

- International Air Carrier Enplanements - **Table 3-13** presents historical shares of U.S. international air carrier enplanements for the Airport between 1990 and 2000. As shown, these shares decreased from 0.100 percent in 1990 to 0.086 percent in 1994, and have increased thereafter to 0.133 percent in 2000. Overall, international air carrier enplanements at the Airport have increased at an annual compounded growth rate of 5.9 percent from 1990 to 2000. However, since a low of 39,843 enplanements in 1994, international air carrier enplanements have increased by an annual compounded growth rate of 10.6 percent through 2000.

As presented in Table 3-13, the Airport's share of total U.S. international air carrier enplanements is assumed to continue to increase throughout the projection period to approximately 0.141 percent by 2020. Based on this assumption, international air carrier enplanements for the Airport are projected to increase from 72,854 in 2000 to approximately 225,500 in 2020, representing an annual compounded growth rate of 5.8 percent. By comparison, total international air carrier enplanements for the U.S. are projected to increase at an annual compounded growth rate of 5.5 percent by the FAA during this same time period.

- Regional/Commuter Enplanements – **Table 3-14** presents historical and projected shares for regional/commuter enplanements at the Airport. As shown, from 1990 to 1995, the Airport's share of U.S. regional/commuter enplanements increased from 0.120 percent to a high of 0.249 percent. Since 1995, however, this share has decreased to 0.200 percent in 2000. Overall, regional/commuter enplanements at the Airport have increased from 42,429 in 1990 to 158,889 in 2000, representing an annual compounded growth rate of 14.1 percent. A majority of this growth occurred from 1993 to 1994 when Continental Express initiated service at the Airport, and a number of other airlines also expanded service at the Airport. Since 1995, the Airport's regional/commuter enplanements have increased by an annual compounded growth rate of 2.7 percent, as compared to 7.4 percent for the U.S. during the same period. To date, the current Comair pilots strike, which began in March 2001, has not significantly impacted the Airport's overall enplanement levels. These passengers have been largely accommodated on Delta Airlines and the other carriers serving the Airport. Comair provided 34 weekly flights to Orlando.

As presented in Table 3-14, the Airport's share of total U.S. regional/commuter enplanements is assumed to continue to decrease throughout the projection period to approximately 0.142 percent by 2020. Based on this assumption, regional/commuter enplanements for the Airport are projected to increase from 158,889 in 2000 to approximately 312,300 in 2020, representing an annual compounded growth rate of 3.4 percent. By comparison, total regional/commuter enplanements for the U.S. are projected to increase at an annual compounded growth rate of 5.2 percent by the FAA during this same time period.

Table 3-15 presents a summary of the total Airport enplanements resulting from the Market Share Methodology, combining the results of the domestic and international air carrier and regional/commuter enplanement projections presented above. As shown, total Airport enplanements are projected to increase from 2,632,088 in 2000, to approximately 5,627,100 in 2020, representing an annual compounded growth rate of 3.9 percent.

Table 3-13

TABLE 3-13
INTERNATIONAL AIR CARRIER ENPLANEMENT PROJECTION
MARKET SHARE METHODOLOGY

Year	Airport Enplanements	Airport Annual Growth	United States Enplanements	United States Annual Growth	Market Share
Historical					
1990	41,097	--	41,300,000	--	0.100%
1991	44,184	7.5%	39,700,000	-3.9%	0.111%
1992	46,195	4.6%	42,600,000	7.3%	0.108%
1993	40,043	-13.3%	45,200,000	6.1%	0.089%
1994	39,843	-0.5%	46,300,000	2.4%	0.086%
1995	47,826	20.0%	48,600,000	5.0%	0.098%
1996	58,253	21.8%	50,000,000	2.9%	0.117%
1997	61,499	5.6%	52,300,000	4.6%	0.118%
1998	74,065	20.4%	53,100,000	1.5%	0.139%
1999	63,952	-13.7%	53,300,000	0.4%	0.120%
2000	72,854	13.9%	54,600,000	2.4%	0.133%
Projected					
2005	100,100		73,900,000		0.135%
2010	134,000		97,500,000		0.137%
2015	175,800		126,078,950		0.139%
2020	225,500		159,422,969		0.141%
Annual Compounded Growth Rate					
1990 - 2000	5.9%		2.8%		
2000 - 2005	6.6%		6.2%		
2005 - 2010	6.0%		5.7%		
2010 - 2015	5.6%		5.3%		
2015 - 2020	5.1%		4.8%		
2000 - 2020	5.8%		5.5%		

Sources: Lee County Port Authority
Ricondo & Associates, Inc.
FAA Aerospace Forecasts, Fiscal Years 2001 - 2012

Table 3-14

TABLE 3-14
DOMESTIC REGIONAL/COMMUTER ENPLANEMENT PROJECTION
MARKET SHARE METHODOLOGY

	Airport		United States		
Year	Enplanements	Annual Growth	Enplanements	Annual Growth	Market Share
Historical					
1990	42,429	--	35,500,000	--	0.120%
1991	47,230	11.3%	38,700,000	9.0%	0.122%
1992	64,558	36.7%	44,700,000	15.5%	0.144%
1993	76,136	17.9%	49,200,000	10.1%	0.155%
1994	121,318	59.3%	55,300,000	12.4%	0.219%
1995	138,880	14.5%	55,800,000	0.9%	0.249%
1996	132,286	-4.7%	60,000,000	7.5%	0.220%
1997	101,303	-23.4%	62,300,000	3.8%	0.163%
1998	152,446	50.5%	65,900,000	5.8%	0.231%
1999	171,832	12.7%	74,300,000	12.7%	0.231%
2000	158,889	-7.5%	79,600,000	7.1%	0.200%
Projected					
2005	178,200		107,200,000		0.166%
2010	221,300		139,800,000		0.158%
2015	266,300		177,200,000		0.150%
2020	312,300		219,500,000		0.142%
Annual Compounded Growth Rate					
1990 - 2000	14.1%		8.4%		
1995 - 2000	2.7%		7.4%		
2000 - 2005	2.3%		6.1%		
2005 - 2010	4.4%		5.5%		
2010 - 2015	3.8%		4.9%		
2015 - 2020	3.2%		4.4%		
2000 - 2020	3.4%		5.2%		

Sources: Lee County Port Authority
Ricondo & Associates, Inc.
FAA Aerospace Forecasts, Fiscal Years 2001 - 2012

Table 3-15

TABLE 3-15
SUMMARY OF ENPLANEMENT PROJECTIONS
MARKET SHARE METHODOLOGY

Year	Domestic Air Carriers	International Air Carriers	Regionals/ Commuters	Airport Total
Historical				
1990	1,789,652	41,097	42,429	1,873,178
1991	1,646,924	44,184	47,230	1,738,338
1992	1,653,057	46,195	64,558	1,763,810
1993	1,760,409	40,043	76,136	1,876,588
1994	1,864,370	39,843	121,318	2,025,531
1995	1,886,675	47,826	138,880	2,073,381
1996	1,997,588	58,253	132,286	2,188,127
1997	2,100,532	61,499	101,303	2,263,334
1998	2,131,747	74,065	152,446	2,358,258
1999	2,234,330	63,952	171,832	2,470,114
2000	2,400,345	72,854	158,889	2,632,088
Projected				
2005	3,015,700	100,100	178,200	3,294,000
2010	3,623,500	134,000	221,300	3,978,800
2015	4,333,700	175,800	266,300	4,775,800
2020	5,089,300	225,500	312,300	5,627,100
Annual Compounded Growth Rate				
1990 - 2000	3.0%	5.9%	14.1%	3.5%
2000 - 2005	4.7%	6.6%	2.3%	4.6%
2005 - 2010	3.7%	6.0%	4.4%	8.6%
2010 - 2015	3.6%	5.6%	3.8%	3.7%
2015 - 2020	3.3%	5.1%	3.2%	3.3%
2000 - 2020	3.8%	5.8%	3.4%	3.9%

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

3.4.2 Regression Analyses

A regression analysis compares proven relationships between various socioeconomic variables for the Airport's market area to aviation activity. A mathematical regression analysis model was developed to correlate the past relationship of these variables to the Airport's enplanements and then to project this relationship using the independent forecasts of these economic/demographic variables. Independent variable inputs were tested, and a simple trend line was determined to test the resulting projections.

Four steps were required in the regression analysis:

- Selecting the dependent variable (i.e., enplanements);
- Selecting the independent variable;
- Developing the regression projections; and
- Testing the adequacy of the regression projections.

The Airport's demand for air service is generally driven by factors directly related to the Air Trade Area's demographic and economic characteristics. As such, three socioeconomic variables were used as the independent variables for the regression analysis:

- Population – The number of persons residing in the region, based on data reported by the U.S. Census Bureau. For this analysis, historical and projected population data for the Air Trade Area was obtained from University of Florida, Bureau of Business Research.

- Employment – Number of persons employed in the region, based on nonagricultural employment data collected by the U.S. Department of Labor, Bureau of Labor Statistics. Historical and projected data for the independent variables listed above associated with the Airport's market area were obtained from National Planning Association (NPA) Data Services, Inc. Because NPA projections are done on a national basis, they provide an independent evaluation of the population and economic growth for the region.

- Per Capita Income (PCI) – PCI indicates a relationship between the wealth of the citizens of the Air Trade Area with the population level for the region. Residents with higher relative income levels are more likely to travel by air. PCI data is based on regional statistics collected by the U.S. Department of Labor, Bureau of Labor Statistics.

In addition to the socioeconomic regression analyses, a linear trend analysis was also undertaken. The linear trend analysis examines the historical growth in enplanements and then produces a linear formula which best describes the Airport's historical activity by a straight line. The resulting straight line represents the "best fit," in which an equal number of historical data observations are both above and below that line. This line is then extended outward to provide enplanement projections.

The results of the various regression analyses are described below.

- Population Regression – **Table 3-16** depicts the results of the population regression analysis. As shown, Air Trade Area population is projected to increase at an annual compounded growth rate of 1.7 percent between 2000 and 2020. Using population as the basis for the regression analysis, total Airport enplanements are projected to increase from 2,632,088 in 2000 to approximately 4,415,800 in 2020, resulting in an annual compounded growth rate of 2.6 percent.

- Employment Regression – **Table 3-17** depicts the results of the employment regression analysis. As shown, Air Trade Area employment is projected to increase at an annual compounded growth rate of 2.9 percent between 2000 and 2020. Using employment as the basis for the regression analysis, total Airport enplanements are projected to increase from 2,632,088 in 2000 to approximately 4,749,600 in 2020, resulting in an annual compounded growth rate of 3.0 percent.

- PCI Regression – **Table 3-18** depicts the results of the PCI regression analysis. As shown, Air Trade Area PCI is projected to increase at an annual compounded growth rate of 2.0 percent between 2000 and 2020. Using PCI as the basis for the regression analysis, total Airport enplanements are projected to increase from 2,632,088 in 2000 to approximately 4,414,100 in 2020, resulting in an annual compounded growth rate of 2.6 percent.

- Linear Trend Analysis – **Table 3-19** presents the results of the projections produced using the linear trend analysis. As shown, total Airport enplanements are projected to increase from 2,632,088 in 2000 to approximately 4,260,000 in 2020, representing an annual compounded growth rate of 2.4 percent.

Overall, the regression methodology resulted in very good correlations between the independent socioeconomic variables and the dependent enplanements. **Table 3-20** depicts the adequacy of each of the tested socioeconomic variables. The correlation coefficient (r^2) is a statistical measure showing the relationship between changes in the values of the independent variables with the changes in the values of the dependent variables. A perfect correlation of 1.0 would mean that each change in the value of the independent variable would translate into a change of equal magnitude in the dependent variable. In the case of an r^2 value of 1.0, movement in the independent variable would be an excellent predictor of what would happen to the dependent variable. In statistical analysis, the closer the r^2 value is to 1.0, the higher the confidence that movements in independent variables will produce the predicted movement in the dependent variable. The standard error of estimate (S_y) measures the similarity between the historical levels of the dependent variable and the estimates of the dependent variable. The closer the S_y value is to zero, the higher the r^2 value is to 1.0, and the higher the correlation.

As shown in Table 3-20, all of the regression analyses, resulted in correlation coefficients of greater than 0.90. The employment and PCI regression models resulted in the highest correlation, with an r^2 value of 0.97442 and 0.97358, respectively. The population regression model produced the lowest correlation, with an r^2 value of 0.91762. As presented above, the regression analyses resulted in very similar enplanement projections ranging from 4.2 million to 4.7 million in 2020. This close fit of all of the regression forecasts is typical given the fact that each of the demographic variables used for the regressions are inter-related, and are influenced by many of the same underlying economic factors.

Table 3-16

TABLE 3-16
ENPLANEMENT PROJECTIONS
POPULATION REGRESSION METHODOLOGY

Year	Domestic Air Carriers	International Air Carriers	Regionals/ Commuters	Airport Total	Annual Growth	Market Area Population	Annual Growth
Historical							
1990	1,789,652	41,097	42,429	1,873,178	--	631,600	--
1991	1,646,924	44,184	47,230	1,738,338	-7.2%	659,500	4.4%
1992	1,653,057	46,195	64,558	1,763,810	1.5%	672,800	2.0%
1993	1,760,409	40,043	76,136	1,876,588	6.4%	687,500	2.2%
1994	1,864,370	39,843	121,318	2,025,531	7.9%	705,600	2.6%
1995	1,886,675	47,826	138,880	2,073,381	2.4%	720,300	2.1%
1996	1,997,588	58,253	132,286	2,188,127	5.5%	732,900	1.7%
1997	2,100,532	61,499	101,303	2,263,334	3.4%	748,600	2.1%
1998	2,131,747	74,065	152,446	2,358,258	4.2%	765,400	2.2%
1999	2,234,330	63,952	171,832	2,470,114	4.7%	810,700	5.9%
2000	2,400,345	72,854	158,889	2,632,088	6.6%	880,700	8.6%
Projected							
2005	2,730,700	99,500	183,900	3,014,100		923,100	
2010	3,150,500	128,500	217,700	3,496,700		1,030,100	
2015	3,544,800	160,200	251,200	3,956,200		1,131,950	
2020	3,930,100	198,700	287,000	4,415,800		1,233,800	
Annual Compounded Growth Rate							
1990 - 2000	3.0%	5.9%	14.1%	3.5%		3.4%	
2000 - 2005	2.6%	6.4%	3.0%	2.7%		0.9%	
2005 - 2010	2.9%	5.2%	3.4%	3.0%		2.2%	
2010 - 2015	2.4%	4.5%	2.9%	2.5%		1.9%	
2015 - 2020	2.1%	4.4%	2.7%	2.2%		1.7%	
2000 - 2020	2.5%	5.1%	3.0%	2.6%		1.7%	

Sources: Lee County Port Authority
Ricondo & Associates, Inc.
University of Florida, Bureau and Business Research

Table 3-17

TABLE 3-17
ENPLANEMENT PROJECTION
EMPLOYMENT REGRESSION METHODOLOGY

Year	Domestic Air Carriers	International Air Carriers	Regionals/ Commuters	Airport Total	Annual Growth	Market Area Employment	Annual Growth
Historical							
1990	1,789,652	41,097	42,429	1,873,178	--	311,600	--
1991	1,646,924	44,184	47,230	1,738,338	-7.2%	314,800	1.0%
1992	1,653,057	46,195	64,558	1,763,810	1.5%	318,800	1.3%
1993	1,760,409	40,043	76,136	1,876,588	6.4%	333,600	4.6%
1994	1,864,370	39,843	121,318	2,025,531	7.9%	348,300	4.4%
1995	1,886,675	47,826	138,880	2,073,381	2.4%	360,700	3.6%
1996	1,997,588	58,253	132,286	2,188,127	5.5%	375,300	4.0%
1997	2,100,532	61,499	101,303	2,263,334	3.4%	387,200	3.2%
1998	2,131,747	74,065	152,446	2,358,258	4.2%	407,300	5.2%
1999	2,234,330	63,952	171,832	2,470,114	4.7%	422,700	3.8%
2000	2,400,345	72,854	158,889	2,632,088	6.6%	440,200	4.1%
Projected							
2005	2,861,700	104,200	192,700	3,158,600		526,700	
2006	2,965,700	110,600	200,700	3,277,000		545,000	
2007	3,066,000	117,000	208,600	3,391,600		562,700	
2008	3,163,100	123,500	216,300	3,502,900		579,900	
2009	3,260,500	130,100	224,100	3,614,700		597,200	
2010	3,358,400	137,000	232,000	3,727,400		614,600	
2015	3,807,000	172,100	269,800	4,248,900		695,200	
2020	4,227,200	213,700	308,700	4,749,600		772,600	
Annual Compounded Growth Rate							
1990 - 2000	3.0%	5.9%	14.1%	3.5%		3.5%	
2000 - 2005	3.6%	7.4%	3.9%	3.7%		3.7%	
2005 - 2010	3.3%	5.6%	3.8%	3.4%		3.1%	
2010 - 2015	2.5%	4.7%	3.1%	2.7%		2.5%	
2015 - 2020	2.1%	4.4%	2.7%	2.3%		2.1%	
2000 - 2020	2.9%	5.5%	3.4%	3.0%		2.9%	

Sources: Lee County Port Authority
Ricondo & Associates, Inc.
NPA Data Services

Table 3-18

TABLE 3-18
ENPLANEMENT PROJECTIONS
PER CAPITA INCOME REGRESSION METHODOLOGY

Year	Domestic Air Carriers	International Air Carriers	Regionals/ Commuters	Airport Total	Annual Growth	Per Capita Income	Annual Growth
Historical							
1990	1,789,652	41,097	42,429	1,873,178	--	$25,317	--
1991	1,646,924	44,184	47,230	1,738,338	-7.2%	$24,707	-2.4%
1992	1,653,057	46,195	64,558	1,763,810	1.5%	$25,313	2.5%
1993	1,760,409	40,043	76,136	1,876,588	6.4%	$25,665	1.4%
1994	1,864,370	39,843	121,318	2,025,531	7.9%	$26,388	2.8%
1995	1,886,675	47,826	138,880	2,073,381	2.4%	$27,081	2.6%
1996	1,997,588	58,253	132,286	2,188,127	5.5%	$27,663	2.1%
1997	2,100,532	61,499	101,303	2,263,334	3.4%	$28,971	4.7%
1998	2,131,747	74,065	152,446	2,358,258	4.2%	$29,745	2.7%
1999	2,234,330	63,952	171,832	2,470,114	4.7%	$30,923	4.0%
2000	2,400,345	72,854	158,889	2,632,088	6.6%	$31,948	3.3%
Projected							
2005	2,940,400	107,100	198,000	3,245,500		$37,151	
2010	3,331,400	135,900	230,200	3,697,500		$40,976	
2015	3,646,600	164,800	258,400	4,069,800		$44,128	
2020	3,928,600	198,600	286,900	4,414,100		$47,042	
Annual Compounded Growth Rate							
1990 - 2000	3.0%	5.9%	14.1%	3.5%		2.4%	
2000 - 2005	4.1%	8.0%	4.5%	4.3%		3.1%	
2005 - 2010	2.5%	4.9%	3.1%	2.6%		2.0%	
2010 - 2015	1.8%	3.9%	2.3%	1.9%		1.5%	
2015 - 2020	1.5%	3.8%	2.1%	1.6%		1.3%	
2000 - 2020	2.5%	5.1%	3.0%	2.6%		2.0%	

Sources: Lee County Port Authority
Ricondo & Associates, Inc.
NPA Data Services

Table 3-19

TABLE 3-19
ENPLANEMENT PROJECTIONS
TREND ANALYSIS REGRESSION METHODOLOGY

Year	Domestic Air Carriers	International Air Carriers	Regionals/ Commuters	Airport Total	Annual Growth
Historical					
1990	1,789,652	41,097	42,429	1,873,178	--
1991	1,646,924	44,184	47,230	1,738,338	-7.2%
1992	1,653,057	46,195	64,558	1,763,810	1.5%
1993	1,760,409	40,043	76,136	1,876,588	6.4%
1994	1,864,370	39,843	121,318	2,025,531	7.9%
1995	1,886,675	47,826	138,880	2,073,381	2.4%
1996	1,997,588	58,253	132,286	2,188,127	5.5%
1997	2,100,532	61,499	101,303	2,263,334	3.4%
1998	2,131,747	74,065	152,446	2,358,258	4.2%
1999	2,234,330	63,952	171,832	2,470,114	4.7%
2000	2,400,345	72,854	158,889	2,632,088	6.6%
Projected					
2005	2,695,300	98,200	181,500	2,975,000	
2010	3,066,300	125,100	211,800	3,403,200	
2015	3,433,100	155,200	243,300	3,831,600	
2020	3,791,400	191,700	276,900	4,260,000	
Annual Compounded Growth Rate					
1990 - 2000	3.0%	5.9%	14.1%	3.5%	
2000 - 2005	2.3%	6.2%	2.7%	2.5%	
2005 - 2010	2.6%	5.0%	3.1%	2.7%	
2010 - 2015	2.3%	4.4%	2.8%	2.4%	
2015 - 2020	2.0%	4.3%	2.6%	2.1%	
2000 - 2020	2.3%	5.0%	2.8%	2.4%	

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

Table 3-20

TABLE 3-20
ADEQUANCY OF TESTED REGRESSION MODELS

Regression Models	Regression Statistics: Correlation Coefficient (r^2)	Regression Statistics: Standard Error of Estimate (S_y)
Population	0.91762	89,287
Employment	0.97442	49,613
Per Capita Income (PCI)	0.97358	50,561
Trend Analysis	0.92707	87,177

Source: Ricondo & Associates, Inc.

3.4.3 Enplanement Projection Scenarios

In addition to the traditional enplanement projections that are examined in a master plan forecast, two additional enplanement projection scenarios were also examined for the Airport. This section provides descriptions and key assumptions related to various alternative scenarios of demand at the Airport beyond the traditional projections presented earlier. These scenarios include:

- New Low-Fare Entrant
- Economic Downturn

Each of these enplanement projection scenarios, and their resulting enplanement levels, are described in the following sections.

New Low-Fare Entrant

The Airport is currently provided with low-fare service by Spirit and Jet Blue airlines to a number of domestic markets. As presented in **Table 3-21**, this scenario assumes that a n additional entrant low-fare carrier will initiate a significant level of new service at the Airport to a number of new markets within five years. As a result, a certain amount of stimulation would occur at the Airport from additional new low-fare entrants. As has been demonstrated in other markets throughout the U.S., the entrance of additional new low-fare airlines can have dramatic effects on not only the Airport as a whole, but also each of the other individual airlines currently serving the market. Low fare-entrants serve to stimulate passenger traffic in the market by attracting passengers to the airport that might otherwise travel via automobile or fly out of another nearby competing airport.

For comparison purposes, historical activity at three other Florida airports (Ft. Lauderdale International, Jacksonville International, and Tampa International) was reviewed to identify the impact that a new low-fare carrier had on overall passenger enplanements at those airports. Based on this review, enplanements at each airport was found to have increased between 15 and 17 percent during the first full year of service by the new low-fare carrier, and between six and eight percent during the second year of service. Beyond the second year, passenger enplanements basically returned to more normal growth patterns for each of the airports.

Based on the findings of the review of historical enplanements at Ft. Lauderdale International, Jacksonville International, and Tampa International, passenger enplanements were assumed to increase by an additional 16 percent the first year (assumed to be 2005 for these analyses), and an additional 8 percent in the second year following the initiation of service by a low-fare carrier. Beyond the second year of service, the Airport's enplanements were projected to increase at the same rate as that projected by the FAA for the entire U.S. Based on these assumptions, total Airport enplanements are projected to increase from 2,632,088 in 2000, to approximately 6,733,000 in 2020, representing an annual compounded growth rate of 4.8 percent.

Table 3-21

TABLE 3-21
PASSENGER ENPLANEMENT SCENARIO 1
NEW LOW FARE CARRIER SERVICE

Year	Domestic Air Carriers	International Air Carriers	Regionals/ Commuters	Airport Total
Historical				
1990	1,789,652	41,097	42,429	1,873,178
1991	1,646,924	44,184	47,230	1,738,338
1992	1,653,057	46,195	64,558	1,763,810
1993	1,760,409	40,043	76,136	1,876,588
1994	1,864,370	39,843	121,318	2,025,531
1995	1,886,675	47,826	138,880	2,073,381
1996	1,997,588	58,253	132,286	2,188,127
1997	2,100,532	61,499	101,303	2,263,334
1998	2,131,747	74,065	152,446	2,358,258
1999	2,234,330	63,952	171,832	2,470,114
2000	2,400,345	72,854	158,889	2,632,088
Projected				
2005	3,458,000	99,000	185,000	3,742,000
2010	4,401,000	132,000	233,000	4,766,000
2015	5,264,000	173,000	280,000	5,717,000
2020	6,182,000	221,000	330,000	6,733,000
Annual Compounded Growth Rate				
1990 - 2000	3.0%	5.9%	14.1%	3.5%
2000 - 2005	7.6%	6.3%	3.1%	7.3%
2005 - 2010	4.9%	5.9%	4.7%	12.6%
2010 - 2015	3.6%	5.6%	3.7%	3.7%
2015 - 2020	3.3%	5.0%	3.3%	3.3%
2000 - 2020	4.8%	5.7%	3.7%	4.8%

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

Economic Downturn

In any given year, there are likely to be variations in the economic activity of the U.S. This scenario, however, examines the potential impact to future activity at the Airport that might result from a sustained slowdown in the economic growth of the Airport's Air Trade Area due to an economic downturn or nationwide recession.

Recent economic forecasts prepared by the Executive Office of the President and the Office of Management and Budget (OMB) projected continued growth for the U.S. economy, however at lower rates in the near-term than the growth which has been experienced in recent years. The OMB economic forecasts anticipate moderate growth throughout the forecast period. In the short-term, U.S. real Gross Domestic Product (GDP) is projected to increase by 2.7 percent in 2001, then increase to average growth of 3.2 percent over the next 5 years. GDP is forecast to increase at an average annual growth rate of 3.1 percent over the entire 12-year forecast period. The consumer price index is projected to remain in the moderate range throughout the 12-year forecast period, increasing at an average annual rate of 2.5 percent. The recently prepared FAA Aerospace Forecasts, Fiscal Years 2001-2012 account for these projected growth rates in the U.S. economy.

Due to the Air Trade Area's reliance of the tourism and trade industries, the region, and in turn the Airport, are particularly susceptible to nationwide economic downturns. As a result, this enplanement scenario assumes that the Airport's Air Trade Area will experience a leveling, or even decrease, in enplanements in the near-term due to the recent economic slowdown. As presented in **Table 3-22**, under this enplanement scenario, the Airport's enplanements are projected to remain relatively constant through 2005, increasing by an annual compounded growth rate of only 0.6 percent. Beyond 2005, the Airport's enplanements are projected to return to more normal growth, however, at somewhat lower growth rates than experienced historically. From 2005 to 2020, the Airport's enplanements are projected to increase at an annual compounded growth rate of 2.6 percent. Based on these assumptions, total Airport enplanements are projected to increase from 2,632,088 in 2000, to approximately 4,076,000 in 2020, representing an annual compounded growth rate of 2.2 percent.

3.4.4 Comparison of Enplanement Projections

Based on the passenger enplanement forecasts presented in the previous sections, the following summarizes the key findings of the enplanement projections for the Airport. Enplanement forecasts prepared using each of the methodologies discussed earlier are presented in **Table 3-23**. In addition, for comparison purposes, enplanement projections from the Airport's 1991 Master Plan and the FAA's most recent Terminal Area Forecasts (TAF) are presented in **Table 3-23**. **Figure 3-3** presents a graphical comparison of the enplanement projections prepared as part of this analysis.

Table 3-22

TABLE 3-22
PASSENGER ENPLANEMENT SCENARIO 2
NATIONWIDE ECONOMIC DOWNTURN

Year	Domestic Air Carriers	International Air Carriers	Regionals/ Commuters	Airport Total
Historical				
1990	1,789,652	41,097	42,429	1,873,178
1991	1,646,924	44,184	47,230	1,738,338
1992	1,653,057	46,195	64,558	1,763,810
1993	1,760,409	40,043	76,136	1,876,588
1994	1,864,370	39,843	121,318	2,025,531
1995	1,886,675	47,826	138,880	2,073,381
1996	1,997,588	58,253	132,286	2,188,127
1997	2,100,532	61,499	101,303	2,263,334
1998	2,131,747	74,065	152,446	2,358,258
1999	2,234,330	63,952	171,832	2,470,114
2000	2,400,345	72,854	158,889	2,632,088
Projected				
2005	2,476,000	75,000	164,000	2,715,000
2010	2,906,000	100,000	199,000	3,205,000
2015	3,294,000	125,000	231,000	3,650,000
2020	3,657,000	155,000	264,000	4,076,000
Annual Compounded Growth Rate				
1990 - 2000	3.0%	5.9%	14.1%	3.5%
2000 - 2005	0.6%	0.6%	0.6%	0.6%
2005 - 2010	3.3%	5.9%	3.9%	4.0%
2010 - 2015	2.5%	4.6%	3.0%	2.6%
2015 - 2020	2.1%	4.4%	2.7%	2.2%
2000 - 2020	2.1%	3.8%	2.6%	2.2%

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

Table 3-23

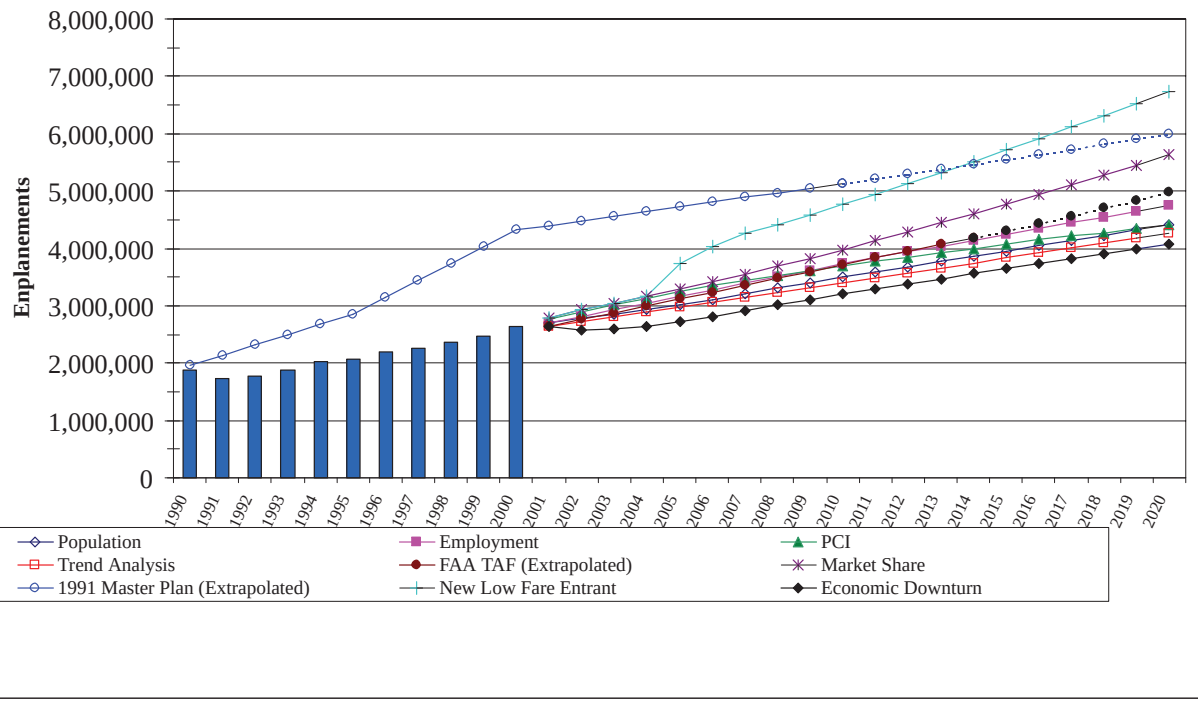
TABLE 3-23
COMPARISON OF ENPLANEMENT PROJECTIONS

		Regression Analyses				Enplanement Scenarios			
Year	Market Share	Population Regression	Employment Regression	PCI Regression	Trend Analysis Regression	New Low Fare Entrant	Economic Downturn	1991 Master Plan	FAA Terminal Area Forecast
Historical									
1990	1,873,178	1,873,178	1,873,178	1,873,178	1,873,178	1,873,178	1,873,178	1,959,000	1,780,766
1991	1,738,338	1,738,338	1,738,338	1,738,338	1,738,338	1,738,338	1,738,338	2,137,000	1,696,072
1992	1,763,810	1,763,810	1,763,810	1,763,810	1,763,810	1,763,810	1,763,810	2,315,000	1,680,259
1993	1,876,588	1,876,588	1,876,588	1,876,588	1,876,588	1,876,588	1,876,588	2,493,000	1,765,797
1994	2,025,531	2,025,531	2,025,531	2,025,531	2,025,531	2,025,531	2,025,531	2,671,000	1,938,706
1995	2,073,381	2,073,381	2,073,381	2,073,381	2,073,381	2,073,381	2,073,381	2,849,000	1,989,677
1996	2,188,127	2,188,127	2,188,127	2,188,127	2,188,127	2,188,127	2,188,127	3,143,000	2,104,260
1997	2,263,334	2,263,334	2,263,334	2,263,334	2,263,334	2,263,334	2,263,334	3,437,000	2,179,338
1998	2,358,258	2,358,258	2,358,258	2,358,258	2,358,258	2,358,258	2,358,258	3,731,000	2,252,107
1999	2,470,114	2,470,114	2,470,114	2,470,114	2,470,114	2,470,114	2,470,114	4,025,000	2,403,891
2000	2,632,088	2,632,088	2,632,088	2,632,088	2,632,088	2,632,088	2,632,088	4,319,000	2,522,921
Projected									
2005	3,294,000	3,014,100	3,158,600	3,245,500	2,975,000	3,742,000	2,715,000	4,724,500	3,118,077
2010	3,978,800	3,496,700	3,727,400	3,697,500	3,403,200	4,766,000	3,205,000	5,130,000	3,713,233
2015	4,775,800	3,956,200	4,248,900	4,069,800	3,831,600	5,717,000	3,650,000	--	4,308,391
2020	5,627,100	4,415,800	4,749,600	4,414,100	4,260,000	6,733,000	4,076,000	--	--
Annual Compounded Growth Rate									
1990 - 2000	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	8.2%	3.5%
2000 - 2005	4.6%	2.7%	3.7%	4.3%	2.5%	7.3%	0.6%	1.8%	4.3%
2005 - 2010	3.8%	3.0%	3.4%	2.6%	2.7%	5.0%	3.4%	1.7%	3.6%
2010 - 2015	3.7%	2.5%	2.7%	1.9%	2.4%	3.7%	2.6%	--	3.0%
2015 - 2020	3.3%	2.2%	2.3%	1.6%	2.1%	3.3%	2.2%	--	--
2000 - 2020	3.9%	2.6%	3.0%	2.6%	2.4%	4.8%	2.2%	--	--

Sources: Lee County Port Authority
FAA Terminal Forecast, February 2001
1991 Master Plan by Coffman Associates, Inc.
Ricondo & Associates, Inc.

Figure 3-3

Figure 3-3
Comparison of Enplanement Projections



The following summarizes key points of the various enplanement projections for the Airport:

- As shown, the new low-fare carrier scenario results in the highest enplanement forecast, and projects enplanements to reach 6.7 million enplanements by 2020, while the economic downturn scenario resulted in the lowest enplanement projection for the Airport of just over 4.0 million enplanements in 2020.

- Each of the regression forecasts (i.e., population, employment, PCI, and trend analysis) resulted in very similar enplanement projections, ranging from a low of 4.3 million to 4.7 million enplanements by 2020.

- The Market Share/Growth Rate forecast, which accounts for both local and nationwide trends in economic and aviation activity, projects Airport enplanements to reach approximately 5.6 million by 2020.

- The most recent FAA TAF prepared for the Airport projects Airport enplanements to increase to approximately 4.3 million in 2015. Extrapolating the FAA TAF out to the year 2020, yields an estimated enplanement level of approximately 5.0 million.

For the purposes of this study, the enplanement projections resulting from the market share methodology were chosen as the preferred enplanement forecast for the Airport. While these projections are somewhat higher than those resulting from the socioeconomic regression analyses and the FAA's TAF, the market share enplanement projections are preferred for the following reasons:

- Historically between 1990 and 2000, the Airport's enplanements have outpaced enplanement growth for the nation (i.e., 3.5 percent versus 3.4 percent annually between 1990 and 2000). This is particularly true in recent years, where the Airport's enplanement growth since 1997 has increased at an annual compounded growth rate of 5.2 percent versus the 3.3 percent growth for the U.S. during this same period. This trend is expected to continue in the future given the strong growth in economic activity and population projected for the Air Trade Area presented earlier. Through 2012, the FAA projects total U.S. enplanements to increase by an annual compounded growth rate of approximately 3.8 percent. By comparison, under the Market Share/Growth Rate forecast, the Airport's enplanements are projected to increase by an annual compounded growth rate of 4.1 percent through 2015, and 3.9 percent through 2020.

- Although the regression analyses resulted in very high correlation factors when compared to historical enplanement growth at the Airport, these forecasts resulted in low annual compounded growth rates ranging from 2.4 to 3.0 percent. As such, these enplanement projections are considered to be too conservative as compared to the Airport's historical enplanement growth of 3.5 percent from 1990 to 2000.

- When compared to the FAA's TAF for the Airport, the Market Share/Growth Rate forecast is approximately 10 percent higher in 2015, the last year in which the FAA TAF forecasts enplanements.

Based on the preferred enplanement forecasts produced by the Market Share/Growth Rate

forecast, the following sections of this report present the forecast of aircraft operations and the associated peak demand activity levels for the Airport.

3.5 PROJECTION OF AIRLINE OPERATIONS AND FLEET MIX

This section presents operations and fleet mix projections for the air carriers and regional/commuters serving the Airport. Operations and fleet mix projections were developed separately for domestic air carrier, international air carrier, and regional/commuter carriers serving the Airport due to the inherent operational differences between each group. Projections of airline operations were developed using the enplaned passenger projections presented earlier, in conjunction with historical and expected trends in load factors and average aircraft seats per departure.

3.5.1 Domestic Air Carrier Operations

Projections of operations by domestic air carrier airlines are presented in **Table 3-24**. The following points highlight the key assumptions that were used to derive domestic air carrier operations projections for the Airport:

- As mentioned previously, in recent years, the domestic air carrier airlines have shifted operations to larger aircraft, while maintaining the number of aircraft operations. Delta in particular shifted its operations from the B-727 and MD-80 aircraft to the B-767 in 1999. Similarly, Northwest and United have transitioned from the B-727 to the larger B-757 aircraft. Average seats for the domestic air carrier airlines has increased from 135.3 seats in 1995 to a high of 154.4 seats in 2000. This increasing trend, however, is considered to be nearing an end as can be seen through an examination of the increased number of domestic air carrier operations in 2000 and the relatively small increase in the number of average seats per aircraft from 1999 to 2000 (i.e., 153.5 seats versus 154.4 seats). By comparison, average domestic air carrier seats for the nation have decreased from an average of 149.7 seats in 1995 to 139.3 seats in 2000.

  Current fleet plans for domestic air carrier airlines show that the average seat size is anticipated to increase nationwide. As such, for projection purposes, average seats per departure for the Airport are projected to continue to increase, yet at slower rates than has been experienced recently. Overall, average domestic air carrier aircraft seats are projected to increase by approximately 0.5 seats per year.

- Historically, load factors for the Airport's domestic air carrier airlines have been high, increasing from 75.0 percent in 1995 to a high of 81.3 percent in 2000, as compared to 70.9 percent for the nation in 2000. For projection purposes, average domestic air carrier load factors at the Airport are anticipated to remain constant at 81.3 percent through 2020.

Table 3-24

TABLE 3-24
DOMESTIC AIR CARRIER OPERATIONS PROJECTION

Year	Domestic Air Carrier Enplanements	Total Passengers Departing	Average Seats	Load Factor	Departures	Operations	Annual Growth
Historical							
1995	1,886,675	1,886,675	135.3	75.0%	18,605	37,210	--
1996	1,997,588	1,997,588	142.5	76.4%	18,347	36,694	-1.4%
1997	2,100,532	2,100,532	144.2	79.9%	18,238	36,476	-0.6%
1998	2,131,747	2,131,747	149.0	80.2%	17,837	35,674	-2.2%
1999	2,234,330	2,234,330	153.5	81.9%	17,778	35,556	-0.3%
2000	2,400,345	2,400,345	154.4	81.3%	19,120	38,240	7.5%
Projected							
2005	3,015,700	3,015,700	156.9	81.3%	23,600	47,200	
2010	3,623,500	3,623,500	159.4	81.3%	28,000	56,000	
2015	4,333,700	4,333,700	161.9	81.3%	32,900	65,800	
2020	5,089,300	5,089,300	164.4	81.3%	38,100	76,200	
Annual Compounded Growth Rate							
1995 - 2000	4.9%					0.5%	
2000 - 2005	4.7%					4.3%	
2005 - 2010	3.7%					3.5%	
2010 - 2015	3.6%					3.3%	
2015 - 2020	3.3%					3.0%	
2000 - 2020	3.8%					3.5%	

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

As shown in Table 3-24, total domestic air carrier operations are expected to increase from 38,240 in 2000 to approximately 76,200 in 2020. This increase represents an annual compounded growth rate of 3.5 percent during this period, compared to 3.1 percent projection by the FAA for air carriers nationwide. This higher than nationwide growth is primarily due to a combination of factors, including the lower growth in average aircraft seat size and constant aircraft load factors assumed throughout the planning period.

Aircraft fleet mix projections for the domestic air carrier airlines are presented in **Table 3-25**. This table ties in the assumptions of growth in average seats per departure for the domestic air carrier airlines presented in Table 3-24. As shown, the domestic air carrier fleet mix is expected to consist primarily of B-737, B-757, and B-767 aircraft, with these aircraft accounting for approximately 75 percent of the domestic air carrier fleet mix.

3.5.2 International Air Carrier Operations

Projections of operations by international air carrier airlines are presented in **Table 3-26**. The following points highlight the key assumptions that were used to derive international air carrier operations projections for the Airport:

- Similar to the domestic air carrier airlines, the international air carrier airlines have shifted operations to larger aircraft, while maintaining the number of aircraft operations. In recent years, a number of international airlines such as LTU International Airway, Air Transat, and Condor have initiated service with larger aircraft including the B-757, B-767, and A-330 aircraft. As such, average seats for the international air carrier airlines has increased from 186.1 seats in 1995 to a high of 226.3 seats in 2000. By comparison, average international air carrier seats for the nation have decreased from an average of 247.6 seats in 1995 to 234.1 seats in 2000.

  Nationwide, the average aircraft size for international air carriers is projected to increase by approximately 1.2 seats per year. For projection purposes, average seats per departure for the Airport are projected to continue to increase, yet at slower rates than has been experienced recently. Overall, average domestic air carrier aircraft seats are projected to increase by approximately 0.5 seats per year.

- Historically, load factors for the Airport's international air carrier airlines have remained relatively constant, ranging from a low of 62.2 percent in 1995 to a high of 72.5 percent in 1996, as compared to 76.0 percent for the nation in 2000. For projection purposes, average international air carrier load factors at the Airport are anticipated to increase to approximately 70.0 percent by 2020.

As shown in Table 3-26, total international air carrier operations are expected to increase from 976 in 2000 to approximately 2,800 in 2020. This increase represents an annual compounded growth rate of 5.4 percent during this period.

Table 3-25

TABLE 3-25
PROJECTED DOMESTIC AIR CARRIER AIRCRAFT FLEET MIX

		ACTUAL		PROJECTED							
	Average	2000		2005		2010		2015		2020	
Aircraft Type	Seats	Departures	%	Departures	%	Departures	%	Departures	%	Departures	%
Airbus A319	120.6	945	4.9%	1,170	5.0%	1,392	5.0%	1,640	5.0%	1,905	5.0%
Airbus A320	150.0	312	1.6%	525	2.2%	789	2.8%	1,121	3.4%	1,524	4.0%
Boeing 717	117.0	117	0.6%	403	1.7%	785	2.8%	1,284	3.9%	1,905	5.0%
Boeing 727-200	160.0	1,449	7.6%	1,341	5.7%	1,061	3.8%	623	1.9%	0	0.0%
Boeing 737-200	115.0	1,390	7.3%	1,287	5.5%	1,018	3.6%	598	1.8%	0	0.0%
Boeing 737-300	127.0	1,580	8.3%	1,757	7.4%	1,857	6.6%	1,913	5.8%	1,905	5.0%
Boeing 737-400	144.0	1,559	8.2%	2,151	9.1%	2,821	10.1%	3,631	11.0%	4,572	12.0%
Boeing 737-500	106.0	281	1.5%	496	2.1%	766	2.7%	1,108	3.4%	1,524	4.0%
Boeing 737-700	124.0	32	0.2%	265	1.1%	583	2.1%	1,001	3.0%	1,524	4.0%
Boeing 737-800	155.0	217	1.1%	909	3.9%	1,839	6.6%	3,054	9.3%	4,572	12.0%
Boeing 757	188.0	3,576	18.7%	4,490	19.0%	5,418	19.4%	6,473	19.7%	7,620	20.0%
Boeing 767-200	204.0	592	3.1%	1,020	4.3%	1,554	5.5%	2,229	6.8%	3,048	8.0%
Boeing 767-300	227.0	1,202	6.3%	1,703	7.2%	2,280	8.1%	2,985	9.1%	3,810	10.0%
Fokker 100	97.0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Lockheed L1011	362.0	87	0.5%	140	0.6%	204	0.7%	284	0.9%	381	1.0%
Mcdonnell Douglas DC9	105.0	1,152	6.0%	1,067	4.5%	844	3.0%	496	1.5%	0	0.0%
Mcdonnell Douglas DC10	360.0	2	0.0%	2	0.0%	1	0.0%	1	0.0%	0	0.0%
Mcdonnell Douglas MD-80	149.0	4,549	23.8%	4,801	20.3%	4,731	16.9%	4,424	13.4%	3,810	10.0%
Mcdonnell Douglas MD-87	133.0	69	0.4%	64	0.3%	50	0.2%	30	0.1%	0	0.0%
Mcdonnell Douglas MD-90	152.0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total Operations		19,120	100.0%	23,600	100.0%	28,000	100.0%	32,900	100.0%	38,100	100.0%

Sources: Official Airline Guide (OAG)
Ricondo & Associates, Inc.

Table 3-26

TABLE 3-26
INTERNATIONAL OPERATIONS PROJECTION

Year	International Enplanements	Passengers Departing	Average Seats	Load Factor	Departures	Operations	Annual Growth
Historical							
1995	47,826	47,826	186.1	62.2%	413	826	--
1996	58,253	58,253	184.3	72.5%	436	872	5.6%
1997	61,499	61,499	235.6	67.4%	387	774	-11.2%
1998	74,065	74,065	211.3	69.0%	508	1,016	31.3%
1999	63,952	63,952	214.1	70.9%	421	842	-17.1%
2000	72,854	72,854	226.3	66.0%	488	976	15.9%
Projected							
2005	100,100	100,100	228.8	67.0%	700	1,400	
2010	134,000	134,000	231.3	68.0%	900	1,800	
2015	175,800	175,800	233.8	69.0%	1,100	2,200	
2020	225,500	225,500	236.3	70.0%	1,400	2,800	
Annual Compounded Growth Rate							
1995 - 2000	8.8%				3.4%	3.4%	
2000 - 2005	6.6%				7.5%	7.5%	
2005 - 2010	6.0%				5.2%	5.2%	
2010 - 2015	5.6%				4.1%	4.1%	
2015 - 2020	5.1%				4.9%	4.9%	
2000 - 2020	5.8%				5.4%	5.4%	

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

Aircraft fleet mix projections for the international air carrier airlines are presented in **Table 3-27**. This table ties in the assumptions of growth in average seats per departure for the international air carrier airlines presented in Table 3-26. As shown, the international air carrier fleet mix is expected to consist primarily of A-320 and A-330 aircraft, which account for approximately 60 percent of the international air carrier fleet mix. The B-757 and B-767 aircraft are projected to account for another 25 percent of the international air carrier fleet mix at the Airport by 2020.

3.5.3 Regional/Commuter Operations

Projections of operations by regional/commuter airlines at the Airport are presented in **Table 3-28**. These projections were also developed based on historical enplaned passengers, load factors, and average seating capacities of aircraft utilized at the Airport.

- As shown in Table 3-28, average seats per departure have increased since 1995, from 28.9 seats to 33.5 seats in 2000. This increased regional/commuter aircraft size is due primarily to the shift of the regional/commuters to regional jet aircraft by Comair, United Express, and Mesa Airlines, as well as an increased utilization of the ATR-72 by American Eagle. By comparison, the average aircraft seat size for regional/commuters nationwide has increased from 30.3 seats in 1995 to 37.5 seats in 2000.

For projection purposes, the average regional/commuter aircraft seat size is projected to continue to increase by approximately 0.4 seats per year through the year 2020. Nationwide, the FAA projects regional/commuter aircraft seats to increase by approximately 0.7 seats per year.

- Historically, load factors for the Airport's regional/commuter airlines have generally increased, ranging from 56.6 percent in 1995 to 65.7 percent in 2000. By comparison, the average regional/commuter load factor for the nation was 55.2 percent in 2000. For projection purposes, average regional/commuter load factors at the Airport are anticipated to increase slightly to approximately 69.7 percent by 2020.

Aircraft fleet mix projections for regional/commuter aircraft at the Airport are presented in **Table 3-29**. This table ties in the assumptions of growth in average seats per departure for carriers presented in Table 3-28; and reflects current aircraft fleet mixes for this group, as well as assumed trends in future regional/commuter aircraft utilized nationwide. As shown in Table 3-29, a shifting to larger aircraft is expected to continue to occur during the projection period, with the 4-14 seat and 15-19 seat aircraft categories decreasing from approximately 42 percent in 2000 to approximately 25 percent in 2020; and the 20-40 seat and 41-60 seat aircraft categories increasing from 49 percent in 2000 to 60 percent in 2020. The 41-60 seat aircraft category includes regional jets such as the RJ Canadair.

Table 3-27

TABLE 3-27
PROJECTED INTERNATIONAL AIRCRAFT FLEET MIX

Aircraft Type	Average Seats	ACTUAL 2000 Departures	%	PROJECTED 2005 Departures	%	2010 Departures	%	2015 Departures	%	2020 Departures	%
Airbus A319	112.0	50	10.2%	67	9.6%	82	9.1%	94	8.5%	112	8.0%
Airbus A320	167.0	171	35.1%	240	34.3%	302	33.5%	360	32.8%	448	32.0%
Airbus A330	344.0	138	28.2%	197	28.2%	253	28.1%	309	28.1%	392	28.0%
Boeing 737-200	170.0	43	8.7%	46	6.5%	39	4.4%	24	2.2%	0	0.0%
Boeing 737 Variant	160.0	0	0.0%	9	1.3%	23	2.5%	41	3.8%	70	5.0%
Boeing 747	380.0	0	0.0%	4	0.5%	9	1.0%	17	1.5%	28	2.0%
Boeing 757-200	228.0	42	8.5%	66	9.4%	92	10.3%	122	11.1%	168	12.0%
Boeing 767-200	269.0	45	9.1%	71	10.1%	100	11.1%	132	12.0%	182	13.0%
Lockheed L1011	280.0	1	0.2%	1	0.2%	1	0.1%	1	0.1%	0	0.0%
Total Operations		488	100.0%	700	100.0%	900	100.0%	1,100	100.0%	1,400	100.0%

Sources: Official Airline Guide (OAG)
Ricondo & Associates, Inc.

Table 3-28

TABLE 3-28
REGIONAL/COMMUTER OPERATIONS PROJECTION

Year	Regional Commuter Enplanements	Average Seats	Load Factor	Departures	Operations	Annual Growth
Historical						
1995	138,880	28.9	56.6%	8,502	17,004	--
1996	132,286	27.3	58.7%	8,264	16,528	-2.8%
1997	101,303	27.7	61.3%	5,978	11,956	-27.7%
1998	152,446	29.1	67.9%	7,727	15,454	29.3%
1999	171,832	31.6	68.1%	7,977	15,954	3.2%
2000	158,889	33.5	65.7%	7,225	14,450	-9.4%
Projected						
2005	178,200	35.2	66.7%	7,600	15,200	
2010	221,300	37.0	67.7%	8,800	17,600	
2015	266,300	38.7	68.7%	10,000	20,000	
2020	312,300	40.5	69.7%	11,100	22,200	
Annual Compounded Growth Rate						
1995 - 2000	2.7%			-3.2%	-3.2%	
1997 - 2000	16.2%			6.5%	6.5%	
2000 - 2005	2.3%			1.0%	1.0%	
2005 - 2010	4.4%			3.0%	3.0%	
2010 - 2015	3.8%			2.6%	2.6%	
2015 - 2020	3.2%			2.1%	2.1%	
2000 - 2020	3.4%			2.2%	2.2%	

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

Table 3-29

TABLE 3-29
PROJECTED REGIONAL/COMMUTER AIRCRAFT FLEET MIX

		ACTUAL		PROJECTED							
	Average	2000		2005		2010		2015		2020	
Aircraft Type	Seats	Departures	%	Departures	%	Departures	%	Departures	%	Departures	%
4-14 Seats [1]	9.0	1,063	14.7%	952	12.5%	911	10.4%	818	8.2%	666	6.0%
15-19 Seats [2]	19.0	1,948	27.0%	1,898	25.0%	2,022	23.0%	2,099	21.0%	2,109	19.0%
20-40 Seats [3]	32.0	1,241	17.2%	1,359	17.9%	1,636	18.6%	1,930	19.3%	2,220	20.0%
41-60 Seats [4]	48.0	2,276	31.5%	2,555	33.6%	3,146	35.7%	3,787	37.9%	4,440	40.0%
61 + Seats [5]	72.0	697	9.6%	835	11.0%	1,085	12.3%	1,366	13.7%	1,665	15.0%
Total Operations		7,225	100.0%	7,600	100.0%	8,800	100.0%	10,000	100.0%	11,100	100.0%

[1] Similar aircraft include the Cessna (All Series).

[2] Similar aircraft include the Beechcraft 1900 and Swearingen Metroliner.

[3] Similar aircraft include the Embaer Brasilia EMB-120, SAAB 340, ERJ-135, 328Jet, and 428Jet.

[4] Similar aircraft include the ATR-42, ERJ-145, and Canadair RJ.

[5] Similar aircraft include the ATR72, ERJ-170, and 728Jet.

Sources: Official Airline Guide (OAG)
Ricondo & Associates, Inc.

3.6 PROJECTION OF GENERAL AVIATION ACTIVITY

The FAA defines "General Aviation" as a "diverse range of aviation activities and includes segments of the aviation industry except commercial air carriers (including commuter/regional aircraft) and military. Its activities include the training of new pilots, sightseeing, the movement of large heavy loads by helicopter and flying for corporate/business or personal reasons. Its aircraft range from a one-seat single engine piston to the long-range corporate jet. General aviation provides on the spot efficient and direct aviation services that commercial aviation cannot or will not provide. General aviation has provided efficient aviation services and it is important for policy makers, opinion leaders and the general public to understand the vital role general aviation plays in the national economy and air transportation system."

3.6.1 General Aviation Trends

Trends in the overall general aviation industry along with changes in local demographics, conditions, and facilities will be utilized in the development of the activity forecasts at the Airport. The last 15 to 20 years has been a difficult period for the general aviation industry. During this time frame the industry saw the cessation of production of single engine aircraft and light twins by the major manufacturers and also saw an overall decline in the total number of general aviation aircraft. The industry was battered by a number of factors. These included two major economic recessions, the impact of product liability and litigation, which contributed significantly to a rapid rise in the cost of purchasing an aircraft. The effect of these factors most significantly impacted two segments of the industry consisting of the single engine piston market and the multi (twin) piston market. The period of the eighties also saw the first time that the industry failed to rebound with improving economic conditions. Unlike previous recessionary cycles where the industry saw a downturn and then returned to a period of growth with economic recovery, the general aviation industry did not experience such a return after the recession of the early 1980's nor did it show recovery after the recession of the early 1990's. A clear indicator of this is the fact that U.S. Gross Domestic Product during the eighties and early nineties grew at an average annual rate of 2.0 percent, while domestic piston engine aircraft shipments declined by 95 percent.

While these facts might suggest a continued decline in the general aviation sector, the FAA has identified a number of positive influences on the general aviation industry, including:

- Repeal of the luxury tax on general aviation aircraft
- Streamlining the certification process for new entry-level aircraft
- Strong demand in the used piston aircraft market
- Steady growth in amateur built aircraft

Another primary reason for general aviation's optimistic outlook in 1994 was the passage of the General Aviation Revitalization Act (GARA), which limited the liability of general aviation aircraft manufacturers. The Act has also created other financial incentives to spur production of aircraft. Since the passage of the GARA, general aviation activity, the active fleet, and the shipments and billings of fixed-wing general aviation aircraft have all increased. According to statistics by the General Aviation Manufacturers Association, general aviation shipments have increased from roughly 1,100 units in 1996 to 2,500 units in 1999. Similarly, annual billings of

new U.S. manufactured general aviation aircraft have increased from approximately $3.1 billion in 1996 to almost $8.0 billion in 1999.

3.6.2 Based Aircraft Projections

Typically, the number of based aircraft is dependent on the local demand for aircraft storage facilities, the amenities provided by the airport, and the capacity of other airports in the vicinity with comparable facilities. Currently, most general aviation activity in the region is centered at the Lee County Port Authority's other airport, Page Field, as well as Charlotte County and Naples Municipal airports. In 2000, each of these three general aviation airports had 256, 284, and 347 based aircraft respectively.

Table 3-30 presents historical and projected based aircraft at the Airport. As shown, between 1995 and 2000, the number of based aircraft at the Airport has generally increased slightly from 2 to 8 based aircraft. Currently, the Airport only has one fixed base operator (FBO) serving the Airport, PrivateSky Aviation Services, Inc. Within the next two years, however, a second FBO is anticipated to be operational at the Airport, which will also be owned by PrivateSky Aviation Services Inc. Conversations with PrivateSky indicate that it is anticipated that this new FBO will serve a large number of business jet aircraft, as well as other general aviation aircraft.

For projection purposes, it was assumed that based general aviation aircraft at the Airport would increase by approximately one based aircraft per year. As such, based aircraft are projected to increase from 8 in 2000 to 28 in 2020. While the Airport's share of based general aviation aircraft may increase in the future, it is expected that the region's general aviation airports will continue to accommodate the majority of the general aviation aircraft based in the region.

3.6.3 General Aviation Operations Projections

Historical and projected general aviation operations at the Airport are presented in **Table 3-31**. As shown, total annual general aviation operations have increased steadily from 12,261 in 1995 to an 20,035 in 2000, representing an annual compounded growth of approximately 10.3 percent. In addition, since 1995, the Airport's share of total U.S. general aviation operations has increased steadily from 0.034 percent to 0.049 percent in 2000. In general this trend is expected to continue in the future.

For the purposes of these analyses, general aviation operations were projected to increase at rates slightly higher than those projected for general aviation activity nationwide by the FAA. This assumption is based on the Airport's historic trends, as well as the development of a second FBO at the Airport as discussed above. As shown in Table 3-31, general aviation activity is projected to increase from 20,035 annual operations in 2000, to 34,400 in 2020. This increase represents an annual compounded growth rate of 2.7 percent, compared to 1.6 percent projected for the nation by the FAA.

Table 3-30

TABLE 3-30
BASED AIRCRAFT PROJECTIONS

Calendar Year	Based Aircraft	Annual Growth	Total U.S. Active GA Aircraft	Annual Growth	Market Share
Historical					
1995	2		188,089	8.8%	0.00001
1996	1	-50.0%	191,129	1.6%	0.00001
1997	5	400.0%	192,414	0.7%	0.00003
1998	5	0.0%	204,710	6.4%	0.00002
1999	7	40.0%	206,530	0.9%	0.00003
2000	8	14.3%	208,655	1.0%	0.00004
Projected					
2005	13		219,415		0.00006
2010	18		229,070		0.00008
2015	23		238,476		0.00010
2020	28		246,940		0.00011
Annual Compounded Growth Rate					
1995 - 2000	32.0%		2.1%		
2000 - 2005	10.2%		1.0%		
2005 - 2010	6.7%		0.9%		
2010 - 2015	5.0%		0.8%		
2015 - 2020	4.0%		0.7%		
2000 - 2020	5.8%		0.8%		

Sources: Lee County Port Authority
FAA Aerospace Forecasts, Fiscal Years 2001 - 2012
Ricondo & Associates, Inc.

Table 3-31

TABLE 3-31
GENERAL AVIATION\AIR TAXI OPERATIONS PROJECTIONS

Year	Itinerant GA Operations		Local GA Operations		Total General Aviation Operations	Annual Growth	U.S. General Aviation		Share of U.S. Operations
	Itinerant	Share	Local	Share			Operations	Growth	
Historical									
1995	11,296	92.1%	965	7.9%	12,261	--	35,926,600	--	0.0341%
1996	11,368	92.8%	882	7.2%	12,250	-0.1%	35,298,300	-1.7%	0.0347%
1997	12,461	90.9%	1,253	9.1%	13,714	12.0%	36,833,300	4.3%	0.0372%
1998	12,418	88.2%	1,657	11.8%	14,075	2.6%	38,046,100	3.3%	0.0370%
1999	15,687	84.0%	2,977	16.0%	18,664	32.6%	40,042,500	5.2%	0.0466%
2000	16,816	83.9%	3,219	16.1%	20,035	7.3%	40,688,400	1.6%	0.0492%
Projected									
2005	19,327	82.9%	3,973	17.1%	23,300	3.1%	44,600,900		0.0522%
2010	21,803	82.0%	4,797	18.0%	26,600	1.9%	48,208,000		0.0552%
2015	24,619	81.0%	5,781	19.0%	30,400	2.4%	52,212,612		0.0582%
2020	27,520	80.0%	6,880	20.0%	34,400	2.4%	56,247,812		0.0612%
Annual Compounded Growth Rate									
1995 - 2000	8.3%		27.2%		10.3%		2.5%		
2000 - 2005	2.8%		4.3%		3.1%		1.9%		
2005 - 2010	2.4%		3.8%		2.7%		1.6%		
2010 - 2015	2.5%		3.8%		2.7%		1.6%		
2015 - 2020	2.3%		3.5%		2.5%		1.5%		
2000 - 2020	2.5%		3.9%		2.7%		1.6%		

Sources: Lee County Port Authority
FAA Aerospace Forecasts, Fiscal Years 2001 - 2012
Ricondo & Associates, Inc.

As also shown in Table 3-31, general aviation operations are further broken out into itinerant and local operations. As defined by the FAA, local operations are performed by aircraft that:

- Operate in the local traffic pattern or within sight of an airport
- Are known to be departing for, or arriving from, flight in local practice areas located within a 30-mile radius of the airport
- Are executing simulated precision, nonprecision, and visual approaches or low passes at an airport (includes touch-and-go operations)
- Itinerant or transient operations constitute all other airport general aviation operations.

Itinerant operations account for the majority of the Airport's general aviation operations, accounting for approximately 84 percent of general aviation operations in 2000. Since 1995, however, the percentage of local general aviation operations to total general aviation operations has increased steadily from 7.9 percent in 1995 to 16.1 percent in 2000. This trend was assumed to continue throughout the projection period. By 2020, local operations are projected to be approximately 6,880 (20 percent), while the remaining 27,520 (80 percent) are projected to be itinerant general aviation operations.

3.6.4 General Aviation Fleet Mix

Data related to the Airport's historical general aviation fleet mix were gathered and are presented in **Table 3-32**. In 2000, single-engine aircraft accounted for 9.5 percent of the Airport's general aviation operations; multiengine piston and turboprop aircraft accounted for 61.4 percent; and jet aircraft accounted for the remaining 29.0 percent of the Airport's general aviation aircraft operations. In particular, as shown on Table 3-32, the percentage of business jet aircraft has increased dramatically from 17.1 percent in 1998 to 29.0 percent in 2000, while the percentage of multiengine turboprop aircraft has decreased from 54 percent in 1998 to 37 percent in 2000. This is largely due to an increase of business jet aircraft operations in recent years. Similarly, the share of single-engine aircraft operations at the Airport has also increased in recent years from 6.1 percent in 1998 to 9.5 percent in 2000.

The Airport's general aviation operational fleet mix was projected by examining historical trends, as well as using national data for general aviation operations. As shown in Table 3-32, the predominate growth in general aviation operations at the Airport is expected to occur in jet aircraft operations. Single engine aircraft operations are also projected to increase, while the share of multiengine aircraft operations at the Airport are projected to decrease. These trends are consistent with nationwide forecasts contained in the FAA's Aerospace Forecasts, Fiscal Years 2001-2012.

Table 3-32

TABLE 3-32
GENERAL AVIATION / AIR TAXI FLEET MIX PROJECTIONS

	Single Engine Piston/Turboprop		Multiengine Piston		Multiengine Turboprop		Jet		Total	
Year	Annual Operations	%	Annual Operations	%	Annual Operations	%	Annual Operations	%	Annual Operations	%
Historical										
1998	863	6.1%	3,224	22.9%	7,582	53.9%	2,406	17.1%	14,075	100.0%
1999	1,512	8.1%	3,586	19.2%	8,425	45.1%	5,141	27.5%	18,664	100.0%
2000	1,906	9.5%	4,893	24.4%	7,417	37.0%	5,820	29.0%	20,035	100.0%
Projected										
2005	2,330	10.0%	5,592	24.0%	8,155	35.0%	7,223	31.0%	23,300	100.0%
2010	2,660	10.0%	6,384	24.0%	9,044	34.0%	8,512	32.0%	26,600	100.0%
2015	3,344	11.0%	7,296	24.0%	10,032	33.0%	9,728	32.0%	30,400	100.0%
2020	3,784	11.0%	8,256	24.0%	11,008	32.0%	11,352	33.0%	34,400	100.0%

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

3.7 PROJECTION OF AIR CARGO ACTIVITY

Air cargo activity at the Airport is measured by the number of operations performed by dedicated all-cargo airlines, as well as the cargo volume carried by the commercial service passenger airlines serving the Airport. Cargo volume is carried by both the all-cargo airlines and within the belly hold of the commercial passenger airlines at the Airport.

3.7.1 All-Cargo Operations Projections

Table 3-33 presents historical and projected operations for all-cargo carriers at the Airport. As shown, since 1995, the Airport's all-cargo operations have remained relatively constant, averaging approximately 1,600 operations annually from 1995 to 2000.

For purposes of these analyses, it was assumed that the strong economic base of the Airport's Air Trade Area and the Airport's geographical location relative to South America, will provide for continued growth in all-cargo operations. As shown in Table 3-33, all-cargo operations are projected to increase from 1,604 in 2000 to approximately 2,360 in 2020, representing an annual compounded growth rate of 1.9 percent. By comparison, the FAA projects air carrier passenger and all-cargo operations to increase by 2.8 percent annually.

3.7.2 Enplaned and Deplaned Cargo Projections

Table 3-34 presents the Airport's historical and projected enplaned and deplaned cargo. This cargo is carried by both the all-cargo carriers and as belly hold cargo on the scheduled commercial airlines at the Airport. As shown, total air cargo (enplaned and deplaned) at the Airport has increased from 28 million pounds in 1995 to nearly 35 million pounds of air cargo in 2000, representing an annual compounded growth rate of 4.4 percent.

Air cargo at the Airport is further broken down into air mail and air freight. As shown, air mail at the Airport decreased by nearly half its previous levels in 1998, from 8.3 million pounds to 4.2 million pounds. This decrease was due to the opening of a regional distribution facility in the region and a subsequent operational change in the transportation of air mail at the Airport. Alternatively, air freight at the Airport has increased consistently since 1995, from 19.6 million pounds in 1995 to 31.7 million pounds in 2000, representing an annual compounded growth rate of 10.1 percent.

Table 3-33

TABLE 3-33
ALL-CARGO OPERATIONS PROJECTION

Year	Depatures	Operations	Annual Growth	U.S. Air Carrier Operations	U.S Growth
Historical					
1995	811	1,622	--	13,647,400	--
1996	804	1,608	-0.9%	13,893,300	1.8%
1997	816	1,632	1.5%	14,256,700	2.6%
1998	784	1,568	-3.9%	14,258,000	0.0%
1999	810	1,620	3.3%	14,582,300	2.3%
2000	802	1,604	-1.0%	14,961,400	2.6%
Projected					
2005	880	1,760		17,226,400	
2010	980	1,960		19,854,000	
2015	1,080	2,160		22,727,086	
2020	1,180	2,360		25,839,289	
Annual Compounded Growth Rate					
1995 - 2000	-0.2%	-0.2%		1.9%	
2000 - 2005	1.9%	1.9%		2.9%	
2005 -2010	2.2%	2.2%		2.9%	
2010 - 2015	2.0%	2.0%		2.7%	
2015 - 2020	1.8%	1.8%		2.6%	
2000 - 2020	1.9%	1.9%		2.8%	

Sources: Lee County Port Authority
FAA Aerospace Forecasts, Fiscal Years 2001 - 2012
Ricondo & Associates, Inc.

Table 3-34

TABLE 3-34
ENPLANED & DEPLANED CARGO PROJECTIONS

Year	AirTrade Area Population	Air Mail Pounds	Air Mail % of Total	Air Mail per Capita	Air Freight Pounds	Air Freight % of Total	Air Freight per Capita	Total Cargo Pounds	Total Cargo per Capita
Historical									
1995	733,326	8,471,000	30.2%	11.55	19,556,600	69.8%	26.67	28,027,600	38.22
1996	753,680	9,018,000	26.9%	11.97	24,536,100	73.1%	32.56	33,554,100	44.52
1997	774,035	8,355,000	24.6%	10.79	25,651,600	75.4%	33.14	34,006,600	43.93
1998	794,390	4,196,000	12.8%	5.28	28,533,400	87.2%	35.92	32,729,400	41.20
1999	814,745	3,255,000	9.8%	4.00	29,799,700	90.2%	36.58	33,054,700	40.57
2000	835,100	3,166,000	9.1%	3.79	31,676,000	90.9%	37.93	34,842,000	41.72
Projected									
2005	923,123	2,890,400	7.2%	3.13	37,406,700	92.8%	40.52	40,297,100	43.65
2010	1,030,100	3,122,400	6.6%	3.03	43,870,900	93.4%	42.59	46,993,300	45.62
2015	1,131,950	3,317,900	6.1%	2.93	50,667,700	93.9%	44.76	53,985,600	47.69
2020	1,233,800	3,493,100	5.7%	2.83	58,043,800	94.3%	47.04	61,536,900	49.88
Annual Compounded Growth Rate									
1995 - 2000	2.6%	-17.9%			10.1%			4.4%	1.8%
2000 - 2005	2.0%	-1.8%			3.4%			3.0%	0.9%
2005 -2010	2.2%	1.6%			3.2%			3.1%	0.9%
2010 - 2015	1.9%	1.2%			2.9%			2.8%	0.9%
2015 - 2020	1.7%	1.0%			2.8%			2.7%	0.9%
2000 - 2020	2.0%	0.5%			3.1%			2.9%	0.9%

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

For projection purposes, air cargo at the Airport was projected on the basis of the ratio of air cargo per capita for both air mail and air freight, as detailed in the following sections:

- Air Mail – As shown in Table 3-34, due to the operational change in the transportation of air mail in the region, the ratio of air mail per capita decreased dramatically in 1998, from 10.79 pounds per capita in 1997 to 5.28 pounds per capita in 1998. Since 1998, this ratio has continued to decrease to 3.79 pounds per capita in 2000. For projection purposes, the ratio of air mail per capita is assumed to continue to decrease throughout the projection period. Overall, the ratio of air mail per capita is projected to decrease to approximately 2.8 pounds per capita in 2020. When combined with the Air Trade Area's projected increase in population, air mail is projected to also increase slightly to approximately 3.5 million pounds in 2020 representing an annual compounded growth rate of 0.5 percent.

- Air Freight – The ratio of air freight per capita has increased since 1995, from 26.67 pounds per capita to 37.93 pounds per capita in 2000. For projection purposes, the ratio of air freight per capita is assumed to continue to increase throughout the projection period. Overall, the ratio of air freight per capita is projected to increase to approximately 47 pounds per capita in 2020. When combined with the Air Trade Area's projected population increases, air freight is projected to increase slightly to approximately 58.0 million pounds in 2020, representing an annual compounded growth rate of 3.1 percent.

In total, enplaned and deplaned air cargo at the Airport is projected to increase from 34.8 million pounds in 2000 to approximately 61.5 million pounds in 2020, representing an annual compounded growth rate of 2.9 percent.

3.8 PROJECTION OF MILITARY ACTIVITY

As presented previously in Table 3-11, military operations at the Airport increased from 698 in 1995 to 1,737 in 2000, with the majority of this increase occurring in 1996. Since 1996, military operations at the Airport have consistently averaged approximately 1,700 annual operations.

Future military activity at the Airport will be influenced by U.S. Department of Defense policy, which largely dictates the level of military activity at an airport. For the purposes of these analyses, it is expected that there will be no growth in military activity at the Airport and the military will maintain its current levels of approximately 1,740 annual operations during the projection period.

3.9 SUMMARY OF PROJECTED AIRPORT OPERATIONS

Table 3-35 summarizes historical and projected aircraft operations for the Airport. In addition, **Figure 3-4** presents a summary of the Airport's annual operations projections graphically. As shown, total operations at the Airport are expected to increase from 77,042 operations in 2000 to approximately 137,900 annual operations in 2020, representing an annual compounded growth rate of 3.0 percent. This operational growth compares well with the projected operational growth projected for the Airport in the FAA's 2000 Aviation Capacity Enhancement Plan. (ACEP) By 2011, the FAA's 2000 ACEP projects annual operations to total approximately 104,000 annual operations. By comparison, operations are projected to reach approximately 105,700 in this forecast.

Table 3-35

TABLE 3-35
SUMMARY OPERATION PROJECTIONS

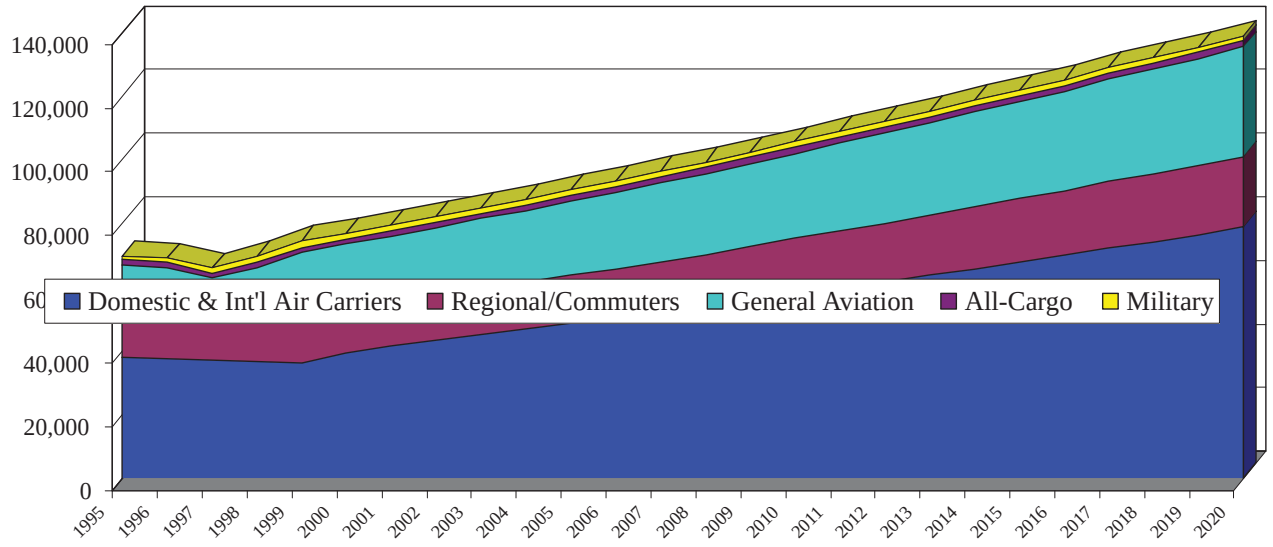
Year	Domestic Air Carriers	International Air Carriers	Regionals/ Commuters	General Aviation [1]	All-Cargo	Military	Airport Total
Historical							
1995	37,210	826	17,004	12,261	1,622	698	69,621
1996	36,694	872	16,528	12,250	1,608	1,152	69,104
1997	36,476	774	11,956	13,714	1,632	1,442	65,994
1998	35,674	1,016	15,454	14,075	1,568	1,943	69,730
1999	35,556	842	15,954	18,664	1,620	1,866	74,502
2000	38,240	976	14,450	20,035	1,604	1,737	77,042
Projected							
2005	47,200	1,400	15,200	23,300	1,760	1,740	90,600
2010	56,000	1,800	17,600	26,600	1,960	1,740	105,700
2015	65,800	2,200	20,000	30,400	2,160	1,740	122,300
2020	76,200	2,800	22,200	34,400	2,360	1,740	139,700
Annual Compounded Growth Rate							
1995 - 2000	0.5%	3.4%	-3.2%	10.3%	-0.2%	20.0%	2.0%
2000 - 2005	4.3%	7.5%	1.0%	3.1%	1.9%	0.0%	3.3%
2005 - 2010	3.5%	5.2%	3.0%	2.7%	2.2%	0.0%	3.1%
2010 - 2015	3.3%	4.1%	2.6%	2.7%	2.0%	0.0%	3.0%
2015 - 2020	3.0%	4.9%	2.1%	2.5%	1.8%	0.0%	2.7%
2000 - 2020	3.5%	5.4%	2.2%	2.7%	1.9%	0.0%	3.0%

[1] Also includes activity by miscellaneous air taxis.

Sources: Lee County Port Authority
Ricondo & Associates, Inc.

Figure 3-4

Figure 3-4
Summary of Projected Aircraft Operations



The following points summarize key findings with regard to the Airport's projected aircraft operations:

- Domestic and international air carrier operations are expected to experience the highest growth in aircraft operations throughout the projection period, with 3.5 percent and 5.4 percent annual compounded growth, respectively. Domestic air carrier operations are projected to nearly double from 38,240 in 2000 to 76,200 in 2020. Similarly, international air carrier operations are projected to increase from 976 in 2000 to 2,800 in 2020.

- Regional/commuter operations are projected to increase from 14,450 in 2000 to approximately 22,200 in 2020, representing an annual compounded growth rate of 2.2 percent.

- General aviation operations are projected to increase from 20,035 in 2000 to approximately 34,400, representing an annual compounded growth rate of 2.7 percent.

- All-cargo operations are expected to continue to grow from 1,604 operations in 2000 to 2,360 operations in 2020.

- Due to the uncertain nature of military activity, military aircraft operations are projected to remain constant at 1,740 operations through 2020.

3.10 DESIGN LEVEL PROJECTIONS

In addition to projecting annual activity levels at the Airport, it was necessary to project design level activity, defined in this study as activity during the peak hour of an average day in the peak month. These projections are critical, as most airports are designed to accommodate peak hour and average daily demands. **Table 3-36** presents the results of the demand level projections for the Airport. Standard methodologies were used to develop these design level projections, as described in the following sections.

3.10.1 Passenger Enplanements and Deplanements

Peak hour passenger volume is the standard aviation industry parameter by which passenger related airport facilities are sized. Unlike annual enplanement volumes, which are an indicator of relative airport size, peak hour statistics more accurately describe the demand for airport facilities based on specific use patterns. More accurately defined as peak month, average day, peak hour (PMADPH) passenger levels, this factor measures the number of enplaned, deplaned, or total passengers boarding or disembarking from aircraft in an elapsed hour on a typical day. The peak hour typically does not correspond exactly to a "clock hour" such as 7:00-7:59, but usually overlaps to clock hours (e.g., 7:20-8:19).

Table 3-36

TABLE 3-36
DEMAND LEVEL PROJECTIONS

ENPLANEMENTS	2000	2005	2010	2015	2020
Annual Enplanements	2,632,088	3,294,000	3,978,800	4,775,800	5,627,100
Peak Month (13.2% of Annual)	337,995	434,808	525,202	630,406	742,777
Average Day (31 Days)	10,903	14,026	16,942	20,336	23,961
Peak Hour (14.2% of Avg Day)	1,546	1,978	2,372	2,827	3,307
DEPLANEMENTS					
Annual Deplanements	2,632,088	3,294,000	3,978,800	4,775,800	5,627,100
Peak Month (13.2% of Annual)	337,995	434,808	525,202	630,406	742,777
Average Day (31 Days)	10,903	14,026	16,942	20,336	23,961
Peak Hour (17.8% of Avg Day)	1,941	2,469	2,948	3,498	4,073
AIRCRAFT OPERATIONS					
Domestic Air Carriers					
Annual	38,240	47,200	56,000	65,800	76,200
Peak Month (11.2 % of Annual)	4,282	5,285	6,271	7,368	8,533
Average Day (Peak Month/31 Days)	138	170	202	238	275
Peak Hour (15.2 % of Avg Day)	21	27	31	36	42
International Air Carriers					
Annual	976	1,400	1,800	2,200	2,800
Peak Month (12.5 % of Annual)	122	175	225	275	350
Average Day (Peak Month/31 Days)	4	6	7	9	11
Peak Hour (12.5 % of Avg Day)	1	1	1	1	1
Regional/Commuters					
Annual	14,450	15,200	17,600	20,000	22,200
Peak Month (10.0 % of Annual)	1,444	1,519	1,759	1,999	2,218
Average Day (Peak Month/31Days)	47	49	57	64	72
Peak Hour (10.9 % of Avg Day)	5	5	6	7	8
All-Cargo					
Annual	1,604	1,760	1,960	2,160	2,360
Peak Month (8.7 % of Annual)	140	154	171	189	206
Average Day (Peak Month/31 Days)	5	5	6	6	7
Peak Hour (0 % of Avg Day)	0	0	0	0	0
General Aviation					
Annual	20,035	23,300	26,600	30,400	34,400
Peak Month (11.4% of Annual)	2,285	2,657	3,034	3,467	3,923
Average Day (Peak Month/31 Days)	74	86	98	112	127
Peak Hour (10 % of Avg Day)	7	9	10	11	13
Military					
Annual	1,737	1,740	1,740	1,740	1,740
Peak Month (8.3 % of Annual)	145	145	145	145	145
Average Day (Peak Month/31 Days)	5	5	5	5	5
Peak Hour (25.0 % of Avg Day)	1	1	1	1	1
Total Airport Operations					
Annual	77,042	90,600	105,700	122,300	139,700
Peak Month	8,418	9,936	11,605	13,443	15,376
Average Day	272	321	374	434	496
Peak Hour	36	43	49	57	65

Sources: Lee County Port Authority
Official Airline Guide (OAG)
Ricondo & Associates, Inc.

Typical to other major leisure destinations, the Airport is a highly peaked facility, with strong seasonal traffic demand and operations, as well as high peaking in the middle of the day. These peaking characteristics produce proportionately higher congestion levels and delays at certain times of the day or year than other facilities with similar annual levels of enplanements or aircraft operations. For the Airport, the enplaning and deplaning peak occurs almost simultaneously, with the deplaning peak occurring from 11:00 a.m. to 11:59 a.m. and the enplaning peak occurring from 11:15 a.m. to 12:14 p.m. Secondary peaks also occur in the late afternoon periods, with a secondary deplaning peak from 3:00 p.m. to 3:59 p.m. and a secondary enplaning peak at 4:00 p.m. to 4:59 p.m.

To estimate the PMADPH enplanements and deplanements for the Airport, the following assumptions were used:

- A ratio of peak month passengers to annual passengers was computed. Using historical passenger data obtained from the Airport, the peak month of the year was found to be March. As presented in **Figure 3-5**, over the last three years, March has consistently been the peak month, accounting for approximately 13.2 percent of the Airport's annual enplanements and deplanements. For the purposes of these analyses, it was assumed that this ratio of peak month to annual activity will continue through the forecast period.

- Average day enplanements and deplanements were then estimated based on the number of days in the peak month of March, or 31 days.

- Finally, peak hour enplanements and deplanements for the Airport were estimated based on a review of the Airport's scheduled aircraft seats available during a Saturday (the peak day of the week) of the peak month of March. Scheduled seats for the Airport were obtained from the Official Airline Guide (OAG), and are presented in **Figure 3-6**. As shown, the deplaning peak at the Airport is much more pronounced than the enplaning peak. Based on this review, the peak enplanement period was found to account for 14.2 percent of the average daily seats, while the peak deplanement period accounted for 17.8 percent of the average daily seats. Over the projection period, it was assumed that the percentage of passengers enplaning and deplaning during the peak hour would decrease slightly due to the fact that airlines will typically begin scheduling off-peak operations as terminal gates and/or aircraft availability becomes more constrained during the peak period.

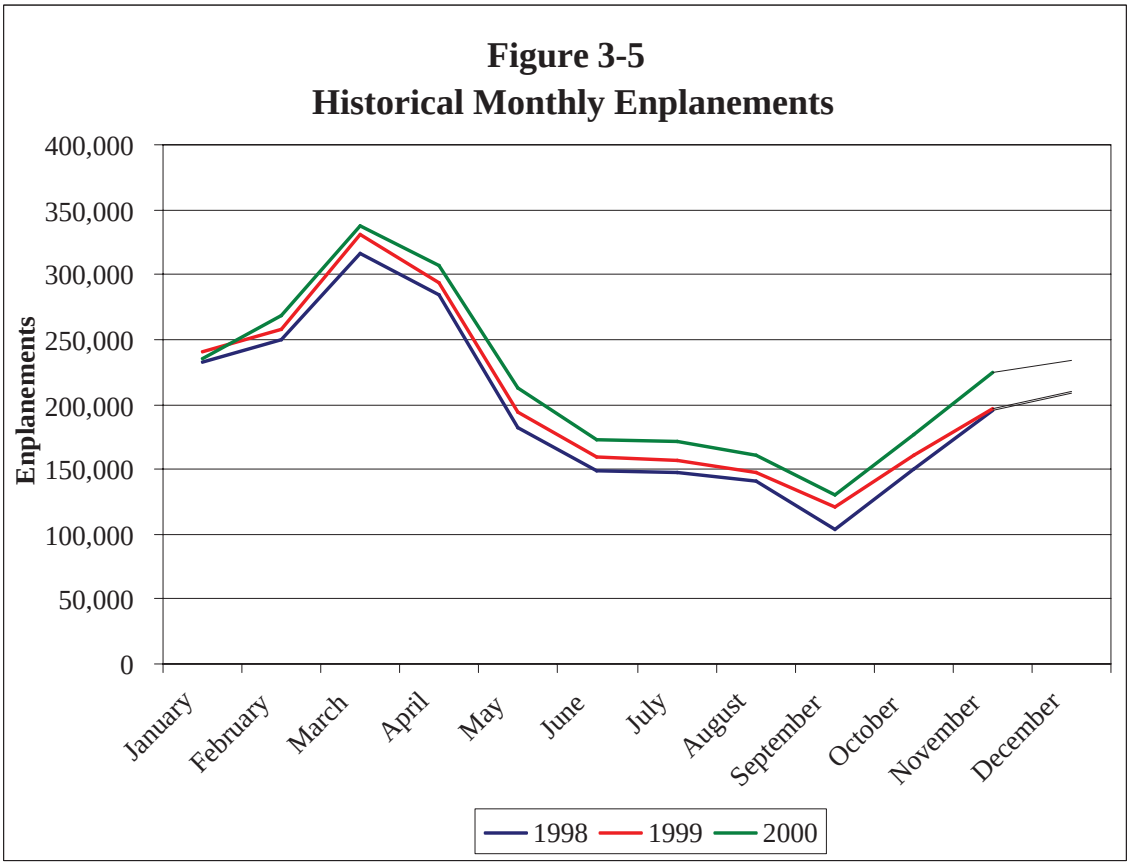
As presented in Table 3-36, passenger enplanements are projected to increase from approximately 1,546 enplanements in 2000 to approximately 3,307 in 2020. Passenger deplanements are projected to increase from approximately 1,941 deplanements in 2000 to approximately 4,073 in 2020.

3.10.2 Aircraft Operations

Design hour operations were determined for air carrier, regional/commuter, general aviation, all-cargo, and military activity at the Airport. The following presents the key assumptions used to estimate the PMADPH aircraft operations for the Airport for each of these categories:

Figure **3-5**

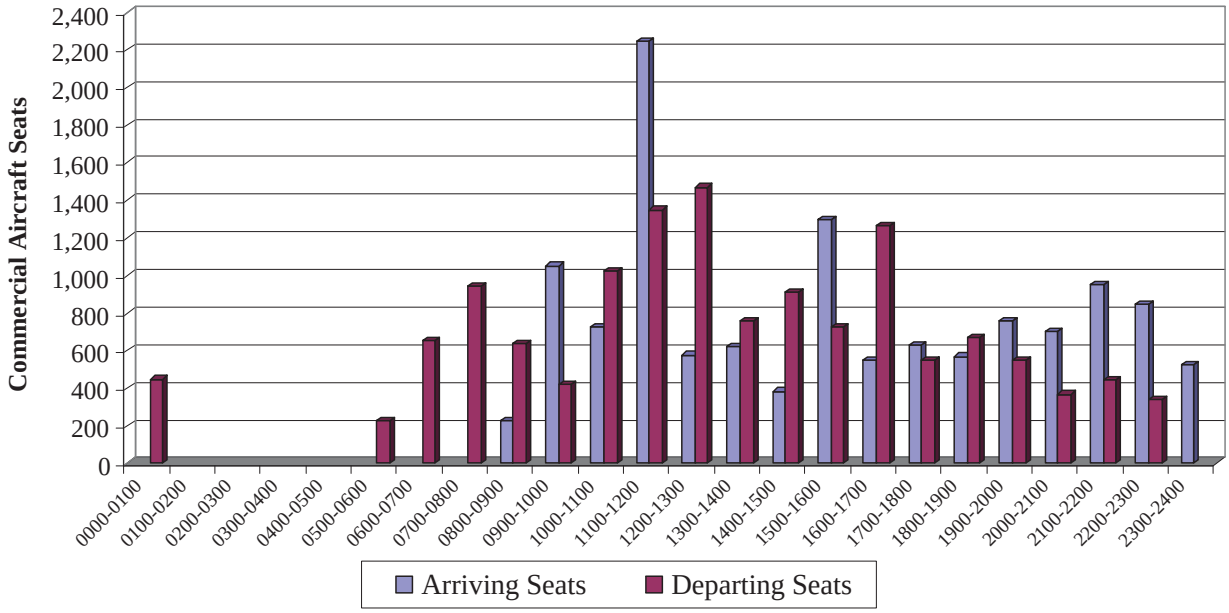
Figure 3-5
Historical Monthly Enplanements



Sources: Lee County Port Authority
Prepared by Ricondo & Associates, Inc.

Figure 3-6

Figure 3-6
Daily Distribution of Scheduled Airline Seats



Sources: Lee County Port Authority
Prepared by Ricondo & Associates, Inc.

- Airport landed weight records were reviewed for the past several years to determine a ratio of peak month air carrier and regional/commuter operations. Similar to passengers, March was found to be the peak month for scheduled commercial air carrier and regional/commuter operations at the Airport. Based on this review, the percentage of peak month operations to annual operations for domestic air carrier, international air carrier, and regional/commuter operations were found to be 11.2 percent, 12.5 percent, and 10.0 percent respectively.

- Average day operations for air carrier and regional/commuter operations were then estimated based on the number of days in the peak month of March, or 31 days.

- Peak hour air carrier and regional/commuter operations for the Airport were estimated based on a review of the Airport's scheduled aircraft operations during a Saturday (the peak day of the week) of the peak month of March. Scheduled aircraft operations for the Airport were obtained from the Official Airline Guide (OAG), and are presented in **Figure 3-7**. Similar to the passenger characteristics, the deplaning peak at the Airport is much more pronounced than the enplaning peak. The peak operational period for scheduled air carrier and regional/commuter airlines was found to be from 11:00 a.m. to 11:59 a.m., with 16 arrivals and 11 departures, or 27 total operations. Of this total, 21 are operated by domestic air carriers, 1 is performed by an international air carrier, and 5 are operated by regional/commuters. Over the projection period, it was assumed that the percentage of scheduled airline operations during the peak hour would decrease slightly due to the fact that airlines will typically begin scheduling off-peak operations as terminal gates and/or aircraft availability becomes more constrained during the peak period.

- FAA tower data were used to estimate the peak month factor for general aviation, all-cargo, and military operations at the Airport. Analysis of data for recent years showed:

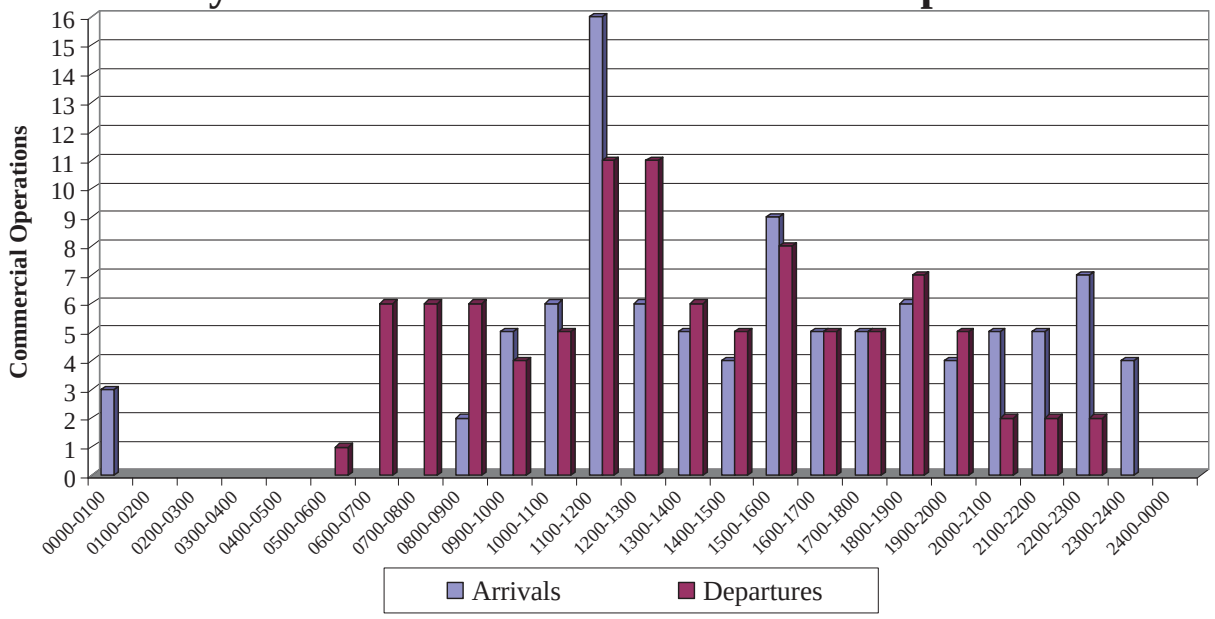
  - Peak month general aviation activity accounts for 11.4 percent of total annual general aviation operations
  - Peak month all-cargo activity accounts for 8.7 percent of total annual all-cargo operations
  - Peak month military activity accounts for 8.3 percent of total annual military operations

- Average daily operations for general aviation, all-cargo, and military operations were determined by dividing peak month operations by 31 days for each of these activity components.

- Because no hourly data for general aviation, all-cargo, or military operations were available, the peak hour factor was estimated. This peak hour estimate was made based on generally accepted planning criteria. For general aviation activity, the peak hour factor was estimated to be 10.0 percent. No peak hour operations were assumed for all-cargo operations due to the fact that the cargo operators typically operate during off-peak periods. Finally, because of the small number of operations occurring in the average day for the military component, the peak hour factor was estimated to be one operation, or 25 percent for military operations.

Figure 3-7

Figure 3-7
Daily Distribution of Scheduled Airline Operations



Sources: Lee County Port Authority
Prepared by Ricondo & Associates, Inc.

As shown in Table 3-36, peak hour aircraft operations for each of the various components of activity at the Airport were projected as follows:

- Domestic air carrier peak hour operations were projected to increase from 21 in 2000 to 42 in 2020
- International air carrier peak hour operations were projected to remain at one operation throughout the projection period
- Regional/commuter peak hour operations were projected to increase from 5 in 2000 to 8 in 2020
- General aviation peak hour operations were projected to increase from 7 in 2000 to 13 in 2020
- No peak hour all-cargo operations were projected throughout the projection period
- Military peak hour operations were projected to remain at one operation throughout the projection period

When combined, peak hour operations for the Airport are projected to increase from 36 hourly operations in 2000 to approximately 65 hourly operations in 2020. As presented, the Airport experiences a high level of peaking activity, which is expected to only increase in the future. At these levels, peak hour aircraft operational activity will play an important role in identifying the need for a future parallel runway at the Airport. As discussed earlier, these demand projections will be used in subsequent sections of this Master Plan Update to measure the Airport's capacity to efficiently process peak hour and annual demand, as well as to identify future airside and landside facility requirements.

4 DEMAND/CAPACITY ANALYSIS

4.1 INTRODUCTION

The purpose of this chapter is to assess RSW's existing capacity with respect to airfield facilities and compare this with the forecasted demand. The projection of aviation demand was presented through the year 2020 in Chapter Three, "Aviation Activity Forecasts." These forecasts, which included aircraft operations, based aircraft, fleet mix, and peak activity, are part of the basis for determining whether the existing airport facilities at Southwest Florida International Airport can meet the future demands of the users. Basic airport components such as runways, taxiways, airspace and ground access can then be reviewed to determine their capability to accommodate the forecast of aviation demand. Subsequent analysis will identify specific improvements required to address not only the function and capability of the basic facilities to support the projected activity, but also the requirements for improvements to other airport components served by these facilities. Such facilities include the passenger terminal, cargo facilities, associated ramps and aprons, hangars, aviation fuel capacity and storage, the Fixed Base Operator (FBO), and other airport support services.

The objective of this effort is to identify, in general terms, the adequacy or inadequacy of the existing airport facilities and outline what new facilities may be needed based on the level or threshold of activity that generates the need for expansion. Having established these facility requirements, alternatives for providing these facilities are developed and then later assessed to determine the most cost-effective and efficient means for addressing these requirements.

4.2 AIRFIELD CAPACITY FACTORS

Several techniques have been developed for the analysis of airfield capacity. The method recommended by the Federal Aviation Administration (FAA) can be found in Advisory Circular (AC) 150/5060-5, Change 2, "Airport Capacity and Delay." This same methodology is also recommended by the Florida Department of Transportation (FDOT). Because of its wide acceptance in determining airfield capacity and aircraft delay, it was the methodology used in this Master Plan. The following definitions are presented in AC 150/5060-5, Change 2, and will be used throughout this chapter:

- **Hourly Capacity of Runways** – A measure of the maximum number of aircraft operations which can be accommodated on the runway in an hour.

- **Annual Service Volume (ASV)** – A reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time.

- **Annual Aircraft Delay** – Total delay incurred by all aircraft on the airfield in one year.

Airfield capacity is affected by a number of factors, which will be analyzed collectively. The factors will provide the basis for establishing the operational capacity of an airport and include the following:

- Airfield Layout
- Instrument Approaches
- Aircraft Mix Index
- Meteorological Conditions
- Airfield Operational Characteristics

The following sections will evaluate each of these capacity factors with respect to RSW.

4.2.1 Airfield Layout

The airfield layout refers to the location and orientation of the runways, taxiways and apron areas. Runway 6-24 has a northeast to southwest orientation. The total pavement length is 12,000 feet long by 150 feet wide. The Runway is served by a full-length parallel taxiway, Taxiway A, located on the north side of the runway. The runway to taxiway separation adheres to standards set forth in AC 150/5300-13, Change 6, and provides 400 feet of separation for ADG IV (discussed in further detail in the following chapter). Taxiway A also provides access to the Fixed Base Operator (FBO), Cargo area, and the main passenger terminal via a number of taxilanes and taxiway connectors. Runway 6 has a total of seven connector taxiways, three of which are high-speed exit taxiways that are located to provide immediate access to the passenger terminal apron. Runway 24 also has a total of seven connector taxiways, two of which are high-speed exit taxiways.

RSW's straight forward layout limits the Airport to just two primary operating configurations. These consist of landings and departures to/from Runway 6 or landings and departures to/from Runway 24.

4.2.2 Instrument Approaches

The Airport is served by both precision and non-precision instrument approaches. Runway 6 has a Category I instrument landing system (ILS) for precision approaches (both vertical and horizontal guidance) to the runway. This system consists of a glideslope, localizer, Runway Visual Range system (RVR), and Medium Intensity Approach Lighting System (MALSR). Operations can occur on Runway 6 with approach minimums as low as 229 feet (decision height) and ½ statute mile visibility for all aircraft at any approach speed or a runway visual range of 2,400 feet. The localizer component of the ILS provides for a straight-in non-precision approach to Runway 6. This approach can be made with a minimum descent altitude (MDA) of 380 feet and visibility as low as ½ statute mile or a RVR of 2,400 feet for aircraft with approach speeds less than 140 knots (Category A, B, and C). Higher approach speeds require a ¾ statute mile visibility or a RVR of 4,000 feet.

Runway 6 has both Non-Directional Beacon (NDB) and Global Positioning Satellite (GPS) non-precision instrument approaches. The MDA for the straight-in NDB approach is 440 feet with visibility minimums of ¾ of a statute mile or a RVR of 4,000 feet for Category A, B, and C

aircraft, and one statute mile a RVR of 5,000 feet for aircraft having approach speeds of between 121 and 141 knots (Category D). The GPS approach for Runway 6 has an MDA of 380 feet and a minimum visibility requirement of ½ statute mile or a RVR of 2,400 feet for Category A, B, and C aircraft. For Category D aircraft, a minimum visibility of one statute mile is required or a RVR of 5,000 feet.

Runway 24 has two non-precision approaches, a Very-high Frequency Omni-directional Range/Distance Measuring Equipment (VOR/DME) approach and a GPS approach. The MDA for the VOR/DME non-precision instrument approach for all aircraft approach classifications is 360 feet with a visibility minimum of one statute mile. The GPS approach for Runway 24 has an MDA of 400 feet with a minimum visibility requirement of one statute mile for approach Category A, B, and C. For Category D aircraft the minimum visibility requirement increases to 1¼ statute mile.

RSW also has an airport surveillance radar (ASR) that provides non-precision approaches to both Runway 6 and Runway 24. These approaches have a MDA of 380 feet for both runways. The visibility minimums for the ASR on Runway 6 are ½ statute mile or a RVR of 2,400 feet for Category A, B, and C. Category D visibility minimums are one statute mile or a RVR of 5,000 feet. The Runway 24 ASR approach cannot utilize the RVR system and visibility minimums therefore increase to one statute mile for Category A, B, and C, and 1¼ statute miles for Category D aircraft.

4.2.3 Aircraft Mix Index

In reviewing the operational fleet mix data from the forecasts presented in the Aviation Activity Forecasts Chapter, it is possible to establish the index value required to compute an airfield's capacity. This index value, known as the aircraft mix index, is calculated based on the type or class of aircraft expected to serve the Airport. The formula for finding the mix index is %(C + 3D) where C is the percentage of aircraft over 12,500 pounds, but less than 300,000 pounds and D is the percentage of aircraft over 300,000 pounds. Since RSW is an air carrier airport, the majority of the current aircraft mix includes Class C and D aircraft.

The mix index calculations indicate that during visual flight conditions approximately 82 percent of the aircraft operations at RSW are currently conducted by Class C aircraft with five (5) percent conducted by larger Class D aircraft. The smaller Class A and B aircraft account for the remaining 13 percent with Class B having the majority with 10 percent. During instrument meteorological conditions at peak periods, it is estimated that the percentage of Class C and Class D aircraft will increase to approximately 90 percent and 6 percent respectively with both Class A and Class B aircraft percentages decreasing significantly. During these conditions Class A and B aircraft account for a reduced percentage of the overall airport mix. This increase in the larger class aircraft and decrease in smaller class aircraft is due to the fact that under instrument meteorological conditions, the larger class aircraft associated with commercial airline operations are often better equipped and trained to make precision instrument approaches and landings into the Airport when weather conditions are poor.

The fleet mix is projected to decrease slightly in terms of Class C aircraft throughout the planning period with the percentage Class C dropping from 82 to 77 percent by 2020. This decrease is a result of an increasing trend towards the use of larger aircraft in both the international and

domestic markets. The larger aircraft are used during peak hour instead of an increase in frequency because of delay constraints. The percentage of Class D aircraft is therefore expected to increase throughout the planning period from 5 percent in 2000 to 11 percent by the Year 2020. Class A and B percentages are expected to remain fairly constant throughout the planning period due to the optimistic outlook and expected stabilization in the general aviation and smaller aircraft market. **Table 4-1** presents the aircraft mix analysis relative to VFR conditions.

TABLE 4-1
AIRCRAFT OPERATIONAL MIX (VFR)

Year	Percent Class				
	A	B	C	D	Mix Index (C+3D)
2000-Base Year	3%	10%	82%	5%	97
2005	3%	9%	81%	7%	102
2010	3%	9%	80%	8%	106
2020	3%	9%	77%	11%	111

Percentages may vary due to rounding
Source: Birk Hillman Consultants, Inc., 2001.
Ricondo & Associates, Inc.

The aircraft mix index under VFR conditions is expected to increase from 97 in 2000 to 111 in 2020 based on the projected changes in the fleet. **Table 4-2** presents the aircraft mix analysis relative to IFR conditions.

TABLE 4-2
AIRCRAFT OPERATIONAL MIX (IFR)

Year	Percent Class				
	A	B	C	D	Mix Index (C+3D)
2000-Base Year	1%	3%	90%	6%	108
2005	2%	3%	87%	8%	111
2010	2%	3%	85%	10%	115
2020	2%	3%	83%	12%	118

Percentages may vary due to rounding
Source: Birk Hillman Consultants, Inc., 2001.

The IFR aircraft mix index is expected to increase from 108 in 2000 to 118 by 2020. Again, this is due to the projected changes in the aircraft fleet mix.

4.2.4 Meteorological Conditions

Weather conditions can significantly affect utilization of the runways, and subsequently, affect the capacity of the airside facilities at an airport. Runway utilization is affected by wind conditions, cloud ceilings, and visibility, all of which factor into the direction in which take-offs and landings at an airport generally occur. The majority of the time runway use is solely

determined by the prevailing winds at the airport. However, the type of instrumentation and the adequacy of the associated instrument approaches for the runway system will influence which runway is active during inclement weather conditions.

As the ceiling and horizontal visibility diminishes the required spacing between aircraft departing or arriving at an airport increases to provide increased margins of operational safety. However, aircraft operations may cease entirely when conditions have deteriorated below the lowest available approach minimums. As the distance between aircraft increases, the number of aircraft that can operate at the airport during a given time period is reduced, thereby adversely affecting the capacity of the airfield. There are four primary measures of cloud ceiling and visibility conditions recognized by the FAA (AC 150/5060-5) in calculating airfield capacity. These include:

- Visual Flight Rules (VFR) – Cloud ceiling is greater than 1,000 feet above ground level (AGL) and the visibility is greater than three statute miles.

- Instrument Flight Rules (IFR) – Cloud ceiling is at least 500 feet AGL but less than 1,000 feet AGL and/or the visibility is at least one statute mile but less than three statute miles.

- Poor Visibility and Ceiling (PVC) – Cloud ceiling is less than 500 feet AGL and/or the visibility is less than one statute mile.

- Below Minimums- Cloud ceiling and visibility is below stated minimums for the airport. The airport is closed.

Based on weather data received from the National Oceanic and Atmospheric Administration (NOAA), the National Climatic Data Center (NCDC), and per conversations with Air Traffic Control staff, a meteorological analysis was prepared for RSW. Hourly observations from NOAA's weather station located at Page Field for the ten year period ending in 2000 and information provided by ATC staff was used to determine the percentage of time the airport is operated under VFR, IFR, and PVC conditions. At RSW, VFR conditions were found to occur approximately 95 percent of the time, while IFR conditions occur approximately 4 percent of the time. PVC conditions and weather conditions below the published approach minimums were found to account for a combined total of 1 percent over the ten-year period. The percentage of IFR and below minimum conditions can have a considerable negative impact on the overall capacity of the airport from an annual service volume perspective. However, RSW has a very low percentage of time under IFR or below minimums conditions when compared to other airports throughout the country.

4.2.5 Airfield Operational Characteristics

A number of operational characteristics will also affect an airfield's overall capacity. These include the percentage of aircraft arrivals, the sequencing of aircraft departures, and the percentage of touch and go operations at an airport.

Percentage of Aircraft Arrivals

The percentage of aircraft arrivals is the ratio of landing operations to the total operations at the airport. In most cases, the higher the percentage of arrivals during the peak period, the lower the service volume. RSW utilizes a single runway operation and, for purposes of calculating capacity figures, the percentage of arrivals at RSW was assumed to be 50 percent.

Runway Utilization

Based on wind rose analysis and a review of the runway operating configurations outlined in the previous Master Plan, it was determined that the runway utilization had not changed significantly at RSW. In both VFR and IFR conditions, Runway 6 is the most utilized runway accounting for approximately 80 percent utilization during VFR conditions and 85 percent during IFR conditions. Runway 24 is utilized approximately 20 percent of the time during VFR and only 15 percent during IFR weather. The Airport was assumed to be closed one (1) percent of the time due to weather conditions. These percentages are important in computing the weighted hourly capacity and annual service volume for the airport.

Percentage of Touch and Go's

A touch and go is defined as the operation of an aircraft, which lands and then makes an immediate take-off without coming to a full stop or exiting the runway. These operations are usually associated with flight training. Very little flight training exists at RSW, thus touch and go operations occur infrequently. For purposes of calculating the hourly capacity of the runway, a touch and go factor (T) of 1.00 was used reflecting less than one (1) percent touch and go operations at the Airport.

Taxiway Exits

Besides the importance of the runway configuration in the airside capacity model, the type and number of exit taxiways also play a very important role in the calculations. The location of exit taxiways can have a significant effect on the occupancy time of a landing aircraft on the runway. The longer an aircraft remains on the runway, the lower the capacity of the runway becomes.

At RSW, there are a total of nine (9) exits connecting the parallel taxiway to Runway 6-24. This includes the taxiway connectors located at each runway end. Based on the FAA's criteria and the fleet mix at RSW, the optimum exit factor relative to capacity is maximized when a runway has two, three, or even four exit taxiways within a range determined by the operations occurring on the runway. At RSW, this operational range is between 5,000 feet to 7,000 feet from the landing threshold. RSW has two taxiway exits for Runway 6 and two taxiway exits for Runway 24 located within this range. This corresponds to a taxiway exit factor (E) of 0.94 under VFR conditions and 0.92 under IFR conditions.

4.3 AIRFIELD CAPACITY

The characteristics of RSW's capacity as determined in the preceding section were used in conjunction with the methodology developed by the FAA to determine airfield capacity. FAA methodology generates three different values for measuring airfield capacity. These include:

- Hourly Runway Capacity
- Annual Service Volume
- Annual Aircraft Delay

4.3.1 Hourly Capacity of Runway System

The hourly capacity of the runway system measures the maximum number of aircraft operations that can be accommodated by the Airport's runway configuration in one hour. Based on FAA methodology, hourly capacity for runways is calculated by analyzing the appropriate VFR and IFR figures in Advisory Circular AC150-5060-5 for the airport's runway configuration. For both VFR and IFR conditions, the hourly capacity for runways is calculated by multiplying the hourly capacity base, exit factor, and touch and go factor as follows:

Hourly Capacity = C* x T x E

The hourly capacity base (C*) is calculated by applying the aircraft mix index and percent of aircraft arrivals. The calculations from the AC 150-5060-5 figures are delineated in **Table 4-3**.

TABLE 4-3
HOURLY CAPACITY OF RUNWAY SYSTEM (2000)

	VFR	IFR
Hourly Capacity Base (C*)	57	53
Touch and Go Factor (T)	1.00	1.00
Exit Factor (E)	0.94	0.92
Hourly Capacity	**54**	**49**

Source: Birk Hillman Consultants, Inc., 2001.

When analyzing the runway system with an aircraft mix of 82 percent Class C operations in VFR conditions and 90 percent in IFR conditions, no touch and go operations in VFR conditions, and a taxiway exit rating of two, existing hourly runway capacity is estimated to be 54 operations per hour under VFR conditions and 49 operations per hour under IFR conditions.

4.3.2 Annual Service Volume (ASV)

ASV is the approximate measure of an airport's capability in terms of annual throughput capacity. In other words, the ASV represents a reasonable theoretical limit of operations that the Airport can accommodate safely given its operating characteristics. A demand that approaches or exceeds the ASV will typically result in increasingly significant delays. No matter how substantial an airport's capacity may appear, delays may occur even before an airport reaches its stated capacity. Capacity, in fact, is a measure of activity that does not exceed an acceptable level of delay. A number of projects that would increase the capacity at an airport are eligible for funding from the Federal Aviation Administration (FAA). According to FAA Order 5090.3B, "Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)," this eligibility is achieved once the airfield has reached 60 percent of its current capacity. This allows improvements to be made before demand levels exceed capacity in order to avoid lengthy delays

normally associated with larger scale construction projects. Future capacity levels for the airport have been calculated based on the forecasted annual operations and the respective ASV for each year.

In order to gain an understanding of the overall capacity at RSW, the calculation of the Airport's Annual Service Volume (ASV) is necessary. RSW's ASV was calculated for each planning period (2000, 2005, 2010, and 2020). By referring to the FAA's methodology to estimate ASV, the ratio of annual demand to average daily demand during the peak month is determined, along with the ratio of average daily demand to average peak hour demand during the peak month. These values are then combined with the weighted hourly capacity according to the following formula:

Annual Service Volume = Cw x D x H

Where: Cw = weighted hourly capacity
D = ratio of annual demand to average daily demand, during the peak month
H = ratio of daily demand to average peak hour demand, during the peak month

For the calculation of annual capacity, a single weighted hourly capacity (Cw) is determined which incorporates VFR and IFR hourly capacities as well as periods of airport closure into a single number that better represents an "average" condition. The weighted hourly capacities calculated for the base year and for each of the three planning periods are included in **Table 4-4**.

TABLE 4-4
WEIGHTED HOURLY CAPACITY OF RUNWAY SYSTEM(Cw)

Year	Operations per Hour
Base Year	
2000	44
Forecast	
2005	42
2010	41
2020	40

Source: Birk Hillman Consultants, Inc., 2001.

ASV – Actual Demand Profiles

Airport capacity as a whole is expressed as the maximum number of operations (takeoffs and landings) that can occur within a given period of time using standard air traffic management practices. The National Airspace System (NAS) capacity would be much greater if traffic were evenly distributed throughout the day (and night) and among all airports. In practice and at RSW, however, traffic demand has peak and off-peak periods. The extent of this peaking can have considerable impact on the ability of an airport to adequately serve demand.

RSW's ASV based on the actual or projected ratio of annual demand to actual or projected average daily demand in the peak month (D) and peak hour (H) for each of the planning periods at RSW is shown in **Table 4-5** below.

TABLE 4-5 ANNUAL SERVICE VOLUME ACTUAL PROFILES				
Year	**Cw**	**(D)**	**(H)**	**ASV**
Base Year				
2000	44	283.2	7.6	94,716
Forecast				
2005	42	282.2	7.5	88,906
2010	41	282.6	7.6	88,058
2020	40	281.7	7.6	85,637

Source: Birk Hillman Consultants, Inc., 2000.

Table 4-7 depicts very low ASV numbers in a decreasing trend towards the long-term planning period. These low numbers are not typical for a single runway airport but reflect the impact of the extreme seasonal and hourly peaking characteristics associated with operations at the Airport.

ASV – Theoretical Profiles

Theoretically, a single-runway Airport should have much higher ASV numbers then those calculated based on the actual demand ratios. This is due to the tendency of operational activity profiles to shift slightly with time to minimize potential for delays, thereby increasing capacity. Ranges of typical ASV (D) and (H) numbers have been identified by the FAA in AC 150/5060-5 as depicted in **Table 4-6** below.

TABLE 4-6 TYPICAL DEMAND RATIOS		
Mix Index	**Daily (D)**	**Hourly (H)**
0-20	280-310	7-11
21-50	300-320	10-13
51-180	310-350	11-15

Source: FAA AC 150/5060-5

To determine the theoretical annual service volume for RSW, a recalculation of the ASV was conducted with the FAA typical demand ratios presented in **Table 4-6** for each planning period. These numbers were used in conjunction with weighted hourly capacity numbers calculated previously for RSW. The demand ratios in the table depict a range to gain an understanding of low, medium, and high ASV scenarios that may be possible with a single runway configuration. The calculated mix indexes at RSW fall in the 51-180 range, thus values representing the low, medium, and high ranges of 310, 330, and 350 for (D) and 11, 13, and 15 for (H), were used. **Table 4-7** presents the resulting ASV numbers:

TABLE 4-7 THEORETICAL (FAA BASED) ANNUAL SERVICE VOLUME					
(D)	**(H)**	**2000 (Base)**	**2005**	**2010**	**2020**
310 (low)	11	150,040	143,220	139,810	136,400
330 (medium)	13	188,760	180,180	175,890	171,600
350 (high)	15	231,000	220,500	215,250	210,000

Source: Birk Hillman Consultants, Inc., 2001.

As depicted in **Table 4-7**, the ASV numbers are significantly higher than those calculated based on actual operational profiles. For the base year, 2000, the low range ASV is estimated at 150,040 while the high range ASV is estimated at 231,000. The high range is an estimate of the maximum possible demand that the Airport would be able to handle at the maximum FAA designated (D) and (H) values. This would assume virtually no monthly or hourly peaks, but rather flat and steady activity levels throughout the year. The low estimate of 136,400 would be representative of a more realistic number of ASV at RSW as the (D) and (H) values are representative of a facility with high seasonal and hourly peaking characteristics.

4.4 AIRFIELD DEMAND VS. CAPACITY

The comparison between demand and capacity provides a measurement for determining when capacity related enhancements should be considered. According to accepted industry standards as demand reaches 60 percent of capacity, planning for improvements should begin and when demand reaches 80 percent of capacity construction of these enhancements should commence. Two different methodologies developed by the FAA were considered in comparing the current and future demand at the Airport to the existing capacity. These include:

- Hourly Demand vs. Capacity
- Annual Demand vs. Annual Capacity

4.4.1 Hourly Demand Vs. Hourly Capacity

This section represents a detailed analysis of the projected hourly demand versus the hourly capacity of the runway system at RSW. As depicted in **Table 4-8**, the base year (2000) peak hour demand is 67 percent of the hourly capacity during VFR conditions and 78 percent during IFR conditions. In 2005, these percentages increase to 83 (VFR) percent and 94 percent (IFR) and continue to increase significantly throughout the planning period, exceeding 100 percent in 2010 under IFR conditions and before 2020 under VFR conditions. When the peak hour demand approaches 80 percent of the hourly capacity the peaking will begin to flatten and spread over a longer period unless additional capacity becomes available. This flattening will increase impacts during the surrounding hours as demand approaches or exceeds 100 percent of capacity.

Although hourly departure and arrival rates (hourly capacity) may appear to be less than the hourly capacity, concentration of flights within the peak hour will likely result in delays prior to reaching capacity levels. The more evenly the traffic is spread throughout peak hour, the better the Airport will be able to serve hourly demands approaching 100 percent of capacity.

TABLE 4-8 RATIO OF PEAK HOUR DEMAND TO HOURLY RUNWAY CAPACITY			
VFR			
Year	**Peak Hour Demand**	**Hourly Capacity**	**% of Capacity**
2000 (base year)	36	54	67%
2005	43	52	83%
2010	49	51	96%
2020	65	50	130%
IFR			
Year	**Peak Hour Demand**	**Hourly Capacity**	**% of Capacity**
2000 (base year)	36	47	78%
2005	43	46	94%
2010	49	46	107%
2020	65	46	141%

Source: Birk Hillman Consultant Inc., 2001.

4.4.2 Annual Demand vs. Annual Capacity

This section presents an analysis of projected annual demand versus the calculated annual service volume based on the FAA's theoretical demand profiles for airports similar to RSW. **Table 4-9** presents the airfield's estimated annual capacity levels.

TABLE 4-9 AIRFIELD CAPACITY LEVELS			
Year	**Annual Operations**	**Annual Service Volume (2000)** ①	**Capacity Level**
2000	77,042	150,040	51%
2005	90,600	143,220	63%
2010	105,700	139,810	76%
2020	139,700	136,400	102%

Source: Birk Hillman Consultants, Inc., 2001.
① ASV calculated using typical FAA demand ratios.

The capacity level in 2005 is expected to exceed 60 percent of the ASV increasing to nearly 80 percent by 2010. Based on this, it is recommended that planning for capacity enhancements at RSW be initiated as soon as practical to avoid future capacity deficiencies.

4.5 ANNUAL AIRCRAFT DELAY

As demand approaches capacity, delays increase at an exponential rate. For a given capacity, there is a tradeoff between demand and delay, with increases in demand accommodated only at the cost of longer and more frequent delays. Even when demand is quite low with respect to capacity, a change in an airport's operating conditions may reduce capacity and thereby increase the delay associated with a given level of demand. One of the major causes for delay besides the influence of weather is flight scheduling and peaking characteristics. Certain arrival and departure times are preferred by travelers, and as a result, airlines schedule their operations

accordingly. This peaking of demand produces overloads, traffic queues, and other forms of congestion that translate into delay not only at the point of incidence but elsewhere in the connecting nodes of the airport and airspace network. The relationship between delay and demand/capacity is very sensitive. Ideally, during a given hour, if aircraft using an airport sought service at a continuous rate equal to that at which aircraft operations could be processed, and if operating conditions at the airport were constant throughout the hour, then operations could reach the airport's highest capacity without significant delays. However, it must be realized that the actual rate of which aircraft arrive and depart is never continuous. As demand approaches airport capacity, delays related to congestion will no doubt occur. If demand begins to exceed airport capacity, delays will become more significant and occur at an increasing rate and it may take hours for an airport to fully recover from compounding delays that occur over a relatively short period.

The FAA methodology allows for the determination of average delay per operation as well as total hours of aircraft delay on an annual basis. The estimate of annual delay includes arriving and departing aircraft operations under both VFR and IFR conditions. Essentially, the ratio of projected demand to ASV is utilized in the FAA's charts in AC 150/5060-5, Change 2 to determine a conservative estimate of the average delay per aircraft. This value is then applied back to the annual demand levels to estimate the total amount of annual aircraft delay. The ASV figures from the FAA based ASV calculations were used. The FAA outlines a range of delay values based on the ratio of demand to capacity. **Table 4-10** outlines both the low and high ends of this range, and outlines the costs associated with the delay.

TABLE 4-10
ANNUAL AIRCRAFT DELAY

Year	Average Delay per Aircraft Operation, Low Ratio (minutes)	Average Delay per Aircraft Operation, High Ratio (minutes)	Average Total Annual Delay (hours)	Estimated Cost of Delay (annual)
Base Year				
2000	0.3	0.5	642	$768,900
Forecast				
2005	0.5	0.7	1,057	$1,323,000
2010	0.7	1.3	2,290	$2,798,800
2020	2.5	3.8	8,814	$11,623,900

Source: Birk Hillman Consultants, Inc., 2001.

As presented in **Table 4-10**, the estimated delay per aircraft operation in the base year for FAA low and high ratios of aircraft delay ranges from 18 seconds (0.3) to 30 seconds (0.5) respectively. These delays are expected to increase slightly by 2005 and nearly double by 2010. For planning purposes, the high ratio was used to estimate total annual delay. As noted, in the base year, 2000, the average delay per aircraft operation for the high average was estimated at 30 seconds (0.5 minutes), which equates to approximately 642 total annual hours of delay. This, in turn, equates to an estimated cost of approximately $768,900 annually. By 2020, the average delay per operation for the high average is projected to increase to 228 seconds (3.8 minutes) or 8,814 total annual hours of delay assuming no capacity improvements are done to the Airfield. The average delay per aircraft by 2020 is 3.8 minutes, which may have an impact on airport capacity. In addition, the annual cost of delay is estimated to approach $11,623,900 within this period.

4.5.1 Annual Delay Cost Basis

The estimated annual costs of delay throughout the planning period were calculated using typical costs by aircraft class, in dollars per minute, described in FAA AC 150/5060-5, Change 2. The same four aircraft classifications, A, B, C, and D, used to determine fleet mix were also used to calculate costs associated with aircraft delay. For the purposes of estimating delay costs, the aircraft classifications are broken down further into the type of aircraft based on the number of seats, and the type of operation, General Aviation, Air Taxi, or Air Carrier. Typical costs associated with each classification include the following ranges in dollars per minute:

- ✈ $0.60 to $1.80 for Class A (12,500 pounds or less, single engine) including aircraft from 1-3 seat GA aircraft to 4+ seat air taxi aircraft. Examples: Cessna 1152/172/182/210, Piper Warrior, Beechcraft Bonanza.

- ✈ $2.50 to $6.80 for Class B (12,500 pounds or less, multi engine) including aircraft from piston twin GA aircraft to twin turbine jet air taxi aircraft. Examples: Beechcraft Baron, Piper Seminole, Cessna Citation I, Cessna 310, Beech King Air 90/100/200/350.

- ✈ $2.80 to $35.50 for Class C (12,500 pounds to 300,000 pounds) including aircraft from piston engine GA, four turbine air carrier aircraft, and two engine air carrier jets to four engine air carrier jets. Examples: Cessna Citation II, Lear 35/55, Gulfstream II/III/IV, Boeing 727/737, Douglas DC9/MD-80.

- ✈ $39.00 to $79.30 for Class D (over 300,000 pounds) including all air carrier aircraft from two engine jets to four engine jets. Examples: Airbus A300/A310, Boeing 767, Lockheed L1011, MD-11, Airbus A340, Boeing 747.

The estimated costs of annual delay at RSW were derived based on the previously mentioned criteria and a percentage breakdown of the fleet mix for each aircraft typically operating at RSW in each classification. In this manner, delay costs were estimated for each aircraft within each classification based on their percentage of operations. This method was used to obtain the most accurate estimate possible to determine total delay costs. In addition, this method allowed for the compensation of the percentage changes forecast for the fleet mix, thus avoiding a generic dollar per minute figure based on the base year.

4.6 AIRSPACE CAPACITY

Airspace capacity is an essential element of any airport, especially with respect to maintaining the existing and proposed operational characteristics. As discussed in Chapter 2, “Inventory”, RSW has an FAA controlled Air Traffic Control Tower (ATCT) and the airspace surrounding the airport is designated as Class C airspace. Class C airspace consists of two columns of space. The Class C airspace at RSW contains no modifications to the standard airspace configuration. The inner column of airspace encompasses an area that has a 5 nautical mile radius from the Airport and extends from the surface up to 4,000 feet above the airport elevation. The outer column of airspace encompasses an area that has a 10 nautical mile radius, but begins at 1,200 feet MSL and extends up to 4,000 feet MSL. Above 4,000 feet MSL, Class E airspace begins and continues up

to 17,999 feet MSL where it intersects the overlying Class A airspace. **Table 4-11** delineates the features of each airspace classification and outlines what requirements, services, and equipment is necessary for use in the different airspaces.

TABLE 4-11
FEDERAL AVIATION REGULATION AIRSPACE CLASSIFICATIONS

Airspace Features	Class A	Class B	Class C	Class D	Class E	Class G
Operations Permitted	IFR	IFR and VFR	IFR and VFR	IFR and VFR	IFR and VFR	IFR and VFR
Entry Requirements	ATC Clearance	ATC Clearance	ATC Clearance for IFR	ATC Clearance for IFR	ATC Clearance for IFR	None
Minimum Pilot Rating	Instrument	Private / Student	Student	Student	Student	Student
Two-way Radio Communication	Yes	Yes	Yes	Yes	Yes for IFR	No
VFR Visibility Minimums	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	3 Statute Miles	1 Statute Mile
Aircraft Separation	All	All	IFR, SVFR and Runway Ops	IFR, SVFR and Runway Ops	IFR and SVFR	None
Conflict Resolution	N/A	N/A	Between IFR and VFR Ops	No	No	No
Traffic Advisories	N/A	N/A	Yes	Workload Permitting	Workload Permitting	Workload Permitting
Safety Advisories	Yes	Yes	Yes	Yes	Yes	Yes
Special Equipment	N/A	Mode C Transponder	Mode C Transponder	N/A	N/A	N/A

Source: Birk Hillman Consultants, Inc., 2001.
Abbreviations: SVFR = Special VFR.

The airspace surrounding RSW is controlled by three types of FAA designated air traffic control. These include the Air Route Traffic Control Center (ARTCC), Fort Myers approach/control, also known as Terminal Radar Approach Control (TRACON), and the air traffic control tower (ATCT). Due to the Airport's close proximity to other airports in the area, the navigation corridors for over flying traffic, the Gulf of Mexico, and the increasing aviation activity in the southwest Florida region it is important to maintain efficient traffic flow and coordination through the use of the abovementioned facilities. Based on discussions with the air traffic controllers no upgrades to these facilities are necessary in the near term, but as demand increases in the future, these facilities should be upgraded as necessary based on FAA requirements.

The airspace overlying RSW and the Fort Myers area is controlled by the ARTCC, also known as Miami Center. The center has delegated airspace in the area at 10,000 feet MSL and below to the Fort Myers approach/control. Fort Myers approach control is operational from 6am till 12pm seven days a week, 365 days a year. When not operational, Miami Center provides approach control service for the Airport. Fort Myers approach/control also provides control for the following airports: Naples, Page Field, Punta Gorda, Marco Island, and Immokalee.

The air traffic control tower (ATCT) at RSW controls airspace within the five nautical mile radius up to 4,000 feet MSL. This area of control is bordered by the Page Field control zone to

the northwest of the Airport. The fact that RSW and Page Field are located only 7 nautical miles apart, could provide some potential airspace conflicts in the future as the demand at both of these airports increases. The close proximity of RSW to Page Field has resulted in the establishment of ATC procedures to resolve potential airspace and aircraft conflicts. These procedures will also minimize the coordination necessary between the two facilities, thus providing controllers more focus on traffic specific to RSW. Traffic patterns at RSW have been designed and amended to keep traffic on the southeast side of the Airport to maintain separation from Page Field. Furthermore, departures on Runway 13 at Page Field require prior release from the RSW tower to avoid traffic conflicts with potential traffic departing or arriving at RSW. Departures from Page Field from Runway 13 are required to head straight out crossing directly over the RSW airfield. In addition, aircraft tracks are coordinated to comply with noise concerns for the surrounding area.

The alignment of the primary instrument runways at both airports are almost identical, thus minimizing the potential for conflicts. The primary runway at RSW is oriented at 6-24 and Page Field's runway is oriented in a 05-23 direction. Therefore, arriving and departing traffic can follow similar procedures when entering or leaving either airport environment. IFR traffic on arrival to both RSW and Page Field can utilize the Sarasota Three Arrival procedure, which is a general use Standard Terminal Arrival (STAR) procedure for the area. The Sarasota Three STAR also serves Marco Island Airport, and Naples Municipal Airport.

Radar coverage of the airspace surrounding RSW and the Fort Myers area is provided via the Southwest Florida International Airport Surveillance Radar (ASR). Radar control beyond the airport control areas for sequencing and separation is available from Fort Myers approach control for the area within the designated Airport Radar Service Area (ARSA). The ARSA allows for radar sequencing and separation procedures within 10 nautical miles of RSW, thus providing a more efficient traffic system to enhance airspace capacity. The ARSA provides positive control up to 4,000 feet MSL. The ASR is currently scheduled for upgrade to an ASR 11 and will be discussed further in the following chapter.

As previously mentioned, air navigation routes play an important role in the air traffic system. RSW has a large number of over-flights compared to other airports in the region. This is in part due to the fact that many of these navigational corridors (also known as Victor Airways) utilize the RSW VORTAC as a main navigation waypoint. The RSW VORTAC appears to be a congregation point for many low-enroute navigational corridors in the area. This influx of over flights is another factor contributing to the complexity of the air traffic control facilities. These transient flights normally operate in a north to south direction and vice versa. These flights must be coordinated with the east to west traffic flow created by aircraft arriving and departing at RSW. With the increase in air traffic expected at RSW and the Fort Myers area airports in general, in addition to the fact that this type of coordination is becoming more operationally intense, expansion of services and facilities may be required. Plans are being made to expand the current TRACON facility at RSW with additional building space and the upgrading of equipment. In addition, programs are planned to maximize the efficiency and coordination with other major TRACON/approach control facilities in the State of Florida. These include facilities at airports such as Orlando International Airport, Tampa International Airport, and Miami International Airport. This coordination on a larger scale will enable controllers to plan routes for aircraft coming into the airspace earlier, thus allowing additional control of the air traffic system. This coordination is expected to be provided by a new digital radar network.

As demand increases in this area for air traffic control services, so does the potential for capacity related conflicts. As several plans have already been initiated to cope with expected air traffic demand, additional plans should be considered as alternatives to those increases in demand.

5 FACILITY REQUIREMENTS

5.1 INTRODUCTION

To ensure that Southwest Florida International Airport will be able to adequately accommodate the various demands that are expected during the 20-year planning period, this chapter will establish the general facility requirements for the future development of the airport. One of the principle challenges facing any airport is development. Airport development can be particularly costly and since each project is typically planned to last many years, care must be taken to ensure that each development project will help satisfy the airport's needs and enhance the capability and quality of the airport. Analyzing future requirements of an airport with respect to safety standards, capacity shortfalls and the demand for services provides a guide for the operational, airfield, building, infrastructure and land requirements that must be addressed to meet demand. Once these requirements have been identified, different development alternatives can be created and analyzed to address each facility need. Assessment of relative benefits or disadvantages of each development option can then be undertaken in such a way to ensure that the greatest benefits are provided to the users, tenants, local community, and of course, to the airport itself.

The objective of this section is to identify, in general terms, the adequacy or inadequacy of the existing airport facilities and outline what new facilities may be needed based on the level or threshold of activity that generates the need for expansion. Having established these facility requirements, alternatives for providing these facilities will be developed and then assessed to determine the most cost-effective and efficient means for meeting these requirements. It is important to note that an airport must be developed in the context of air safety. Improvements to the airport must allow for continued safe operation of aircraft into and out of the airport as well as maneuvering on the ground. Accommodating these capabilities safely is the most basic function of an airport facility and, as such, the needs associated with these capabilities are addressed first.

5.2 AIRPORT ROLE AND SERVICE LEVEL

The FAA, through the National Plan of Integrated Airport System (NPIAS), establishes the role and service level of each airport included within that plan. The role for each airport identifies one of five basic service levels, which describe the type of public service the airport is expected to provide to the community. The role and service level also represents the funding categories set by Congress to assist in airport development. Southwest Florida International Airport is designated as a public use commercial service-primary airport according to 1998-2002 NPIAS transmitted to Congress in March 1999. Commercial service airports are defined as public airports receiving scheduled passenger service and having 2,500 or more enplaned passengers per year. There are 540 commercial service airports throughout the United States. Of these, 413 have more than 10,000 enplanements and are classified as primary airports. According to the 1998-2002 NPIAS, primary airports such as RSW receive an annual apportionment of at least $500,000 in Airport Improvement Program (AIP) funds, with a total amount determined by the number of enplaned passengers.

5.3 AIRPORT REFERENCE CODE AND CRITICAL AIRCRAFT

An initial step in identifying an airport's future requirements is the establishment of fundamental development guidelines. By examining the types of aircraft expected to use the airport, it is possible to establish the critical aircraft for design purposes. This critical aircraft is usually the most demanding aircraft using the airport. The FAA defines this as the largest, heaviest, and fastest aircraft forecast to have more than 500 annual itinerant operations at the airfield.

After the critical aircraft has been determined, an Airport Reference Code (ARC) is established based on the characteristics of that aircraft. The two primary characteristics of a critical aircraft are the aircraft's wingspan and approach speed. Because some aircraft may have large wingspans and relatively slow approach speeds, while others may have high approach speeds with shorter wingspans, it is sometimes necessary to establish more than one critical aircraft. Additionally, it may be necessary in some instances to design certain areas to a higher design standard than the rest of the airport in order to accommodate certain operations.

The ARC is made up of two components, a letter designation followed by a Roman numeral. The letter indicates the approach category (approach speed) of the most demanding aircraft, while the Roman numeral designates the Design Group (wingspan) of the most demanding aircraft. **Table 5-1** and **Table 5-2** delineate the Aircraft Approach Categories and Aircraft Design Groups according to FAA Advisory Circular (AC) 150/5300-13, Change 6, "Airport Design."

TABLE 5-1
AIRCRAFT APPROACH CATEGORIES

Category	Approach Speed (knots)
A	< 91
B	91 – 121
C	121 – 141
D	141 – 166
E	> 166

Source: FAA AC 150/5300-13 Change 7.

TABLE 5-2
AIRCRAFT DESIGN GROUPS

Design Group	Wingspan (feet)
I	< 49
II	50 – 79
III	80 – 118
IV	119 – 171
V	172 – 214
VI	215 – 262

Source: FAA AC 150/5300-13 Change 7.

As determined in the 1992 Airport Master Plan conducted by Coffman & Associates, the Airport was designed to ARC D-V standards. This was due to the expected operations of larger aircraft such as the Boeing 747. Based on previous analyses at RSW and the expectation that large

aircraft such as the B747, A330, and A340 will provide service to the Airport in the future, it is recommended the ARC remain a D-V.

The future airport facility layout will be undertaken in accordance with FAA design criteria established in Advisory Circular 150/5300-13 Airport Design, Change 6. The specific design criteria associated with Airport Reference Code D-V are shown in **Table 5-3**.

TABLE 5-3
AIRPORT DESIGN – AIRPLANE AND AIRPORT DATA

Criteria	ADG D-V (Ft.)
Runway to Parallel Taxiway/Taxilane Centerline	400
Runway Centerline to aircraft parking area	500
Runway Width	150
Runway Shoulder Width	35
Runway Blast Pad Width	220
Runway Blast Pad Length	400
Runway Safety Area Width	500
Runway Safety Area Length Beyond each Runway End	1,000
Runway Object Free Area (ROFA) Width	800
ROFA Length Beyond Each Runway End	1,000
Runway Obstacle Free Zone (OFZ) Width	400
Runway OFZ Length Beyond Runway End	200
Taxiway Centerline to Parallel Taxiway/Lane Centerline	267
Taxiway Centerline to Fixed or Movable Object	160
Taxilane Centerline to Parallel Taxiway/Lane Centerline	245
Taxilane Centerline to Fixed or Movable Object	138
Taxiway Width	75
Taxiway Shoulder Width	35
Taxiway Safety Area Width	214
Taxiway Object Free Area Width	320
Taxilane Object Free Area Width	276
Taxiway Edge Safety Margin	15
Taxiway Wingtip Clearance	53
Taxilane Wingtip Clearance	31

Source: Airport Design AC 150/5300-13 Change 7.

5.4 AIRFIELD REQUIREMENTS

5.4.1 Airfield Capacity

The Airport's ASV as outlined in Chapter Four is currently estimated at 150,040 annual operations. Over the planning period, the ASV at RSW will decline slightly as the fleet mix shifts to a slightly higher percentage of Class D aircraft. As such, the ASV is projected to decrease to 136,400 annual operations or more than 100 percent of capacity by the Year 2020. This indicates the need for airfield improvements within the 20-year planning period.

RSW is projected to reach over 60 percent of capacity by 2005, almost 80 percent of capacity by 2010, and exceed 100 percent by 2020. Due to the extreme peaking characteristics at the Airport, and the current airfield configuration, the addition of a new runway would be the only improvement capable of providing the increase in capacity required to accommodate the projected demand. A parallel runway typically provides the greatest increase in capacity. However, this configuration can only be beneficial if wind conditions at the airport are compatible. Wind conditions at RSW are ideal to provide for such a configuration with Runway 6-24 accounting for over 98 percent wind coverage. Based on this, it is recommended that a new runway parallel to the existing Runway 6-24 be considered in providing the required capacity improvement at RSW.

5.4.2 Runway Requirements

This section addresses the specific requirements relative to Runway 6-24 as well as the new parallel runway. As a primary airfield facility at any airport, a runway must have the proper width, length, and strength to safely accommodate the critical aircraft expected to use the airfield.

Runway width requirements for airport design are included in FAA AC 150/5300-13, Change 6. The design standards are based on the critical aircraft's Approach Category, Design Group, and the approach visibility minimums at the Airport.

FAA AC 150/5325-4A, "Runway Length Requirements for Airport Design" and the FAA "Airport Design" software, Version 4.2D, provide guidelines to determine the ultimate runway length required at an airport facility. These guidelines consider airfield conditions such as the elevation, mean daily maximum temperature, and effective runway gradient. Length determinations also consider critical aircraft data such as takeoff weight, length of haul and payload using individual aircraft performance manuals published by the manufacturers.

The runway's pavement strength is also an important factor to consider in the future runway requirements. Airport pavement strength is evaluated to establish load carrying capacity for expected operations, to assess the ability of pavements to support significant changes from expected volumes or types of traffic, and to determine the condition of existing pavements for use in the planning or design of improvements which may be required to upgrade a facility.

Runway 6-24

Runway Width

The current width for Runway 6-24 is 150 feet. Criteria contained in FAA AC 150/5300-13, Change 7, states that for the D-V designation, a runway width of 150 feet is adequate. However, if the runway at RSW is utilized by New Large Aircraft (NLA) in the future, the runway width will need to be upgraded to standards pertaining to FAA design group E-VI. These standards are discussed later in this chapter.

Runway Length Analysis

A runway length analysis for Runway 6-24 was conducted in the Runway Extension Justification Study completed in 1989 by Coffman & Associates. As a result of larger

aircraft operational demands, it was determined that a runway extension from 8,400 feet to 12,000 feet was required. This was adopted into the 1992 Airport Master Plan (Coffman Study). As a result, the extension of the runway to 12,000 feet was completed in 1994.

As determined from the aforementioned 1989 Runway Extension Justification Study, the 12,000-foot runway is capable of handling long-range activity by large aircraft including the Boeing 747-400. When comparing the stage lengths of the aircraft used in the Runway Extension Justification Study to the current aircraft using the airport, it was determined that the existing 12,000 foot runway is capable of handling all the types of aircraft using RSW today. This includes the newer short-haul jets and larger Airbus models such as the A330 and A340. As determined by the Coffman & Associates Study a stage length of approximately 2,500 nautical miles was calculated as being sufficient to reach all domestic markets. Based on this, the existing runway is more than sufficient in length to handle all current and projected domestic aircraft operations into and out of RSW. When compared to the initial runway length analysis, the current international route stage lengths have not changed significantly and still remain between 5,000 and 6,500 nautical miles. As such, no improvements are recommended with regard to the Runway 6-24 length.

Runway Pavement Strength

As indicated in the Inventory Chapter, the Runway 6-24 pavement is currently strength rated at 30,000 pounds single wheel loading (SWL); 190,000 pounds dual wheel loading (DWL); 430,000 pounds dual-tandem loading, and 840,000 pounds double-dual-tandem loading (DDTL). The 840,000-pound double-dual tandem strength rating satisfies the demands of the heaviest double dual tandem aircraft, the Boeing 747-400, that would serve RSW. As such, the pavement strength of Runway 6-24 is considered to be adequate throughout the planning period for all aircraft currently serving or projected to serve RSW. However, if NLA aircraft demand is identified during this period, pavement strength will need to be revisited to ensure that such operations will not require additional pavement improvements. This is addressed further later in this chapter.

Runway Condition

The existing runway is generally noted in fair condition. However, as indicated in the Inventory Chapter, the PCI indices depict certain areas of the 18-year old runway as being in very poor condition. With the rate of deterioration increasing as the pavement ages, a full rehabilitation of the runway is recommended in the near term. Various approaches to accomplishing this will be addressed in the Alternatives chapter of this Master Plan.

New Runway

The additional capacity provided by a new runway is not necessarily proportional to the number of runways, but is dependent on a number of factors that impact the use of each runway in the system. These include:

- Number of existing runways.
- Aircraft use restrictions associated with the use of the runway.
- Runway orientation/configuration.
- Runway length.
- Runway width.
- Runway strength.

A runway's utilization is determined in part by its length, strength, instrumentation, and separation from and orientation to the other runways at the airport. For example, adding a shorter commuter-length runway will limit its utility since larger aircraft will not be able to use it. Similarly, new runways oriented in a parallel manner to an existing runway system generally provide greater utility since aircraft approaches will not intersect with approaches to other runways.

Runway spacing is also a major factor in determining runway system capacity as it affects the dependency of runway operations, meaning that inadequate spacing between two parallel runways dictates that the use of one runway is dependent or constrained by activity on the other. The following sections outline key factors in developing a new runway to serve RSW.

Orientation/Configuration

The idea of a parallel runway at RSW has been present since the original plans for the Airport proposed in the 1970s. As previously mentioned, wind conditions are ideally suited to provide for such a configuration with 98.06 percent wind coverage for the 6-24 orientation. Thus, a parallel runway would be the optimal choice for a new runway. The original airport plan provided for a general aviation only parallel runway located north of the existing runway. Updated activity projections along with change in aircraft fleet mix projections set forth in the 1992 Master Plan conducted by Coffman & Associates, proposed a longer south parallel runway to accommodate air carrier aircraft and provide for simultaneous instrument approaches. This configuration would allow RSW to maximize its long-range flexibility in serving the growing demand for air service in the Southwest Florida Region. The previous master plan concluded that a parallel runway of the same length as the existing runway should be planned for, with a 5,875-foot spacing from the existing runway. This spacing was to allow the maximum possible development area for a midfield terminal without impacting the major inland slough to the south.

In 1993, the Coffman Parallel Runway Length and Separation Refinement Study reviewed the proposed new parallel runway's length and spacing to determine if development costs could be reduced. Based on this review, the Refinement Study suggested a reduction in spacing to 5,385 feet from the 5,875-foot spacing originally proposed. By doing so, it was determined that the double (now triple) row of 230 Kv power lines to the south would not require relocation along the length of the runway, only where they passed beyond the new runway's northern end. The 5,385-foot spacing

provided 1,095 feet of horizontal clearance from the 88-foot MSL power line poles, plus an additional six-foot clearance margin of safety. According to the 1994 Environmental Assessment, the reduced parallel runway spacing would reduce the length of power lines requiring relocation from approximately 19,000 feet to approximately 4,500 feet.

It is important to note that from an operational standpoint, as stated in the Coffman Parallel Runway Length and Separation Refinement Study, the installation of an Instrument Landing System (ILS) on either end of the parallel runway would not be possible. According to the report and the FAA, the power lines would severely distort the localizer signals, rendering the ILS approach unusable. This is a potential disadvantage considering the ultimate plan to have simultaneous precision instrument approaches. However, with the advent of Global Position System (GPS) technology, an ILS may not be needed. The use of GPS for precision approaches at RSW is discussed further in the Navaid Section of this chapter.

In conclusion, the proposed refinement as stated in the Parallel Runway Length and Separation Refinement Study reduced the runway separation from the original 5,875 feet to 5,385 feet. This new distance is 1,085 feet more than the FAA's minimum recommended separation of 4,300 feet required for simultaneous instrument approaches and provides considerable room to construct the Midfield Terminal Complex without conflicting with airspace requirements for a precision approach runway. Based on this, it is recommended that the revised configuration be maintained as the preferred configuration for the new runway. Future analysis should continue to consider the rate of passenger growth and whether adequate terminal area expansion can be accommodated within the midfield expansion envelop without an additional shift of the runway's location to the south.

Runway Width

As the new runway will be planned to accommodate simultaneous precision instrument approaches and the same commercial aircraft serving the current runway, the width of the new runway should adhere to Aircraft Design Group D-V as stipulated in FAA AC 150/5300-13, Change 6, which states that for D-V designations, a runway width of 150 feet is adequate. However, standards for New Large Aircraft (NLA) will have to be considered as the potential for such operations in the future exists.

Runway Length

The 1992 master plan noted that a shorter parallel runway length could meet most air carrier needs, but that a 12,000-foot length would ensure maximum flexibility for serving international flights. The primary advantages associated with having two 12,000 foot runways includes the capability to use either runway for all types of aircraft operations, thus providing the air traffic controller with the maximum flexibility, efficiency, and safety for assigning aircraft to runways. This would be especially advantageous in the Fort Myers area since air traffic has been increasing steadily for all the airports in close proximity.

In the Parallel Runway Length and Separation Refinement Study conducted by Coffman Associates in 1993, the minimum length requirements were again addressed. It was

determined that existing and projected international traffic levels did not likely warrant a full 12,000-foot runway in the near term. As such, runway length reductions that could reduce initial cost without impacting operational capabilities were explored.

It was noted that there were three sets of power lines beyond the northeastern end of the proposed parallel runway. The poles of the line closest to the proposed parallel runway, carrying 230 kv, are 73 feet above ground level (AGL) or 104 feet above mean sea level (MSL). The second power line, another 230 kv line, is slightly further away and has a maximum elevation of 119 feet MSL. The third line, carrying 500 kv, has a maximum elevation of 144 feet MSL and is therefore the controlling approach surface obstruction in the area of the proposed parallel runway. As calculated in the Refinement Study, the elevation difference between the runway threshold elevation and the 500 kv power line is 112 feet. It was determined that the threshold location for a 9,100-foot parallel runway would provide at least 20 feet of clearance from the top of the power lines to the 50 to 1 slope precision approach surface.

Based on a review of current and projected activity, it is anticipated that a length of 9,100 feet would provide the necessary capacity and capability to accommodate over 90 percent of projected aircraft departures through the Year 2020. Therefore, 9,100 feet is recommended as the minimum runway length to satisfy demand throughout the planning period.

Runway Strength

The strength of the existing runway at RSW is designed to accommodate aircraft as large as the Boeing 747-400 with an ADG D-V. As this designation represents the most critical aircraft expected to use the facilities, it is recommended that the new runway be designed to the same D-V standards. Even if the new runway will not be utilized by such large aircraft in the short-term period, the construction of a D-V pavement strength will ensure future compliance with larger aircraft demand and possible extension of the runway if required in the future. Again, with the potential for NLA activity at the Airport, pavement consideration should be addressed during the preliminary design phase.

5.4.3 Taxiway System Requirements

A proper taxiway system should provide freedom of movement to and from the runways of an airport under a variety of operating conditions. This includes entrance and exit taxiways, taxiway run-up areas, apron taxiways, and taxilanes. Some of the basic design principles for an efficient taxiway system include the following:

- Provide each active runway with a full parallel taxiway.
- Construct as many by-pass, multiple access, or connector taxiways as required to ensure efficient access to each runway and runway end.
- Provide taxiway hold areas for each runway end.
- Build all taxiway routes as direct as possible.
- Provide adequate curve and fillet radii.
- Avoid developing areas which might create ground traffic congestion.
- Ensure taxiways are adequate to serve projected aircraft ARC.

Improvements to a taxiway system can be warranted for more than just capacity enhancement reasons. A key consideration for taxiway enhancements is the safety of aircraft movements, as well as the efficiency of aircraft movements on the airfield and to access developing portions of the airport. The following sections outline requirements needed for the existing taxiway system at RSW.

Taxiway 'A'

Taxiway 'A' is the full-length parallel taxiway serving Runway 6-24. This taxiway, which is located on the north side of Runway 6-24, has been constructed to a width of 75 feet, and meets the design Group V's minimum taxiway width. Taxiway A's runway centerline to taxiway centerline spacing of 400 feet also meets the separation standards for Design Group V aircraft. The parallel taxiway has a total of nine taxiway connectors, all of which provide access to and from the parallel taxiway and the runway. Five of these taxiways, Taxiways A-4 through A-8, are high-speed exit taxiways. As noted in the Inventory Chapter, the full-length taxiway is in good overall condition. Several areas have been treated for cracking, but currently have no significant impacts on operations. However, Taxiway A-8 was observed to have severe cracking and a sealant has been applied as a temporary solution until the area can be resurfaced. With the current condition and age of Taxiway A and its associated connectors, it is recommended that resurfacing treatment be conducted in the short-term to intermediate period.

Taxilane 'B'

As noted in the Inventory Chapter, Taxilane B is the 1,580 foot long apron taxilane that runs parallel to the Passenger Terminal. It serves as the terminal apron area taxilane for aircraft transitioning to and from the gate positions and to and from taxiways A-6, A-7, and A-8. The separation distance from the Taxilane centerline to the parallel taxiway centerline is 435.5 feet. This separation distance exceeds the FAA minimum of 267 feet for ADG V type aircraft. Taxilane B is in good condition, but should be considered for resurfacing following the relocation of the terminal. The priority for the project will also depend on the ultimate reuse strategy for the existing terminal.

Runway 6-24 South Parallel Taxiways

To provide adequate access between the Midfield Terminal Complex and the existing Runway 6-24, a two-phase dual parallel taxiway system will be required. These taxiways are crucial to the efficient operation of aircraft taxiing to and from Runway 6-24. The nearest taxiway to the runway should be planned with the same FAA separation standards and taxiway width standards as the current parallel ADG V taxiway. Per interviews with Air Traffic Control (ATC), it is recommended this taxiway be planned to include a hold-bay/by-pass area to facilitate traffic movement efficiency and allow for improved sequencing of aircraft. The second parallel taxiway, developed as a later phase improvement, should be designed to New Large Aircraft (NLA) standards. The NLA standards demand an increase in the separation and taxiway width standards and are outlined later in this chapter.

New Runway North Parallel Taxiway

In reviewing projected demand and the configuration of the ultimate midfield program, it is recommended that the new runway be configured with a single parallel taxiway. It is recommended that the taxiway be built on the north side of the new runway to provide easy access to and from the midfield terminal. The taxiway should be spaced for NLA standards to accommodate the future needs of the Airport.

Dual Cross-Field Connector Taxiways

With the addition of the new parallel runway to the south of the existing runway and the new midfield terminal complex, there is a need to connect the two runways and the terminal area to provide an easy transition for aircraft taxiing in and out of the terminal area. Based on this, it is recommended dual cross-field connector taxiways be provided for adequate airfield operational flexibility. Thee cross-field connectors should be adequately spaced to accommodate the movement of NLA aircraft.

5.4.4 New Large Aircraft

A new generation of aircraft is on the horizon, which could carry over 600 passengers and weigh over one million pounds. The first of these "New Large Aircraft" (NLA) is anticipated to make its first test flight in the year 2004 and enter the commercial market by 2006. Specific characteristics of these aircraft are not fully known at this time. However, the FAA has started to identify standards for these aircraft and assess how they will affect U.S. airports.

Until recently, Airport Reference Code (ARC) E-V was the most stringent category and included aircraft with an approach speed greater than 166 knots and a wingspan larger than 171 feet but smaller than 214 feet. This ARC represented aircraft such as the Boeing 747, Boeing 777, and the Airbus A340. NLAs will be much larger than the Boeing 747 and will become the largest aircraft in the commercial airline fleet. When the idea of a New Large Aircraft appeared to take shape, the FAA created a new category for those aircraft. Struggling to develop a design standard for NLA aircraft, manufacturers guaranteed that the aircraft would fit in a square of 262 feet by 262 feet. Based on this, the FAA created a sixth category for aircraft that would have a wingspan greater than 214 feet but less than 262 feet. Approach speeds for this Category are still unknown but are expected to be over 166 knots. However, until an additional approach category is warranted, NLAs will be included in the approach Category E Design Group VI (Table 5-4).

TABLE 5-4
AIRCRAFT REFERENCE CODE (ARC)

Aircraft Approach Category		**Airplane Design Group**	
Category	***Approach Speed***	***Group***	***Wingspan***
Category A	< 91 kt.	Group I	< 49 ft.
Category B	≥ 91 kt. but < 121 kt.	Group II	≥ 49 ft. but < 79 ft.
Category C	≥ 121 kt. but < 141 kt.	Group III	≥ 79 ft. but < 118 ft.
Category D	≥ 141 kt. but < 166 kt.	Group IV	≥ 118 ft. but < 171 ft.
Category E	≥ 166 kt.	Group V	≥ 171 ft. but < 214 ft.
		Group VI	≥ 214 ft. but < 262 ft.

Source: FAA AC 150/5300-Change 7

Advisory Circular 150/5300-13, Change 7, includes the addition of taxiway, runway and shoulder dimension at standards required to accommodate ARC E-VI aircraft. These dimensions will be outlined later in this section. The FAA has also issued the "New Large Aircraft Issues Document" with the goal of making airport planners and designers aware of all the issues associated with NLAs utilizing an airport. Although it is difficult to determine when the NLA will operate at RSW, a plan that is flexible enough to accommodate these aircraft in the future should be developed as the airport continues to expand. Currently, no facilities need to be designed to NLA standards but consideration should be given to the separation requirements of taxiways, taxilanes and runways to allow for easy expansion or modification of facilities to accommodate NLA's in the future. A number of important issues will be discussed in the following sections.

Runway Issues

Even if the definitive Maximum Take-Off Weight (MTOW) of NLAs is not known yet, it is certain that it will be more than the B747's MTOW. According to the manufacturers, the weight will be spread among the larger array of landing gear configurations. In doing so, the impact on the pavement should not be significantly more than that of a B747. Therefore, runways already designed to accommodate B747's may not need any reinforcement or pavement alterations. However, design criteria for airfield pavement has not yet been issued by any organization (either the FAA or ICAO). In the "New Large Aircraft Issues Document", the FAA does mention that pavement will most likely require a new composition or a new texture to obtain additional traction or braking efficiency. Again, this has not been confirmed.

While details of whether or not pavement for NLAs will require reinforcement remains unknown, the main gear and the wings are much wider. As such, it has been determined that the runway will also have to be wider in order to provide an appropriate safety margin. Furthermore, as the engines will be further from the centerline when compared to the B747, shoulders will also have to be widened in order to protect the engines from ingestion of foreign object debris.

Table 5-5 shows the comparison of runway characteristics for ADG-V and ADG-VI. If RSW were to serve NLA in the future, the indicated improvements would need to be made.

TABLE 5-5
RUNWAY CHARACTERISTICS

	Airplane Design Group	
	V (current)	**VI**
Runway Width	150 ft	200 ft
Runway Shoulder Width	35 ft	40 ft
Runway Blast Pad Width	220 ft	280 ft
Runway Blast Pad Length	400 ft	400 ft
Runway Safety Area Width	500 ft	500 ft
Runway Safety Area Length Beyond RW End	1,000 ft	1,000 ft
Runway Object Free Area Width	800 ft	800 ft
Runway Object Free Area length Beyond RW End	1,000 ft	1,000 ft

Source: FAA AC 150/5300-13 Chg 7

Taxiway Issues

The issues that were mentioned for the runways also apply to the taxiways. The pavement strength issues for taxiways are also unknown. Due to the anticipated larger wheel track and the larger wingspan of NLA's, taxiways will also have to be widened and shoulders extended to provide adequate safety margins. Moreover, engines may hang over dirt or grass areas and the higher engine thrust may exceed blast limitations. There will therefore be a higher risk of foreign object damage and blast of debris on the taxiways. This risk can be minimized if the shoulders are widened and the clearance with other aircraft and vehicles is increased. It should be noted that there may be different clearances depending on whether two or four engines are used to taxi. If only two engines are used, then the engine exhaust will be more geographically concentrated but also stronger in force. If all four engines are used, the force associated with each engine's exhaust will be less, but the overall blast will be more widespread. **Table 5-6,** outlines some of the taxiway characteristics as identified in FAA AC 150/5300-13.

TABLE 5-6
TAXIWAY CHARACTERISTICS

	Airplane Design Group	
	V (current)	**VI**
Taxiway Width	75 ft	100 ft
Taxiway Edge Safety Margin	15 ft	20 ft
Taxiway Shoulder Width	35 ft	40 ft
Taxiway Safety Area Width	214 ft	262 ft
Taxiway Object Free Area Width	320 ft	386 ft
Taxilane Object Free Area Width	276 ft	334 ft

Source: FAA AC 150/5300-13 Chg 7

Because of the larger wheel track and wheelbase, over-steering may require additional pavement to make a 90-degree or greater turn onto a taxiway centerline. In addition, if the nose wheel is turned too early, the taxiway fillet may not be large enough for the main landing gear. Therefore, taxiway/taxiway and taxiway/runway fillets may have to be increased. Furthermore, an important factor that will have to be taken into consideration is NLA taxiing speed. The speed may have to be reduced to ensure a more accurate track of the aircraft and to further protect the pavement.

Separation Standards

As a result of having a large wingspan, the NLA taxiway-to-taxiway separation and taxiway-to-runway separation standards increase significantly. These separation standards are perhaps the most critical to airport design as they will determine the overall layout and spacing of the runways and taxiways. Additionally, the actual proposed separations are significantly more than the previous category. As such, expansion to accommodate NLAs may be difficult for many airports if adequate provisions were not made during initial development. These new separations are described and compared in **Table 5-7.**

TABLE 5-7 STANDARD LATERAL SEPARATION STANDARDS		
	Airplane Design Group	
	V (current)	VI
Runway Centerline/Parallel Taxiway Centerline	400 ft	600 ft
Runway Centerline/Aircraft Parking Area	500 ft	500 ft
Taxiway Centerline/Parallel Taxiway Centerline	267 ft	324 ft
Taxiway Centerline/Fixed or Movable Object	160 ft	193 ft
Taxilane Centerline/Parallel Taxiway Centerline	245 ft	298 ft
Taxilane Centerline/Fixed or Movable Object	138 ft	167 ft

Source: FAA AC 150/5300-13 Chg 7

Terminal Apron Issues

It has been determined that NLA will more than likely require reconfiguring existing terminal parking aprons because of the length and wingspan of these aircraft. In a best-case scenario, an NLA could take the place of two adjacent parking positions, which accommodate B747 type aircraft. In order to prevent the NLA from impacting two parking spaces of smaller aircraft when parked in a jumbo aircraft gate, it was initially envisioned that an NLA could park parallel to another aircraft with its wings overlapping due to its high ground to wing height. However, after review of the initial designs of the aircraft, it appears that the wingtip clearance may not be high enough to enable this to occur. Furthermore, the existing passenger gates may not be compatible with those aircraft and multiple bridges may be required to unload passengers more efficiently. In addition, due to the wide wheelbase, the turning radius will be increased, making the maneuverability of the aircraft more difficult when docking at the gate positions. Additional visual or electronic aids may be required to help guide and safely maneuver the NLAs on the ramp. Lastly, since the NLAs will be heavier than any other commercial aircraft currently in service, their breakaway engine thrust (initial thrust needed to make the aircraft move) will be higher than any others. It will therefore increase the risk of damage caused by debris on the ramp. To reduce this risk, a greater separation between the aircraft and proximate aircraft and vehicles will have to be established.

Airfield Signage, Marking and Lighting Issues

Since the runways and taxiways will have to be widened to accommodate NLAs, the edge lights will have to be relocated. As such, special consideration should be given to the angle of the lights. NLA pilots have to be able to see the lights when they taxi on the ground. Therefore, the angle of illumination to the aircraft cockpit height may have to be slightly increased.

Signage at RSW designating taxiways, runways, ramp areas, hazards, and taxi instructions are located at certain distances from the taxiways and runways centerline based on B747 criteria. However, NLAs will be much larger than B747s and the distance between signs and centerline may need to be increased. In addition, due to anticipated cockpit height, the distance from the pilots' eyes to the airfield signs and markings will increase significantly. Characters, numbers and letters may become too small and not legible. Signage may have to be replaced and markings repainted to accommodate the mentioned possible vision impairments for the NLA pilots.

Areas restricted to NLAs will have to be marked accordingly. Special NLA holding bars will have to be created to ensure that the aircraft tail does not penetrate the Object Free Zone. Over steering lines should be marked as appropriate on the pavement to enable the NLAs to turn properly.

Taxi and Guidance Issues

To avoid confusion and to ensure that pilots do not use restricted taxiways, specific guidance and procedures may be required for ground movements and operations. One way to guide the pilots is to have an adequate signage and markings system as described in the previous section. Another way to provide this guidance and safety to the pilots is through the use of cameras on the aircraft. For example, having a camera installed on the nose wheel strut to ensure that the nose wheel remains on the centerline to make sure that the wing tip clearances are adhered to.

To further aid NLA aircraft maneuvering, other types of technology have also been explored and suggested. This includes the DGPS (Differential Global Positioning System), which would be able to provide enhanced navigation on the ground. However, it is still under development as accuracy must be refined for such operations. Additionally, another type of GPS technology that may be available is the GPS/ADS-B (Automatic Dependent Surveillance-Broadcast). This system uses the accuracy of the information provided by the GPS system via a data link. It reports the position of an aircraft to the aircraft itself, to other aircraft and to air traffic control. Lastly, tracking wires embedded in the pavement have also been suggested and could provide an alternative solution.

Ground Service Issues

The unique dimensions of NLA will more than likely require new ground service equipment. Ground service personnel may also need specialized training when working on NLA's. For instance, the size of cargo containers may be too large or too heavy to be processed by regular load vehicles and ramps. Tugs may need additional power and greater traction to be able to tow NLA's in adverse weather conditions. Furthermore, those vehicles may require more resistance to the speed and heat of the exhaust blast or engine intake of NLAs. Thrust deflecting may even be required to protect the ground crew.

5.4.5 Pavement Marking

As mentioned in the Inventory Chapter, all pavement marking at RSW visually appears adequate and in good condition. Both Runway 6 and Runway 24 are marked as precision instrument runways and need no additional marking. Precision instrument runway markings consist of runway designation markers, a centerline stripe, threshold bars, threshold markings, aiming point markers, touchdown zone stripes, and side stripes indicating the extent of the full strength pavement. Currently the runway hold short markings are being re-striped at all taxiway runway intersections to comply with FAA requirements. The taxiways are also marked with centerline, edge, and sidebar striping, as well as hold line markings adjacent to the runway. When the runway is rehabilitated the markings will need to be repainted. Additionally, the future runway should reflect a similar level of marking. The existing runway marking will need to be modified to reflect a 6L-24R designation when the new runway is constructed. As such, the new runway will also need to be properly marked as 6R-24L.

5.4.6 Signage

Currently, there are approximately eighty-two lighted signs on the taxiways and runway at RSW to safely guide aircraft and ground vehicles. As determined in the inventory process, all signage at RSW is in good condition and should be updated when deemed appropriate by the Lee County Port Authority. As additional pavements are added, signage will need to be included and particular consideration should be given to potential signage modifications. For example, when the new runway is added, existing runway signage will need to be changed to reflect a 6L-24R designation. The same holds true for the new runway with a 6R-24L designation.

5.4.7 Airfield Lighting

When meteorological conditions are not optimum, a lighting system helps pilots using an airport to safely land and taxi on the airfield. If the system shows deficiencies, its utilization can then become dangerous as pilots may interpret a missing light in a straight line as a beginning of a turn. Therefore, daily care must be given to the system to ensure that every light is properly working and that no lights are obstructed by shrubbery or other objects. The following sections provide recommendations for future facility requirements for airfield lighting at RSW.

Runway Lighting

According to FAA AC 150/5340, High Intensity Runway Lights (HIRL) are required for a precision approach runway. RSW currently has HIRL lighting and satisfies all precision approach runway requirements relative to lighting. As mentioned in the Inventory Chapter of this master plan, no centerline or touchdown zone lighting systems are in place at RSW. Runway centerline and touchdown zone lighting systems are designed to facilitate landings, rollouts, and takeoffs. These systems are not required for a Category I runway. However, should RSW upgrade the runway to a Category II designation, runway centerline lighting and touchdown zone lights will be required (AC 150/5340-4C, Change 2). Additionally, if the runway remains a Category I runway and is widened to 200 feet to satisfy future new large aircraft requirements, the FAA recommends that centerline lighting be implemented. On this basis, it is recommended that the future runway be equipped with both edge and centerline lighting.

Taxiway Lighting

As mentioned in the Inventory Chapter, taxiway lighting is essential to safe operations during low visibility conditions and nighttime operations at an airport. Taxiway lights allow pilots to maneuver to and from the active runways, terminals and hangars. Taxiway edge lights also provide surface guidance to other ground vehicles on the airport. Currently, taxiway edge lighting, corner barrel reflectors, or centerline lighting is installed on all taxiways at RSW with the exception of the GA taxiway leading to the FBO. As the Midfield Terminal Complex is scheduled for completion in 2005, no additional taxiway lighting is recommended for the current RSW taxiway system configuration. However, with the addition of a new midfield taxiway system, centerline lighting for all associated taxiways is recommended. It is also less costly to install taxiway centerline lighting during initial construction, which will allow for the Airport to implement a Surface Movement Guidance Control System (SMGCS). This system will enhance safety for aircraft operating on the taxiway system under low visibility weather conditions.

5.4.8 Navaids

Airport Surveillance Radar (ASR)

The Airport Surveillance Radar is located approximately 1.5 miles north-northwest of the airport reference point (ARP). The current ASR is a FAA designated Series-8 radar with a critical area that encompasses approximately 40,000 square feet of land. An ASR-11, proposed by the FAA, is envisaged to be installed approximately 200 feet east-southeast of the existing ASR-8 facility. Signal deviations, caused by obstacles such as buildings, trees or vehicles, require that the ASR-11 be located at least 1,500 feet from any tall building or object which may cause signal deviations and at least one-half mile from any other electronic equipment. Future upgrades will depend on the FAA facility and system requirements.

The current location of the area surrounding the ASR northwest of the existing terminal is ideally suited for industrial/commercial use land since it is located in close proximity of both Chamberlin Parkway and Daniels Parkway. The FAA has indicated that development may be acceptable within the defined critical area if the heights of the buildings are controlled. It is recommended that before any planned development is considered in the ASR critical area coordination with the FAA take place early in the planning process.

Global Position System (GPS)

According to the FAA, precision GPS approaches are slated to become the industry standard in approximately five to seven years from the implementation of the RSW master plan update through the use of either the Wide Area Augmentation System (WAAS) or Local Area Augmentation System (LAAS). WAAS provides the required accuracy, availability and integrity to support GPS use as a primary means of navigation during all phases of flight through Category I Precision Approaches. The WAAS will improve basic GPS service to approximately seven meters vertically and horizontally. On-airport systems are not required to achieve a WAAS supported Category I precision approach and as such, a single WAAS is expected to have the ability to support multiple regional airports. LAAS is intended to support approaches to Category I minimums in those instances where WAAS cannot provide the necessary satellite coverage to achieve Category II and Category III precision capabilities. LAAS accomplishes this by using ground stations located at the airport to transmit signals with the highest level of accuracy to the aircraft making an approach. LAAS is expected to be accurate to within one meter or less and a single LAAS system can support approaches to multiple runway ends.

Currently, non-precision GPS approaches are available at RSW. However, as LAAS and WAAS become available in the future, these options may prove to be a viable alternative to upgrade the current system to Category II or Category III standards. As GPS approaches are slated to become the standard, such a system would enable RSW to upgrade its instrument approach Category for each runway end without requiring the costly implementation of ILS equipment. This cost savings may be especially advantageous to the proposed parallel runway complex. As details relative to the siting of GPS equipment are defined, the associated requirements of such should be reviewed relative to RSW.

Instrument Landing Systems

To enhance overall airport capacity and safety during adverse weather conditions, upgrade of the Airport's precision instrument approach may be warranted. RSW currently has a Category I ILS procedure for Runway 6 only. This approach permits pilots to descend to 200 feet above the touchdown zone elevation and a runway visual range of not less than 1,800 feet. A Category II procedure provides for approaches to a height above touchdown elevation of not less than 100 feet and with runway visual range of not less than 1,200 feet. Requirements to upgrade the current Category I ILS to a Category II ILS include additional Runway Visual Range (RVR) Equipment, an increase in the size of the ILS critical area, an upgraded approach lighting system, and runway centerline and touchdown zone lighting systems. It is recommended that at least one Category II approach be considered for the Airport for operating the primary configuration (west to east). This should consider either an upgrade of the current ILS Category I approach to a Category II for the existing Runway 6 or for the same end of the new parallel runway. The latter, however, would require relocation at the existing three sets of power lines to remove signal distortion. Finally, it is recommended that consideration be given to implement Category I precision approach capabilities (either ILS or GPS) for all remaining runway ends.

Approach Lighting System (ALS)

Currently, RSW has a Medium Intensity Approach Lighting System (MALSR) designated for use with a Category I runway. The system is installed at the Runway 6 approach end. Should the Airport upgrade to Category II standards, an ALSF-2 will be required. An ALSF-2 is an approach lighting system with sequenced flashing lights arranged specifically for Category II and III runways. Additionally, if other precision approaches are implemented, proper provisions should be made to install the required lighting system for the planned approach. As such, the identification of the specific lighting system for each runway end is dependent on which end will have a Category II precision approach. MALSR's should be added in a phased approach to all other runway ends to provide full Category I capabilities.

5.4.9 Visual Landing Aids

As noted in the Inventory Chapter, the Runway 6 and Runway 24 end at RSW both provide ground based visual aids known as Visual Approach Slope Indicators (VASI). They are considered to be in good to fair condition. However, the VASI system is becoming outdated and the FAA has recommended that existing VASIs be replaced with Precision Approach Path Indicators (PAPIs) when their useful life has expired. This is recommended since VASIs are no longer produced and replacement parts are increasingly difficult to obtain. Additionally, PAPIs provide a more accurate interpretation of glidepath establishment for pilots. The future runway should be equipped with PAPIs serving each runway end during its initial construction.

5.4.10 Helicopter Operations

Currently, there are no designated helipads at RSW and helicopter operations are minimal at the Airport. However, as rotorcraft operations have steadily increased over the past couple of years in the State of Florida, the addition of such facilities should be planned to accommodate potential future helicopter operations at the Airport. An FAA based helipad provides a controlled area for

a rotorcraft to initiate takeoffs and landings. Both a helipad and a helicopter parking area are important facilities for the safe operation of helicopters at an airport. It is anticipated that rotorcraft operations will continue to grow in the region, as is evident at nearby airfields such as Page Field and Naples.

The type of heliport demand at RSW would most likely be for a general aviation facility since the Airport is not located near a hospital, nor does it provide a market for larger transport commercial helicopters. FAA AC 150/5390-2A, *Heliport Design*, requires that a public-use general aviation heliport have at least one Final Approach and Takeoff Area (FATO). This area should be graded to assure proper drainage but should not exceed two percent in any area where a helicopter is expected to land. The Touchdown and Lift-off Area (TLOF) is centered in the FATO. The size of the FATO, TLOF, the safety area surrounding the FATO and the pavement strength depends on the design helicopter. By definition, the design helicopter is a generic helicopter, which represents the maximum weight, overall length, skid/wheel base and rotor diameter of all the helicopters expected to operate at the facility. Since no regular helicopter traffic currently exists at RSW, a design helicopter utilizing the nearest airport, Page Field (FMY), was used. The design helicopter in the current Page Field Master Plan is the Bell Jet Ranger. The characteristics of this helicopter are shown in **Table 5-7**.

TABLE 5-7
HELICOPTER CHARACTERISTICS

Max Takeoff Weight	4,450 lbs
Overall Length	43 feet
Rotor Diameter	37 feet
Undercarriage skid length	9.9 feet
Undercarriage skid width	7.2 feet

From these characteristics and the criteria for heliport design found in AC 150/5390-2A, the area for a heliport was calculated to be approximately 11,000 square feet, including the safety area, the FATO and the TLOF. It is recommended that one heliport area of the calculated size be designated at RSW with enough space to expand for future facilities. In addition, the location and required land needed for such a heliport is also based on compatibility with imaginary surfaces as set forth in FAA CFR 14, Part 77, *Objects Affecting Navigable Airspace*. It is therefore recommended that a Part 77 analysis be conducted for any proposed helicopter operation area.

5.5 LANDSIDE REQUIREMENTS

5.5.1 Terminal Requirements

The high rate of historical passenger growth, increasing operations and current facility constraints have forced the LCPA to consider a long term solution to addressing terminal capacity shortfalls at RSW. As such, the potential for a midfield terminal with unimpeded access to both the existing and future parallel runways has been the subject of growing scrutiny over the past ten years. During a very intensive effort over the past 3 years, this has culminated into the Midfield Terminal Development Program. The first phase of the development program, currently in implementation, has been the subject of an extensive programming effort. Due to this, it is not

the intent of terminal analysis outlined herein to readdress the initial phase of terminal development. Rather, this analysis will summarize the first phase of development and then outline the additional development that might be expected to adequately provide for terminal expansion throughout the balance of the 20-year planning period.

Overview of the Midfield Program

In the year 2000, a study was conducted by DMJM Aviation that considered a new Midfield Terminal at RSW. This study outlined a conceptual program of terminal space and identified and assessed numerous terminal alternatives. The resulting preferred alternative was broken into phases and further refined based on both the design activity levels outlined in **Table 5-8** and the specific facility requests of the tenants and users. The activity levels used in outlining the first phase of development correspond to the 2010 projection of activity outlined by Leigh Fisher and Associates' Forecast Activity report prepared in 1995.

TABLE 5-8
ACTIVITY LEVELS USED FOR THE MIDFIELD TERMINAL STUDY

Annual	
Enplanements	4.5 million passengers
Departures	52,600 operations
Peak Month	
Peak Month Ratio	10.9%
Departures during Peak Month	5,734 operations
Average Day	
Average Day Ratio	3.23%
Daily Departures	185 operations
Daily Passenger Enplanements	20,457 passengers
Peak Hour	
Enplanements	2,599 passengers
Deplanements	3,132 passengers
Aircraft Departures	22
Aircraft Arrivals	26

Source: DMJM AVIATION

As outlined in **Table 5-9** the first phase of Midfield Terminal development program includes 28 gates, 120 ticket counters, 10 baggage claim devices and over 760,000 square foot of terminal space.

TABLE 5-9 FIRST PHASE MIDFIELD TERMINAL SUMMARY	
Number of Gates	28
Number of Ticket Counters	120
Number of Baggage Claim Devices	10
Space Summary	**Area (square feet)**
Airline Operations	21,143
In Transit Lounge	4,334
FIS	39,903
Ticketing	6,224
ATO	16,770
Holdrooms	73,860
Baggage Makeup	83,514
Baggage Claim	75,090
Baggage Offices	6,015
Concessions	41,228
General Circulation	159,339
Ticketing Lobby/Screening	60,071
Toilets	23,938
Support/Mechanical	74,964
Airport Administration	68,451
Unassigned	11,365
Total Space	**766,209**

Source: Spillis Candella DMJM 5-22-02

The ultimate design, configuration and layout of the midfield facilities include three terminals and five concourses with the ability to support 65 gates. The first phase of development includes a single terminal building serving three concourses, which support a range of aircraft sizes (**Table 5-10**). The layout and configuration of first phase allows for the expansion of each of the three concourses to provide a net increase of four gates each, prior to the need to construct a second terminal building.

TABLE 5-10 GATE BREAKDOWN	
Type of Aircraft	**Number**
Commuters	1
Large Narrowbody	20
Medium Widebody	6
Large Widebody	1
Total	**28**

Source: DMJM AVIATION

Additional improvements programmed as part of the first phase of the midfield program include the following:

- Surface parking
- Three-story parking garage
- Toll plaza complex

- Rental car customer service buildings
- 8 rental car quick return maintenance facilities
- Rental car fuel facility
- Taxicab limousine building
- Chiller plant
- Belly-haul cargo building

In reviewing the design levels outlined in **Table 5-8** against the new forecasts outlined in this master plan, it can be determined that the peak hour design levels roughly correspond to 2012 activity levels. This indicates that the first phase of the midfield development should be adequate, at least from a space perspective, throughout the short and intermediate term development periods. However, based on the analysis outlined in the following section it appears that consideration of additional gates may be required during this period.

Future Gate Requirements

One of the most important attributes of a terminal is its number of aircraft parking positions or 'gates'. If a terminal has too few gates, the airport may not be able to accommodate airline or passenger demand, or attract additional carrier service. If there are too many, the airport may have needlessly expended resources that could have been better used elsewhere. It is consequently important to try to get a good feel for actual gate demand prior to construction and to outline terminal development strategies that allow for easy gate expansion if demand requires. Two techniques for determining gate requirements are outlined in this section. The first considers peak hour demand and gate utilization rates. The second considers the number of total annual enplanements per gate. The results of each will be reviewed relative to the first phase of the midfield terminal development to determine potential shortfalls throughout the planning period.

Peak Hour Demand Methodology

One of the methods to calculate the number of gates required, suggested by the FAA in AC 150/5360, is to use a peak hour gate utilization rate. This rate can then be applied to future activity levels to estimate future gate requirements.

In 2000, there were 21 domestic aircraft operations during peak hour. Out of the 17 existing gates, one was assumed to be reserved for an international flight. Therefore, 16 gates were available to accommodate those 21 domestic movements. That means that on average each gate accommodated 21/16=1.3125 movements during the peak hour. According to the FAA, a domestic gate utilization factor typically should fall between 0.9 and 1.1. The utilization of gates at RSW is more than 20 percent higher than the FAA's "typical" range. This is an indicator of saturation during the peak hour and is readily apparent in considering the extreme congestion being experienced during existing peak periods at RSW. Therefore, in improving the level of service and providing greater flexibility during the peak hour, a utilization rate lower than that currently experienced should be used for projecting the number of domestic gates. For long range planning purposes it was assumed that a utilization factor of 1.1, at the high end of the FAA's range, would be reasonable. If the current gate utilization rate was 1.1, the airport would have 19 domestic gates available, rather than the current 16. This would reduce peak hour congestion, increase the level of service, and better position the airport to attract

new air service. Utilizing the 1.1 factor, it was projected that the total domestic gates required in 2010 would increase to 29 and, by 2020 to 39.

With respect to international activity, only one operation is anticipated during the peak hour through 2020. Therefore, a single international gate should be adequate to enable the accommodation of the international flight. However, as international operations typically have a greater turnaround time than domestic activity, an additional position or 'swing' gate may require consideration due to the increased potential for operational overlap.

Commuters and regional jets (RJ) have shorter turnaround times than commercial jet aircraft and a single position can typically handle multiple operations during a single hour period. With a turnaround time as short as 20 minutes, a single gate position can typically handle three operations (arrivals plus departures) during a single hour. According to the forecasts, the number of commuter/RJ operations during peak hour will increase from five to eight between 2005 and 2020. Based on three operations per hour, two commuter positions will be required through 2010 with an additional position by 2020.

Table 5-11 summarizes the gate requirements using the peak hour utilization methodology.

TABLE 5-11
GATES REQUIRED – PEAK HOUR UTILIZATION METHODOLOGY

	2005	**2010**	**2020**
Domestic Air Carriers	25	29	39
International Air Carriers	1	1	1
Commuters/Regionals	2	2	3
Total	**28**	**32**	**43**

Source: Birk Hillman Consultants, Inc.

Annual Enplanement Methodology

The ratio of annual enplanements per gate can often be used as a good indicator of future gate requirements. The higher the overall activity level and the flatter the peaks, the higher the likely ratio of enplanements per gate. This section outlines gate requirements using an annual enplanement throughput methodology.

Commuter, domestic, and international gates each typically support different levels of annual passenger activity. Although commuter gates can accomplish more turns in a given hour, the limited seating capacity usually results in the lowest volume of enplanements per gate. In defining the future gate requirements, an 80,000 annual enplanement level was estimated as an average throughput that might be expected at RSW. Domestic gates, typically serving a range of narrowbody aircraft, provide a higher annual enplanement volume, which could be expected to range between 115,000 and 140,000 annual enplanements per gate. Given the peaking characteristics of RSW, 125,000 enplanements per domestic gate was used as a reasonable estimate of throughput. Finally, international gates typically have the highest annual passenger

throughput due to the larger aircraft that these gates typically serve. While international gates can typically accommodate between 150,000 and 200,000 annual enplanements, it is anticipated that throughput at RSW will fall at the low end of that range. This is due to the inefficiencies that are typical with the relatively low volume of international activity. Projected gates using the annual enplanement methodology are outlined in **Table 5-12**.

TABLE 5-12
GATES REQUIRED – ANNUAL ENPLANEMENT METHODOLOGY

	2005	2010	2020
Domestic (Air Carriers)	24	29	41
International	1	1	2
Commuters/Regionals	3	3	4
Total	**28**	**33**	**47**

Source: Birk Hillman Consultants, Inc.

Summary of Gate Requirements

Both the peaking methodology and the annual enplanement methodology project a need for 28 total gate positions by 2005. By 2010, the total number of gates required is estimated at between 32 and 33. This indicates the need for additional gate development beyond that currently programmed in the first phase of the Midfield Terminal Development Program. By 2020, the estimated number of gates required will increase to between 43 and 47 or an additional 10 to 15 gates over the 2010 levels. Finally, an estimated ultimate gate capacity of 65, it appears that the midfield terminal complex will therefore be adequate to accommodate gate requirements throughout the 20-year planning period.

Space Requirements

To determine long-range terminal space requirements, the design activity levels for the first phase of the Midfield Terminal Development Program were compared to the projected 2010 and 2020 activity levels. The profile of space for the midfield was then used to project future space shortfalls based on the respective ratios of peak hour enplanements or deplanements for the given development period. Because 2010 projected activity levels were below the Phase 1 Midfield Design levels, the only projected space shortfall is the holdroom space required to accommodate the additional gates that were identified in the previous section. However, by 2020 most use classifications other than those associated with international activity will require additional space. Due to the relatively low projected levels for international activity, it was assumed that the Phase 1 FIS and In-Transit Lounge would be adequate to serve the projected demand throughout the planning period.

As outlined in **Table 5-13**, it is projected that a space shortfall of 10,600 square feet will exist by 2010 and that this shortfall will increase to almost 205,000 square feet by 2020.

TABLE 5-13 PROJECTED TERMINAL SHORTFALLS			
Planning Criteria	**Phase 1 Midfield**	**2010**	**2020**
Annual Enplanements (Pax)	4.5 million	3.98 million	5.63 million
PH Enplanements	2,599	2,372	3,307
PH Deplanements	3,132	2,948	4,073
		Facility Shortfalls	
Number of Gates	28	4-5	15-19
Number of Ticket Counters	120		33
Number of Baggage Claim Devices	10		3
		Space Shortfalls	
	(square feet)	**(square feet)**	**(square feet)**
Airline Operations	21,143		5,429
In Transit Lounge	4,334		
FIS	39,903		
Ticketing	6,224		1,693
ATO	16,770		
Holdrooms	73,860	10,600	38,400
Baggage Makeup	83,514		22,715
Baggage Claim	75,090		22,527
Baggage Offices	6,015		1,805
Concessions	41,228		15,783
General Circulation	159,339		33,193
Ticketing Lobby/Screening	60,071		16,339
Toilets	23,938		7,181
Support/Mechanical	74,964		21,228
Airport Administration	68,451		18,619
Unassigned	11,365		-
Total Space	**766,209**	**10,600**	**204,912**

Note: 2020 number represent total deficit versus Phase 1 midfield.
Source: Spillis Candella DMJM 5-22-02; Birk Hillman Consultants analysis 2002

Finally, the existing terminal is already capacity constrained. This will likely worsen considerably by the time the new terminal is opened in 2005. To minimize these problems until the midfield terminal complex is completed, both operational and facility modifications will be required. This includes possible modification of airline agreements, reallocation of resources, and use of temporary measures for accommodating activities during peak periods. In addition, a communications link between the existing terminal and the midfield terminal will be required to coordinate operations during the transition of operations.

5.5.2 Parking Requirements

Current Conditions

As previously outlined in the Inventory Chapter, the current number of available automobile parking spaces at Southwest Florida International Airport (RSW) is 4,905 spaces (including those

currently under construction) and is shown below in **Table 5-14**. Short-term and long-term parking consists of 2,356 spaces, economy parking includes 1,935 spaces and employee parking consists of 614 spaces. Rental cars currently have their own lots (separate from the terminal parking area) in which automobiles are stored and are accessed by passengers via shuttle buses from the terminal area.

TABLE 5-14
EXISTING AUTOMOBILE PARKING

Facility	Total Spaces
Short-term parking	735
Long-term parking	1,621
Economy parking	1,935
Employee parking	614
Rental car parking	-
Total	**4,905**

Source: LCPA

Midfield Terminal Complex Parking

The construction of the new Midfield Terminal Complex will make available a significant amount of additional auto parking spaces to the traveling public. The Midfield Terminal Complex is scheduled to be operational during the second quarter of 2005. It is anticipated that a total of 14,399 parking spaces will be incorporated into the construction of the new terminal as illustrated in **Table 5-15**. The Midfield Terminal design includes both structural and surface auto parking. The parking garage will be conveniently located to the new terminal building and will consist of three levels. The structure has also been designed to be able to accommodate two additional levels for future expansion. The first level of the garage will be dedicated to rental car operations and will contain 1,500 spaces. The second and third levels of the garage will contain 2,519 spaces (1,330 on level two and 1,189 on level three) and will be used for hourly parking. It is anticipated that the rental car operators will continue to utilize the off-site location currently in use for additional rental car overflow storage. This overflow storage demand can be substantial. For example, during 2000, the peak season rental car fleet at RSW totaled 17,400 vehicles. The ground level access for the rental car area will be via the terminal access road. The hourly parking will also access the garage via the terminal access road but will be isolated from the rental cars.

TABLE 5-15 MIDFIELD TERMINAL PARKING*	
Car Rental Ready/Return	1,500
Short-term	2,519
Long-term	8,942
Employee	1,288
Taxi	85
Limousine	45
Toll Booth	20
Total	**14,399**
***The Midfield Terminal is scheduled to open the second quarter of 2005	

Source: LCPA

Access to the 8,942 space surface daily parking lot will be via the terminal area access roadway and also from the recirculation roadway. The 1,288-space employee parking lot will be outside the terminal access loop road and west of the daily lot. The 130-space limousine and taxi parking lot is also outside the terminal access loop road and south of the daily lot. The 20-space tollbooth employee parking is located adjacent to the toll facilities. Because of the walking distances to the new terminal building, users of the surface daily lot and employee parking will utilize a shuttle bus system.

Projected Parking Demand

Hourly and Daily Demand

Auto parking requirements for the Midfield Terminal provide 2.5 auto parking spaces per 1,000 annual enplanements for the traveling public. This ratio does not include spaces for rental cars, employees or other ancillary uses. A design criteria of 4.5 million enplanements was utilized resulting in a requirement of 11,250 spaces for hourly and daily parking demand. For the purposes of this analysis, the same ratio was utilized for the Master Plan and applied against the approved enplanement forecasts for RSW. This analysis, completed for 2005, 2010, and 2020 is shown in **Table 5-16** and results in a total of 14,068 hourly and daily auto parking spaces required by the year 2020. The auto parking spaces are further delineated into hourly and daily requirements. Percentage splits of 17 percent hourly and 83 percent daily were used for both the Midfield Terminal Project and for the 20-year planning horizon. It is recommended that an additional 443 spaces for daily use and 2,164 spaces for hourly use be constructed by 2020.

Consideration should be given for 200 spaces adjacent to the terminal on the lower level to accommodate an hourly lot for “meeters and greeters” of arriving flights. This lot should be strictly policed to ensure short occupancy times for quick turnover. If this lot is constructed, the spaces constructed should be subtracted from the hourly lot demand.

Rental Car Demand

The initial construction of the Midfield Terminal will provide 1,500 rental car ready return spaces. It is estimated that the initial allocation will be adequate through 2010, but

an additional 1,500 spaces are anticipated by 2020. These estimates should be further refined by discussions with the rental car companies to better estimate actual demand.

Employee Lot Demand

The employee parking lot was sized to accommodate shift changes, which at times overwhelms the existing employee parking lot. It is anticipated that expansion of this lot will be necessary in conjunction with future enplanement growth, which will require additional employees. An additional 400 spaces are recommended for 2020.

Taxi and Limousine Parking Demand

The limousine and taxi parking lot will also require expansion to accommodate additional passengers. An additional 50 spaces are recommended by 2020.

Summary

Table 5-16, summarizes the current capacity and future demand of automobile parking at RSW. As depicted in the table, the current parking spaces available will be able to surpass those demanded through 2005. It is recommended that 719 spaces be constructed for 2010 and 4,557 spaces be constructed by 2020.

TABLE 5-16 FUTURE PARKING REQUIREMENTS			
Year	**2005**	**2010**	**2020**
Annual Enplanements	**3,294,000**	**3,978,800**	**5,627,100**
Passenger Parking Requirements	**8,235**	**9,947**	**14,068**
Hourly (17%)	1,340	1,691	2,392
Daily (83%)	6,895	8,256	11,676
Existing Space	**11,461**	**11,461**	**11,461**
Hourly (17%)	2,519	2,519	2,519
Daily (83%)	8,942	8,942	8,942
Surplus/Deficiency	**3,226**	**1,514**	**(2,607)**
Hourly (17%)	548	257	(443)
Daily (83%)	2,678	1,257	(2,164)
Rental Car Requirements	**1,500**	**2,250**	**3,000**
Existing Spaces	1,500	1,500	1,500
Surplus Deficiency	0	(750)	(1,500)
Employee Parking Requirements	**1,288**	**1,288**	**1,688**
Existing Spaces	1,288	1,288	1,288
Surplus Deficiency	0	0	(400)
Taxi and Limo Parking Requirements	**130**	**130**	**180**
Existing Spaces	130	130	180
Surplus Deficiency	0	0	(50)
Toll Booth Employee Requirements	**20**	**20**	**20**
Existing Spaces	20	20	20
Surplus Deficiency	0	0	0
TOTAL SPACES REQUIRED	**11,173**	**13,635**	**18,956**
TOTAL EXISTING SPACES	**14,399**	**14,399**	**14,399**
TOTAL SURPLUS/DEFFICIENCY	**3,226**	**764**	**(4,557)**

Source: RS&H 2001
**A 200 space meeter and greeter lot is recommended. If this lot is constructed, 200 spaces should be subtracted from the hourly requirements.*

5.5.3 Access Roads

The requirements for airport access roads will be addressed as part of this Master Plan and are incorporated in Section 5.10 of this Chapter, "Airport Access".

5.6 AVIATION SUPPORT FACILITIES

5.6.1 Airport Maintenance

A new 11,000 square foot Vehicle Maintenance Building and a 4,800 square foot covered storage area have recently been constructed west of the original facilities. The original airport maintenance facility, encompassing 1.65 acres and consisting of a 12,000 square foot building, is

expected to remain in operation as a maintenance field shop. It is located north of the runway and in the northwest corner of the Airport. The Airport Maintenance Department, which conducts the airport maintenance, is divided into four (4) groups, airfield, grounds, terminal, and vehicle maintenance. It has not been determined where each department will be located. Regardless, a service road is recommended to connect both the existing and new maintenance facilities without having to use the public roadway. In the event that the operations of the maintenance facilities reach capacity, the new maintenance facility possesses ample space for expansion.

5.6.2 Aircraft Maintenance Facilities

An increase in operations at RSW creates the demand for additional aircraft maintenance. Two (2) new facilities have previously been discussed in the Inventory section of this report; a large aircraft maintenance facility and a general aviation maintenance facility. The proposed large aircraft maintenance facility would support Boeing 747s or equivalent sized aircraft. As Miami International Airport is becoming saturated with large aircraft maintenance facilities, RSW represents a viable alternative location for such operations. RSW is not at a great distance from Miami and has the proper facilities, i.e. runway length and pavement strength, to support aircraft like the Boeing 747. Furthermore, RSW has fewer operations than Miami International Airport and it would thus be able to provide a more efficient maintenance operation without traffic and space constraints. Thus, it is recommended that land be set aside to provide for a large aircraft maintenance complex with a single initial phase hangar expandable to include at least two additional hangars. Provisions will need to be made for a hush-house or engine run-up facility to mitigate the potential noise increase associated with such an operation.

A general aviation maintenance facility for larger GA aircraft including jets would accommodate the increase in larger general aviation aircraft expected to operate at RSW in the future. Currently, the FBO at the Airport utilizes half of a 26,000 square foot hangar for such an operation. The other half of the hangar is used for storage and is limited in size for specific maintenance work. Since a new larger FBO facility is expected to be constructed at the Airport to attract larger general aviation aircraft including jets, a larger or new aircraft maintenance facility will be required. Thus, it is recommended that space be equivalent to that available in the current hangar be used exclusively for aircraft maintenance by 2010 and that space will be set aside to allow for expansion by an additional 10,000 square feet by 2020.

5.6.3 Airport Rescue and Fire-Fighting (ARFF)

According to the FAA, airports that serve any scheduled or unscheduled passenger activities of an air carrier with a passenger seating capacity of more than 30 seats must comply with FAR Part 139. FAR Part 139 outlines the requirements for each ARFF Index at an airport according to the length of aircraft frequently using the Airport. An aircraft frequently using the Airport experiences an average of five (5) daily departures from the Airport. The levels of protection are indicated by the different Indexes shown in **Table 5-17**.

TABLE 5-17 ARFF AIRPORT INDEX	
AIRPORT INDEX	**AIRCRAFT OVERALL LENGTH**
A	<90'
B	90' to <126'
C	126' to <159'
D	159' to <200'
E	200' and >

Source: FAA Far Part 139

As mentioned previously, Southwest Florida International Airport's ARFF activity levels currently require an FAA ARFF Index of D. However, it is anticipated that future activity of increasingly larger aircraft may require the Airport increase to an Index E rating. **Table 5-18** outlines the current airport equipment along with the requirements for both indexes D and E.

TABLE 5-18 ARFF EQUIPMENT REQUIREMENTS				
Designation	**Equipment Type**	**Water (gal.)**	**AFFF 3% (gal.)**	**Halon (lbs.)**
CFR 901	Oshkosh T-1500	1,500	205	500
CFR 903	Oshkosh T-1500	1,500	205	500
CFR 908	Oshkosh T-3000	3,000	405	0
Total		**6,000**	**815**	**1,000**
Index D Requirement		**5,000**	**100**	**500**
Index E Requirement		**6,000**	**100**	**500**

Source: Birk Hillman Consultants Inc., 2001

As outlined in **Table 5-18**, the existing equipment is capable of meeting the equipment requirements for both D and E indexes.

FAR Part 139 requires at least one ARFF vehicle to reach the midpoint of the farthest runway serving air carrier aircraft within three (3) minutes from the time of an alarm, from its assigned post, and that vehicle must be able to begin application of water foam, dry chemical, or halon 1211. Additionally, all other required ARFF vehicles are required to reach the same point within four (4) minutes of the alarm and begin their tasks. The ARFF is properly located for current operations at RSW. However, when the Midfield Terminal Complex and parallel runway alternatives are implemented, difficulty in complying with response requirements set by the FAA will likely require either relocation of the existing facility or development of a supplemental facility. It is recommended that alternatives for both be further explored based on the results of response times, cost of construction and operation, proximity to other facilities, and surveillance of airport operations area. As such, additional equipment may be required depending on the option selected. Regardless, periodic replacement of major equipment should be programmed to ensure the equipment available continues to meet performance requirements.

5.6.4 Fuel Storage Requirements

Planning for the storage of fuel to serve aircraft demand requires consideration of not only future operational demand but also fuel settling requirements, how fuel is transported to the Airport, the reliability of the supply and major changes to the aircraft stage lengths. Typically, fuel storage for 2-3 days provides adequate supply. However, if the fuel is coming from an area located at a significant distance from the fuel storage locations, these storage requirements could be double or more, especially in areas highly susceptible to major weather events or traffic delays. Fuel at RSW is tankered to the Airport by trucks from Tampa. Tampa is located approximately 140 miles from Fort Myers. Therefore, to be safe it is recommended that the fuel and supply at RSW be between 5-7 days and no less than 2-3 days at any time.

It was noted in the inventory that there are two fuel farms located at the Airport, one serving GA, and the other serving the commercial service airlines. The commercial fuel storage and hydrant-fueling facility owned by the Lee County Port Authority consists of three (3) 420,000-gallon Jet-A fuel tanks. Therefore, the current fuel storage capacity is 1,260,000 gallons plus an additional 70,000 gallons in the hydrant piping system. Fuel flowage records show that the average daily flow of Jet-A for the Year 2000 was 114,032 gallons. During the peak month, March of 2000, the recorded fuel flowage was 4,851,493 gallons, resulting in an average daily flowage of 156,500 gallons. In addition, the peak month for the Year 2001 recorded a flowage of 5,635,848 gallons, representing an increase of 784,355 gallons or 1.6 percent. Industry standards depict that a five to seven day storage capacity at the fuel farm at all planning levels would satisfy the appropriate level of service required at the Airport.

Future demand for aircraft fuel is driven primarily by the expected number of aircraft operations. Because no historical fuel sales information was available, an estimate of the approximate gallons of fuel per flight was used. This estimation varied depending on the fuel farm being analyzed. The main commercial operations fuel farm serves considerably larger aircraft that, on average, will be traveling much greater distances than the aircraft being serviced at the FBO. Therefore, the ratio assumed for the commercial operations equals 700 gallons of fuel per peak month jet operation. The ratio used for the GA/FBO analysis equals ten (10) gallons of fuel per each peak month for piston operations and 125 gallon per peak month for jet operations. This value is based on information from other airports with operations similar to that at RSW. To determine the existing supply in days the following formula was used:

Peak Month Demand / 30 (avg. # of days in a month) = Peak Day Demand.
Existing Capacity / Peak Day Demand = Existing Supply (in days)

In order to project the future storage requirements, expected operational demand growth can be applied to existing fuel flowage levels as outlined in **Table 5-19.**

TABLE 5-19 FUEL STORAGE REQUIREMENTS				
Year	**Peak Month Operations**	**Peak Month Demand (gallons)**	**Existing Capacity (gallons)**	**Existing Supply (days)**
Main Commercial Operations Fuel Farm				
2000 (Base Year)	6,133	4,293,100	1,260,000	8.8
2005	7,279	5,095,300	1,260,000	7.4
2010	8,571	5,999,700	1,260,000	6.3
2015	9,955	6,968,500	1,260,000	5.4
2020	11,406	7,984,200	1,260,000	4.7
GA/FBO Fuel Farm (Jet-A)				
2000 (Base Year)	2,285	285,625	60,000	6.3
2005	2,657	332,125	60,000	5.4
2010	3,034	379,250	60,000	4.8
2015	3,467	433,375	60,000	4.2
2020	3,923	490,375	60,000	3.7
GA/FBO Fuel Farm (100LL)				
2000 (Base Year)	2,285	22,850	12,000	15.8
2005	2,657	26,570	12,000	13.5
2010	3,034	30,340	12,000	11.8
2015	3,467	34,670	12,000	10.4
2020	3,923	39,230	12,000	9.2

Source: Birk Hillman Consultants Inc., 2001

As depicted in **Table 5-19** above, planning for the expansion of the fuel farm should commence as operations at the Airport are expected to increase significantly over the planning period. With the implementation of the midfield terminal, consideration should be given to allow for expansion of the current fuel farm, as the fuel will be pumped across the field via a hydrant fueling system to the new terminal. The current location of the fuel farm provides enough space for expansion and should be coordinated as deemed appropriate by the provider.

5.6.5 Air Traffic Control Tower

The current location and height of the air traffic control tower (ATCT) at RSW are sufficient for line of sight requirements for the existing runway. However, the height and location will not be sufficient for operations and safety when the midfield terminal is constructed and a new parallel runway is implemented. As such, the new tower location and height should be built to provide an unrestricted view of all operational aprons of the airfield. Based on FAA Order 6480.4 *Air Traffic Control Tower Siting Criteria*, a minimum visibility angle of 35 degrees relative to the runway grade should be provided to ensure the controller adequate depth perception. To determine approximate cab size, the control tower activity level must be determined. Using the

methodology outlined in FAA Order 6480.7C, *Airport Traffic Control and Terminal Radar Approach Control Facility Design Guidelines*, it can be determined that the new RSW air traffic control tower would need to meet Level 3 tower requirements by 2020. The tower height will be analyzed as part of the alternatives chapter and will be primarily driven by its location and the need to provide a clear line of sight of the entire airport operations area.

5.7 CARGO FACILITY REQUIREMENTS

Air cargo at RSW is processed through two facilities. These facilities are the all-cargo building and the airline/belly-haul cargo facility.

The all-cargo building consists of approximately 24,000 ft^2 of warehouse, located west of the general aviation facility. A 69,000 yd^2 aircraft apron adjacent to the all cargo facility allows for the aircraft to park and load/unload air freight. The apron can accommodate six aircraft simultaneously depending on their size. The facility has direct access to Chamberlin Parkway and has adequate truck dock and automobile parking to satisfy the facility's needs. Three all-cargo carriers currently utilize the apron and building. They include FedEx, UPS and Airborne Express.

The belly haul cargo building consists of approximately 15,500 ft^2 of common use warehouse owned by the Lee County Port Authority and leased to the airlines and others for processing belly haul cargo. This facility is located to the west of the existing passenger terminal building and east of the all-cargo building. This facility has no dedicated aircraft parking apron. Cargo is tugged between the aircraft parked on the passenger terminal ramp and the belly haul facility via the airport perimeter road. The facility is accessible via Regional Lane, which connects directly to Chamberlin Parkway.

The projected growth of the all-cargo activity is expected to differ from the projected growth of the belly-haul cargo activity. Additionally, the space requirements for the two buildings are computed differently. These requirements are detailed in the following sections.

5.7.1 All-Cargo Activity Demand

The 1993 Master Plan indicated that there were only two all-cargo operators at RSW; they included Fed Ex and UPS. Combined, these two cargo carriers shared 40 percent of the overall cargo activity in 1993. Since then, Airborne Express, which operates as an all-cargo carrier, began serving RSW. Air cargo at the Airport has grown 4.4 percent annually over the past five years. Although no exact breakdown was available, it is believed that Airborne Express greatly contributed to the increase in the freight carried in all-cargo aircraft. In the year 2000, cargo carried by all-cargo aircraft contributed to 70 percent of the total cargo enplaned and deplaned at the airport. It is expected that the percentage of all-cargo activity will continue this increasing trend as a percentage of total cargo activity. The projected all-cargo demand is outlined in **Table 5-20**.

TABLE 5-20 ALL-CARGO ACTIVITY				
Year	**Total Cargo (lb)**	**Proportion of All-Cargo/Total Cargo**	**All-Cargo (lb)**	**All-Cargo (Tons)**
2000	34,482,000	70%	24,137,400	12,069
2005	40,297,100	75%	30,222,800	15,111
2010	46,993,300	75%	35,245,000	17,623
2020	61,536,900	80%	49,229,520	24,615

Source: Birk Hillman Consultants, Inc.

Based on the growth of cargo worldwide, the share of cargo carried by all-cargo aircraft at RSW is anticipated to increase to 75 percent by 2005 and then to 80 percent by the year 2020. By the end of the planning period it is projected that 49 million pounds (24,500 tons) of cargo will be transported on all-cargo aircraft.

5.7.2 All-Cargo Building Requirements

Depending on the efficiency of the processing systems utilized by the cargo operators, the building space needed to process one ton of freight per year typically varies between 1 and 2.5 square feet. One square foot per annual ton of freight indicates that a cargo operation is extremely efficient and advanced automation equipment is often used in processing the cargo. This is typical of airports with very high cargo volumes. A ratio closer to two and a half square feet per annual ton is representative of a facility that has little or no automation and processes cargo less efficiently. This is typical of a lower volume operation. RSW is not a hub for any of the all-cargo operators, and the overall cargo volume is relatively low compared to other airports of similar size. (The current ratio of space to freight is roughly 2 ft^2 per annual ton). However, the three cargo operators currently serving RSW have been in business for many years and have well established and efficient air cargo processing standards. Due to the fact that the existing facility has multiple tenants, no standard mechanical handling system, and some off-site processing associated with one of the cargo operators, 1.7 square feet of building space per one annual ton of cargo was used as a reasonable basis for developing future space requirements. It is anticipated that this ratio will drop as volume increases. **Table 5-21** outlines the space requirements for the all-cargo building and anticipated surplus or deficit for each of the planning periods.

TABLE 5-21 SPACE REQUIREMENTS FOR THE ALL-CARGO ACTIVITY					
Year	**Space Required/Annual Ton of Cargo (Ft2/Ton)**	**Annual Volume Of Cargo (Tons)**	**Space Required (Square Feet)**	**Existing Space (Square Feet)**	**Surplus/ Deficiency (Square Feet)**
2000	1.7	12,069	20,520	24,000	3,480
2005	1.7	15,111	25,689	24,000	(1,689)
2010	1.6	17,623	28,200	24,000	(4,200)
2020	1.5	24,615	36,925	24,000	(12,925)

Source: Birk Hillman Consultants, Inc. 2001

The space required per annual ton of cargo is anticipated to decrease slightly through the planning period due to improved efficiencies inherent with increased volumes of activity. Based on the continued use of the existing facility, a deficiency of 1,689 ft^2 is projected in the year 2005. This is expected to increase to 12,925 ft^2 by 2020.

5.7.3 All-Cargo Apron Requirements

The existing air cargo apron can accommodate up to six aircraft simultaneously with a balanced mix of narrow body aircraft (757 or smaller) and wide body aircraft (767 or smaller). In the year 2000, the Airport typically experienced one DC-9, one 727, and one 757 on the ramp simultaneously. It is anticipated that as the total cargo volume grows at the airport the aircraft size is likely to increase and/or the frequency of flights will have to increase to meet the demand. The forecasts for cargo operations during the peak month average day, project five to six aircraft by the end of the planning period. Even if all six aircraft arrived simultaneously, they could all be accommodated on the existing cargo apron, assuming the fleet mix of all-cargo aircraft serving RSW does not change dramatically. Although the projections do not warrant additional aircraft parking apron through the planning period, the alternatives chapter of this report will identify options for additional apron area if cargo grows beyond the total volume projections for the twenty-year time frame. Additionally, based on the condition of the cargo pavement, rehabilitation should be programmed in the short-term planning period.

5.7.4 Belly-Haul Cargo Demand

Belly-haul cargo remains an important profit generator for commercial airlines and is carried by a majority of the major passenger airlines to supplement passenger revenues. In the year 2000, belly haul cargo accounted for 10.0 million pounds of the 31.7 million pounds of total cargo processed through RSW. This equates to an approximate 30 percent share with all-cargo tonnage expected to increase throughout the planning period. It is estimated that the share of belly-haul cargo activity versus overall air cargo will decrease to 25 percent by 2005 and 20 percent by 2020. **Table 5-22** details the share of belly-haul cargo carried by aircraft passengers throughout the planning period.

TABLE 5-22
BELLY-HAUL CARGO ACTIVITY

Year	Total Cargo (lb)	Proportion of Belly-Haul Cargo/Total Cargo	Belly-Haul Cargo (lb)	Belly-Haul Cargo (Tons)
2000	34,482,000	30%	10,009,400	5,005
2005	40,297,100	25%	10,074,300	5,037
2010	46,993,300	25%	11,748,300	5,874
2020	61,536,900	20%	12,307,380	6,154

Source: Birk Hillman Consultants, Inc.

By the end of the planning period it is projected that 12.3 million pounds of cargo will be transported on commercial aircraft compared to 10 million pounds in the Year 2000

5.7.5 Belly-Haul Cargo Facility Requirements

The current ratio of belly-haul cargo space to annual ton of cargo is 3.1. This indicates that the existing facility is either not fully utilized or its configuration/allocation of space is inefficient. The utilization ratio of the existing building was reviewed along with a recent survey conducted to identify the space required for a relocated facility adjacent to the midfield terminal complex. The DMJM Aviation belly-cargo survey, conducted in July 2000, asked the airlines involved with belly-haul cargo activity at RSW how much they would need in the new freight forwarding facility. The results of the survey are presented in **Table 5-23**.

TABLE 5-23
2005 BELLY-CARGO SURVEY

Airline	Cargo Space Required		Space Requirements (ft^2)		
	Yes	*No*	*Warehouse*	*Office*	*Total SF*
Continental Airlines		No①			
Delta Airlines	Yes		5,000	1,000	6,000
Northwest Airlines	Yes		1,200	300	1,500
TWA②		No①			
United Airlines	Yes		1,200	300	1,500
US Airways	Yes		1,200	300	1,500
AMR		No			
Totals			**8,600**	**1,900**	**10,500**

Source: DMJM Aviation
① As of the Year 2001, Continental Airlines and TWA still operate their cargo facilities at RSW. However, their cargo services are slated to be discontinued during the short-term planning period.
② This survey was conducted before American Airlines acquired TWA. However, since no additional information was provided, it was assumed that nothing had changed.

Although the cargo survey outlines 10,500 ft^2 in identified space needs, a new midfield facility is planned for 15,000 ft^2 to provide for flexibility in accommodating tenants and potential air service expansion. A 15,000 ft facility would provide a space to process a ratio of 2.6 ft^2 per annual ton in 2010 and 2.4 ft^2 per annual ton in 2020. As such, it is anticipated no expansion will likely be required to this facility through the end of the planning period. However, for long term planning purposes, it is recommended that land be set aside to provide for at least a 50 percent expansion of the pending belly-haul facility.

5.8 GENERAL AVIATION FACILITY REQUIREMENTS

The existing general aviation (GA) facility is located west of the existing passenger terminal and includes a general aviation terminal building, aircraft parking apron and a single multi-use hangar. The terminal is a two-story building with approximately 8,000 square feet of space, the aircraft parking apron is approximately 39,000 square yards and the multi-use hangar totals approximately 26,200 square feet. Construction has begun on a second GA facility located west of the existing GA facility. The new facility will include a new general aviation terminal building with approximately 51,500 square feet of space, and approximately 23,000 square yards of new aircraft apron. This new facility has the potential to expand in the future with an additional

39,950 square feet of building and another 17,940 square yards of aircraft parking apron. Private Sky is the new tenant and currently the only general aviation operator at RSW. They plan to use the existing apron and hangar facilities but plans for the reuse of the old GA terminal building were not known at the time of this analysis.

For planning purposes and determining the future requirements for general aviation aircraft, based and itinerant aircraft were analyzed separately since they serve different traffic segments and have different space requirements. The projected demand, hangar and apron parking requirements for each are detailed in the following sections.

5.8.1 Based Aircraft Demand

The number of based aircraft varied from 1 to 8 between 1995 and 2000. This number is expected to grow to 28 based aircraft by 2020, as projected in the Forecast Chapter. In order to determine the future requirements for based aircraft, the split of single-engine, multi-engine and jet aircraft was estimated. In doing so, the same percentages splits used in projecting the general aviation operations were applied. The results are outlined in **Table 5-24**.

TABLE 5-24
TYPES OF BASED AIRCRAFT

Year	Single-Engine Aircraft	Multi-Engine Aircraft	Jets	Total Number
2000	1	5	2	**8**
2005	1	8	4	**13**
2010	2	10	6	**18**
2020	3	16	9	**28**

Source: Birk Hillman Consultants, Inc. 2001.
Ricondo and Associates, Inc 2001.

It is worth noting that the calculations were rounded up in order to favor larger aircraft, especially jets, since the apron and hangar requirements for jet aircraft are slightly larger.

5.8.2 Based Aircraft Hangar Requirements

Southwest Florida is known for intense sunlight, heavy rains, occasional hail and strong winds, especially during the summer months. As such, aircraft owners often desire to store their aircraft in hangars year around, if possible. The Lee County Port Authority is currently experiencing a demand for hangars at Page Field General Aviation Airport that far exceeds capacity. While Page Field currently provides hangars for 30 percent of its based aircraft, it is expected to increase to 60 percent by 2020. This is in line with levels already provided by other airports in the region. It is expected that storage requirements will be similar at RSW, particularly in light of the number of high end turbo prop and GA jet aircraft either currently utilizing or projected to utilize the facility. **Table 5-25** outlines the anticipated based aircraft demand throughout the planning period.

TABLE 5-25 BASED AIRCRAFT: PERCENT OF HANGARED AIRCRAFT			
Year	**Total Number of Based Aircraft**	**Hangared Based Aircraft/ Total Based Aircraft**	**Hangared Aircraft Demand**
2000	8	40%	3
2005	13	40 %	5
2010	18	50 %	9
2020	28	60 %	17

Source: Birk Hillman Consultants, Inc. 2001.

In the year 2000, roughly 40 percent of the aircraft based at RSW were stored in the 26,000 square foot hangar located east of the existing GA terminal. The 26,000 square foot hangar has the capability to store six to seven aircraft simultaneously depending upon their size. It should be noted that Private Sky has started to provide maintenance services in the existing hangar. As such, the hangar is now used for both maintenance and storage of general aviation aircraft with half of the hangar space set aside for each.

In order to relate aircraft hangar demand into the hangar space required, the demand must be split into aircraft types. In reviewing, the projected based aircraft fleet at RSW, it is likely that a large number of jets based at RSW will choose to be stored in hangar facilities. The expense of these aircraft coupled with the extreme cost of repairs and maintenance tends to support this assumption. The remaining hangar space is anticipated to be occupied by multi-engine and single-engine aircraft. Based on the projection of larger corporate jets and multi engine aircraft based at RSW and the assumption that the majority of these will be stored in hangars, an average of 3,000 square feet per hangared aircraft was used to determine hangar space. The projected mix of aircraft and hangar storage requirements are included in **Table 5-26**.

TABLE 5-26 BASED AIRCRAFT: HANGAR REQUIREMENTS					
Year	**Single-Engine Aircraft**	**Multi-Engine Aircraft**	**Jets**	**Total Number of Hangared Positions**	**Hangar Space Required (S.F)**
2000	0	2	1	3	9,000
2005	0	2	3	5	15,000
2010	1	3	5	9	27,000
2020	1	8	8	17	51,000

Source: Birk Hillman Consultants, Inc. 2001

Since the number of hangared positions and the type of activity do not justify the construction of T-hangars but favor bulk hangars and/or multi-use hangars, it is recommended that the requirements for based and itinerant aircraft be combined for accommodation in the same hangars.

5.8.3 Based Aircraft Parking Apron Requirements

Based on the anticipated number and fleet of aircraft to be hangared, the number of aircraft remaining on the apron and the associated area required can be estimated. The analysis outlined

in **Table 5-27** assumes that single-engine and multi-engine aircraft each need about 800 square yards per parking position and that jet aircraft will need approximately 1,200 square yards.

TABLE 5-27
BASED AIRCRAFT: FLEET MIX OF NON-HANGARED

Year	Single-Engine Aircraft	Multi-Engine Aircraft	Jets	Total Number of Non-Hangared Positions	Total Based Aircraft Apron Area (Square Yards)
2000	1	3	1	5	4,400
2005	1	6	1	8	6,800
2010	1	7	1	9	7,600
2020	2	8	1	11	9,200

Source: Birk Hillman Consultants, Inc. 2001

5.8.4 Itinerant Aircraft Demand

Itinerant general aviation demand is often difficult to project. This is particularly true relative to the number of aircraft that will be parked on the apron at the same time. The FAA provides guidelines in Advisory Circular AC150/5300-13, Annex 5, Change 6, "Small Airport Buildings, Airplane Parking, and Tie-Downs" to calculate the number of itinerant aircraft utilizing the apron simultaneously. The steps to determine the itinerant parking demands at RSW followed the guidelines in the advisory circular and are outlined as follows:

1. Consider the total annual operations (as forecasted)
2. Consider the total operations of the peak month (11.4% of the year from forecasts)
3. Consider the operations of an average day of the peak month (divide by 31)
4. Assume the busy day is 10 percent more than the average day
5. Divide by two to obtain the total number of aircraft per day
6. Assume that 60 percent of the transient aircraft will be on the apron at the same time.

The results of the above calculations are presented in **Table 5-28** and are estimated for the busy day of the peak month for the years 2005, 2010 and 2020.

TABLE 5-28
PEAK ITINERANT AIRCRAFT DEMAND

Year	Annual Operations	Peak Month Operations	Average Day Operations	Busy Day Operations	Busy Day Aircraft	Aircraft at the FBO, at the same time
2000	16,816	1,917	62	68	34	**21**
2005	19,237	2,193	71	78	39	**24**
2010	21,803	2,404	78	86	43	**26**
2020	27,520	3,137	101	111	56	**34**

Sources: Ricondo & Associates, Inc.
Birk Hillman Consultants, Inc. 2001

5.8.5 Itinerant Hangar Requirements

Providing adequate hangar facilities for itinerant aircraft requires consideration of a number of factors. Some itinerant aircraft will only stay a couple of hours while others may stay for a couple of days to over a week. GA jets and high end turboprop aircraft are typically primary itinerants that want single or multiple overnight temporary storage. The percentage of itinerant aircraft owners willing to hangar their aircraft is projected to increase throughout the planning period due to some of the same reasons mentioned for the hangaring of the based aircraft. Since no information was available from the former FBO operator regarding the number of itinerant aircraft desiring hangars, estimates were used to project the numbered hangar spaces required. In the year 2000, it was estimated that ten percent of the aircraft at the FBO at the same time would want hangar facilities to store their aircraft. By 2020, it was projected that twenty percent of the itinerant aircraft would desire aircraft storage. **Table 5-29** depicts the projected number of itinerant aircraft demanding hangars and the associated area requirement

Table 5-29
ITINERANT AIRCRAFT IN HANGARS

Year	Total Number of Aircraft at the FBO	% of Aircraft in Hangars	Number of Aircraft in Hangars	Hangar Space Required (Ft^2)
2000	21	10%	2	7,000
2005	24	10%	3	10,500
2010	26	15%	4	14,000
2020	34	20%	7	24,500

Source: Birk Hillman Consultants, Inc. 2001

In order to provide maximum flexibility in the storage of aircraft, it was assumed that the majority of aircraft to be hangared would be the larger aircraft, such as the medium to larger size general aviation jets and multi engine aircraft. Utilizing the larger jets as the criteria for determining hangar space requirements would leave ample space to provide for the smaller jets and multi-engine turbo prop aircraft in hangars as well. To estimate the demand for itinerant aircraft hangar space 3,500 square feet per itinerant aircraft was used. This is 500 square feet larger than what was used to project based aircraft hangar requirements due to the necessity for accommodating the larger itinerant aircraft and also to provide additional flexibility in the movement of aircraft into and out of the hangars.

5.8.6 Itinerant Apron Requirements

For planning purposes apron parking requirements for itinerant aircraft tend to be larger than those for based aircraft. An average of 1,500 square yards per peak itinerant aircraft was used to determine the future apron requirements for itinerant aircraft. This figure takes into account the required wingtip clearances and taxilane/maneuvering area in front of the tie-down position. The total apron required to provide for itinerant aircraft is outlined in **Table 5-30.**

TABLE 5-30 APRON AREA FOR ITINERANT AIRCRAFT		
Year	**Number of Parking Positions**	**Area Needed (Sq. Yards)**
2000	19	28,500
2005	21	31,500
2010	22	33,000
2020	27	40,500

Source: Birk Hillman Consultants, Inc. 2001

5.8.7 Total GA Hangar and Apron Requirements

The goal of the two previous sections was to determine how much hangar and apron area will be required to accommodate the growth of each segment of projected general aviation activity. This section outlines the combined requirements for both based and itinerant aircraft and compares this to current conditions.

Table 5-31 provides a summary of the combined hangar requirements for based and itinerant aircraft as well as the projected deficiency or surplus for the development period.

TABLE 5-31 SUMMARY OF GA HANGAR REQUIREMENTS								
Year	**Based Aircraft**		**Itinerant Aircraft**		**Total Required**		**Existing Hangar Space**	**Hangar Space Deficient/Surplus**
	# of Aircraft	***Square Feet***	***# of Aircraft***	***Square Feet***	***# of Aircraft***	***Square Feet***	***Square Feet****	***Square Feet***
2000	3	9,000	2	7,000	5	16,000	13,000	(3,000)
2005	5	15,000	3	10,500	8	25,500	6,500	(12,500)
2010	9	27,000	4	14,000	13	41,000	0	(41,000)
2020	17	51,000	7	24,500	24	75,500	0	(75,500)

Source: Birk Hillman Consultants, Inc. 2001

* *Existing available hangar space is decreased due to increasing aircraft maintenance demand.*

The above analysis assumes that the existing 26,000 square-foot facility hangar would transition to aircraft maintenance exclusively by 2010. Based on this assumption, it is estimated that a 3,000-square foot deficiency in hangar storage space currently exists. This shortfall is projected to increase to 75,500 square feet by the year 2020. Thus, it is recommended that space be set aside to accommodate an additional 75,500 square feet of bulk or multi-use aircraft hangars in support of GA activity.

In determining the total GA apron area deficiency or surplus, the new apron project (approximately 23,000 square yards) associated with the new general aviation terminal facility was included in the existing apron figure. **Table 5-32** outlines the GA apron requirements.

TABLE 5-32 TOTAL GA APRON AREA REQUIREMENTS (Square Yards)					
Year	**Based Aircraft**	**Itinerant Aircraft**	**Total**	**Existing**	**Deficient/Surplus**
2000	4,400	28,500	32,900	48,650	15,750
2005	6,800	31,500	38,300	48,650	10,350
2010	7,600	33,000	40,600	48,650	8,050
2020	9,200	40,500	49,700	48,650	(1,050)

Source: Birk Hillman Consultants, Inc.

With the new 23,000 square yard apron project, projected demand for both based and itinerant aircraft parking positions are met through the 2010 planning period. By 2020, a 1,050-square yard projected shortfall of parking apron is anticipated. However, it is important to note that if the indicated hangar shortfalls are not provided for, the apron parking requirements will increase considerably.

5.9 NON-AVIATION SUPPORT FACILITIES

5.9.1 Multi-modal Facilities

A "multi-modal" facility is a facility(s) that provides an interface between multiple transportation types. These types may include air, roadways, rail, or sea and may be oriented to either the movement of freight, passengers, or both. As airports typically are provided with good surface access and provide air access by function, they also may offer a cost effective and efficient location for consolidation of other transportation facilities. In reviewing the potential need to provide for multi-modal facilities at RSW, a number of observations were made. However, as multi-modal access is a very complex issue requiring detailed analyses of numerous regional factors, it is recommended that a detailed multi-modal study be undertaken to confirm the need for and ultimate approach to multi-modal provisions.

Freight

Trucks are the dominant mode of transportation for businesses shipping goods into and out of the Southwest Florida region. As depicted in a business transportation survey conducted in the 2000 "Transportation Cornerstone, Southwest Florida" report by the Florida Chamber Foundation, trucking in southwest Florida, on average, accounted for about 88 percent of the total shipments. Rail, air, and ship all require the use of trucking in one stage of the trip. Due to the limited rail availability in the region, the use of trucks for transporting goods remains the key mode for Southwest Florida transportation logistics. As RSW forecasts indicate an increase in cargo operations and overall economic growth in the region, the potential need for freight warehousing, surface freight terminals, and other such consolidation facilities at the Airport should be considered.

The Seminole Gulf Rail provides the primary heavy rail freight service to the region connecting Vanderbilt Beach to the south with Arcadia to the north. The connection to CSX Rail Line in Arcadia provides access to the national rail system.

As noted in the before mentioned transportation survey, 25 percent of the businesses surveyed viewed rail as "highly important" or "essential" to their operations. However, a definite improvement in rail transportation was also envisaged as only 12 percent of the businesses that completed the survey rated the rail transportation mode as "adequate" or "very adequate". The Florida Chamber Foundation report also noted that the lack of inter-modal access to the Southwest Florida area prevents the businesses from more easily transporting their goods by rail and contributes to a greater dependence on trucks. This dependence on trucks is also responsible for the traffic congestion experienced on the major arterial roads in the area such as I-75 and U.S. 41. This is especially evident in the RSW area and at the Daniels Parkway I-75 interchange. With the potential for light industrial development on the airport and the airport's status as a Foreign Trade Zone, it appears that some type of heavy rail access should be considered between the airport and the Seminole Gulf Rail Line.

It has been noted that an easement did exist along the north side of Alico Road which provided a right of way for the Seminole Gulf Rail Company. Based on discussions with the local planning agencies the easement has been abandoned and no longer exists. Although rail is not a predominant mode of transporting passenger or freight in Southwest Florida, a link to the airport should be considered as part of an ultimate development plan. It is recommended that land be reserved for a passenger and freight multimodal link at the airport.

Passengers

Passenger transportation requires consideration of a range of other potential facilities. Options for rail can include heavy rail (AMTRAK), highspeed rail and light rail. Bus service includes local, long distance and prearranged charter. Surface transportation can include car pool or commuter facilities.

Southwest Florida currently has no direct regional passenger rail service of any kind. While Amtrak has a station in Fort Myers, all passengers are currently bused in from either Tampa or Orlando. It is unclear what demand levels would be required to justify extension of heavy rail passenger service to Fort Myers or whether in fact, the existing lines have the capacity to support such activity. While highspeed rail is being considered between major metropolitan areas in Florida, extension of this system to Fort Myers is not even in the preliminary planning stages. Additionally, given the existing and projected population base, such a system would not likely be considered economically feasible until well beyond the planning period. Again, given the regional population base and density, light rail will also not likely be feasible until well beyond the planning period.

Automobiles and buses appear to be the likely modes of passenger transport for the region for the forseeable future. The proximity of the Airport to I-75 would likeley result in good point-to-point bus service, but its distance from the major metropolitan areas would not likely make it a good location for a regional bus terminal.

5.9.2 Hotel

In considering potential sources of revenue enhancement for RSW, provision for development of an on airport hotel should be considered. While business oriented airport hotels are often located

within the terminal area of an airport, the profile of activity at RSW requires consideration of a site outside the terminal area that would benefit from use by both airport users and I-75 automobile traffic. Such a site would provide the greatest potential return to a hotel operator and provide the greatest potential for a successful operation. The size of the site should be adequate to support a 300 room hotel with ample space for meeting rooms.

5.9.3 Commercial/Industrial Areas

The expansion of commercial/industrial facilities and land use areas at RSW are important to the overall development of the Airport and its financial stability. The leasing of land for such facilities would provide the Airport with additional funds needed for continuous airport improvements. The demand for a suitable industrial area in close proximity of the Airport comes from the fact that the areas surrounding the Airport are growing rapidly in terms of commercial business, which is mostly based on tourism. The Airport is close to the main tourist and other industrial areas of Fort Myers and hence a commercial/industrial complex location at the Airport would provide an excellent distribution point for the continuation of export or import goods. Based on this, land should be identified with the ability to provide for such developments in enhancing the Airport's revenue system. Provisions should also be made to provide for basic infrastructure required to develop the identified sites.

5.9.4 Land Acquisition

Land Acquisition for I-75 Airport Access

The current plan to improve vehicle traffic to and from the Airport is to provide direct access to I-75 between Alico Road and Daniels Parkway. Along with the proposed plan to widen I-75 in 2008, this improvement plan will relieve the traffic congestion currently experienced on I-75. RSW is the only major commercial airport located in Florida without direct access to the Intrastate Highway System. The acquisition of land of approximately 460 +/- acres between Treeline Avenue /Ben Hill Griffin Parkway and I-75 has been identified for acquisition to provide a corridor to I-75. It is recommended that the LCPA pursue this acquisition aggressively due to intense development pressures in this region. The Airport Access section will provide additional discussion on this topic.

Land Acquisition for Area East of the New Parallel Runway

The acquisition of this land has been identified for the purpose of providing the operational safety required for the Runway Protection Zone (RPZ) and approach surface to the new runway. It is recommended this area be acquired to avoid future conflicts regarding the new parallel runway and to allow for the airport to control the lands in the RPZ. The approximate area recommended for acquisition is 139 acres. It is also recommended that land within the "Timber Trails" subdivision be acquired to help eliminate incompatible land uses. Voluntary acquisition of lots within the Timber Trails subdivision (f/k/a Piney Acres) as shown in the land acquisition map is recommended to protect the airport from incompatible land use. This subdivision is located at the east end of Runway 6/24 within the flight path. Due to its close proximity to the airport, the Timber Trails subdivision is included within Zone 3 of the noise zone overlay mapping. It is therefore within a zone that restricts development to no noise sensitive uses and prohibits the construction of single family homes. Since Timber Trails was platted prior to the establishment of the noise zones, the subdivision is vested and single family homes are allowed if certain requirements are met. This determination was made in a memo from the Lee County Attorney's Office in July 1998. One of the requirements was the submittal of an avigation easement prior to

the issuance of a building permit. The purpose of an avigation easement is to provide a legal basis for acknowledging the presence of noise impacts. Since the time of the determination, the Lee County Attorney's Office has removed the avigation easement requirement. Therefore, any protection granted to the Port Authority and/or notification to the property owner through the avigation easement process as been removed. The Port Authority initiated a voluntary land acquisition program within the southern portion of the Timber Trails subdivision as part of the 1992 Master Plan. Of the ninety-four (94) Timber Trails lots within the 1992 proposed acquisition boundary, seventy-seven (77) were purchased and seventeen (17) continue under private ownership. The majority of these lots are vacant land. Given this, it is recommended that the Port Authority complete the acquisition, on a voluntary basis, within the initial boundary.

Land Acquisition for Area West of the New Parallel Runway

Based on the noise contours approximately 88 acres of land south of the airport between the Ben Hill Griffin Parkway extension and Airport Haul road may need to be acquired to avoid potential noise problems. This land acquisition recommendation is due to aircraft noise. A discussion of noise and the effects on adjacent land uses is discussed further in Chapter 7, "Environmental Overview".

5.9.5 Storm Water Requirements

During the original construction of the airport, the storm water management system was permitted through the South Florida Water Management District (SFWMD). Subsequent development at the airport has been handled on airport through a number of detention/retention areas scattered throughout the Airport rather than a consolidated means of handling storm water. It is highly recommended that RSW implement a comprehensive storm water plan for all areas at the Airport to allow the most efficient development approach in consideration of the airport's large areas of wetland and environmentally sensitive land. Such a plan would allow the Lee County Port Authority to more efficiently plan building sites and determine land-use compatibility. All storm water improvements at the airport should strive to comply with the guidelines set forth in FAA Advisory Circular 150/5200-33, "Hazardous Wildlife Attractants on or Near Airports."

5.9.6 Mitigation

The land surrounding the existing airport facilities includes numerous wetlands and environmentally sensitive lands. To provide for major developments such as a new midfield terminal complex, off-site land areas have been purchased to allow for the mitigation of any associated impacts. Chapter 7, the Environmental Overview outlines the mitigation strategy for RSW and the details of mitigation lands required for future development will likely be incorporated in the ongoing Environmental Assessment.

Projects with mitigation implications that are currently programmed include:

- Fill Habitat Areas and Unimproved Ponds (Midfield Program)
- Removal of Unsuccessful Mitigation Area "G"
- Mitigation Management

5.9.7 Rehabilitate All Service Roads

To increase safety and efficiency of service road operations at the Airport, it is recommended that a plan be implemented to rehabilitate all service roads.

5.9.8 Flight Kitchen

Per discussions with the operators of the flight kitchen at RSW, no additional areas are anticipated for catering facilities due to the general trend of a reduction of in-flight meals being served on flights operating at the Airport.

5.9.9 Security Fencing/Access

Since a number of major new airport developments have been planned, the replacement, upgrade and reorientation of security fencing will be required in related areas of the Airport. Additional checkpoints should also be considered as appropriate to provide controlled access to airside facilities.

5.9.10 Landscaping

Landscaping is important to the image and attractiveness of an Airport. This is important not only for the tourist associated areas but also to enhance the facility's overall interface with the community. It is therefore recommended that an ongoing capital program be established with adequate budget for the continual improvement of these areas.

5.10 AIRPORT ACCESS

The Southwest Florida International Airport (RSW) is located ten miles southwest of the City of Fort Myers, Florida as shown in the General Location Map, **Exhibit 5-1**. The Airport opened in 1977 and has undergone significant expansion to meet the air service needs of Southwest Florida. As a part of this continued expansion, a new midfield terminal is currently under construction. Access to the existing terminal area and the new midfield terminal complex will be discussed in this narrative.

5.10.1 Existing Terminal Facility

Access to the Airport Terminal area is currently provided by two roads on Airport property, Chamberlin Parkway (located at the northwest corner of the Airport) and Paul J. Doherty Parkway (located at the northeast corner of the Airport) as shown on **Exhibit 5-2**. They both are four-lane divided roadways, which connect to off-site Daniels Parkway. Daniels Parkway (six lane divided, SR 876) runs in an east-west direction and provides access to Interstate 75 to the west of the airport. Daniels also provides access to I-75 from the communities of Lehigh Acres, Gateway and to the northeast Airport service area.

5.10.2 The New Midfield Terminal Complex

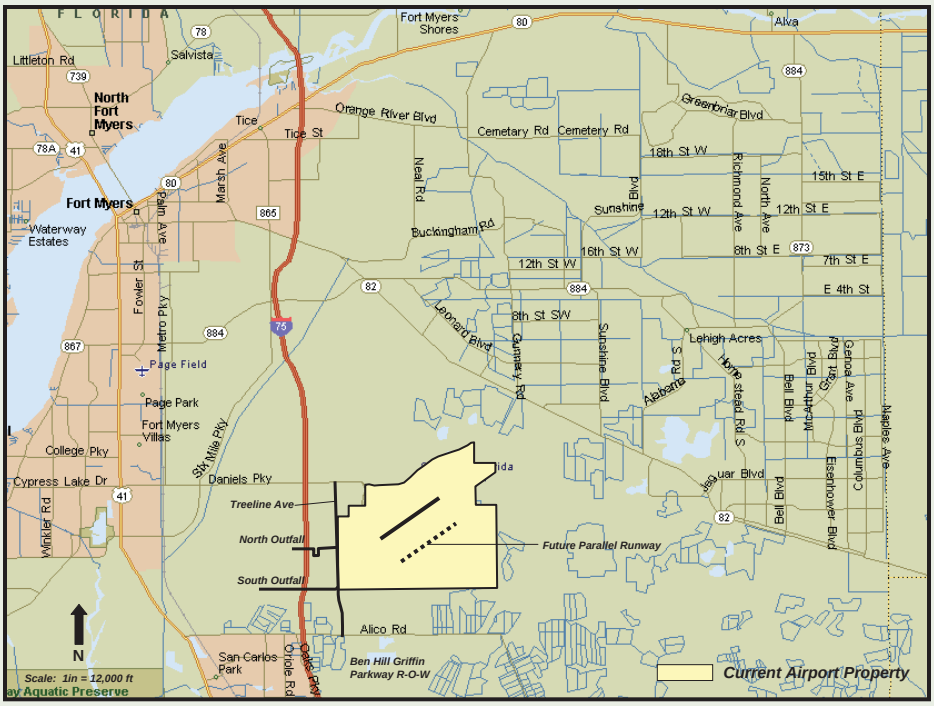
The new midfield terminal complex, is proposed to open during the first quarter of 2005 and will replace the existing passenger terminal facility. With the proposed opening of the Midfield Terminal, several access roadway systems will be constructed to serve the new facility. These new roadways, shown in **Exhibit 5-3**, include the construction of Treeline Avenue (TA) from its current intersection with Daniels Parkway (SR 876) south to the new airport terminal access roadway system. The roadway's name will change to Ben Hill Griffin Parkway (BHGP) (at its intersection with the Airport Passenger Terminal Access Road) and will continue in a southerly direction to its intersection with Alico Road.

Exhibit 5-1

Vicinity Map

LOCATION WITHIN FLORIDA

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT

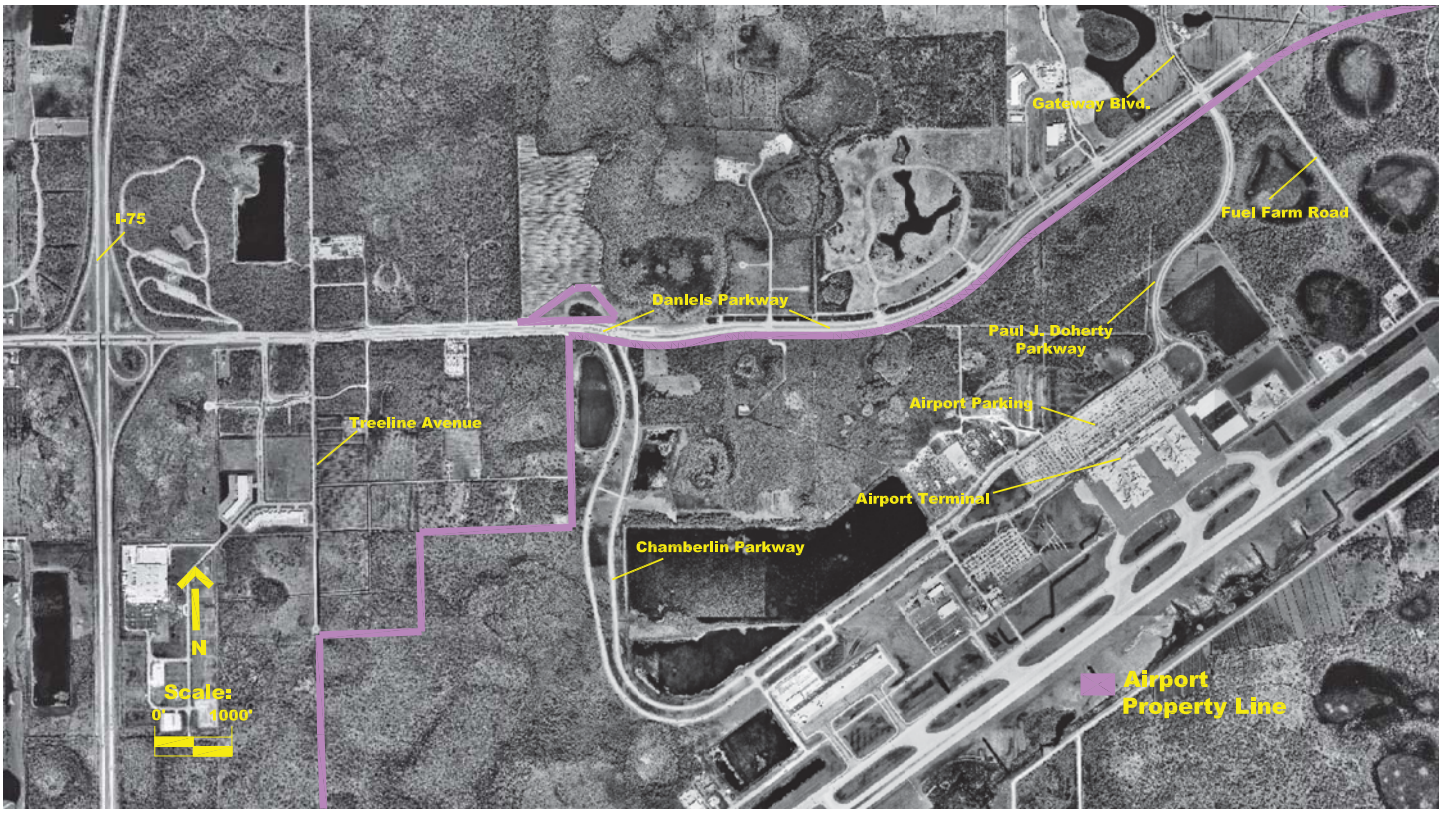


Source: Microsoft Expedia Streets, 2001 and Reynolds, Smith and Hills Analysis, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE VICINITY MAP	**EXHIBIT** 5-1

Exhibit 5-2

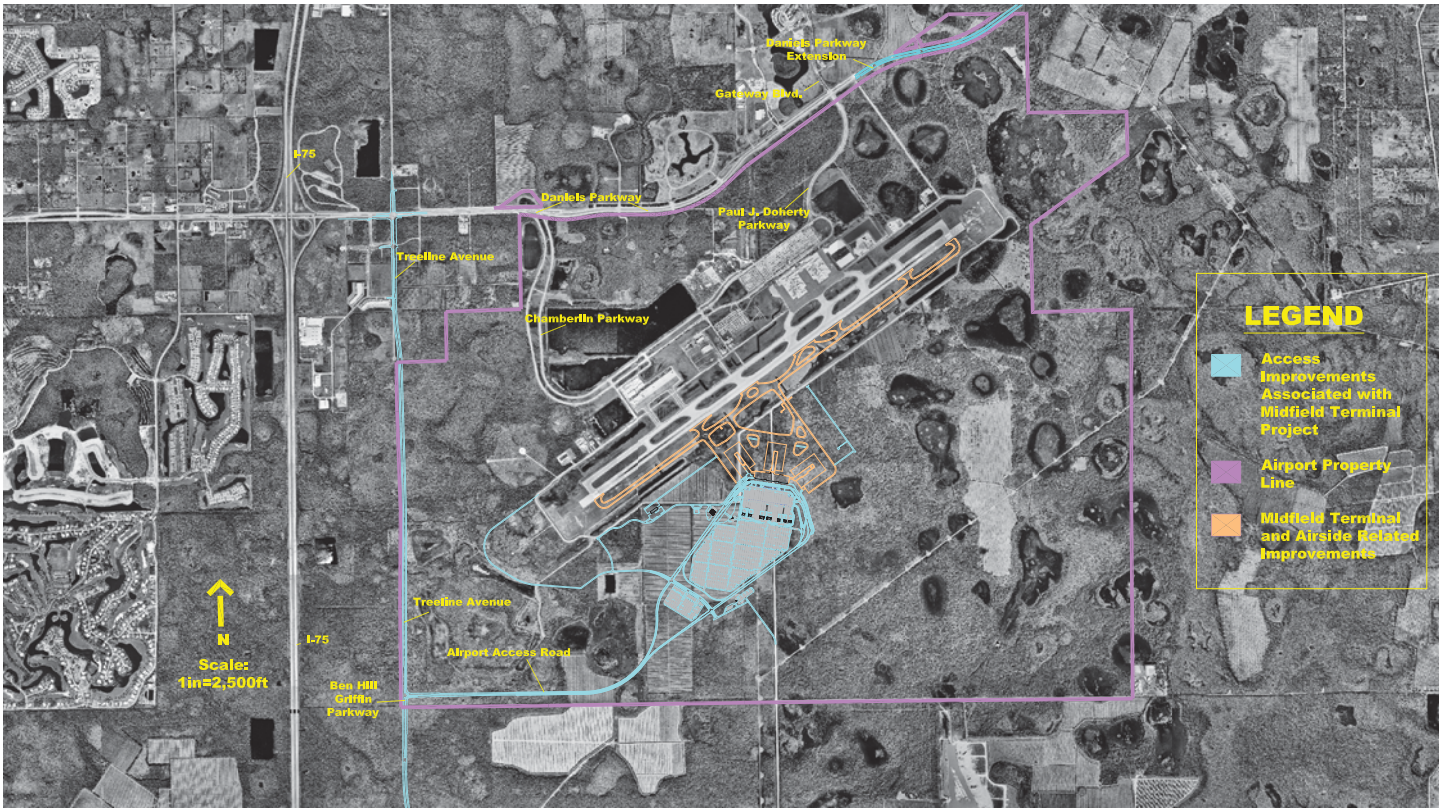
Existing Roadway Access



Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE EXISTING ROADWAY ACCESS	EXHIBIT 5-2

Exhibit 5-3

Midfield Roadway System



Source: Reynolds, Smith and Hills, Inc., 2002

Lee County Port Authority

Birk Hillman
Orlando · Miami · Atlanta

DMJM Aviation

RS&H

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA

MASTER PLAN UPDATE
FUTURE AND EXISTING ROADWAY ACCESS

EXHIBIT
5-3

TA/BHGP will be constructed as a divided four-lane controlled access roadway with future expansion potential to 6 lanes. Access to TA/BHGP has been restricted by the Lee County Board of County Commissioners in order to minimize signalization and disruption of flow along this roadway. The TA and Daniels Parkway intersection will be configured so that there will be three left turn lanes heading toward I-75 to enhance the flow from the Airport to I-75. The intersection at BHGP and Alico Road will provide for two right turn lanes in order to facilitate traffic movement from the Airport to I-75 traveling in a southerly direction. The proposed speed limit along TA/BHGP will be posted at 45 MPH.

Passenger and employee access to the new Midfield Terminal Complex, shown on **Exhibit 5-3** will be via a four-lane divided access roadway system from TA and BHGP. The roadway system loops in front of the passenger terminal providing direct access and parking. The terminal roadway system will be designed to direct departing traffic to the upper level and to direct arriving traffic to the lower level to enhance traffic flow and improve curbside capacity and function. Surface and structural garage parking will also be provided to service the passenger terminal.

5.10.3 Need for Improved Airport Access

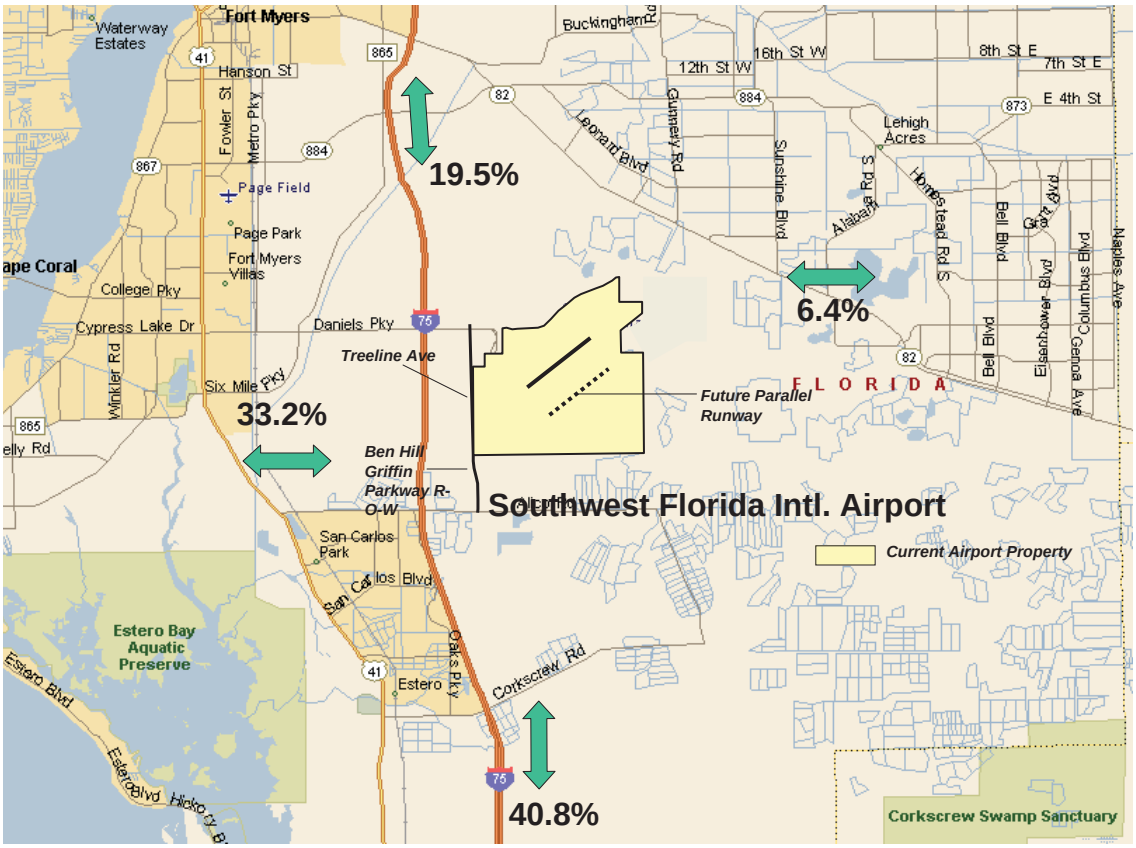
In order to provide for the air transportation needs of the community, the Airport is carrying out several major expansions to the existing airport; a new midfield passenger terminal complex, planned new parallel runway, planned future terminal expansion and associated access roadways. To be able to best provide for these increased access needs, it is necessary to understand the airport service area, current and future passenger volumes and associated access routes. These passenger characteristics were recommended in an origin and destination survey.

In 1998, the Lee County Port Authority conducted an origin and destination survey to determine passenger travel patterns to and from the Airport. The following sketch illustrates the direction of travel to the Airport. It was found that 75% of the passenger traffic was from the south and west of the Airport, and about 25% was coming from the north and east of the facility as shown in **Exhibit 5-4**.

Current and Previous Studies

Roadway access to the Airport has been studied in numerous documents due to the Airport's crucial role in providing access to southwest Florida. This section will provide a brief summary of some of the studies that reference access to the airport.

Exhibit 5-4
Origin and Destination Survey



Source: Lee County Port Authority Origin and Destination Survey, 2002

Lee County Port Authority	Birk Hillman	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE ORIGIN AND DESTINATION SURVEY	EXHIBIT 5-4

Lee County Metropolitan Planning Organization - 2020 Long Range Transportation Plan

Lee County adopted the 2020 Long-Range Plan in December 2000. The purpose of the Lee County (MPO) 2020 Long-Range Transportation Plan (LRTP) is to develop a process and plan to address the future transportation and intermodal needs of the greater metropolitan area. This plan coordinates and guides implementation of transportation capital improvement programs with the Florida Department of Transportation (FDOT) and local and regional agencies. Additionally, the plan is developed to meet the criteria of the Federal Transportation Equity Act of the 21st Century (TEA 21) which requires a fully integrated intermodal transportation system.

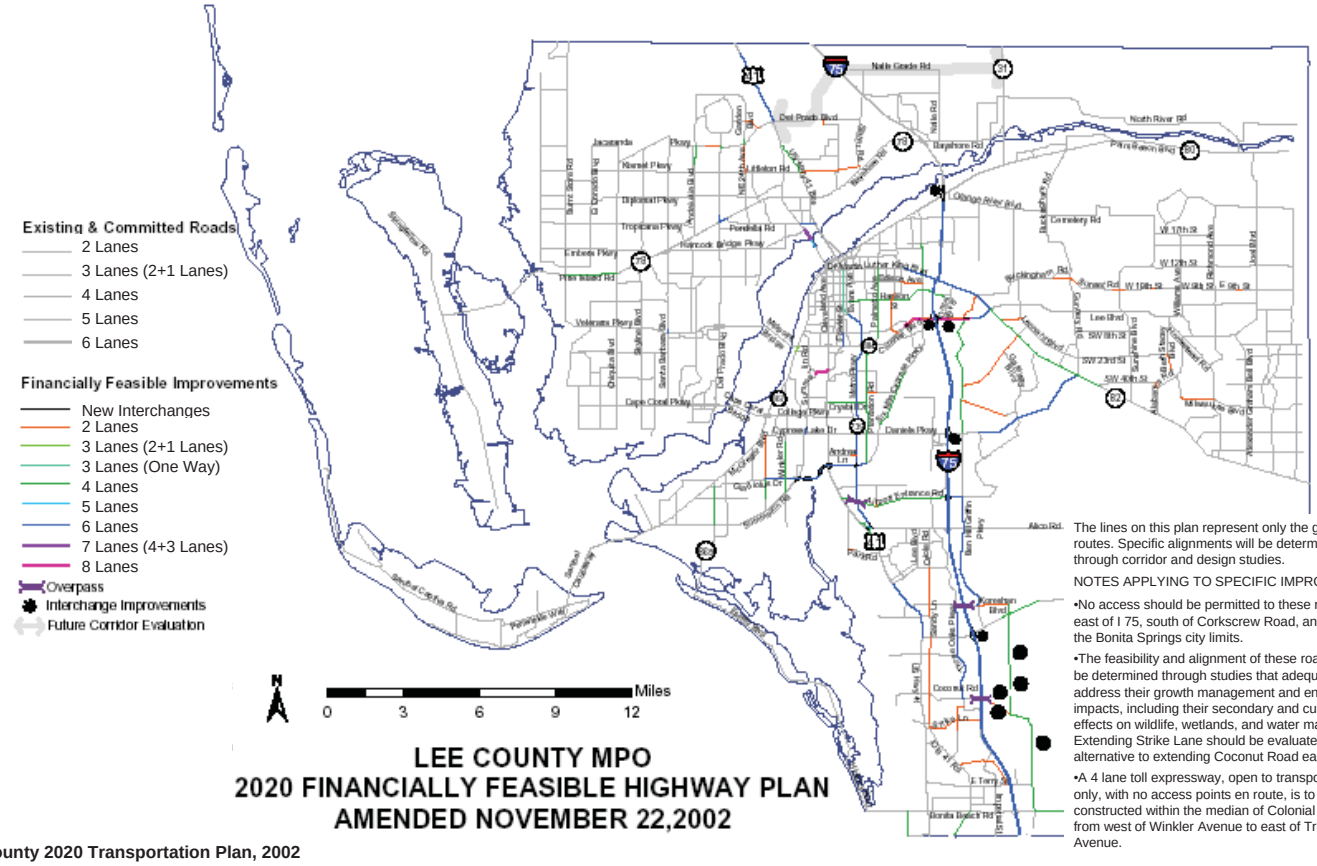
Multimodal transportation involves the moving of passengers or freight between points of origin and destination using two or more modes. For freight transport, that means an exchange of freight between air to truck for delivery. For air passengers, that means the exchange between the aircraft and the surface transportation mode, which is typically, an automobile. The three elements of the intermodal transfer process are (1) the landside portion including the highway network, (2) the intermodal transfer facility, and (3) the airside portion of the airport including the runway environment and airway system. This overview will provide a brief description of the highway system as an integral part of this intermodal network.

To provide a "seamless" transportation connection between modes, the three elements mentioned above must work in harmony. Each element must be able to cope with travel demands to provide a high quality of service.

Roadway improvements identified in the 2020 Long Range Cost Feasible Highway Plan are shown in **Exhibit 5-5**. Improvements associated with the Airport referenced in the document include direct access to Interstate 75.

Exhibit 5-5

MPO 2020 Financial Feasible Map



LEE COUNTY MPO
2020 FINANCIALLY FEASIBLE HIGHWAY PLAN
AMENDED NOVEMBER 22,2002

The lines on this plan represent only the general routes. Specific alignments will be determined through corridor and design studies.

NOTES APPLYING TO SPECIFIC IMPROVEMENTS

- No access should be permitted to these roads east of I 75, south of Corkscrew Road, and north of the Bonita Springs city limits.
- The feasibility and alignment of these roads should be determined through studies that adequately address their growth management and environmental impacts, including their secondary and cumulative effects on wildlife, wetlands, and water management. Extending Strike Lane should be evaluated as an alternative to extending Coconut Road east of I 75.
- A 4 lane toll expressway, open to transponder users only, with no access points en route, is to be constructed within the median of Colonial Boulevard from west of Winkler Avenue to east of Treeline Avenue.

Source: Lee County 2020 Transportation Plan, 2002

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Transportation Cornerstone Southwest Florida – Florida Chamber of Commerce Foundation

This 2000 study was initiated by the Florida Chamber to evaluate and address the transportation needs of Southwest Florida and identified the lack of direct Airport access to an Interstate Highway System. The study indicated that RSW is the primary gateway to the region. While expansion of the passenger terminal facility with the new midfield terminal will help the airport keep up with projected passenger demand, surface access is of particular concern. The study recommended that the Lee County Port Authority (LCPA) work cooperatively with FDOT, MPO governing boards and local governments to address a long-term solution for surface access to the facility.

I-75 PD&E Study

The Florida Department of Transportation (FDOT) has funded a Project Development and Environmental (PD&E) Study for the I-75 Corridor in Lee and Collier Counties. The completion date of the study is anticipated to be early Spring 2003. The limit of the study is from SR 951(Collier Boulevard) to SR78 (Bayshore Road). The purpose of this study is to develop strategies to mitigate I-75 congestion through the year 2030. The study will recommend the widening of I-75 from the current 4 lanes to as many as 10 lanes (6 local lanes, 4 special-use/express lanes to accommodate future traffic demand in Southwest Florida). As part of the PD&E study, Airport access was also evaluated and the recommended alternative will be presented later in this section.

I-75 Interchange Planning Study

A System Interchange Modification Report (SIMR), by the Federal Highway Administration (FHWA) approved in September 2002, was prepared to address the projected traffic volume, access and operational needs of the interrelated interchanges along I-75 including Alico Road and Daniels Parkway interchanges. This report also recommends improvements to provide enhanced access to the Airport.

5.10.4 Airport Master Plan Update/Lee Plan Coordination

As part of the Airport Master Plan Update process, the Airport will submit a Lee Plan Amendment for approval by Lee County, Southwest Florida Regional Planning Council, and the Florida Department of Community Affairs. This document will serve to ensure that the airport master plan and future local, regional and state planning efforts are compatible and consistent.

A number of traffic studies have been completed in the past to review traffic around RSW. These include:

- 1976/77 DRI Application for Development Approval
- 1988/89 Daniels Parkway Widening and Extension Engineering Report prepared by Johnson Engineering
- Southwest Florida Regional Airport Travel Patterns (O-D Study dated November 1989 for counts performed on February 23, 1989) prepared by David Plummer Associates in support of the Terminal Expansion DRI SD

- August 1989 DRI Application for Development Approval Question 31, Appendix, and Sufficiency Responses prepared by David Plummer Associates
- Final draft spreadsheet of proportional share road impacts prepared by Lee County DOT
- *Airport Master Plan Update Final Technical Report (Revised 2/11/92)*
- October 7, 1994 traffic impact statement for the Northeast Access Road entitled "1997 & 2002 Traffic Analysis for the Northeast Access Road" prepared by Greiner Engineering and included in the DRI NOPC for the Northeast Access Road
- 1995 Florida DOT I-75 Master Plan
- May 1998 "Vision 2010 Implementation Plan" (addressed only airport landside traffic patterns and parking needs)
- October 15, 1998 Final Report "1998 Travel Patterns on the SWFIA" O-D Study by Southwest Transportation Engineering, Inc.
- December 7, 1998 Preliminary Analysis HCS Runs prepared by RS&H
- Ongoing Lee County MPO Transportation Plans.
- Various Lee County DOT Annual Traffic Count Reports
- Annual SWFIA DRI Traffic Monitoring Reports
- Miromar Lakes DRI Traffic Study
- 2000/01 Alico/I-75 Interchange Improvement PDE Study
- I-75 Project Development and Environment Study in Lee and Collier Counties
- CFASPP Update, (traffic counts from January 29, 2001 thru February 1st on Chamberlin, Fuel Farm, and Doherty)

5.10.5 Airport Access Improvements

Southwest Florida continues to experience rapid urbanization due to increased demand from tourism and the relocation of retirees to the area. This rapid growth is reflected in the approved aviation enplanement forecasts presented in this Airport Master Plan Update, which expects an increase of enplanements from 2,632,088 in the year 2000 to 5,627,100 by the year 2020 (in other words doubling in 20-years or roughly a three percent increase per year). Continued growth of the region will result in continued increases in activity at the Airport and will also place heavy burdens on the local roadway network.

The Florida Intrastate Highway System (FIHS) Modal Plan, "Summary Report - Needs Assessment" June, 2000 states that the FIHS serves major international airports located in Florida, which handle over 90% of Florida's air freight and passengers. RSW is the only Florida Airport with international service not directly accessible to the FIHS.

A study was prepared recently which analyzed the nearby roadway system as a result of the opening of the Midfield terminal in 2005. This study, *Phase 2 – Final Report for Transportation Demands & Needs of the Southwest Florida International Airport Treeline Avenue/Terminal Access Road System* prepared by Southwest Transportation Engineering, Incorporated and Reynolds, Smith & Hills, Incorporated, September 7, 2000 was reviewed for this analysis.

This report analyzed 3 scenarios that included 3 different internal access road combinations. The third scenario was the preferred and selected scenario. This report also included 2 alternative traffic scenarios for each access scenario. The traffic scenarios were titled "Low Traffic" and

"Baseline Traffic." The results that are summarized in this report are from Scenario 3 for both Baseline and Low Traffic.

The intersections of Treeline Avenue at Daniels Parkway and Treeline Avenue at the Airport access road were determined to need grade separation to provide acceptable levels of service in the future. Otherwise, any other at grade improvements at these two intersections would result in LOS F. The intersection of BHG Parkway and Alico Road was not analyzed.

Additional analysis was undertaken to determine the year that a grade separation would first be required. Turning movements for each year between 2005 and 2020 for the Low and Baseline conditions were determined. These volumes were obtained by prorating the traffic between the 2005, 2010, and 2020 study years. These turning movement volumes were analyzed for each scenario to determine when a grade separation would be required. Grade separation would be required for Treeline Avenue at Daniels Parkway intersection by 2008 for the Baseline Traffic condition, and by 2013 for the Low Traffic condition.

For the Treeline Avenue at the Airport Access Road intersection, grade separation was not needed through 2020 for the Low Traffic condition. For the Baseline Traffic condition, it was determined that grade separation would be required by 2011.

Therefore, under the existing at grade configuration at the Airport Access Road Treeline Avenue will fail at approximately 2011. An alternative access must be provided to and from the airport to I-75 to maintain acceptable levels of service and reduce the volume of traffic on Treeline Avenue / BHG parkway. The direct connection to the interstate would provide relief to Treeline Avenue and would allow it to operate at acceptable levels of service for many years beyond its currently estimated life.

The previous Airport Master Plan Update approved by FDOT and the FAA in 1994 showed the need for direct access to I-75. This Interstate access connector, as proposed, was not implemented due primarily to spacing concerns. However, as listed above, FDOT is currently actively analyzing direct airport access to I-75 and it is recommended that the LCPA continue to work cooperatively with FDOT and Lee DOT on an acceptable solution.

Current Access Improvements

As mentioned earlier, numerous traffic studies have been prepared for the Airport. The Airport is currently constructing a North-South Roadway (Treeline Avenue/Ben Hill Griffin Parkway) parallel to I-75 that will service the new Midfield Terminal Complex. This roadway system is expected to be a temporary access solution and is predicted to experience a degredation in level of service by the year 2011 and 2012 without additional roadway improvements. The Phase 2 – Final Report of the Transportation Demands and Needs of the Southwest Florida International Airport Treeline Avenue/Terminal Access Road System, dated September 7, 2000, concluded that while the Treeline Avenue/Ben Hill Griffin Parkway will serve the interim needs of the new Midfield Terminal Complex, the proximity of the Treeline Avenue and Daniels Parkway intersection to I-75 limit its capacity and as traffic volumes increase other improvements would be required to maintain an acceptable level of service. The study also identified the need for a long-term solution to provide direct access to I-75 and to begin coordinating this solution with local, regional and state state transportation agencies. To respond to growth demands in

the region the FDOT initiated a study to evaluate the I-75 Corridor in Lee and Collier Counties. This study also resulted in identifying recommended interchange solutions along this corridor, including access from I-75 to the Airport. This recommended alternative is presented below.

Concept "2FMR"

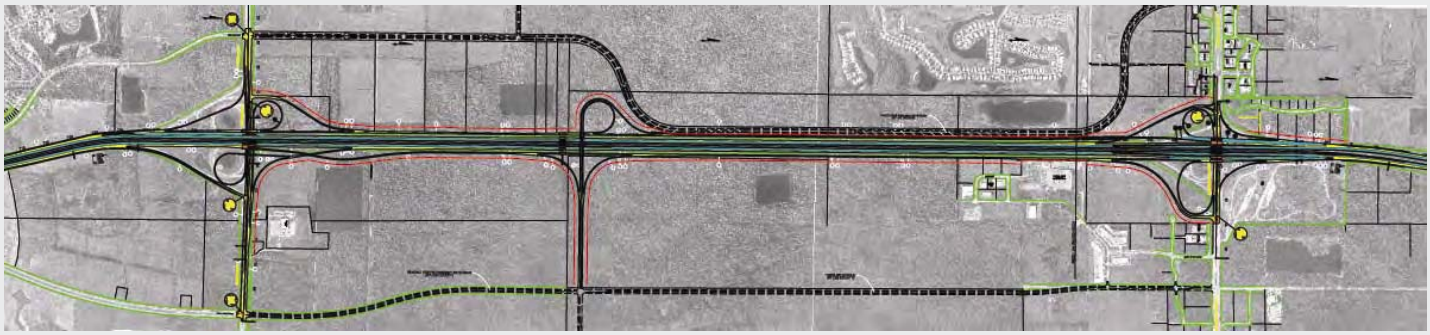
Concept "2FMR", shown on **Exhibit 5-6**, was produced as part of the FDOT Study Team efforts and is the recommended Airport access alternative. This alternative uses both Daniels Parkway and Alico Road interchanges along with a parallel Collector/Distributor Roadway System on the east and west sides of I-75. An interchange would be constructed with the C/D roads to provide Airport access. The proposal would provide for a direct connector to the Midfield Terminal Complex. While the intersection of this direct access connector with Treeline Avenue / Ben Hill Griffin Parkway is shown at grade, it is recommended that the LCPA explore the possibility of making this a grade separated interchange to enhance traffic flow. This improvement could also make the segment of the roadway system located on airport property eligible for FAA / FDOT funding. This concept, while still in preliminary stages appears to be the best strategy to accommodate direct access to I-75 from the airport while still meeting both Federal and State design standards. A Preliminary Design and Environmental Study (PD&E) is currently underway for this concept and further refinement of this concept is anticipated. It is recommended that the LCPA continue to assist Lee DOT in coordinating the need for improved airport access with FDOT to ensure it is accomplished in a compatible, phased and cost-effective manner.

Land Acquisition Recommended

Concept "2FMR" will be shown dashed on the Airport Layout Plan ensure continued agency coordination. The corridor for this alternative was used to determine possible future land acquisition requirements to provide direct access to I-75. For planning purposes, a 2,700 foot-wide corridor was assumed to be adequate with the south Airport drainage out-fall forming the southern boundary and then progressing northward 5,300 feet to the northern corridor boundary. Land acquisition requirements for the trumpet interchange and C/D system is estimated to be approximately 460 acres and will include some land acquisition west of I-75. This corridor is shown in **Exhibit 5-7**. This area should be sufficient to allow some alignment flexibility and provide storm water management detention/retention areas if necessary. It is important that the LCPA continue to work with Lee DOT, MPO and FDOT to investigate acquiring this corridor as soon as possible to provide access to Interstate 75. The area along the proposed TA/BHGP alignment is under extensive development pressure and any delay in the acquisition of this land will make acquiring access right-of-way to I-75 much more costly.

Exhibit 5-6

Concept “2FMR”



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Source: S reiner, T I P E

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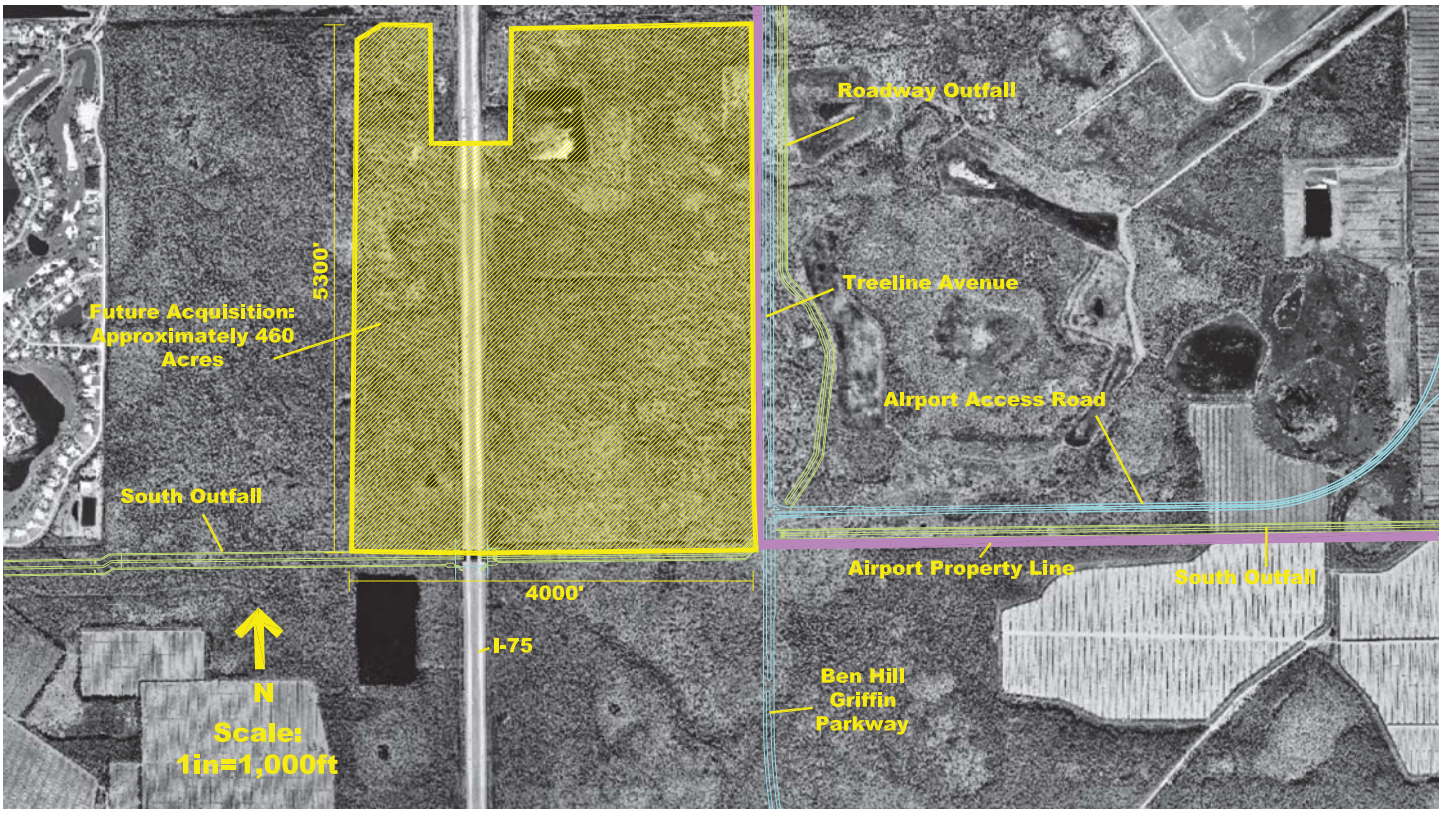
Exhibit 5-7

Land Acquisition Map



Source: Reynolds, Smith and Hills, Inc. Analysis, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE FUTURE ROADWAY LAND ACQUISITION	EXHIBIT 5-7

5.10.6 Preliminary Estimates of Probable Costs

Preliminary Estimates for probable costs are shown in the financial chapter of this report. Identification of the agencies to lead the effort in acquiring the land necessary for the construction of this improvement are not available at this time.

5.10.7 Summary and Conclusions

Good accessibility is the lifeblood of any airport. The Airport accessibility problems can not be solved unless LCPA, FHWA, FDOT, the MPO and other interested groups and individuals work together to create an equitable, workable solution.

The overall functional design of Concept 2FMR, which has been included and referenced in this report, has been agreed to conceptually by the appropriate parties.

The overall Concept should continue to be refined by the appropriate agencies and decisions made regarding timing of construction, staging and funding.

However, to summarize:

- Southwest Florida resident and tourist populations are increasing at a rapid rate.
- Air transportation for passengers and freight is an integral part of the regional transportation system.
- Capacity constraints in the road system network reduce the effectiveness of the total transportation system.
- Passenger and freight air services are a vital link to the economic viability of the entire Southwest Florida region and therefore every effort should be made to enhance existing market share by providing the Airport with adequate access.
- Traffic studies confirm the need for access improvements and a link between Southwest Florida International Airport and I-75.
- Access alternatives will require continuing coordination among Transportation agencies and will probably require phasing for implementation. More detailed engineering and design studies will provide the exact layout, right-of-way needs and construction details for the project(s).
- It is important to acquire the right-of-ways as soon as possible because of intensive development pressure along TA/BHGP. Early coordinated acquisition of this property will save money, reduce future development impacts and ensure land needed for airport access.

5.11 FACILITY REQUIREMENTS SUMMARY

Table 5-33 summarizes the major facility requirements recommended for RSW throughout the 20-year planning period.

Table 5-33

TABLE 5-33
FACILITY REQUIREMENTS SUMMARY TABLE

TIMELINE	THROUGH 2005	2010	2020
Runways Runway 6L-24R Runway 6R-24L	Rehabilitate and Re-stripe Runway 6L-24R	New parallel Runway 6R-24L (9,100'X 150')	
Taxiways		Construct West Cross-Field Connector Taxiway Repair North Ramp New Parallel Taxiway for Runway 6R-24L Hold Bay & By-Pass Improvements to Runway 6-24 South parallel taxiway	Construct East Cross-Field Connector Taxiway Cross-Field taxiway to Midfield ramp connector
Cargo	Rehabilitate existing air cargo apron New Midfield Freight Forwarding Facility	Expand Air Cargo	Expand Air Cargo
Terminal	Terminal enhancements-existing building 28-gate Midfield Terminal (Phase 1) Security Enhancements to existing terminal and new Midfield Terminal	Demolition of existing terminal building 4-5 gate midfield terminal expansion (Phase 2)	11-14 gate expansion/new concourse (phase 3) Air Carrier Apron Expansion
Storm Water/Mitigation	Stormwater Master Plan Cargo Area Drainage Improvements Remove Mitigation Area "G"	Stormwater/Drainage Improvements	Stormwater/Drainage Improvements
Land Acquisition	Land east of Runway 24L-RPZ/Noise and power line relocation Land west of Runway 6R-Noise Land for I-75 access road	Mitigation Land Acquisition Continuation of Land Acquisition Program East of Runway 24L Land for I-75 access road	Mitigation Land Acquisition Continuation of Land Acquisition Program East of Runway 24L
GA Activity	Construct multi-use hangars	Construct multi-use hangars	Construct multi-use hangars Expand GA Apron
NAVAIDs	Upgrade to ASR-11 Upgrade VASI to PAPI (during runway Rehab)	Runway 24R ALS Precision GPS Approach	Runway 6L Cat. II ILS w/ALS upgrade Upgrade RVR for Runway 6L-24R Airport Rotating Beacon
Access	Cargo/perimeter road improvements Connector road for maintenance facilities Roadway Signage Modifications	Rehab perimeter, service and fuel farm roads Expand Entrance road to 6 lanes Rehab Chamberlin Parkway	Miscellaneous Roadway Improvements I-75 Airport Access
Supplemental Facilities			
Fuel Farm		Fuel Farm Expansion Improvements	
Flight Support	Aircraft Maintenance Facility Engine Run-up Facility/Hush-House	Relocate ATCT	
ARFF		Purchase of new ARFF vehicle Construct New ARFF facility-Mid-field	
Automobile Parking	Construct Mid-field surface parking Construct Mid-field parking garage Construct Mid-field taxi/limo parking	Expand surface parking (employee spaces) Expand garage parking (additional wings) Expand parking toll booth Rehabilitate existing parking lot	Add levels 4 and 5 to parking garage Expand surface parking
Miscellaneous	Utility improvements Rental car fuel farm (Midfield) Part 150 Noise Study	Relocate high voltage power lines Utility improvements Develop multi-modal center (freight) Design/Const. Infrastructure	Relocate rental car facilities Utility improvements Helipad Master Plan Update

6 ALTERNATIVES

6.1 INTRODUCTION

The previous chapter identified a number of facilities that were determined necessary for Southwest Florida International Airport (RSW) to adequately accommodate the aviation demands expected over the course of the twenty-year planning period. The alternatives section analyzes both the viability of meeting the identified needs as well as how best to undertake the improvements from an operational, environmental, and construction perspective. This chapter will identify potential concepts for meeting each major facility enhancement needed and will evaluate the positive and negative aspects of each concept.

A number of primary components of the airport are addressed in the alternative analysis that follows. These airport components include:

- ✈ Airside Alternatives
  - Runway Rehabilitation
  - All-Cargo and General Aviation
  - Aircraft Maintenance
  - Aircraft Rescue and Fire Fighting (ARFF)
  - Air Traffic Control Tower (ATCT)
- ✈ Landside Alternatives
  - Terminal
  - Rental Cars

The alternatives review not only considers these key elements of the airport individually, but also must factor the interrelationships between these elements of the airport and the options for development within each component. One key consideration when addressing the location and configuration of future facilities at RSW is the near term relocation of passenger activities from the north side of Runway 6/24 to the midfield location. The relocation will not only change the operational characteristics of the airport, but areas previously occupied by the terminal operation will now become available for development. To determine whether the existing terminal facilities should be maintained or modified to accommodate another use, a terminal disposition study (**Appendix A**) was commissioned. This study concluded that it was not feasible to reuse the existing terminal structure or facilities. Demolition of the existing passenger terminal will provide considerable development opportunities and flexibility for accommodating expansion of non-passenger functions.

Defining the future development configuration of facilities at the airport must also consider the phasing of development activities within the areas that are available, both in the present and in the future. Proper development phasing to avoid unnecessary or premature construction of costly infrastructure must be considered in the planning process. Location and infrastructure service related considerations also play a large part in the alternatives analysis. Other factors against which the alternatives are reviewed include:

- Utilization of existing property;
- Ability to serve projected demand with existing facilities;
- Impacts to terminal area navigation aids and their associated critical areas;
- Conformance with FAA airport design standards;
- Provisions for expandability and flexibility;
- Capital costs;
- Operational efficiency;
- Phasing and constructability;
- Stormwater and drainage considerations;
- Environmental compatibility;
- Landside accessibility.

In completion of this chapter, each alternative, or component thereof, that is recommended for implementation will be modified to their final form to provide a comprehensive development plan.

6.2 AIRSIDE ALTERNATIVES

6.2.1 Runway Rehabilitation

In reviewing the facility requirements, it is apparent that the existing runway will require major structural rehabilitation before the new parallel runway becomes available. To determine the best means of accomplishing this while maintaining ongoing operations a detailed alternatives analysis was conducted. This analysis was the subject of an independent report and its results are presented separately.

6.2.2 All-Cargo and General Aviation

Both the existing all-cargo and general aviation facilities are located adjacent each other at the west end of the airfield north of the runway. Constraints to the west of the cargo facility include a 16 acre retention pond. Constraints to the east of the general aviation facility include the existing ARFF and air traffic control tower. Since the all-cargo and general aviation facilities are located adjacent each other with constraints on each side, expansion of either of the facilities has the potential to directly affect the other. Therefore, for the purpose of ultimately developing a cost effective overall approach to future development, alternatives addressing both all-cargo and general aviation facilities were identified.

To provide for development through the 20 year period, future all-cargo facilities will need to provide approximately 37,000 square feet of building space. This is roughly a fifty percent increase from the existing area of 24,000 square feet. However, it is anticipated that cargo aircraft parking, currently providing for six narrow body aircraft during peak periods, will not require a major increase by the end of the planning period. It is anticipated that any additional aircraft parking demand can be staged from the soon to be vacated existing terminal ramp.

Future general aviation facilities will need to provide for a considerable increase in hangar storage area. The addition of four large hangars should be adequate to provide for the 75,000

square feet projected hangar shortfall. Assuming the hangar space is provided, minimal additional hangar space will be required.

Alternatives for the required all-cargo and general aviation development include the following:

Alternative 1: GA Expansion West and Cargo Expansion in the old Terminal Area
This alternative includes GA hangar development eastward adjacent the existing GA apron (**See Exhibit 6-1**). This requires demolition of the existing general aviation terminal. Subsequent expansion would occur to the west immediately adjacent the all-cargo apron. This would result in the displacement of the all-cargo facilities or locating new cargo tenants in the old air carrier terminal area. As the need for the additional GA hangars grows, the entire cargo operation would eventually be relocated to the western half of the existing terminal apron. The all-cargo relocation would free up considerable expansion potential for GA while allowing considerable all-cargo facility expansion westward from its new location.

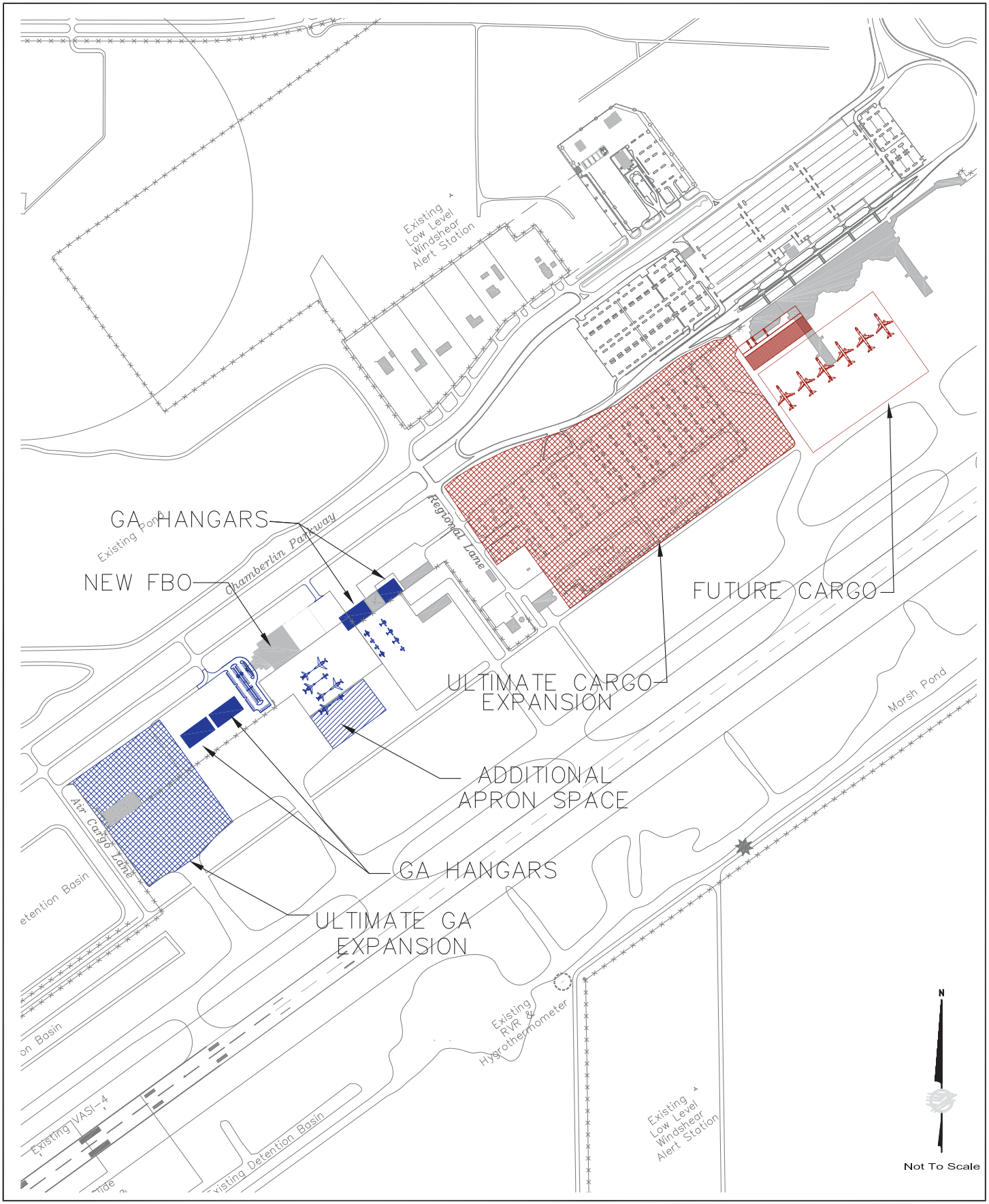
Pros

- GA stays in its existing location in keeping with the pending plans to expand westward with the flexibility to expand both west and slightly to the east.
- Reuses existing terminal apron for cargo relocation.
- Provides ample space for additional expansion beyond 2020 for both GA and cargo.
- All-cargo relocation fits well with a potential multi modal facility located just to the north of the existing terminal building.
- May require a split cargo operation for a period of time but not GA operations.
- Existing all-cargo apron provides good depth for expansion of GA facilities.
- Offers opportunity for second FBO operation from the existing all-cargo building.

Cons

- Demolition of existing FBO building is required to construct new aircraft hangars.
- Access and parking in the terminal area would need to be modified to allow for large trucks, truck parking, and a docking area for loading and unloading of cargo.
- Cargo expansion would be limited until the passenger terminal operation is relocated.
- Requires relocation of two dry detention ponds located to the west of the terminal area to provide for ultimate cargo expansion.

Exhibit 6-1



Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	GA/CARGO ALTERNATIVE 1	EXHIBIT 6-1

Alternative 2: GA Expansion West and Cargo Relocation to Parking Area

Alternative 2 consists of hangar development to the east in the immediate proximity of the existing GA apron and former FBO terminal (**See Exhibit 6-2**). As with Alternative 1 this would require demolition of the existing general aviation terminal. Additional GA hangars would be added along the north side of the existing all-cargo apron. This would result in the displacement of the all-cargo facilities. Alternative 2 differs from Alternative 1 in that it offers the potential for all-cargo development prior to the relocation of the existing terminal operation. The all-cargo relocation would free up considerable expansion potential for GA while allowing considerable all-cargo facility expansion both eastward and westward from its new location. This option would be especially attractive if a new operator expressed a near term desire to develop a new facility at the airport.

Pros

- Ultimately has the potential to reuse a portion of the existing terminal area apron.
- Provides considerable all-cargo and GA growth potential.
- Cargo could be relocated in the short term without impacting terminal operations at the existing terminal building.
- The ultimate all-cargo relocation fits well with a potential multi modal facility located just to the north of the existing terminal building.
- Does not require split cargo or GA operations.
- Existing all-cargo apron provides good depth for expansion of GA facilities.
- Offers opportunity for second FBO operation from the existing all-cargo building.

Cons

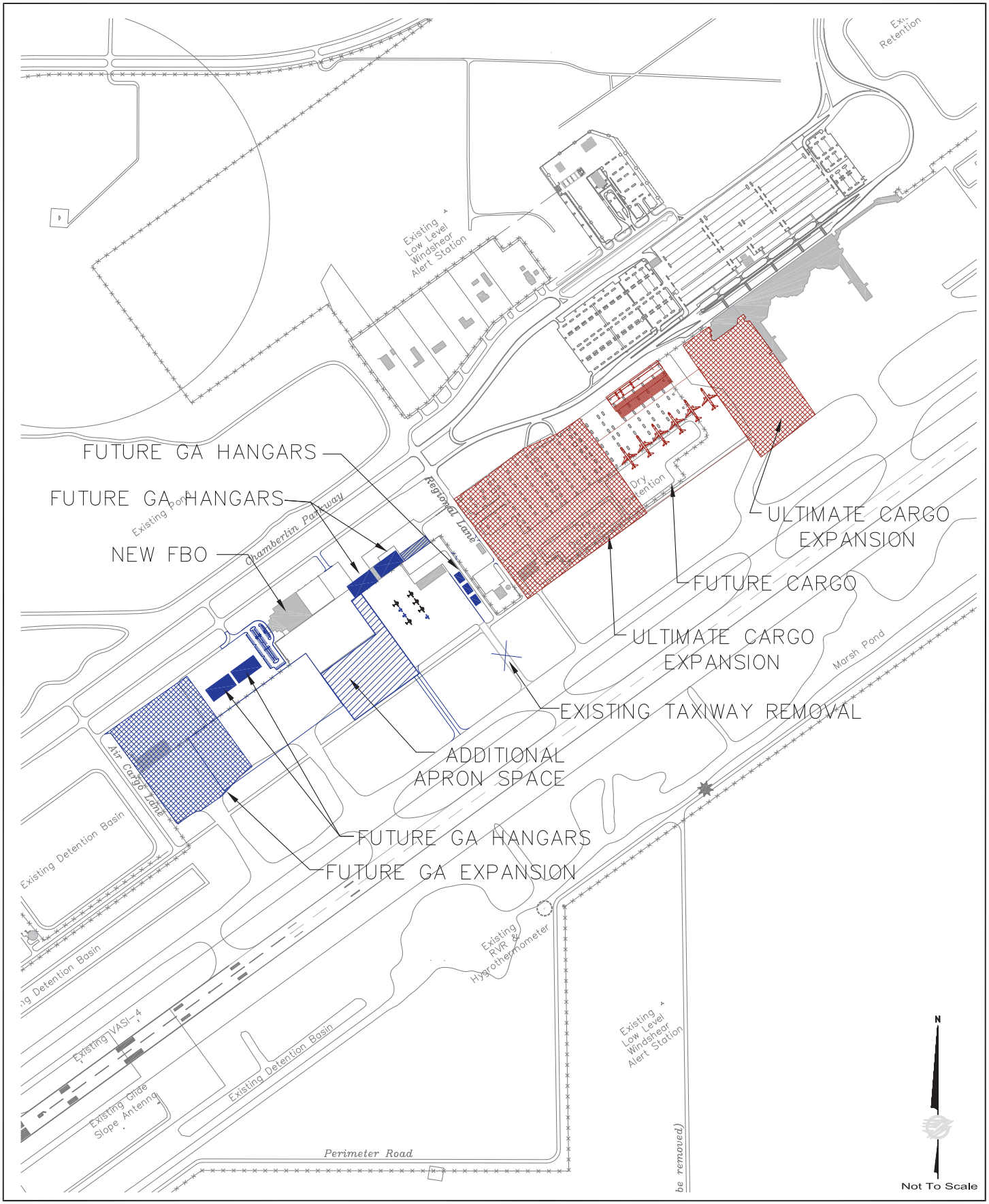
- Access and parking will need to be modified to accommodate larger trucks and a docking area for trucks will need to be designed.
- Does not reuse terminal apron in the first phase of development.
- Demolition of existing FBO building is necessary to construct new aircraft hangars with this alternative.
- Requires adding a new taxiway for improving traffic flow into the G.A. area.
- Requires relocation of two dry detention ponds located to the east of the ARFF station.

Alternative 3: Cargo Expansion West and Split GA Expansion

This alternative would expand the all–cargo building to the east with ultimate cargo ramp and additional facility expansion to the west (**See Exhibit 6-3**). This would displace the 16 acre pond located immediately west of the existing cargo facility. Prior to the westward expansion, cargo aircraft exceeding the peak capacity of six on the existing ramp could be staged from the existing terminal area.

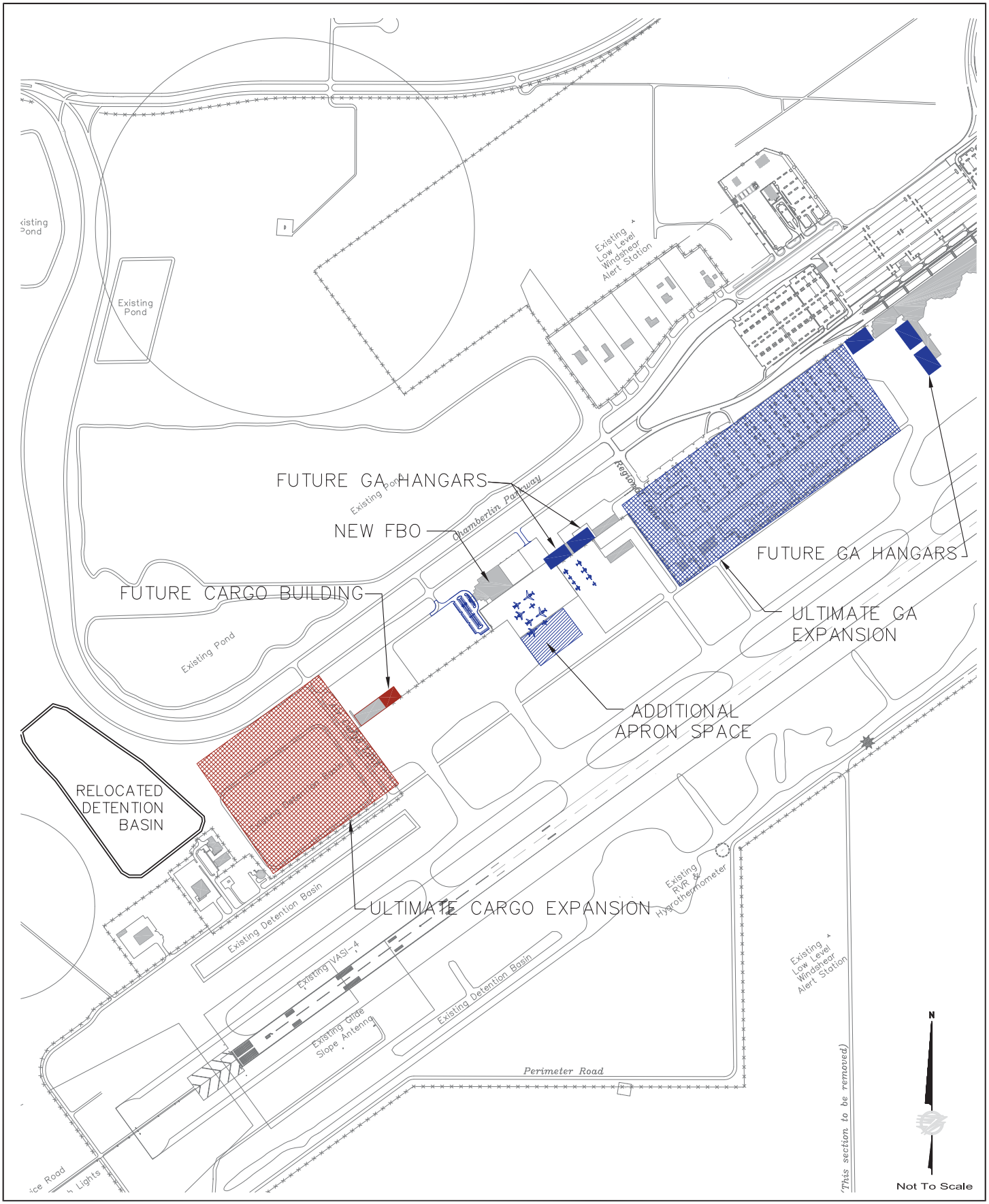
Alternative 3 consists of a split GA operation. Initially, hangar expansion would take place in the existing GA area. Upon relocation of the terminal operation to the midfield, future GA hangars would be constructed in the general area of the existing west concourse. This also offers the opportunity to add a second FBO operation through conversion of the existing FIS facilities.

Exhibit 6-2



Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	GA/CARGO ALTERNATIVE 2	EXHIBIT 6-2

Exhibit 6-3



Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	GA/CARGO ALTERNATIVE 3	EXHIBIT 6-3

Pros

- GA expansion would not impact the existing cargo area.
- Construction of additional GA hangars could begin as soon as the midfield terminal operations are relocated.
- Expands existing infrastructure for both GA and cargo.
- Provides opportunity for an additional FBO operator from the existing international arrivals building.

Cons

- Cargo expansion is limited if tremendous growth is experienced in cargo traffic.
- Existing FBO building requires demolition for future aircraft hangars.
- Requires relocation of detention pond to allow for cargo expansion.
- Potential multi modal facility locations are not as desirable in relation to the cargo facility as they are in Alternative 1 and 2.
- If cargo outgrows this location, further facility development would result in splitting the cargo operation.

Recommended GA and All- Cargo Alternative

With the desire to provide maximum flexibility in developing additional air cargo service for the region, Alternatives 1 and 2 appear to provide the greatest potential all-cargo development area. While neither of the alternatives maintain ultimate long term use of the existing cargo facilities, both provide consolidated cargo and GA areas with considerable expansion potential. Although implementing either of these alternatives will result in additional capital costs, both will allow the airport to aggressively market new operators. The consolidation of land uses reflected in each will ensure that the associated development can be implemented efficiently thereby minimizing the potential for 'dead' areas or areas with limited long term development potential.

The selection of the exact alternative will greatly depend on the timing of the required development. For the most part, Alternative 1 should be adequate to meet demand upon relocation of the passenger terminal operation and takes advantage of the existing terminal apron. However, in the case of considerable short-term demand, Alternative 2 provides the ability to develop facilities prior to the completion of the midfield complex. This may prove advantageous in attracting a given operator and may warrant consideration if the opportunity was attractive enough.

Alternative 3, while maintaining the existing cargo operation, remains limited in its ultimate expansion of cargo unless the cargo operation is split. With this alternative GA would end up accounting for a large portion of the north airfield unless it were also split. The more the similar land uses are separated the less likely that the use of the overall land area will be maximized. Based on this, Alternative 3 was generally considered the least desirable alternative.

Finally, based the information outlined herein, it is recommended that GA and All-Cargo Alternative 1 be included in the preferred development plan.

6.2.3 Aircraft Maintenance

No large aircraft maintenance facilities currently exist at the airport. However, a 7.78 acre land lease does exist for the development of such facilities in a location east of the existing terminal adjacent the roughly 5 acre L-shaped detention pond. This location currently has no other identified use and provides considerable expansion capability to the west upon relocation of the terminal operation to the midfield. While the site is somewhat restricted in the short term, no other location on the airport offers better short-term development or long-term expansion potential. In consideration of this, all of the alternatives considered for aircraft maintenance generally incorporate the existing leasehold area and expand westward to provide for potential demand through the 20-year period.

Alternative 1: Maximum use of "L" Pond Area

Alternative 1 provides maximum use of the area in the vicinity of the existing leasehold through the relocation of the L-shaped detention pond (**See Exhibit 6-4**). This area would allow adequate space for at least two, and possibly three, large aircraft hangars. An engine run-up area equipped with a blast fence or similar type of noise attenuation device would be located on the existing terminal apron. By coordinating its use, this facility could be used without impact to the existing terminal operation.

Pros

- Could be constructed and used prior to relocation of the terminal operation to the midfield.
- Allows flexibility for between one and three large aircraft hangars in the short term.
- Provides considerable growth potential to the west.
- Does not reuse the existing terminal building.

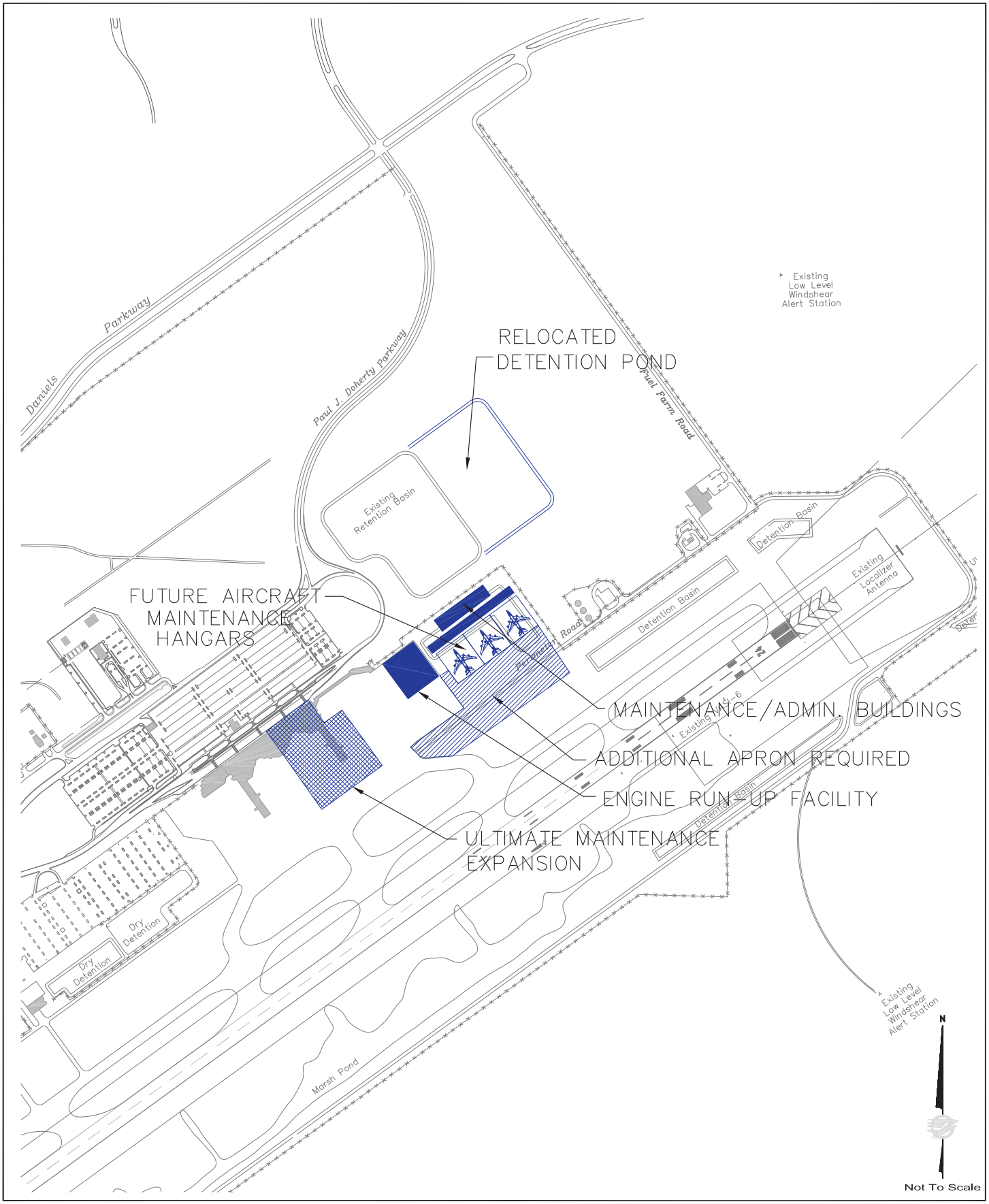
Cons

- Requires relocation of the existing detention pond.
- In the short term, employees and delivery vehicles would be required to use the terminal's primary loop roadway system.
- Requires additional apron to be constructed for maneuvering of aircraft.
- Reduces the potential for reuse of the existing apron.

Alternative 2: Utilize Terminal B Addition and Maintain Retention Pond – Consolidated Facility

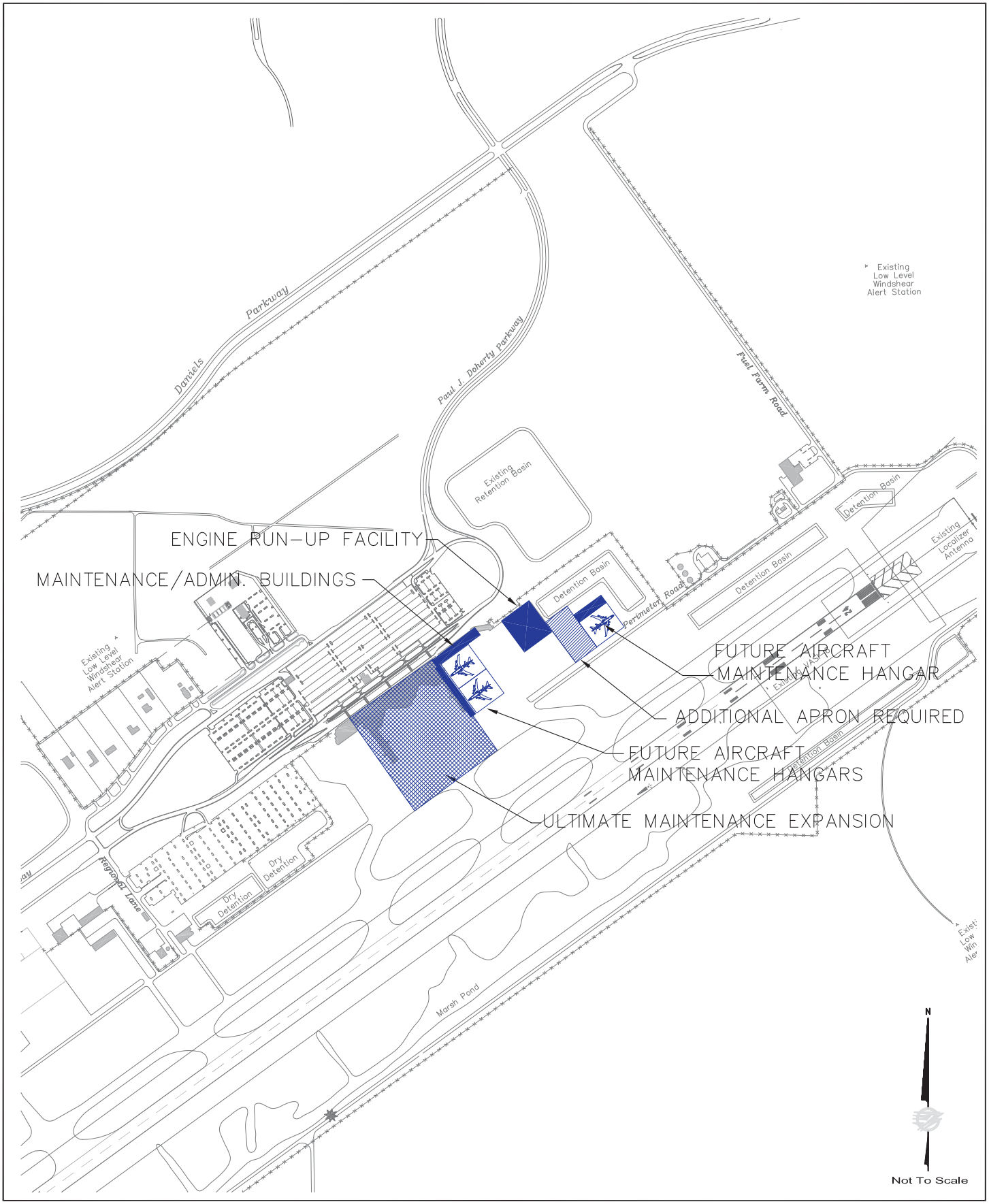
In this alternative the retention pond impact would be minimized. A single hangar and associated ramp would be constructed in the short term. Upon relocation of the terminal operation to the midfield, a larger maintenance operation would be constructed in the proximity of east end of the old terminal. The maintenance bays would be configured to take advantage of the existing pavement gradient. This configuration could be mirrored around the workshops and storage areas to ultimately provide for two additional maintenance bays. The Terminal B addition would be used for offices in support of the maintenance operation. The original hangar could ultimately be converted to a hush house or an engine run-up area could be constructed as in Alternative 1 to provide for noise attenuation (**See Exhibit 6-5**).

Exhibit 6-4



A Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	AIRCRAFT MAINTENANCE FACILITY ALTERNATIVE 1	EXHIBIT 6-4

Exhibit 6-5



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Pros
- Best fit within the description of the existing lease envelope.
- Minimal impacts to the existing detention pond.
- Good reuse of the aircraft apron.
- Good potential for expansion to the west.

Cons
- Requires additional apron to be constructed.
- Requires rehab of a portion of the existing terminal.
- Minimal space for offices and parts storage without impacting maintenance stall.
- Access may be difficult without impacting pond.
- Limited first phase development potential.
- In the short term, employees and delivery vehicles would be required to use the terminal's primary loop roadway system.

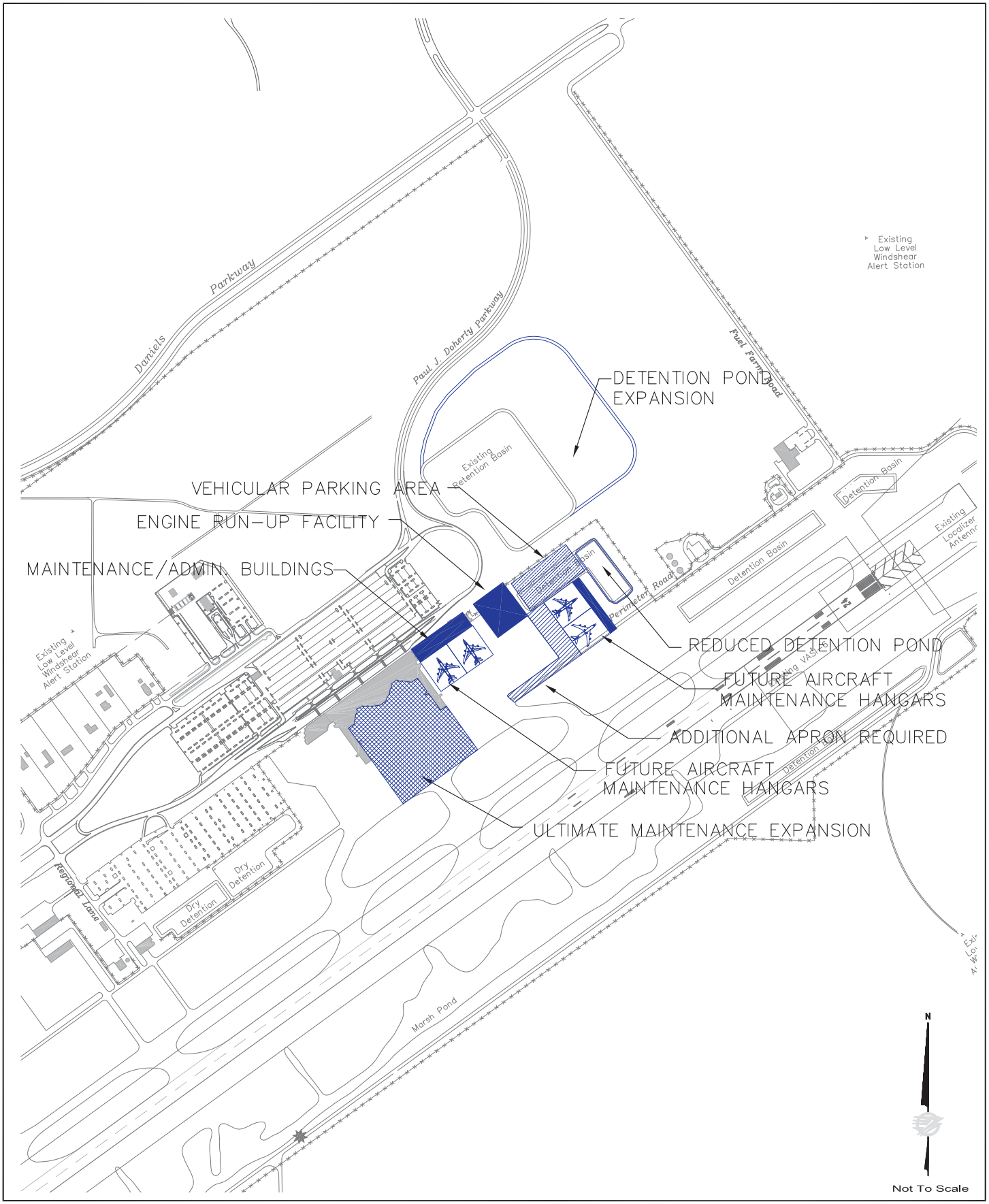
Alternative 3: Utilize Terminal B Addition and Maintain Retention Pond – Split Facility

In this alternative two hangars will be constructed to the east utilizing the existing apron and minimizing potential impacts to the detention pond. Maintenance offices could be constructed with this alternative adjacent to those hangars. A hush house or engine run-up area would be located just west of the existing detention pond. This alternative also has the potential to reuse a portion of the terminal concourse for offices or storage of aircraft spare parts. Adjacent to the proposed offices, two additional hangars sized to accommodate 747 type aircraft could be constructed with minimal rework of the existing site (**See Exhibit 6-6**).

Pros
- Matches well with existing leasehold description.
- Provides space for additional expansion to the west.
- Provides efficient reuse of apron.
- Provides plenty of space for maintenance offices.

Cons
- Requires additional apron to be constructed.
- Impacts a portion of the existing detention pond.
- Requires rehab of a portion of the existing terminal.
- In the short term, employees and delivery vehicles would be required to use the terminal's primary loop roadway system.
- Requires relocation of service road.

Exhibit 6-6



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Recommended Aircraft Maintenance Alternative
Providing the greatest short-term development potential, Alternative 1 appears the most desirable alternative for a large aircraft maintenance facility. This alternative also provides the most efficient use of airside land which an asset that will grow increasingly scarce as the airport development continues. While Alternatives 1 and 2 impact the existing detention basin to a lesser extent, they neither provide for the most efficient use of the land nor the best short term development potential. The latter of which may prove critical to the attractiveness and feasibility of such a facility to a private operator. Based on this and the recommendation of the terminal disposition study not to reuse the existing terminal building (**See Appendix A**), it is recommended that Aircraft Maintenance Alternative 1 be included in the preferred development plan.

6.2.4 Aircraft Rescue and Fire Fighting (ARFF)

With the construction of a new parallel runway, a new ARFF facility will be required to provide adequate emergency response capabilities to all areas of the new runway. Options include 'satellite' supplemental facilities or development of a new more centrally located primary facility.

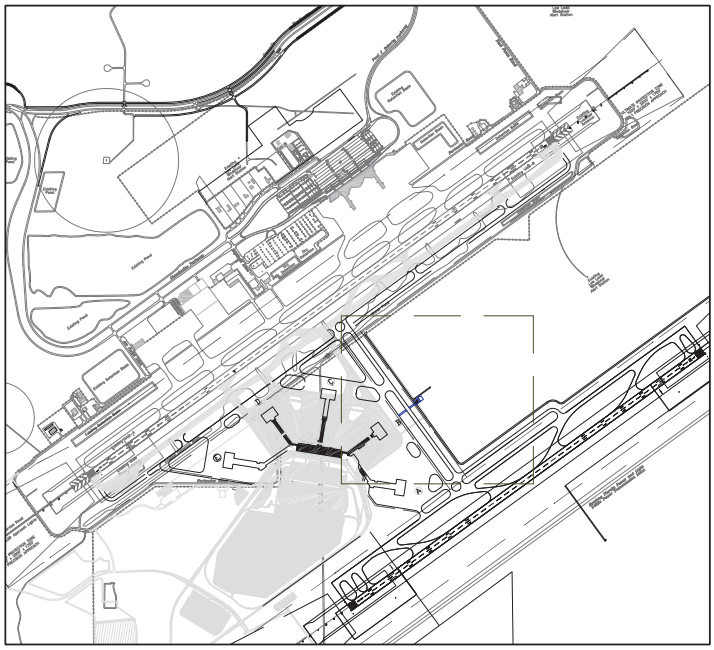
Alternative 1: Central Midfield Satellite
ARFF Alternative 1 consists of a supplemental satellite facility located centrally between the runways to the east of the midfield connector taxiways (**See Exhibit 6-7**). This facility would be capable of housing two vehicles and associated personnel.

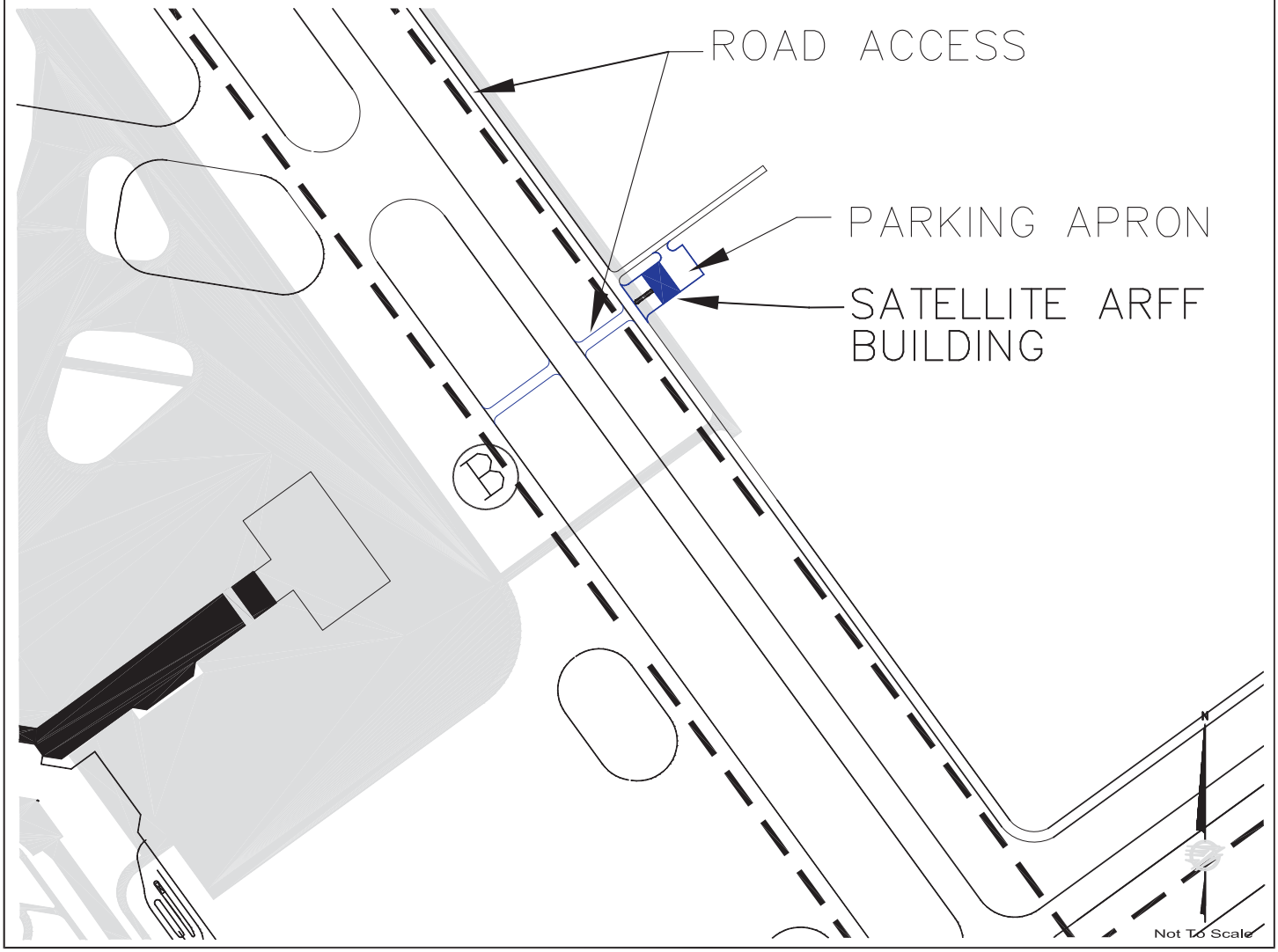
Pros
- Provides good ARFF proximity to terminal area and airfield.
- Could potentially be expanded to serve as primary facility.
- Would provide improved response times to emergencies in terminal and the south airfield.
- Good location for surveillance of the air operations area.

Cons
- Primary facility constrains GA and cargo expansion options.
- Requires circuitous access.
- Cheaper initial facility cost but higher overall operation cost.
- Requires crossing active taxiways to get to terminal and terminal apron.

Alternative 2: South Midfield Satellite
Similar to Alternative 1, Alternative 2 consists of a supplemental satellite facility located between the runways to the east of the midfield connector taxiways. However, this alternative would locate the facility near the intersection of the east parallel connector taxiway and the parallel taxiway serving the future parallel runway (**See Exhibit 6-8**). Again, this facility would be capable of housing two vehicles and associated personnel.

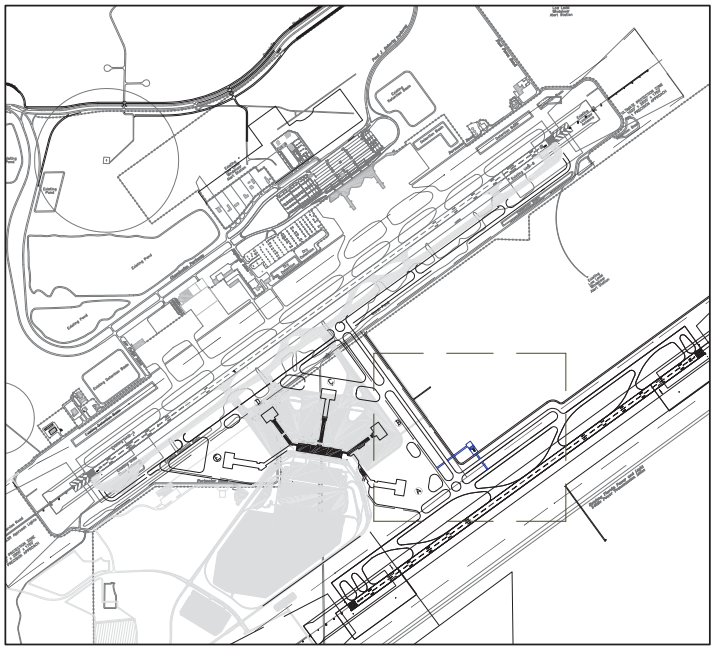
Exhibit 6-7

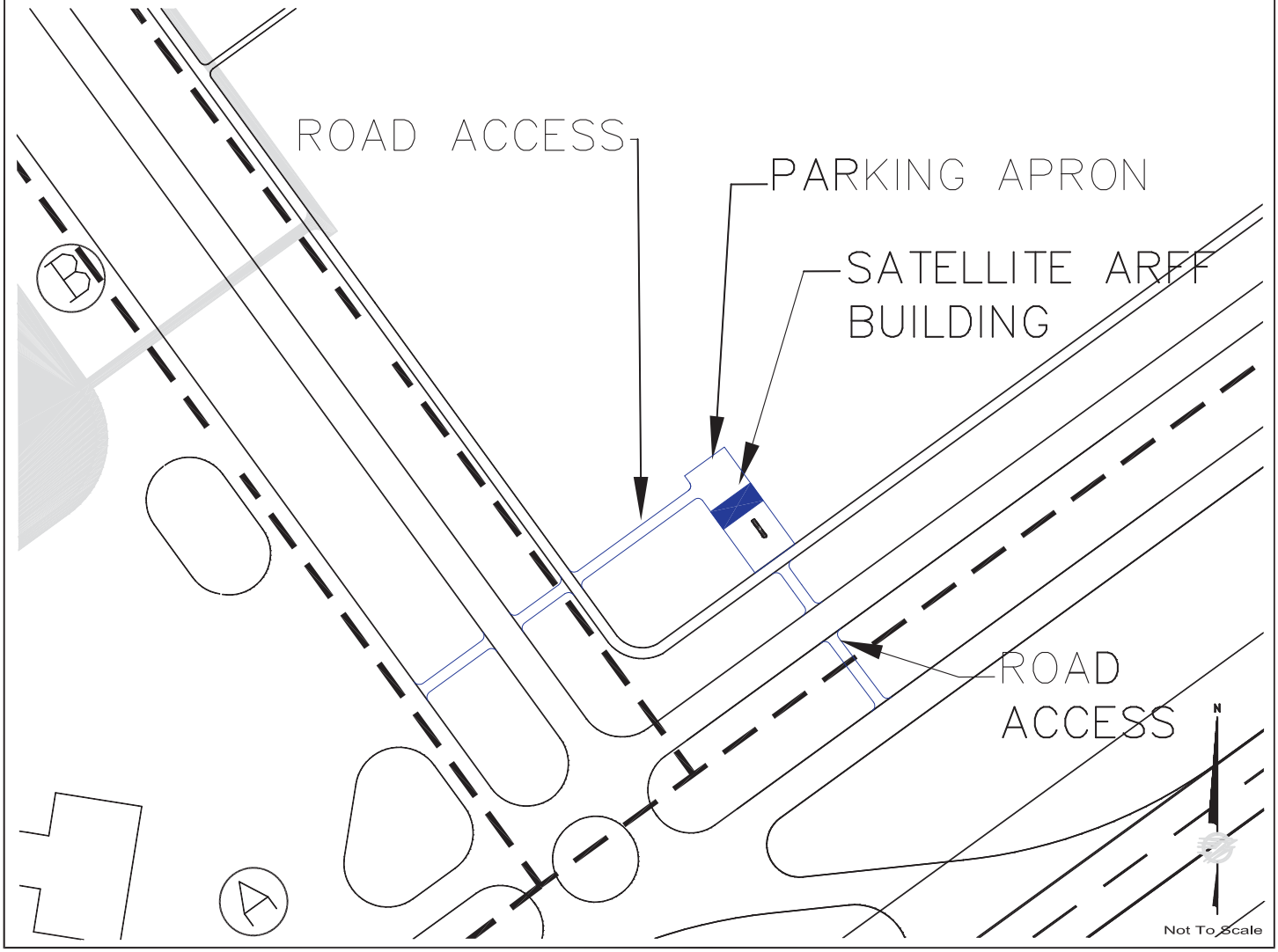




Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	ARFF FACILITY ALTERNATIVE 1	EXHIBIT 6-7

Exhibit 6-8





Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	ARFF FACILITY ALTERNATIVE 2	EXHIBIT 6-8

Pros
- Good proximity to the midfield terminal.
- Improved response times to the terminal and new south runway.
- Straight access to the terminal apron and proposed south runway.

Cons
- Primary facility constrains GA and cargo expansion options.
- Requires circuitous access.
- Cheaper initial facility cost but higher overall operation cost.
- Not as centrally located compared to Alternative 1 and 3.
- Would be difficult to convert to the primary ARFF station in the future because of longer response times to the North airfield.
- Requires crossing active taxiways to get to terminal and terminal apron.

Alternative 3: Central Midfield Primary

ARFF Alternative 3 consists of a new primary facility in the same central midfield location as Alternative 1. However, Alternative 3 would result in complete closure and relocation of all ARFF operations to the new primary site (**See Exhibit 6-9**). This facility would be capable of housing up to five large ARFF vehicles and associated personnel.

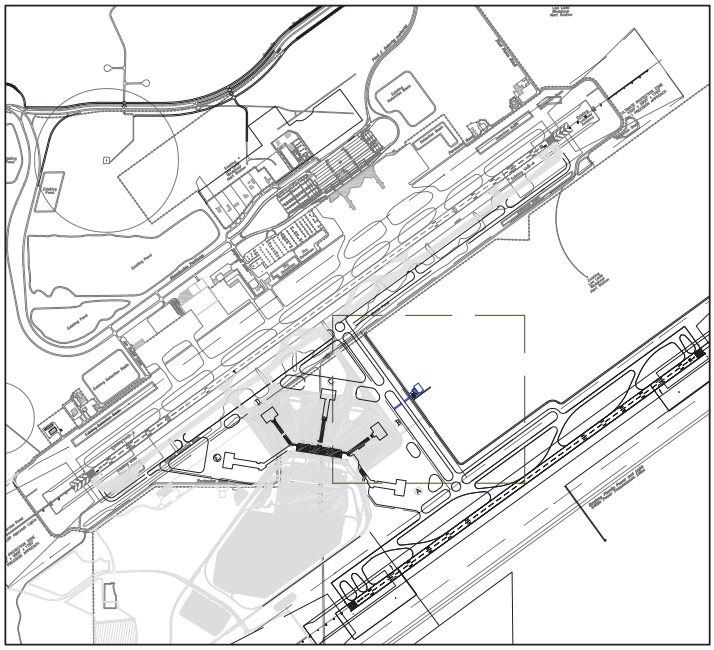
Pros
- Minimizes staffing and equipment requirements.
- Provides good ARFF proximity to terminal area and airfield.
- Provides for additional future expansion of G.A. or cargo on the north side of the airport.
- Most centrally located of all the alternatives considering full build out of the airport.
- Great location for surveillance of the air operations area.

Cons
- Requires circuitous access.
- More expensive initial facility cost.
- Would require crossing active taxiways and runway to reach north side of the airfield.

Recommended ARFF Alternative

Each of the alternatives provide attractive options for ARFF development as required by the addition of the future runway. Alternative 2 provides the best response capability to the new runway while Alternatives 1 and 3 provide the best response capabilities to the future terminal area. Alternatives 1 and 2 are supplemental facilities and maintain the existing ARFF facility, while Alternative 3 consolidates the ARFF activities in a single centrally located facility. Alternative 3, by consolidating the future ARFF requirements into a single facility, results in the lowest equipment and personnel requirement while at the same time freeing up land to the east of the GA facilities. Balancing long term operating costs with accessibility, Alternative 3 is recommended as the preferred development option.

Exhibit 6-9



PARKING APRON

PRIMARY ARFF BUILDING

ROAD ACCESS

B

N

Not To Scale

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6.2.5 Air Traffic Control Tower (ATCT)

Construction of a new parallel runway will require development of a new air traffic control tower (ATCT) that provides adequate line of sight to both runways and their approaches as well as designated taxiway 'movement' areas. This will require development of a facility that is more centrally located. Options for a new ATCT include sites centrally located both east and west of the future connector taxiways.

Alternative 1: West Midfield - Terminal Top

The terminal top ATCT would be located in the future midfield terminal at the base of Concourse C (**See Exhibit 6-10**). The estimated minimum controller eye height required for Alternative 1 based on a concourse headhouse elevation of 70 feet above ground level (agl) is approximately 340 feet agl. This assumes that the visibility of no part of a taxiway or runway can be obstructed by the location of a fixed object. In this case the most critical view would be from the tower over Concourse B to the west parallel connector taxiway. It is important to note that aircraft parked around the concourse may result in a further increase in controller eye height requirements.

Pros

- Provides good accessibility.
- Is centrally located.
- Provides good utility access.

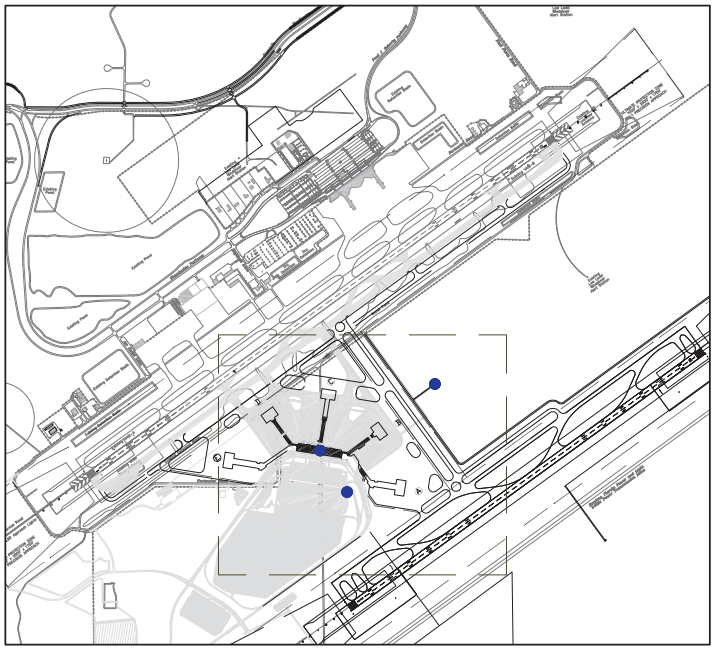
Cons

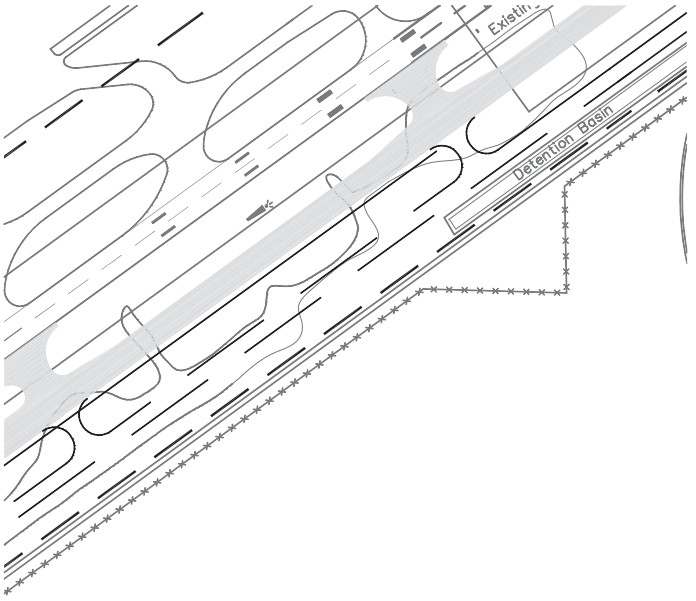
- Has a number of potential security concerns.
- Would require modifications to the terminal to support the design of the tower.
- Requires higher controller workload.
- Must act immediately to incorporate into midfield terminal design.
- Requires the second highest tower.
- Detracts from architectural features of the terminal complex.

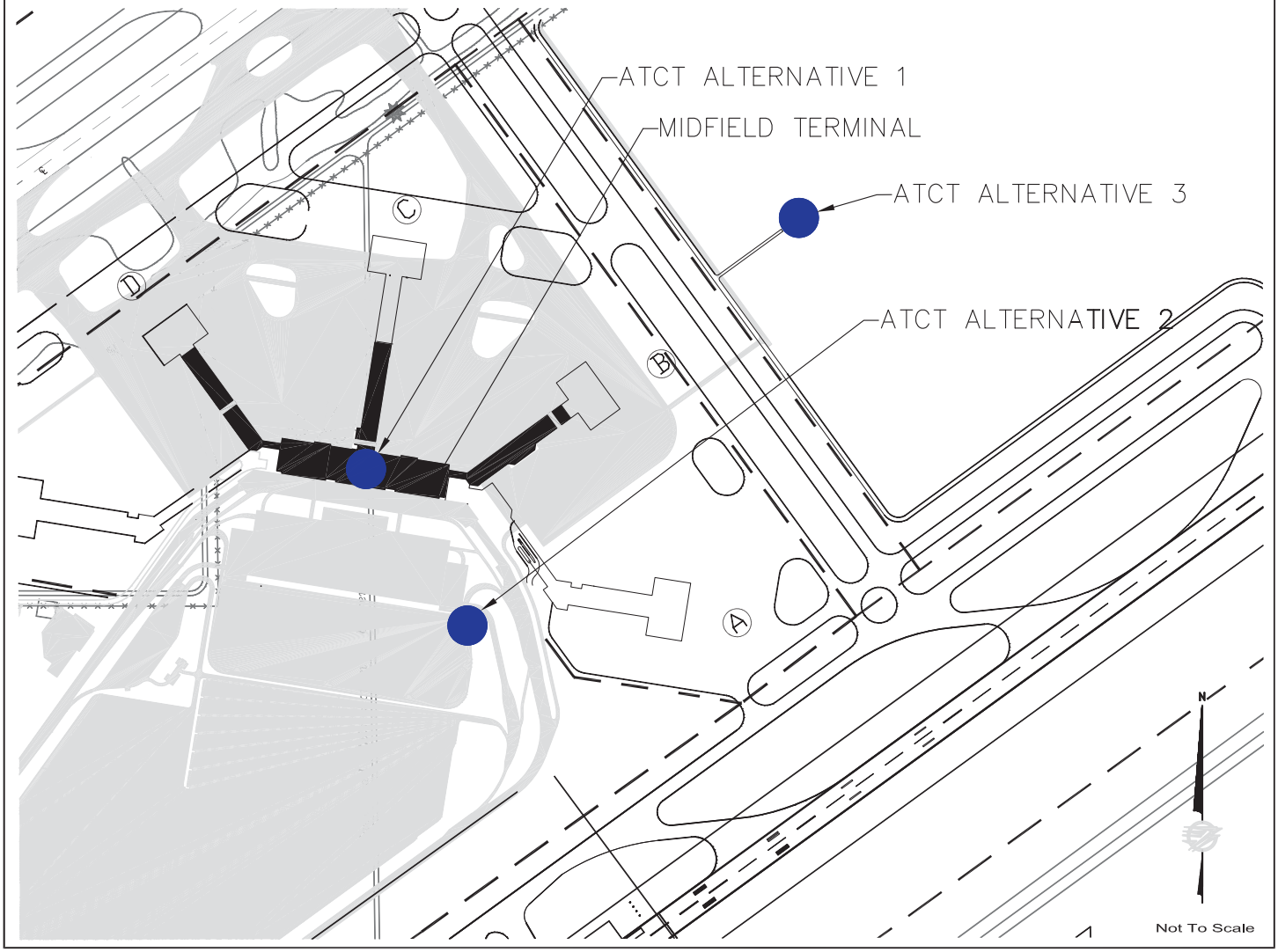
Alternative 2: West Midfield – Southeast of Terminal

ATCT Alternative 2 consists of a new tower located south of the Phase 1 midfield terminal and east of the existing parking garage (**See Exhibit 6-10**). This terminal area alternative minimizes the development conflicts with the terminal while still providing a fairly central terminal area location. Applying the same criteria as Alternative 1, the estimated minimum controller eye height required for Alternative 2 is approximately 540 feet agl. In this case the most critical view would be from the tower location over Concourse D to the south dual parallel NLA taxiway. Again, it is important to note that aircraft parked around the concourse may result in a further increase in controller eye height requirements.

Exhibit 6-10







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Pros
- Easily accessible from landside.
- Independent structure not part of another building (see Alternative 1).
- Provides good utility access.

Cons
- Has potential security concerns.
- Requires high controller workload.
- Requires the highest tower.
- Potentially inhibits future flexibility of future terminal area expansion.
- Must act immediately to incorporate into midfield terminal design.
- Detracts from architectural features of the terminal complex.

Alternative 3: East Midfield

ATCT Alternative 3 is located centrally between the runways to the east of the midfield connector taxiways. This alternative minimizes conflicts with the midfield facilities with a remote location (**See Exhibit 6-10**). Applying the same criteria as Alternative 1, the estimated minimum controller eye height required for Alternative 3 is approximately 260 feet agl. The most critical view would be from the tower location over Concourse E to the south dual parallel NLA taxiway. Once again, it is important to note that aircraft parked around the concourse may result in a further increase in controller eye height requirements.

Pros
- Provides the most secure location.
- Requires lowest controller workload.
- Appears to requires the lowest tower height.
- Best overall alternative for viewing entire airport.
- The most centrally located of all the alternatives.
- Allows related facilities to be collocated with facility.

Cons
- Requires circuitous access.
- Utilities would have to be extended into area from the midfield complex.
- Would require all employees to have security access to the airside to get to facility.

Recommended Air Traffic Control Tower Alternative

The ideal ATCT facility location provides good line of sight to all operational areas of an airport with a minimal controller workload. While access is also important, it must be balanced with security which is an increasingly important aspect of air traffic facilities. While both Alternatives 1 and 2 provide good access to the towers, they also result in the highest controller workload and present development and security challenges within the future terminal area. They also have the greatest controller eye height requirements. ATCT Alternative 3, likely requiring the shortest tower, would result in the lowest controller workload and most secure site with minimal chance of impacting future development. By sharing infrastructure with the recommended ARFF alternative, costs

associated with Alternative 3's infrastructure can be spread between the two facilities. Therefore, based on the functional benefits of each proposed tower location and those factors reviewed herein, ATCT Alternative 3 is recommended for inclusion in the preferred development plan.

6.3 LANDSIDE ALTERNATIVES

6.3.1 Terminal

The Phase 1 Midfield Terminal Project includes development of over 760,000 square feet of building space including a main terminal and three concourses. Although each concourse has been planned with the ability to expand to add gates, by the end of the 2020 period there will be shortages in terminal space as well. The activity levels projected for 2020 indicate the need for an additional 205,000 square feet of terminal and concourse space as well as an additional 15 to 19 gates. This will require the next major phase of terminal development. Options for this development based on the current midfield concept include expansion of the terminal and either development of a new concourse to the west or to the east. In each case a 4-5 gate headhouse expansion to Concourse C is planned by 2010. Alternatives providing for the balance of the facility shortfalls are further addressed below:

Alternative 1: West Concourse
The west concourse expansion would consist of expansion of the terminal building westward, addition of a connector, and a new concourse. This concourse, designated Concourse E by the midfield conceptual development program, would have the nearest proximity to the departure end of the existing runway (**See Exhibit 6-11**).

Pros
- Does not depend on development of new runway.
- Provides shortest taxi times to Runway 6.
- Would not require future parallel connector taxiway.
- Provides close proximity to airline cargo building.

Cons
- May require partial dual parallel taxiway to reduce potential for queuing conflicts at the existing Runway 6 departure end.
- Requires long taxi distance to future Runway 6R end.
- Requires long walking distances to main terminal.
- Appears to require more apron than Concourse A expansion.
- Aircraft tail height restrictions for positions at the end of the concourse may be required due to potential for penetrations to Part 77 surfaces.

Alternative 2: East Concourse
Similar to Concourse E, addition of an east concourse would consist of expansion of the terminal building eastward, addition of a connector and a new concourse. This concourse, designated Concourse A by the midfield conceptual development program, would have the nearest proximity to the departure end of the future parallel runway (**See Exhibit 6-12**).

Exhibit 6-11

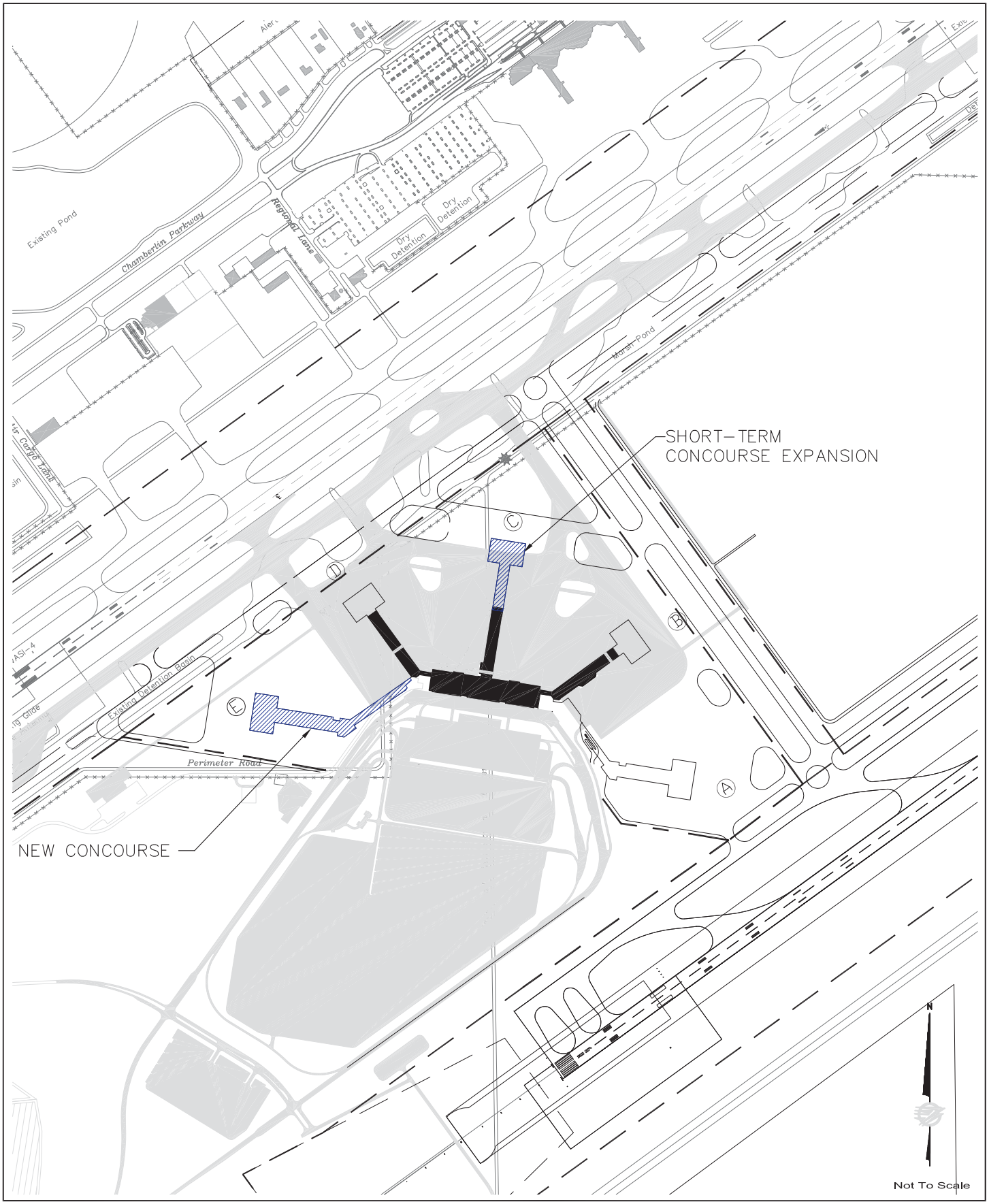

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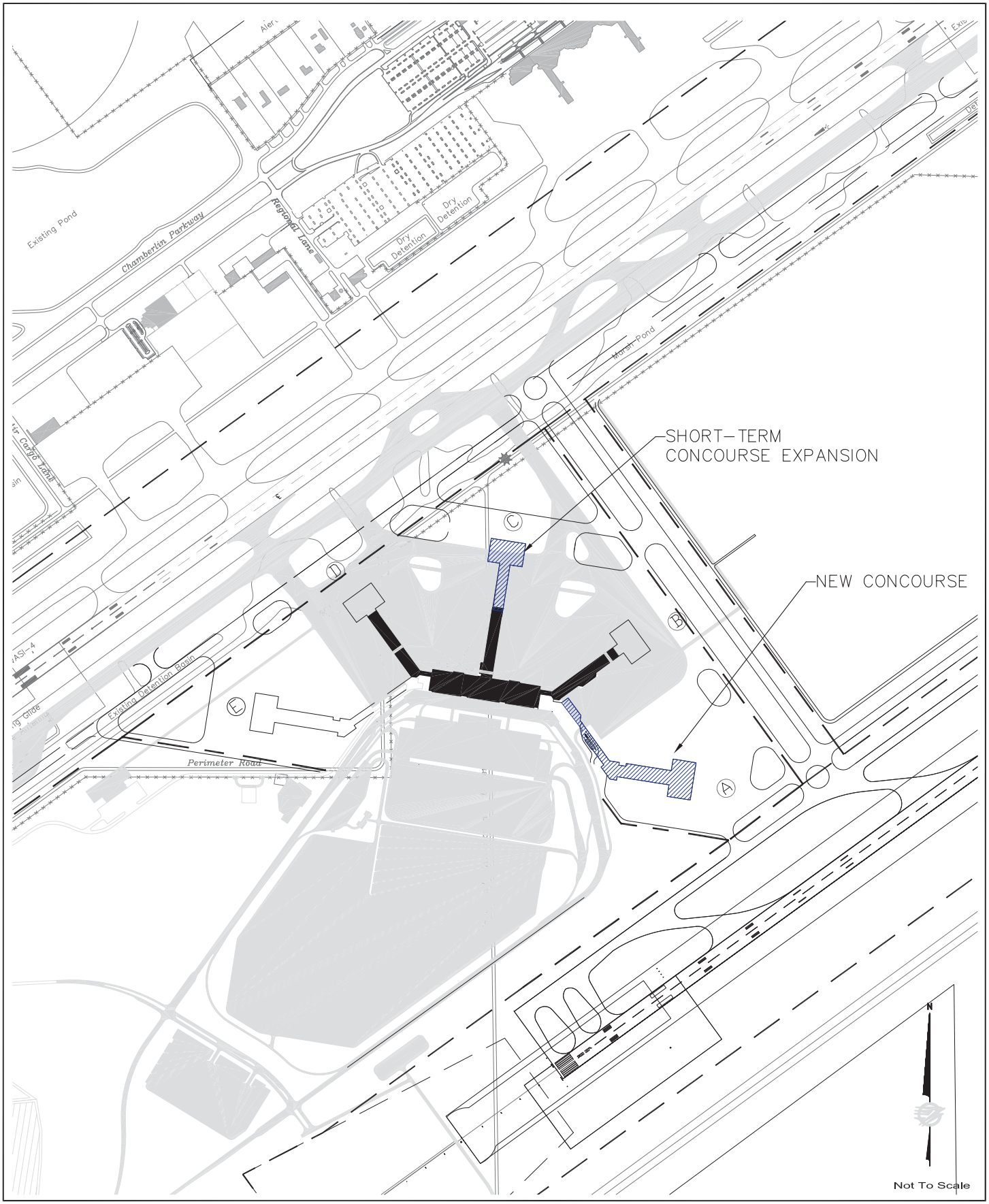
Exhibit 6-12



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Pros
- ✈ Provides good airfield balance with new runway.
- ✈ Provides shortest taxi times to the new Runway 6 end.
- ✈ Appears to require less apron than Concourse E expansion.

Cons
- ✈ Requires long taxi distance to existing Runway 6 end.
- ✈ Requires long walking distances to main terminal.
- ✈ Aircraft tail height restrictions for positions at the end of the concourse may be required due to potential for penetrations to Part 77 surfaces.

Recommended Terminal Alternative

The recommended terminal alternative will largely depend on the timing of development of the new parallel runway. Based on a review of the projected activity, it is anticipated that the new runway will become operational near the end of the 10-year timeframe. With this in mind, the east concourse, Alternative 2, is ideally positioned to take advantage of the added airfield capacity. However, if for some unforeseen reason the new runway development is delayed until well beyond the anticipated period, the west concourse development, Alternative 1, may be more desirable as it provides the shortest taxi distance to the existing runway. Conversely, it also results in the greatest potential for congestion near the Runway 6 end and would likely require the addition of a dual parallel taxiway section. Therefore, with the addition of the new parallel runway anticipated prior to the construction of the new concourse, Terminal Alternative 2 is the preferred development alternative.

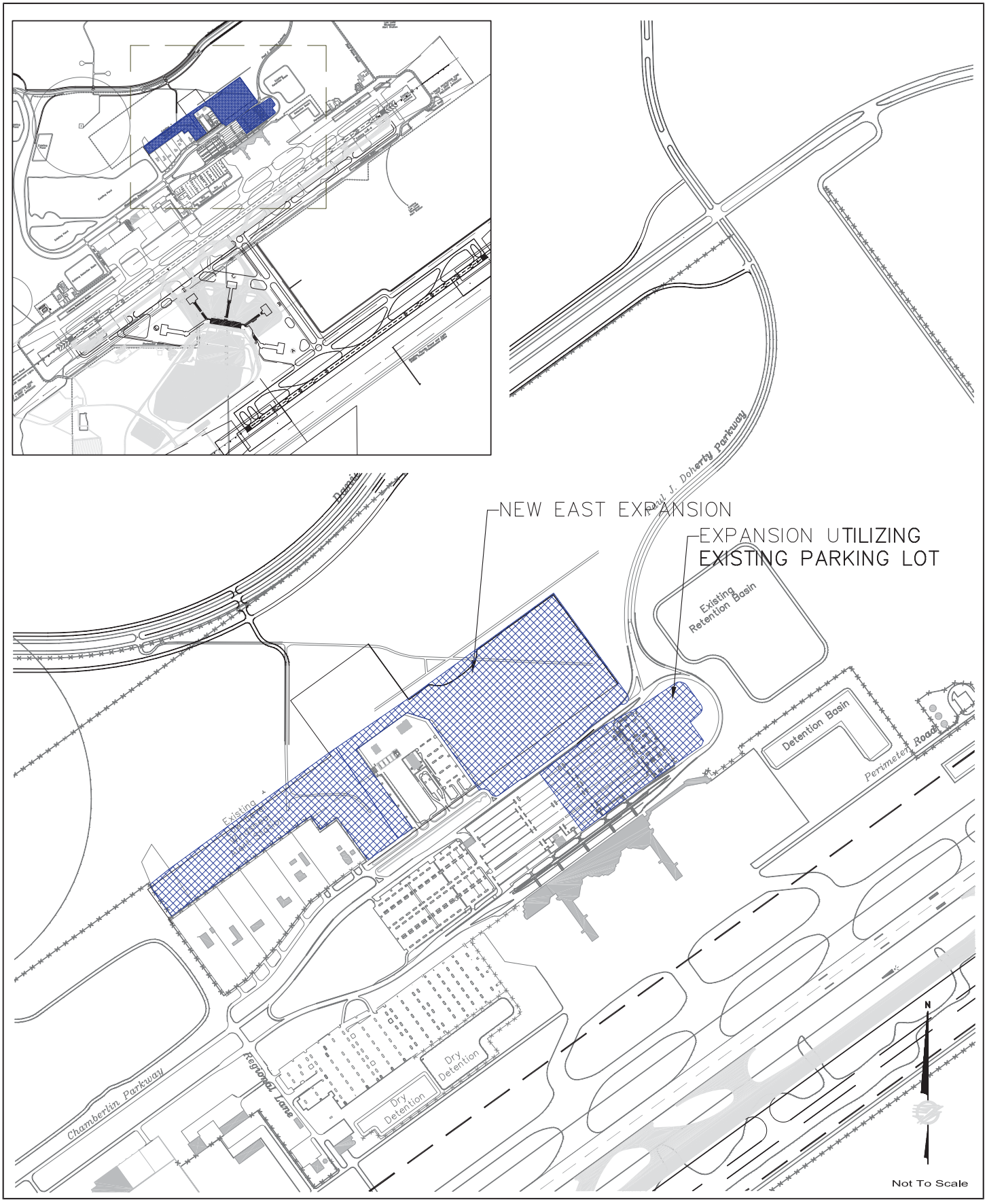
6.3.2 Rental Cars

Rental car activity is a key revenue growth area at many of Florida's airports including RSW. The existing rental car storage and maintenance facilities are located adjacent the terminal area loop road just north of the automobile parking area. With the relocation of passenger operations to the midfield terminal area considerable parking area in the northern airfield will become available for alternative use. However, these facilities may not provide the most operationally efficient location for rental car activities due to the distance between them and the new terminal facilities. The following alternatives explore a number of locations for future rental car development that either focus on reuse of existing facilities, operational efficiency, or some combination thereof.

Alternative 1: Existing Expansion and Vacated Parking

Rental Car Alternative 1 continues the planned expansion of the existing facilities and provides for additional expansion in the existing terminal parking area (**See Exhibit 6-13**). This alternative reduces the depth of the Alamo leasehold to provide for consistent frontage on Daniels Parkway for non-aviation use.

Exhibit 6-13



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Pros
- ✈ Maintains use of existing rental car facilities.
- ✈ This option requires the least initial capital investment.
- ✈ Maintains good off-site access.
- ✈ Utilizes part of terminal parking lot for additional rental car expansion.
- ✈ Minimizes potential leases with current rental car tenants.

Cons
- ✈ Operationally inefficient - long distance from new terminal facilities.
- ✈ Restricts potential long-term non-aeronautical development along Daniels.
- ✈ This option requires the greatest ongoing operational cost.

Alternative 2: Complete Relocation to New Terminal Area and Nearby Remote

Alternative 2 includes the complete relocation of the existing rental car operations to the west terminal area. This alternative splits the rental car function between the immediate terminal area and a location bordering the Treeline Avenue extension (**See Exhibit 6-14**). By placing all of the rental car operations in the proximity of the terminal area, this alternative provides a considerable operational advantage.

Pros
- ✈ Most operationally efficient – very short distance to terminal area.
- ✈ Accessible from planned access roads.
- ✈ Reduces traffic flow through the north side facilities.
- ✈ Considerably increases the depth of the non-aviation developable land with frontage to Daniels.
- ✈ Reduces the congestion of rental car shuttles on access road around runway.

Cons
- ✈ Does not maintain use of existing facilities.
- ✈ Likely one of the highest initial capital costs.
- ✈ Would require breaking or modifying existing leases with tenants.
- ✈ Reduces the potential area available for surface auto parking at midfield.

Alternative 3: Maintain Existing, Expand to both Vacated Parking and West Remote

Alternative 3 offers a combination of areas to meet the future rental car needs. It maintains the existing operations and takes advantage of a portion of the soon to be vacated north terminal parking area. Additionally, it provides expansion at a location bordering the Treeline Avenue extension (**See Exhibit 6-15**). This option balances the use of existing facilities with some enhancement to operational efficiency for some rental car operators.

Exhibit 6-14

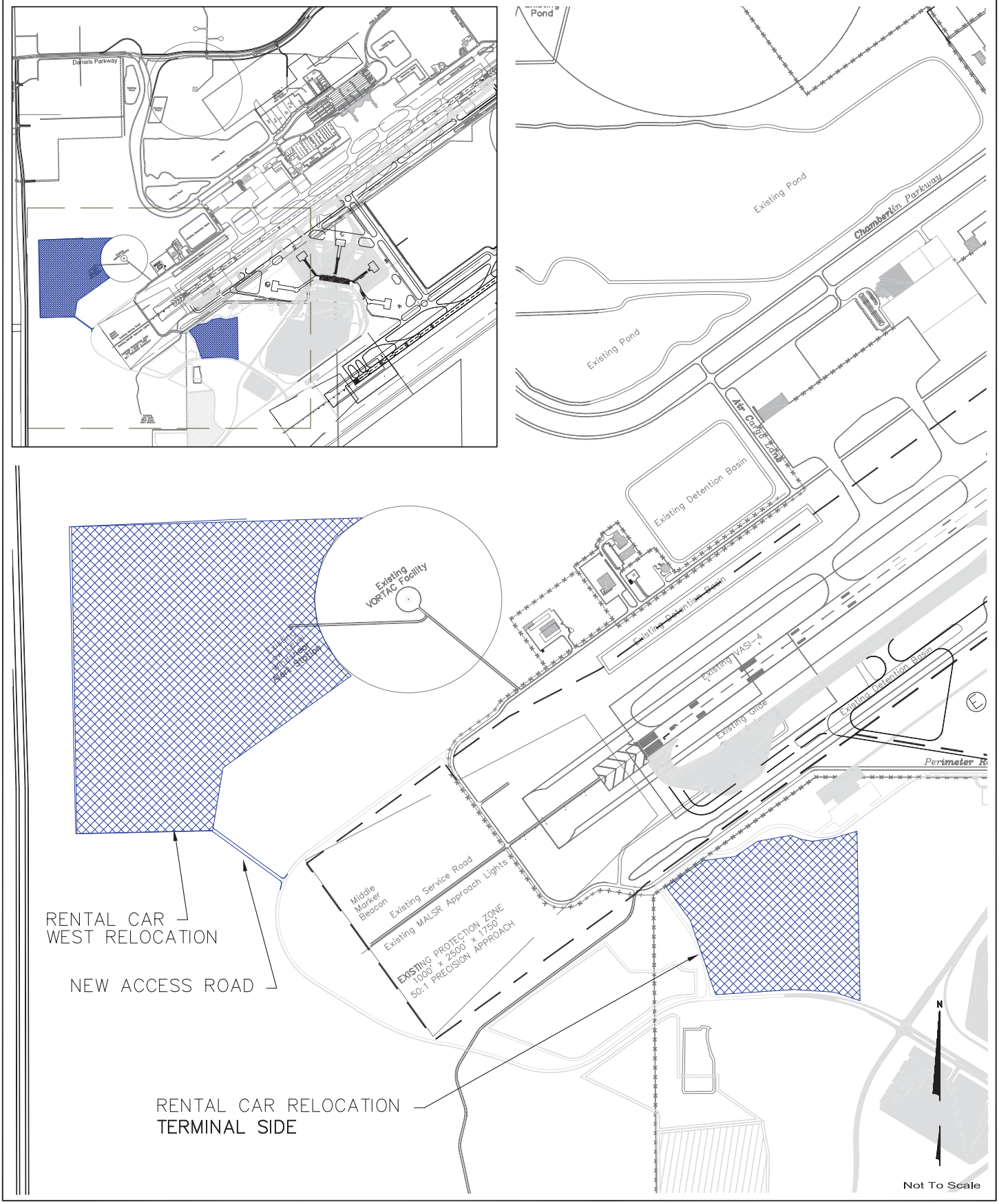

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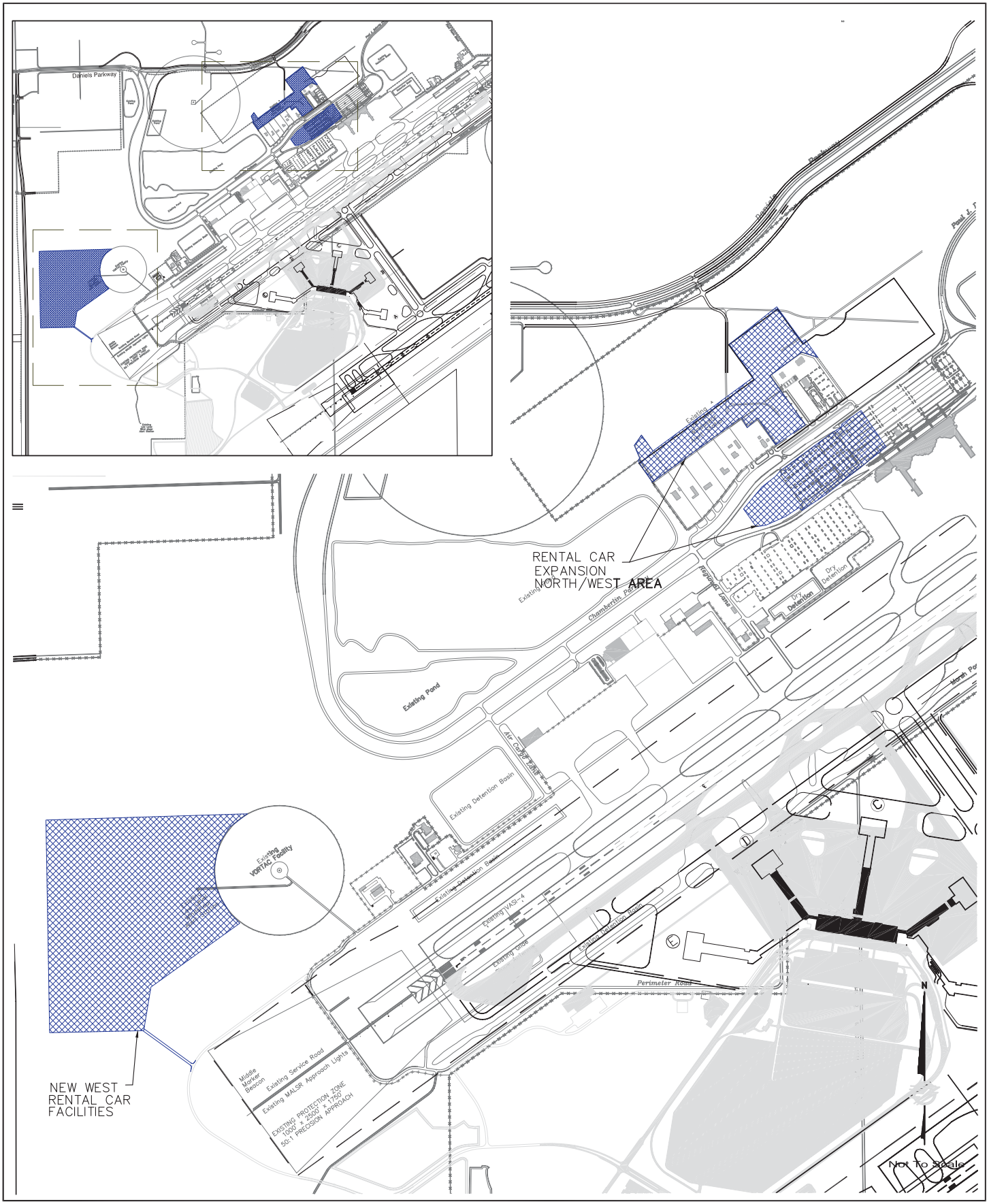
Exhibit 6-15



Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE	RENTAL CAR ALTERNATIVE 3	EXHIBIT 6-15

Pros

- Improves operational efficiency – reduces distance for some operators.
- Reuses a portion of existing terminal parking area for additional rental car expansion.
- Would not require Airport to break existing leases with rental car tenants.

Cons

- Does not provide similar level of service to all operators.
- Reduces development flexibility for area between existing terminal area and Daniels.
- Still results in considerable traffic between the new midfield and the old terminal area.

Recommended Rental Car Alternative

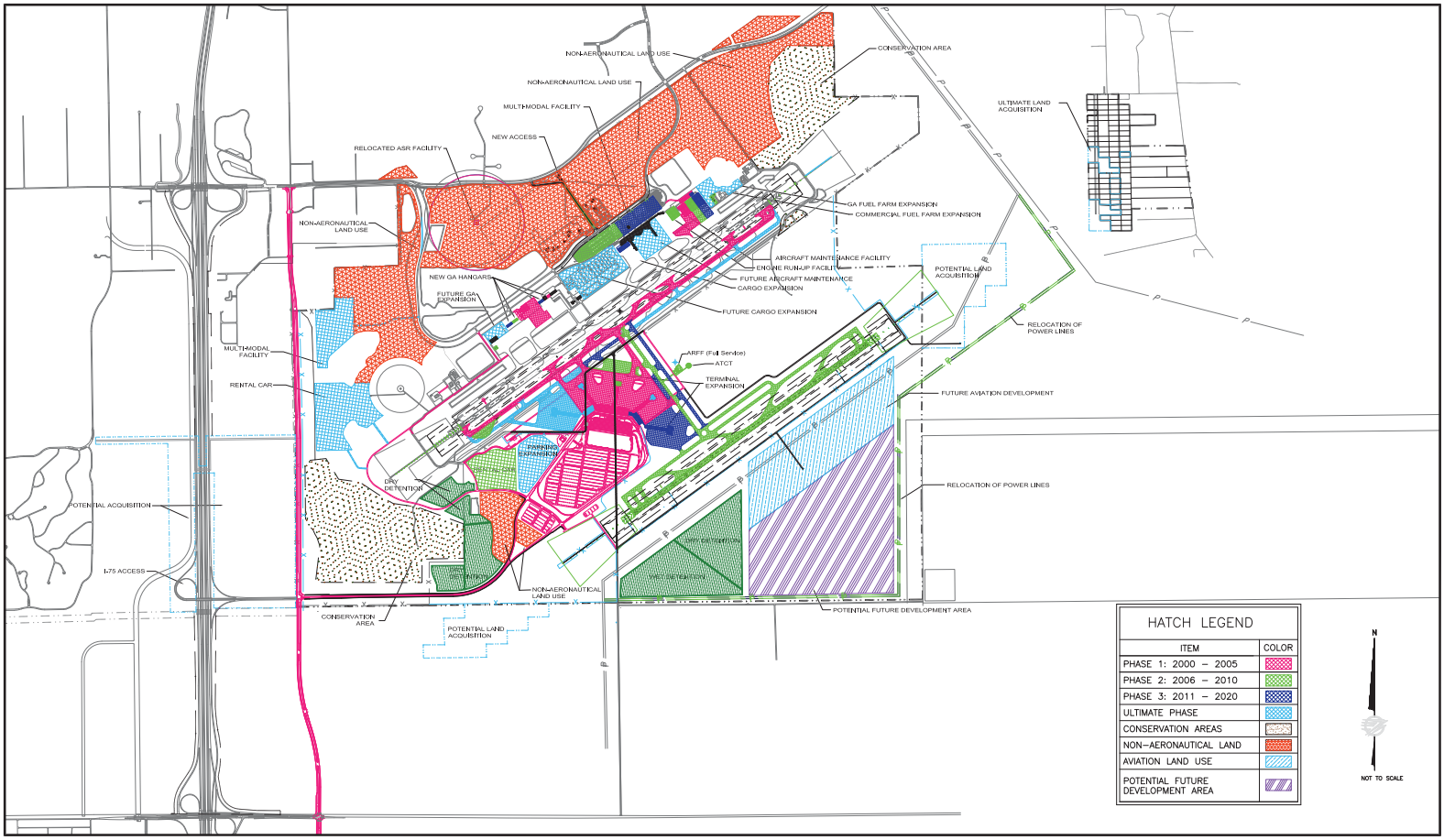
The three rental car alternatives include a range of options that include simply expanding existing facilities to full rental car relocation. Expanding the existing facilities has an obvious capital cost advantage while relocation of the facilities has a long-term operational cost advantage. With the relocation of the midfield complex a considerable distance from the existing rental car area both rental car Alternative 2, full rental car relocation, and Alternative 3, partial rental car relocation, were considered the most desirable. In reviewing the future revenue generation potential for the north side of the airport, it is apparent that full relocation of the rental car facilities provides the most flexibility for revenue enhancement. Based on this and the analysis included above, it is recommended that the rental car facilities ultimately be fully relocated as outlined in Alternative 2.

6.4 RECOMMENDED DEVELOPMENT PLAN

The recommended development program is outlined in **Exhibit 6-16**. The program can be summarized as follows:

- Upon relocation of the midfield terminal, the north airfield is reconfigured to maximize potential cargo, general aviation, and aircraft maintenance activities.
- With relocation of the rental car facilities to the proximity of the new midfield terminal area, considerable land becomes available along the north side of the airport to support non-aviation revenue enhancing development.
- The projected passenger demand throughout the 20 year development period is handled in the new midfield terminal complex through the expansion of one of the concourse headhouses and the development of Concourse A and associated terminal area.
- A new 9,100'parallel runway is added along with a new central primary aircraft rescue and fire fighting facility and air traffic control tower.
- Primary landside access will shift from Treeline Avenue to a direct connection with I-75.
- The land south of and adjacent to the new runway is preserved for ultimate aviation related development.

Exhibit 6-16



Lee County Port Authority

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RS&H

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA

MASTER PLAN UPDATE

RECOMMENDED DEVELOPMENT PLAN

DATE:	MARCH 2004
PROJECT NO:	C0690.1
FILE NAME:	
DESIGNED BY:	F.B.B
DRAWN BY:	F.B.B
CHECKED BY:	S.R

EXHIBIT 6-16

7 ENVIRONMENTAL OVERVIEW

7.1 INTRODUCTION

An airport is an important transportation resource that provides both metropolitan and rural areas with access to the national transportation system, as well as being a direct stimulator to local and regional economies. Because of the size and nature of an airport, it may generate impacts to the natural, social and economic systems in the area. Through careful planning and implementation of mitigation measures, an airport can provide valuable transportation service, economic development and compatibility with the surrounding environment.

As part of the Southwest Florida International Airport (RSW) Master Planning process, an overview of environmental conditions of the proposed site has been prepared to examine the potential impacts of the proposed development plan. The primary emphasis of this environmental overview is to present a broad overview of general environmental conditions at RSW. It is not intended to provide the level of detail required for an Environmental Assessment (EA). This information will be used to determine what specific projects and environmental concerns may require further federal-level EA, Environmental Impact Statement (EIS) or other specialized environmental study in the future.

The environmental overview has been developed using information supplied through coordination and review of local, regional, state and federal governmental requirements and a review of previous studies and historical documents for RSW.

7.2 FEDERAL ENVIRONMENTAL REQUIREMENTS

The National Environmental Policy Act (NEPA) of 1969 provides for the study and documentation of the impacts of any proposed federal action. NEPA, legislative mandates and Presidential Executive Orders outline specific federal agency environmental review requirements. The Federal Aviation Administration (FAA) is typically the lead governmental agency that is obligated to review major airport development and improvement actions proposed by an airport sponsor, as most major projects involve some form of funding grant request by the airport sponsor to the FAA. As a result, the FAA must review the project for impacts prior to providing funds. It is mandated by Congress, and implemented through NEPA, that adverse environmental impacts be avoided or minimized to the greatest possible extent when federal dollars are being used. NEPA requires that alternatives be considered to avoid or reduce potential adverse effects, to identify necessary mitigation measures and to document public participation in the decision-making process. The guiding document in airport environmental matters is FAA Order 5050.4A, Airport Environmental Handbook.

Three levels of FAA environmental review of development projects are outlined in Order 5050.4A. Each review is dependent upon the level of development being proposed. The three levels of FAA Environmental review are:

- Those development projects that are normally categorically excluded from further environmental analysis;
- Those development projects normally requiring an EA; and
- Those development projects normally requiring an EIS.

7.2.1 Categorical Exclusions

FAA Order 5050.4A defines certain airport development projects as being categorically excluded from formal environmental study. When a project is identified as a Categorical Exclusion, the proposed airport development project is allowed to proceed without further environmental studies. In 5050.4A, airport development actions normally categorically excluded from environmental review (EA or EIS) include:

- Runway, taxiway, apron or loading ramp construction or repair work including extension (except for major runway extensions) strengthening, reconstruction, resurfacing, marking, grooving, fillets and jet blast facilities and new heliports on existing airports (except where such action would create environmental impacts of airport property).
- Installation or upgrading of airfield lighting systems, including runway end identifier lights, visual approach aids, beacons and electrical distribution systems.
- Installation of miscellaneous items including segmented circles, wind or landing direction indicators, measuring devices or fencing.
- Construction or expansion of passenger handling facilities.
- Construction relocation or repair of entrance and service roads.
- Grading or removal of obstruction on airport property and erosion control actions with no off-airport impacts.
- Landscaping generally, and landscaping or construction of physical barriers to diminish impact of airport blast and noise.
- Projects to carry out noise compatibility programs.
- Land acquisition and relocation associated with any of the above items.
- Federal release of airport land.
- Removal of displaced thresholds.

7.2.2 Environmental Assessment (EA)

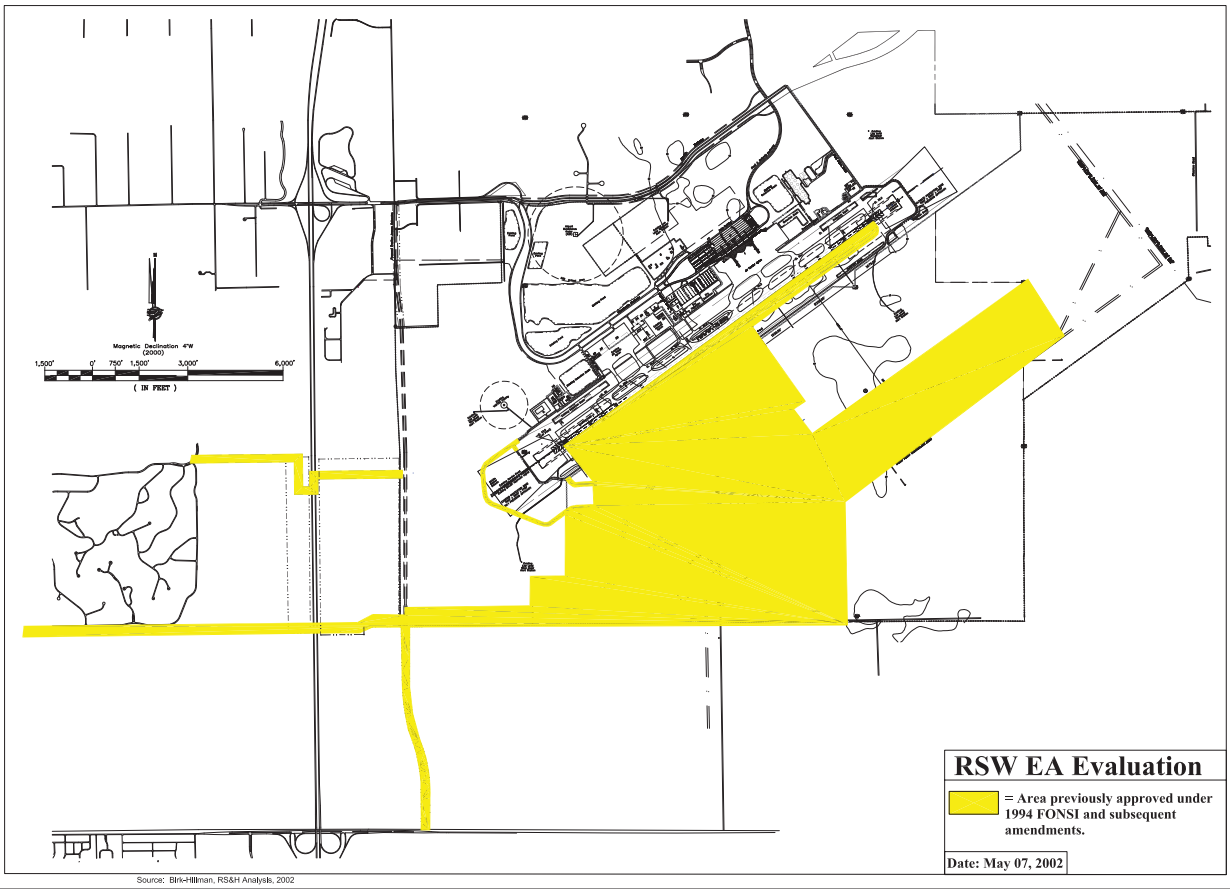
An EA examines potential impacts to determine whether they exceed predefined thresholds of significance or create sufficient controversy to require FAA to prepare a full EIS, or if the FAA can provide a Finding of No Significant Impact (FONSI). The FAA will either issue a FONSI as a result of the EA review process and the proposed airport development can proceed, or it will determine that an EIS must be prepared. Actions normally requiring an EA include the following:

- A new airport location.
- A new runway.
- A major runway extension.
- Runway strengthening that would result in a 1.5 DNL (the average day-night sound level) increase in noise impacting a sensitive area within the 65 DNL contour.
- Construction or relocation of entrance or service road connections to public roads that adversely affect the capacity of such public roads.
- Land acquisition associated with any of the above items including land acquisition that would result in the relocation of residential units when there is evidence of insufficient compatible replacement dwellings, major disruption of business activities, or acquisition that involves land covered under Section 4(f) of the Department of Transportation (DOT) Act.
- Establishment or relocation of an Instrument Landing System (ILS) or an approach lighting system.
- An airport development action that involves extraordinary circumstances or involves Section 4(f) lands; land areas or structures eligible for or designated as significant, historical, architectural or cultural; land acquisition for conversion of farmland; impacts to wetlands, coastal areas, or floodplains; or endangered or threatened species.

The last EA for RSW was prepared in 1994 and it addressed the long-term development needs of the airport. The analysis included the development of the midfield terminal complex and the future parallel runway. A graphic depicting the area covered in the 1994 EA is shown in Exhibit 7-1. Since that time, additional coordination has been conducted with the Federal Aviation Administration and in a letter dated May 15, 2002, it is assumed that any of the development shown within the limits identified in the next exhibit is covered under the 1994 FONSI and will not require any additional environmental processing.

Any of the proposed development outside the limits depicted in **Exhibit 7-1** may require additional environmental processing. The LCPA has recently initiated an Environmental Assessment that will address all the environmental impacts of those projects outside the area identified in the 1994 FONSI.

Exhibit 7-1



Source: Birk-Hillman, RS&H Analysis, 2002

Lee County Port Authority

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Orlando Miami Atlanta

DMJM Aviation

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SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA
MASTER PLAN UPDATE
FONSI APPROVED DEVELOPMENT MAP

EXHIBIT
7-1

7.2.3 Environmental Impact Statement

If proposed development results in significant environmental impact, an EIS may be required. An EIS is a thorough review process that provides federal, state, regional, local and other agencies an opportunity to participate in the project as coordinating or commenting agencies. The detail of the EIS is determined either by the EA, or during the FAA environmental scoping process. Full evaluation of the proposed project or action, as well as all reasonable and prudent alternatives, must be undertaken. Actions normally requiring an EIS include:

- The development of a first-time airport layout plan, or airport location approval for commercial service airport in a Standard Metropolitan Statistical Area (SMSA).
- Financial participation in, or airport layout plan approval of, a new runway capable of handling air carrier aircraft at a commercial service airport in a SMSA.

It is not anticipated that an EIS will be required for any of the development proposed in this Master Plan Update.

7.3 FEDERAL, STATE, REGIONAL AND LOCAL ENVIRONMENTAL COORDINATION

In addition to satisfying FAA regulations, proposed airport development also needs to comply with federal, state, regional and local environmental and permitting requirements and will require approval by those agencies. Potential federal, state, regional and local agencies, other than the FAA, that would be involved in the review process for RSW include:

- Lee County Development Services (Growth Management and Local Permitting)
- Lee County Department of Transportation (Airport Access)
- South Florida Water Management District (Storm Water Management and Permitting)
- Southwest Florida Regional Planning Council (Growth Management)
- Florida Department of Environmental Protection (FDEP), Southwest District
- Florida Department of Transportation (Airport Access)
- Florida Department of State, Division of Historical Resources (Historic and Cultural Resources)
- United States Environmental Protection Agency, Public Affairs Office (Threatened and Endangered Species, Water Quality)
- United States Fish and Wildlife Service (Threatened and Endangered Species)
- United States Army Corps of Engineers, Flood Control and Water Management Program, Jacksonville District (Wetlands Impact)
- United States Department of the Interior, Bureau of Land Management, Eastern States Office (Section 4F Lands)
- United States Department of Agriculture, Forest Service United States National Park Service (Section 4F Lands)
- National Marine Fisheries Service, Southeast Regional Office (SERO), Protected Resources; (Biotic Communities) and
- Federal Emergency Management Agency (FEMA) (Floodplains).

7.4 GROWTH MANAGEMENT REGULATIONS

The Airport is currently operating under Growth Management Regulations under the Florida Department of Community Affairs. Regulations that affect airports currently are under revision to simplify the process. The Lee County Port Authority is currently working with Lee County to incorporate this Airport Master Plan document into the local Comprehensive Plan.

7.5 AIRPORT MASTER PLAN ENVIRONMENTAL OVERVIEW

As discussed earlier in this chapter, the environmental overview analysis prepared for this Airport Master Plan is neither intended nor required to be prepared at the level of detail of an EA or EIS. Its intended purpose is to provide a review of the environmental issues that may need to be considered in a future, formal environmental study and assist in the selection of the preferred development plan. In addition, coordination was conducted with the Florida State Clearinghouse to allow various state agencies an opportunity to review the anticipated development expected to occur at RSW and to conduct a data base research of potential issues that would be impacted by the proposed development. A copy of the comments received from the Florida State Clearinghouse is included in **Appendix B**.

A preliminary analysis of environmental conditions related to the Airport's recommended development alternatives was evaluated in relation to the 21 impact categories outlined in FAA Order 5050.4A. These impact categories include:

- Noise
- Compatible Land use
- Social Impacts
- Induced Socioeconomic Impacts
- Air Quality
- Water Quality
- DOT Section 4(f) Lands
- Historical, Architectural, Archaeological and Cultural Resources
- Biotic Communities
- Endangered and Threatened Species of Flora and Fauna
- Wetlands
- Floodplains
- Coastal Zone Management Program
- Coastal Barriers
- Wild and Scenic Rivers
- Prime and Unique Farmland
- Energy Supply and Natural Resources
- Light Emissions
- Solid Waste Impacts
- Construction Impacts
- Other Considerations

Discussion is provided below on the potential impacts to these environmental categories resulting from the proposed Airport Master Plan development.

7.5.1 Aircraft Noise

Background

A number of noise analyses have been prepared at Southwest Florida International Airport (RSW) over the past 25 years. These included the noise analysis portion of the environmental document prepared for the new facility in the late 1970's, an FAR Part 150 study prepared in the late 1980's and the most recent update to the FAR Part 150 study completed and approved by the FAA in 1995.

Following the approval of the FAR Part 150 study, minor adjustments were made to operational procedures (flight corridors) based on requests from neighboring communities and from FAA's air traffic control and were included in the 2001 Future Aircraft Noise Contour Update, prepared in 1997.

Included as part of both FAR Part 150 studies was the development of a noise/land use compatibility overlay zone that limits the future development of property around the Airport to uses compatible with aircraft noise and overflight. The 1995 FAR Part 150 study expanded the noise/land use analysis to incorporate the long-term effects of a future parallel air carrier runway. The overlay zone has been incorporated into the Lee Plan (Lee County's Comprehensive Plan) and into the Lee County Land Development Code.

The noise analysis documented in this section of the Master Plan provides updated year 2000 baseline noise exposure contours based on actual operations for the year and future noise contours associated with both the current single runway configuration and the future parallel runway system.

Aviation Noise Fundamentals

A number of key terms associated with the assessment of noise need to be defined to ensure that the reader is familiar with terminology that will be used in describing the noise exposure on areas surrounding RSW. The following provides a listing of key terms.

A-Weighted Sound Level
A-weighted sound is a sound pressure level, which has been filtered or weighted to reduce the influence of the low and high extremes. Unweighted sound pressure levels do not correlate well with human assessment and response to noise loudness. As a result, a variety of techniques to filter sound have been developed. A-weighting has been found to correlate well with the human hearing response and with a person's subjective judgement of the loudness of sounds. A-weighting gives greater emphasis to the sounds in the speech important frequency bands and less emphasis to the lower and higher frequencies. A-weighting is widely used and almost universally accepted in analyzing noise and its affects on people.

Equivalent Sound Level (Leq)
Leq is the energy average noise level over a specified time. This approach is normally employed for a duration of 1 hour, 8 hours or a 24-hour period. Equivalent signifies that the total acoustical energy associated with the fluctuating sound (during the specified time period) is equal to the total acoustical energy associated with the steady sound level

of Leq for the same specified period of time. The purpose of Leq is to provide a single number measure of noise averaged over a set time period.

Day Night Sound Level (DNL)

DNL was developed as a single number measure of community noise exposure. DNL was introduced as a simple method for predicting the effects on a population of the average long-term exposure to noise. DNL is an enhancement of the Equivalent Sound Level (Leq) metric through the addition of a 10 dB penalty for nighttime (10 p.m. to 7 a.m.) noise intrusions. The incorporation of the 10 dB penalty is in recognition of the increased annoyance that is generally associated with noise during the later night hours. DNL employs the same energy equivalent concept as Leq and uses a 24-hour time integration period. DNL was developed under Environmental Protection Agency (EPA) auspices, and embodies extensive information regarding the physical description of noise as related to human acceptability in residential areas. The basic elements and concepts of DNL are as follows:

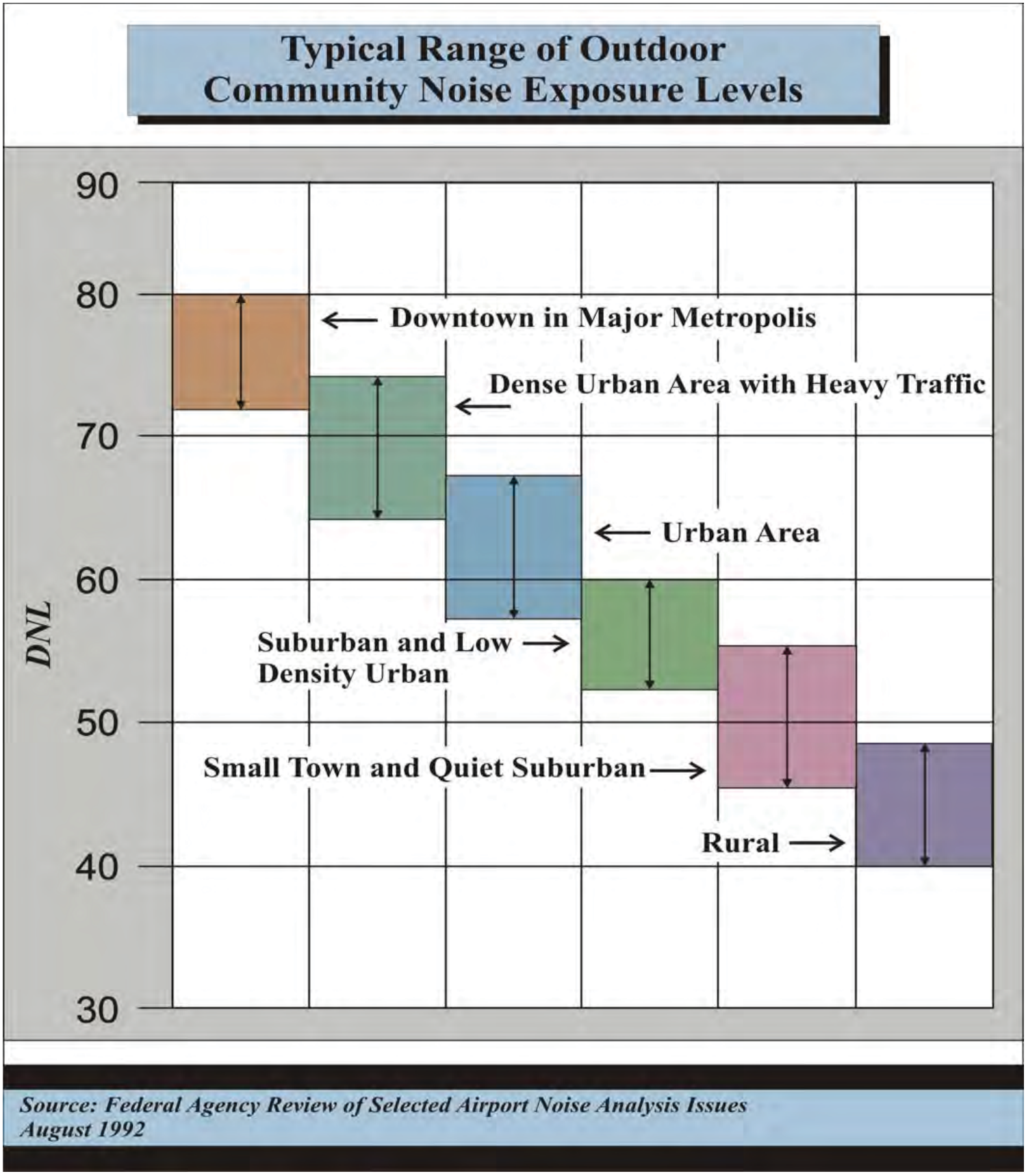
- Frequency Weighting - Use of the standard A-weighting which most closely reflects the response to the human ear.
- Time-of-Day Weighting - The 10 dB nighttime penalty accounts for greater sensitivity to noise and/or lower background levels at night.
- Energy Averaging - The energy-mean is the best general single-number description of sound level that varies with time, in terms of average community response.

In 1981, the FAA formally adopted DNL as the single system for determining exposure of individuals to aircraft noise. The use of DNL as the most appropriate measure of noise and its affect on persons was reconfirmed in the early 1990's after careful re-consideration by the Federal Interagency Committee on Urban Noise and subsequent re-evaluation by the Federal Interagency Committee on Aircraft Noise. DNL is the most widely accepted descriptor for aviation noise because of the following characteristics:

- DNL is a measurable quantity.
- DNL provides a simple method to compare the effectiveness of alternative airport scenarios.
- DNL can be understood by airport planners and the public who are not familiar with acoustics or acoustical theory.
- DNL is a measure that can describe a community's reactions to environmental noise.
- DNL is the best measure of noise exposure to identify significant impacts on the quality of the human environment.
- By Federal interagency agreement, DNL is the best descriptor of all noise sources for land use compatibility planning.
- DNL is the only metric with a substantial body of scientific survey data on the reactions of people to noise.

DNL is currently preferred by the FAA, EPA and HUD as an appropriate measure of cumulative noise exposure, thus, the DNL is used to assess aircraft noise exposure at RSW. **Exhibit 7-2** gives an indication of typical ranges of outdoor community noise exposure levels in DNL.

Exhibit 7-2



Source: Environmental Science Associates, 2002

Computation of DNL

In calculating DNL, the Leq level is used as the hourly equivalent sound level. The hourly noise figures are summed for the 15 hours of daylight (7 a.m. to 10 p.m.) and added to the sum of Leq hourly figures for the remaining 9 hours of nighttime with a 10 dB penalty added to the nighttime figures (to reflect added human sensitivity to nighttime noise). The result is the DNL noise level or a 24-hour summary of noise levels for a given location. When aircraft noise contours are calculated, however, the noise levels are solely due to the aircraft and do not include background or ambient noise levels.

Integrated Noise Model

The standard methodology for generating the DNL contours at airports involves the use of the Integrated Noise Model (INM). The INM was developed by the Transportation Systems Center of the United States Department of Transportation (USDOT) at Cambridge, Massachusetts and is undergoing continuous refinement. The model is designed as a conservative planning tool, and is periodically updated based on the philosophy that each version should present a conservative approach to noise prediction. Version 6.0c (the most current version of the model at the time of the study) was used for the noise analysis described in this report.

Methodology

The INM works by defining a network of grid points at ground level around an airport (RSW in this study). It then selects the shortest distance from each grid point to each flight track and computes the noise exposure generated by each aircraft operation, by aircraft type and engine thrust level, along each flight track. Corrections are applied for atmospheric acoustical attenuation, acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels for each aircraft are then summed at each grid location. The cumulative noise exposure levels at all grid points are then used to develop noise exposure contours for selected values (e.g. 60, 65, 70, and 75 DNL). DNL noise contours of equal noise exposure can then be plotted.

INM Input Data

In order to develop DNL noise contours, the INM uses a series of input factors. Some of these factors are included in the database for the model (such as engine noise levels, thrust settings, aircraft profiles and aircraft speeds) and others are Airport-specific and need to be determined for each condition analyzed. This Airport-specific data includes the airport elevation, average annual temperature, runway layout, the mathematical description of ground tracks above which aircraft fly, and the assignment of specific aircraft with specific engine types at specific takeoff weights to individual flight tracks. The INM input factors specific to RSW for this analysis include:

- Aircraft operations and fleet mix
- Runway orientation and use
- Stage lengths of aircraft
- Time of day/night of operations
- Flight tracks

Operational Activity and Fleet Mix

The aircraft operations and fleet mix used in the noise analysis was based on the activity and forecasts presented in the Master Plan Update. **Table 7-1** summarizes the annual airport operational activity. In 2000, a total of 77,042 operations occurred, or an average of 211 operations per day. By 2020, operations are forecasted increase to 139,160, or 381 per day. The breakdown of operations and fleet mix for domestic and international air carrier aircraft are presented in **Tables 7-2** and **7-3.**

Table 7-1
Domestic Air Carrier Operations and Fleet Mix
Southwest Florida International Airport

Year	Domestic Air Carrier	International Air Carrier	Regional / Commuter	General Aviation	Cargo	Military	Total
2000	38,240	976	14,450	20,035	1,604	1,737	**77,042**
2005	47,200	1,400	15,200	23,300	1,760	1,740	**90,600**
2010	56,000	1,800	17,600	26,600	1,960	1,740	**105,700**
2015	65,800	2,200	20,000	30,400	1,920	1,740	**122,060**
2020	76,200	2,800	22,200	34,400	1,820	1,740	**139,160**

Sources: LCPA and Ricondo & Associates

Table 7-2
Domestic Air Carrier Operations and Fleet Mix
Southwest Florida International Airport

	2000		2005		2010		2015		2020	
Aircraft Type	Operations	%	Operations	%	Operations	%	Operations	%	Operations	%
A319/320	2,514	6.6	3,390	7.2	4,362	7.8	5,522	8.4	6,858	9.0
B717	234	0.6	806	1.7	1,570	2.8	2,568	3.9	3,810	5.0
B727-200	2,898	7.6	2,682	5.7	2,122	3.8	1,246	1.9	0	0.0
B737-200	2,780	7.3	2,574	5.5	2,036	3.6	1,196	1.8	0	0.0
B737-300	3,160	8.3	3,514	7.4	3,714	6.6	3,826	5.8	3,810	5.0
B737-400	3,118	8.2	4,302	9.1	5,642	10.1	7,262	11.0	9,144	12.0
B737-500	562	1.5	992	2.1	1,532	2.7	2,216	3.4	3,048	4.0
B737-700/800	498	1.3	2,348	5.0	4,844	8.7	8,110	12.3	12,192	16.0
B757	7,152	18.7	8,980	19.0	10,836	19.4	12,946	19.7	15,240	20.0
B767-200	1,184	3.1	2,040	4.3	3,108	5.6	4,458	6.8	6,096	8.0
B767-300	2,404	6.3	3,406	7.2	4,560	8.1	5,970	9.1	7,620	10.0
L1011/DC10	178	0.5	284	0.6	410	0.7	570	0.9	762	1.0
DC9	2,304	6.0	2,134	4.5	1,688	3.0	992	1.5	0	0.0
MD-80/87	9,236	24.2	9,730	20.6	9,562	17.1	8,908	13.5	7,620	10.0
Total Operations	**38,222**	**100.0**	**47,182**	**100.0**	**55,986**	**100.0**	**65,790**	**100.0**	**76,200**	**100.0**

Sources: Official Airline Guide (OAG) and Ricondo & Associates

Table 7-3
International Air Carrier Operations and Fleet Mix
Southwest Florida International Airport

	2000		2005		2010		2015		2020	
Aircraft Type	Operations	%	Operations	%	Operations	%	Operations	%	Operations	%
A319/320	442	45.1	614	43.8	768	42.6	908	41.3	1,120	40.0
A330	276	28.2	394	28.1	506	28.1	618	28.1	784	28.0
B737-200	86	8.8	92	6.6	78	4.3	48	2.2	0	0.0
B737-700/800/900	0	0.0	18	1.3	46	2.6	82	3.7	140	5.0
B747	0	0.0	8	0.6	18	1.0	34	1.5	56	2.0
B757-200	84	8.6	132	9.4	184	10.2	244	11.1	336	12.0
B767-200	90	9.2	142	10.1	200	11.1	264	12.0	364	13.0
L1011	2	0.2	2	0.1	2	0.1	2	0.1	0	0.0
Total Operations	**980**	**100.0**	**1,402**	**100.0**	**1,802**	**100.0**	**2,200**	**100.0**	**2,800**	**100.0**

Sources: OAG and Ricondo & Associates

The fleet mix of the regional/commuter activity includes single engine propeller, medium/large turboprop and regional jet aircraft. Destinations served by regional/commuter aircraft operating at RSW include Key West, Miami, Tampa and Orlando. Over the next 20 years, the trend to increase the use of regional jets (typically referred to as RJ's) by airlines will continue. By 2020, RJ's are expected to account for almost 40 percent of the regional/commuter fleet at RSW. The breakdown of operations and fleet mix for regional/commuter aircraft is presented in **Table 7-4**.

Table 7-4 Regional/Commuter Aircraft Operations and Fleet Mix Southwest Florida International Airport										
	2000		2005		2010		2015		2020	
Aircraft Type	Operations	%	Operations	%	Operations	%	Operations	%	Operations	%
Cessna 402 (4-14)	2,126	14.7	1,904	12.5	1,822	10.4	1,636	8.2	1,332	6.0
Beech 1900 (15-19)	3,896	27.0	3,796	25.0	4,044	23.0	4,198	21.0	4,218	19.0
EMB 120 (20-40)	1,986	13.7	2,039	13.4	2,290	13.0	2,316	11.6	2,220	10.0
ERJ 135 (20-40)	496	3.4	680	4.5	982	5.6	1,544	7.7	2,220	10.0
ATR-42 (41-60)	3,642	25.2	3,833	25.2	4,404	25.0	4,544	22.7	4,440	20.0
Canadair RJ (41-60)	910	6.3	1,278	8.4	1,888	10.7	3,030	15.2	4,440	20.0
ATR-72 (61+)	1,115	7.7	1,253	8.2	1,519	8.6	1,639	8.2	1,665	7.5
ERJ 170 (61+)	279	1.9	418	2.7	651	3.7	1,093	5.5	1,665	7.5
Total Operations	**14,450**	**100.0**	**15,201**	**100.0**	**17,600**	**100.0**	**20,000**	**100.0**	**22,200**	**100.0**

Sources: OAG, Ricondo & Associates and Environmental Science Associates

In 2000, cargo activity accounted for approximately 1,600 operations at RSW. Currently, the airport is served by Federal Express, United Parcel Service and Airborne Express. Cargo operations are forecasted to peak in 2010 with approximately 1,960 operations. **Table 7-5** presents the cargo operations and fleet mix at RSW over the next 20 years.

Table 7-5 Cargo Aircraft Operations and Fleet Mix Southwest Florida International Airport										
	2000		2005		2010		2015		2020	
Aircraft Type	Operations	%	Operations	%	Operations	%	Operations	%	Operations	%
B727-200	535	33.3	587	33.3	653	33.3	640	33.3	607	33.3
B757	535	33.3	587	33.3	653	33.3	640	33.3	607	33.3
DC9	535	33.3	587	33.3	653	33.3	640	33.3	607	33.3
Total Operations	**1,605**	**100.0**	**1,761**	**100.0**	**1,959**	**100.0**	**1,920**	**100.0**	**1,821**	**100.0**

Source: LCPA, Ricondo & Associates and Environmental Science Associates

Table 7-6 and **Table 7-7** summarize the itinerant and local general aviation (GA) activity at RSW. In 2000, approximately 84 percent of the GA activity was itinerant and 16 percent local. These percentages are forecasted to be similar in 2020 with approximately 80 percent of the GA operations being itinerant and 20 percent local. The greatest

numbers of itinerant GA aircraft operating at RSW are multiengine turboprop aircraft. In 2000, these aircraft accounted for approximately 37 percent of the itinerant GA activity at RSW. The fleet mix of itinerant aircraft is assumed to remain constant over the next 20 years.

The local GA traffic involves aircraft making a close-in pattern off the airport's runway. GA jet aircraft account for approximately 80 percent of the local operations. Noise associated with general aviation jet aircraft can vary widely with older general aviation Stage 2 jets having noise levels higher than some larger commercial service aircraft. For the purpose of this study, Stage 2 GA jet activity was assumed to be 23 percent and Stage 3, 77 percent. This assumption is based on National Business Aviation Association's (NBAA) estimate of FAA registered aircraft in the United States.

Table 7-6
Itinerant General Aviation Aircraft Operations and Fleet Mix
Southwest Florida International Airport

	2000		2005		2010		2015		2020	
Aircraft Type	Operations	%	Operations	%	Operations	%	Operations	%	Operations	%
Single Engine	1,598	9.5	1,836	9.5	2,071	9.5	2,339	9.5	2,614	9.5
Multiengine Piston	4,120	24.5	4,735	24.5	5,342	24.5	6,032	24.5	6,742	24.5
Multiengine Turboprop	6,222	37.0	7,151	37.0	8,067	37.0	9,109	37.0	10,182	37.0
Jet (Stage 2)	1,177	7.0	1,353	7.0	1,526	7.0	1,723	7.0	1,926	7.0
Jet (Stage 3)	3,700	22.0	4,252	22.0	4,797	22.0	5,416	22.0	6,054	22.0
Total Operations	**16,817**	**100.0**	**19,327**	**100.0**	**21,803**	**100.0**	**24,619**	**100.0**	**27,518**	**100.0**

Source: LCPA, Ricondo & Associates and Environmental Science Associates

Table 7-7
Local General Aviation Aircraft Operations and Fleet Mix
Southwest Florida International Airport

	2000		2005		2010		2015		2020	
Aircraft Type	Operations	%	Operations	%	Operations	%	Operations	%	Operations	%
Single Engine	160	5.0	198	5.0	240	5.0	290	5.0	344	5.0
Multiengine Turboprop	482	15.0	596	15.0	720	15.0	868	15.0	1,032	15.0
Jet (Stage 2)	592	18.4	732	18.4	882	18.4	1,064	18.4	1,266	18.4
Jet (Stage 3)	1,982	61.6	2,448	61.6	2,954	61.6	3,562	61.6	4,238	61.6
Total Operations	**3,216**	**100.0**	**3,974**	**100.0**	**4,796**	**100.0**	**5,784**	**100.0**	**6,880**	**100.0**

Source: LCPA, Ricondo & Associates and Environmental Science Associates

Table 7-8 and **Table 7-9** summarize the itinerant and local military activity at RSW. In 2000, approximately 10 percent of the military operations were itinerant and 90 percent local. The mix of aircraft includes small jet and large transport aircraft. Given the limited availability of military operations data, the number and type of military operations are assumed to remain constant in the future.

Table 7-8
Itinerant Military Aircraft Operations and Fleet Mix
Southwest Florida International Airport

	2000		2005		2010		2015		2020	
Aircraft Type	Operations	%	Operations	%	Operations	%	Operations	%	Operations	%
Sabrliner	139	80.0	139	80.0	139	80.0	139	80.0	139	80.0
C130	35	20.0	35	20.0	35	20.0	35	20.0	35	20.0
Total Operations	**174**	**100.0**	**174**	**100.0**	**174**	**100.0**	**174**	**100.0**	**174**	**100.0**

Source: LCPA, Ricondo & Associates and Environmental Science Associates

Table 7-9
Local Military Aircraft Operations and Fleet Mix
Southwest Florida International Airport

	2000		2005		2010		2015		2020	
Aircraft Type	Operations	%	Operations	%	Operations	%	Operations	%	Operations	%
Sabrliner	1,252	80.0	1,252	80.0	1,252	80.0	1,252	80.0	1,252	80.0
C130	314	20.0	314	20.0	314	20.0	314	20.0	314	20.0
Total Operations	**1,566**	**100.0**	**1,566**	**100.0**	**1,566**	**100.0**	**1,566**	**100.0**	**1,566**	**100.0**

Source: LCPA, Ricondo & Associates and Environmental Science Associates

Runway Utilization

The FAR Part 150 for RSW, approved in 1995, indicated the airport operates in a northeasterly flow approximately 85 percent of the time with the remaining 15 percent in a southwesterly flow. FAA's Air Traffic Control personnel indicated that these percentages were still applicable for existing and future conditions at RSW.

Stage Lengths

An aircraft's "stage length" (or trip length) refers to the distance an aircraft flies to its next destination after departing an airport. The stage length is important in noise modeling, since the longer the distance an aircraft will travel to its next destination the greater its fuel load and overall weight and, as a result, the lower its departure profile will be. The stage lengths, included in **Table 7-10**, for departures at RSW range from stage lengths 1 to 6 with the following indicating the ranges of these stage length descriptors.

Stage length 1 – 0 to 500 miles
Stage length 2 – 500 to 1,000 miles
Stage length 3 – 1,000 to 1,500 miles
Stage length 4 – 1,500 to 2,500 miles
Stage length 5 – 2,500 to 3,500 miles
Stage length 6 – 3,500 to 4,500 miles

Table 7-10
Aircraft Stage Length Percentages
Southwest Florida International Airport

Aircraft Type	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6
Domestic Air Carrier						
A319/320		90%	10%			
B717		90%	10%			
B727-200		90%	10%			
B737-200		90%	10%			
B737-300		90%	10%			
B737-400		90%	10%			
B737-500		90%	10%			
B737-700/800		90%	10%			
B757		90%	10%			
B767-200		90%	10%			
B767-300		90%	10%			
L1011/DC10		90%	10%			
DC9		90%	10%			
MD-80/87		90%	10%			
International Air Carrier						
A319/320			100%			
A330						100%
B737-200			100%			
B737-700/800/900			100%			
B747						100%
B757-200			100%			
B767-200			100%			
L1011			100%			
Cargo						
B727-200		100%				
B757	100%					
DC9	100%					

** All Regional/Commuter, GA and Military Aircraft modeled 100% Stage Length 1

Source: Air Carrier Schedule – 2000 and Environmental Science Associates

Time of Day Operations

The percentages of aircraft that operate during the day (7 am-10 p.m.) and nighttime (10 p.m.- 7 am) were developed through a review of the flight schedules and discussions with FAA's Air Traffic Control and Airport Operations Personnel for non-scheduled activity.

The separation of aircraft activity into daytime and nighttime periods is important because the INM includes a penalty for aircraft noise during the nighttime hours. The results of the evaluation are included in **Table 7-11**.

Table 7-11
Time of Day Percentages
Southwest Florida International Airport

Aircraft Type	DEPARTURES		ARRIVALS	
	DAY	NIGHT	DAY	NIGHT
Domestic Air Carrier	90%	10%	80%	20%
International Air Carrier	90%	10%	80%	20%
Regional/Commuter	90%	10%	80%	20%
Cargo	50%	50%	50%	50%
General Aviation	100%	minimal	100%	minimal
Military	100%	minimal	100%	minimal

Source: Air Carrier Schedule – 2000, LCPA and Environmental Science Associates

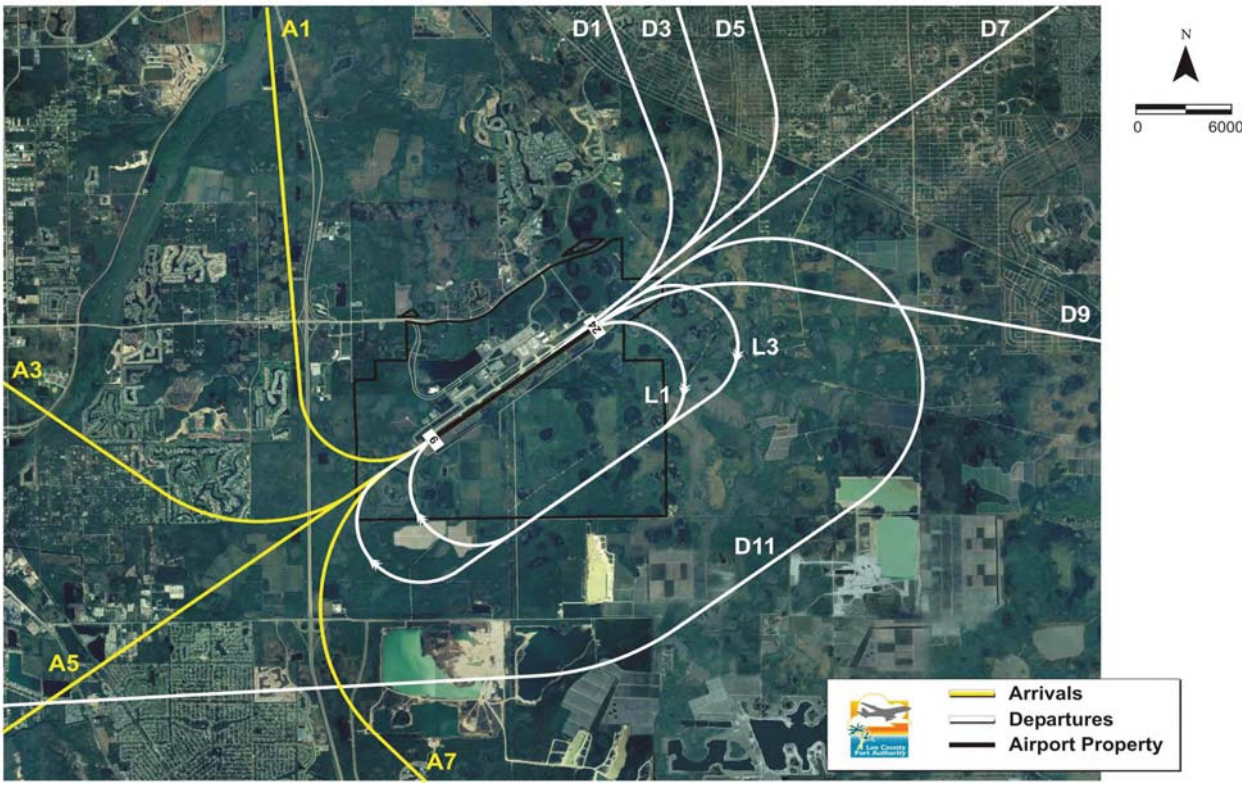
Flight Tracks

The location of flight corridors is an important factor in determining the geographic distribution of noise contours on the ground. The arrival and departure corridors from the FAR Part 150 Study and the 2001 Future Noise Contour Update were reviewed with FAA's Air Traffic Control personnel. Flight corridors utilized by arriving and departing aircraft in all flow conditions were reviewed and a series of centerlines of flight corridors (flight tracks) were established for each condition. The aircraft arrival and departure flight tracks off Runway 6-24 for northeast-flow condition are shown on **Exhibit 7-3** and for southwest-flow on **Exhibit 7-4.**

As noted earlier, the airport operates in a northeast flow approximately 85 percent of the time. Just over 80 percent of all domestic air carrier aircraft operating at RSW depart Runway 6 and turn left heading north (Tracks D1, D3, D5). A very small percentage (less than 1 percent) of the domestic air carrier aircraft depart runway heading or depart and make an immediate right turn (Tracks D7 and D11). This right turn typically includes aircraft departing to Houston or Dallas. During southwest flow, the vast majority of domestic air carrier aircraft departing Runway 24 turn right to northern destinations. Given the different departure performance characteristics of these aircraft, it was determined that these aircraft generally begin their turn between 3.5 NM and 4.5 NM from the beginning of takeoff roll (Tracks D13 and D15) with a small percentage departing straight along Runway heading (Track D17). Domestic air carrier aircraft arriving on Runways 6 and 24 have been identified using a straight in arrival procedure (Tracks A5 and A11).

Exhibit 7-3

Northeast Flow Tracks 85% Single Runway

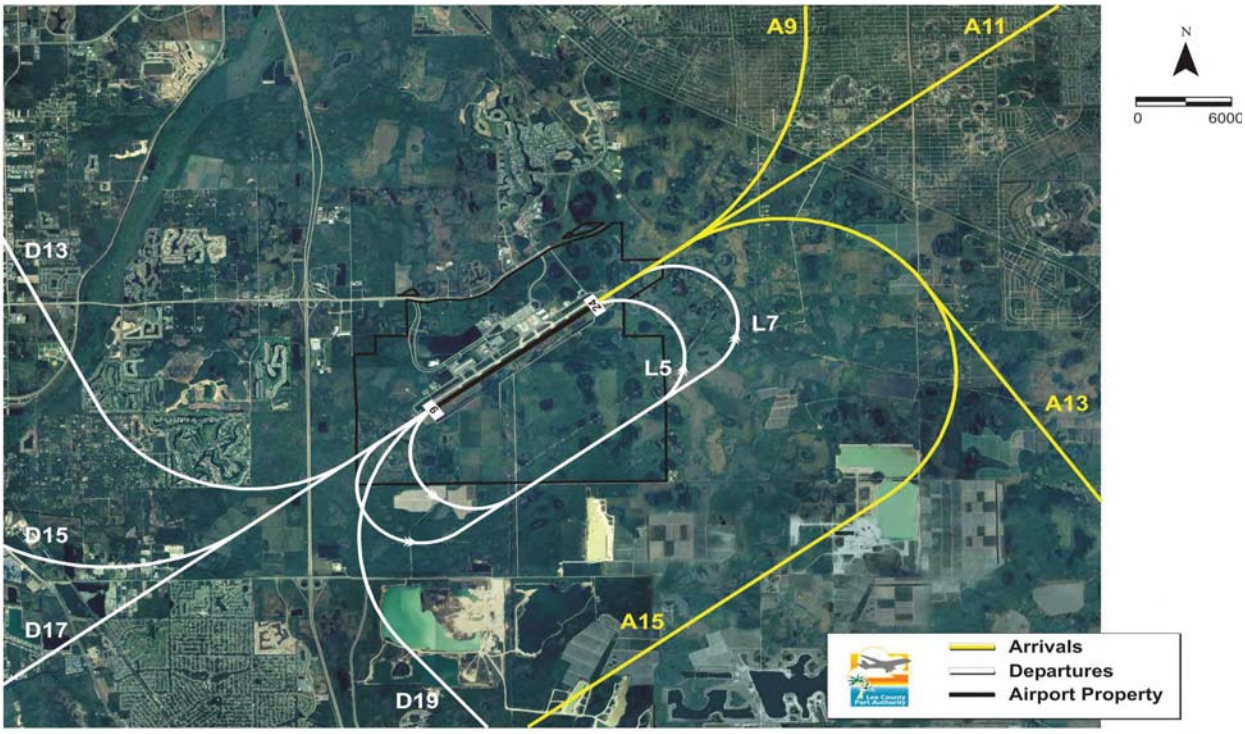


Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE NORTHEAST FLOW TRACKS (85%) - SINGLE RUNWAY	**EXHIBIT** 7-3

Exhibit 7-4

Southwest Flow Tracks (15%) Single Runway



Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE SOUTHWEST FLOW TRACKS (15%) - SINGLE RUNWAY	**EXHIBIT** 7-4

Given the longer stage lengths of the international air carrier aircraft destinations, Canada and Europe, these aircraft were identified departing straight out and arriving straight in (Tracks D7, D17, A5 and A11). Regional/Commuter aircraft departures were split 50-50 between northern and southern destinations. The northern destinations include Tampa and Orlando (Tracks D1, D3, D5 and D13) and the southern destinations include Miami and Key West (Tracks D9 and D19). Arrivals were also split among northern and southern locations (A1, A3, A7, A9, A11 and A13). Itinerant GA aircraft were modeled using the same track percentages as the Regional/Commuter aircraft. Cargo aircraft were identified departing to and arriving from Memphis, St. Pete/Clearwater and West Palm Beach. As such, two-thirds of these aircraft have been modeled to and from northern destinations (Tracks D3, D15, A5 and A11) and one-third to and from southern destinations (Tracks D9, D19, A7 and A11). Itinerant military aircraft have been modeled using straight in and straight out procedures (Tracks D7, D17, A5 and A11). Local single engine piston and turboprop aircraft have been modeled following a close-in pattern off Runway 6-24 (Tracks L1 and L5). Local jet and military aircraft have been modeled following a larger pattern off the runway (Tracks L3 and L7). The flight track use percentages by aircraft group with a single runway configuration are summarized in **Tables 7-12**, **7-13** and **7-14**.

Table 7-12
Departure Corridor Percentages – Single Runway System
Southwest Florida International Airport

Flow	Runway	Track	Domestic Air Carrier	International Air Carrier	Regional/ Commuter	Itinerant GA	Cargo	Itinerant Military
NE	06	D1	38.25		21.25	21.25		
		D3	25.50		12.75	12.75	55.25	
		D5	19.55		8.50	8.50		
		D7	0.85	85.00				85.00
		D9			42.50	42.50	29.75	
		D11	0.85					
SW	24	D13	7.50		7.50	7.50		
		D15	6.00				9.75	
		D17	1.50	15.00				15.00
		D19			7.50	7.50	5.25	
Total			**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: FAA Air Traffic and Environmental Science Associates

Table 7-13 Arrival Corridor Percentages – Single Runway System Southwest Florida International Airport								
Flow	**Runway**	**Track**	**Domestic Air Carrier**	**International Air Carrier**	**Regional / Commuter**	**Itinerant GA**	**Cargo**	**Itinerant Military**
NE	06	A1			21.25	21.25		
		A3			21.25	21.25		
		A5	85.00	85.00			55.25	85.00
		A7			42.50	42.50	29.75	
SW	24	A9	2.25		7.50	7.50		
		A11	0.75	15.00	1.50	1.50	9.75	15.00
		A13			6.00	6.00	5.25	
		A15	12.00					
Total			**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: FAA Air Traffic and Environmental Science Associates

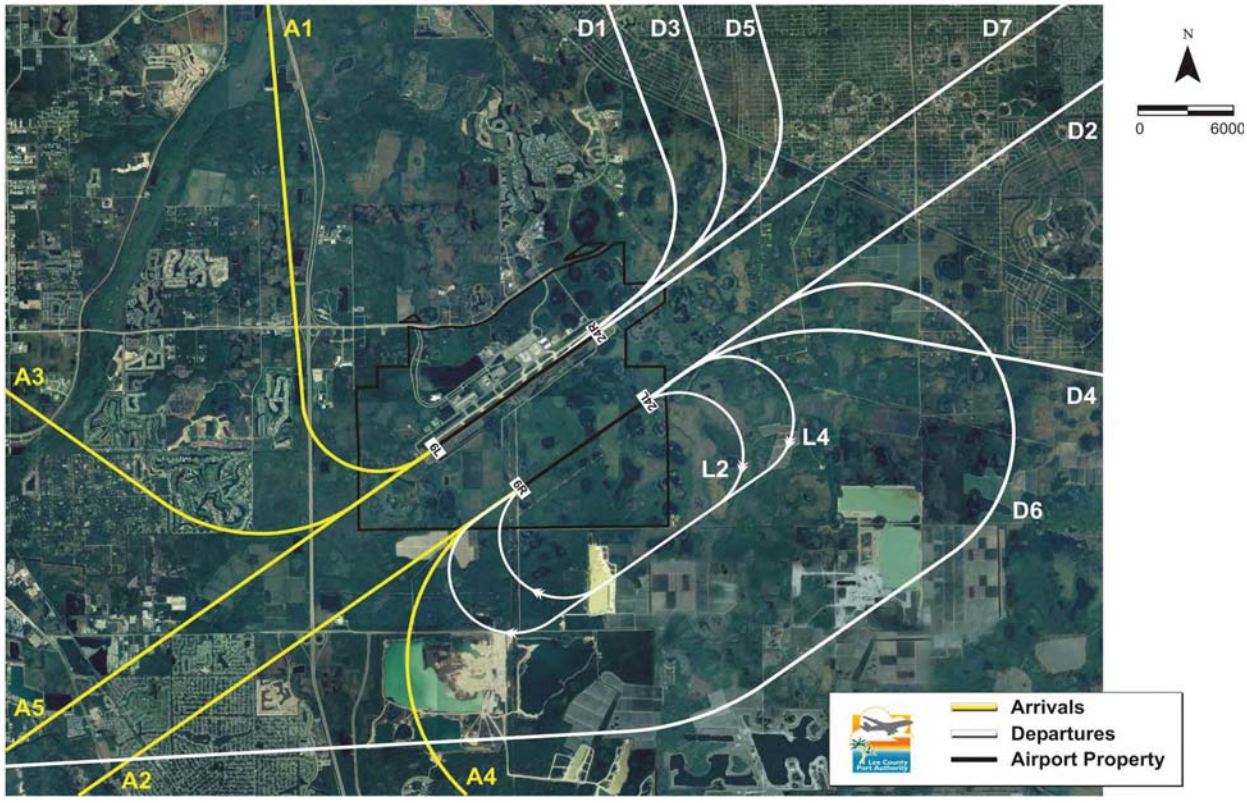
Table 7-14 Local Pattern Percentages – Single Runway System Southwest Florida International Airport					
Flow	**Runway**	**Track**	**Local Prop/Turboprop**	**Local Jet**	**Local Military**
NE	6	L1	85		
		L3		85	85
SW	24	L5	15		
		L7		15	15
Total			**100.00**	**100.00**	**100.00**

Source: FAA Air Traffic and Environmental Science Associates

A new 9,100-foot parallel runway, located 5,385 feet southeast of the existing Runway 6-24, is projected to be operational in 2010. When the new runway opens, it will be designated 6R-24L, with the current Runway 6-24 being re-designated 6L-24R. FAA Air Traffic personnel indicated with the parallel runway configuration, aircraft departing to and arriving from the north will generally use Runway 6L-24R and aircraft departing to and arriving from the south will generally use Runway 6R-24L. It was also indicated that local traffic would use Runway 6R-24L. Given the longer length of Runway 6L-24R, all international air carrier operations have been modeled on this runway. The aircraft arrival and departure flight tracks with the parallel runway system for northeast-flow condition are shown on **Exhibit 7-5** and for southwest-flow on **Exhibit 7-6**. The flight track percentages with the parallel runway system are shown in **Tables 7-15** through **7-17**.

Exhibit 7-5

Northeast Flow Tracks (85%) Parallel Runways



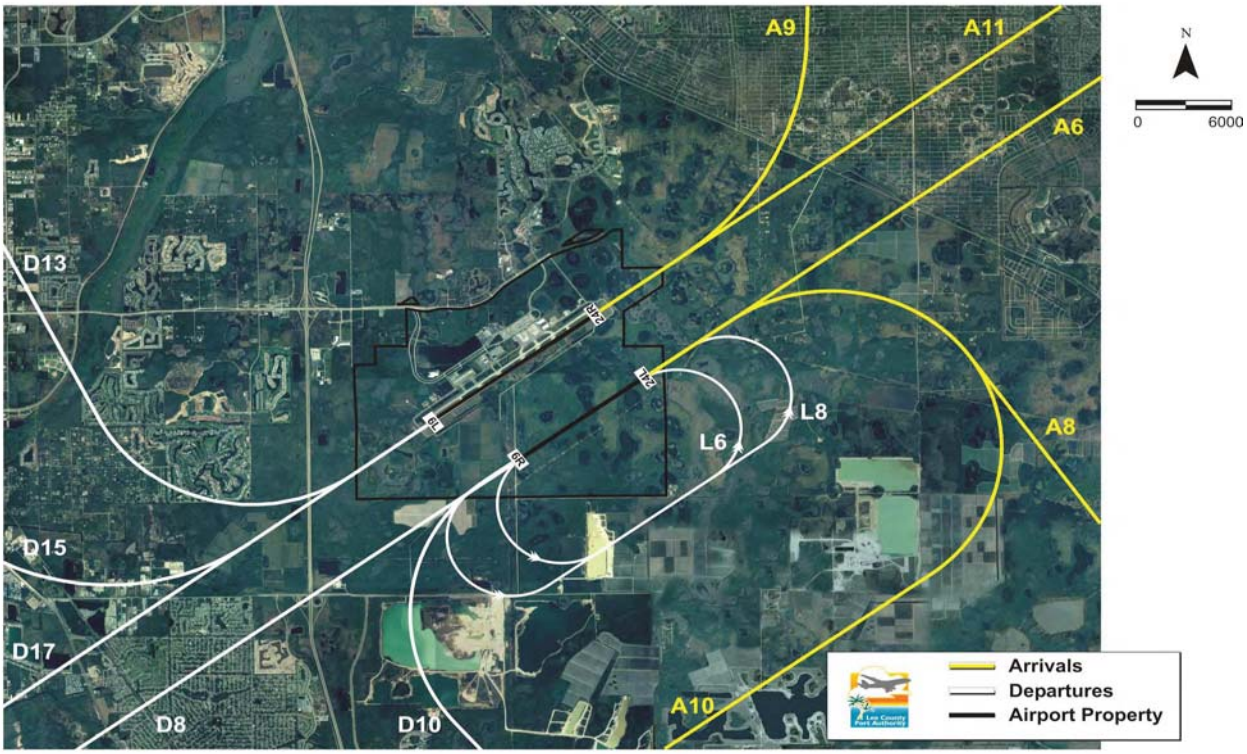
Source: Environmental Science Associates, 2002

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA
MASTER PLAN UPDATE
NORTHEAST FLOW TRACKS (85%) - PARALLEL RUNWAYS

EXHIBIT
7-5

Exhibit 7-6

Southwest Flow Tracks (15%) Parallel Runways



Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE SOUTHWEST FLOW TRACKS (15%) - PARALLEL RUNWAYS	**EXHIBIT** 7-6

Table 7-15
Departure Corridor Percentages – Parallel Runway System
Southwest Florida International Airport

Flow	Runway	Track	Domestic Air Carrier	International Air Carrier	Regional / Commuter	Itinerant GA	Cargo	Itinerant Military
NE	06L	D1	38.25		21.25	21.25		
		D3	25.50		12.75	12.75	55.25	
		D5	18.70		8.50	8.50		
		D7	0.85	85.00				51.00
	06R	D2	0.85					34.00
		D4			42.50	42.50	29.75	
		D6	0.85					
SW	24R	D13	7.50		7.50	7.50		
		D15	6.00				9.75	
		D17	0.75	15.00				9.00
	24L	D8	0.75					6.00
		D10			7.50	7.50	5.25	
Total			**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: FAA Air Traffic and Environmental Science Associates

Table 7-16
Arrival Corridor Percentages – Parallel Runway System
Southwest Florida International Airport

Flow	Runway	Track	Domestic Air Carrier	International Air Carrier	Regional / Commuter	Itinerant GA	Cargo	Itinerant Military
NE	06L	A1			21.25	21.25		
		A3			21.25	21.25		
		A5	51.00	85.00			55.25	51.00
	06R	A2	34.00					34.00
		A4			42.50	42.50	29.75	
SW	24R	A9	2.25		7.50	7.50		
		A11	0.38	15.00	1.50	1.50	9.75	9.00
	24L	A6	0.37					6.00
		A8			6.00	6.00	5.25	
		A10	12.00					
Total			**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: FAA Air Traffic and Environmental Science Associates

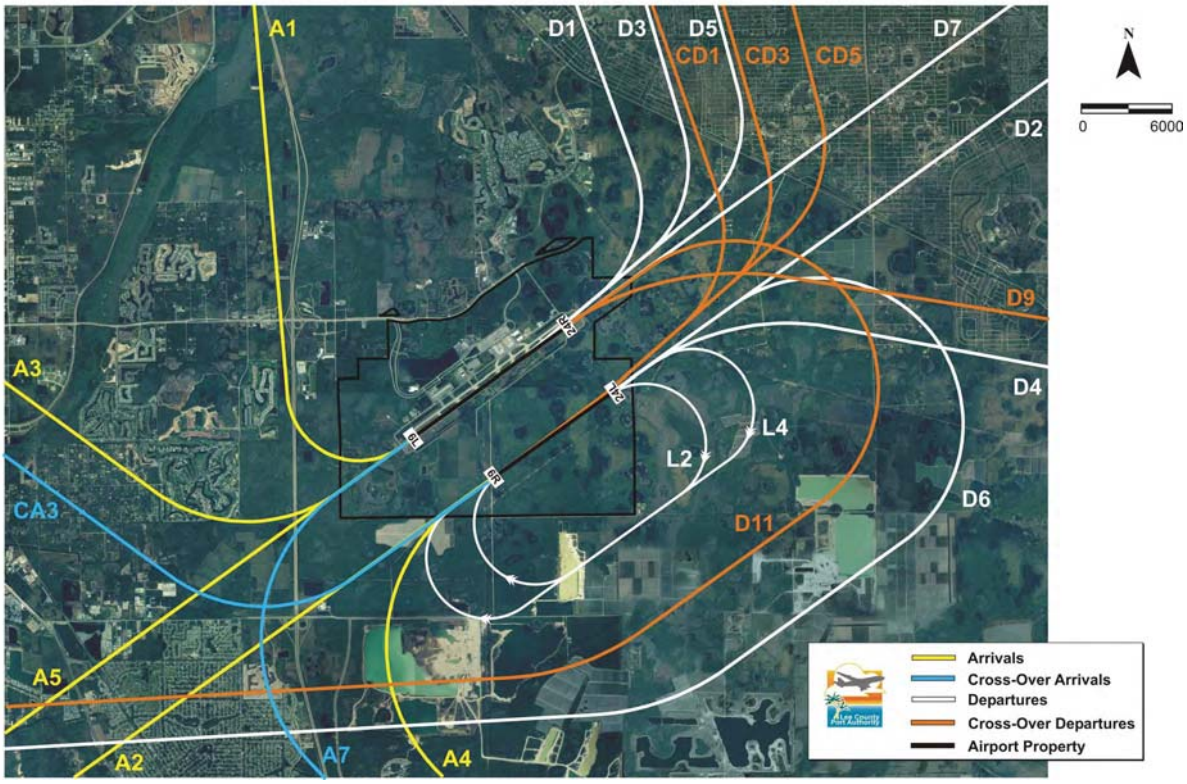
Table 7-17 Local Pattern Percentages – Parallel Runway System Southwest Florida International Airport					
Flow	**Runway**	**Track**	**Local Prop/Turboprop**	**Local Jet**	**Local Military**
NE	6R	L2	85%		
		L4		85%	85%
SW	24L	L6	15%		
		L8		15%	15%
Total			**100.00**	**100.00**	**100.00**

Source: FAA Air Traffic and Environmental Science Associates

One airfield operations alternative that may occur in the future has been identified as the "balanced runway system." This alternative places approximately 50 percent of the itinerant operations on Runway 6L-24R and approximately 50 percent of itinerant operations on Runway 6R-24L. In order to accommodate this, additional flight tracks were identified. These tracks are referred to as cross-over tracks. These cross-over tracks are identified on **Exhibits 7-7** and **7-8**. The Runway 6L-24R cross-over tracks include aircraft arriving from and departing to destinations south of RSW. The Runway 6R-24L cross-over tracks include aircraft arriving from and departing to destinations north of RSW. It should be noted that all international air carrier departures have been assigned to Runway 6L-24R. Also, all local traffic has been assigned to Runway 6R-24L. The flight track percentages associated with the balanced runway system are shown in **Tables 7-18** through **7-20**.

Exhibit 7-7

NE Balanced

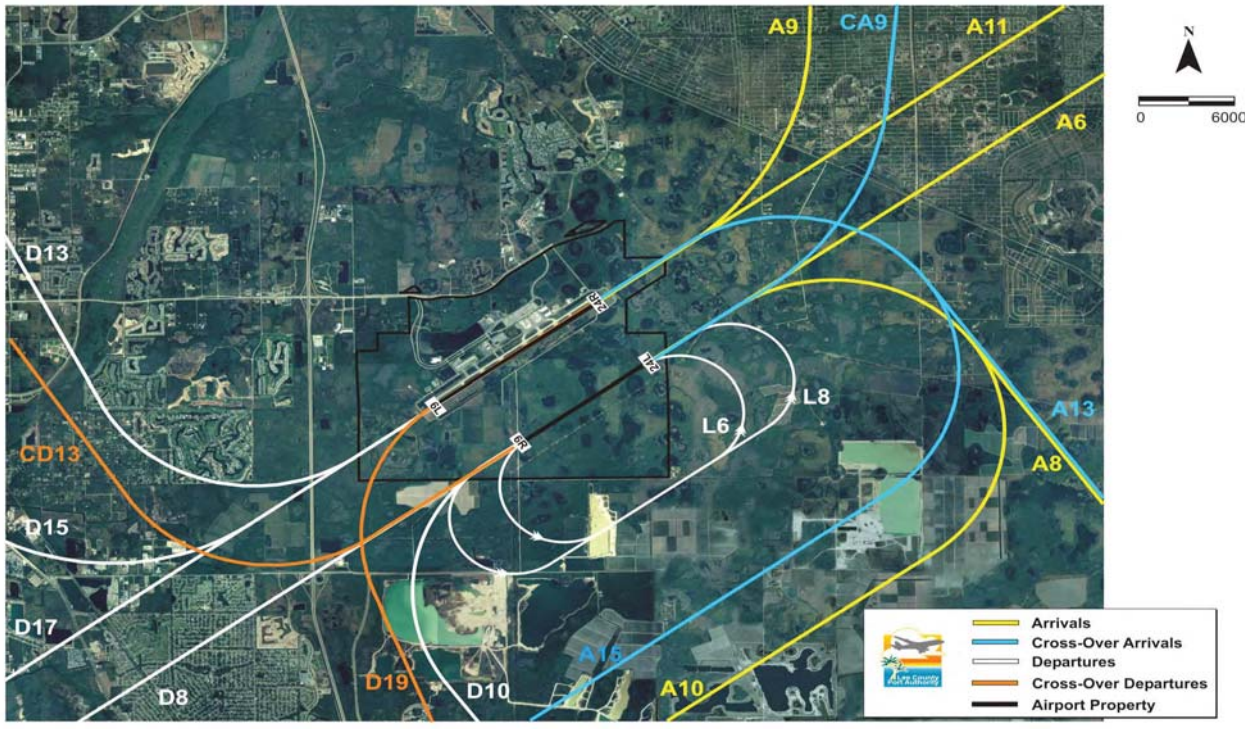


Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE NORTHEAST FLOW TRACKS (85%) BALANCED - PARALLEL RUNWAYS	**EXHIBIT** 7-7

Exhibit 7-8

SW Balanced



Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE SOUTHWEST FLOW TRACKS (15%) BALANCED - PARALLEL RUNWAYS	**EXHIBIT** 7-8

Table 7-18
Departure Corridor Percentages – Balanced Runway System
Southwest Florida International Airport

Flow	Runway	Track	Domestic Air Carrier	International Air Carrier	Regional / Commuter	Itinerant GA	Cargo	Itinerant Military
NE	06L	D1	19.13		10.63	10.63		
		D3	12.75		6.37	6.37	27.63	
		D5	9.35		4.25	4.25		
		D11	0.42					
		D7	0.85	85.00				42.50
		D9			21.25	21.25	14.87	
	06R	CD1	19.12		10.62	10.62		
		CD3	12.75		6.38	6.38	27.62	
		CD5	9.35		4.25	4.25		
		D6	0.43					
		D2	0.85					42.50
		D4			21.25	21.25	14.88	
SW	24R	D13	3.75		3.75	3.75	2.44	
		D15	3.00				2.43	
		D17	0.75	15.00				7.50
		D19			3.75	3.75	2.62	
	24L	CD13	6.75		3.75	3.75	4.88	
		D8	0.75					7.50
		D10			3.75	3.75	2.63	
Total			**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: Environmental Science Associates

Table 7-19
Arrival Corridor Percentages – Balanced Runway System
Southwest Florida International Airport

Flow	Runway	Track	Domestic Air Carrier	International Air Carrier	Regional / Commuter	Itinerant GA	Cargo	Itinerant Military
NE	06L	A1			10.63	10.63		
		A3			10.63	10.63		
		A5	42.50	42.50			27.63	42.50
		A7			21.25	21.25	14.87	
	06R	A2	42.50	42.50			27.62	42.50
		A4			21.25	21.25	14.88	
		CA3			21.24	21.24		
SW	24R	A9	1.13		3.75	3.75		
		A11	0.38	7.50	0.75	0.75	4.88	7.50
		A13			3.00	3.00	2.62	
		A15	6.00					
	24L	CA9	1.12		3.75	3.75		
		A6	0.37	7.50	0.75	0.75	4.87	7.50
		A8			3.00	3.00	2.63	
		A10	6.00					
Total			**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: Environmental Science Associates

Table 7-20 Local Pattern Percentages – Parallel Runway System Southwest Florida International Airport					
Flow	**Runway**	**Track**	**Local Prop/Turboprop**	**Local Jet**	**Local Military**
NE	6R	L2	85%		
		L4		85%	85%
SW	24L	L6	15%		
		L8		15%	15%
Total			**100.00**	**100.00**	**100.00**

Source: Environmental Science Associates

Noise Contours

Noise contours prepared for the baseline 2000 condition are shown on **Exhibit 7-9** and contours for future conditions with a single runway are presented for the years 2005 and 2010 on **Exhibits 7-10** and **7-11** respectively. Future noise contours with the parallel runway system are presented for the year 2010 on **Exhibit 7-12** and for the years 2015 and 2020 on **Exhibits 7-13** and **7-14** respectively. The 2020 balanced runway alternative noise contours are shown on **Exhibit 7-15**.

A comparison was made of the area within each of the noise contour limits for each condition analyzed. **Tables 7-21** through **7-23** provide the limits for the single runway conditions in 2000, 2005 and 2010 respectively and **Tables 7-24** through **7-27** provide the same information for the years 2010, 2015 and 2020 with the parallel runway system.

In comparing the Tables, there is a gradual increase in contour areas for each year analyzed between 2000 and 2020. In 2010, with the parallel runway in place, there is a more noticeable increase in the overall width of the contours but most of this increase occurs over Airport property.

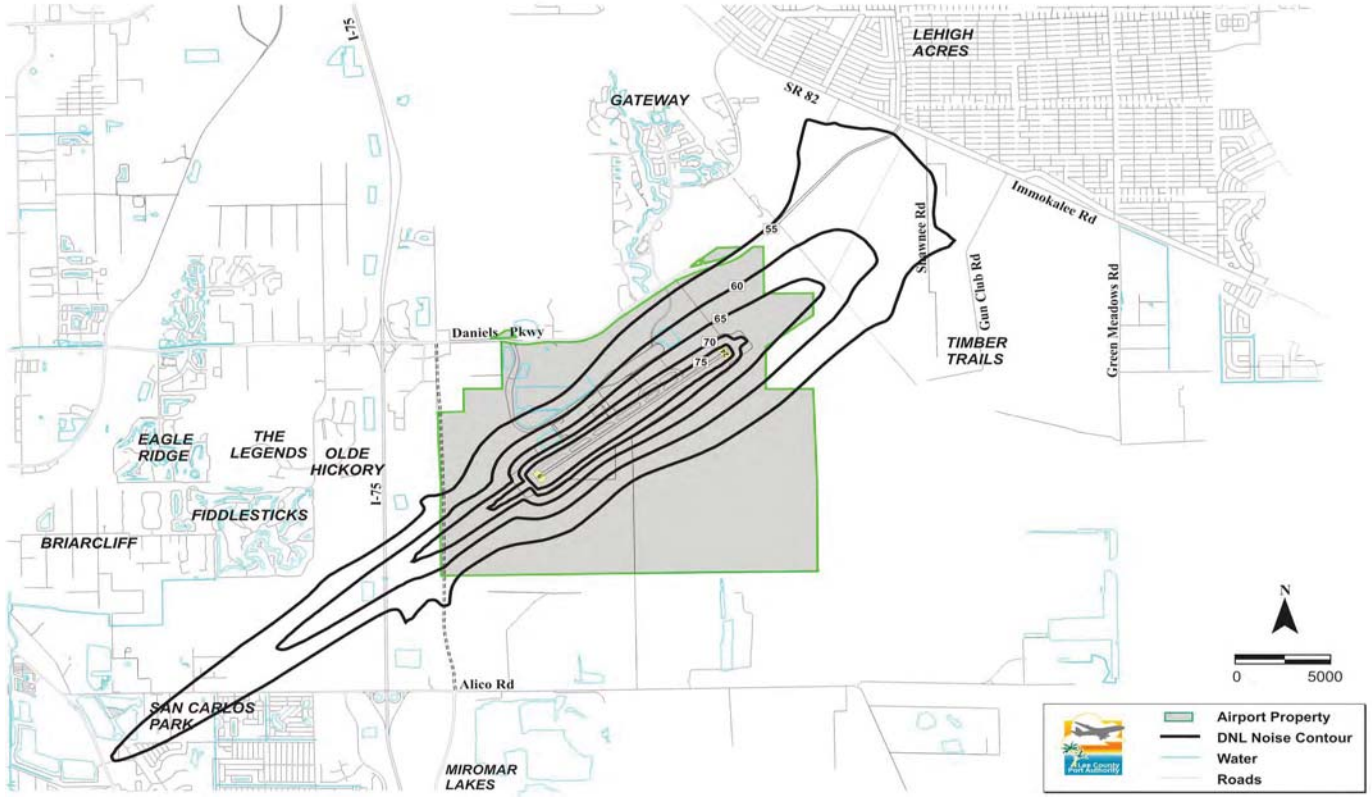
Exhibit 7-9
2000 DNL Noise Contours

Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE 2000 DNL NOISE CONTOURS	**EXHIBIT** 7-9

Exhibit 7-10

2005 DNL Noise Contours

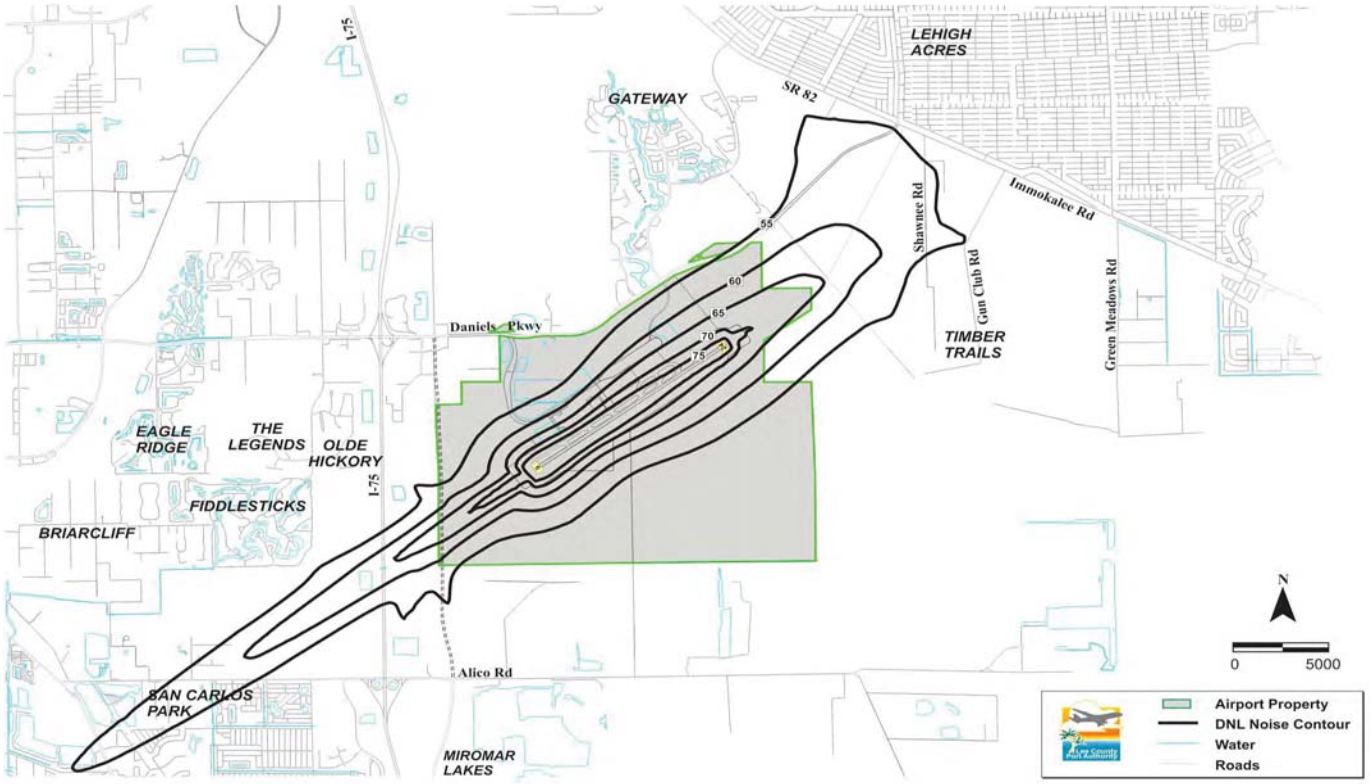


Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE 2005 DNL NOISE CONTOURS	**EXHIBIT** 7-10

Exhibit 7-11

2010 DNL Noise Contour



Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE 2010 DNL NOISE CONTOURS	**EXHIBIT** 7-11

Exhibit 7-12

2010 DNL Parallel Runways Noise Contours

Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE 2010 DNL PARALLEL RUNWAYS NOISE CONTOURS	EXHIBIT 7-12

Exhibit 7-13

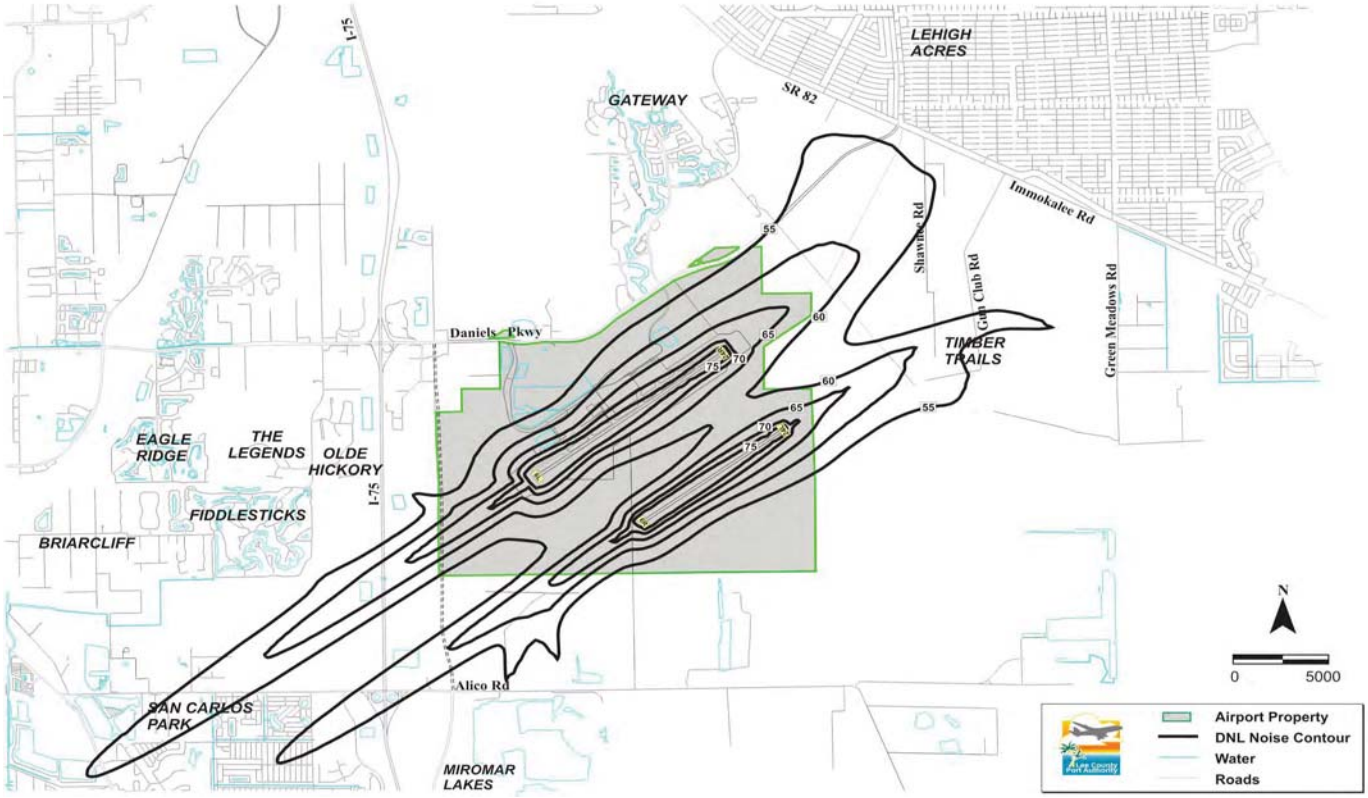
2015 DNL Parallel Runways Noise Contours

Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE 2015 DNL PARALLEL RUNWAYS NOISE CONTOURS	EXHIBIT 7-13

Exhibit 7-14

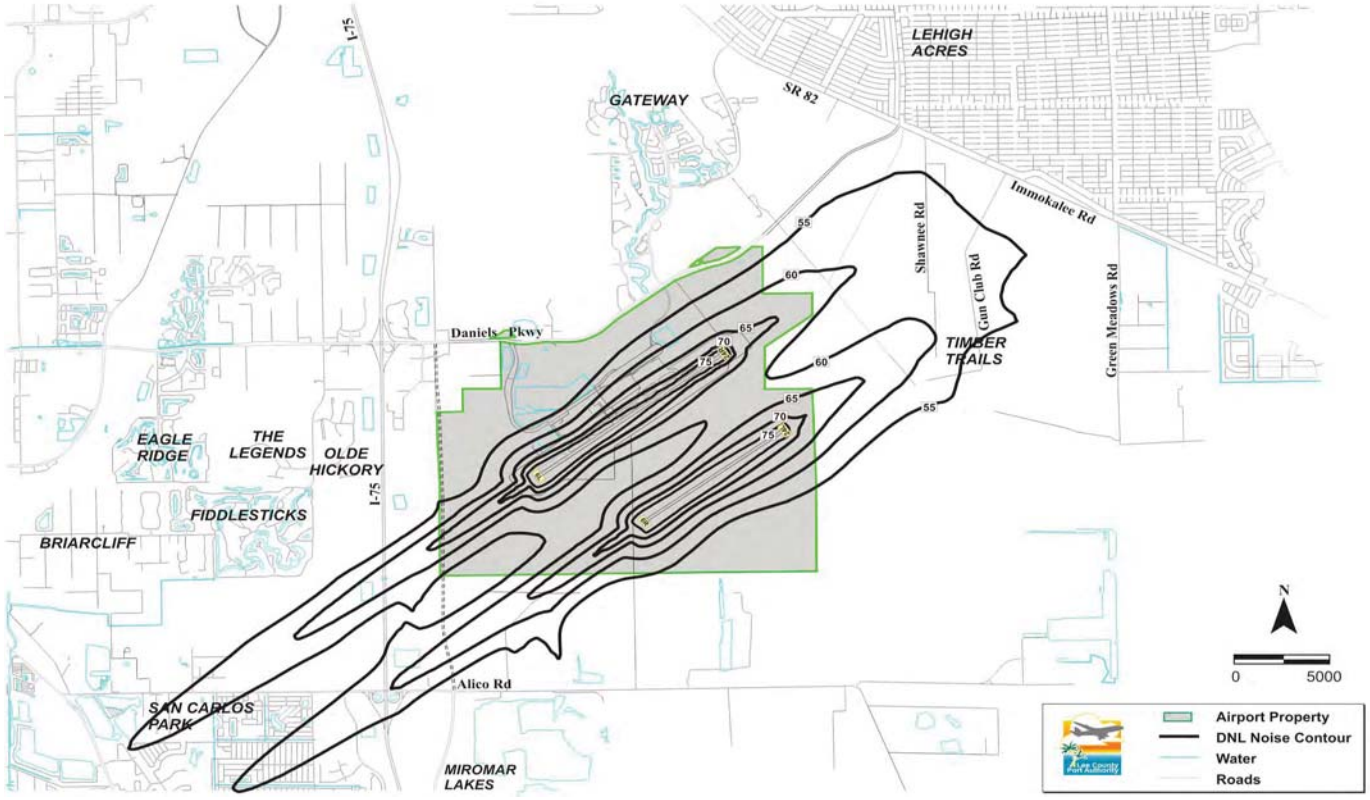
2020 Parallel Runways Noise Contours



Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE 2020 DNL PARALLEL RUNWAYS NOISE CONTOURS - PREFERRED RUNWAY ANALYSIS	EXHIBIT 7-14

Exhibit 7-15
2020 Balanced



Source: Environmental Science Associates, 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE 2020 DNL PARALLEL RUNWAYS NOISE CONTOURS - BALANCED RUNWAY ANALYSIS	EXHIBIT 7-15

Table 7-21 2000 Noise Contour Surface Areas Southwest Florida International Airport			
Contour	**Acres**	**Square**	**Square Miles Within**
		Miles	5 DNL Range
55	6227	9.73	5.32 (55-60 DNL)
60	2822	4.41	2.31 (60-65 DNL)
65	1345	2.10	1.18 (65-70 DNL)
70	587	0.92	0.45 (70-75 DNL)
75	300	0.47	0.47 (75+ DNL)

Source: Environmental Science Associates

Table 7-22 2005 Noise Contour Surface Areas Southwest Florida International Airport			
Contour	**Acres**	**Square**	**Square Miles Within**
		Miles	5 DNL Range
55	6777	10.58	5.82 (55-60 DNL)
60	3045	4.76	2.52 (60-65 DNL)
65	1435	2.24	1.27 (65-70 DNL)
70	622	0.97	0.48 (70-75 DNL)
75	315	0.49	0.49 (75+ DNL)

Source: Environmental Science Associates

Table 7-23 2010 Noise Contour Surface Areas Southwest Florida International Airport			
Contour	**Acres**	**Square**	**Square Miles Within**
		Miles	5 DNL Range
55	7216	11.27	6.24 (55-60 DNL)
60	3219	5.03	2.69 (60-65 DNL)
65	1496	2.34	1.32 (65-70 DNL)
70	652	1.02	0.51 (70-75 DNL)
75	324	0.51	0.51 (75+ DNL)

Source: Environmental Science Associates

Table 7-24 2010 Noise Contour Surface Areas – Parallel Runways Southwest Florida International Airport			
Contour	**Acres**	**Square**	**Square Miles Within**
		Miles	5 DNL Range
55	9080	14.18	7.76 (55-60 DNL)
60	4112	6.42	3.61 (60-65 DNL)
65	1800	2.81	1.57 (65-70 DNL)
70	792	1.24	0.60 (70-75 DNL)
75	408	0.64	0.64 (75+ DNL)

Source: Environmental Science Associates

Table 7-25 2015 Noise Contour Surface Areas Southwest Florida International Airport			
Contour	**Acres**	**Square**	**Square Miles Within**
		Miles	5 DNL Range
55	9435	14.74	8.07 (55-60 DNL)
60	4272	6.67	3.82 (60-65 DNL)
65	1829	2.86	1.59 (65-70 DNL)
70	814	1.27	0.63 (70-75 DNL)
75	412	0.64	0.64 (75+ DNL)

Source: Environmental Science Associates

Table 7-26 2020 Noise Contour Surface Areas Southwest Florida International Airport			
Contour	**Acres**	**Square**	**Square Miles Within**
		Miles	5 DNL Range
55	9676	15.11	8.34 (55-60 DNL)
60	4337	6.77	3.94 (60-65 DNL)
65	1815	2.83	1.57 (65-70 DNL)
70	811	1.27	0.63 (70-75 DNL)
75	405	0.63	0.63 (75+ DNL

Source: Environmental Science Associates

Table 7-27 2020 Noise Contour Surface Areas – Balanced Runway System Southwest Florida International Airport			
Contour	**Acres**	**Square**	**Square Miles Within**
		Miles	5 DNL Range
55	10156	15.86	8.84 (55-60 DNL)
60	4495	7.02	4.21 (60-65 DNL)
65	1797	2.81	1.55 (65-70 DNL)
70	805	1.26	0.64 (70-75 DNL)
75	397	0.62	0.62 (75+ DNL

Source: Environmental Science Associates

The property located within the 65 DNL contours is either Airport property or off-Airport undeveloped property under all years of evaluation and all runway configurations. Table 7-28 identifies the acres within the 65 DNL contour that are on and off Airport property.

Table 7-28 65 DNL On/Off Airport Property Southwest Florida International Airport		
Year	**Acres On Airport**	**Acres Off Airport**
2000	1309	36
2005	1374	61
2010 (single runway)	1416	80
2010 (parallel runways)	1772	28
2015	1789	40
2020	1751	64
2020 (balanced runways)	1670	127

Source: Environmental Science Associates

Single Runway Noise Contours (2000, 2005 and 2010)
The baseline 2000 contours, presented on **Exhibit 7-9**, show the characteristic pattern that will be seen on all noise contour exhibits. That is, the contours are relatively long and narrow southwest of the Runway and wider northeast of the Runway. This is a result of the aircraft flow operating in a southwest to northeast direction 85 percent of the time. When compared to departures, noise exposure associated with arrivals generates less sideline noise due to their lower power settings but increases the extent of the noise exposure along the centerline of the approach due to their lower altitudes. Departures, on the other hand, generate greater sideline noise due to higher thrust settings but the extent of the contour is reduced due to the higher altitudes attained.

The differences in the size and extent of the noise contours in future years (2005 and 2010) when compared with the baseline 2000, are caused by the differences in the number of aircraft operations and the fleet mix. The noise contours for the year 2005, shown on **Exhibit 7-10** increase slightly in size in all directions due to an approximate 20 percent increase in domestic air carrier activity and a 40 percent increase in international air carrier activity. The increase in noise contour size in 2005 is relatively minor due to the fact the some of the noisiest aircraft in the fleet (B-727s and B737-200s) are reduced in numbers compared with the 2000 condition. The B727s and 737-200 aircraft are older aircraft in the fleet and are typically being retired by the airlines.

As shown in **Exhibit 7-11**, in 2010 with the single runway, the noise contours slightly increase again compared to the 2005 condition. The increase however, is again tempered by additional reduction in the numbers of B-727 and B-737 type aircraft.

Parallel Runway Noise Contours (2010, 2015 and 2020)
Since it is projected that the parallel runway will be in operation around the year 2010, this study has analyzed the noise exposure in 2010 under both a single runway and parallel runway condition. In 2010 with a new parallel runway in operation, the noise exposure off the existing Runway 6L-24R reduces in size compared with the 2010 single runway condition. See **Exhibit 7-12** compared to **Exhibit 7-11**. This reduction in noise exposure is a result of some aircraft using the new parallel Runway 6R-24L. The extent

of noise exposure widens around the Airport due to the two-runway system but also reduces in the extent of the length of the noise contours to the northeast and southwest. It should be noted that the noise contours off the new Runway 6R-24L are smaller than those on the existing Runway 6L-25R. This is caused by larger number of aircraft being assigned to the existing Runway due to the existing runway being longer (and thus, in some cases preferred by airlines for use in departure) and due to the existing runway being closer to adjacent air cargo and other facilities.

By the years 2015 and 2020, the extent and width of the noise contours remains generally the same as the 2010 parallel runway condition. See Exhibits 7-13 and 7-14. Although the total number of operations increases throughout this timeframe, the noisier B-727s and B-737-200s are completely phased out by 2020. Thus, the operational increases are off-set by the reduction in the noisiest aircraft resulting in noise contours remaining almost constant between the years 2010 and 2020.

Although the 2020 balanced runway alternative 65 DNL area decreases when compared to the 2020 65 DNL area (1797 acres for the 2020 balanced alternative and 1814 acres for 2020) the 65 DNL off-airport noise exposure increases (64 acres off-airport in 2020 and 127 acres off-airport with the balanced runway system). See Exhibits 7-14 and 7-15.

Land Use Considerations

The FAA and the Florida Department of Transportation (FDOT) have developed land use guidelines that relate the compatibility of aircraft activity to areas surrounding airports. These guidelines, provided in **Tables 7-29** and **7-30** identify land use activities that are acceptable within the 65, 70 and 75 DNL contours.

Table 7-29
FAA - Land Use Compatibility Guidelines
Southwest Florida International Airport

Land Use	Yearly Day-Night Average in Decibels: Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL	Y	N_1	N_1	N	N	N
Residential, other than mobile homes and transient lodgings						
Household units. (11)						
Single units - detached (11,11)						
Single units - semidetached (11.12)						
Single units - attached row (11.13)						
Two units - side-by-side (11.21)						
Two units - one above the other (11.22)						
Apartments - walk up (11.31)						
Apartments - elevator (11.32)						
Group quarters (12)						
Residential hotels (13)						
Other residential (19)						
Mobile home parks (14)	Y	N	N	N	N	N
Transient lodgings (15)	Y	N_1	N_1	N_1	N	N
PUBLIC USE:						
Schools	N_1	N_1	N	N	N	
Educational services (68)						
Hospitals and nursing homes	Y	25	30	N	N	N
Hospitals, nursing homes (65.13, 65.16)						
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Cultural activities (including churches) (71)						
Auditoriums, concert halls (72.1)						
Government services (67)	Y	Y	25	30	N	N
Transportation	Y	Y	Y_2	Y_3	Y_4	Y_4
Railroad, rapid rail transit/street railway (41)						
Motor vehicle (42)						
Aircraft (43)						
Marine craft (44)						
Highway and street right-of-way (45)						
Parking (46)	Y	Y	Y_2	Y_3	Y_4	N
COMMERCIAL USE						
Offices, business, and professional	Y	Y	25	30	N	N
Finance, insurance and real estate services (61)						
Personal services (62)						
Business services (63)						
Professional services (65)						
Other medical facilities (65.1)						
Miscellaneous services (69)						
Wholesale and retail - building materials, hardware and farm equipment	Y	Y	Y_2	Y_3	Y_4	N
Wholesale trade (51)						
Retail trade - building materials, hardware and farm equipment (52)						
Repair services (64)						
Contract construction services (66)						
Retail trade - general	Y	Y	25	30	N	N
General merchandise (55)						
Food (54)						
Automotive, marine craft, aircraft and accessories (55)						
Apparel and accessories (56)						
Furniture, home furnishings and equipment (57)						
Eating and drinking establishments (58)						
Other retail trade (59)						
Utilities (48)	Y	Y	Y_2	Y_3	Y_4	N
Communication (47)	Y	Y	25	30	N^4	N

Land Use	Yearly Day-Night Average in Decibels: Below 65	65-70	70-75	75-80	80-85	Over 85
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y_2	Y_3	Y_4	N
Food and kindred products (21)						
Textile mill products (22)						
Apparel and other finished products - fabric leather and similar materials (23)						
Lumber and wood (except furniture) (24)						
Furniture and fixtures (25)						
Paper and allied products (26)						
Printing/publishing/allied industries (27)						
Chemicals and allied products (28)						
Petroleum refining/related industries (29)						
Rubber and misc. plastic products (31)						
Stone, clay and glass products (32)						
Primary metal industries (33)						
Fabricated metal products (34)						
Miscellaneous (39)						
Photographic and optical	Y	Y	25	30	N	N
Professional/scientific/controlling instruments photographic/optical goods; watches, clocks (35)						
Agriculture (except livestock) and forestry	Y	Y_6	Y_7	Y_8	Y_8	Y_8
Agriculture (except livestock) (81)						
Agricultural related activities (82)						
Forestry activities and related services (83)						
Livestock farming and breeding (81.5 to 81.7)	Y	Y_6	Y_7	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Fishing activities and related services (84)						
Mining activities and related services (85)						
Other resource production and extraction (89)						
RECREATIONAL						
Outdoor sports arenas and spectator sports (72.2)	Y	Y_5	Y_5	N	N	N
Outdoor music shells, amphitheaters (72.11)	Y	N	N	N	N	N
Nature exhibits and zoos (71.2)	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Amusements (73)						
Parks (76)						
Public assembly (72)						
Resorts and group camps (75)						
Other cultural, entertainment and recreation (79)						
Golf courses, riding stables and water recreation (74)	Y	Y	25	30	N	N

Source: FAA Advisory Circular 150/5020-12
Y (Yes) = Land use and related structures compatible without restrictions.
N (No) = Land use and related structures are not compatible and should be prohibited.
25, 30 or 35 = Land use and related structures generally compatible; measures to achieve Noise Level Reduction (NLR), outdoor to indoor, of 25, 30 or 35 must be incorporated into design and construction of structure.
Number in ( ) = Standard Land Use Coding Manual (SLUCM).

1 Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 and 30 dB should be incorporated into building codes and be considered in individual approvals.
2 Compatible where measures to achieve NLR of 25 are incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where normal noise level is low.
3 Compatible where measures to achieve NLR of 30 are incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where normal noise level is low.
4 Compatible where measures to achieve NLR of 35 are incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where normal noise level is low.
5 Land use compatible provided special sound reinforcement systems are installed.
6 Prime use only, any residential buildings require a NLR of 25 to be compatible.
7 Prime use only, any residential buildings require a NLR of 30 to be compatible.
8 Prime use only, NLR for residential buildings not normally feasible, and such uses should be prohibited.

Table 7-30
FDOT - Airport Compatible Land Use Guidelines
Southwest Florida International Airport

Impacted Zones(DNL) / Land Uses and Activities	Overflight 55-65	65-70	70-75	75-80	80-Up	Zones Inner	Outer***
RESIDENTIAL DEVELOPMENT							
Single Units; row, semi- & detached	Y	I_1	I_2	N	N	N	I_{11}
Duplexes	Y	I_1	I_2	N	N	N	I_{11}
Multi-family units	Y	I_1	I_2	N	N	N	I_{11}
Residential hotels & motels	Y	I_1	I_2	N	N	N	I_{12}
Transient lodgings	Y	I_1	I_2	I_3	N	N	I_{12}
Mobile home parks & courts	Y	N	N	N	N	N	N
Recreational vehicle (RV) parks	Y	N	N	N	N	N	N
Other residential	Y	I_1	I_2	N	N	N	N
RELIGIOUS; CULTURAL; RECREATIONAL							
Outdoor Activities							
Religious services & assemblies	Y	N	N	N	N	N	I_{13}
Entertainment assemblies	Y	N	N	N	N	N	I_{13}
Sports event assemblies	Y	C_4	I_4	N	N	N	I_{13}
Sports arenas, courts, fields & tracks	Y	C_4	C_4	I_4	N	N	I_{16}
Circuses & carnivals	Y	C_4	I_4	N	N	N	$I_{12,13}$
Amusement & theme parks	Y	C_4	I_4	N	N	N	$I_{12,13}$
$C_{12,18}$							
Playgrounds & neighborhood parks	Y	C_6	C_6	I_6	N	N	$I_{12,13}$
Community & regional parks	Y	I_6	I_6	N	N	N	$I_{12,13}$
Indoor Activities							
Churches, mosques, synagogues & temples	Y	I_2	I_3	N	N	N	I_{12}
Theaters & auditoriums	Y	$I_{2,4}$	$I_{3,4}$	N	N	N	I_{12}
Stadiums & arenas	Y	$C_{1,4}$	$I_{2,4}$	$I_{3,4}$	N	N	I_{12}
$C_{18,19}$							
Gymnasiums & natatoriums	Y	C_1	I_2	$I_{3,4}$	N	N	I_{12}
SERVICES							
Hospitals & nursing homes	Y	I_2	N	N	N	N	I_{12}
Other medical facilities	Y	I_2	N	N	N	N	I_{12}
Day care facilities	Y	I_2	N	N	N	N	I_{12}
Educational facilities	Y	I_2	N	N	N	N	I_{17}
Government services	Y	C_1	C_2	I_3	N	N	I_{17}
Correctional institutions	Y	C_1	I_2	N	N	N	I_{12}
Cemeteries	Y	C_1	C_2	C_3	$C_{6,7}$	C_{15}	C_{15}
Professional, financial & insurance	Y	C_1	C_2	I_3	N	N	I_{12}
Business & real estate	Y	C_1	C_2	I_3	N	N	I_{12}
Repairs and contract construction	Y	C_1	C_2	I_3	N	N	I_{12}
Personal & miscellaneous	Y	C_1	C_2	I_3	N	N	I_{12}
TRANSPORTATION; COMMUNICATIONS; UTILITIES							
$C_{18,19}$							
Passenger facilities	Y	C_1	C_2	C_3	N	N	I_{12}
Cargo-freight facilities	Y	Y	C_2	C_3	$C_{6,7}$	N	C_{12}
Road, rail and water transit ways	Y	Y	C_2	C_3	$C_{6,7}$	$C_{15,18}$	C_{12}
Vehicle parking	Y	Y	C_2	C_3	$C_{6,7}$	$C_{15,18}$	C_{12}
$C_{18,19}$							
Vehicle storage	Y	Y	C_2	C_3	$C_{6,7}$	$C_{15,18}$	C_{12}
Telecommunications	Y	C_1	C_2	I_3	$C_{6,7}$	N	I_{12}
Broadcast communications	Y	C_1	C_2	I_3	N	N	I_{12}
Electric generating plants	Y	Y	C_1	C_2	$C_{6,7}$	I_{19}	C_{18}
Sewer-waste water treatment	Y	Y	C_1	C_2	$C_{6,7}$	I_{19}	C_{18}
Gas utility facilities	Y	Y	C_1	C_2	$C_{6,7}$	N	C_{18}
Electric utility facilities	Y	Y	C_1	C_2	$C_{6,7}$	I_{19}	C_{18}

Impacted Zones (DNL) / Land Uses and Activities	Overflight 55-65	65-70	70-75	75-80	80-Up	Zones Inner	Outer***
RETAIL TRADE							
Building materials & hardware	Y	Y	C_1	C_2	$I_{3,7}$	N	C_{12}
Automotive, farm & marine craft	Y	C_1	C_2	C_3	N	N	C_{12}
Apparel and general merchandise	Y	C_1	C_2	C_3	N	N	I_{12}
Groceries & food stuff	Y	C_1	C_2	C_3	N	N	I_{12}
Eating & drinking establishments	Y	C_1	C_2	C_3	N	N	I_{12}
Shopping malls & centers	Y	C_1	C_2	C_3	N	N	N
Gasoline, diesel & heating oil	Y	Y	C_1	C_2	$I_{3,7}$	N	I_{12}
Liquified & bottled gas	Y	Y	C_1	C_2	$I_{3,7}$	N	I_{12}
WHOLESALE TRADE							
Home furnishings & building materials	Y	Y	C_1	C_2	$C_{3,7}$	N	C_{12}
Food products & general merchandise	Y	Y	C_1	C_2	$C_{3,7}$	N	C_{12}
Liquified gasses	Y	Y	C_1	C_2	$C_{3,7}$	N	$I_{18,19}$
Petroleum & distillate products	Y	Y	C_1	C_2	$C_{3,7}$	N	$I_{18,19}$
Industrial chemicals	Y	Y	C_1	C_2	$C_{3,7}$	N	$I_{18,19}$
Explosive & pyrotechnic products	Y	Y	C_1	C_2	$C_{3,7}$	N	$I_{18,19}$
Other wholesale trade	Y	Y	C_1	C_2	$C_{3,7}$	N	
MANUFACTURING							
Food products & processing	Y	Y	C_1	C_2	$I_{3,7}$	N	C_{12}
Textiles & apparel	Y	Y	C_1	C_2	$I_{3,7}$	N	C_{12}
Lumber & wood products	Y	Y	C_1	C_2	$I_{3,7}$	N	C_{18}
Paper & allied products	Y	Y	C_1	C_2	$I_{3,7}$	N	
Chemical & allied products	Y	Y	C_1	C_2	$I_{3,7}$	N	$I_{18,19}$
Petroleum refining & related products	Y	Y	C_1	C_2	$I_{3,7}$	N	N
Explosive & pyrotechnic products	Y	Y	C_1	C_2	$I_{3,7}$	N	N
Rubber & plastic products	Y	Y	C_1	C_2	$I_{3,7}$	N	I_{18}
Clay & glass products	Y	Y	C_1	C_2	$I_{3,7}$	N	I_{19}
Primary & fabricated metal products	Y	Y	C_1	C_2	$I_{3,7}$	N	I_{18}
Electronic & optic products	Y	C_1	C_2	I_3	N	N	I_{18}
Professional & scientific products	Y	C_1	C_2	I_3	N	N	I_{18}
Other manufacturing	Y	C_1	C_2	C_3	N	N	C_{18}
RESOURCE PRODUCTION & RECOVERY							
Livestock & poultry farming	Y	$C_{2,5}$	$I_{3,5}$	I_5	N	N	C_{20}
Animal & poultry breeding	Y	$I_{2,5}$	$I_{3,5}$	N	N	N	N
Crop & related agricultural production	Y	$C_{1,5}$	$C_{2,5}$	$C_{3,5}$	$I_{6,7}$	N	C_{20}
Fishing & aquaculture activities	Y	$C_{1,5}$	$C_{2,5}$	$C_{3,5}$	$C_{6,7}$	N	C_{19}
Forestry & timber production	Y	$C_{1,5}$	$C_{2,5}$	$C_{3,5}$	$C_{6,7}$	$I_{18,20}$	
Oil & natural gas wells	Y	Y	C_2	C_3	$C_{6,7}$	N	N
Strip & open pit mining	Y	Y	C_2	C_3	$C_{6,7}$	N	N
Stone & mineral quarries	Y	Y	C_2	C_3	$C_{6,7}$	N	N
Other mining & resource recovery	Y	Y	C_2	C_3	$C_{6,7}$	$I_{18,19,20}$	

Y (Yes) = Land use is normally compatible without restriction and should be allowed.

$C_{(1..20)}$ = Land use is generally compatible with some limitations or restrictions. The use should be allowed only if Condition Note $_{(1..20)}$ is met.

$I_{(1..20)}$ = Land is basically incompatible and should be discouraged. Where there is a demonstrated community need for the use and viable alternative options are not possible, the use may be allowed if Condition Note $_{(1..20)}$ is met. Condition Note $_{(1..20)}$ will not eliminate or alter the basis of the incompatibility but is intended to lessen or mitigate the potential for impact on the land use function, activity or occupants.

N (No) = Use is not compatible and should not be permitted.

NLR = Noise Level Reduction (outdoor to indoor) achieved through incorporation of sound attenuation into the design and construction of structures to lessen or mitigate a potential interior noise impact on occupants or activities. Achievement of 25, 30 or 35 decibel (dB) reductions, exterior to interior sound level, are the standard acceptable minima for mitigation of airport generated noise impact.

Noise Impacted Zones

1. Measures to achieve NLR of 25 dB must be included in the design and construction of the structures where occupants reside; the public is received; office areas are located; or noise sensitive activities or functions occur.
2. Measures to achieve NLR of 30 dB must be included in the design and construction of the structures where occupants reside; the public is received; office areas are located; or noise sensitive activities or functions. occur.
3. Measures to achieve NLR of 35 dB must be included in the design and construction of the structure where occupants reside; the public is received; office areas are located, or noise sensitive activities or functions occur.
4. Sound reinforcement or amplification systems must be installed.
5. Residential structures are not permitted.
6. Occupied structures are not permitted.
7. Individual hearing protection devises must be worn where structural or other forms of physical noise attenuation is not available.

Aircraft Overflight Zones

11. Density limited, 1-2 dwelling units per acre or 20% or less lot coverage for PUDs.
12. Density limited, 1-2 occupied structures per acre; occupancy 10 or less per structure.
13. Population density limited, 40 persons per acre or less.
14. Passenger terminals or facilities for staging, transfer or loading of passengers are not permitted. ....

Although the FAA has indicated that all lands outside the 65 DNL are compatible with aircraft noise, it encourages local planning agencies to promote compatible development beyond the 65 DNL. Studies have shown that a significant number of people are annoyed with aircraft noise beyond the 65 DNL. **Exhibit 7-16** shows generalized community reactions to noise in terms of DNL. Lee County has developed an overlay zone that it uses to ensure development in areas surrounding the Airport are compatible with aircraft noise (see **Exhibit 7-17**). These limits extend beyond the 65 DNL to include areas that are subject to frequent aircraft overflights. **Exhibit 7-18** shows the existing overlay zones with the generalized flight corridors in the immediate vicinity of RSW.

Overlay Zoning

Over the past 15 years, a series of noise studies and off-Airport land use compatibility studies have been completed for RSW. These have led to the implementation of operational procedures and land use measures aimed at maintaining long-term land use compatibility between the Airport and future land development.

In 1990, a FAR Part 150 study was approved by the Federal Aviation Administration (FAA) for RSW. The study identified preferred noise abatement flight corridors for aircraft approaches and departures and established an off-airport Noise Overlay Zone for the purpose of providing long-term land use compatibility between aircraft activity and future land use in the airport environs. The operational procedures were implemented by the FAA's air traffic control and the Overlay Zone was established in the Lee County Land Development Code by the Lee County Commission.

In 1995, a FAR Part 150 Update was approved by the FAA that identified flight corridors from a proposed (environmentally approved) parallel runway and expanded the Noise Overlay Zone to reflect noise exposure and flight corridors associated with the two runway system. Following the approval of the study by the FAA, the expanded Overlay Zone was approved by the Lee County Commission through its incorporation into the Lee County Comprehensive Plan (Lee Plan) and the Land Development Code.

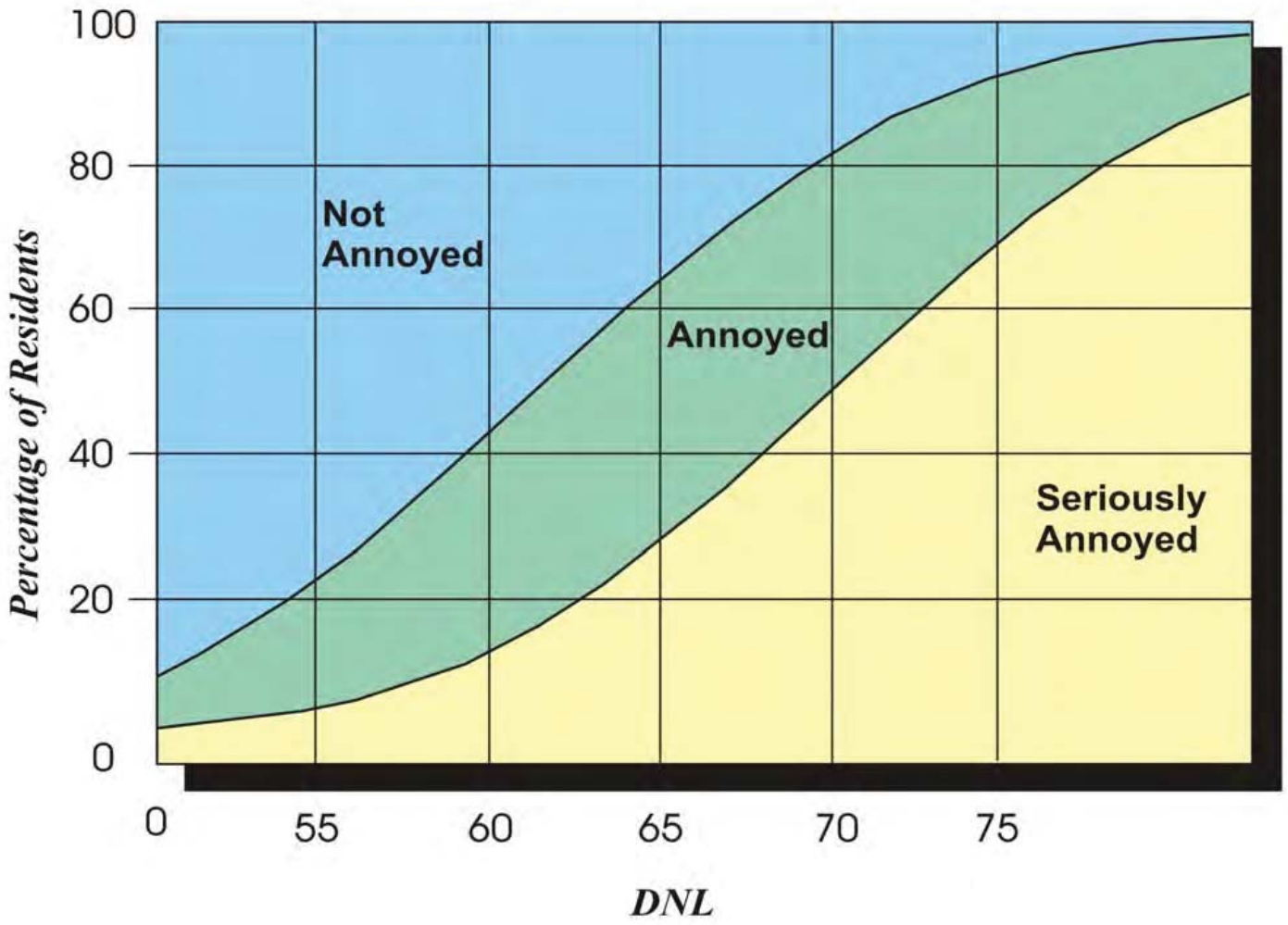
Under the approved off-Airport Noise Overlay Zone plan, all land use requirements contained in the Lee County Development Code would apply as if no Overlay Zone was in place. However, for properties located within the Overlay Zone, certain additional requirements must be met for new development. Specifically, four sub-zones were included as part of the off-Airport Noise Overlay Zone. Zone 4 represents Airport property, Zone 3 represents an area where new noise sensitive uses are restricted from development, Zone 2 restricts the development of new mobile homes and Zone 1 represents an area where no Noise Overlay Zone restrictions apply (see **Exhibit 7-17**).

Following the incorporation of the Overlay Zones in the Lee Plan (Comprehensive Plan) and the Lee County Land Development Code (LDC), clarification was made to identify the specific land uses included in the LDC that would be considered noise sensitive in Overlay Zones 2 and 3 (and thus, non-permissible for future development). As a guideline to the evaluation, the land uses that involved activities where noise would be an annoyance were typically considered non-compatible uses within Noise Overlay Zone 3. For Overlay Zone 3 noise sensitive uses included, but were not limited to, residential uses, cultural facilities, religious institutions, health care facilities, and public schools. Overlay Zone 2 was much less restrictive but did not allow such uses as mobile home dwelling units and park trailers.

Exhibit 7-16

Annoyance Caused by Aircraft Noise

Annoyance Caused by Aircraft Noise in Residential Communities Near Major Airports



Source: FAA Report EE-85-2-Aviation Noise Effects

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FORT MYERS, FLORIDA

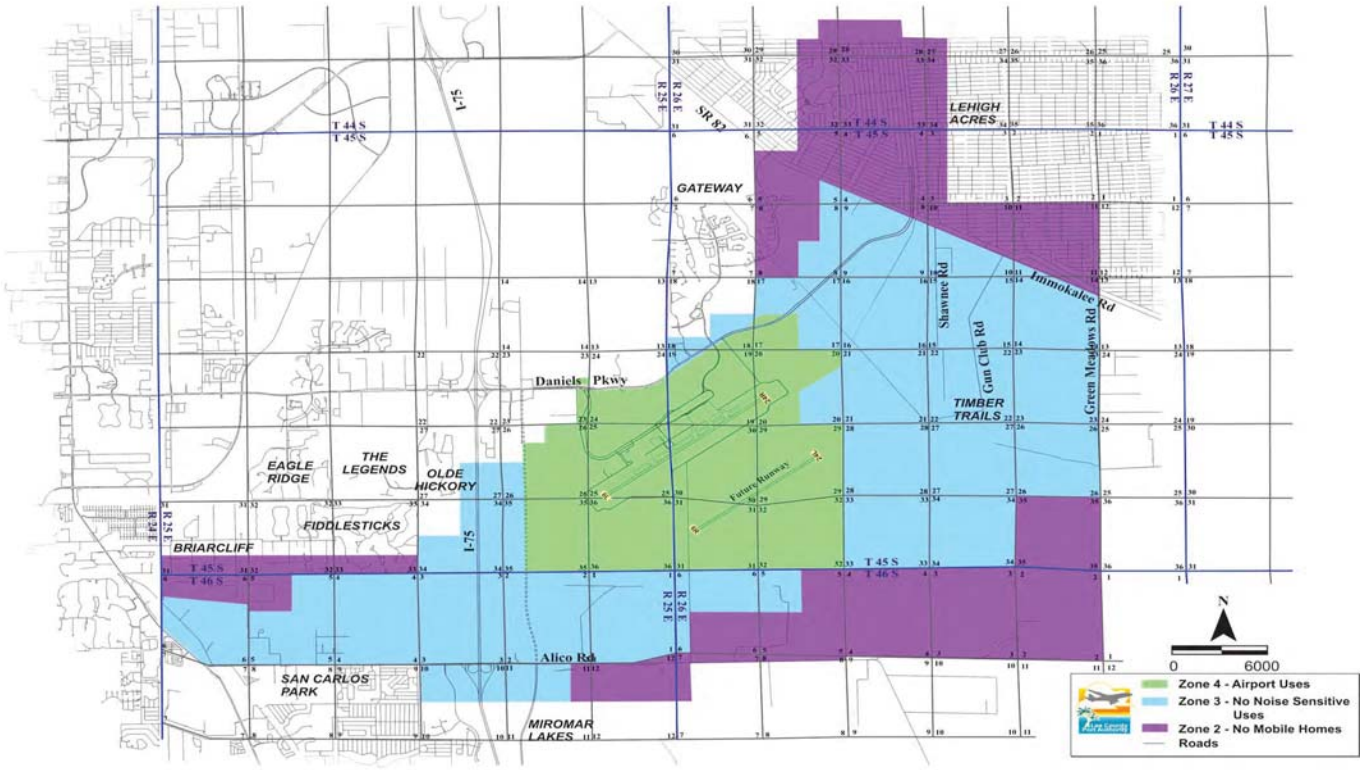
MASTER PLAN UPDATE

EXHIBIT

7-16

Exhibit 7-17

Existing Overlay Zone Limits



Source: Environmental Science Associates, 2002

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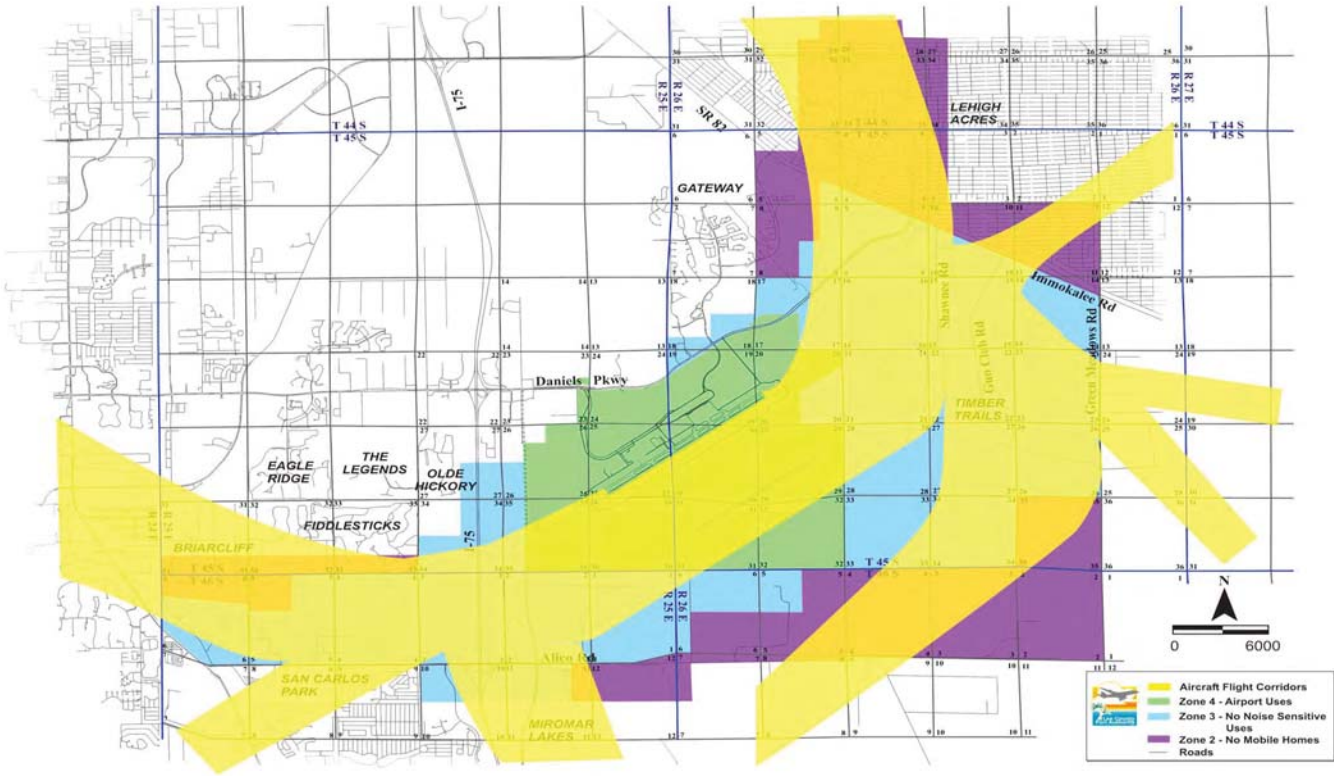
Exhibit 7-18

Flight Corridors



Source: Environmental Science Associates, 2002

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As part of the Overlay Zoning approval process, the Lee County Commission, required that the limits of the Overlay Zone be re-evaluated by the Port Authority by the year 2006. A logical time to begin the re-evaluation would be following the opening of the midfield terminal complex scheduled for 2004. This re-evaluation would determine if the limits of the Zones should be increased due to increased operational activity at the Airport or should reduce in size due to the decreased number of noisier aircraft in the fleet.

Summary

The Off-Airport Noise Overlay Zones require development that is compatible with aircraft noise in areas surrounding RSW. This Overlay Zone has been fully incorporated in the Lee Plan and Lee County Land Development Code. In order to determine if adjustments to the Overlay Zone limits should be made (increase or reduction) a re-evaluation will begin following the opening of the midfield terminal scheduled for 2004. Although positive land use control has been established through overlay zoning, the most permanent form of land use control is property acquisition. Under each of the scenarios analyzed in this report, the 65 DNL contour extends off-airport property. The Airport should consider acquiring property within the 65 DNL for noise mitigation, safety enhancements and potential airport development uses.

7.5.2 Compatible Land Use

Compatible land use of existing and planned land uses in the vicinity of an airport is usually associated with the extent of noise impacts related to the airport and height restrictions outlined in local zoning ordinances for parcels of land in the immediate vicinity of the airport.

Guidelines for compatible land use areas impacted by aircraft noise are contained in FAR Part 150, *Airport Noise Compatibility Planning,* and FAA Advisory Circular 15015020-1 entitled, *Noise Control and Compatibility Planning for Airports.* These impacts have been discussed above in Section 5.5.1.

Guidelines for height limitations on land uses in the vicinity of an airport are contained in FAA Advisory Circular 150/51 *904A, A Model Zoning Ordinance to Limit Height of Objects Around Airports,* based on the obstruction surfaces described in FAR Part 77, *Objects Affecting Navigable Airspace.*

Guidelines to control land uses within the airport operation areas are contained in FAA Advisory Circular *150/5300-13, Airport Design,* and are based on the obstruction surfaces described in FAR Part 77. FAA AC 150l5300-13 establishes a Runway Protection Zone (RPZ) for all runways at an airport. The RPZ is a trapezoidal shaped area at the end of the runway. Within this area, development is limited to land uses that do not involve places of public assembly (i.e., schools, churches, hospitals, residential areas, etc.). Certain land uses are allowed in the RPZ, such as golf courses (but not clubhouses), agricultural operations and automobile parking facilities (located outside the object free area). The FAA recommends that the airport sponsor own all land within the RPZ. Advisory Circular 150/5300-13 outlines the following specific land uses, which are either limited or prohibited within the RPZ:

- Fuel handling and storage facilities.
- Smoke and dust generating activities.

- Misleading lights and those activities, which may create, glare or attract wildlife.
- Residence or places of public assembly.

As suggested above, the LCPA either owns the runway protection zone in fee simple or the area has been identified for future acquisition.

The FAA has also recently published Advisory Circular *15015200-23, Hazardous Wildlife Attractants On or Near Airports,* which provides guidance on locating certain land uses having the potential to attract hazardous wildlife to or in the vicinity of public-use airports. For airports serving turbine-powered aircraft, the FAA recommends against land use practices that attract or sustain populations of hazardous wildlife within 10,000 feet of the airport's movement areas, loading ramps or aircraft parking areas and within five statute miles of approach and departure airspace, where applicable. These land uses include any waste disposal site, wastewater treatment facilities and some wetland mitigation projects. The U.S. EPA requires any operator proposing a new or expanded waste disposal operation within five statute miles of a runway end to notify the appropriate FAA Airport District Office (ADO) and airport owner. The Lee Land Development Code section 34-1005(a)(5) specifically restricts the placement of landfills within the criteria mentioned above.

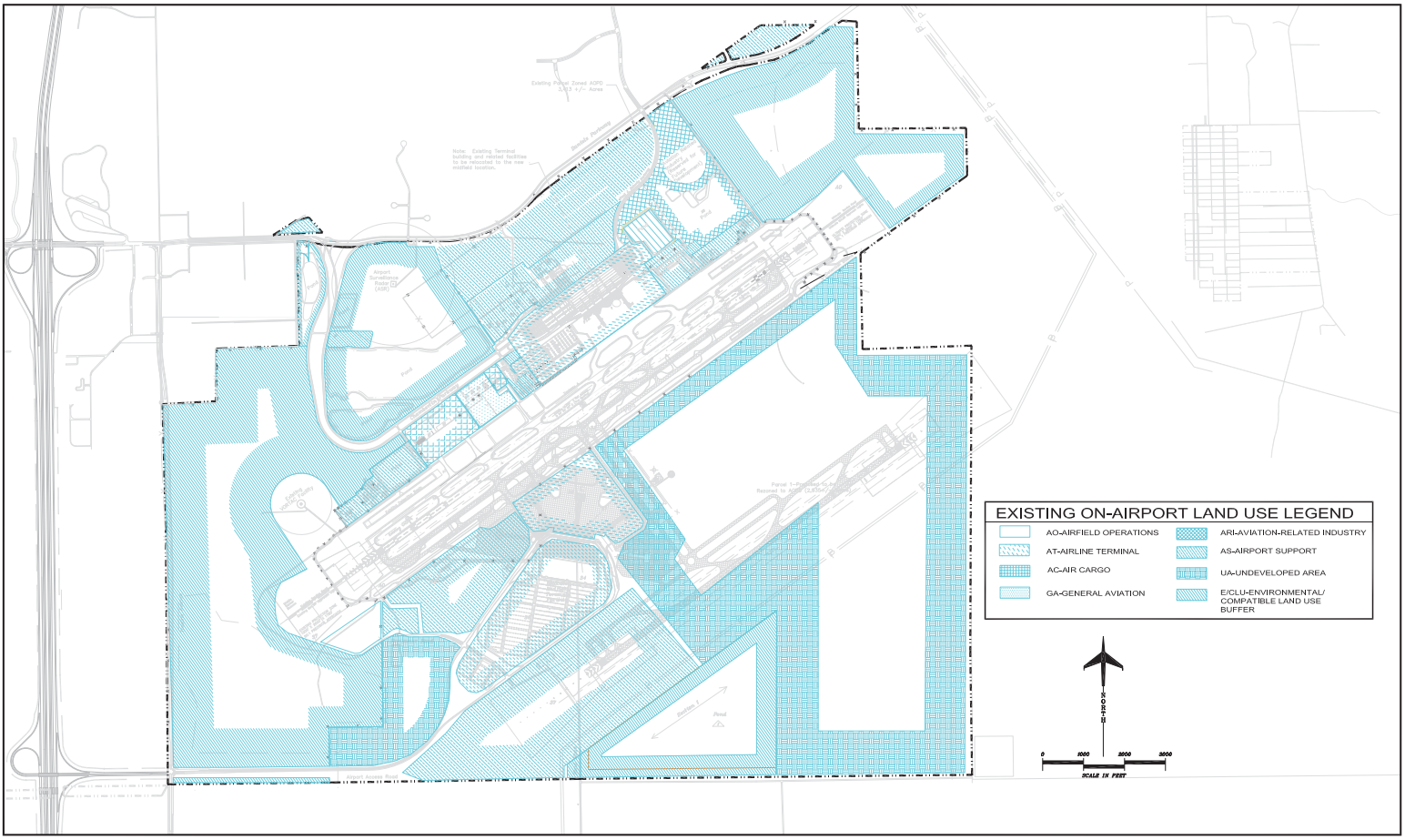
FAA Advisory Circular 150/5300-13 also states FAA policy to conduct studies of existing and proposed objects and activities, both off and on public-use airports, with respect to their effect on the safe and efficient use of airports and safety of persons and property on the ground. This particularly addresses the issues of towers in the vicinity of the airport, which can effect the safe operation of the facility. The Lee Land Development Code section 34-1008 addresses the procedure necessary to obtain a permit for tall structures within Lee County. Specifically, Lee County requires proposed structures over 125 feet MSL to submit a tall structures permit for review by the County and the LCPA. In addition, the FAA requires FAA Form 7460-1 to be completed and submitted to the FAA for any structures over 200 feet above ground level for an airspace review. Also, any proposed construction on airport property is coordinated through the LCPA and information is forwarded to the FAA Orlando District Office for final review and coordination.

On-Airport Land Use Analysis

On-airport land uses were also evaluated with a goal to achieve optimum utilization of land within the existing airport boundary and to promote compatibility between the airport and its environs. For the purposes of this analysis, a comparison will be made between the existing and approved Existing On-Airport Land Use Map and the proposed Future On-airport Land Use Map generated as part of this study and are shown in **Exhibit 7-19** and **Exhibit 7-20**. The most recent version of the Existing on-Airport Land Use Map was prepared and approved by the Lee County Port Authority and Lee County as part of an Airport rezoning process completed in 2001. The definitions of the eight categories of the on airport land use have been incorporated in the Lee County Land Development Code and are listed below:

Exhibit 7-19

Existing on-airport land use



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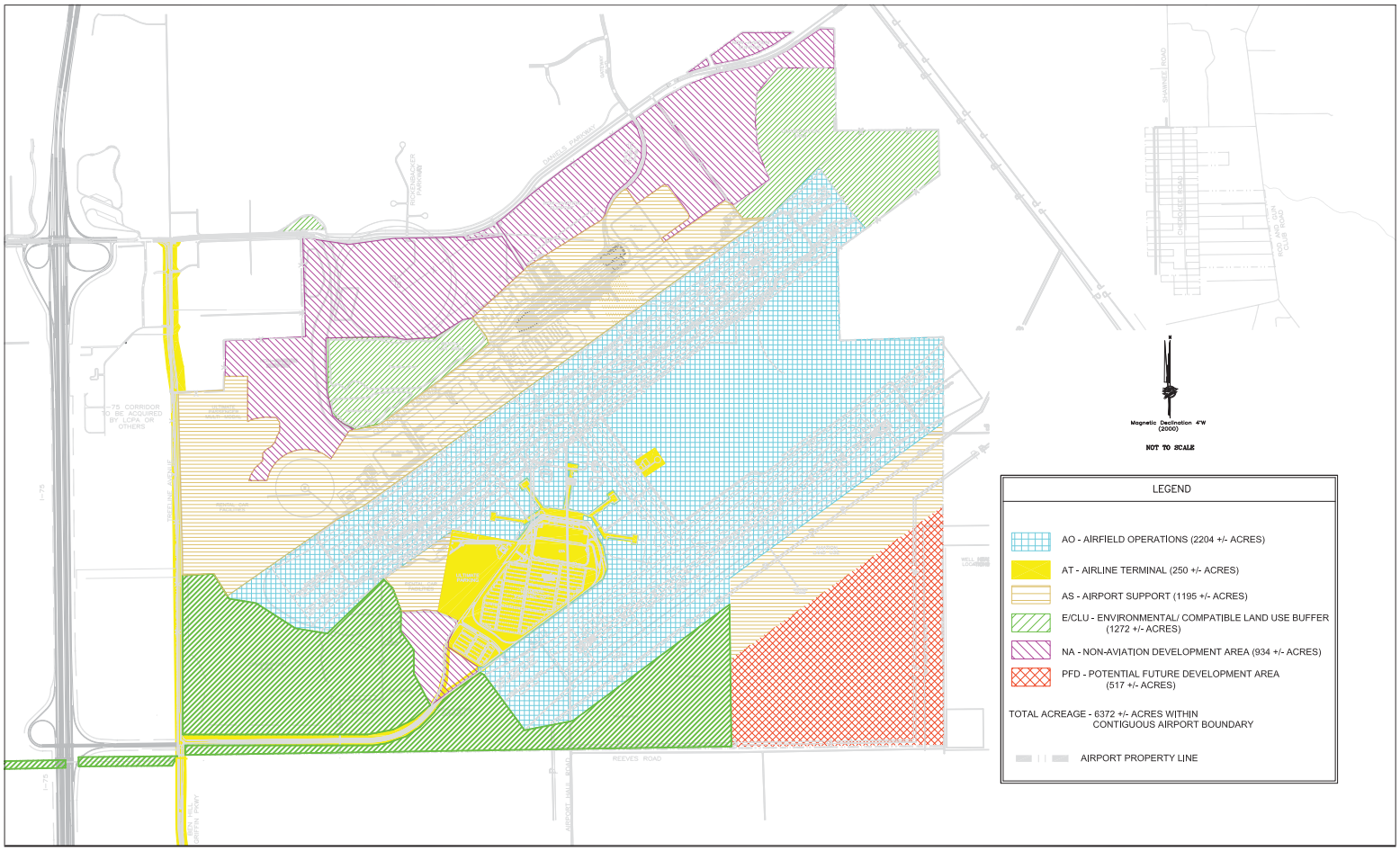
FORT MYERS, FLORIDA

MASTER PLAN UPDATE
ON-AIRPORT EXISTING LAND USE MAP

EXHIBIT
7-19

Exhibit 7-20

Proposed on-airport land use



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MASTER PLAN UPDATE

ON-AIRPORT PROPOSED LAND USE MAP

EXHIBIT
7-20

Existing On-Airport Land Use Definitions
Listed below of the proposed on-airport land use definitions for RSW:

AIRFIELD OPERATIONS
This category of land use includes all areas necessary for safe operation on the airside of the airport. Included in this area are runway and taxiway safety areas, runway approaches where clearance is not adequate to permit other uses, taxiways and taxiway exits, areas where NAVAIDs will be located, and areas within the building restriction lines (BRLs) and the runway protection zones.

AIRLINE TERMINAL
This land use category includes all facilities associated with the passenger terminal area. This involves the passenger terminal building, Federal Inspection Station (FIS)/customs, aircraft aprons, and terminal auto parking.

AIR CARGO
This category consists of aircraft apron, cargo buildings, auto parking and truck ramps for transshipping cargo between air and ground transportation.

GENERAL AVIATION
This category consists of aircraft apron, fixed base operator (FBO) offices and hangars, planned conventional hangars, and auto parking. This area is designed to store and service general aviation aircraft, with a planned expansion of the apron and hangar area westward to the air cargo apron.

AIRPORT SUPPORT
This category includes several land uses that provide support facilities to other airport operations. Support facilities include air traffic control tower (ATCT), airport rescue and firefighting (ARFF), airport maintenance, airport utilities, rental car service and storage, fuel farms, future aircraft maintenance, and airline in-flight catering kitchens. These facilities are grouped together wherever possible and are located to have reasonable access to the other functions on the airport that they are designed to save. Airport Support also provides lease areas for uses that serve other aviation-related uses but do not need direct access to the airfield. Examples of uses for this area would include, but not be limited to, aviation-related offices, transportation terminals, warehousing, hotels, restaurants, and motels that would benefit by close proximity to airport activities.

AVIATION-RELATED INDUSTRY
This land use includes manufacturing, fabrication, or assembly activities relating to aviation. Examples of uses for this area would include fuel storage and transfer facilities, aircraft parts/instrument manufacture, facilities for processing large air cargo shipments, and warehousing.

ENVIRONMENTAL/COMPATIBLE LAND USE BUFFER
This buffer provides a land use compatible with aircraft operations and includes areas to be used for surface water and wetlands management. Portions of this buffer have provided mitigation for past airport development and also include

upland or former crop areas that are available for either future wetland mitigation or other compatible airport development.

UNDEVELOPED AREA
This land use consists of area reserved for future direct or related aviation uses that will be defined at a future date and will be the result of a future land uses amendment.

The eight future on-airport land use definitions are recommended to be consolidated into six major categories for clarity and are listed below:

Proposed On-Airport Future Land Use Definitions
Listed below of the proposed on-airport land use definitions for RSW:

Airfield Operations
This designation consists of lands used for the operation of RSW, including but not limited to, the runway and taxiway areas, NAVAIDs, as well as those areas restricted for aviation safety (RPZs and Building Restriction lines, etc).

Airline Terminal
This land use includes the area necessary for scheduled air service operations. This land use would include items such as the terminal building, access roadway system, rental car areas, auto parking and utility infrastructure. This land use would also include the air traffic control tower and airport rescue and firefighting stations that are located in the vicinity.

Environmental/Compatible Land Use Buffer
This land use includes existing conservation easements, open space and storm water management lakes, which will promote compatibility between the airport and adjacent land uses.

Airport Support Areas
This designation consists of lands associated with the aviation related infrastructure but excluding the commercial service terminal area and those land uses defined in the Airline Terminal category. Land uses include aircraft apron areas for general aviation and air cargo aircraft, aircraft maintenance hangars and buildings, general aviation terminals, aircraft storage hangars, related auto parking and utility infrastructure. This land use also includes activities that have a direct connection with aviation related activities such as airport maintenance, airport utilities, rental car service and storage, fuel farms, airline in-flight catering kitchens and intermodal facilities. These facilities are grouped together wherever possible and are located to have reasonable access to the other functions on the airport that they are designed to serve

Airport Revenue Support/Non-Aviation Areas
This land use is for commercial industrial and related land leases to support the continued growth of the Airport and aid in the generation of additional revenue. These areas will include warehousing and distribution facilities, offices, hotels/motels, limited retail development and other similar related development.

Reserved for Future Development
The land use under this designation will include areas for future aviation-related activities that include airfield, landside or other use but is outside the 20-year development window for the airport. The ownership of this land use allows a buffer between the airport and adjoining property and prevents encroachment of development that could hinder the future expansion of the RSW.

The following changes are proposed between the existing on-airport land use and the proposed future on-airport land use:

- The Airfield Operations category definition has remained the same.
- The Airline Terminal category definition has remained the same
- The Air Cargo, General Aviation and Airport Support Categories have been combined and renamed Airport Support since the majority of these land uses are similar and a distinction between the three categories are not necessary.
- Aviation Related Industry category has been renamed Airport Revenue Support to better encompass all the land uses defined in this category which may or may not be totally aviation related.
- Environmental / Compatible Land Use Buffer category uses a similar but broader definition.
- Undeveloped Area category has been renamed Reserved for future development which better defines the proposed use of this category.

It is recommended that upon adoption of the Airport Master Plan by the Federal Aviation Administration and Florida Department of Transportation, the LCPA initiate the process to update the Lee County Comprehensive Plan, The Lee Land Development Code and the Master Concept Plan (rezoning) to bring the proposed future on-airport land use plan forward for formal approval by local government.

Local Land Use and Zoning

To promote land use compatibility, the Lee County Board of County Commissioners has established sections 34-1001 through 34-1008, which outline compatibility guidelines for public-use airports in Lee County. These sections of the Land Development Code address Airport Hazard Districts, Land use Restrictions, Airport Noise Zones and Permits for Tall Structures. The Lee Plan, as amended through December 2000, presents the local government comprehensive plan for the area. All units of local government in the State of Florida are required to adopt local comprehensive plans pursuant to Chapter 163 of the Florida Statutes. Within the Lee Plan, a vision for the year 2020 has been adopted by the Lee County Board of County Commissioners. Specifically, the vision of RSW is as follows; ".... RSW will be greatly expanded by 2020. The expanded airport will have a second parallel runway and a new terminal building which will more than double the capacity of the airport." The Lee Plan also includes a Ports, Aviation and Related section that outlines the goals and objectives for RSW.

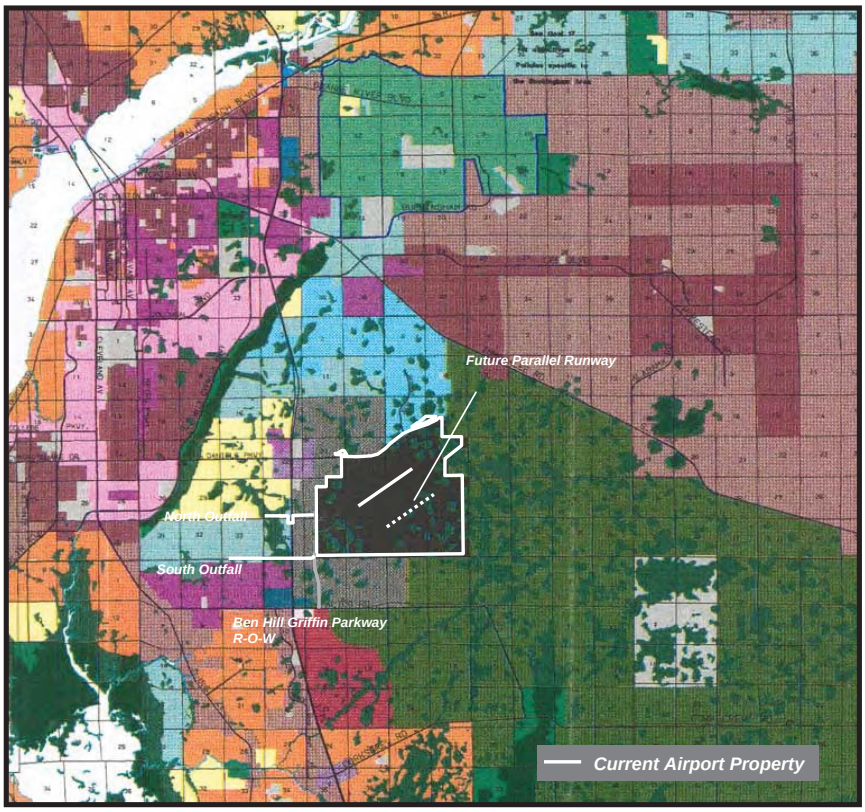
The Lee Plan also presents the future land use map for Lee County. The goal of the future land use map is to depict the location, type and density of future land uses in order to protect natural and manmade resources, provide essential services in a cost-effective manner and to discourage

urban sprawl. The future land use map of Lee County that includes Airport Property is shown in **Exhibit 7-21**. The future land use of airport property is classified as Airport. The Airport future land use category as defined in the Lee County Comprehensive Plan includes all land necessary to include the existing and future infrastructure needs of the airport through the year 2020. The definition goes on to say that any airport expansion will include extensive environmental buffer areas for the protection of groundwater resources and wildlife habitat. Any airport expansion beyond the present boundary will require appropriate modifications to the DRI Development Order and any necessary amendments to the Lee Plan. Future land uses surrounding the airport include Airport Commerce, Density Reduction/Groundwater Recharge Areas, Wetlands, and New Community (Gateway).

RSW is currently zoned as a Planned Development District as defined in Section 34-611 of the Lee Land Development Code. A planned development district is provided to implement the goals and objectives of the Lee Plan while providing some flexibility in planning and designing the developments. The Airport zoning within the planned development district is defined as an Airport Operations Planned Development District (AOPD) and the geographic boundary of the airport planned development district along with surrounding zoning is shown in **Exhibit 7-22**. Regulations for specific land uses allowed within AOPD designation are defined in section 34-934 of the Lee Land Development Code. The LCPA plans to submit a request to include additional land uses allowed within the AOPD designation as part of the master planning process after the master plan has been approved and adopted by the FAA and FDOT. Surrounding zoning includes agricultural (AG-2), Light Industrial (IL), Commercial Planned Development (CPD) District and scattered residential.

Exhibit 7-21

Lee County Future land use map



Future Urban Areas
- Intensive Development
- Central Urban
- Urban Community
- Suburban
- Outlying Suburban
- Industrial Development
- Public Facilities
- University Campus

Interchange Areas
- Industrial
- General
- General Commercial
- Industrial Commercial
- University Village
- Mixed Use

New Community
- New Community

Airport Areas
- Airport Commerce
- Airport

Non-Urban Areas
- Rural
- Rural Community Preserve
- Outer Islands
- Open Lands
- Density Reduction/ Groundwater Resource
- Upland Conservation Lands

Wetlands
- Wetlands
- Wetland Conservation Lands

Source: Lee County GIS Department 2002

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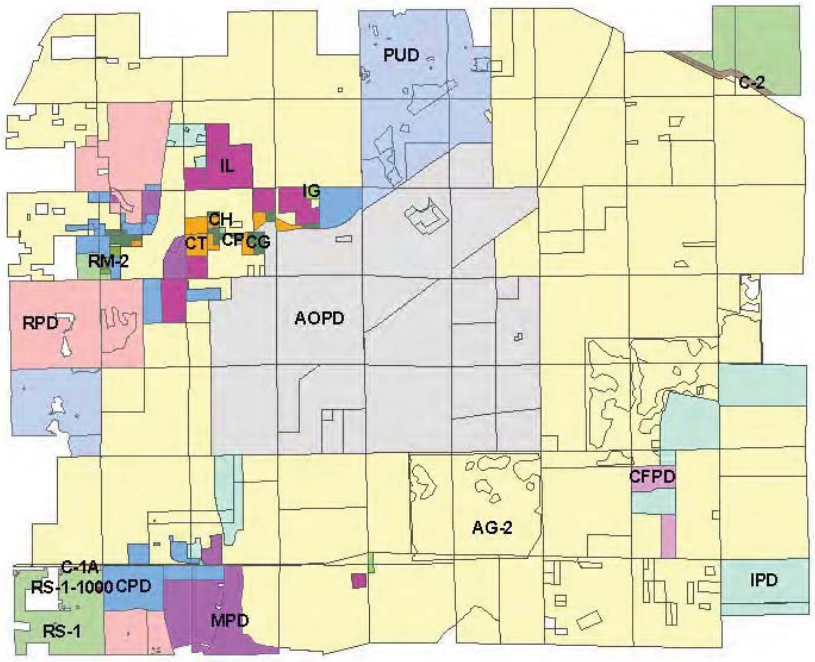
Exhibit 7-22

Lee County Zoning Map



North

Scale: NTS

Legend

AG-2	CG	CT	PUD
AOPD	CH	IG	RM-2
C-1A	CN-1	IL	RPD
C-2	CP	IPD	RS-1
CFPD	CPD	MPD	RS-1-1000

Source: Lee County Property Appra er, Decem er 2002

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7.5.3 Social lmpacts

The purpose of a social impact analysis is to determine the effect of airport development on the human environment. The types of social impacts that generally result from development include:

- Relocation of residences and/or businesses;
- Division or disruption of established communities;
- Disruption of orderly, planned development; and
- Alterations in traffic patterns that may permanently or temporarily restrict traditional community access.

The continued development of RSW is not expected to have significant impacts on the population and demographics of Lee County and the Southwest Florida region as a whole. The majority of land identified as future acquisition is currently vacant so therefore there would be few residence or business relocations.

The LCPA, in conjunction with Lee County, has established land use controls that will help prevent incompatible development and therefore social impacts due to future expansion of the facility.

7.5.4 Induced Socioeconomic Impacts

For major airport development proposals, there is a potential for induced or secondary impacts on surrounding communities. These potential airport development impacts include the following:

- Shifts in population movement and growth;
- Changes in public service demands; and
- Changes in business or economic activities.

The continued expansion of RSW and its associated construction would provide additional jobs in the heavy construction sector of the local economy. The continued development of the airport will not cause shifts in population movements in the region. The expansion of the airport will require modest incremental increases in public service demands such as utilities and public transportation but will not be a significant impact. With the continued development of the airport there will come new opportunities to accommodate businesses, residents and tourists who require access to the national airport system.

7.5.5 Air Quality

Section 176(c) of the Clean Air Act (CAA) amendments of 1977, the amendments of 1990, and the General Conformity Rule of 1993, requires federally funded projects to demonstrate that a proposed project will not degrade air-quality in non-attainment areas. A non-attainment area is an area that does not meet EPA's established air quality standards. An attainment area is an area where air quality standards are met, but prevent deterioration beyond acceptable limits. Legal limitations on pollutant concentration levels allowed to occur in ambient air or ambient air quality

standards has been established by the U.S. EPA and Florida Department of Environmental Protection (DEP) for the following six pollutants:

- Carbon Monoxide (CO)
- Nitrogen Dioxide (NO2)
- Sulfur Dioxide (SO2)
- Ozone (O3)
- Lead (Pb)
- 10-Micron Particulate Matter (PM)

Lee County has been designated by the EPA and Florida DEP as an attainment area. As a result, no additional air quality modeling is anticipated for future development.

7.5.6 Water Quality

The Federal Water Pollution Control Act, more widely known as the "Clean Water Act", provides the authority to establish water quality standards, control discharges into surface and subsurface waters, develop wastewater treatment management plans and practices, and issues permits for discharges of dredge and fill material. These water quality control requirements are handled at the federal, state, regional and local levels.

The U.S. EPA as mandated under the clean water act developed a National Pollutant Discharge Elimination System (NPDES) stormwater permitting program in two phases. EPA is responsible for implementing the program, but has in most cases authorized individual states to administer the program. In October 2000, the Florida DEP was authorized to implement the program in the State of Florida with the exception of Indian-owned lands. Regulated Sources that would affect development at RSW include transportation facilities such as airports and construction activities, which would disturb more than five acres.

In order to obtain an NPDES stormwater permit, a Stormwater Pollution Prevention Plan (SWPPP) is required. The necessary components of a SWPPP includes a site plan for managing runoff, identification of stormwater controls, a description of planned inspections and maintenance and monitoring of activities. RSW is currently operating under a SWPPP for airport activities. In addition, many of the major tenants of the airport operate under their own SWPPP and tenants who operate their own fueling operation are required to prepare individual SWPPPs. Individual construction SWPPPs have also been prepared for the airport. The airport has also prepared a Spill Prevention Control and Countermeasures (SPCC) for the facility. The SPCC is required for fuel storage tanks to identify a means to contain spills if one should happen to occur.

It is recommended that the LCPA update their SWPPP and SPCC documents upon the opening of the midfield terminal complex to reflect necessary changes. It is also recommended that the airport prepare a Stormwater Master Plan that would also look at water quality issues.

7.5.7 Historical, Architectural, Archaeological and Cultural Resources

Two federal laws apply to this category: 1) The National Historic Preservation Act of 1966 and 2) The Archaeological and Historic Preservation Act of 1974. The National Historic Preservation

Act of 1966 requires an initial review to determine whether properties contained within the National Register of Historic Places or properties eligible for inclusion in the register are located in the vicinity of the project site. The Archaeological and Historic Preservation Act of 1974 requires a survey, recovery and preservation of significant and pre-historical data that may be destroyed or irreparably lost due to a federal, federally licensed or federally funded project.

Correspondence received from the Florida Department of State, Division of Historical Resources verified that no archaeological or historical resources are recorded within the boundaries of RSW.

7.5.8 Biotic Communities (including Flora and Fauna)

Biotic communities are defined as areas where plants (flora) and animals (fauna) share a mutual habitat necessary for sustenance and propagation. Consideration of this category is required by the Endangered Species Act of 1973 and the Fish and Wildlife Coordination Act (if water resources are impacted). The level of anticipated impacts determines the level of biotic assessment needed. Several (marginal) factors are examined to determine the anticipated impacts to biotic communities:

- If the proposed development would take or impact a publicly owned wildlife or waterfowl refuge of local, state, or national significance;
- If there are threatened and endangered species in the area of immediate impact;
- If the proposed development would affect water resources (i.e., wetlands, groundwater, impoundment, diversion, deepening, controlling, modifying, polluting, dredging or filling of any stream or body of water);
- If the proposed development would impact other than man-dominated areas of land; and
- If the proposed development causes a permanent altercation or a removal of a sizable amount of habitat.

Existing airport property as of August 2001 was mapped depicting major plant communities on recent rectified digital aerial photography using the January 1999 edition of the Florida Land use, Forms and Cover Classification System (FLUCFCS), Level III and is shown on **Exhibit 7-23**. A fourth level (Level IV) was included, where appropriate, to further identify specific habitat types. Any standard three-digit FLUCFCS code that has a nine added to the end indicates that the habitat was disturbed. Disturbances on airport property were due primarily to the presence of exotic vegetation. Extensive ground verification was conducted from August through October 2001 to insure the accuracy of this mapping effort. As part of the mapping process, the approximate levels of exotic/nuisance plant species infestations within each plant community were delineated.

Exhibit 7-23

FLUCS Map

A survey for threatened and endangered species was also conducted on-site in January, February, and March 2002 and May through September 2002 for a majority of the study area and is discussed later in this chapter. The listed species survey did not include the two existing conservation areas because these areas will not be impacted by the proposed potential future site development activities. Areas within the Aircraft Operations Area (AOA) was not intensively mapped or surveyed due to access restrictions and the fact that the majority of this land was previously cleared for aviation activity. The lands associated with the Midfield Terminal Complex facilities and an extension of Treeline Avenue/Ben Hill Griffin Parkway have been intensively reviewed and have recently received the required county, state and federal development permits; therefore, these areas were considered to be developed and were not mapped or surveyed as part of this study and are shown as the airport FLUCFCS code.

Based on analysis of work completed to date, the potential development activities described in the Master Plan update will not take or impact a publicly owned wildlife or waterfowl refuge of local, state, or national significance. The potential development activities may affect threatened and endangered species and will affect wetlands and wildlife habitats. The existing conditions on-site, potential impacts to listed species, and likely strategies to compensate for unavoidable wetland impacts are described in the sections below.

7.5.9 Endangered and Threatened Species

Federally listed threatened and endangered plant and animal species are protected by the Endangered Species Act of 1973 administered by United States Fish and Wildlife Service (FWS). State-listed animal species are protected by Sections 39-27.002 through 39-27.005 of the Florida Administrative Code (FAC) under the auspices of Florida Fish and Wildlife Conservation Commission (FWC). State-listed plant species are regulated by Sections 581.185 through 581.187 and 581.201 of the Preservation of Native Flora of Florida Act administrated by the Florida Department of Agriculture and Consumer Services (FDA). Legal protective status of state and federally listed plant and animal species are derived from Florida's Endangered Species, Threatened Species, and Species of Special Concern Official Lists published by the FWC August 1, 1997.

A request for information on listed species known to occur within or adjacent to the project have been submitted to the FWS, FWC, and Lee County Department of Community Development Division of Planning.

The National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, responded to a request for information related to the proposed development. The response stated that since the project is to be accomplished wholly on land, there is no impact to any waterway known to contain species protected by the Endangered Species Act.

Numerous surveys for listed species have been conducted on LCPA property as a part of previous Master Planning and permitting activities. These surveys have confirmed the presence of listed wading birds, such as Florida sandhill crane, tricolor heron, little blue heron, reddish egret, and roseate spoonbill, and American alligator in the marshes and borrow lakes on-site. The Florida black bear has been suspected to occur given the potential habitat on-site and documented occurrences adjacent to the site, but has not been reported as being observed on-site. A Florida panther was struck by a car on Chamberlin Parkway on November 29, 1988 and panthers are

presumed to periodically pass through the area. Several potential Big Cypress fox squirrel nests have been identified. With the exception of these squirrel nests and one burrowing owl nest located within the AOA in 2000, no nesting by listed species has been documented. A summary of the listed animal and plant species reported from these previous surveys is presented in **Table 7-31**.

Pedestrian transects surveys for potential listed species habitat were conducted within the current project boundary in January, February, and March 2002. Surveys were conducted by qualified ecologists familiar with local flora and fauna. A list of animal and plant species by habitat type that could occur in the project area is presented in **Table 7-32**. This list was compiled based on Appendix H of the Lee County Land Development Code, Chapter 10, Article 3, Division 8 (Protection of Habitat) and local knowledge of the area. These surveys consisted of ecologists walking parallel transects looking for listed species or their sign (tracks, burrows, nests, etc.). At intervals the ecologists stopped, remained silent, and listened for wildlife vocalizations. Field surveys were only conducted on lands owned by the LCPA. The listed species survey methodology was approved by Lee County Department of Community Development Division of Planning on March 22, 2002. A copy of the survey methodology has also been submitted to the FWS for review and comment. The FWS replied on March 27th stating that they were unable to respond to this Technical Assistance request and therefore would not comment on the proposed survey methodology. Based on comments received from the FWC, the proposed methodology was revised to incorporate limited additional summer surveys. This consisted of monitoring the known RCW cavity trees for activity, surveying open fields for Southeastern American Kestrel, surveying suitable wetlands for bird rookeries, and evening audible surveys for gopher frogs. The revised methodology was approved by the FWC on April 30th. These additional surveys were conducted in May through September 2002. The FWC has requested that intensive listed species surveys be conducted for the long-term planning areas (i.e., those areas in which future develop is beyond the 20-year planning window of the current Master Plan). However, because a listed species survey is typically valid for no more than five-years, and the airport is not requesting authorization for specific development intensity authorizations (i.e., square-feet of commercial or industrial use, number of residential units, etc.), the LCPA has elected to conduct a less intensive survey of the long-term planning areas.

Spacing of the transects varied between near-term and long-term development areas and were based on the habitat type and the potential for listed species to occur. Within the near term development areas the spacing of the transects was adjusted as needed to insure a minimum of approximately 80 percent coverage of the area. This survey methodology was also used on those lands within the overall project boundary that were within 500 feet of the near-term development area. Within the long-term development areas the spacing of the transects was adjusted as needed based on the habitat type and the potential for listed species to occur.

Based on the listed species surveys conducted in January through September 2002, twelve species of birds, one reptile, one mammal, and six plant species that are listed by the FWS and/or the FWC/FDA have been observed on-site (**Table 7-32**). Only three of these species are federally listed. The majority of the bird species were wading birds that were observed foraging in the marshes, swamps, or borrow lakes that contained water at the time of the surveys. A cypress wetland, located north of the existing airport maintenance facility west of Chamberlin Parkway appears to be a roosting area for species such as white ibis, great egrets, and great blue herons. One active yellow crown night heron nest was present in August 2002. A second cypress area, located approximately 500 feet south of the future parallel runway and 500 feet west of the east

property line, contains an active wading bird rookery. Great blue heron, black-crown night-heron, and anhinga nests were observed within this wetland. Due to the presence of chicks in the nests, a thorough survey of the area to count all the nests and to confirm all of the species present was not conducted. An active Florida sandhill crane nest was observed in a large marsh located south of Daniels Parkway between Paul J. Doherty Parkway and Fuel Farm Road. Two additional old Florida sandhill crane nests were found in a marsh east of Fuel Farm Road and north of the Northeast Conservation Area. The red-cockaded woodpecker shown on **Table 7-32** consists of the abandon cavity trees previously identified on the site. These abandon cavities are located in the vicinity of the southeast corner of the Midfield Terminal project area. No RCW's have been observed on-site.

Table 7-31
Summary of Listed Animal and Plant Species Observed
Southwest Florida International Airport

Common Name	Scientific Name	1977 EIS	1990 DRI	1992 EA	1994 EA	2000 ERP	2002 DRI
Birds							
Bald eagle	*Haliautus leucocephalus*				✓	✓	✓
Burrowing owl	*Speotyto cunicularia*					✓	
Florida sandhill crane	*Grus canadensis*	✓		✓	✓	✓	✓
Least tern	*Sterna antillarum*		✓				
Limpkin	*Aramus guarauna*					✓	√
Little blue heron	*Egretta caerulea*		✓	✓	✓	✓	✓
Red-cockaded woodpecker*	*Picoides borealis*				✓	✓	✓
Reddish egret	*Egretta rufescens*			✓			
Roseate spoonbill	*Ajaia ajaja*	✓			✓		✓
Snowy egret	*Egretta thula*				✓	✓	✓
Southeastern Kestrel	*Felco sparverius paulus*						√
Tricolored heron	*Egretta tricolor*			✓	✓	✓	✓
White ibis	*Eudocimus albus*					✓	✓
Wood stork	*Mycteria americana*				✓	✓	✓
Mammals							
Big Cypress fox squirrel	*Sciurus niger avicennia*	✓		✓		✓	✓
Florida black bear	*Ursus americanus floridanus*	✓				✓	
Reptiles							
American Alligator	*Alligator mississippiensis*	✓	✓	✓	✓	✓	✓
Plants							
Common wild pine	*Tillandsia fasciculata*					✓	✓
Leafless beak orchid	*Stenoffynochos lanceolata*						√
Leather fern	*Acrostichum* spp.			✓			
Northern needle leaf	*Tillandsia balbisiana*						✓
Pine lily	*Lilium catesbaei*						✓
Pine pink	*Bletia purpurea*						✓
Wild coco	*Eulophia alta*						✓

** Abandoned red-cockaded woodpecker cavities observed on-site.*
Federally listed species are underlined. Species without underline are listed only by the state of Florida
Source: Kevin L. Erwin Consulting Ecologist, Inc.

Table 7-32
Listed Species Which Potentially Occur Onsite Based on Vegetation Communities (FLUCFCS)
Southwest Florida International Airport

FLUCFCS Code	Vegetation Description	Potential Listed Species
100	Urban and Built-Up	None
211	Improved Pasture	Florida Pine Snake
262	Low Pasture	Florida Panther
		Sherman's Fox Squirrel*
		Burrowing Owl*
		Audubon's Crested Caracara*
		Florida Sandhill Crane
261	Fallow Cropland	Least Tern
		Florida Panther*
321	Palmetto Prairie	Eastern Indigo Snake
3219	Palmetto Prairie, Disturbed	Florida Pine Snake*
		Gopher Tortoise
		Gopher Frog
		Southeastern American Kestrel
		Florida Sandhill Crane
		Audubon's Crested Caracara
		Florida Panther*
		Florida Black Bear
		Curtis' Milkweed
		Fakahatchee Burmannia
		Beautiful Paw-Paw
		Florida Coontie
411	Pine Flatwoods	Eastern Indigo Snake
4119	Pine Flatwoods, Disturbed	Florida Pine Snake*
414	Pine / Mesic Oak	Gopher Tortoise
		Gopher Frog
		American Bald Eagle*
		Southeastern American Kestrel
		Red-cockaded Woodpecker
		Florida Panther
		Big Cypress Fox Squirrel
		Sherman's Fox Squirrel*
		Florida Black Bear
		Common Wild Pine*
		Fakahatchee Burmannia
		Satin Leaf
		Beautiful Paw-Paw
		Florida Coontie
422	Brazilian Pepper	Florida Black Bear*

Table 7-32
Listed Species Which Potentially Occur Onsite Based on Vegetation Communities (FLUCFCS)
Southwest Florida International Airport

FLUCFCS Code	Vegetation Description	Potential Listed Species
427	Live Oak	Eastern Indigo Snake
428	Cabbage Palm	Gopher Tortoise
4289	Cabbage Palm, Disturbed	Audubon's Crested Caracara Florida Panther Florida Black Bear Simpson's Stopper Hand Adder's Tongue fern Twisted Air Plant
4291	Wax-Myrtle Willow, Hydric	Wading bird roosts/rookeries*
4299	Wax-Myrtle Willow, Hydric, Disturbed	**Limpkin***
514	Drainage Canal	**American Alligator**
742	Borrows Areas	Roseate Spoonbill Limpkin **Little Blue Heron** Reddish Egret **Snowy Egret** **Tricolor Heron** **White Ibis*** **Wood Stork*** **Florida Sandhill Crane*** Snail Kite* Least Tern* Everglades Mink
6179	Mixed Wetland Hardwoods, Disturbed Cypress	American Alligator Eastern Indigo Snake*
621	Cypress, Disturbed	Gopher Frog
6219	Cypress, Cut	Limpkin
621c	Cypress-Pine-Cabbage Palm, Disturbed	Little Blue Heron
6249		Snowy Egret Tricolored Heron **White Ibis*** Artic Peregrine Falcon Bald Eagle* Wood Stork Florida Panther Everglades Mink Big Cypress Fox Squirrel Florida Black Bear **Common Wild Pine***

Table 7-32
Listed Species Which Potentially Occur Onsite Based on Vegetation Communities (FLUCFCS)
Southwest Florida International Airport

FLUCFCS Code	Vegetation Description	Potential Listed Species
619	Exotic Wetland Hardwoods	Big Cypress Fox Squirrel*
6192	Exotic Wetland Hardwoods, Brazilian Pepper	Florida Black Bear*
6193	Exotic Wetland Hardwoods, Melaleuca	
625	Hydric Pine Flatwoods	Eastern Indigo Snake*
6259	Hydric Pine Flatwoods, Disturbed	Gopher Frog*
		American Bald Eagle*
		Southeastern American Kestrel*
		Red-cockaded Woodpecker*
		Florida Panther*
		Big Cypress Fox Squirrel*
		Florida Black Bear*
		Common Wild Pine
		Fakahatchee Burmannia*
		Satin Leaf*
600	Created Wetland	**American Alligator**
641	Freshwater Marsh	Eastern Indigo Snake*
6419	Freshwater Marsh, Disturbed	**Limpkin**
643	Wet Prairie	**Little Blue Heron**
6439	Wet Prairie, Disturbed	**Reddish Egret**
		Snowy Egret
		Tricolored Heron
		White Ibis*
		Florida Sandhill Crane
		Wood Stork
		Snail Kite
		Everglades Mink
743	Spoil Areas	American Alligator*
748	Cleared Areas	Gopher Tortoise
		Burrowing Owl
		Little Blue Heron*
		Snowy Egret*
		Tricolored Heron*
		Florida Sandhill Crane*
		Least Tern
811	Airport	None
814	Roads and Highways	
818	Airport Parking	

** Species not specifically noted to occur in habitat by County Ordinance but known to utilize general habitat type based on literature and past survey experience.*

***Bold Font**: Species observed within Midfield Terminal Complex facility and access roads during previous surveys*

Source: Kevin L. Erwin Consulting Ecologist, Inc.

Potential impacts to listed bird species caused by the proposed development activities will likely consist of impacts to potential wading bird foraging habitat; however, those wetlands that are outside of development areas (i.e. not filled or excavated) will continue to provide foraging habitat post development. The compensation for loss of foraging habitat resulting from direct filling or excavating of wetlands is typically provided via the wetland mitigation required as part of the U.S. Army Corps of Engineers (USACE) and South Florida Water Management District (SFWMD) permitting process. Given the high quality of the wetlands containing the wading bird roost, wading bird rookery, and Florida sandhill crane nest it is unlikely that these wetlands will be filled for development. Setbacks may be required if these nesting and roosting areas are active at the time of future development.

One species of mammal, the Big Cypress fox squirrel, has been observed on-site. Scattered Big Cypress fox squirrel nests were observed in cypress and melaleuca trees in hydric pine flatwoods, cypress/pine, and cypress habitats located south of Daniels Parkway, east and west of Chamberlin Parkway, and within the footprint of the future parallel runway. As discussed above, there is potential habitat for both the Florida black bear and Florida panther on-site and on adjacent off-site lands. These wide ranging species could potentially use any of the forested upland or wetland habitats on-site.

Impacts to the Big Cypress fox squirrel caused by development activities will consist of a loss of habitat and potential loss of nest trees depending on the locations of active nests at the time of development. Areas that are not developed will continue to provide potential nesting habitat for these squirrels. As discussed for wading birds above, compensation for the direct loss of nesting habitat is typically provided via the wetland mitigation required as part of the USACE and SFWMD permitting process. The FWS prepared a Biological Opinion for the Midfield Terminal Complex facilities. In this document, the FWS also evaluated the potential future development of areas outside of the Midfield Terminal project limits, which includes the lands within this study area. Their findings confirm that the enhancement, preservation, and long-term management of the Mitigation Park (6,986± acres) established by the LCPA will insure that the proposed development within the Master Plan study area will not adversely affect the Florida panther. While the Florida Black bear was not included in the Biological Opinion (because the Florida Black bear is not federally listed), it is likely that potential impacts to the Florida black bear by proposed future development within the master plan study area will also be adequately compensated at the Mitigation Park.

One species of listed reptile, the American alligator, has been observed on-site. This species was typically observed within the borrow lakes and less commonly within the wetlands on-site. No nesting has been observed, however it is likely that alligators occasionally nest somewhere within the Master Plan study area. No eastern indigo snakes have been observed on-site. This snake is commonly associated with gopher tortoise burrows; however, given the habitat types present on-site it is likely that the eastern indigo snake may be present.

Unless a project proposes to take an active alligator nest, mitigation for impacts to potential alligator habitat is typically not required. The wetland mitigation program required by the USACE and SFWMD typically compensates for impacts to potential eastern indigo snake habitat.

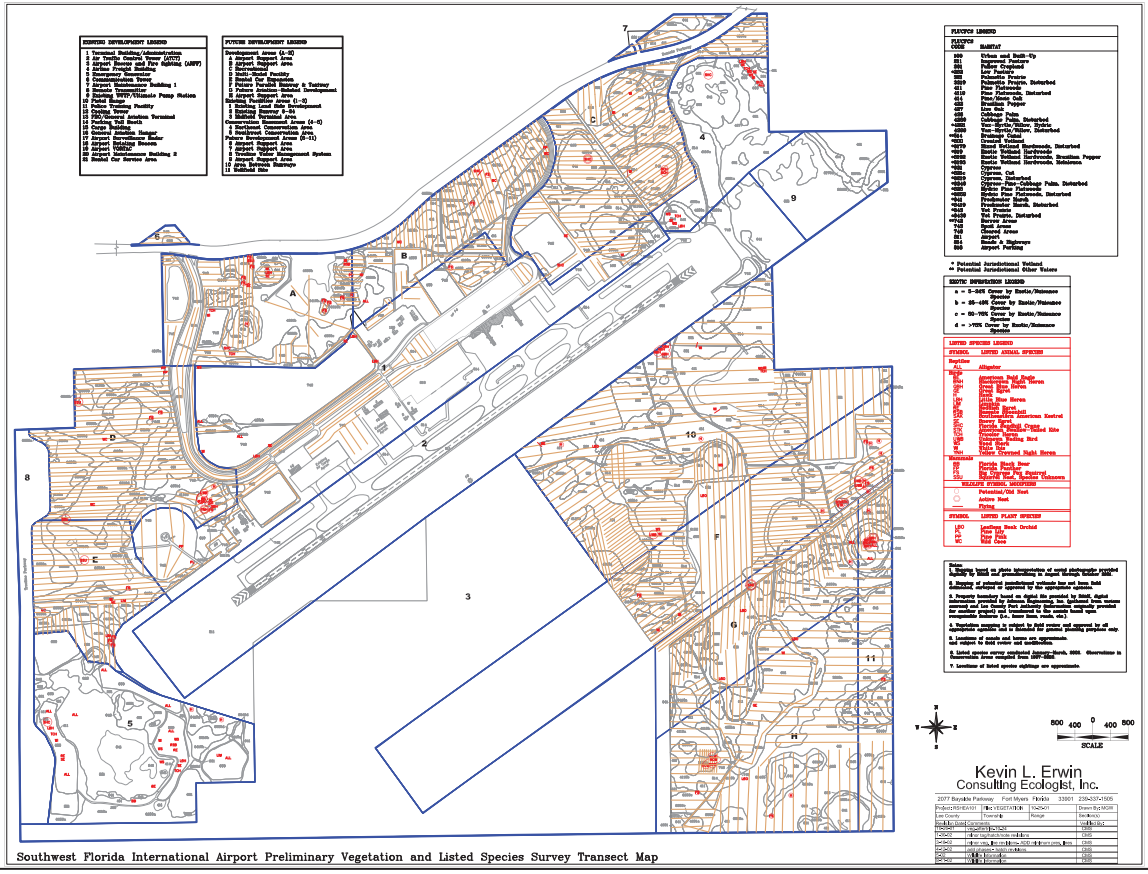
Six listed plant species have been observed on-site. None of these species are federally listed. State-listed plant species are regulated pursuant to the Preservation of Native Flora of Florida Act. The purpose of this rule is to prevent the wanton destruction of native plants and to

encourage propagation and salvage of plants being destroyed through property development. As such, there is no requirement for a landowner to preserve state listed plant species on-site or mitigate for potential impacts. Future development activities will likely result in impacts to state listed plant species; however, these species are also likely to occur in areas of the site that are not developed. In addition, the Mitigation Park provides potential habitat for these plants, and through proper management should continue to support healthy plant populations into the future.

In summary, as shown in **Exhibit 7-24** listed animal or plant species have been identified within the Master Plan study area project area. Careful site planning as part of future detailed site plan design can minimize impacts to these species. Remaining natural areas (upland and wetland) will continue to provide habitat for these species. Unavoidable impacts will be compensated at locations such as the Mitigation Park, in conjunction with the wetland mitigation required by the state and federal permitting agencies.

Exhibit 7-24

Listed Animal and Plant Species at RSW



Southwest Florida International Airport Preliminary Vegetation and Listed Species Survey Transect Map

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA
MASTER PLAN UPDATE
AIRPORT WILDLIFE MAP

EXHIBIT
7-24

7.5.10 Wetland Overview

The discussion and analysis of wetlands and potential wetland impacts was a major element of the environmental overview chapter. This particular section is organized into four primary sections; an overview of the definitions of what is a wetland, an overview of previous wetland permitting at RSW, an analysis of potential wetland impacts as a result of the recommended twenty year development plan, and a brief mitigation strategy for the anticipated wetland impacts.

Wetland Overview

Wetland areas provide several functions: as a wildlife habitat to a variety of wildlife, as important water quality functions in an agricultural area, and provide flood attenuation benefits during the summer wet season. Development activities, such as dredging and filling, within wetlands are regulated by both the state and federal governments. They both use the following definition for wetlands:

> Those areas that are inundated or saturated by surface or ground water at a frequency and a duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The delineation of state jurisdictional wetlands and other surface waters is based on Chapter 62-340 FAC. The delineation of federal jurisdictional wetlands is based on the Clean Water Act (33 U.S.C. 1344), 33 CFR Part 328, and as described in Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1 prepared by Department of the Army Waterways Experiment Station. Both regulations include the evaluation of vegetation, soils, and hydrology in the delineation of jurisdictional wetlands.

FAA Advisory Circular 1500/5200-23, Hazardous Wildlife Attractants On or Near Airports, recommends against land use practices that attract or sustain populations of hazardous wildlife within 10,000 feet of the Airport's movement areas, loading ramps or aircraft parking areas and within five statute miles of approach and departure airspace, where applicable.

In 1949, the Florida legislature created the Central and Southern Florida Flood Control District (FCD) to provide flood control to this portion of Florida. The Florida Water Resources Act of 1972, Chapter 373 Florida Statutes, created five water management districts with expanded regulatory authority in the state and in 1976 the name of the FCD and boundaries were changed to its current form. The SFWMD regulates the construction, alteration, operation, maintenance, repair, and abandonment of water management systems and requires that these activities are not harmful to the water resources of the District. Permits for these activities are reviewed and issued pursuant to Chapters 40-E4, 40-E40, and 4-E400, FAC. The USACE regulates wetlands pursuant to Section 404 of the Clean Water Act and the program's implementing regulations (33 CFR 320 – 330); therefore, many activities in wetlands require a dredge and fill Section 404 permit from the USACE; however, the January 9, 2001 Supreme Court ruling (commonly referred to as the SWANCC decision) confirmed that isolated wetlands, whose sole nexus to interstate commerce is potential use by migratory birds, is not subject to Section 404 regulatory authority.

Mitigation Park

The LCPA purchased 6,986 acres in eastern Lee County forming an almost contiguous preservation area extending from SR 82 to Corkscrew Rd. The intent of the purchase of the Mitigation Park is to provide mitigation for not only the Midfield Terminal Complex but for future airport projects identified in the Master Plan.

The Mitigation Park has provided compensation for impacts associated with both the USACE and SFWMD permits issued for the Midfield Terminal Complex project and will be utilized to offset wetland impacts for future RSW projects.

Since the early 1990s, the LCPA embarked on an ambitious project to acquire sufficient land for mitigation purposes sufficient for future development. **Exhibit 7-25** presents the 7,411 acre (6,986 acres owned by LCPA and 425 acres owned by Lee County) Mitigation Park for the airport, which provides connectivity to important environmental areas in southwest Florida. The LCPA has acquired approximately 6,986 acres in fee simple title adjacent to the 425-acre wellfield site. The Mitigation Park also provides connectivity to other offsite preservation areas. The Flint Pen Strand Addition connects to the Flint Pen Strand, which connects to the Corkscrew Swamp Sanctuary portion of the park, located in the southwest corner, which ties into Camp Keais Strand, Big Cypress National Preserve and Fakahatchee Strand, and ultimately to the Everglades National Park. Accumulation of these lands by LCPA over the last ten years has helped to protect them from possible commercial/residential development. The sheer magnitude of this land acquisition effort required a significant investment in both time and dollars. The LCPA's recent capital investment program has been dominated by this effort and has resulted in significantly delaying other needed expansion programs. The airport is currently working with the SFWMD to design and construct the mitigation areas within the Mitigation Park in conjunction with the permitting for the new Midfield Terminal Project. The current Master Plan and Environmental Assessment will evaluate the Mitigation Park for the ability to accommodate future projects identified in the 20-year Master Plan.

Previous Wetland Permitting

Wetlands within the boundaries of RSW are protected from unauthorized alteration by the USACE under Section 404 of the Clean Water Act and by the SFWMD under Chapter 373 Florida Statute and 40E-4 Florida Administrative Code. It is important to understand each agency evaluates wetlands different from each other and is explained below.

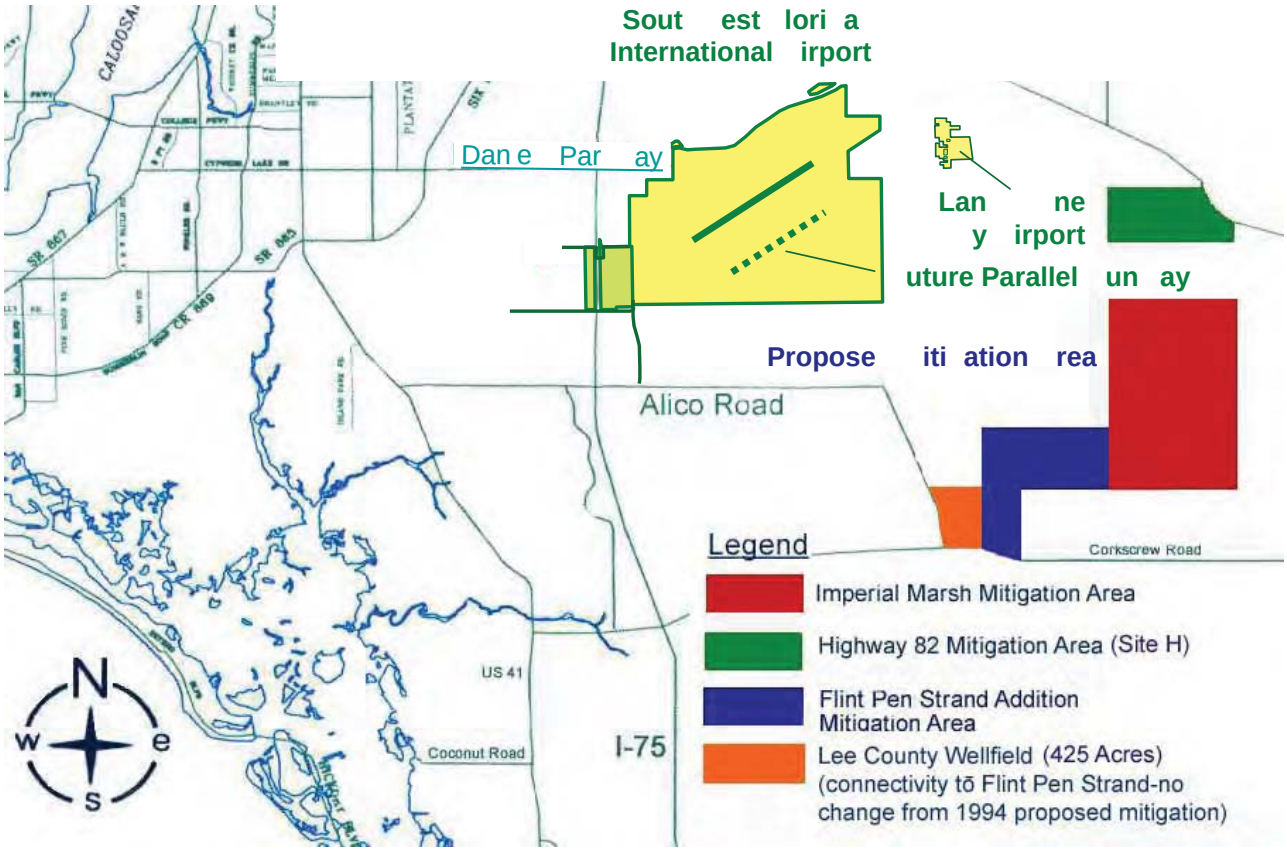
Wetland impacts for the USACE were evaluated by the Wetland Rapid Assessment Procedure (WRAP). WRAP variables that are analyzed include wildlife utilization, wetland overstory/shrub canopy, wetland vegetative ground cover, adjacent upland support/wetland buffer, field indicators of wetland hydrology, and water quality input and treatment systems. A WRAP analysis of all wetlands within the project area gives the baseline condition of all wetlands prior to construction. Another WRAP analysis of project area wetlands is conducted taking into account changes in the variables that will result from the construction of the project. A comparison of the post-construction and pre-construction WRAP scores indicates the anticipated impact of the proposed construction on the wetland functions and values. A lower post-construction score indicates a loss of wetland functions.

To determine an appropriate wetland mitigation to offset the loss in wetland function a similar pre- and post-WRAP analysis was done at the Mitigation Park. The pre-mitigation WRAP value at the Mitigation Park was determined and then a WRAP score was determined for the approved mitigation plan. The post-mitigation WRAP score at the Mitigation Park shows there are extra WRAP credits available to offset future LCPA projects for the USACE.

Wetland impacts for RSW projects under SFWMD jurisdiction are determined according to the criteria in 40E-4 F.A.C. and other applicable SFWMD criteria. For the Midfield Terminal Complex project the basis for the recently issued Environmental Resource Permit (ERP) was the 1996 Conceptual Permit issued to the LCPA.

Exhibit 7-25

Mitigation Park Location Map



Source: Reyno , Sm t an H , 2002

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE MITIGATION PAR LOCATION MAP	EXHIBIT 7-2

The USACE Midfield Terminal Complex permit authorized impacting 706 acres of wetlands and was mitigated for in the mitigation park previously discussed. As mitigation for these wetland impacts, as determined by the pre and post WRAP analysis, the LCPA provided 2,636 acres of upland enhancement and upland preservation; 3,710 acres of wetland enhancement and wetland preservation; and 56 acres of upland restoration. Using the pre and post WRAP scores indicates "excess" credits in the Mitigation Park of 237 units, not including a future WRAP evaluation of the 574 acres of wetlands created for the SFWMD ERP. This future evaluation will be conducted after these created wetlands have met the success criteria outlined in the SFWMD permit. Future SWFIA projects involving wetland impacts can be mitigated by determining the WRAP scores of these future wetland impacts and deducting this value from 237 units, the to be determined credits available from the SFWMD created wetlands, and the future mitigation development of the 505 acres in Site H.

The SFWMD ERP for the Midfield Terminal Complex authorized impacting 645 acres including consideration of secondary and cumulative impacts and listed species habitat impacts. As mitigation for these impacts the LCPA provided 1,664 acres of upland preservation; 953 acres of upland enhancement; 3,379 acres of wetland preservation; 361 acres of wetland enhancement; 574 acres of wetland creation; and 56 acres of upland restoration. There is 505 acres in Site H available for future mitigation. The LCPA placed the Mitigation Park under a Conservation Easement to the SFWMD and will also have the WMD be responsible for the long-term management of the Mitigation Park. The LCPA will provide the SFWMD with a one-time management endowment for their long-term management activities. The SFWMD will implement the CREW management plan within the Mitigation Park. The SFWMD states in their staff report for the Midfield Terminal Complex ERP that based on the difference between the impacts in the conceptual permit, 690 acres, and those in the ERP, 645 acres, that only approximately 45 acres of future impacts can be mitigated in the Mitigation Park using the 505 acres of available habitat in Site H.

Existing Wetland Analysis

The approximate extent of state and/or federal jurisdictional wetlands has been delineated within the project area. For the purposes of this study, the project area is defined as lands owned by the LCPA on August 1, 2001 that are contiguous with the existing RSW facility (with the exception of three small parcels separated from the contiguous ownership by the extension of Daniels Parkway) and a map depicting wetlands by quality is shown in **Exhibit 7-26**.

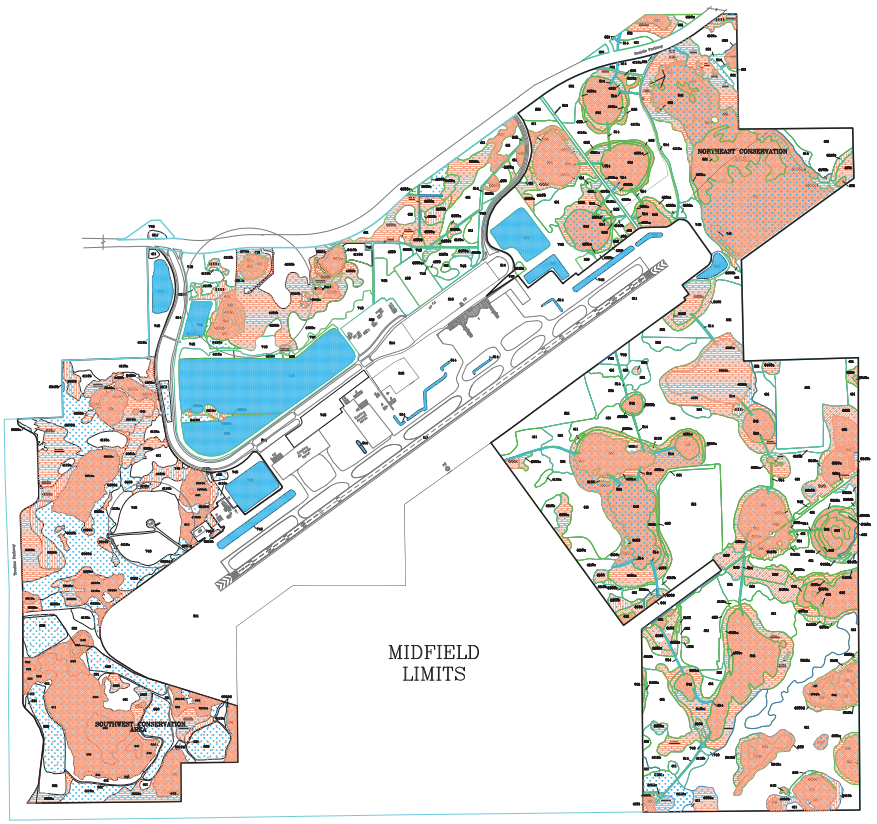
The project site consists of a mosaic of habitat types. A total of 35 plant communities have been delineated. Approximately 1,878.8 acres of jurisdictional wetlands and 237.9 acres of other surface waters have been identified within the site, exclusive of the existing Runway 6-24 and recently approved Midfield Terminal Complex areas (**Table 7-33**). The wetlands range from forested to non-forested systems and from relatively high quality to very low quality. Hydric pine flatwoods is the dominant forested wetland on-site. Much of this habitat type, particularly the areas south from Daniels Parkway to the existing Runway 6-24, has become invaded by melaleuca. This exotic species can form dense stands and thereby reduces the diversity of native plant species. Cypress and cypress/pine are the other dominant forested wetland type on-site. These areas are more deeply inundated by standing water during the wet season than the hydric flatwoods and typically contain lower levels of exotic vegetation. Several areas of shrub (wax myrtle) dominated wetlands occur onsite. This wetland type occurs on the fringes of herbaceous wetlands or in wet agricultural fields that have been fallow for many years. Non forested

wetlands consist primarily of freshwater marshes. These large marshes are a dominant feature of the landscape south of the existing Runway 6-24.

The other surface water category consists primarily of borrow areas excavated during the construction of the existing airport facilities. They were used both to provide fill material and surface water management. The littoral zones of the borrow areas range from approximately three to 20 feet in width.

Exhibit 7-26

Wetlands Map



N
W E
S
Not To Scale

HATCH LEGEND
- High Quality Wetland
- Moderate Quality Wetland
- Low Quality Wetland
- Very Low Quality Wetland
- Created Wetland
- Other Waters
- Upland

Source: Kevin L. Erwin Consulting Ecologist, Inc., 2002

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SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA
MASTER PLAN UPDATE
WETLANDS MAP

EXHIBIT
7-26

Table 7-33
Summary of Existing Conditions (to be completed at a later date)
Southwest Florida International Airport

FLUCFCS CODE	Habitat	Percent Cover By Exotic/Nuisance Species					Total
		>5%	(a) 24%	(b) 25-49%	(c) 50-75%	(d) >75%	
100	Urban and Build-up					44.9	44.9
211	Improved Pasture					147.2	147.2
261	Fallow Cropland					196.0	196.0
*262	Low Pasture					16.0	16.0
321	Palmetto Prairie	30.7					30.7
3219	Palmetto Prairie, Disturbed		40.0				40.0
411	Pine Flatwoods	556.0					556.0
4119	Pine Flatwoods, Disturbed		186.8	67.1	9.6	5.7	269.2
414	Pine/Mesic Oak	5.9					5.9
422	Brazilian Pepper	10.4					10.4
427	Live Oak	0.5					0.5
4289	Cabbage Palm, Disturbed		1.1		0.9		2.0
*4291	Wax-myrtle/Willow, Hydric	78.7	152.7	81.4	11.3	8.8	332.9
4299	Wax-myrtle/Willow, Disturbed	10.2		21.6	23.4		55.2
**514	Drainage Canal					20.9	20.9
*600	Created Wetland	91.5					91.5
*6179	Mixed Wetland Hardwood, Disturbed		4.1	1.0			5.1
*6189	Willow and Elderberry, Disturbed		0.8	1.8			2.6
*619	Exotic Wetland Hardwoods					7.3	7.3
*6192	Exotic Wetland Hardwoods, Brazilian Pepper					1.0	1.0
*6193	Exotic Wetland Hardwoods, Melaleuca					45.5	45.5
*621	Cypress	276.5					276.5
*621c	Cypress, Cut					1.2	1.2
*6219	Cypress, Disturbed		96.0	27.9	7.1	4.3	135.3
*6249	Cypress-Pine-Cabbage Palm Disturbed		8.3	10.2	5.8	1.2	25.5
*625	Hydric Pine Flatwoods	43.0					43.0
*6259	Hydric Pine Flatwoods, Disturbed		142.2	68.5	33.9	94.7	339.3
*641	Freshwater Marsh	445.6					445.6
*6419	Freshwater Marsh, Disturbed		56.0	14.5	1.8	4.0	76.3
*643	Wet Prairie	8.7					8.7
*6439	Wet Prairie, Disturbed		9.9	3.1	12.5		25.5
**742	Borrow Areas					217.0	217.0
743	Spoil Areas					7.0	7.0
748	Cleared Areas					229.8	229.8
811	Airport					2407.4	2407.4
814	Roads and Highways					187.6	187.6
818	Airport Parking					51.2	51.2
	Totals						
	Upland Sub-Totals	613.7	227.9	88.7	33.9	3276.8	4241.0
	*Wetland Sub-Totals	944.0	470.0	208.4	72.4	184.0	1878.8
	** Other Surface Waters Sub-Totals	0.0	0.0	0.0	0.0	237.9	237.9
	Project Totals	**1557.7**	**697.9**	**297.1**	**106.3**	**3698.7**	**6357.7**

Source: Kevin L. Erwin Consulting Ecologist, Inc.

Agricultural drainage ditches comprise the remainder of the other surface water category on-site. These ditches vary in width and depth and were excavated to drain the wetlands on-site. The majority of the large freshwater marshes on the property have been interconnected by these ditches. This has resulted in a reduced hydroperiod, which, in turn, has facilitated the colonization of the transitional edges by wax myrtle and melaleuca.

As described above, the wetlands on-site have been affected by previous land use activities. Excavation of drainage canal and borrow lakes has altered the site's hydrology. The transitional edges of a majority of the freshwater marshes on the property have been used in the past to grow row crops such as tomatoes, peppers or melons. During the winter growing season for row crops in southwest Florida these transitional zones would retain sufficient moisture to grow crops without the need of supplemental irrigation. The furrows created by the farming can be seen on historical aerial photographs and are still noticeable on the ground today. All of the lands within the Master Plan study area south of the AOA were being utilized as pasture or rangeland for cattle at the time of the vegetation mapping in 2001. The altered hydrology and previous farming activity, in concert with fire suppression, has resulted in transitional areas becoming invaded by shrubs and exotics. Fallow agricultural fields have also become overgrown by exotics. In general the most disturbed lowest quality wetlands are found in the area located south of Daniels Parkway, east of Fuel Farm Road, north of the AOA / Southwest Conservation Area, and west of Treeline Avenue. The wetlands located within the conservation areas, east and northeast of Runway 6-24, and south of the AOA are generally in better condition. Wetlands that have longer hydroperiods (i.e. cypress and freshwater marsh) typically have lower levels of exotic vegetation.

Potential Wetland Impact Analysis

In order to more accurately analyze potential wetland impacts, the study area has been divided into 19 areas based on either existing land use, existing conservation status, or potential future land use as shown on **Exhibit 7-27**. The land uses have also been segregated by those lands required for aviation activities versus land that could be potentially leased to tenants. The approximate acreage of uplands, of high, moderate, low and very low quality wetlands, of other surface waters is summarized by area on **Table 7-34**. The general character of each area is discussed below.

Development Area A (241.4± acres) is located in the southeast quadrant of the Daniels Parkway - Chamberlin Parkway intersection. The parcel consists of 121.6± acres of uplands, 99.4± acres of wetlands, and 20.4± acres of other surface waters (Table 7-34). The majority of the wetlands consist of low quality shrub dominated wetlands that are located within a fallow farm field. Several small isolated high quality cypress wetlands areas are also present. The other surface waters consist entirely of excavated lakes. Based on current projections, the development of this area is outside of the 20-year planning window; however, it is anticipated that future development plans would be designed to avoid impacts to the cypress dominated wetlands to the extent practicable.

Development Area B (182.8± acres) is located south of Daniels Parkway and east of development area A and north of the existing rental car facilities. The parcel consists of 102.1± acres of uplands and 79.1± acres of wetlands (**Table 7-34**). The majority of the wetlands consist of moderate quality hydric pine flatwoods. The presence of existing roadways to the north and east, and existing development to the south makes this area a logical location for future development activities.

Development Area C (299.5± acres) is located in the southeast quadrant of the Daniels Parkway - Paul J. Doherty Parkway intersection and is bisected by Fuel Farm Road. The parcel consists of 137.6± acres of uplands, 136.9± acres of wetlands, and 25.0± acres of other surface waters (**Table 7-34**). The majority of the wetlands consist of four large high quality freshwater marshes. A 21± acre excavated lake is also present in the southwest corner of the parcel. Given the high quality of the four marshes, it is anticipated that the majority of these areas will not be impacted by future development activities.

Exhibit 7-27

Wetland Grid Map/FLUCS

Wetland and Upland Acreage Summary by Identified Development Area

Development Areas (A-H)	Wetland					Other Surface Waters	Uplands	Area Total
	High Quality	Moderate Quality	Low Quality	Very Low Quality	Total			
A-Airport Support Area	25.3	4.2	66.4	3.5	99.4	20.4	121.6	241.4
B-Airport Support Area	13.9	43.2	14.6	7.4	79.1	1.6	102.1	182.8
C-Recreational	85.0	47.5	2.2	2.2	136.9	25.0	137.6	299.5
D-Multi-Modal Facility	62.6	31.2	45.2	41.6	180.6	0.2	87.1	267.9
E-Rental Car Expansion	23.3	30.3	14.7	65.3	133.6	0.0	21.0	154.6
F-Future Parallel Runway & Taxiway	60.8	26.1	8.5	25.3	120.7	2.5	436.2	559.4
G-Future Aviation-Related Development	30.8	18.0	2.8	35.6	87.2	2.4	134.8	224.4
H-Airport Support Area	96.2	61.1	4.6	17.3	179.2	2.0	210.5	391.7
Existing Facilities Areas (1-3)								
1-Existing Land Side Development	10.4	5.4	6.7	17.4	39.9	157.1	465.6	662.6
2-Existing Runway 6-24	47.7	4.3	1.1	0.1	53.2	21.1	665.0	739.3
3-Midfield Terminal Area	0.0	0.0	0.0	0.0	0.0	0.0	1212.9	1212.9
Conservation Easement Areas (4-5)								
4-Northeast Conservation Area	87.2	29.7	0.0	0.0	116.9	0.5	38.1	155.5
5-Southwest Conservation Area	221.9	28.8	2.1	5.4	258.2	0.0	61.3	319.5
Future Development Areas (6-11)								
6-Airport Support Area	1.6	0.0	0.0	0.0	1.6	0.0	5.6	7.2
7-Airport Support Area	3.8	0.0	5.6	0.0	9.4	0.4	12.4	22.2
8-Treeline Water Management System	0.0	0.0	0.0	0.0	0.0	0.0	102.4	102.4
9-Airport Support Area	76.0	7.5	2.2	0.0	85.7	0.0	27.6	113.3
10-Area Between Runways	65.6	120.3	7.0	18.8	211.7	4.7	345.8	562.2
11-Wellfield Site	61.6	16.2	5.3	2.4	85.5	0.0	53.4	138.9
Total	973.7	473.8	189.0	242.3	1878.8	237.9	4241.0	6357.7

Source: Kevin L. Erwin Consulting Ecologist, Inc. and Reynolds, Smith and Hills, Inc., 2002

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MASTER PLAN UPDATE
AIRPORT WETLANDS GRID ANALYSIS

EXHIBIT
7-27

Table 7-34
Wetland and Upland Acreage Summary by Identified Development Area
Southwest Florida International Airport

Development Areas (A-H)	Wetland					Other Surface Waters	Uplands	Area Total
	High Quality	Moderate Quality	Low Quality	Very Low Quality	Total			
A-Airport Support Area	25.3	4.2	66.4	3.5	99.4	20.4	121.6	241.4
B-Airport Support Area	13.9	43.2	14.6	7.4	79.1	1.6	102.1	182.8
C-Recreational	85.0	47.5	2.2	2.2	136.9	25.0	137.6	299.5
D-Multi-Modal Facility	62.6	31.2	45.2	41.6	180.6	0.2	87.1	267.9
E-Rental Car Expansion	23.3	30.3	14.7	65.3	133.6	0.0	21.0	154.6
F-Future Parallel Runway & Taxiway	60.8	26.1	8.5	25.3	120.7	2.5	436.2	559.4
G-Future Aviation-Related Development	30.8	18.0	2.8	35.6	87.2	2.4	134.8	224.4
H-Airport Support Area	96.2	61.1	4.6	17.3	179.2	2.0	210.5	391.7
Existing Facilities Areas (1-3)								
1-Existing Land Side Development	10.4	5.4	6.7	17.4	39.9	157.1	465.6	662.6
2-Existing Runway 6-24	47.7	4.3	1.1	0.1	53.2	21.1	665.0	739.3
3-Midfield Terminal Area	0.0	0.0	0.0	0.0	0.0	0.0	1212.9	1212.9
Conservation Easement Areas (4-5)								
4-Northeast Conservation Area	87.2	29.7	0.0	0.0	116.9	0.5	38.1	155.5
5-Southwest Conservation Area	221.9	28.8	2.1	5.4	258.2	0.0	61.3	319.5
Future Development Areas (6-11)								
6-Airport Support Area	1.6	0.0	0.0	0.0	1.6	0.0	5.6	7.2
7-Airport Support Area	3.8	0.0	5.6	0.0	9.4	0.4	12.4	22.2
8-Treeline Water Management System	0.0	0.0	0.0	0.0	0.0	0.0	102.4	102.4
9-Airport Support Area	76.0	7.5	2.2	0.0	85.7	0.0	27.6	113.3
10-Area Between Runways	65.6	120.3	7.0	18.8	211.7	4.7	345.8	562.2
11-Wellfield Site	61.6	16.2	5.3	2.4	85.5	0.0	53.4	138.9
Total	**973.7**	**473.8**	**189.0**	**242.3**	**1878.8**	**237.9**	**4241.0**	**6357.7**

Source: Kevin L. Erwin Consulting Ecologist, Inc. and Reynolds, Smith and Hills, Inc.

Development Area D (267.9± acres) is located west of Chamberlin Parkway and east of Treeline Avenue. The parcel consists of 87.1± acres of uplands and 180.6± acres of wetlands (Table 7-34). The majority of the wetlands consist of moderate to very low quality hydric pine flatwoods. Significant infestations of melaleuca occur in these wetlands. Three large cypress dominated wetlands are also present in this parcel. These high quality wetlands contain low levels of exotics, primarily Brazilian pepper. Detailed site planning will insure that unavoidable wetland impacts occur in the lowest quality wetlands to the extent practicable.

Development Area E (154.6± acres) is located east of Treeline Avenue and south of development area D. This parcel consists of 21.0± acres of uplands and 133.6± acres of wetlands (**Table 7-34**). The majority of the wetlands consist of very low quality hydric pine flatwoods that has become dominated by melaleuca. Two areas of high quality cypress wetland and one area of high quality hydric pine flatwoods wetland are also present within the parcel. Detailed site planning will insure that unavoidable wetland impacts occur in the lowest quality wetlands to the extent practicable.

Development Area F (559.4± acres) is the future parallel runway and is located approximately 4,500 feet south of the existing Runway 6-24. The parcel consists of 436.2± acres of uplands, 120.7± acres of wetlands, and 2.5± acres of other surface waters (**Table 7-34**). Approximately half of the area is within the permitted project limit of the Midfield Terminal Complex facilities and as such is considered to be uplands as part of this review. The majority of the wetlands consist of either high quality freshwater marsh or high quality cypress. The fringes of these wetlands are dominated by wax myrtle or melaleuca. The location of the future runway and associated taxiways are fixed by FAA requirements; therefore, all of the wetlands within this area will be filled as part of the facility construction. Impacts to these wetlands were reviewed as part of the 1994 FONSI.

Development Area G (224.4± acres) is located south of the future parallel runway. The parcel consists of 134.8± acres of uplands, 87.2± acres of wetlands, and 2.4± acres of other surface waters (**Table 7-34**). The majority of the wetlands consist of lower quality wax myrtle or melaleuca dominated areas. Portions of several high quality freshwater marshes also occur within the parcel. The other surface waters consist of agricultural drainage ditches. The westerly 18.4± acres of the parcel is within the permitted boundary of the Midfield Terminal Complex facilities and as such is considered to be uplands as part of this review. Based on current projections, the development of this area is outside of the 20-year planning window; however, it is anticipated that future development plans would be designed to avoid impacts to the higher quality freshwater marsh wetlands to the extent practicable.

Development area H (391.7 acres) is located in the southeast corner of the Airport. The parcel consists of 210.5± acres of uplands, 179.2± acres of wetlands, and 2.01± acres of other surface waters (Table 7-34). The majority of the wetlands consist of either high quality freshwater marsh or high quality cypress. The fringes of these wetlands are dominated by wax myrtle or melaleuca. The other surface waters consist of agricultural drainage ditches. The westerly 16.1± acres of the parcel is within the permitted boundary of the Midfield Terminal Complex facilities and as such is considered to be uplands as part of this review. Based on current projections, the development of this area is outside of the 20-year planning window; however, it is anticipated that future development plans would be designed to avoid impacts to the higher quality freshwater marsh and cypress wetlands to the extent practicable.

Existing Facilities Area 1 (662.6± acres) is the existing terminal, general aviation, passenger parking, and rental car facilities. The majority of this parcel (465.6± acres) consists of cleared and/or developed uplands. Approximately 39.9 acres of wetlands and 157.1± acres of other surface waters are also present (**Table 7-34**). The wetlands consist of a high-quality freshwater marsh located at the northeast end of the parcel and exotic dominated wetlands located at the southwest end of the parcel. Based on current projections, future development activities that could potentially impact wetlands, will be located at the northeast end of this area.

Existing Facilities Area 2 (739.3± acres) is the existing Runway 6-24 and it's protection zones. The majority of this parcel consists of cleared and filled uplands. For the purposes of this evaluation all of the areas within the AOA were considered to be uplands. Approximately 53.2 acres of predominately high-quality wetlands are present at the northeast end of this parcel within the runway protection zone (**Table 7-34**). No additional wetland impacts are proposed for this area as part of the 20 year Master Plan.

Existing Facilities Area 3 (1,212.9± acres) is the recently permitted project limits of the Midfield Terminal Complex facilities and as such is considered to be uplands as part of this review (Table 7-33); therefore, no additional wetland impacts will occur in this area.

Conservation Easement Area 4 (155.5± acres) is the Northeast Conservation Area located at the northeast end of Runway 6-24. The parcel consists of 38.1± acres of uplands, 114.9± acres of wetlands, 2.0± acres of created wetlands, and 0.5± acres of other surface waters (**Table 7-34**). The majority of the wetlands consist of high quality freshwater marsh and cypress habitat. The wetland creation, enhancement of the native wetlands via exotic control, and long-term management of both the wetlands and uplands was required by the state and federal permits issued for the Runway 6-24 extension. No development activities are proposed to occur within this area.

Conservation Easement Area 5 (319.5± acres) is the Southwest Conservation Area located at the southwest end of Runway 6-24. The parcel consists of 61.3± acres of uplands, 176.6± acres of native wetlands, and 81.6± acres of created wetlands (**Table 7-34**). The majority of the wetlands consist of high-quality freshwater marsh and cypress habitat. The wetland creation, enhancement of the native wetlands via exotic control, and long term management of both the wetlands and uplands was required by the state and federal permits issued for the Runway 6-24 extension. No development activities are proposed to occur within this area.

Future Development Area 6 (7.2± acres) is located north of the Daniels Parkway - Chamberlin Parkway intersection. The parcel consists of 5.6± acres of uplands and 1.6± acres of wetlands (**Table 7-34**). The wetland within this area appears to have been created from improved pasture as part of the surface water management system for Daniels Parkway. No development activities are proposed for this area at this time.

Future Development Area 7 (22.2± acres) is located north of Daniels Parkway in the northeast corner of the Master Plan study area. The parcel consists of 12.4± acres of uplands, 9.4± acres of wetlands, and 0.41± acres of other surface waters (**Table 7-34**). The wetlands consist of high-quality freshwater marsh with a fringe of wax myrtle and melaleuca. The majority of the marsh extends off-site to the north. Based on the location of the wetlands on the parcel and the proposed future land use, it is anticipated that future wetland impacts will be primarily to a portion of the transitional wax myrtle and melaleuca fringe of the freshwater marsh.

Future development area 8 (102.4± acres) is the permitted portion of the Treeline Avenue alignment within the Master Plan study area boundary. For the purposes of this study, the area is considered to be entirely upland (**Table 7-34**). No additional development of this area is proposed at this time.

Future development area 9 (113.3± acres) is located northeast of the runway protection zone at the northeast end of Runway 6-24. The parcel consists of 27.6± acres of uplands and 85.7± acres of wetlands (**Table 7-34**). The majority of the wetlands consist of high quality cypress and freshwater marsh habitat. Development activities are proposed not to occur within 20 planning horizon.

Future development area 10 (562.2± acres) is located south of the existing Runway 6-24 and north of the proposed future parallel runway. The parcel consists of 345.8± acres of uplands, 211.7± acres of wetlands, and 4.75± acres of other surface waters (**Table 7-34**). The majority of the wetlands consist of large- high- or moderate-quality freshwater wetlands. Future development activities within this area will be limited to placement of navigational aides and access roads to those facilities. It is anticipated that the majority of these development features will be located either within uplands or the lower quality wetlands.

Future development area 11 (138.9± acres) is located south of the proposed future parallel runway along the east edge of the Master Plan study area. The parcel consists of 53.4± acres of uplands and 85.56± acres of wetlands (**Table 7-34**). The majority of the wetlands consist of high-quality cypress and freshwater marsh habitat. Development activities are proposed not to occur within 20 planning horizon.

Based on the proposed 20-year Master Plan it is anticipated that approximately 297 acres of wetlands will be impacted (excavated, filled or cleared of native vegetation) as part of development activities over the next 20 years. This represents less than 16 percent of the wetlands that are currently estimated to occur on-site. Approximately 148 +/- acres of wetlands will be impacted for aviation related activities and 149 +/-acres of wetlands will be impacted for airport support related land uses and would carry a long term lease. State and federal permits will be required for the future development of the parcels described above. The LCPA will be required to obtain the necessary permits for aviation related activities while each individual tenant would be required to obtain their own individual permits including mitigation for the airport support related land use impacts. This permitting process will include the stepwise sequence of wetland impact avoidance, wetland impact minimization, and wetland impact mitigation. Through this process it is anticipated that site specific designs of each development site, with the exception of the future parallel runway, will result in minimal impacts to the high quality wetlands with the remaining unavoidable impacts occurring within lower quality disturbed wetlands. The location of the future parallel runway and associated taxiways are fixed by the location of the existing Runway 6-24, the location of the Midfield Terminal Complex, and FAA requirements; therefore, this portion of the proposed future development will have unavoidable impacts to high quality wetlands.

Mitigation Strategy

Wetland mitigation will be required for unavoidable wetland impacts. Previous wetland impacts associated with RSW have been mitigated for on-site (the southwest and northeast conservation

areas) and off-site (the 6,986± acre Mitigation Park). The FAA currently discourages placing perpetual conservation easements over property contiguous with an airport. Therefore, on-site wetland mitigation, which will require conservation easements be placed over the mitigation areas, is not a viable alternative for the unavoidable wetland impacts described above.

As discussed above, the USACE and SFWMD use differing procedures to evaluate the amount of mitigation required to compensate for unavoidable wetland impacts. The USACE uses the WRAP analysis. In order to estimate the number of WRAP credits required to compensate for the 148 +/- acres of anticipated aviation related wetland impacts, the WRAP scores previously approved by the agencies for a representative sample of high, moderate, low, and very low quality wetlands at the Midfield Terminal Complex was used to calculated an average WRAP score for each relative wetland category. These average WRAP scores were then applied to the anticipated wetland impacts resulting in an estimated USACE wetland mitigation requirement of 97 +/- WRAP credits. The SFWMD used a 10:1 ratio (10 acres of mitigation : 1 acre of wetland impact) to calculate the state wetland mitigation requirement. This would equate to 1480 +/- acres of either wetland preservation, enhancement, restoration, or creation, upland preservation or restoration, or a combination of all of these activities.

The permitting of the Midfield Terminal Complex established the 6,986± acre Mitigation Park for RSW. Wetland impacts authorized by that permit did not use all of the wetland mitigation available at the Mitigation Park. It is estimated that 237± WRAP credits plus the future potential credits derived from the 574± acres of wetlands created for the SFWMD and the 505 acre Site H are available to mitigate the anticipated impacts under the USACE permitting process. This exceeds the estimated 197 +/- WRAP credits required to compensate for the 148 +/- acres of aviation related wetland impacts. However, pursuant to the current SFWMD permit, the Mitigation Park can provide mitigation for only 45± acres of additional wetland impact. The remaining 103 +/- acres of anticipated aviation related wetland impacts will need to mitigated at another location.

Three general potential mitigation strategies have been identified to address the anticipated mitigation shortfall with the SFWMD. Depending upon mitigation availability and wetland mitigation requirements the LCPA may pursue options to purchase and enhance additional properties adjacent to the Mitigation Park or other publicly owned conservation lands. Lee County has also initiated discussions with the regulatory agencies to evaluate the potential of using enhancement of lands purchased under the Conservation 2020 program as wetland mitigation for County sponsored projects. The second option is to participate in FDOT's wetland mitigation program. Through this program the LCPA would pay into a fund which the DEP and SFWMD would use in turn to undertake mitigation strategies. The third potential strategy is to purchase credits from mitigation banks permitted pursuant to the Federal Guidance for the Establishment, Use and Operation of Mitigation Banks (Federal Register Vol. 60 No. 228) and the Establishment and Operation of Mitigation Banks (Chapter 373.4136, Florida Statutes). The existing wetland mitigation banks that could potentially supply mitigation credits also use WRAP. Presuming the Mitigation Park is used to mitigate for 45± acres of aviation related impacts to high quality wetlands, approximately 61 mitigation bank credits would be require to compensate for the remaining anticipated aviation related wetland impacts. The ultimate decision on the type of wetland mitigation to be provided (i.e. newly purchased off-site lands, Conservation 2020 lands, FDOT mitigation program or mitigation bank credits) will be dependant on site specific conditions, current rules and regulations (including wetland evaluation procedures), and regulatory agency negotiations at the time of permitting for each proposed

development area that contains wetland impacts. It is anticipated that a series of the required state and federal wetland permits will be obtained over a period of years as the development plans for each area become finalized. It is also recommended that the LCPA initiate discussions with the SFWMD concerning the amount of credits given to the mitigation park which could ultimately increase the number of credits available for future mitigation.

As stated above, individual tenants of airport support land uses will be required to provide their own wetland mitigation to compensate for unavoidable wetland impacts. On-site mitigation is not a practical mitigation alternative. Therefore, all required mitigation for the anticipated 149 +/- acres of impacts of airport support related land uses will occur off-site. This may take the form of land purchase, enhancement and preservation, or the purchase of mitigation credits from a wetland mitigation bank. Based upon the average WRAP scores described above, the 149 +/- acres of airport support wetland impacts would require the purchase of 86 +/- mitigation bank credits.

Recommendations

In order to facilitate the environmental permitting of future phases of projects at RSW it is recommended that the LCPA undertake the following actions.

- The LCPA should seek to confirm with the USACE that the 6,986± acre Mitigation Park contains 237 credits plus addition potential credits from 574 acres of wetlands created for the SFWMD, which were not required as mitigation for the Midfield Terminal Project in addition to the mitigation available in site H. The permit issued by the USACE does not clearly state that these additional credits are in fact available for use for future RSW expansion. The USACE Statement of Findings document should be carefully reviewed to determine if this critical item is well defined. The goal of these discussions would be written confirmation from the USACE that the Mitigation Park does in fact contain additional wetland mitigation credits that can be used by the LCPA for future RSW expansion projects.

- Discussions should be initiated with the SFWMD to re-evaluate the amount of wetland mitigation credits assigned to the Mitigation Park by the SFWMD during the previous conceptual and Midfield Terminal Project construction permitting processes. The ratios used during those permit reviews appear to under estimate the ecological benefits that will be realized from this 6,986± acre enhancement and preservation project. The LCPA should consider re-evaluating the project using the state wide Unified Mitigation Assessment Method (when finally adopted) to determine if that evaluation process will result in additional mitigation credits being available.

- In order to facilitate the favorable review of future proposed wetland impacts and the potential assignment of additional mitigation credits to the Mitigation Park, the LCPA should strive to meet or exceed all permit requirements and/or mitigation success criteria for existing LCPA mitigation areas. This will require a commitment to a rigorous exotic/nuisance species control program for the first several years of each project and objective oversight so that potential problems can be identified and corrected.

- The LCPA should continue evaluating other potential wetland mitigation options (i.e. purchase of additional lands, Conservation 2020, FDOT mitigation program, and mitigation banks) in the event that the SFWMD does not agree to favorably re-evaluate the Mitigation Park.

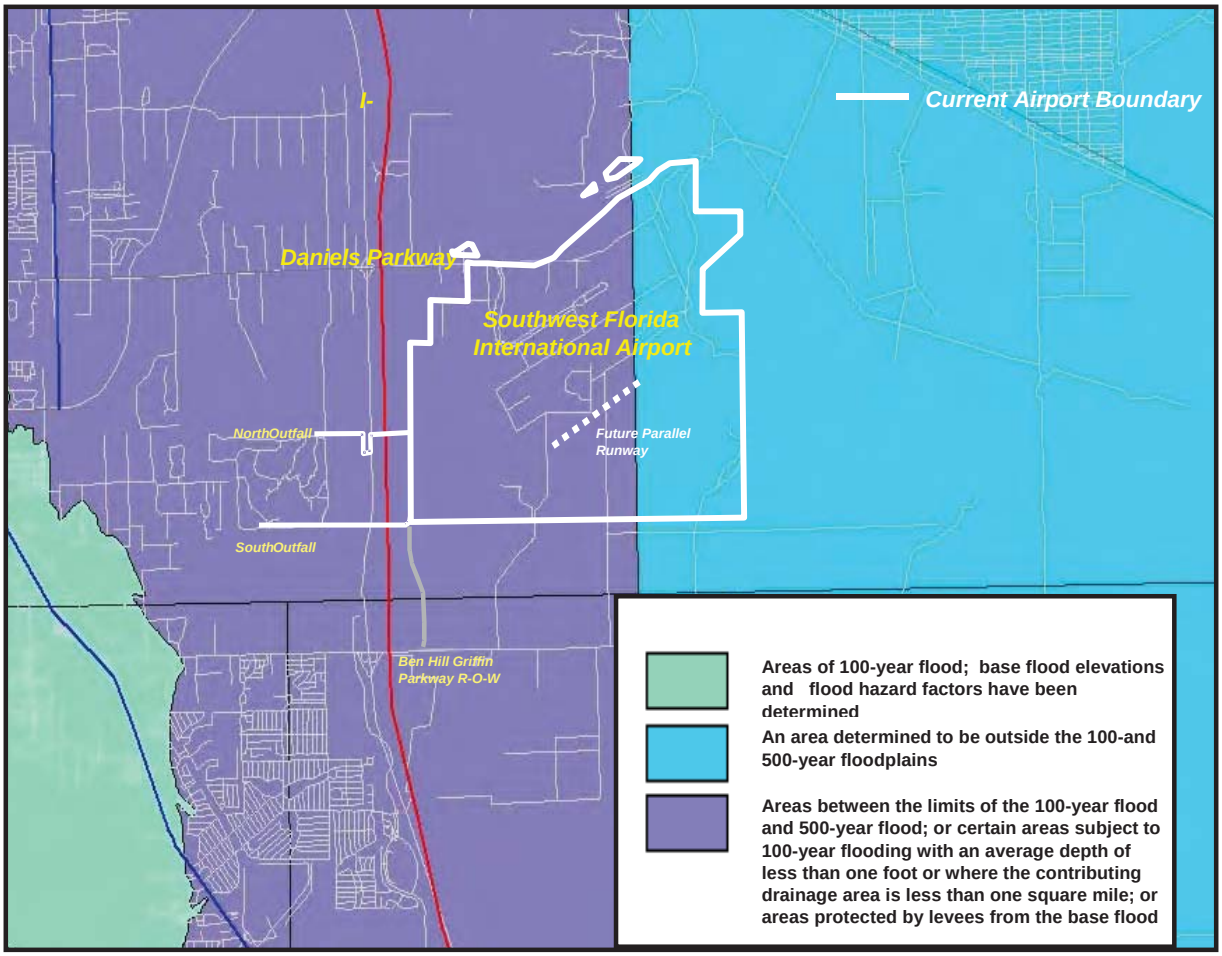
- The two cypress wetlands that contained active nests of colonial nesting wading birds should be inspected annually. This will be required to determine if these areas are established nesting sites used each year or if the nesting observed in 2002 was an atypical event.

7.5.11 Floodplains

Floodplains are defined by Executive Order 11988 as "the lowland and relatively flat areas adjoining inland and coastal waters." At a minimum, floodplains include areas that are subject to a one percent or greater chance of flooding in any given year (i.e., the area that would be inundated by a 100-year flood). **Exhibit 7-28** represents the known areas of inundation during a 100-year flood event in the vicinity of the proposed airport as shown on the FEMA Flood Insurance Rate Map. All proposed development is outside the 100-year flood plain.

Exhibit 7-28

Flood Plains Map



Source: Reyno , Sm t an H , 2001

Lee County Port Authority	Birk Hillman Orlando · Miami · Atlanta	DMJM Aviation	RS&H	SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA MASTER PLAN UPDATE FLOODPLAINS MAP	EXHIBIT 7-2

7.5.12 Coastal-Zone Management Program

The Coastal Zone Management Program Act of 1977 requires federal agencies to review activities with regard to direct effects to coastal zones. Florida has the nation's second longest coastline with approximately 8,400 miles of tidally influenced shoreline. Any activities which directly effect the state coastline are subject to determination of consistency with Florida's Coastal Zone Management Program. Activities which are likely to require consistency determinations include:

- Any project subject to state or federal dredge and filling permitting review;
- Any point or non-point source discharge to surface waters, and;
- Major industrial expansion or development projects.

The coordination with the Florida State Clearinghouse indicated that the proposed development is consistent with the Florida Coastal Management Program (FCMP).

7.5.13 Coastal Barriers

The Coastal Barriers Resource Act of 1982, PL 97-348 (CBRA) prohibits, with some exception, federal financial assistance for development within the Coastal Barriers Resources System. CBRA maps were reviewed to determined potential impacts to coastal barriers due to the proposed airport development.

RSW is not located in areas designated for coastal barrier review.

7.5.14 Wild and Scenic Rivers

The Wild and Scenic Rivers Act (PL 90-542) protects rivers that are described as free-flowing and possessing "outstandingly remarkable, scenic, recreational, geological, fish and wildlife, historic, cultural, and other similar values." According to the 1982 National Rivers Inventory, there are no rivers within close proximity of RSW that are protected by the Wild and Scenic Rivers Act.

The Caloosahatchee National Wildlife Refuge and the Koreshan State Historic Site are designated as Outstanding Florida Waters, defined as "water worthy of special protection due to its natural attributes". Outstanding Florida Waters are protected by Section 403.061, Florida Statutes, and 62-302.700, Florida Administrative Code.

None of the rivers defined above are located within the vicinity of RSW and no impact to these river systems is expected as a result of the airport development; therefore, there would be no impacts to the wild and scenic rivers, nor Outstanding Florida Waters.

7.5.15 Prime and Unique Farmland

The Farm Protection Policy Act (FPPA), PL 97-98, which became effective August 6, 1984, authorizes the United States Department of Agriculture to establish evaluation criteria to identify

impacts associated with federally funded projects converting agricultural land to non-agricultural land. Prime and unique farmland is considered to be available land that is best suited for producing food, feed, forage, and other type of crops. In addition, prime and unique farmland has the soil quality and moisture supply needed to produce and sustain high yields of crops when treated and managed according to modern farming methods.

Some of the existing and future land uses in the vicinity of the airport are agricultural and industrial. The majority of adjacent agricultural land identified for future acquisition is not currently being farmed and therefore would not be impacted by future airport development.

7.5.16 Energy Supply and Natural Resources

In terms of aviation development, there are typically two areas of concern with energy supply and natural resources:

- Stationary sources (i.e. terminal building, other facilities, airfield lighting); and
- Mobile sources (i.e. aircraft and automobiles).

Development of airport facilities, including the development of additional terminal space and gates, increased apron area, new parallel runway and associated taxiway system would be the primary sources of increased stationary energy consumption.

Mobile energy consumption is primarily from the consumption of aircraft fuel. As discussed previously in the airport facility demand section of this report, it is anticipated that the existing single runway will reach 63 percent of the runway's capacity by the year 2005 and 76 percent of the runway's capacity by the year 2010. The additional planned parallel will actually help reduce fuel consumption by minimizing aircraft delays due to capacity issues.

7.5.17 Light Emissions

Airport lighting systems are generally located in the airfield, apron, terminal, parking lots and access roadways. FAA Order 5050.4A states that the airport sponsor shall consider the extent to which lighting associated with an airport action will create an annoyance among people in the vicinity of an installation. Several factors are considered to determine if annoyance may exist:

- Site location of lights or lighting systems.
- Purpose of the light system, either pole or ground mounted, beam angle, intensity, color, flashing frequency and other pertinent characteristics.
- Possible measures, including shielding or angular adjustments, available to lessen any annoyance.

Light emissions which may create an annoyance to residents in the vicinity of the airport must be taken into account. Possible lighting projects to occur at the Airport include the construction of an approach lighting system for the proposed parallel runway, lighting for the parallel runway, taxiway lighting and visual navigation aids.

Only in unusual circumstances, such as the effect of high intensity strobe lights shining directly into a residence, would the impact of light emissions be considered sufficient to warrant special study. The majority of property surrounding the airport is sparsely populated with very few residential structures; therefore, lighting at RSW would not generate any significant impacts to surrounding property owners.

7.5.18 Solid Waste Impact

Solid waste is typically affected by commercial, industrial and major terminal development as opposed to airfield development such as runways and taxiways. Current solid waste produced by the airport is handled by a private contractor. The waste is hauled off site to an incinerator operated by Lee County. Although the master plan is recommending additional terminal expansion, it is anticipated that the additional demand can be accommodated by private contractors and the Lee County incinerator.

Generally, landfills near airports are considered to be a potential impact due to a landfill's tendency to attract birds, possibly creating strike hazards with approaching and departing aircraft. FAA Order 5200.5A, *Waste Disposal On or Near Airports,* provides guidance regarding the location of sanitary landfills on or near airports. Landfills located within 10,000 feet of any point of a runway are considered as incompatible land uses. There are no landfills within 10,000 feet of RSW.

7.5.19 Construction Impacts

Potential construction impacts include noise generated by construction equipment, dust from delivery of materials and denuded earth, creation of borrow pits and disposal of soil, air pollution from burning debris, and water pollution from erosion and sedimentation. These types of potential impacts are described below:

- Noise-Heavy construction equipment will generate noise; however, it is expected that this noise will occur only during the daylight hours. During construction of any new facilities, it is expected that temporary noise impacts could occur but not near any residential areas. This impact will not be permanent in nature.

- Dust-Potential impacts of dust during construction include reduced visibility, unsightly coatings on buildings and discomfort for dust-sensitive individuals. Methods for dust control can be implemented to minimize dust generation and transport. Dust generation and transport is expected to be a controllable, temporary impact.

- Air Emissions-Air emission impacts from construction activity could occur. Construction activity would produce emissions from vehicular equipment, burning of debris, and other construction activity associated with the project. A temporary increase in emissions could occur due to the presence of constantly running internal combustion engines. While these activities would produce a temporary increase of emissions, they are typical of large construction projects and would not pose any lasting impacts.

- Erosion-Some erosion and sedimentation in the vicinity of the proposed development may occur during major construction activities. Erosion control measures required by the FAA, FDEP, SFWMD, and other agencies would be incorporated into the project design plans and specifications. The potential amount of erosion is determined by the area of denuded earth, the duration of exposure, and meteorological season that construction occurs. FAA Advisory Circular 15015370-1 OA, *Standards for Specifying Construction of Airports*, Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control provides effective pollution prevention practices that will be implemented during construction.

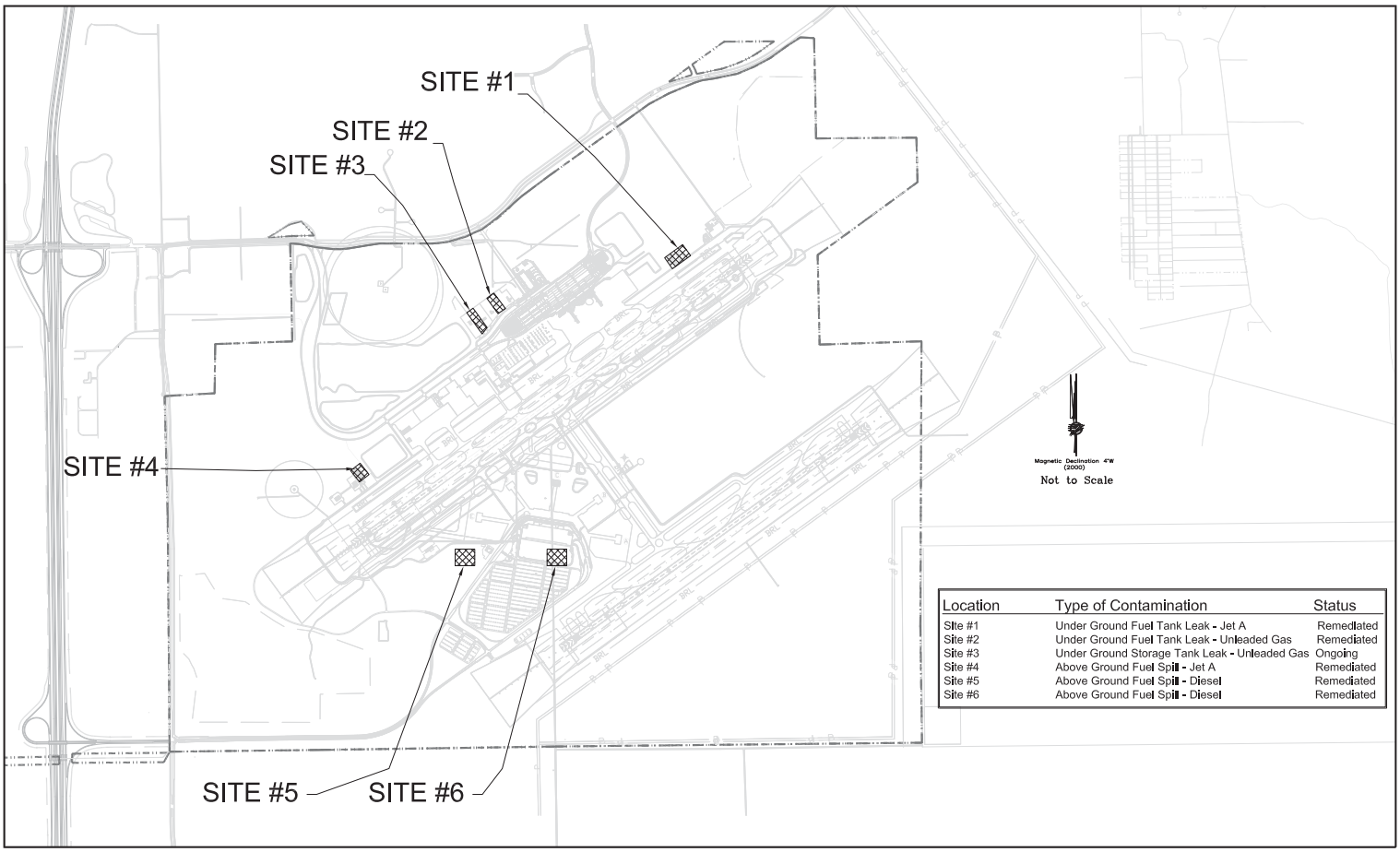
Potential impacts are associated with this category; however, they are the types of impacts that effective construction techniques can minimize.

7.5.20 Potential Contaminated Sites

A cursory review of available information in Airport records indicated four sites on Airport property that have subjected to contamination as a result of fuel spills. Three of the four sites have since been remediated and the forth is currently underway. **Exhibit 7-29** presents the general location of the four sites on airport property.

Exhibit 7-29

Contamination Sites



Location	Type of Contamination	Status
Site #1	Under Ground Fuel Tank Leak - Jet A	Remediated
Site #2	Under Ground Fuel Tank Leak - Unleaded Gas	Remediated
Site #3	Under Ground Storage Tank Leak - Unleaded Gas	Ongoing
Site #4	Above Ground Fuel Spill - Jet A	Remediated
Site #5	Above Ground Fuel Spill - Diesel	Remediated
Site #6	Above Ground Fuel Spill - Diesel	Remediated

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SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA
MASTER PLAN UPDATE
AIRPORT CONTAMINATION SITES MAP

EXHIBIT
7-29

7.5.21 Airport Drainage

Hydrologically, the SWFIA is predominantly located within the Six Mile Cypress Watershed Basin. Generally, all surface water within this basin travels in a westerly direction toward the Six Mile Cypress Strand, the Ten Mile Canal, and then out into the Gulf of Mexico.

Historically, the flow of stormwater runoff within the area of the Airport has been predominantly dispersed over the land surface and a drainage map of the airport is shown in **Exhibit 7-30**. With the construction of I-75 directly west of the Airport property, this flow was channeled through two separate box culverts (one north and one south of the northerly section line for Section 34, Range 25 E, Township 45S) and underneath a 145-foot-long bridge on the south end of Section 34. Flow from the interstate box culverts then runs west under Fiddlesticks Boulevard and, ultimately, into the Six Mile Cypress Strand. Flow from the 145-foot-long bridge runs both west to Ten Mile Canal and northwest into Six Mile Cypress Strand, the Ten Mile Canal, and then out into the Gulf of Mexico.

The SFWMD and the Lee County Commissioners have each adopted regulations that limit the surface water outfall for developed properties in the Six Mile Cypress Watershed to 37 cubic feet per second per square mile (csm). Outfalls of greater than 37 csm may result in downstream flooding and create a drought effect for onsite ecological systems. A 37 csm outfall would also result in a beneficial hydroperiod for the downstream Six Mile Cypress Strand.

Lee County includes the 37 csm requirement in its Development Standards Ordinance (DSO). The DSO allow the use of a variety of mitigative efforts, such as onsite water detention in swales and basins, and other structural methods of regulating flow, to reduce the overall discharge into the Ten Mile Canal.

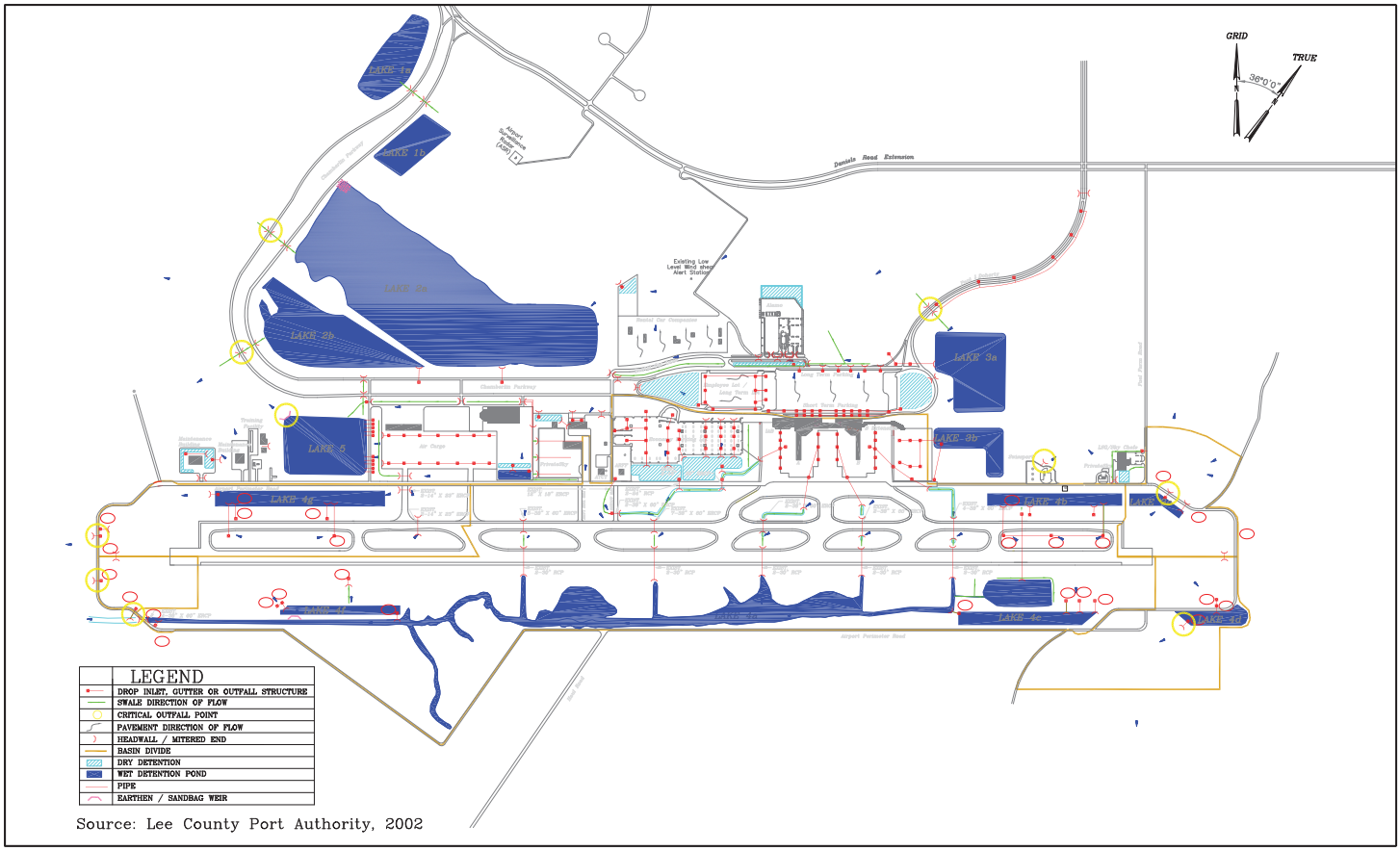
Implementation of the midfield terminal relocation added approximately 623.5 acres of additional impervious surfaces and required an expanded surface water management system at SWFIA. This additional impervious surface also includes the future parallel runway.

The basic concept is a self-contained watershed system for the Airport. The watershed boundary is Shown in **Exhibit 7-30**, generally Daniels Parkway and its proposed Northeast extension on the North; FPL easement on the east and south; the south line of sections 31,34,35 and 36 on the south; and future Treeline Avenue on the west. Since sheetflow is predominantly from northeast to southwest, the future Treeline Avenue acts as the control for surface flow coming off the west side of the Airport Property. From Treeline Avenue, it will be routed through two conveyances to positive outfalls.

The plan for surface water runoff near the south side of the existing runway is to perpetuate existing flow to the west. The existing perimeter road will separate the surface water runoff of the existing facilities from that of the proposed facilities. There will be two primary detention areas. The northwesterly detention area will serve the existing terminal facilities and the proposed taxiway and will provide pretreatment and water quality treatment. The southerly detention area will provide pretreatment, water quality and water quantity control for the Midfield Terminal facilities currently under construction. The facilities will discharge to the southerly detention area then over a weir to the westerly flowway. The entire area is and will be held to the 37csm allowable discharge for 25-year storm event by the system design. Control at Treeline Avenue is provided by weirs. Weir gates are used to preempt storrmwater runoff or hold water back to protect previously flooded downstream areas.

Exhibit 7-30

Airport Drainage Map



Source: Lee County Port Authority, 2002

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SOUTHWEST FLORIDA INTERNATIONAL AIRPORT
FORT MYERS, FLORIDA

MASTER PLAN UPDATE

AIRPORT DRAINAGE MAP

EXHIBIT 7-30

All future development will be designed similarly to the Midfield Terminal project with a self contained watershed system and will be designed for the 37 csm requirement outlines by the South Florida Water Management District. As recommended previously, a master stormwater plan is recommended during the early phases of the planning period to guide the LCPA with the overall drainage plan for the airport and to help with permitting with individual projects.

7.6 ENVIRONMENTAL OVERVIEW-SUMMARY

As mentioned earlier in this chapter, the purpose of this environmental overview is to provide a generalized analysis of some of the environmental issues facing RSW. Detailed summary and recommendations for each specific section have been included where appropriate. Highlighted Suggested action items include:

- Preparation of a stormwater drainage master plan that would develop a long-term drainage solution for the airport to accommodate the 20-year development plan.
- Update the current SWPPP and SPCC plan for the airport.
- Initiate discussions with the SFWMD to re-evaluate the amount of mitigation credits assigned to the mitigation park during the previous conceptual and midfield terminal permitting process.
- Develop a long-term wetland mitigation plan to address impacts resulting from the development of the facility which include evaluating the three alternatives listed in this section only after completing discussions with the SFWMD mentioned above.
- Confirm with the USACE that the additional credits remaining in the mitigation park are available for future projects.
- Work cooperatively with federal, state and local agencies to minimize the environmental impacts of the 20-year development plan.
- LCPA should anticipate working cooperatively with the FAA and FDOT to ensure adequacy of FAA finding of no significant impact for future development.
- Prepare an update to the noise overlay zone by 2006.

8 FINANCIAL PLAN

The previous chapters of the Master Plan Update evaluate the existing facilities, project the future activity levels, identify potential facility shortfalls, and detail alternatives and recommendations for addressing these shortfalls throughout the 20 year planning period. The previous analysis is based on operational efficiency, safety, environmental factors and, to a lesser extent, cost, with a primary focus of identifying the need for specific improvements and identifying the general configuration of such. Regardless of the identified need for improvements, the ability to pay for a project will ultimately be a major factor influencing when it is implemented. This chapter addresses the financial implications of the various improvements.

Following an overview of both the state and federal grant programs and a general overview of potential funding sources, each project in the development program is summarized in this chapter along with its rough order of magnitude (ROM) cost for the short, intermediate, and long term phases. Each project's eligibility relative to state and federal funding programs is also outlined. Finally, the net operating position of the airport is highlighted along with a review of future potential revenue sources that may assist in meeting the local funding share requirements.

In general, the financial plan for the Master Plan Update was conducted as follows:

- A overview of the Airport's financial structure was prepared to present the current accounting practices, financial operating environment, and key provisions of the Airport's Airline Agreement.

- Potential funding sources were identified including the FAA's Airport Improvement Program (AIP), Florida Department of Transportation (FDOT) funding, and other funding sources. Project costs not funded by these sources are expected to be funded by some combination of Airport funds and general airport revenue bonds.

- The Airport's existing financial operating results were examined to determine its primary revenue generating sources, as well as its major expenses.

This chapter, which presents the results of the financial analysis, is organized as follows:

- Financial Structure Overview
- Capital Improvement Program
- Sources of Funding for the Capital Improvement Program
- Airport Revenue Sources
- Operating Expenses

8.1 FINANCIAL STRUCTURE OVERVIEW

This section discusses Authority accounting practices, including the cost center structure utilized for airline rate-setting purposes, the requirements and provisions of the Bond Resolution, and the status of the business and operating relationship between the Authority and the Participating Airlines.

8.1.1 Airport Accounting

The accounting and financial reporting policies of the County conform to generally accepted accounting principles for local government units set forth by the Government Accounting Standards Board. Enterprise funds are used to account for operations that are financed and operated in a manner similar to private business enterprises where the intent of the governing body is that the costs of providing goods and services to the general public be financed or recovered primarily through user charges. As such, the Airport is established as an Enterprise Fund of the County.

Operating Expenses and Operating Revenues of the Authority are categorized into Cost Centers. Cost Centers include those areas or functional activities used for the purposes of accounting for the financial performance of the Airport. There are four Cost Centers included in the Airport's financial structure. The Cost Centers included in the Airport's financial structure are described in greater detail below:

- **Airfield** – Pursuant to the Authority's residual airport rate-setting methodology, the Airfield Cost Center includes all areas of the Airport, excluding those elements included in the Terminal, Cargo Building, and Fueling System cost centers.

- **Terminal** – The Terminal includes the passenger terminal complex on the Airport, including the aircraft parking apron immediately adjoining the terminal building, but excluding all parking lots, roads and service facilities beyond the pedestrian sidewalk in front of the landside terminal building and the Cargo Building and its adjoining aprons, ramps, and parking areas.

- **Cargo Building** – The Cargo Building Cost Center includes Investment Service, Operating Expenses, and Operating Revenues associated with the operation of the airline cargo building. The Cargo Building Cost Center does not include costs or revenues associated with operations of all-cargo carriers or the cargo ramp.

- **Fueling System** – The Fueling System Cost Center includes Investment Service and Operating Expenses associated with the hydrant fueling system. The annual fuel system payments from the airlines to the Authority are based upon a combination of debt service, land rent, and insurance costs. Other costs may be billed to the Fuel System Cost Center if directly related to the operation and maintenance of the hydrant fueling system. For rate-setting purposes, revenues and expenses for the Fueling System Cost Center are included in the Airfield Cost Center.

8.1.2 Airline Agreement

The term of the Airline Agreement between the Authority and the Participating Airlines expires December 31, 2008. Participating Airlines are required to pay landing fees, fees for the use of Exclusive Space in the Terminal and for the use of Cargo Building Space, Gate Area Charges, and Baggage Claim Area Charges, through the term of the Airline Agreement.

As presented in the Airline Agreement, the following key elements are included in the rate-setting methodology:

- "Residual" terminal rental rates for the Terminal Building using total Airline and Authority leased square feet as the divisor.
- An Airport "residual" landing fee rate using airline landed weight as the divisor. Miscellaneous and cargo landing fee revenues are credited to the airline landing fee requirement.
- A debt service coverage rebate to the Participating Airlines. In general, this rebate is equal to the net of 25 percent of Debt Service payable in the Fiscal Year, less the amount required to be transferred into the various Airport funds (i.e., Discretionary Fund [2], Working Capital Account, etc.).

8.2 CAPITAL IMPROVEMENT PROGRAM

The following sections detail the 20-year Capital Improvement Program (CIP) for the short-, intermediate-, and long-term development periods.

8.2.1 Short Term Improvements – 2003 Through 2005

Midfield Terminal Expansion (Phase 1)
This expansion includes the currently on-going construction of a 28-gate Midfield Terminal, a new freight facility, cargo road improvements from Chamberlin Parkway, Fuel Farm expansion, and all associated automobile parking.

Rehabilitate Runway 6-24 and Parallel Taxiway
Based on the inspection of the runway pavement and the input of LCPA operations and maintenance representatives of LCPA, the runway needs to be rehabilitated during the short-term development program. This project will include the complete rehabilitation of the runway with reconstruction of those areas exhibiting extreme deterioration. Subsequently, a runway rehabilitation report was completed by DMJM Aviation in 2002. Once the paving is completed the 12,000-foot long, 150-foot wide runway will need to be re-striped for a precision approach and the touchdown zones will need to be grooved. Additionally, this project will include an overlay of Taxiway A and all connecting taxiways.

[2] The amount transferred into the Authority's Discretionary Account equals 12.5 percent of the Debt Service payable in the Fiscal Year, up to a maximum of $2.5 million.

Rehabilitate Air Cargo Ramp
This project consists of the rehabilitation of the air cargo apron and reconstruction of the aircraft apron where the pavement has failed. The total area of the cargo pavement project is approximately 70,000 square yards. Additionally, this project will include a number of drainage improvements.

General Aviation Hangar
This project is the first of four hangar projects during the 20-year development period required to increase the capacity for covered aircraft storage at the airport. It consists of a 12,500 square foot hangar constructed adjacent to the existing GA terminal building and apron.

Maintenance Facility Access Road
A new maintenance road is necessary to connect the existing maintenance building to the new maintenance building located to the west. The two-lane roadway will extend approximately 585 linear feet.

Aircraft Maintenance Facility
In order to construct the aircraft maintenance facility a number of infrastructure improvements will be required. A dual-lane access road for automobiles stemming off of Chamberlin Parkway's southern access road, approximately 2,015 feet in length, will be necessary. The 175,000 square foot detention pond with an approximate depth of 6 feet will also need to be drained and filled to allow for the full build out of the facility. The drainage pond will have to be relocated to a suitable area and an automobile parking area must be added. Parking can generally be accommodated on the eastern portion of the existing terminal parking lot but will have to be reconfigured to suit the facility's parking demand.

Land Acquisition – Phase I
In order to provide the necessary future access capabilities to the Airport and to ensure environmental compatibility, land acquisition in four areas will be required. These areas include the area south of the Airport west of the approach end of Runway 6R to mitigate the anticipate noise associated with the new parallel runway (approximately 88 acres); the area east of Runway 24L to accommodate the construction the parallel runway and its associated requirements, RPZ and aircraft noise (approximately 139 acres); and the approach to Runway 6L, west of Treeline Avenue for noise, environmental compatibility and the future I-75 access (approximately 460 acres).

Storm Water Master Plan
Currently no storm water management plan exists. In order to efficiently plan for immediate and long-term future drainage and storm water issues, a comprehensive storm water management plan should be developed.

Cargo Road Improvements
This project includes converting approximately 5,800 linear feet of an airside perimeter service roadway to a public road connecting the Midfield Terminal Complex to Chamberlin Parkway. This portion of the road will be a joint use public/perimeter road

with modern security access control points to separate the public from the airport operating area.

Midfield Terminal Security Requirements
Due to heightened security measures at airports throughout the country expansion of the Midfield terminal building will be necessary at both levels. Modifications to the associated baggage system to accommodate TSA baggage inspection system also will be necessary.

Existing Terminal Security Requirements
This project includes any necessary enhancements to the existing terminal building in order to accommodate the baggage inspection system and comply with the new security measures outlined by TSA for passenger and baggage screening.

Roadway Signage Modifications
Once the airline operations are transferred to the Midfield Terminal Complex the existing informational roadway signs must be removed, modified or replaced on Chamberlin and Paul J. Doherty Parkway directing the public to the new terminal and support facilities.

Part 150 Noise Study
Part 150 Environmental Studies are typically updated when necessary depending on the validity of the prior analysis and assumptions. Changes occurring in aircraft activity levels, types of aircraft, the local business and residential community, the profile of users, etc. will help determine the need to revisit and update the study. By revisiting the assumptions, projections and development accomplished to date, the existing study can be modified and refocused to better address a continued strategy of environmental compliance.

8.2.2 Intermediate Term Improvements – 2006 Through 2010

ARFF Vehicle
The purchase of a new fire truck will increase fire response effectiveness and keep RSW in compliance with FAA regulations. The truck will be a Class 2 ARFF vehicle with a three-person cab, 1,200 gallon per minute pump, 1,500-gallon water tank, 200-gallon foam tank, and a 500-pound halotron fire fighting system.

Existing Terminal Parking Lot Rehabilitation
This project requires the rehabilitation of the existing 4,291 space automobile parking lot. The rehabilitation is required to extend the service life through the opening of the Midfield Terminal Complex and allow for this parking area to be used as a remote parking facility with the opening of the new Midfield Terminal.

GIS Purchase and Setup
This project includes the purchase of the software and hardware to run a geographic information system for the airport and provide system training and support for the system set up is necessary. The set up includes utilizing either a client server system or web-based system.

Design/Construct Infrastructure
Utility improvements include all those improvements related to electric, water, and sewage services. These improvements include the establishment of utility lines connecting to the Airport facilities from the north along Daniels Parkway or the south along Alico Road. A general upgrade of Airport facilities will be required to maintain an efficient operation. These improvements are a continuation of the improvements performed in the previous phase.

Hold Bay and By-Pass for Runway 6/24
Based on anticipated operational demand and a recommendation by the air traffic controllers a by pass taxiway should be constructed at the approach end of Runway 6L on the south parallel taxiway, and hold bay at the approach end of Runway 24R. This project will assist air traffic controllers in queuing aircraft at the runways, thus potentially decreasing airside delay.

Repairs to North Ramp
Many portions of the existing terminal apron, and parallel associated taxilanes on the north side of the airport are considered to be somewhat aged and in poor condition upon inspection during the inventory process. With the demolition of the existing terminal the terminal apron area should receive resurfacing treatment. The 1,580-foot long taxilane 'B' should be resurfaced according to the proposed use for the existing terminal complex, and the concourse demolition area should be replaced with concrete pavement.

New Parallel Runway 6R/24L
The project requires the construction of a new runway and full-length parallel taxiway to maximize RSW's long-range flexibility in serving the growing demand for air service in the Southwest Florida Region. Runway 6R-24L will be 9,100 feet in length and 150 feet wide with a 5,385-foot separation from the existing runway. This project includes expansion of the existing perimeter road system, new perimeter fencing, and all associated lighting and runway navigational aids.

Cross-Field Connector Taxiway (Phase 1)
With the addition of the new parallel runway south of the existing runway and the new Midfield Terminal Complex, this project is phase 1 of a dual cross-field connector taxiway system to provide an easy transition for aircraft taxiing in and out of the terminal area. The taxiways, configured to satisfy NLA spacing requirements, will both ultimately be 100 feet wide and are both approximately 4,040 feet in length. The taxiway closest to the Midfield Terminal Complex will be built in this phase.

Relocate ATCT
This project will require the construction of a new ATCT facility located on the eastern side of the dual cross-field taxiways and across from the Midfield Terminal Complex. The control tower will need to meet Level 3 tower requirements and should have a cab size greater than 350 square feet. However, it is anticipated that the height of this tower will be at least 260 feet agl. Exact location and tower height will depend on further analysis and coordination with the FAA.

New ARFF Facility
This project will consist of the construction of full-size ARFF facility to be located directly east of the Midfield Terminal Complex in close proximity of the relocated ATCT facility. The Index E facility will encompass approximately 14,000 square feet of building space, with a 10,000 square foot paved automobile parking area, 5,000 square feet of ARFF vehicle (5 bays) and equipment space, and a 5,000 square foot ramp for ARFF administration vehicles.

Existing Terminal Demolition
This project requires the demolition of the existing terminal building to create an area for other future aviation facilities. The two-story building has a footprint of approximately 231,000 square feet with a total building area of roughly 381,000 square feet. This includes the two-story international arrivals building (IAB) and the eastern Concourse B wing which account for 41,000 square feet of the building footprint.

Midfield Terminal Expansion (Phase 2)
This consists of the addition of 7 to 8 gates through the extension of Concourse C. This 95,000 square foot building expansion will include the construction of 61,400 square yards of apron space to accommodate aircraft parking and maneuvering.

Rehabilitate Chamberlin Parkway
This project involves the rehabilitation of Chamberlin Parkway from the entrance at Daniels Parkway to the entrance road of the multi-modal facility located north of the existing terminal. The road will be a single a two-lane road. As such, the outer road (western road) that runs parallel will be decommissioned. The length of the rehabilitation will be approximately 11,400 linear feet.

Land Acquisition – I-75 Access/Noise
These areas include the area southwest of the Airport to accommodate the planned I-75 interchange (approximately 395 acres).

Rehab Perimeter, Service, and Fuel Farm Roads
This project includes the rehabilitation of the existing two-lane perimeter, service, and fuel farm roads. The perimeter road has a total length of approximately 76,500 linear feet; service roads and the fuel farm road total approximately 15,000 linear feet.

Expand Midfield Entrance Road to 6 Lanes and Landscape
This project serves to provide additional capacity to the Midfield Terminal entrance road by increasing the lane total to 6 lanes. This project includes the roadway plus any curbs and gutters associated with the expansion.

Midfield Terminal Surface Parking Expansion
This project includes the expansion of the surface parking, the construction of additional wings for the parking garage, and expansion of the parking tollbooth. The total additional parking spaces required for this phase is 719 spaces.

Relocation of High-Voltage Power Lines
This project requires the relocation of the high voltage power lines located on the southeastern portion of the airfield to accommodate the construction of the new parallel

Runway 6R-24L. There are three rows of 230kv power lines. The length of the relocation is estimated at 25,000 linear feet.

Develop Freight Multi-Modal Center
This project includes the construction of a multi-modal freight center that will be located in the area that is currently the existing terminal automobile parking area. It will interface with cargo and freight operations situated directly south of the facility and will encompass approximately 15 million square feet of area.

Fuel Farm Improvements
Based on the terminal expansion anticipated at the Midfield during phase 2 additional fuel hydrants will need to be added and additional fuel farm improvements may be necessary to meet the demand. Among the improvements includes modifications to the containment facility and improvements to the tank farm circulation roadway, off loading facility and may require an increase in the fuel storage capacity.

8.2.3 Long Term Improvements – 2011 Through 2020

Runway 6L/24R CAT II ILS and ALS
This project serves to enhance overall airport capacity and safety during adverse weather conditions. Requirements to upgrade the current Cat I ILS to a Cat II ILS include additional Runway Visual Range (RVR) equipment, an increase in the size of the ILS critical area, an upgraded approach lighting system (ALSF-2) and runway centerline and touchdown zone lighting systems. This project should be accomplished during the rehabilitation of the existing runway.

General Aviation Multi-Use Hangar (Phase 2)
This project is the second of four hangar projects over the planning period required to increase the capacity for covered aircraft storage at the airport. In the mid-term development program, a 12,500 square foot hangar is anticipated to meet the expected demand for these types of facilities. The second hangar will be located adjacent to the automobile parking lot of the existing FBO facility.

I-75 Airport Access Improvements
This project consists of the upgrade of access to RSW from Interstate Highway 75. The project will provide a new direct access interchange and limited access roadway to tie into the Midfield terminal access road. This project includes a fly-over bridge structure at Ben Hill Griffin Parkway.

Relocate of Rental Car Service Facilities
This project involves provisions for the eventual relocation of rental car facilities from the existing location north of the existing terminal to an area either northwest of the Runway 6L end or northwest of the midfield terminal. The project consists of providing basic infrastructure to support facility development at the new site.

Helipad
A helipad will be constructed on the existing cargo apron to accommodate any future helicopter demand. The designated area will encompass approximately 11,000 square

feet. Improvements to the existing apron will include the addition of lighting, striping, windsock, and related facilities.

Relocate Airport Rotating Beacon

Based on constructing of a portion of the second south parallel taxiway and the expansion of the terminal apron, the airport's rotating beacon will need to be relocated. With the ATCT being located to an area at Midfield it is recommended that the beacon be also located in at Midfield in the vicinity of the ATCT.

Improvements to Gun Range

Based on the condition of the airport police pistol range a number of improvements must be done to bring the level of safety up to standard. This project involves upgrading and refurbishing the 120' x 60' pistol range located adjacent the police training facility, west of the existing air cargo building.

Cross Field Connector Taxiway to Midfield Ramp

With the addition of the new parallel runway south of the existing runway and the new Midfield Terminal Complex, this project is phase 2 of a dual cross-field connector taxiway system to provide an easy transition for aircraft taxiing in and out of the terminal area. The taxiways, configured to satisfy NLA spacing requirements, will both be 100 feet wide and approximately 4,040 feet in length. This project supplements the phase 1 cross-field taxiway with a second parallel taxiway constructed to the east. This project also includes constructing the taxiway connector stubs between the cross-field taxiway and the phase 1 Midfield apron. This includes a partial apron expansion adjacent to concourse B and at least three taxiway connectors for adequate circulation of aircraft in the terminal area.

Midfield Terminal Expansion – Additional Gates (11-14)

This expansion will include the addition of a new concourse designated as Concourse 'A' on the southern side of the Midfield Terminal Complex. This will allow for an additional 11-14 gates. This expansion includes 157,000 square yards of ramp area to allow for the parking and maneuvering of aircraft.

Surface Parking and Garage Expansion

This project will add two levels to the parking garage in addition to expanding surface parking. The total amount of vehicle parking spaces required for this phase is 4,557.

Master Plan Update

Airport Master Plans are typically updated every five to ten years depending on the validity of the prior planning analysis and assumptions. This project provides for the update of the existing plan and airport layout plan set. By revisiting the assumptions, projections and development accomplished to date the existing plan can be modified and refocused to better address a continued strategy of development.

8.3 SOURCES OF FUNDING FOR THE CAPITAL IMPROVEMENT PROGRAM

The Master Plan Update CIP will be funded through a combination of FAA AIP entitlement grants, FAA Letter of Intent (LOI), AIP Discretionary Funds, Federal Highway grants, State of Florida grants, Passenger Facility Charges (PFCs), other funds (such as third party funds or rental car customer facility charges), and local funds. **Table 8-1** presents a summary of the projects, ROM costs, and estimated funding sources for the Airport's CIP.

The following sections describe the anticipated funding sources for the Airport's CIP in greater detail.

8.3.1 Federal Grants

One of the main sources for the funding of airport improvements is the Federal AIP. The AIP was authorized by the Airport and Airway Improvement Act of 1982 to assist in the funding of planning, development and noise compatibility projects at public-use airports nationwide in order to meet projections of civil aviation growth. To be eligible for funding assistance under the Airway Improvement Act, an airport must be included in the National Plan of Integrated Airport Systems (NPIAS).

Funding for the AIP comes from the Aviation Trust Fund which was established by the Airport and Airway Revenue Act of 1970. The Aviation Trust Fund derives its revenues through the levying of taxes and fees on aviation fuel and lubricants, airline tickets, international departure passengers, aircraft freight and other components of the aviation community. Funds collected and deposited in the Aviation Trust Fund are distributed to eligible airports throughout the United States and its trust territories through grants administrated by the Federal Aviation Administration under appropriations limits established by the United States Congress.

Insert Table 8-1
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S ort Ter 200 t rou 200 in 2002 ollars

Pro ect De cr pt on	Tota Co t	Ma mum Po e Fe era Grant	Ma mum Po e State Grant	Ot er [2]	PFC Loca S are
M e Term na [1]	,000,000	,1 2, 10	7 , 1 ,	0	2 , 0,
Ot er M e Term na [1]	,000,000	,011,	,70 , 7	7, 00,000	,77 ,1
Re a tate RW 2	0,000,000	22, 00,000	,7 0,000	0	,7 0,000
Re a tate A r Car o Ramp	2,000,000	0	1,000,000	0	1,000,000
Genera A at on Han ar	1,000,000	0	0	1,000,000	0
Ma ntenance Fac ty Acce Roa	2 0,000	0	12 ,000	0	12 ,000
A rcra t Ma ntenance Fac ty	,000,000	0	0	,000,000	0
Lan Ac u t on - P a e I	20,000,000	1 ,000,000	2, 00,000	0	2, 00,000
Storm Water Ma ter P an	00,000	22 ,000	7, 00	0	7, 00
Car o Roa Impro ement	2,000,000		1,000,000	0	1,000,000
M e Term na Secur ty Re u rement	2 ,000,000	1 ,7 0,000	,12 ,000	0	,12 ,000
E t n Term na Secur ty Re u rement	,000,000	0	0	,000,000	0
Roa ay S na e Mo cat on	00,000	0	2 0,000	0	2 0,000
Part 1 0 No e Stu y	2 0,000	1 7, 00	1,2 0	0	1,2 0
TOTAL - SHORT TERM	1, 00,000	107, 1 ,77	2, 1 ,22	1 , 00,000	22,11 , 7

[1] Fun n ource or t e M e Term na an Ot er M e Term na pro ect repre ent actua un n ource rat er t an ma mum po e un n ource

[2] Ot er un n ource con t o renta car Cu tomer Fac ty C ar e CFC , t r party un n , an Tran portat on Secur ty A m n trat on TSA un n ource

Note: Fun n c e u e a ume u e era an tate part c pat on or a e e pro ect Any un not rece e y LCPA ou cau e t e oca are to ncrea e T e e ncrea e may cau e t e pro ect to e e aye or cance e

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T BLE
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Inter e iate Ter 200 t rou 20 0 in 2002 ollars

Pro ect De cr pt on	Tota Co t	Ma mum Po e Fe era Grant	Ma mum Po e State Grant	Ot er [2]	PFC Loca S are
ARFF e c e	0,000	712, 00	11 ,7 0	0	11 ,7 0
E t n Term na Par n Lot Re a tat on	10, 00,000	0	0	0	10, 00,000
GIS Purc a e an Setup	2 0,000	0	0	0	2 0,000
De n Con t In ra tructure	,000,000	0	0	,000,000	0
Ho ay an y-Pa or RW 2	1, 00,000	1,12 ,000	1 7, 00	0	1 7, 00
Repa r to Nort Ramp	7, 00,000	, 2 ,000	7, 00	0	7, 00
Ne Para e Run ay R 2 L	120,000,000	0,000,000	1 ,000,000	0	1 ,000,000
Cro F e Connector Ta ay P a e 1	7,000,000	,2 0,000	7 ,000	0	7 ,000
Re ocate ATCT	0,000,000	22, 00,000	,7 0,000	0	,7 0,000
Ne ARFF Fac ty	, 00,000	, 7 ,000	2, 00	0	2, 00
E t n Term na Demo t on	,000,000	0	0	0	,000,000
M e Term na E pan on - P a e 2	2, 0,000	12,22 ,000	10, 7, 00	0	10, 7, 00
Re a tate C am er n Par ay	,000,000	0	1, 00,000	0	1, 00,000
Lan Ac u t on - I-7 Acce	, 00,000	1 , 70,000	11,21 ,000	0	11,21 ,000
Re a Per meter, Ser ce an Fue Farm R	,000,000	1,000,000	1, 00,000	0	1, 00,000
E pan Entrance R to ane an an cape	, 00,000	2, 7 ,000	12, 00	0	12, 00
M e Term na Sur ace Par n e pan on	,000,000	0	1, 00,000	0	1, 00,000
Re ocat on o H - o ta e Po er L ne	1 ,000,000	1 , 00,000	2,2 0,000	0	2,2 0,000
De e op Fre t Mu t-Mo a Center	7,000,000	0	, 00,000	0	, 00,000
Fue Farm Impro ement	,000,000	0	0	0	,000,000
TOTAL - INTERMEDIATE TERM	0 , 0,000	171,2 7, 00	, 7 ,2 0	,000,000	7 ,70 ,2 0

[2] Ot er un n ource con t o renta car Cu tomer Fac ty C ar e CFC , t r party un n , an Tran portat on Secur ty A m n trat on TSA un n ource

Note: Fun n c e u e a ume u e era an tate part c pat on or a e e pro ect Any un not rece e y LCPA ou cau e t e oca are to ncrea e T e e ncrea e may cau e t e pro ect to e e aye or cance e

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Page 3 of 3

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T BLE
Pa e o

Lon Ter 20 t rou 2020 in 2002 ollars

Pro ect De cr pt on	Tota Co t	Ma mum Po e Fe era Grant	Ma mum Po e State Grant	Ot er [2]	PFC Loca S are
Run ay 2 CAT II ILS an ALS	7,000,000	,2 0,000	7 ,000	0	7 ,000
Genera A at on Mu t U e Han ar P 2	1,000,000	0	0	1,000,000	-
I-7 A rport Acce Impro ement	7 ,000,000	2 ,12 ,000	2 , 7, 00	0	2 , 7, 00
Re ocate Renta Car Ser ce Fac t e	7, 00,000	0	0	7, 00,000	-
He pa	0,000	0	17 ,000	0	17 ,000
A rport Rotat n eacon	1 0,000	112, 00	1 ,7 0	0	1 ,7 0
Impro ement to Gun Ran e	720,000	0	0	0	720,000
Connector Cro F e TW to M e ramp	2, 00,000	1, 7 ,000	12, 00	0	12, 00
2n Cro F e Connector TW	7,000,000	,2 0,000	7 ,000	0	7 ,000
M e Term na - A t ona Gate 11-1	0,000,000	1 ,7 0,000	1 , 2 ,000	0	1 , 2 ,000
Sur ace Par n an Gara e E pan on	1 ,000,000	0	, 00,000	0	, 00,000
Ma ter P an Up ate	00,000	7 ,000	2, 00	0	2, 00
TOTAL - LONG TERM	1 ,720,000	,7 7, 00	7, 1,2 0	, 00,000	, 01,2 0
T T L CIP LL PH SES	**,0 , 0,000**	**, ,**	**, , 2**	**,000,000**	**, 2 ,**

[2] Ot er un n ource con t o renta car Cu tomer Fac ty C ar e CFC , t r party un n , an Tran portat on Secur ty A m n trat on TSA un n ource

Note: Fun n c e u e a ume u e era an tate part c pat on or a e e pro ect Any un not rece e y LCPA ou cau e t e oca are to ncrea e T e e ncrea e may cau e t e pro ect to e e aye or cance e

Allocation of funds from the FAA to the nation's airports is based upon a number of eligibility criteria and tied to a priority system that is used to rank each request and determine which projects will be funded and which will not during any given fiscal year. The priority system employed by the FAA has different criteria for different projects. For instance, planning projects are assessed using specific criteria that are applicable to planning types of projects. Generally, projects that enhance the safety of aircraft operations and those that enhance capacity in the system are higher priority projects. The priority system also ranks projects based on the size of the airport and the number of aircraft and aircraft operations at the facility.

In addition to the use of the priority system for the evaluation of projects, the AIP has identified a number of projects that are either eligible or ineligible for Federal funding assistance. Even if a proposed airport improvement is considered to be eligible for Federal funding the airport must first conform to several requirements. These requirements are listed below (from FAA Order 5100.38A, Airport Improvement Handbook):

- An airport development project must be shown on a current Airport Layout Plan (ALP) which has FAA approval from the standpoint of safety, utility and efficiency of the airport.
- The project sponsorship requirements must have been met.
- The proposed project will be reasonably consistent with the plans for planning agencies for the development of the area in which the airport is located.
- Sufficient funds must be available for the portion of the project not paid for by the Federal government. (i.e. local and/or state matching share.)
- The project will be completed without undue delay.
- The airport location is included in the current version of the National Plan of Integrated Airport Systems (NPIAS).
- The project involves more than $25,000 in AIP funds unless, in the judgement of the responsible airports office it would be in the best interest of the Government to award a lesser grant amount.
- All AIP projects require either a determination that the project is categorically excluded from environmental requirements, an environmental assessment resulting in either a "Finding of No Significant Impact" (FONSI) or preparation of an Environmental Impact Statement (EIS).

Close agency coordination is often required to address more complex issues relative to project eligibility. Additionally, it is reasonable to assume that there may be changes in eligibility criteria over the course of the planning period. Guidance on issues of eligibility is provided in FAA Order 5100.38A, Airport Improvement Program Handbook. The Federal funding share for these projects is generally 90 percent for small commercial and GA airports and 75 percent for medium and large hub commercial airports such as Southwest Florida International Airport. Based on current eligibility criteria, the following projects are generally considered eligible under FAA guidance:

- Ramps (non-exclusive)

- Land acquisition costs and costs incidental to the acquisition, including relocation assistance of displaced persons or businesses, of any property interest necessary for airport purposes. Reimbursement for land previously acquired is also eligible.

- The cost of planning and engineering services needed in connection with an airport development or noise implementation project.

- Site preparation for new facilities and for existing facilities where these facilities must be brought into compliance with applicable airport design standards.

- Construction, alteration and reconstruction of runways and taxiways available for general public use. This includes the surface friction treatments such as grooving, aggregate seal coats or porous friction coats.

- Initial marking of eligible runways, taxiways, helipads and portions of aprons associated with the taxiway system as well as the re-marking of these pavements under certain conditions.

- Airfield signs including destination, intersection, runway distance remaining markers and signs necessary to provide information to pilots.

- Installation, alternation and rehabilitation of airfield lighting including runways, taxiways and aprons conforming to FAA design and engineering standards. Retro-reflective markers are also eligible as long as they provide sufficient and safe guidance.

- Navaids are eligible for funding under the Airport Improvement Program, although most Navaids are funded through FAA's Facilities and Equipment program.

- Construction, reconstruction and alteration of airport roads and related facilities are eligible to varying degrees depending upon their designated use.

- Portions of terminal facilities devoted to use by the general public.

- Perimeter fencing and fencing between the airport property and public areas such as roads to discourage the access of wildlife on runways and taxiways.

- Removal and relocation of objects in the Runway Protection Zone or removal, lowering or relocation of an object constituting a hazard to air navigation.

- Environmental mitigation, if it is a condition of approval of an environmental action associated with an airport development project.

Projects which are specifically referenced (Appendix 2, FAA Order 5100.38A) as non-eligible for FAA AIP funding assistance include the following:

- Fuel farms.
- Emergency Planning.
- Landscaping, unless an incidental part of an eligible project.
- Communication systems (except that which is used for safety/security).
- Training facilities except those which are included in an otherwise eligible project as an integral part of that project and which are of a relatively minor or incidental cost, i.e., less than 10 percent of the project cost. An example of exception would be would be a training room included as part of a new ARFF facility.
- Roads, whatever length, used exclusively for the purpose of connecting public parking facilities to an access road.
- Roads serving principally industrial or non-aviation related areas or facilities.
- General aviation terminals.
- Airport surface detection systems (ASDE).
- Maintenance/service facilities except for those allowed to service required ARFF equipment.
- Projects for the determination of latitude, longitude, and elevation except as an incidental part of master planning.
- Development of new flight procedures or demonstration programs for noise compatibility purposes.

The availability of AIP funding for projects at the Airport will depend directly on the priority and the funding availability for medium hub airports. The Authority expects to use a combination of discretionary, entitlement, and LOI grants for eligible Airport projects. Since 1998, the Airport has received approximately $8,288,339 million in FAA AIP entitlement funds and $9,830,000 million in AIP discretionary funds. In addition, on November 10, 1998, the FAA issued a 10-year LOI to fund $35 million of the Midfield Terminal Project, of which the Authority has received $12 million.

In addition to funding available through the FAA AIP, federal grants are also assumed to be available from the Federal Highway Administration (FHWA) for the acquisition of property and construction associated with various I-75 access improvements. FHWA grants are estimated to fund approximately 37.5 percent of the I-75 land acquisition and construction costs.

As shown in **Table 8-1**, approximately $339 million (34 percent) of the Airport's CIP is anticipated to be eligible for Federal funding. It is important to note that the estimated funding shown in **Table 8-1** assumes full federal participation for all eligible projects. Any funds not received by the Authority would cause the local share to increase. These increases may cause the project(s) to be delayed or cancelled.

8.3.2 State Funds

Similar to the AIP on the federal level, the FDOT Aviation Grant Program is funded from the state Transportation Trust Fund. The state Transportation Trust Fund consists, in part, of funds collected through the State's aviation fuel tax. The FDOT Aviation Office administers the aviation grant program to help provide a safe, cost-effective, and efficient statewide aviation system. The FDOT grant program supplements the AIP, providing a portion of the sponsors matching share when federal funding is available and 50 percent of the overall project cost when it is not. FDOT grant funds help airports build T-hangars, build and maintain runways and taxiways, eliminate airport hazards, protect the air space, and build terminals and other facilities.

FDOT participation in aviation projects can be summarized as follows

Commercial Service Airports – FDOT provides ½ of the local share of commercial service airport project costs when federal funding is available. In other words, the FDOT provides 12.5 percent of the project costs when the FAA funds 75 percent. If there is no FAA funding for a project, FDOT provides 50 percent of the eligible project costs.

Economic Development – Airport economic development provides 50 percent of airport development funds to build on-airport revenue-producing capital improvements, like industrial/commercial parks.

Airport Loans – Airport loans are used to help airports acquire land in the near term and allows time to apply for FAA funding. FDOT provides interest free loans for 75 percent of the cost of airport land purchases for both commercial service and general aviation airports. These loans are repaid at the normal FDOT funding ratio when FAA funds become available, or in 10 years, whichever comes first.

All publicly owned Florida airports that are open for public use are eligible for state funding. In addition, privately owned airports that are classified with "reliever" status are eligible for FAA funding. Florida law generally allows the FDOT to fund any capital project on airport property and any service that leads to capital projects, such as planning and design services. The only off-airport projects allowed are the purchase of mitigation lands, the purchase of avigation easements, and the access projects for intercontinental airports. Airport capital equipment is eligible, except equipment closely related to the day-to-day operations (mowing machines, weed eaters, airport vehicles, etc.). In general, operational costs such as maintenance services, equipment, and supplies are not eligible for aviation grants. To be eligible for FDOT grants, each airport project must be consistent with the airport's role as defined in the Florida Aviation System Plan (FASP), and capital projects must be part of an FDOT approved airport master plan or airport layout plan. Additionally, for projects to be eligible for state funding, they must also be included in the Joint Automated Capital Improvement Plan (JACIP). This plan accepts requests from airports for project funding along with each airport's priority for individual projects. The JACIP does not represent a commitment by the FDOT or FAA to fund a particular project or projects. The Plan is intended to coordinate state and federal funding efforts and provide a realistic approach based on the best and most current information available of projects at Florida grant eligible airports.

As with the federal grant program the state program commits funds through its district offices to eligible airport projects according to a project priority system. The following is a summary of this system presented in order of priority:

- **Federally Funded Projects**. The State's share will be up to one-half of the non-Federal share.

- **Non-federally Funded Airside Projects** – Priority Order
  - Safety or security of the travelling public.
  - Preserve existing airfield infrastructure.
  - Increase capacity of Florida's airports.
  - Projects of significant importance that cannot be fully funded by the Federal government and can be funded per the provisions of F.S. Section 332.007(6)(a) 1 and 2, if State funds are available.

- **Non-Federally Funded** – Other
  - Airport planning projects.
  - Land acquisition for airfield infrastructure.
  - Airport terminal projects.
  - Airport access projects, if Department intermodal funds are not available.
  - Navigational Aids (Navaids) projects under certain criteria.

- Economic Development Projects

Currently, approximately $81 million in funding is committed and under contract through Joint Participation Agreements (JPA) with the State of Florida for the design and construction of the Midfield Terminal Project and access roads. Under the terms of the grant, proceeds are distributed as reimbursement to the Authority for funds actually expended by the Authority.

As shown in **Table 8-1**, approximately $194 million (19 percent) of the Airport's CIP is anticipated to be eligible for FDOT funding. It is important to note that the estimated funding shown in **Table 8-1** assumes full FDOT participation for all eligible projects. Any funds not received by the Authority would cause the local share to increase, and may cause the project(s) to be delayed or cancelled.

8.3.3 Other Funds

Other funding sources for the Airport's CIP consist of the following:

- Rental car customer facility charges.
- Transportation Security Administration.
- Third-Party (private) sources.

Rental Car Customer Facility Charges (CFCs) - On October 1, 2002, the Authority began collecting a rental car CFC at the Airport to pay for certain rental car facilities being constructed as part of the new Midfield Terminal project. This CFC is assessed at $1.00 per transaction-day for rental car patrons at the Airport. The CFC is charged and

collected by the various rental car companies operating at the Airport, and then remitted to the Airport on a monthly basis.

It is estimated that the Airport will collect approximately $2.8 million to $3.5 million per year in rental car CFCs to support the construction of rental car facilities. As such, future rental car projects included in the Airport's CIP are assumed to be funded through rental car CFCs.

Transportation Security Administration (TSA) – At present, there is not a funding program in place through the TSA to fund security initiatives at commercial service airports. For this analysis however, it was assumed that funding would be made available through the TSA and/or FAA to fund the existing terminal security requirements.

Third-Party (Private) Sources – For certain projects that would support the development of private tenants on the Airport such as fixed base operators, hangar tenants, or other non-aviation commercial tenants, third-party, or private funding sources were assumed. Tenants typically invest directly in the construction of facilities such as hangars. This approach limits sponsor revenue to the nominal rents for the underlying land, but avoids the need for the sponsor to raise funds for hangar or other private development.

As shown in **Table 8-1**, other funds for the Airport are estimated to fund approximately $33 million of the total CIP costs.

8.3.4 Local Funds

The balance of project costs (i.e., after consideration of grants and other funding sources) must be funded through the local sponsor. As such, it is anticipated that local sources will be a primary component for the funding of the future development program. Local funding of airport improvements can come from several sources, including:

- Passenger Facility Charges (PFCs)
- Issuance of general airport revenue bonds (GARBs)
- Airport earnings and reserves

As shown in **Table 8-1**, approximately $445 million in project costs are estimated to be funded by local and PFC funds. Of this total, however, approximately $310 million has already been committed toward the development of the Midfield Terminal project (primarily through the issuance of the Series 2000 Bonds). The remaining $135 million in local share would be required to be funded from PFCs, GARBs, or Airport reserves.

In accordance with the Aviation Safety and Capacity Expansion Act of 1990, as amended by the Aviation Investment and Reform Act for the 21st Century, the Authority is currently imposing a $3.00 PFC at the Airport. PFCs may be used by the Airport to fund the local share of eligible project costs (PFC eligibility for projects generally follows the same general guidelines for determining AIP grant eligibility outlined earlier). In 1998, the Authority issued PFC-backed debt (the Series 1998 Bonds), which was used to fund approximately $46.0 million for the acquisition of land for the development of the Midfield Terminal Project and environmental

mitigation. As such, PFC collections are currently being used to pay the outstanding debt service on the Series 1998 Bonds. In addition, the Authority is currently in the process of submitting an application to increase the PFC collection level to $4.50 per enplaned passenger. Excess PFC collections, after payment of debt service on the Series 1998 Bonds, will be used to fund a portion of the Midfield Terminal project during construction and to pay a portion of debt service on the Series 2000 Bonds which were issued to finance the construction of the new Midfield Terminal. The charge effective date for the $4.50 PFC level is estimated to be toward the end of FY 2003. Beyond the payment of debt service on the Series 1998 and Series 2000 Bonds, it is estimated that an additional $78 million in PFC funds will also be available through the year 2020 to pay for the local share of other project costs.

As established by the Airport's existing Airline Agreement, the Airport is provided with a Discretionary Fund that it can use towards capital projects at its sole discretion. The Discretionary Fund is funded from any remaining airport earnings after the payment of operating expenses, outstanding debt service, funding of other reserves, and payment of Airline Rebates. As of the end of September 2002, the Discretionary Fund was provided with a balance of approximately $1.0 million that could be used to fund CIP projects. Any additional local funding, beyond what can be funded with PFCs or from the Airport's Discretionary Fund, would require the issuance of GARBs.

8.4 AIRPORT REVENUE SOURCES

As a result of the Airport's commercial airline service, the Airport is provided with a diverse revenue stream, from a number of different sources. These revenue sources include revenues from the airlines (landing fees, terminal rent, and cargo fees), concessions (food & beverage and retail merchandise), parking, rental car contracts, miscellaneous and cargo landing fees, general aviation, cargo, and other miscellaneous revenues. In FY 2002, the Airport's revenue sources generated a total of approximately $41 million in revenues.

These major revenue sources are described in greater detail in the following sections.

8.4.1 Airline Revenues

The majority of the revenues generated at the airport is comprised of terminal rentals, cargo building, and landing fees payable by the airlines. In general, the items included in the total requirement for the terminal rental rate, cargo building use fee, and landing fee include the following components:

- **Investment Service** - Includes the portion of Investment Service allocated to the specific rate-setting area.
- **Operating Expenses** - Includes the Operating Expenses (direct and allocated indirect) attributable to the specific rate-setting area.
- **R&R Expenses** - Includes amounts budgeted for R&R Expenses (i.e., unanticipated or emergency replacements and repairs) within the specific rate-setting area.

- **Capital Improvement Expenses** - Includes amounts budgeted for Capital Improvement Expenses within the specific rate-setting area.

Terminal rental rates at the airport are established based on a "residual" formula, which results in the airlines covering the net remaining requirement attributable to the terminal cost center. The net requirement for the Terminal Building is equal to the sum of the previously described components for the Terminal, reduced by all Nonairline Revenue derived from the Terminal. The average Terminal rental rate is derived by dividing the net requirement by the Airline and Authority leased square feet in the Terminal. In FY 2002, the terminal rental rate was $38.84 per square foot, which generated approximately $13.3 million in terminal rental revenue.

A residual calculation is also used to establish the cargo building use fee at the Airport. In FY 2002, the cargo building use fee was $10.44 per square foot, which generated approximately $112,000 in cargo building revenue.

Landing fees at the Airport are established based on a residual Airport landing fee calculation. The landing fee is calculated by combining the items described above for the entire Airport in order to determine the Airport's total requirement. The total requirement is then reduced by all other Airport Revenues (i.e., terminal rental revenue, cargo building revenue, fuel system revenue, total nonairline revenues, and investment income). The landing fee is then calculated by dividing the net requirement by passenger Airline landed weight per thousand pounds. In FY 2002, the cargo building use fee was $0.894 per thousand pounds landed weight, which generated approximately $2.5 million in landing fee revenue.

8.4.2 Rental Car Revenues

Rental car fees are privilege fees assessed to the rental car operators for the right to provide services to users of the airport. There are currently six on-Airport and two off-Airport rental car operators at the Airport. The on-Airport rental car operators are assessed a minimum guarantee of 80 percent of the average of the prior two years' fees or 10 percent of gross revenues, whichever is greater, while off-Airport operators pay the Authority eight percent of gross receipts. In addition, the off-Airport rental car operators are assessed a monthly courtesy vehicle fee of between $15.00 and $50.00 per vehicle, depending on its size. In FY 2002, rental car revenues at the Airport were approximately $10.1 million. With the opening of the new Midfield Terminal, the rental car operators will be relocated to the new facility, which will provide:

Airport include the development of the following:

- 1,100 ready/return spaces located within the first level of the parking garage
- 1,600 uncovered ready/return spaces
- Exterior rental car customer service building
- Quick Turn Around (QTA) facility

The capital costs for the new Midfield rental car facilities are anticipated to be recovered through a combination of facility rentals and CFCs (as discussed previously). In general, it is anticipated that capital costs associated with the Customer Service Building will be recovered through the form of a space rental rate, while the capital costs for the ready/return spaces and QTA facility will be recovered through CFC revenues. Furthermore, space rental rates are expected be

assessed to recover: 1) annual operating expenses associated with each rental car facility; and 2) a $0.20 per square foot ground rental.

8.4.3 Parking Revenues

The parking lot at the Airport is operated by APCOA, a parking management company, under a management contract. On-Airport parking fees are generated by the hourly short-term, daily long-term, and economy parking lots. Existing parking rates at the Airport, which were changed on December 18th, 2002 are $1.00 every 20 minutes up to a maximum of $18.00 per day for short-term, $10.00 per day for long-term, and $6.00 per day for the economy lot. In FY 2002, the parking lots at the Airport generated approximately $6.9 million in revenue. As part of the Midfield Terminal Project, 9,500 public surface parking spaces, 1,300 surface employee spaces, and a three-story, 3,800 stall, parking garage will be constructed. Future parking revenues should be expected to increase based on increased parking rates as well as the re-capturing of some off-Airport parking patrons.

8.4.4 Terminal Concession Revenues

Terminal concession revenues are generated from a number of terminal tenants including restaurant, news and gift, advertising, pay phones, and others. Future revenue from these sources is expected to increase due to the implementation of a new concessions program in the development of the new Midfield Terminal complex. These terminal concession revenue sources are discussed below:

Restaurant
The restaurant operator in the terminal is Host International. In general, Host International pays the Airport the greater of 85 percent of the previous year's fees or a percentage of gross revenues, which range from 12 to 14 percent of gross revenues depending on the type of merchandise. In FY 2002, restaurant revenues were approximately $1.2 million.

News and Gift
News and gift operators at the Airport consist of Paradies and Star Gifts. The current leases with these news and gift operators provides for a base rent plus the greater of its percentage of gross sales or a per enplaned passenger fee. In FY 2002, news and gift revenues were approximately $1.3 million.

Advertising
Interspace Airport Advertising, Inc. operates the advertising concession at the Airport. Interspace is responsible for installing and maintaining the advertising displays located in the public areas of the terminal. Under the current agreement, Interspace pays the Airport between 48 percent and 58 percent of gross revenue depending on their reported gross receipts. In FY 2002, advertising revenues were approximately $275,000.

Commercial Space Revenues
Commercial space rental revenue at the Airport is derived from space rent charged to the rental car operators, concessionaires, and other nonairline terminal tenants. In FY 2002, terminal space rent from commercial operators generated approximately $611,000.

Pay Phones
Pay phones at the Airport are provided by Sprint. Under its lease, Sprint is required to pay the Airport 38 percent of gross revenues or $0.046 per passenger, whichever is greater. Pay phone revenues were approximately $235,000 in FY 2002.

Ground Transportation Revenues

Ground transportation at the Airport is currently provided by a number of operators including, limousine, charter bus, and various commercial courtesy vehicle operators. In general, limousine operators are assessed a $150 per month vehicle fee plus a fee of $1.00 per departure; charter bus operators are charged a fee of $20.00 per trip; and commercial courtesy vehicles are charged a monthly fee of $15 to $50 per vehicle fee based on the size and type of vehicle plus a fee of $1.00 per departure. Combined, ground transportation revenues for the various operators at the Airport were approximately $273,000 in FY 2002.

Land Rental Revenues

Land rental revenues consist of revenues generated from ground rental fees assessed to various tenants located on the Airport such as the Airport's FBO, cargo tenants, etc. These revenues are generally charged to tenants based on a per square foot basis for the land contained within their leasehold for which their facilities occupy. In FY 2002, land rental revenues from these various Airport tenants was approximately $400,000. Future development opportunities associated with the infrastructure improvements proposed along Daniels Parkway, as well as the construction of future general aviation hangars, aircraft maintenance facilities, and a freight multi-modal center should present opportunities for increasing land rental revenues in the future.

Other

Other revenues include miscellaneous revenues for use of airport facilities, etc. Revenues from miscellaneous sources were approximately $793,000 in FY 2002.

8.5 OPERATING EXPENSES

Operating Expenses at the Airport are assigned to various organizations including Executive, Administration, Development/Facilities, Operations/Safety, and County Services. Within each organization, Operating Expenses are classified by various expense categories, including salaries and fringe, materials and supplies, contract maintenance, insurance, utilities, other, and capital outlay. These expenses for each organization are then allocated to the various Airport cost centers for rate-setting purposes. Historically, the Authority's Operating Expenses for the Airport increased from $15.6 million in FY 1994 to $25.6 million in FY 2002, representing an annual compounded growth rate of 6.2 percent.

Details of the Operating Expense projections by organization are described below.

8.5.1 Executive

Operating Expenses for the Executive organization include expenses associated with the Port Board, Director, and Legal Services departments. In FY 2002, operating expenses for the Executive organization were approximately $518,000.

8.5.2 Administration

The Administration organization includes operating expenses associated with Aviation Marketing, Finance and Accounting, General Services, Human Resources, Property Management, and Public Relations departments. In FY 2002, operating expenses for the Administrative organization were approximately $5.7 million.

8.5.3 Development

The Development organization includes Operating Expenses associated with the Development, Construction Management, Planning, Government Affairs, and Engineering departments. In FY 2002, operating expenses for the Development organization were approximately $2.7 million.

8.5.4 Aviation Services

The Aviation Services organization includes the Aircraft Rescue, Facilities, Operations, Police, and Police Communications departments. In FY 2002, operating expenses for the Aviation Services organization were approximately $24.9 million.

8.5.5 County Services

County Services includes Operating Expenses associated with services provided by Lee County, including legal counsel, annual audit, and bill payment services. In FY 2002, operating expenses for County Services were approximately $200,000.

9 AIRPORT LAYOUT PLAN SET

9.1 GENERAL OVERVIEW

An update to the Airport Layout Plan (ALP) drawing set for the Southwest Florida International Airport (RSW) is included and discussed in this chapter. The ALP set is required by the Federal Aviation Administration (FAA) as a part of the Master Plan process. This drawing set provides input required to determine the eligibility of proposed airport improvement projects. Generally, the FAA will not provide financial assistance for projects that are not depicted on the ALP. The drawings comprising the updated ALP illustrate the current (2003) facilities at RSW and the proposed improvements resulting from the analyses contained in the previous sections of the Master Plan Study for the short, intermediate, and long term planning periods.

The ALP set has been prepared in conformity with the criteria established by the Federal Aviation Administration (FAA) in **Advisory Circular (AC) 150/5070-6A, "Airport Master Plans"** and **AC 150/5300-13 Change 7, "Airport Design"** and supporting circulars and orders.

The ALP set includes the following individual drawing sheets:

- Cover Sheet (Sheet 1)
- Airport Layout Plan (Sheet 2)
- ALP Data Tables (Sheet 3)
- Terminal Area Plan (Sheet 4)
- FAR Part 77 Approach Surfaces (Sheet 5)
- FAR Part 77 Inner Surfaces (Sheet 6)
- Runway 6 (6L) Protection Zone Plans (Sheet 7)
- Runway 24 (24R) Protection Zone Plans (Sheet 8)
- Runway 6R Protection Zone Plans (Sheet 9)
- Runway 24L Protection Zone Plans (Sheet 10)
- Runway 6-24 (6L-24R) Approach Zone Plans (Sheet 11)
- Runway 6R-24L Approach Zone Plans (Sheet 12)
- Land Use Plan (Sheet 13)
- Property Map (Sheet 14)
- Property Map (Overview) (Sheet 15)

Additionally, both a location and a vicinity map for the airport are incorporated onto the cover sheet (**Sheet 1**), which also provides an index of individual drawing sheets. A reduced scale version of the ALP set has been included at the end of this chapter.

9.2 AIRPORT LAYOUT PLAN DRAWING

The ALP (**Sheet 2**) depicts all existing facilities as well as those proposed for development over the course of the master plan (2000-2020) for RSW. These facilities include, but are not limited

to: the runway and taxiway system, taxilanes, hold aprons, lighting, navaids, terminal facilities, hangars, other airport buildings, aircraft parking areas, automobile parking, and airport access elements. Key dimensional criteria are included for the airfield geometry. This includes, but is not limited to, the size of the runways and various taxiways; runway safety and runway object free areas; building restriction lines; and navigational aid critical areas. Phasing for various Airport improvements are also depicted on the ALP. Airport coordinates, airport elevations, general airport data, basic runway data, declared distances, a building/facilities table, a runway safety area determination table, a modification approval block, wind rose data, and all necessary abbreviations and legends are included on the separate ALP Data Sheet (**Sheet 3**).

The Airport Layout Plan includes the future 9,100-foot runway 6L-24R. Other key improvements depicted on the ALP include the midfield terminal complex, additional full-parallel taxiway associated with the current single runway, and the cross-field taxiways that integrate the new parallel runway with the existing airside facilities and new terminal area. The criteria that were applied in the development of the runway and taxiway system as well as those associated with mandatory FAA safety and object clearance criteria are defined in **Table 9-1.**

TABLE 9-1
AIRFIELD DESIGN STANDARDS FOR RSW

Airfield Design Criteria	Runway 06-24 (6L-24R)	Proposed Runway 6R-24L
Airport Reference Code (ARC)	D-V	D-V
Runway Safety Area Length beyond Runway End	1,000 feet	1,000 feet
Runway Safety Area Width	500 feet	500 feet
Runway Width	150 feet	150 feet
Runway Object Free Area Length beyond Runway End	1,000 feet	1,000 feet
Runway Object Free Area Width	800 feet	800 feet
Runway/Taxiway Separation	400 feet	600 feet
Taxiway Width	75 feet	75 feet
Taxiway Safety Area Width	118 feet	118 feet
Taxiway Object Free Area Width	186 feet	186 feet
Taxiway Lighting	MITL	MITL
Runway Lighting	HIRL, REIL	HIRL, REIL, TDZ
Pavement Strength Rating	30,000 SWL 190,000 DWL 430,000 DTWL 840,000 DDTWL	30,000 SWL 190,000 DWL 430,000 DTWL 840,000 DDTWL

Source: FAA AC 150/5300-13 Change 7.

9.3 TERMINAL AREA PLAN

The Terminal Area Plan (TAP) (**Sheet 4**) depicts the same configuration and dimensional information shown on the ALP, but provides a larger scale version so that certain additional features and greater detail of the terminal area improvement can be discerned. The TAP displays the Midfield terminal complex currently under construction. The existing terminal is planned to

be removed and is therefore not depicted. Rooftop elevations above ground level (AGL) are also provided for the buildings and facilities in the plan.

9.4 FAR PART 77 APPROACH SURFACES

To enhance the safe operation of aircraft in the airspace around airports, the FAA has adopted **Federal Aviation Regulations (FAR) Part 77 "Obstructions Affecting Navigable Airspace."** Subpart C of FAR Part 77 establishes standards for determining obstructions to air navigation. These regulations enable the establishment of "imaginary surfaces," which no object, manmade or natural, should penetrate. FAR Part 77 surfaces are utilized in zoning and land use planning adjacent to the airport to protect the navigable airspace from encroachment by hazards, which would potentially affect the safety of airport operations.

The FAR Part 77 Imaginary Surfaces Plan (**Sheets 5** and **6**) depicts the physical features of the area around the airport including existing obstructions that penetrate the surfaces. The specific imaginary surfaces that should be protected from obstructions include:

Primary Surface - A rectangular area symmetrically located about each runway centerline and extending a distance of 200 feet beyond each runway threshold. Width of the Primary Surface is based on the type of approach a particular runway has, while the elevation is the same as that of the runway centerline at all points. The width of the primary surface for Runway 6-24 and the proposed Runway 6R-24L is 1,000 feet.

Horizontal Surface – A level oval-shaped plane situated 150 feet above the airport elevation, extending 5,000 or 10,000 feet outward, depending on the runway category and approach procedure available. The horizontal surface for RSW resembles the floor of a stadium. Its edge extends 10,000 feet from each point on both the existing and proposed runway centerlines.

Conical Surface - Extends outward for a distance of 4,000 feet beginning at the outer edge of the Horizontal Surface, and slopes upward at a ratio of 20:1.

Approach Surfaces - These surfaces begin at the end of the Primary Surface (200' beyond the runway threshold) and slope upward at a ratio determined by the runway category and type of approach available to the runway. The width and elevation of the inner end conforms to that of the Primary Surface while approach surface length and width of the outer end are governed by the runway category and approach procedure available.

Transitional Surface - A sloping area beginning at the edges of the Primary and Approach Surfaces and sloping upward and outward at a ratio of 7:1 until it intersects the Horizontal Surface.

9.5 RUNWAY PROTECTION ZONE PLANS

The Runway Protection Zone (RPZ) Plans illustrate in detail the approach area immediately beyond the ends of the existing and proposed runways at RSW. The primary purpose of the RPZ

is protection of people and property on the ground. Therefore, the areas within the RPZs should be kept free of obstacles that could constitute a hazard to aircraft approaching or departing the Airport. These drawings depict the location of roadways, structures, natural ground elevations, and other man-made or natural features within the limits of the RPZs. The drawings also detail objects that penetrate the approach surfaces or violate the Object Free Area criteria. These obstructions are listed numerically in an obstruction table with data describing the obstruction, obstruction elevation, affected Part 77 surface, surface elevation, amount of penetration, and proposed manner in which the obstruction will be addressed. Additionally, the drawings depict the configuration of the required Runway Safety Areas for each runway end.

The RPZ for Runway 6(6L) is shown in plan and profile on **Sheet 7**. The existing 50:1 precision approach slope is shown. As indicated on the drawing the approach to Runway 06 has no obstruction issues. The RPZ for Runway 24(24R) is shown in plan and profile on **Sheet 8**. The existing 34:1 non-precision approach and future 50:1 approach slopes are shown. A tree creates the only obstruction to both the existing and future approach slopes. There are a few obstructions located within the primary surface. Most of these obstructions noted in the Obstruction Table on the drawing are fixed by their aviation related function. These include two rods associated with the RVR, and the windsock. In all, the noted obstructions are limited in nature and do not pose a significant impact on the existing or proposed approaches to either end of Runway 6-24.

Sheet 9 displays the RPZ for Runway 6R, which has future 50:1 precision approach slope. Runway 24L also has a future 50:1 precision approach slope, which is depicted on **Sheet 10** along with the RPZ. No obstacles to either runway end approach surface have been determined. Additional information should be collected via survey regarding the approach surface obstacles prior to the construction of the new Runway.

9.6 APPROACH ZONE PROFILES

The Approach Zone Profiles depicted on **Sheet 11** (Runway 6-24 (06L-24R)) and **Sheet 12** (Runway 06R-24L) display the full profile view of the existing and ultimate approach surfaces without the use of match lines or truncated depictions. Potential obstructions in the approach zones include vertical clearances required over roadways as well as incursions by power poles, trees, buildings, etc. for both the existing and ultimate approaches. As depicted in the approach zone plan for Runway 6-24 there are no obstacles that penetrate the approach slope beyond those already noted in the discussion of Runway Protection Zones.

9.7 AIRPORT LAND USE PLAN

The Airport Land Use Plan (**Sheet 13**) shows the proposed utilization of property within the existing and future boundary of RSW. This drawing identifies various land use designations for airport owned property ranging from Airport Operations Areas covering portions of the airport utilized by aircraft or those areas required to meet FAA design and safety requirements, to non-aviation revenue support development areas.

9.8 PROPERTY MAP

An Airport Property Map features the tracts of land owned by the Airport and provides informative detail on those tracts such as the date of acquisition, the acreage, the purposeful interest in which the property was acquired, and the federal project number if paid for with federal aid. The property map also reveals the Airport's proposed property acquisition and informative detail on those tracts as well. The RSW Airport Property Map is presented on **Sheets 14** and **15**.

9.9 SUMMARY

The ALP set is a basic planning tool generated by the master plan process. It provides an informative basis to guide future planning and expansion efforts at RSW while maintaining and protecting the long-term viability of the airport. Implications of development to operations, expansion, land use compatibility, etc., can be readily identified and explored to ensure that airport growth occurs in a deliberate and efficient manner. To achieve full benefit of the ALP set and ensure project funding eligibility, it should be continually updated to reflect current conditions.

10 APPENDICES

10.1 Appendix A – Terminal Disposition

APPENDIX A – TERMINAL DISPOSITION

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT

TERMINAL DISPOSITION EVALUATION

EXECUTIVE SUMMARY

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SOUTHWEST FLORIDA INTERNATIONAL AIRPORT

TERMINAL DISPOSITION EVALUATION EXECUTIVE SUMMARY

INTRODUCTION

TKW Consulting Engineers, Inc. was retained by DMJM Aviation Inc. to conduct a disposition analysis of the existing passenger terminal at Southwest Florida International Airport (RSW) for the Lee County Port Authority (LCPA). The purpose of this evaluation is to examine the existing Southwest Florida International Airport Airside and Landside terminal A and B structures and systems and to provide recommendations related to its future use once air carrier and passenger operations transition to the new midfield terminal (estimated in 2005). This analysis includes demolition and potential re-use options and a determination of order of magnitude costs and practicability of bringing the structure into compliance with the current State of Florida Building Code and Fire and Life Safety Codes.

The existing terminal facility is located in Lee County, Florida at approximate latitude 026°32'10.2"N and longitude 081°45'18.6"W. This facility is situated between Runway 6-24 to the south and the Chamberlin Parkway loop road to the north. The terminal includes approximately 380,000 square feet of enclosed space on two levels.

The RSW terminal, as it is now constructed, has been completed in three different phases:

- Main Terminal including Concourses A and B - The Main Terminal including Concourses A and B were completed in May of 1983.
- International Arrivals Building (IAB) – The International Arrivals Building (IAB) was added to the west end of the main terminal for processing of international passengers in 1993.
- Concourse B Extension - Concourse B Extension is a three-gate addition to the existing terminal and was completed in 1999.

The current utilization of the terminal is inherently the greatest challenge when projecting other possible uses for the building. The building is a specialty use structure with a unique design attributable to the specified use. Any reuse or modification to the building, or portions thereof, will require extensive design and construction planning not covered by this document. This evaluation provides an order of magnitude for cost estimation.

Many modifications may be necessary to bring the building, or portions thereof, up to existing code for reuse. A general assessment of the conditions of the buildings and mechanical and electrical systems was performed. This assessment of the terminal included:

- Evaluation of accessible building areas including exterior walls, interior walls, ceiling, roof, slab, foundations, concrete and asphalt areas.
- Evaluation of mechanical and plumbing systems.
- Assessment of electrical systems.
- Review of drawings of underground utilities.
- Interviews with multiple LCPA personnel.
- Review of the Draft Master Plan Update prepared by Birk Hillman.
- Review of tarmac area and hydrant piping system.
- Analysis of pertinent life safety and fire issues.
- An assessment of potential environmental hazards present in the building.

In order to supplant the in-house expertise of TKW and to properly consider the potentialities and costs for reuse of the terminal or portions thereof, TKW enlisted the services of professionals in the fields of architecture, mechanical/electrical/plumbing engineering, roofing structure and analysis, asbestos and lead paint investigation, and cost analysis. The team of experts assembled for this project includes the following firms:

Architecture One, Inc.
Teco/BGA, Inc.
Scott Bonk and Associates, Inc.
Castech, Inc.
Asbestech/EnviroHome, Inc.

Individual reports from these various professional specialties were prepared for reference purposes. Portions of each report have been incorporated throughout the evaluation and this document to provide a cohesive composite for analysis and review.

Based upon the inspections and subsequent meetings and reports from the team of experts, four options were selected for terminal disposition evaluation. These four options are:

- **Option 1** - Reutilization of the entire existing terminal facility for various uses.

- **Option 2** - Remove the Main Terminal and Concourses A and B, and leave the Concourse B Extension and the International Arrivals Building (IAB).

- **Option 3** - Remove the Main Terminal, Concourses A and B, and Concourse B Extension, and leave the IAB.

- **Option 4** – Remove the entire existing terminal facility to grade.

LIMITATIONS OF DISPOSITION

Existing Airline and Port Authority Agreements

As part of the 1998 Amended and Restated Airport Use Agreement between the Lee County Port Authority Board of Port Commissioners and the participating RSW airlines, Section 34 of this agreement states that "Unless the Port Authority and an MII (Majority-In-Interest vote by the airlines) otherwise agree prior to the Midfield Terminal Project Operational Date, Port Authority agrees that it shall, promptly after such date, commence and then complete the demolition of the existing Terminal at the Airport." The entire demolition of the existing terminal is also included as part of the 1999 Majority-In-Interest approval as a condition of the participating RSW airlines support and funding for the Midfield Terminal Project. Any conclusions of this study that result in keeping all or a portion of the existing terminal building would require MII approval by the RSW airlines and ratification by the Board or Port Commissioners.

Security

Any analysis of potential reuse options for the terminal facility must consider security issues. Given the location of the terminal building and the general access from this area to all airside areas of the airport, security considerations for any reuse are a mandatory component of potential tenant occupation of the area.

Landside utilization of the terminal facility would require a commitment of security resources to any proposed conceptual development. Essentially, the terminal building would have to become a totally independent landside component of the airport. This type of arrangement would negate the potential utilization of ramp space and the balance of the existing area for airside applications. For security reasons and for the potential of using the terminal area for airside purposes, the utilization of the terminal area for airside and not landside purposes is preferred.

FAA Grant Issues

In order to facilitate the financing of projects at RSW, grants from the Florida Department of Transportation (FDOT) and the Federal Aviation Administration (FAA) were applied for, secured and utilized for the purchase, design and construction of various terminal projects. The utilization of these grant dollars by the LCPA involved the commitment to maintain the project and/or equipment for a prescribed period of time. Grant investments that are made for the design and construction of buildings or renovations have a useful life of 20 years. Equipment purchases are designated as having a useful life of approximately 10 years. The majority of funded equipment purchases will either be fully depreciated at the time of actual terminal disposition or the reselling of the equipment may offset the remaining costs. For these reasons, equipment purchases are not evaluated in this

report. The Port Authority will coordinate the issue of grant reimbursement with the FDOT and the FAA. However, for the purposes of this study, no grant reimbursement is assumed for any option.

Costs to Maintain Building Without Tenants

The current operation of the terminal building has a specific cost associated with repair, maintenance, and utilities. Indirect costs including insurance, taxes, etc. are potential ongoing cost liabilities. Upon modification of the existing building, or demolition of a portion of the building, there will still be a repair, maintenance, utility cost, and indirect cost component. For purposes of this analysis, these costs have been estimated based upon the use of the building and size and complexity of the modification.

Hurricane Shelter Options

The evaluation of the terminal building for re-use should include an analysis of the potential to use all, or part, of the building as a hurricane shelter. Lee County currently has a shortage of accessible hurricane shelter space. In order to qualify as an appropriate shelter option, a number of factors, as outlined by Lee County Emergency Management, must be met. These factors are outlined below. Adequacy of the terminal building in meeting these guidelines is italicized in response.

- SLOSH Flooding Zone: The building's lowest floor elevation above the Category 3 hurricane storm surge flooding level as defined by the most recent data from the Charlotte Harbor SLOSH model, or two feet above the highest point of the road adjacent to the building, whichever is higher.
  All floor elevations of the terminal building are above the storm surge SLOSH zones for Category 3 hurricanes.

- FIRM Flooding Zone: B or X (post 1987), with at least one access route designed for the 1 in 25 year flood event.
  The terminal building is located in a B FIRM flooding zone.

- Elevation: Shelter spaces 0-3 feet above the Base Flood Elevation (BFE).
  Shelter space would be above this BFE.

- Wind Design Certification: Design to the 150 mph peak gust wind speed using ASCE-7 procedures with no importance factors considered, certification by a structural engineer or architect.
  The existing facilities were not originally designed to this criteria. Wind design to 150 mph peak gust wind speed cannot be certified without additional review, analysis, and design. Modifications to the

existing construction (i.e. structural improvements, protection of openings, etc.) may be required for certification.

- Wall Envelope: Reinforced concrete or masonry exterior walls, with vertical rebars spaced at 4 - 8 feet on center.
  Wind design to 150 mph peak gust wind speed cannot be certified without additional review, analysis, and design. Modifications to the existing construction may be required for certification.

- Roof Envelope: Sufficiently anchored to exterior walls to meet specified internal wind pressure loads, prevent fluttering and racking, and to avoid progressive collapse. Solid skin design of a heavy gauge metal type or equivalent roof covering. Roof mounted mechanical equipment sufficiently anchored to meet wind design certification. No skylights or roof turbines.
  Wind design to 150 mph peak gust wind speed cannot be certified without additional review, analysis, and design. Modifications to the existing construction may be required for certification.

- Roof Drainage: Scuppers required for roofs and enclosing parapets. Designed to facilitate cleaning of roof drains and scuppers.
  Existing roof drainage conditions are adequate.

- Aperture Protection: Limited apertures, full aperture protection of lowest ten stories from penetration from windblown debris by strengthened glazing, baffles, window and door protection meeting Miami-Dade County missile impact protection criteria, or equivalent.
  Aperture protection is not provided per the current construction. This feature could be added but at significant cost.

- Fire/General Safety: Meets all applicable codes and standards with battery emergency access lights.
  Fire and safety standards can be met.

- Handicap Accessibility: Meets minimum applicable codes and standards.
  Handicapped accessibility meet code.

- Electrical: Pre-wired for portable emergency generator hook-up connection to lighting (including emergency lighting) air circulation system (not cooling, only air movement), cooler/freezer (if present), building intercom (if present), fire alarm and all life safety items, telephone and elevator (if present and part of shelter).
  Electrical standards would require significant modification and cost.

- Water Source: Potable water storage and/or delivery of 5 - 7 gallons per person sheltered per day.
  This standard could be accommodated.

- Sanitary Capabilities: A minimum of one toilet, and storage and/or delivery of additional toilet unit at the rate of one each per 40 persons sheltered.
  This standard could be accommodated.

A review of Lee County hurricane shelter standards indicates that the terminal building, or portions of the building, may have limited adequacy as a hurricane shelter, but not without significant modification and cost. Concourses A and B, and Concourse B Extension present concerns regarding potential conversion due to the number of building openings.

Any consideration of utilizing the facility as a hurricane shelter must account for a number of logistical factors in addition to these standard guidelines. Airports are designated for ingress and egress and it may actually be detrimental to the community to stress the resource by having the Airport be considered a destination area in the event of a hurricane. Additionally, the value to the community of the existing terminal building may be more readily realized by using this area for staging of recovery equipment and personnel.

RE-USE ANALYSIS OF TERMINAL AT PAGE FIELD GENERAL AVIATION AIRPORT

In order to fully assess the potential reuse options for the existing RSW terminal facility it is beneficial to evaluate the re-use success or lack thereof, at a similar abandoned terminal facility at Page Field General Aviation Airport (FMY). The LCPA moved out of the North side FMY Terminal in 1981. This facility remained unoccupied for approximately 17 years. During this time costs were incurred for the upkeep of this facility.

After the period of building dormancy, leasing of the facility was initiated. Currently, three state administration offices occupy 40,243 square feet of the 63,000 square foot airport terminal.

- **Florida Department of Law Enforcement** (FDLE) was first tenant at FMY, beginning in 1998. FDLE utilizes 24,223 sq. ft in office space. LCPA costs included $149,030 to design (includes design and construction analysis) and $2,776,998 to construct the space. Construction costs included total building interior demolition, overlay of parking lot and access roads, replacement of parking lot light poles, new lift station to accommodate total build out and site utility improvements to accommodate total build out.

- **Florida Highway Patrol** (FHP) utilizes 5,686 sq. ft. in office space with LCPA cost of $59,000 to design and $533,768 to construct.

- **On Call** utilizes 10,334 sq. ft. in office space with LCPA cost of $357,138 to construct (this is an estimate derived from tenants construction performance bond and additional construction components provided by Page Field). Design costs are not available

The Lee County Port Authority has spent a total of $3,875,934 in design and construction costs with estimated build out costs of approximately $9 million. Estimated time to recover renovation/demolition costs is expected to be approximately 25 years. The effort to maintain, renovate, and lease the FMY terminal building has proven to be an overall costly proposition with average costs well over $100 per square foot. It is anticipated that renovations to RSW facilities would approximate this average cost.

ANALYSIS OF EXISTING RSW FACILITY SYSTEMS

The evaluation of the RSW terminal facility and potential reuses of this facility must consider the types and adaptability of existing systems for potential alteration. Mechanical, electrical, and plumbing (MEP), of the existing terminal were examined for code compliance and assessment of condition and remaining useful life. The hydrant piping system, communications system, roofing components, environmental conditions of the building and the existing terminal parking areas were examined as well. The assessment of these systems and the costs associated with the modifications of these systems were compiled and formatted to reflect various options for reuse. Details of MEP configuration and potential modification are presented within the full report text. Costs for modifications of existing systems are included with this summary.

ANALYSIS OF RE-USE OPTIONS

In order to evaluate potential reuse of the terminal building, or portions thereof, specific reuses or the building were examined. The following potential options for reuse of the terminal building were evaluated:

- Office Space
- Warehouse Space
- Industrial Space

There are several areas of the building code that will impact the cost and suitability of conversion to the above uses. These include the type of construction of the various parts of the terminal building, fire separation of upper and lower levels, exiting requirements, enclosure of stairs and sprinkler requirements.

Several different utilization classifications for the existing terminal building were examined extensively with the following conclusions.

- Industrial use of the building would present numerous problems. Typical industrial uses require ceilings heights not available in this facility. In addition most industrial uses require grade level access for receiving of materials and shipping of finished products. This could be provided on the lower floor only and would require controlled secure vehicular access points to the surrounding apron. The upper floors of the building would have limited use except possibly for auxiliary office space.
- Warehouse use also presents difficulties. As with industrial uses most storage occupancies require high ceiling heights and grade level access. In this use also the upper levels would be of limited use except as office areas that are typically of minimal area in storage uses.
- Office use is the most compatible with the current building configuration. The available ceiling heights are adequate for most office areas. The depth of the building will dictate that some areas of the main terminal and international arrivals building will not have access to day lighting. Windows for most offices are easily achievable in the concourse areas. Exiting is adequate for the anticipated occupant loads and the required distances to exits can be provided with additional enclosed stairways as discussed above.

Given this analysis, areas of the building have been compared by looking at re-utilization as office space. Four different options for conversion to office space with associated costs are presented.

Option 1 - Reutilization of the Existing Terminal Facility

In this option the entire existing terminal facility would be prepared for reuse as office space. Reuse of all or portions of the building would require that the interior finishes, systems and partitions be removed to provide “shell space” for later division and improvements for multiple tenants. New interior exit corridors would be added to facilitate movement of people from the current terminal curb to the upper and lower floors of the main terminal and concourses. The existing six enclosed exit stars along the south side of the main terminal would be utilized for emergency exiting. New enclosed stairways would be added to the ends of concourses A and B and the concourse B extension. MEP systems would require extensive modification.

- Costs to Convert Entire 380,000 Square Feet to Office Space

Interior Demolition/Modification	$11,050,000
Mechanical Renovation	$ 5,715,000
Electrical Renovation	$ 5,715,000
Plumbing Renovation	$ 1,905,000
Fire Sprinkler Renovations	$ 762,000
MEP Demolition	$ 381,000
Ongoing Direct/Indirect Costs	$ 1,723,000
Roof Repairs	$ 1,696,000
TOTAL	$28,947,000

The above cost equates to a cost of approximately $76 per square foot for renovation. Similar new construction would cost approximately $100 per square foot for office space of this size.

Option 2 - Remove Main Terminal and Concourses A and B

In this scenario the Main Terminal and Concourses A and B would be demolished, leaving the Concourse B Extension and International Arrivals Building as stand-alone buildings for office space. Some exterior finish work would be required where the buildings currently abut the Main Terminal. Additional enclosed stairways would need to be provided at each end of the Concourse B Extension, as well as the northeast corner of the International Arrivals Building. MEP systems would require conversion.

- Costs to Demolish 300,000 Square Feet and Convert 80,000 Square Feet to Office Space

Demolition	$ 2,100,000
Construction Modification	$ 1,600,000
Mechanical Renovation	$ 1,200,000
Electrical Renovation	$ 1,200,000
Plumbing Renovation	$ 400,000
Fire Sprinkler Renovations	$ 160,000
MEP Demolition	$ 80,000
Roof Repairs	$ 372,000
Ongoing Direct/Indirect Costs	$ 861,461
TOTAL	$ 7,973,461

The above cost equates to a cost of approximately $100 per square foot for renovation. Similar new construction would cost approximately $120 per square foot for office space of this size.

Option 3 - Remove the Main Terminal, Concourses A and B, and Concourse B Extension

This option includes demolition of the Main Terminal, Concourses A and B, and the Concourse B Extension, leaving the IAB for use as office space. The IAB is potentially the most suitable portion of the existing facility for re-use as office space. This area is relatively new and the configuration works well for office use. As above, a new enclosed stair would need to be provided at the northeast corner of the IAB. MEP systems would require conversion.

- Costs to Demolish 332,000 Square Feet and Convert 48,000 Square Feet to Office Space

Demolition	$ 2,324,000
Construction Modification	$ 960,000
Mechanical Renovation	$ 720,000
Electrical Renovation	$ 720,000
Plumbing Renovation	$ 240,000
Fire Sprinkler Renovations	$ 96,000
MEP Demolition	$ 48,000
Roof Repairs	$ 372,000
Ongoing Direct/Indirect Costs	$ 430,730
TOTAL	$ 5,910,730

The above cost equates to a cost of approximately $123 per square foot for renovation. Similar new construction would cost approximately $130 per square foot for office space of this size

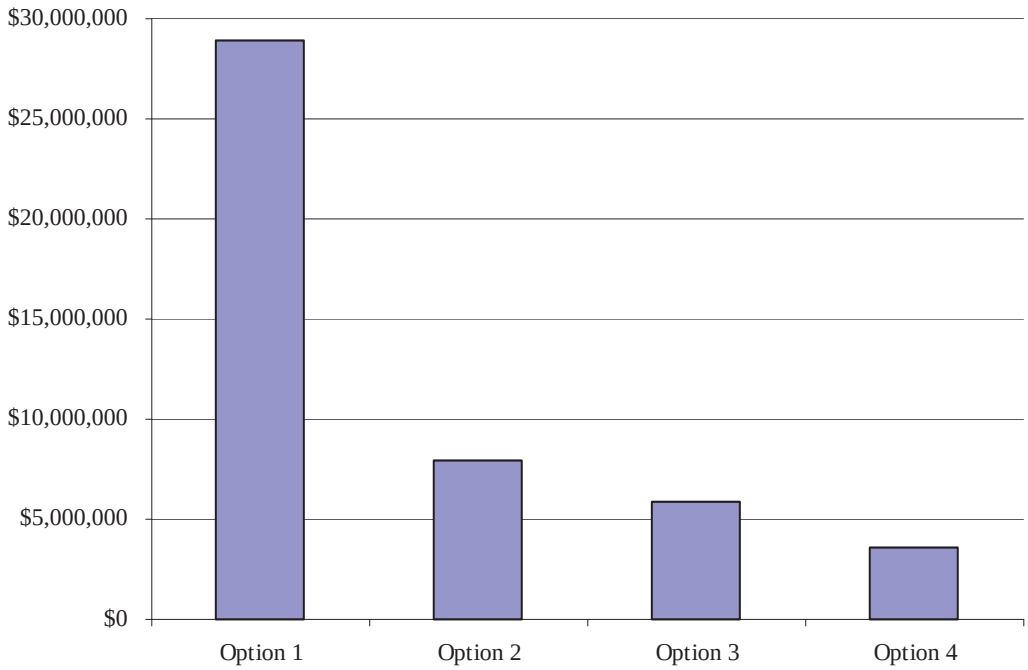
Option 4 – Remove the Entire Existing Terminal Facility to Grade

In this option the entire existing terminal facility would be demolished or deconstructed and the area prepared for other airside uses.

- Demolish 380,000 Square Feet

Demolition	$ 2,660,000
MEP	$ 381,000
TOTAL	$ 3,041,000

A synopsis of costs for the four options is presented in the following chart:



By considering the potential order of magnitude costs for terminal modification, it is apparent that reuse of the existing facility, Option 1, may be cost prohibitive on the front end. These costs may be recouped over time, as the building, or portions thereof, are leased to tenants, but the timing and sufficiency of lease income to offset costs cannot be guaranteed. Options 2 and 3 involve significant modifications to buildings and related systems, and again require tenant participation for long-term success and financial remuneration. Option 4, the removal of the facility to grade, allows for the least amount of expenditure initially and the maximum amount of flexibility as far as re-use.

EVALUATION CONCLUSIONS

This evaluation of terminal disposition options concludes that it is consistent, from a cost standpoint, to support the recommendations of the Draft Master Plan. Option 4, the demolition of the existing terminal facility, presents the opportunity to conform with the Draft Master Plan at the least potential initial cost to the LCPA and is the recommended option. The removal of the existing terminal provides flexibility for secure, airside reutilization of this area while maintaining consistency with the 1998 Amended and Restated Airport Use Agreement between the Lee County Port Authority Board of Port Commissioners and the participating RSW airlines.

10.2 Appendix B – Florida Clearing House Letters

APPENDIX B – FLORIDA STATE CLEARING HOUSE LETTERS

STATE OF FLORIDA

DEPARTMENT OF COMMUNITY AFFAIRS

"Dedicated to making Florida a better place to call home"

JEB BUSH
Governor

STEVEN M. SEIBERT
Secretary

April 12, 2002

Mr. Jeffrey W. Breeden
Reynolds, Smith and Hills, Inc.
4651 Salisbury Road
Jacksonville, Florida 32256

RE: Lee County Port Authority - Preliminary Review - Development of Regional Impact (DRI) Substantial Deviation and Airport Master Plan Update for the Southwest Florida International Airport - Ft. Myers, Lee County, Florida
SAI: FL200202061483C

Dear Mr. Breeden:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4231, 4331-4335, 4341-4347, as amended, has coordinated a review of the above-referenced project.

The Florida Department of Transportation (DOT) has determined that the proposed improvements will impact the surrounding transportation network, and should be addressed as a Substantial Deviation within the DRI process. A detailed traffic analysis study must be provided by the applicant as part of this process. Issues such as drainage and driveway/access permits are already being coordinated with DOT, and the DOT Aviation Office reports that the airport's development plans are consistent with DOT's Work Program as well as the Lee County Port Authority's Airport Master Plan. The applicant's proposal to construct a new interchange on Interstate 75 between the existing I-75 interchanges at Alico Road and Daniels Parkway would not be in conformance with DOT's three-mile Interchange Spacing Standard or consistent with the I-75 Master Plan. DOT has been working with the airport and Lee County officials to develop other, more cost-effective alternatives to the direct-access proposal. Please refer to the enclosed DOT comments for further details.

2555 SHUMARD OAK BOULEVARD • TALLAHASSEE, FLORIDA 32399-2100
Phone: 850.488.8466/Suncom 278.8466 FAX: 850.921.0781/Suncom 291.0781
Internet address: http://www.dca.state.fl.us

CRITICAL STATE CONCERN FIELD OFFICE
2796 Overseas Highway, Suite 212
Marathon, FL 33050-2227
(305) 289-2402

COMMUNITY PLANNING
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 488-2356

EMERGENCY MANAGEMENT
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 413-9969

HOUSING & COMMUNITY DEVELOPMENT
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 488-7956

The Fish and Wildlife Conservation Commission (FWC) notes that previous comments on this project remain applicable. The new project components will also require additional wildlife surveys. To compensate for the additional impacts associated with this proposal, the existing mitigation plans for the Southwest Florida International Airport will need to be expanded. Please refer to the enclosed FWC comments for further details.

The South Florida Water Management District (SFWMD) notes that most of the proposed activities identified in this proposal have been previously approved by the SFWMD under a Conceptual Environmental Resource Permit (ERP) or a Construction and Operation ERP. Issues to be resolved include additional details concerning the new access road from Daniels Parkway, the relocated ASR facility, and the associated preservation mitigation activities. The Southwest Florida Regional Planning Council has provided the Substantial Deviation Questionnaire Checklist for DRI ADA Submission. Please refer to the enclosed comments from these agencies for further details.

Based on the information contained in the project proposal and the enclosed comments provided by our reviewing agencies, the state has determined that, at this stage, the above-referenced action is consistent with the Florida Coastal Management Program (FCMP). All subsequent environmental documents prepared for this project must be reviewed to determine the project's continued consistency with the FCMP. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews.

Thank you for the opportunity to review this project. If you have any questions regarding this letter, please contact Ms. Jasmin Raffington at (850) 922-5438.

Sincerely,

Shirley W. Collins, Acting Administrator
Florida Coastal Management Program

SWC/dc

Enclosures

cc: Larry G. Slayback, Florida Department of Transportation
Bradley J. Hartman, Florida Fish and Wildlife Conservation Commission
Nicole Gwinnett, Southwest Florida Regional Planning Council

SAI Routing Sheet

COUNTY: LEE

DATE: 02/06/2002

SAI#: FL200202061483C

Message:

PROJECT BE REVIEWED BY: (Div/Program)	ASSIGNED REVIEWERS (Print Last Name)	IS PROJECT LOCATED IN APPROVED DRI? (Circle Yes/No) YES / NO				Is Project CONSISTENT w/ COMPLAN? YES / NO	Is Project CONSISTENT w/ FCMP? YES / NO	Do you have any COMMENTS on project? YES / NO	DATE REVIEW COMPLETED	RVWR/ SUPV INIT
		Is Project Consistent with DO?		Is Project DRI Scale?						
DCP 2/7/02 Date Rec'd	RWD	YES	NO	YES	NO	NA			2/10/02	
			Monitoring Letter?		Monitoring Letter?					
		YES	NO	YES	NO					
Complete and forward to Div/Prog Below no later than: 3/8/02										
DEM 2/11/02 Date Rec'd	Hampton							✓	2/14/02	JM
Complete and forward to Div/Prog Below no later than: 3/8/02										
CMP 2/19/02 Date Rec'd	Clayton	Wetlands? YES	NO	Stormwater? YES	NO			✓	2-20-02	DC
Complete and forward to ACC Coordinator no later than: 3/8/02										

COUNTY: LEE

DATE: 2/6/02
COMMENTS DUE DATE: 3/8/02
CLEARANCE DUE DATE: 4/7/02
SAI#: FL200202061483C

Message:

STATE AGENCIES	WATER MNGMNT. DISTRICTS	OPB POLICY UNITS
AGRICULTURE OTTED COMMUNITY AFFAIRS FISH and WILDLIFE COMMISSION X HEALTH STATE TRANSPORTATION ENVIRONMENTAL PROTECTION	SOUTH FLORIDA WMD	ENVIRONMENTAL POLICY UNIT

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evalutation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- — Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- — Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- — Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

The Lee County Port Authority is proposing future development/improvements to the Southwest Florida International Airport. As a preliminary step to preparation of a DRI and Airport Master Plan Update, the Port Authority's consultant - Reynolds, Smith and Hills, Inc. is submitting documents on proposed development items and their locations relative to existing airport facilities, to allow a full statewide agency review to be conducted and enable any identified concerns to be mitigated by Port Authority decision makers as early in the process as possible.

To: Florida State Clearinghouse
AGENCY CONTACT AND COORDINATOR (SCH)
2555 SHUMARD OAK BLVD
TALLAHASSEE, FLORIDA 32399-2100
(850) 414-6580 (SC 994-6580)
(850) 414-0479

EO. 12372/NEPA

- ☐ No Comment
- ☐ Comment Attached
- ☐ Not Applicable

Federal Consistency

- ☒ No Comment/Consistent
- ☐ Consistent/Comments Attached
- ☐ Inconsistent/Comments Attached
- ☐ Not Applicable

From:
Division/Bureau: HSES
Reviewer: Brad Cecil
Date: 2-26-02

COUNTY: LEE

DATE: 2/6/02
COMMENTS DUE DATE: 3/8/02
CLEARANCE DUE DATE: 4/7/02
SAI#: FL200202061483C

Message:

STATE AGENCIES	WATER MNGMNT. DISTRICTS	OPB POLICY UNITS
AGRICULTURE X OTTED COMMUNITY AFFAIRS FISH and WILDLIFE COMMISSION HEALTH STATE TRANSPORTATION ENVIRONMENTAL PROTECTION	SOUTH FLORIDA WMD	ENVIRONMENTAL POLICY UNIT

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State of Florida Clearinghouse

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(850) 414-6580 (SC 994-6580)
(850) 414-0479

EO. 12372/NEPA
- ☒ No Comment
- ☐ Comment Attached
- ☐ Not Applicable

Federal Consistency
- ☒ ~~No~~ Comment/~~Consistent~~
- ☐ Consistent/Comments Attached
- ☐ Inconsistent/Comments Attached
- ☐ Not Applicable

● From:
Division/Bureau: OTTED
Reviewer: MBlakeslee
Date: 2/9/02

COUNTY: LEE

DATE: 2/6/02
COMMENTS DUE DATE: 3/8/02
CLEARANCE DUE DATE: 4/7/02
SAI#: FL200202061483C

Message:

STATE AGENCIES

AGRICULTURE
OTTED
COMMUNITY AFFAIRS
FISH and WILDLIFE COMMISSION
HEALTH
X STATE
TRANSPORTATION
ENVIRONMENTAL PROTECTION

RECEIVED
02 FEB -8 AM 11:18
FLORIDA STATE CLEARINGHOUSE

WATER MNGMNT. DISTRICTS

SOUTH FLORIDA WMD

ORAT-97-5693

OPB POLICY UNITS

ENVIRONMENTAL POLICY UNIT

Lee DRI
SAI - ~~FL200202061483C~~
2002-1693

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evalutation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
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(850) 414-6580 (SC 994-6580)
(850) 414-0479

EO. 12372/NEPA

- ☒ No Comment
- ☐ Comment Attached
- ☐ Not Applicable

Federal Consistency

- ☒ No Comment/Consistent
- ☐ Consistent/Comments Attached
- ☐ Inconsistent/Comments Attached
- ☐ Not Applicable

From: Division of Historical Resources
Bureau of Historic Preservation
Division/Bureau:

Reviewer: Douglas Lewis — Frederick P. Gaske
Date: 3/8/2002 — Deputy SHPO

Question No.	Subject	Regionally Significant	Answer Required	Special Note
PART VI.	SPECIFIC DRI INFORMATION			
31. A-F	AIRPORTS	Y	Y	
32. A-C	ATTRACTIONS & RECREATION FACILITIES	N/A	N/A	
33. A-C	HOSPITALS	N/A	N/A	
34. A-D	INDUSTRIAL PLANTS & PARKS	N/A	N/A	
35. A-J	MINING OPERATIONS	N/A	N/A	
36. A-D	PETROLEUM STORAGE FACILITIES	Y	Y	
37. A-H	PORT & MARINA FACILITIES	N/A	N/A	
38. A-C	SCHOOLS	N/A	N/A	

Question No.	Subject	Regionally Significant	Answer Required	Special Note
16. A-D	FLOODPLAINS	Y	Y	
17. A-H	WATER SUPPLY	Y	Y	
18. A-E	WASTEWATER MANAGEMENT	Y	Y	
19. A-E	STORMWATER MANAGEMENT (Also see FGFWFC Guidelines)	Y	Y Y	
20. A-C	SOLID WASTE/HAZARDOUS MATERAILS	Y	Y	
PART IV.	TRANSPORTATION RESOUCE IMPACTS			
21. A-I SWFRPC.A-I	TRANSPORTATION	Y	Y Y	
22. A-E SWFRPC	AIR	Y	Y Y	
23. A-C SWFRPC. 1-5,	HURRICANE PREPAREDNESS If Onsite Shelters 1-3.	Y	Y	(as applicable)
PART V.	HUMAN RESOURCE IMPACTS			
24. A-C	HOUSING	Y	N	(affordable housing possibly based on employment)
25. A-B	POLICE & FIRE	N	Y	
26. A-E	RECREATION & OPEN SPACE	N	Y	
27. A-C	EDUCATION	N	N	
28. A	HEALTH CARE	N	N	
29. A-D SWFRPC. A-R	ENERGY	Y	Y Y	
30. A-B	HISTORICAL & ARCHAEOLOGICAL	N	Y	(as in preapp. package)

ATTACHMENT I

QUESTIONNAIRE CHECKLIST FOR DRI-ADA SUBMISSION

Question No.	Subject	Regionally Significant	Answer Required	Special Note
PART I.	APPLICANT INFORMATION		Y	
PART II.	GENERAL SECTION			
9.	MAPS	Y	Y	
	A. Site Location		Y	
	B. Aerials		Y	
	C. Topography		Y	
	D. Existing Land Use		Y	
	E. Soils		Y	
	F. Vegetation		Y	
	G. Transects (Plants/Animals)		Y	
	H. Master Development Plan		Y	
	I. Master Drainage Plan		Y	
	J. Transportation		Y	
10.	GENERAL PROJECT DESCRIPTION	Y	Y	
Part 1, A-E	Specific Project Description	Y	Y	
Part 2, A-C	Consistency with Comp. Plan	Y	Y	
Part 3, A.	Demographic & Employment Info.	Y	Y	
Part 4, A-B	Impact Summary	Y	Y	
11. A.	REVENUE GENERATION SUMMARY	Y	Y	
PART III.	ENVIRONMENTAL RESOURCE IMPACTS			
12. A-E	VEGETATION & WILDLIFE	Y	Y	
	(Also see FGFWFC Guidelines)		Y	
13. A-B	WETLANDS	Y	Y	
	(Also see FGFWFC Guidelines)		Y	
	SWFRPC 13.B.1		Y	
14. A-C	WATER	Y	Y	
15. A-D	SOILS	Y	Y	

Parallel Taxiway

The parallel runway will have a parallel taxiway system associated with it along with numerous connector taxiways.

Aircraft Apron Expansion

The Midfield Terminal apron will be expanded on the east and west sides, and will include a taxiway connector to the end of Runway 6.

Construction of Utility Service Corridors

Construction of the additional expansion will spur the need for utility services to the new location, including water, sewer, electrical, gas and communication.

Construction of Surface and Structural Auto Parking

Continued expansion of both surface and structural parking is anticipated throughout the 20-year planning period. The exact number of spaces and phasing will be determined in the Master Plan Update.

Direct Access Connection to 1-75

A direct connection from Interstate 75 to the new terminal via the access roadway is under analysis as part of the Master Plan Update. The selected configuration will be included in the ADA.

Cargo Area Expansion

The current air cargo building is expected to expand and the addition of a second air cargo building on the northeast side of the airport is anticipated.

General Aviation Expansion

The current general aviation apron is expected to expand to the southwest along with associated buildings.

Navigational Aids

The addition of aircraft navigational aids such as an Instrument Landing System for the future parallel runway will be necessary. In some cases, the relocation of navigational aids will be needed. For example; due to the construction of the south parallel taxiway, the glide slope on the end of Runway 6 will need to be moved from the south side to the north side of the runway. All navigational aids are being evaluated as part of the Master Plan process.

Reuse/Demolition of Existing Terminal

As mentioned previously, the current Development Order requires that the existing terminal building be closed upon receipt of the Certificate of Occupancy for the new Midfield Terminal. The Master Plan Update will analyze alternative uses/demolition of the abandoned terminal building and the final recommendation will be included in the ADA.

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT SUBSTANTIAL DEVIATION QUESTIONNAIRE CHECKLIST FOR DRI ADA SUBMISSION

Background

On June 20, 2001, a preapplication meeting was held for the proposed Southwest Florida International Airport Substantial Deviation DRI. The Southwest Florida International Airport (RSW) is located approximately ten miles southeast of the city of Ft. Myers (see attached Exhibit 1). Attending this meeting were the applicant Lee County Port Authority, consultants for the project, Lee County Development Review staff, Florida Department of Transportation and SWFRPC staff. Other review agencies were unable to attend; however, they have received background information on the project and will be providing input throughout the review process.

Project Description

In addition to preparing a Substantial Deviation to the Development of Regional Impact, a Master Plan Update and an Environmental Assessment are concurrently underway for the Airport. All three projects were initiated by the Lee County Port Authority (LCPA) in January 2001. The Master Plan Team has conducted an inventory of the site and has also produced a twenty-year activity forecast for the Airport through the year 2020, which will be used for the traffic analysis. These forecasts estimate enplanement and operational levels for the facility. In addition, the anticipated aircraft fleet mix for the airport has been identified. These forecasts have been approved by the LCPA and will be forwarded to FDOT and the FAA for review and approval. The Master Plan Team anticipates approval of the forecasts by July 2001. The Master Plan Team anticipates conducting and finalizing the facility requirements, alternative analysis and final facility recommendations and phasing for RSW by November 2001. These recommendations and analysis will be incorporated into the ADA for submission to the appropriate agencies. Projects anticipated to be included in the Master Plan Update are listed below.

Commercial Passenger Terminal Building Expansion

A new terminal building is currently under design for a midfield location. The existing terminal building has seventeen gates with approval for twenty-eight gates and the new terminal complex will include a total of twenty-eight gates. The existing terminal will be closed upon the receipt of the Certificate of Occupancy for the new Midfield Terminal Complex and operations will be shifted to the new facility. It is anticipated that the Midfield Terminal will be expanded again during the 20-year planning period to approximately 55 gates and 1,000,000 S.F. The exact phasing and total gates are currently being analyzed as part of the Master Plan Update process.

Parallel Runway

A future 9,100-foot parallel runway is being evaluated and is proposed to be located south of the existing runway and Midfield Terminal. This runway has been anticipated since the 1991 Master Plan and will be refined further during the master planning process.

RPC INTERGOVERNMENTAL COORDINATION AND RESPONSE SHEET

SAI FL200202061483C DATE: 2/6/02

COMMENTS DUE TO CLEARINGHOUSE: 2/6/02

AREA OF PROPOSED ACTIVITY: COUNTY: LEE CITY: Ft. Myers

[X] FEDERAL ASSISTANCE [ ] DIRECT FEDERAL ACTIVITY [ ] FEDERAL LICENSE OR PERMIT [ ] OCS

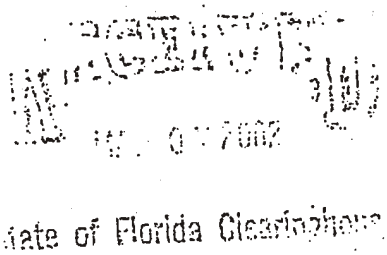
PROJECT DESCRIPTION

The Lee County Port Authority is proposing future development/improvements to the Southwest Florida International Airport. As a preliminary step to preparation of a DRI and Airport Master Plan Update, the Port Authority's consultant - Reynolds, Smith and Hills, Inc. is submitting documents on proposed development items and their locations relative to existing airport facilities, to

ROUTING:

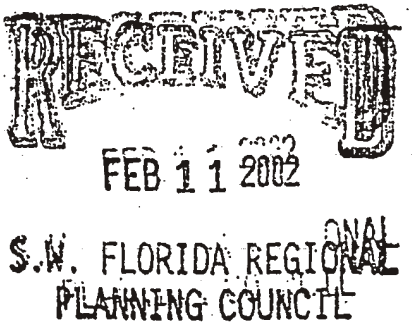
RPC

X SW FLORIDA RPC



PLEASE CHECK ALL THE LOCAL GOVERNMENTS BELOW FROM WHICH COMMENTS HAVE BEEN RECEIVED; ALL COMMENTS RECEIVED SHOULD BE INCLUDED IN THE RPC'S CLEARINGHOUSE RESPONSE PACKAGE. IF NO COMMENTS WERE RECEIVED, PLEASE CHECK "NO COMMENT" BOX AND RETURN TO CLEARINGHOUSE.

COMMENTS DUE TO RPC: 2/6/02



NO COMMENTS: ____

(IF THE RPC DOES NOT RECEIVE COMMENTS BY THE DEADLINE DATE, THE RPC SHOULD CONTACT THE LOCAL GOVERNMENT TO DETERMINE THE STATUS OF THE PROJECT REVIEW PRIOR TO FORWARDING THE RESPONSE PACKAGE TO THE CLEARINGHOUSE.)

NOTES: See attached comments.

ANY CONCERNS OR COMMENTS REGARDING THE ATTACHED PROJECT (INCLUDING ANY RPC COMMENTS) SHOULD BE SENT IN WRITING BY THE DUE DATE TO THE CLEARINGHOUSE. PLEASE ATTACH THIS RESPONSE FORM AND REFER TO THE SAI # IN ALL CORRESPONDENCE.

IF YOU HAVE ANY QUESTIONS REGARDING THE ATTACHED PROJECT, PLEASE CONTACT THE STATE CLEARINGHOUSE AT (850) 414-6580 OR SUNCOM 994-6580.

Fort Myers, Florida 33913-8899

Mr. Craig Smith
Kevin L. Erwin Consulting Ecologist, Inc
207 Bayside Parkway
Fort Myers, Florida 33901

Ms. Kim Dryden
U.S. Fish and Wildlife Service
Office of Ecological Services
Southwest Florida Suboffice
3860 Tollgate Boulevard, Suite 300
Naples, Florida 34114

Mr. Dave Burr
DRI Coordinator
Southwest Florida Regional Planning Council
4980 Bayline Drive, 4th Floor
North Ft. Myers, Florida 33917-3909

Ms. Kim Trebatoski
Lee County
Division of Planning
P.O. Box 398
Fort Myers, Florida 33902-0398

proposal is inadequate for DRI review since the SWFIA will be requesting authorization for impacts to long term areas in the absence of a sufficient wildlife survey. We recommend that all proposed development impact areas be accorded a complete and rigorous survey if those areas are intended to be approved for development in this DRI review. Alternatively, the SWFIA could withdraw the long term areas from development consideration until they are prepared to complete full surveys.

3) The described listed species field survey is of a cursory form and does not include all the necessary species-specific methods necessary for a complete and thorough listed species survey. Pedestrian surveys at only one time of the year will not locate many listed species occurrences. Survey methods need to be species specific, seasonally timed, and follow time of day, weather condition, and replication protocols. We recommend use of the protocols we have previously provided for listed species surveys at the SWFIA. This will involve surveys through the year to address species specific nesting and foraging seasons.

4) For wide-ranging species, it is not sufficient to confine wildlife surveys only to properties owned by the SWFIA. Wildlife surveys should be performed on properties not owned by the SWFIA that the SWFIA has permission to enter. If any properties not owned by SWFIA are included in the DRI, permission must be obtained for surveying these sites or they should be excluded from the DRI.

The level of rigor of wildlife surveys for the SWFIA DRI should be of equivalent breadth and rigor as the surveys implemented for the mid-field terminal expansion. We have previously provided Kevin L. Erwin and Associates (KLECE) with comprehensive survey methods for the species of concern, and expect the same methods to be applied to the DRI review.

We will assist in providing needed background information and current wildlife sightings for the wildlife survey review and report.

If you would like to meet with me or if you have any questions, please contact me at (941) 575-5765.

Sincerely,

James W. Beever III

James W. Beever III
Biological Scientist IV

JWB/jwb
ENV 1-11-3
swfiawildlifemethod2.wpd
CC: Ms. Jami McCormick
Lee County Port Authority
16000 Chamberlin Parkway - Suite 8671

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

DAVID K. MEEHAN, St. Petersburg
H.A. "HERKY" HUFFMAN, Deltona
JOHN D. ROOD, Jacksonville
QUINTON L. HEDGEPETH, DDS, Miami
EDWIN P. ROBERTS, DC, Pensacola
RODNEY BARRETO, Miami
SANDRA T. KAUPE, Palm Beach

ALLAN L. EGBERT, Ph.D., Executive Director
VICTOR J. HELLER, Assistant Executive Director

OFFICE OF ENVIRONMENTAL SERVI
29200 TUCKERS GR
PUNTA GORDA, FL 33
(941) 575-5
FAX (941) 575-5

March 14, 2002

Mr. Jeffrey W. Breeden
Reynolds, Smith and Hills, Inc.
4651 Salisbury Road
Jacksonville, Florida 32256-0901

RE: Lee County, Southwest Florida International Airport, Listed Species Survey Methods

Dear Mr. Breeden:

We have reviewed the material provided in your letter of January 8, 2002, concerning the proposed wildlife survey methods for the twenty-year Master Plan and Development of Regional Impact (DRI) application for the Southwest Florida International Airport (SWFIA). We have the following comments and recommendations.

The project has the potential to impact a variety of listed species, including the Florida panther, Florida black bear, Big Cypress fox squirrel, wood stork, red-cockaded woodpecker, Florida sandhill crane, little blue heron, snowy egret, tricolored heron, roseate spoonbill, white ibis, southeastern American kestrel, burrowing owl, eastern indigo snake, gopher tortoise, gopher frog and American alligator.

Based on the material provided, the proposed wildlife surveys for the proposed project are not sufficient, nor consistent with FWC's "Wildlife Methodology Guidelines for Section 18.D of the application for Development Approval" (Office of Environmental Services, Florida Game and Fresh Water Fish Commission, 15 January 1988).

The following items are the problem areas in your proposed wildlife survey methodology.

1) The method specifies use of the August 1, 1997 listed species lists. This project will span multiple years during which the lists will be updated and revised. The method should specify use of the most current listed species lists and not be tied to the August 1, 1997 list alone.

2) The method divides the areas of species survey into three categories: short term, long term, and conservation easement areas. It further states that the standard intensive surveys will be performed in short term areas. Less rigorous and less intensive surveys are proposed to occur in the long term areas, to be followed by intensive surveys prior to development. No new surveys will be performed in the conservation easement areas and noted observations will come from incidental observations related to other activities. This

Ms. Kim Dryden
U.S. Fish and Wildlife Service
Office of Ecological Services
Southwest Florida Suboffice
3860 Tollgate Boulevard, Suite 300
Naples, Florida 34114

Mr. Daniel L. Trescott
DRI Coordinator
Southwest Florida Regional Planning Council
4980 Bayline Drive, 4th Floor
North Ft. Myers, Florida 33917-3909

Mr. Steve Sullivan
Army Corps of Engineers
Fort Myers Regulatory Office
2301 McGregor Blvd., Suite 300
Fort Myers, Florida 33901

Mr. John H. Hankinson, Jr.
Regional Administrator
United States Environmental Protection Agency
Region 4
Water Management Division
South Florida Office
400 North Congress Avenue, Suite 120
West Palm Beach, Florida 33401

Mr. Rick Joyce and Ms. Kim Trebatoski
Lee County
Division of Planning
P.O. Box 398
Fort Myers, Florida 33902-0398

Ms. Heather Stafford
Estero Bay State Preserve
700 Fisherman's Wharf
Fort Myers Beach, Florida 33931

In the past month, we have resolved the location and size (4' high x 20' wide and 4' high x 6' wide) of two wildlife undercrossings that will be installed in Treeline Boulevard with associated wildlife fencing. These were matters we discussed at the beginning of the permitting process, and should be included in project design and permit specific conditions.

The proposed project is located within the feeding radius of wood storks in the Corkscrew colony. The maintenance of natural hydro-periods in foraging grounds around the Corkscrew colony is vital to the recovery of wood storks in South Florida. The required increased fill of wetlands adjacent to the operating airport will destroy stork foraging areas. How will the project offset this loss? Will the remaining lake designs include draw-down pool features in littoral shelf slopes to favor use by wood storks and other wading birds? What additional mitigation will be provided to offsite the loss of seasonal wetlands for wood stork foraging?

The project site is suitable habitat for the eastern indigo snake. We recommend that the applicant follow the Standard U.S. Fish and Wildlife Service Protection Measures for the Eastern Indigo Snake and prepare an Eastern Indigo Snake Protection Plan.

The permit should specify the entity responsible for the management of the proposed preserves, and a condition that specifies the establishment of an adaptive management review of the initial preserve management plan and annual reviews by regulatory permitting entities, including the FWC.

We will continue interagency coordination on these issues. Please contact me, or Mr. Jim Beever at (941) 575-5765, if you have any questions.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

BJH/JWB
ENV 1-12-2
a:\midfieldtreelinewmd.wpd
cc: Mr. Church Roberts
Johnson Engineering, Inc.
2158 Johnson Street
Fort Myers, Florida 33902-1550

A maintenance program will be implemented in the preserved, enhanced, and created wetlands and upland areas to insure the integrity and viability of the mitigation activities. The maintenance shall be conducted in perpetuity to insure no more than 5% total coverage of exotic and nuisance plant species. Torpedo grass will be maintained at no more than 25% coverage (current coverage is approximately 31%). Mitigation areas will be exotic-free immediately following treatment. After the five-year monitoring period, a final environmental compliance inspection will be scheduled with the South Florida Water Management District. In addition, periodic assessments of the site will be conducted no less than quarterly to identify any potential infestations that will require the attention of the maintenance crew; and periodic maintenance will be performed on a quarterly, semiannual, or annual basis, as appropriate for the species in question, to treat any exotic or nuisance plant species.

Limited authorized access to the site will be controlled in an effort to preserve and maintain the functional habitat value of the site. Passive use will be allowed for Site H.

Regular and periodic observations of wildlife will be made during all monitoring events and other site visits by qualified ecologists. This will consist of recording evidence and sign of wildlife (i.e., direct sightings, vocalizations, burrows, nests, tracks, droppings, etc.). The vegetation, wildlife, photographic, and hydrological data collected during the baseline monitoring will be summarized and presented in the baseline monitoring report. Each wetland will be described and discussed in terms of these parameters. Upland preserves will be assessed for the presence of exotic plants. This report will be submitted to the agencies within sixty days of data collection.

The prescribed fire plan for the Mitigation Park will be a program that mimics the natural fire cycle for the various habitat types identified within the Park. Prescribed burning will be carried out by licensed fire crews. Mesic flatwoods will be burned every three to five years, and wet flatwoods will be burned every three to eight years. Fire maintenance of hydric hammocks will be done primarily by burning the adjacent flatwoods and marshes, reducing the fuel needed to ignite the hammock.

Because the airport project has the potential to adversely affect wide ranging species and sever the connections between coastal preserve lands and eastern large-scale landscape preserves, we have recommended the conservation plan involving the Mitigation Park preserve lands to address the impacts to the habitat value of the sites impacted. However, the original plan we reviewed did not include the new segment of Treeline Avenue, access roads to Interstate 75 signs, or the additional fill of wetlands now required by the Federal Aviation Administration to reduce and avoid bird/airplane collisions. These newly proposed impacts should be assessed in terms of the type and function of the habitat subject to alteration, and the potential for habitat fragmentation as a result of development. The mitigation required for these impacts should be determined, and included in the evaluation of the Mitigation Park benefits.

In general, upland and wetland habitats within the Mitigation Park are of high quality. Human disturbance to vegetation and wildlife is negligible due to limited access to these lands. A total of sixty-nine different native vegetation communities have been identified within the Mitigation Park, from the predominant pine flatwoods, pine with cypress, and freshwater marshes to the to the rare tropical hardwood hammock.

Wildlife surveys conducted within the Mitigation Park have been limited to pedestrian transects and observations recorded during other field work. A total of eleven listed species were confirmed on-site. Large congregations of roseate spoonbills were observed foraging in the Park in late winter, as were sandhill cranes. A sandhill crane nest was found in Section 8 of the Imperial Marsh. A great egret rookery was found in Section 6 of the Imperial Marsh. Two alligator dens were found within the Park, one in Section 5 of the Imperial Marsh and the other in Section 13 of the Flint Pen Strand. A burrowing owl and its burrow was found in Section 29 of Site H. While not directly observed in this survey, Florida panther and Florida black bear have been historically documented within the Park lands. The Park also contains suitable habitat for red-cockaded woodpeckers and eastern indigo snakes. Because the Park allows for a regional wildlife corridor, preservation of these lands will compliment the Department of Interior's Florida Panther Recovery Plan.

A total of 35.56 acres of cypress, 179.28 acres of freshwater marsh, 111.02 acres of pine/cypress, 28.24 acres of wet prairie, and 31.01 acres of hydric shrub are proposed to be created from agricultural fields at Site H. In order to provide for additional wading bird foraging habitat, in particular wood storks, deeper pools are proposed within creation areas. The deep pools are delineated as created open water on the cross-sections and wood stork habitat on the plan views. The deeper pools allow for fish to become concentrated during periods of falling water. A total of 21.25 acres of created wood stork habitat are proposed in Site H. In addition, 37.20 acres of fallow fields will be restored to upland plant communities. All freshwater marshes will be graded one-half foot below final grade, and then backfilled with mulch material from the impact site.

The total proposed creation areas within the Imperial Marsh are 41.82 acres of freshwater marsh, 66.86 acres of pine/cypress, 140.86 acres of restored wetlands, 56.32 acres of restored uplands, and 5.29 acres of created wood stork habitat.

Mitigation totals for the Flint Pen Strand are 106.30 of cypress creation, 45.65 acres of freshwater marsh creation, 82.75 acres of pine/cypress creation, 9.37 acres of newly created wood stork habitat, and 7.00 acres of hydric shrub creation. Other mitigation activities within the Mitigation Park include 236.18 acres of upland enhancement (exotic removal), 1,584.10 acres of upland preservation, 3,232.60 acres of wetland preservation, and 484.67 acres of wetland enhancement. All of the mitigation activities will be completed by June 30, 2003.

the Florida Panther Habitat Protection Plan. The Mitigation Park also provides connectivity to other offsite preservation areas. The Flint Pen Strand portion of the park, located in the southwest corner, connects to Corkscrew Swamp Sanctuary, which ties into Camp Keais Strand, Big Cypress National Preserve and Fakahatchee Strand, and finally to the Everglades National Park.

Habitat types within the Park resemble those found within the Midfield Terminal Complex. These lands are located within an area containing little residential development, with the majority of adjacent activities being rock mining and agriculture. The Mitigation Park extends from SR 82 on the north to Corkscrew Road and the upper limits of the CREW lands on the south. The SR 82 lands and the Imperial Marsh lands are separated by lands within Sections 31 and 32, Township 45 South, Range 27 East, which are currently proposed for mining by Florida Rock. A large portion of Florida Rock's proposed mitigation occurs within Section 32, which provides a connection between the northern portion of the Park and the Imperial Marsh. The Florida Rock permit application is currently undergoing review by the Florida Department of Environmental Protection.

The Mitigation Park is composed of three different areas. The northern portion of the Park, Sections 29 and 30, Township 45 South, Range 27 East, is called the Highway 82 Mitigation Area, commonly known as Site H. Prior to 1960, the land primarily consisted of freshwater marsh, hydric pine flatwoods, and some cypress domes. Both sections have been extensively cleared for row crop and pasture farming. Extensive ditching of the area has lowered the water table and resulted in hydrologically stressed wetlands.

The central part of the Mitigation Park is known as the Imperial Marsh. This area is found in Sections 5, 6, 7, 8, 17, and 18, Township 46 South, Range 27 East. The two northern-most sections (5 and 6) contain the single largest freshwater marsh in Lee County. In addition to this marsh, this area contains mature cypress domes that show no signs of logging activity. The remaining four sections provide a variety of habitat types, including cypress ponds and forests, pine flatwoods, wet prairies and marshes, and fallow agricultural fields. The wetlands within the Imperial Marsh represent a significant groundwater recharge area for Lee County.

The south area of the Park is the Flint Pen Strand Addition, consisting of all or portions of Sections 13, 14, 22, and 23,Township 46 South, Range 26 East. The Flint Pen Strand Addition abuts 415 acres owned by Lee County that is utilized as a wellfield and connects to Flint Pen Strand, which connects to the Corkscrew Swamp Sanctuary to the south. Although the wellfield area will not be altered from its current purpose as a potable water source for Lee County, it will remain in a natural state that allows the Mitigation Park a contiguous connection to the adjacent preserves. Also, there is a fenced wildlife underpass under Corkscrew Road that provides a wildlife connection between the Mitigation Park and adjacent preservation areas. The Flint Pen Strand Addition contains cypress and cypress/pine forest, pine flatwoods, and fallow agricultural fields.

forest, 26 acres of mixed cypress and pine forest, 260 acres of freshwater marsh, and 56 acres of wet prairies. As compensation for wetland impacts, the applicant proposes to utilize the 6,989.69-acre Mitigation Park preserve established during the conceptual permit review for the original midfield terminal plans.

Currently, the site consists of 289.85 acres of improved pasture; 10.22 acres of abandoned agriculture; 26.8 acres of fallow farm field; 27.63 acres of herbaceous field; 55.25 acres of palmetto prairie; 269.39 acres of slash pine flatwoods; 2.19 acres of pine and mesic oak; 437.29 acres of pine flatwoods with exotics; 158.78 acres of mixed hydric slash pine, cypress, and melaleuca forest; 151.76 acres of melaleuca forest; 81.92 acres of Brazilian pepper forest; 255.23 acres of wax myrtle/willow wetlands; 106.09 acres of ditches; 354.24 acres of cypress swamp; 422.65 acres of freshwater marsh; 105.97 acres of wet prairie; 24.3 acres of disturbed ground; 349.1 acres of existing airport; 88.28 acres of roads; 18.54 acres of power line easement; and 4.63 acres of dirt trails. The proposed midfield terminal expansion landscape will consist of no native upland forest and no wetlands. The Treeline Boulevard right-of-way and Briarcliff Ditch portion of the project will retain some residual native landscape.

The project site is documented for the occurrence of the Florida panther, Florida black bear, Big Cypress fox squirrel, wood stork, red-cockaded woodpecker, Florida sandhill crane, little blue heron, snowy egret, tricolored heron, roseate spoonbill, white ibis, southeastern American kestrel, burrowing owl, eastern indigo snake, gopher tortoise, gopher frog, and American alligator. The project area has been used as an important travel way for black bears and panthers in southern Lee County. Bears have been documented east of Interstate 75, since 1989 to as recent as 2000, on the proposed alignment of the new Treeline Avenue/Ben Hill Griffin Boulevard extension and east to the greater Corkscrew Swamp system. Wildlife surveys for the project site were performed by the applicant in 1999-2000. Based on the material provided, the wildlife surveys for the proposed project are sufficient, and consistent with FWC's "Wildlife Methodology Guidelines for Section 18.D of the application for Development Approval" (Office of Environmental Services, Florida Game and Fresh Water Fish Commission, 15 January 1988).

Mitigation will be accomplished in 6,985.69 acres of lands previously identified in the South Florida Water Management District (SFWMD) conceptual permit. This area is referred to as the Mitigation Park. The Mitigation Park was identified, in coordination with the FWC, as a preferable alternative to onsite mitigation for the Airport Expansion, because it is less likely to have conflicting goals. Wetlands near airports become a safety issue because of bird strikes, as documented in the FAA Advisory Circular "Hazardous Wildlife Attractants on or Near Airports" (AC 150/5200-33 dated May 1, 1997).

Portions of the property within the Mitigation Park area have been previously identified as high priority in various environmental conservation and preservation programs, including Save Our Rivers, Preservation 2000, Lee County Sensitive Lands, regional wildlife corridor plans, and

BARBARA C. BARSH
Jacksonville

QUINTON L. HEDGEPETH, DDS
Miami

H.A. "HERKY" HUFFMAN
Deltona

DAVID K. MEEHAN
St. Petersburg

JULIE K. MORRIS
Sarasota

TONY MOSS
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EDWIN P. ROBERTS, DC
Pensacola

JOHN D. ROOD
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OFFICE OF ENVIRONMENTAL SERVI
BRADLEY J. HARTMAN, DIRECT
(850)488-6661 TDD (850)488-9
FAX (850)922-5

May 14, 2001

Ms. Dawn Underwood
South Florida Water Management District
2301 McGregor Boulevard
Fort Myers, Florida 33901

RE: SFWMD Applic. # 000403-6, USACOE # 199301156 (IP-SR), DRI #2000-134, Lee County, Southwest Florida International Airport, Midfield Terminal Complex and Treeline Avenue/Ben Hill Griffin Parkway extension between Daniels Road and Alico Road

Dear Ms. Underwood:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed this application, and has the following comments and requests for additional information. Our response to this application was coordinated with interagency staff, including the South Florida Water Management District and the U. S. Fish and Wildlife Service staff. A copy of this letter will be provided directly to the applicant and the applicant's consultant.

The applicant proposes to construct a new mid-field terminal complex including: a new roadway segment of Treeline Avenue/Ben Hill Griffin Parkway between Daniels Road and Alico Road, a new Terminal Access Road that connects to the new Treeline Avenue, a new parallel taxiway and ramp, a new terminal parking lot, south detention and westerly detention areas, associated water conveyance systems (including lakes, channels, ditches, culverts and weirs, and outfall conveyance to Briarcliff Channel at the southwest corner of the Fiddlesticks development), access roads to signs on Interstate 75, and presumably a new midfield terminal building.

The project site consists of 3,286.28 acres, including 710 acres of wetlands located primarily south of Daniels Road and the Southwest Florida International Airport and north of Alico Road, east of Interstate 75. The applicant proposes to impact 690 acres of ERP wetlands, including 203 acres of hydric pine flatwoods, 72 acres of shrub wetlands, 73 acres of cypress

We will continue interagency coordination on these issues. Please contact me, or Mr. Jim Beever at (941)575-5765, if you have any questions.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

BJH/JWB
ENV 1-3-2
swfiasubdevsai.wpd
Enclosures
CC: Mr. Mark R. Fisher, AAE
Director, Department of Development
Lee County Port Authority
16000 Chamberlin Parkway, Suite 8671
Fort Myers, Florida 33913

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

DAVID K. MEEHAN, St. Petersburg
H.A. "HERKY" HUFFMAN, Deltona
JOHN D. ROOD, Jacksonville
QUINTON L. HEDGEPETH, DDS, Miami
EDWIN P. ROBERTS, DC, Pensacola
RODNEY BARRETO, Miami
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March 22, 2002

Ms. Cindy Cranick
Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100

Re: FL200202061483C, DRI #2000-134, Lee County, Southwest Florida International Airport Substantial Deviation

Dear Ms. Cranick:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the referenced document, and provides the following comments.

We have previously commented on an earlier, smaller version of this project (see enclosed letter dated May 14, 2001), and these comments remain applicable. New additions to this proposal beyond project components that we have previously reviewed include a new intermodal transportation facility for transfer of freight, a new approximately 300-room hotel, a potential golf course near Daniels Road at the northeast side of the site, and a commercial/office park development along Daniels Parkway.

Additional wildlife surveys will be needed to address these new project components. Please see the attached letter dated March 14, 2002. To compensate for the additional impacts associated with the proposed new project components, the existing mitigation plans for the Southwest Florida International Airport will need to be expanded.

To determine these impacts, and appropriate mitigation requirements, a detailed traffic analysis study will need to be provided by the Applicant as part of that process. The district's DRI Coordinator is John Czerepak. He may be contacted in Bartow at (863) 519-2343.

3. Issues such as drainage and driveway/access permits are already being coordinated with the Department, with no major issues anticipated, pending the outcome of the upcoming DRI review. In addition, the District Aviation Office reports that the airport's development plans are consistent with the Department's Work Program (FM #2065701 and #2066051), as well as the Lee County Port Authority's Airport Master Plan.

Thank you for allowing us the opportunity to review this document. Should you have any questions, please contact Larry Slayback, District ICAR Coordinator, at Suncom 741-4300 or (941) 461-4300.

Sincerely,

Larry G. Slayback
District ICAR Coordinator

LGS/ls
LS-L03-02

Attachment

cc: Sandra Whitmire, MS 28
Ricky Langley, MS 1-3
Mike Rippe, MS 1-98
Dick Combs, MS 1-40
Mark Schulz, MS 1-40
Charles Bleam, MS 1-40
Debra Snyder, MS 1-8
Mike Tako, MS 1-36
Tony Russo, MS 1-8
Marcelle Zakhary, MS 1-98
John Starling, MS 1-39
Wayne Chewning, MS 1-39
John Czerepak, MS 1-36
Jim Baxter, MS 1-36
Joseph Philips, MS 1-98
Sarah Clarke, MS 1-98
Thomas Garcia, MS 1-93
Johnny Limbaugh, MS 1-98
Donald Barrett, MS 1-98
Glenn Ahlert, MPO

Florida Department of Transportation

JEB BUSH
GOVERNOR

THOMAS F. BARRY, JR.
SECRETARY

March 14, 2002

Ms. Jasmin Raffington
State Clearinghouse
Florida Coastal Management Program
Department of Community Affairs
2555 Shumard Oak Boulevard, Suite 325
Tallahassee, Florida 32399-2100

RE: ICAR REVIEW (SAI# FL200202061483C)
SOUTHWEST FLORIDA INTERNATIONAL AIRPORT (LEE COUNTY)

Dear Ms. Raffington:

District One, Florida Department of Transportation, has reviewed the above-referenced Intergovernmental Coordination and Review (ICAR) documents, and offers the following comments:

1. The Applicant's documentation proposes construction of a new interchange on Interstate 75 between the existing I-75 interchanges at Alico Road and Daniels Parkway. Because such a proposal would not be in conformance with the Department's three-mile Interchange Spacing Standard or consistent with the I-75 Master Plan, the Department has been working closely with airport and Lee County officials to develop other, more cost-effective alternatives to the airport's direct-access proposal.

   One such alternative, referred to as "Concept F", proposes a north-south collector-distributor system parallel to Interstate 75, which would connect to the existing interchanges at I-75/Daniels Road and I-75/Alico Road. The Department and airport staff tentatively favor this concept, subject to concurrence by an I-75 Project Development and Environment (PD&E) Study and subsequent FHWA design/location approval. It is critical that the Applicant continue its close coordination with the Department through completion of the PD&E Study (FM #4062251). The study's Project Manager is Charles Bleam, who may be contacted in Bartow at (863) 519-2758. Local district contacts include: Mike Rippe, Director of the Southwest Area Office in Fort Myers, Don Barrett, I-75 Corridor Coordinator, and John Limbaugh, Community Liaison, all of which may be reached at (941) 461-4300.

2. Irrespective of the I-75 access issue above, the proposed improvements to Southwest Florida International Airport will impact the surrounding transportation network, and will need to be addressed as a Substantial Deviation within the Development of Regional Impact (DRI) process.

10.3 Appendix C – Public Meeting Minutes

APPENDIX C – PUBLIC MEETING MINUTES

MARCH 06, 2003

The Joint Meeting of the Board of Port Commissioners of the Lee County Port Authority, with the Airports Special Management Committee, was held on this date in the Training Facility at the Southwest Florida International Airport (SWFIA), with the following members present:

LEE COUNTY PORT AUTHORITY	AIRPORTS SPECIAL MANAGEMENT COMMITTEE
Ray Judah, Chairman	Gateley Daniel, Chairman
John E. Albion, Vice-Chairman	Fran Myers, Vice-Chairman
Douglas R. St. Cerny	Hugh Thimlar
Robert P. Janes	Michael Geml
	REGIONAL MEMBER(S)
	Representing Collier County, Jeffrey D. Fridkin

THE CHAIRMAN ANNOUNCED THAT COMMISSIONER ANDREW COY WAS ABSENT BECAUSE OF A SCHEDULING CONFLICT. COMMITTEE MEMBER ROBERT TAYLOR AND CHARLOTTE COUNTY REPRESENTATIVE RUFUS LAZZELL WERE ABSENT FOR THE ENTIRE MEETING.

The Chairman called the meeting to order at 9:32 a.m. The Invocation was given by Pastor David Comer, Christian Life Fellowship, followed by the Pledge of Allegiance to the Flag.

PRESENTATIONS

Commissioner Judah read and presented a 25th Year Anniversary Resolution noting that the Airport Police Department was established on March 15, 1978; stating that it was the first Airport Police Agency to be accredited by the Commission on Accreditation for Law Enforcement Agencies, Inc. (CALEA); and proclaiming the week of March 15 to March 22, 2003 as the Lee County Port Authority Police Department's 25th Anniversary Week. Chief of Police Richard Severson, on behalf of the Airport Police Department, accepted the Resolution; and introduced Administrative Coordinator Ray Landon and Lieutenant John Tuttle (retired), who assisted with originating the Department on March 14, 1978. Chief Severson read the list of names of the Police Department employees who were present at the meeting. Major Daniel W. Sizemore reviewed the Department's accomplishments over the last twenty-five years. An anniversary celebration was held following the meeting.

Executive Director Robert M. Ball stated that recently, he had been presented with the Federal Aviation Administration Southern Region 2002 Air Carrier Airport Safety award, which is the prestigious award given when an airport has the ability to consistently meet and exceed requirements for safe operations; and informed the Board that this airport has achieved 100% compliance for seven consecutive years on its annual certification inspections. He clarified that this achievement does not happen very often, and stated that the credit goes to the men and women of the airport, and requested the following employees to come forward, for them and their fellow employees to join in this honor: Operations Agent Richard Keane, Ground Crew Equipment Operator Dave Hayes, Lead Tradesworker Airfield Mike Cook, Airport Police Officer Eric Burton, and Aircraft Rescue & Fire Fighting Technician

Federal Security Director Douglas M. Perkins presented a Letter of Appreciation to Executive Director Robert M. Ball and Staff for their excellent cooperation and partnering efforts at the airport, which has led to success in completing and meeting the Congressional Mandates created as a result of the Bill that originated the Transportation Security Administration (TSA). He stated that war has been declared on terrorism; and reported that SWFIA's new equipment to help secure the sky is definitely ready to assist in this war. Mr. Perkins thanked the Lee County Port Authority Commissioners, and with the aid of Chairman Judah, presented an award inscribed with the words, "Partners in Security", recognizing the Authority's contribution in achieving world-class security at SWFIA. Chairman Judah thanked Mr. Perkins for the smooth transition that occurred at the airport.

9:30 A.M. AGENDA ITEM - Public Comment on Agenda Items
Consent (C) and Administrative (A)

No one came forward to offer comment.

There were no requests for Consent Agenda items to be pulled for discussion by the individual Commissioners.

CONSENT AGENDA

1. COMMUNICATIONS

(a) Request Board approve the following Minutes of the Board of Port Commissioners meetings:

May 14, 2001
November 14, 2001
February 12, 2002
September 05, 2002 (Budget)
September 19, 2002 (Budget
December 10, 2002
December 17, 2002

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

2. COMMITTEES AND BOARDS

No requests received.

3. LEGISLATION

(a) Request Board adopt, by resolution, revisions to the Lee County Port Authority Policy Manual and Appendices and Purchasing Policy Manual. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent. RESOLUTION NO. PA03-03-01

4. BUDGETING, PURCHASES, CONTRACTS AND AGREEMENTS

(a) Request Board approve the First Extension to the Service Provider Agreement for Mechanical Systems Service and Maintenance of Passenger Loading Bridges, Baggage Conveyor Systems, 400 Hertz Power Systems and Aircraft Air Conditioning Systems at Southwest Florida International Airport, with Oxford Electronics, Inc., to extend Contract No. 1247 for an additional two-years, with options for two additional one-year terms, among other contract modifications, for a total annual contract amount of $212,039.00, plus parts and additional labor charges, as authorized. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(b) Request Board amend the 457(b) Deferred Compensation Program to provide participants the ability to borrow their money through a loan program. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent. RESOLUTION NO. PA03-03-07

(c) Request Board consent to assignment of a lease of offices in the GAC Building at Page Field from Beaver Aviation Service, Inc. to Beaver Aviation South, Inc. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(d) Request Board approve a Nonparticipating Airline Airport Use Permit agreement with Hyannis Air Service, Inc., d/b/a Cape Air. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(e) Request Board approve an amendment to FAA Lease No. DTFA06-01-L-00865, dated November 14, 2001, for construction and operation of a new Airport Surveillance Radar (ASR-11) system at Southwest Florida International Airport. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(f) Request Board approve a Car Rental Concession Agreement for Page Field General Aviation Airport with B and D Transportation Services, Inc., d/b/a Budget Rent-A-Car. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(g) Request Board approve a Car Rental Concession Agreement for Page Field General Aviation Airport with Enterprise Leasing Corporation. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(h) Request Board approve an Access Agreement Allowing for Continuation of Remedial Work Upon National Car Rental's Vacating Airport Location with Remediation and Liability Management Company, Inc. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(i) Request Board approve the purchase of one (1) Backhoe Loader Model 310G, with accessories, from Nortrax Equipment Company, utilizing the Florida Sheriff's Association Contract #02-10-0826, in the amount of $65,246.44. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(j) Request Board authorize execution of a contract between the Lee County Port Authority and Johnson Engineering, Inc., for General Environmental and Planning Management and Related Consulting Services, in the amount of $383,730.00. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(k) Request Board authorize execution of Supplemental Agreement No. 1 between the Lee County Port Authority and Hole Montes, in the amount of $60,800.00, to provide construction administration services for the Page Field Phase III Ramp and T-Hangar Buildings. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(l) Request Board authorize execution of Supplemental Agreement No. 2 between the Lee County Port Authority and Hole Montes, in the amount of $33,000.00, to provide construction administration services for the Page Field Multi-Use Hangar Building. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(m) Request Board authorize execution of Supplemental Agreement No. 47 between the Lee County Port Authority and Owen-Ames-Kimball Company, in the amount of $659,270.00, to provide construction related services for the Page Field Multi-Use Hangar; and approve a Total Project Budget in the amount of $864,100.00. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(n) Request Board authorize execution of Supplemental Agreement No. 48 between the Lee County Port Authority and Owen-Ames-Kimball Company, in the amount of $1,683,525.00, to provide construction related services for the Page Field Phase III Ramp/T-hangar Buildings; and approve a Total Project

Budget in the amount of $2,109,333.00. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(o) Request Board approve Supplemental Agreement No. 1 to the Professional Services Agreement between Ricondo and Associates, Inc. and the Lee County Port Authority. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(p) Request Board approve a Nonparticipating Airline Airport Use Permit agreement with MN Airlines, LLC, d/b/a Sun Country Airlines. The Airports Special Management Committee and Staff recommend approval.

Commissioner Albion moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

5. DEPARTMENTAL MATTERS

No requests received.

6. EXECUTIVE DIRECTOR

No requests received.

7. PORT ATTORNEY

No requests received.

ADMINISTRATIVE AGENDA

1. COMMUNICATIONS

No requests received.

2. COMMITTEES AND BOARDS

No requests received.

3. LEGISLATION

No requests received.

4. BUDGETING, PURCHASES, CONTRACTS AND AGREEMENTS

(a) Request Board award PAB 03-01, SWFIA Midfield Terminal Complex - Parking Garage Package, to D.H. Griffin Construction Company LLC, the lowest, most responsive, responsible bidder for the Base Bid and Alternate 1, in the amount of $34,088,430.81. The Airports Special Management Committee and Staff recommend approval.

Commissioner Janes moved the item, seconded by Commissioner Albion. Commissioner Albion expressed appreciation, noting that this figure came in approximately $5/$6 million under what was anticipated in the bid process, and commended Development Director Mark Fisher and staff for a job well done. The motion was called and carried with Commissioner Coy absent.

THE CHAIRMAN ANNOUNCED THAT ITEM A4b HAS BEEN DEFERRED UNTIL AFTER CONSIDERATION OF THE APPEALS AGENDA. SEE THAT PORTION OF THE MEETING.

(b) Request Board award PAB 02-22, SWFIA Midfield Terminal Complex – Passenger Boarding Bridges, to INET Airport Systems, Inc., the lowest, most responsive, responsible bidder for the Base Bid and

Alternates A-1, A-2, A-3 and A-4, in the amount of $10,376,624.00. The Airports Special Management Committee and Staff recommend approval.

DIRECTLY AFTER CONSIDERATION OF THE APPEALS AGENDA ITEM:
The Chairman entertained a motion to move the item, consistent with the Appeals Bid Protest motion. Commissioner Albion so moved, seconded by Commissioner Janes, called and carried with Commissioner Coy absent.

(c) Request Board adopt the Southwest Florida International Airport Master Plan Update as presented, subject to review and approval by the Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT). The Airports Special Management Committee and Staff recommend approval.

Development Director Mark Fisher briefly reviewed the January status report on the development of the SWFIA Master Plan Update; and noted that the plan depicts the airport's planned development over the next 20 years, and enables airport projects to be eligible for state and federal grant funding. He stated that for this presentation, a 20-year airport layout plan, an environment overview and a financial plan have been developed. Birk Hillman and Associates representative Steve Ritter, and by Reynolds, Smith and Hills Consultants representative Jeff Breeden, and with the use of Powerpoint slides, which followed their handout (copy is on file in the Minutes Office), presented the Master Plan Update and reviewed the following issues:

An overview subsequent to ASMC Workshop
Master Planning overview containing the environmental overview, airport access, and financial plan
Comparison of the enplanement projections
The activity forecast
Facility requirements – basic assumptions
Facility requirements for 2005, 2010 and 2020
Composite and refined alternatives
Environmental overview – consequences categories
Noise and Land Use analysis
Aircraft flight corridor and Wetlands Map
Airport access – "Concept 2FMR" preferred
CIP – Summary by phase and major component and funding sources

Mr. Breeden stated that, in the Master Plan, it is recommended that the Port Authority should work cooperatively with FDOT and Lee County DOT to secure the necessary right-of-way between Treeline Avenue and I-75. Mr. Ritter noted that the total CIP consisted of approximately $1.01 billion in improvements. He stated that the requested action today was to approve the Draft Master Plan Document including the refined alternative; and to authorize the Lee County Port Authority staff to submit the 2003 Master Plan Update to the FAA and FDOT for review and approval. The Chairman entertained a motion to support the recommendations. Commissioner St. Cerny so moved, seconded by Commissioner Janes, called and carried with Commissioner Coy absent.

(d) Request Board endorse submittal of a Comprehensive Plan Amendment to incorporate the 2002 SWFIA Master Plan Update into the Lee County Comprehensive Plan. The Airports Special Management Committee and Staff recommend approval.

Development Director Mark Fisher reported that the Legislature adopted language which allows airports to utilize information within an airport's Master Plan to fulfill the Development of Regional Impact (DRI) Comprehensive (Comp) Plan requirements; Lee County and the Port Authority entered into a Memorandum of Understanding (MOU) whereby procedures were established on how to satisfy the DRI requirements. He stated the Airport Development Committee consisted of various Lee County staff that advised the airport during the preparation of the Comp Plan Amendment. Reynolds, Smith and Hills Consultants representative Jeff Breeden, with the use of Powerpoint slides, which followed their handout (copy is on file in the Minutes Office), gave a brief overview of the Comp Plan; and stated that the goals for this presentation were: review of recent changes in Florida Statutes regarding Airport DRI's, the MOU between Lee County and Lee County Port Authority, and a Draft Lee Plan application update summary; and explained that the local Master Plan must be incorporated into the local Comprehensive Plan. He reviewed the following maps: the refined alternative; Future Land Use Map; future airport land use; and the non-aviation related development, calling attention to the five uses: hotel/motel, office use, gas station/convenience store, warehouse/distribution, and light manufacturing/assembly (the maps are contained in the Comprehensive Plan Amendment). He stated that he was requesting approval to submit the draft Lee Plan Application, with the recognition that it is a draft, as outlined in the MOU. He recognized Community Development Planner Matt Noble, who stated that Lee County Staff wished it known that this is the start of the process; the Lee Plan Amendment language will be modified over the course of the upcoming review; noted there are still issues that County Staff wishes to discuss with the Airport Staff and Consultants to achieve the desired results to incorporate the Airport into

the County's Comp Plan and, in time, to abandon the DRI. Commissioner Janes thanked everyone for holding the gas station/convenience stores to only 3,500 square feet. The Chairman entertained a motion to move forward with the recommendation. Commissioner Janes so moved, seconded by Commissioner St. Cerny. The Chairman thanked everyone involved in this difficult endeavor. The motion was called and carried with Commissioner Coy absent.

(e) Request Board award PAP 03-04, Request for Proposals for a Disadvantaged Business Enterprise (DBE) firm to operate an On-Airport Rental Car Concession at Southwest Florida International Airport, to Nitelines USA, Inc.; and authorize staff to begin contractual negotiations. The Airports Special Management Committee and Staff recommend approval.

Commissioner St. Cerny moved 4(e), seconded by Commissioner Albion. Finance Department Director Benjamin Siegel was available to respond to questions. The motion was called and carried with Commissioner Coy absent.

CONVENE AS BOARD OF COUNTY COMMISSIONERS

(f) Request Board of County Commissioners hold a public hearing to approve a resolution to allow Aero Fort Myers, LLC and the Capital Trust Agency to issue tax-exempt bonds for the acquisition and rehabilitation of the cargo building at Southwest Florida International Airport. The Airports Special Management Committee and Staff recommend approval. (Affidavit)

FOR ACTION TAKEN, REFER TO THE MEETING OF THE BOARD OF COUNTY COMMISSIONERS.

(g) Request Board of County Commissioners approve an interlocal agreement, with the Capital Trust Agency, to allow the Agency to issue tax-exempt bonds for the acquisition and rehabilitation of the cargo building at Southwest Florida International Airport, on behalf of the lessee Aero Fort Myers, LLC. The Airports Special Management Committee and Staff recommend approval.

FOR ACTION TAKEN, REFER TO THE MEETING OF THE BOARD OF COUNTY COMMISSIONERS.

RECONVENE AS BOARD OF PORT COMMISSIONERS

(h) Request Board approve leasehold mortgage between Aero Fort Myers, LLC and Bank One, National Association, as trustee; and authorize the chairman to execute the required documents upon closing of the transaction. The Airports Special Management Committee and Staff recommend approval.

Commissioner St. Cerny moved 4(h), seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

5. DEPARTMENTAL MATTERS

No requests received.

6. EXECUTIVE DIRECTOR

No requests received.

7. PORT ATTORNEY

No requests received.

APPEALS AGENDA
BID PROTEST

4. BUDGETING, PURCHASES, CONTRACTS AND AGREEMENTS

(a) Package; and consider Bid Dispute Committee's recommendation to deny the protest and award the contract to INET Airport Systems, Inc.

Assistant Port Authority Attorney Gregory S. Hagen reminded the Board of his letter dated February 21, 2003, which detailed the protest procedures (copy is on file in the Minutes Office). The Chairman called for Jetway Systems, Inc. to present their protest; however, no one came forward. INET Airport Systems was available with their handout and ready to proceed (copy is on file in the Minutes Office). The Chairman inquired if the Commissioners had questions; no one responded. The Chairman entertained a motion to support the recommendation from the Bid Dispute

Committee, who had voted unanimously (4-0) to deny Jetway's bid protest and award the contract to INET, and the Airports Special Management Committee, who recommended the Board of Port Commissioners award the bid to INET, contingent on the outcome of the bid protest. Commissioner Albion so moved, seconded by Commissioner St. Cerny. In response to the Chairman's inquiry, Attorney Hagen stated that Jetway Systems had been given the opportunity to appear. Commissioner St. Cerny stated that the backup is complete, and was comfortable going ahead with the motion. The motion was called and carried with Commissioner Coy absent.
AT THIS TIME, ADMINISTRATIVE AGENDA ITEM 4(b) WAS HEARD. SEE THAT ITEM FOR THE MOTION.
AT THE END OF THE EXECUTIVE DIRECTOR ITEMS: Attorney Hagen further confirmed that he had notified Jetway Systems about today's hearing on at least three separate occasions; that a copy of his letter is on file with the Clerk of Courts Minutes Office, and added that the firm's representative was present at the ASMC meeting on February 24, 2003.

COMMISSIONER ITEMS

DOUBLE THANK-YOU - Commissioner Albion thanked Staff for the excellent job they have done with moving the airline passengers throughout the terminal concourse, particularly since the new security procedures coincided at the busiest time of the year for the traveling public; noted that a lot of great planning has produced great results; and expressed his appreciation - not only as a Commissioner, but as a passenger.

PLANNING PLUS WORK CREATES A SUPERIOR PRODUCT- Commissioner Janes agreed with Commissioner Albion's statement; and also wanted Federal Security Director Douglas M. Perkins to know that the Board appreciates the tremendous amount of work that he and his staff have done in planning and operating the new checkpoint security system. He believed, after visiting other airports, that SWFIA is handled far more efficiently.

COMMITTEE APPOINTMENTS

Chairman Judah entertained a motion to reappoint both Mr. Jeffrey Fridkin and General Rufus Lazzell as Regional Members on the ASMC for another two years. Commissioner St. Cerny so moved, seconded by Commissioner Albion, called and carried with Commissioner Coy absent. General Lazzell was absent; however, Mr. Fridkin responded that he was grateful for the opportunity because it is an exciting group to work with, along with exciting projects to work on. The motion was called and carried with Commissioner Coy absent.

COMMENTS FROM THE CHAIRMAN OF THE AIRPORTS SPECIAL MANAGEMENT COMMITTEE

Chairman Daniel stated he had nothing to discuss at this time.

FRAN'S HOT LIST - Ms. Myers presented her handout entitled Fran's Hot List, January 2003 (copy is on file in the Minutes Office); and reported that, this past week, the Visitor Convention Bureau (VCB) and the Tourist Development Council (TDC) have started to closely monitor the tourist industry for any changes in reservations and cancellations due to the uncertain conditions with Iraq.

EXECUTIVE DIRECTOR ITEMS
EXECUTIVE DIRECTOR'S MONTHLY REPORT - Executive Director Robert M. Ball presented the following items of interest, which are contained in his update "Executive Director's Comments, Joint Meeting, March 6, 2003", (copy is on file in the Minutes Office):

ANNOUNCEMENTS

The Port Authority, in close cooperation with Lee County staff, is once again leading the way for other Florida airports. Incorporation of an Airport Master Plan into the local Comprehensive Plan is an allowable substitution for the Development of Regional Impact process, due to the new regulations. SWFIA is the first airport to apply the new rules and are proud to serve as the test case. This change has the promise of streamlining development reviews and minimizing FAA conflicts – a benefit for Lee County and all airports across Florida. Port Authority and County staff have been working closely over the last few months educating each other on airport and county planning. SWFIA appreciates the assistance from numerous county employees who have contributed to this effort through meetings, reviews and recommendations. Mr. Ball recognized those present: Assistant County Attorney Dawn E. Lehnert, Transportation Department Engineer Andy Getch, Development Services Planner Bryan Kelner, Community Development Planner Matt Noble, and Senior Environmental Planner Kim Trebatoski. The Port Authority thanked them for their efforts.

Condor will offer nonstop service between Frankfurt and SWFIA beginning this summer, and a Sunday flight will be offered starting May 4th and continuing through October 19th.

Air Tran inaugurated one daily nonstop flight to Philadelphia on February 5th.

Spirit Airlines added additional service to Detroit and Chicago-O'Hare this month.

US Airways began year-round daily nonstop service to Washington Regan National Airport on February 9th.

The Transportation Security Administration certified Corporal Eric Runge and Officer Keith Francis, along with their canine partners Barry and Nero, for completing the TSA's explosives-detection program.

Development Director Mark Fisher has been named Chairman of the Southwest Florida Steering Committee for the Continuing Florida Aviation Systems Planning process (FASP), one of nine regional committees, that together with a statewide committee, will review aviation activity forecasts, community air transportation demand projects, and other data used to update the Florida Aviation Systems Plan.

STATISTICES:

January passenger volume set a record increase of 12.96% compared to 2002; fiscal year volume increased 14.44%; making this the second consecutive month that passengers exceeded FY2001/2002 levels. January International traffic increased 35.45%. January Airmail increased 38.62%; airfreight decreased 12.08%; total landed weight increased 42,000 units and 99,000 units above budgeted projections. On-airport rental car sales increased 24.40%; off-airport rental increased 45.97% for the month, and 53.94% for the year. December parking lot revenues increased 37.77% compared to the same period last year. Retail shops combined sales increased 10.75% compared to December 2001. Total food concessions sales increased 23.69% for the month.

AT THIS TIME, ASSISTANT PORT AUTHORITY ATTORNEY GREGORY S. HAGEN MADE AN ADDITIONAL STATEMENT REGARDING THE BID PROTEST. SEE THAT PORTION OF THE MEETING.

EXTRA ITEM -- Presentation on the Southwest Florida International Airport Midfield Terminal Complex Progress Report, March 2003

DMJM Aviation Program Manager Dan L. Schultz, gave a presentation and presented a handout that described the progress that has been made on the Terminal and site (copy is on file in the Minutes Office). Mr. Schultz reviewed that the:

Terminal building construction is now vertical - see handout cover and pages 8 thru 10
First floor columns and second level floor beams are being poured
Underground electrical duck banks have begun
Chiller building foundation walls are completed
Piling work for the terminal building is completed
Site development continues, with the creation of wet and dry detention areas
Sizeable drainage structures have been built; and lime rock put in place on the service roads
Airside components are underway with the assemblage of 5000 feet of hydrant fueling pipe
Installation of 1000 feet of electrical duck banks is in place
Notice to Proceed was issued for landside work in January
Perimeter road has been paved linking current terminal area to the Midfield construction site
Construction on Ben Hill Griffin Parkway/Treeline Avenue extension is progressing
Mitigation Park Development: nuisance trees/plants are being eradicated
Site H parcel is fenced; surface road from Corkscrew has been constructed

Mr. Schultz reported that the construction program is on schedule and 5% under budget; and noted that page 22 indicates the construction schedule. On page 23, an update is provided on impending Transportation Security Administration (TSA) changes, and identifies potential opportunities for airport system upgrades and airline tenant improvements. He stated that moving forward will require additional program funding, especially for the TSA improvements; and noted that Executive Director Robert M. Ball and advisors are presently putting the finishing touches on a plan which will address the funding issues. Mr. Schultz stated his staff is working with the Port Authority's Development Department identifying ways and means to incorporate the impending changes and minimize impacts to the Midfield completion date; and added that this proposal will be presented in the near future. In response to Mr. Geml's question, Mr. Schultz concurred that the progress at the Midfield site is setting the blueprint for future airport designs and construction - as far as TSA and airport security goes; and when opened, the terminal will be state of the art. The Chairman opined that Mr. Schultz, Mr. Ball and staff need to be commended.

The Chairman adjourned the meeting at 10:45 a.m.

ATTEST:
CHARLIE GREEN, CLERK

_____ _____

Deputy Clerk Chairman, Lee County Port Authority

FEBRUARY 24, 2003

A Meeting of the Airports Special Management Committee was held this date in the Training Facility at the Southwest Florida International Airport (SWFIA), with the following Members present:

Gateley Daniel, Chairman
Fran Myers, Vice-Chairman
Robert Taylor
Hugh Thimlar
REGIONAL MEMBER(S):
Representing Charlotte County,
Brigadier General Rufus Lazzell (U.S. Army Retired)

MR. MICHAEL GEML AND COLLLIER COUNTY REPRESENTATIVE JEFFREY FRIDKIN WERE ABSENT FOR THE ENTIRE MEETING.

The Chairman called the meeting to order at 1:32 p.m., followed by the Pledge of Allegiance to the Flag.

PRESENTATIONS

Executive Director Robert M. Ball, General Aviation Services Director Peter Modys, Public Relations Director Susan Sanders, Operations Manager Thomas Nicholas and Chairman Daniel presented Length of Service Awards to the following Port Authority employees:

TEN YEAR SERVICE AWARD

Laska L. Ryan, Aviation Marketing Communications Senior Manager – February 15, 2003

FIFTEEN YEAR SERVICE AWARD

Mark Fisher, Development Division Director – February 28, 2003

TWENTY YEAR SERVICE AWARD

Bobby Orick, Operations Manager – February 03, 2003
Rodney Jacobson, Maintenance Supervisor – February 10, 2003

PUBLIC AGENDA - Public Comment on Agenda Items
Consent (C) and Administrative (A)

A(a) - Anthony B. Torres, representing FMC-Jetway, a bidder for PAB 02-22, SWFIA Passenger Boarding Bridges, spoke on the Buy American Act; opposed the bid award to INET Airport Systems; and stated that INET has not presented the full information requested by SWFIA.

A(a) – Edward J. Gill, representing INET and Dewbridge Airport Systems, stated that INET had certified compliance with the Buy American requirements; and has provided information to the Committee detailing compliance.

There were no requests for Consent Agenda items to be pulled for discussion by the individual Commissioners.

CONSENT AGENDA

(a) Request Board consent to assignment of a lease of offices in the GAC Building at Page Field from Beaver Aviation Service, Inc. to Beaver Aviation South, Inc. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(b) Request Board approve a Nonparticipating Airline Airport Use Permit agreement with Hyannis Air Service, Inc., d/b/a Cape Air. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(c) Request Board adopt, by resolution, revisions to the Lee County Port Authority Policy Manual and Appendices and Purchasing Policy Manual. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(d) Request Board approve an amendment to FAA Lease No. DTFA06-01-L-00865, dated November 14, 2001, for construction and operation of a new Airport Surveillance Radar (ASR-11) system at Southwest Florida International Airport. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(e) Request Board approve a Car Rental Concession Agreement for Page Field General Aviation Airport with B and D Transportation Services, Inc., d/b/a Budget Rent-A-Car. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(f) Request Board approve a Car Rental Concession Agreement for Page Field General Aviation Airport with Enterprise Leasing Company. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(g) Request Board approve an Access Agreement Allowing for Continuation of Remedial Work Upon National Car Rental's Vacating Airport Location with Remediation and Liability Management Company, Inc. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(h) Request Board approve the purchase of one (1) Backhoe Loader Model 310G, with accessories, from Nortrax Equipment Company, utilizing the Florida Sheriff's Association Contract #02-10-0826, in the amount of $65,246.44. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(i) Request Board authorize execution of a contract between the Lee County Port Authority and Johnson Engineering, Inc., for General Environmental and Planning Management and Related Consulting Services, in the amount of $383,730.00. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(j) Request Board authorize execution of Supplemental Agreement No. 1 between the Lee County Port Authority and Hole Montes, in the amount of $60,800.00, to provide construction administration services for the Page Field Phase III Ramp and T-Hangar Buildings. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(k) Request Board authorize execution of Supplemental Agreement No. 2 between the Lee County Port Authority and Hole Montes, in the amount of $33,000.00, to provide construction administration services for the Page Field Multi-Use Hangar Building. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(l) Request Board authorize execution of Supplemental Agreement No. 47 between the Lee County Port Authority and Owen-Ames-Kimball Company, in the amount of $659,270.00, to provide construction related services for the Page Field Multi-use Hangar; and approve a Total Project Budget in the amount of $864,100.00. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(m) Request Board authorize execution of Supplemental Agreement No. 48 between the Lee County Port Authority and Owen-Ames-Kimball Company, in the amount of $1,683,525.00, to provide construction related services for the Page Field Phase III Ramp/T-hangar Buildings; and approve a Total Project Budget in the amount of $2,109,333.00. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(n) Request Board approve Supplemental Agreement #1 to the Professional Services Agreement between Ricondo and Associates, Inc. and the Lee County Port Authority. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(o) Request Board approve a Nonparticipating Airline Airport Use Permit agreement with MN Airlines, LLC, d/b/a Sun Country Airlines. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(p) Request approval of the following Minutes of the Airports Special Management Committee Meetings: October 30, 2002, November 25, 2002 and December 18, 2002. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

ADMINISTRATIVE AGENDA

(a) Request Board award PAB 02-22, SWFIA Midfield Terminal Complex – Passenger Boarding Bridges, to INET Airport Systems, Inc., the lowest, most responsive, responsible bidder for the Base Bid and Alternates A-1, A-2, A-3 and A-4, in the amount of $10,376,624.00. Staff recommends approval.

Development Director Mark Fisher stated that this was the eighth bid award associated with the Midfield complex; advised that it was related to 27 passenger boarding bridges; noted that three bids were received, and the low bid was submitted by INET Airport Systems. He informed the Committee that a bid protest was received from FMC-Jetway; and that presentations were heard by the Port Authority's Bid Dispute Committee, who unanimously concurred with DMJM Aviation and Staff's recommendation. In response to Mr. Lazzell's question regarding Mr. Torres and Mr. Gill's comments regarding the percentage of the components being made in America, Mr. Fisher reviewed the bidding procedures and noted that all bidders must meet the Buy American requirement. He stated that as a result of the bid protest, additional information was requested, and the response submitted satisfied the Buy American requirement certification to the Committee's satisfaction. Assistant Port Authority Attorney Gregory S. Hagen stated that this issue is contingent upon the Board hearing of March 06, 2003; that the bid protest is on-going; and that this Committee does not have a direct role in that process. He added that the motion would be contingent upon the outcome of the bid protest. Attorney Hagen explained that the Buy American provisions are not straight forward; and that there are a number of ways a firm can certify and demonstrate compliance. He added that the Port Authority Board would get a full presentation at the bid protest hearing. After further discussion, Ms. Myers moved the item, seconded by Mr. Taylor. Mr. Taylor stated his understanding was that the Committee, one member being ASMC Member Michael Geml, listened to the facts and that everyone had concurred. The motion was called and carried with Mr. Geml and Mr. Fridkin absent.

(b) Request Board adopt the Southwest Florida International Airport Master Plan Update as presented, subject to review and approval by the Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT). Staff recommends approval.

Development Director Mark Fisher briefly reviewed the January status report on the development of the SWFIA Master Plan Update; and noted that the plan depicts the airport's planned development over the next 20 years, and enables airport projects to be eligible for state and grant funding. He reviewed the previously presented issues; and stated that, for this presentation, a 20-year airport layout plan, an environment overview and a financial plan have been developed. Birk Hillman and Associates representative Steve Ritter, assisted by Garfield Eden, and with the aid of overhead projections which followed their handout (copy is on file in the Minutes Office), presented the Master Plan Update and reviewed the following issues:

An overview subsequent to ASMC Workshop
Master Planning overview containing the environmental overview, airport access, and financial plan
Comparison of the enplanement projections
The activity forecast
Facility requirements – basic assumptions
Facility requirements for 2005, 2010 and 2020
Composite and refined alternatives
Environmental overview – consequences categories
Noise and Land Use analysis
Aircraft flight corridor and Wetlands Map
Airport access – "Concept 2FMR" preferred
Capital Improvement Program (CIP) – Summary by phase and major component,

CIP funding sources

Mr. Eden stated the Port Authority should work with FDOT and Lee County DOT to secure the necessary right-of-way to I-75. Mr. Ritter stated that the total CIP consisted of approximately $1.01 billion in improvements, and the breakdown can be found on the tenth page of the handout; and noted that in funding sources, Federal grants accounted for approximately 33%, State grants for 19%, and other funds for 3%. Mr. Ritter stated that the requested action today was to approve the Draft Master Plan Document including the refined alternative; and to authorize the Lee County Port Authority staff to submit the 2003 Master Plan Update to the FAA and FDOT for review and approval. Ms. Myers moved the item, seconded by Mr. Taylor. After further discussion between the presenters, staff, and the Committee, the motion was called and carried with Mr. Geml and Mr. Fridkin absent.

(c) Request Board endorse submittal of a Comprehensive Plan Amendment to incorporate the 2002 SWFIA Master Plan Update into the Lee County Comprehensive Plan. Staff recommends approval.

Development Director Mark Fisher reported that the Legislature adopted language which allows airports to utilize information within an airport's Master Plan to fulfill Development of Regional Impact (DRI) in Comprehensive (Comp) Plan requirements; Lee County and the Port Authority entered into a Memorandum of Understanding (MOU) whereby procedures were established on how to satisfy the DRI requirements. He stated the Airport Development Committee consisted of various Lee County staff that advised the airport and have given expert knowledge during the preparation of the Comp Plan Amendment. Reynolds, Smith and Hills Consultants representative Jeff Breeden , with the aid of overhead projections which followed their handout (copy is on file in the Minutes Office), gave a brief overview of the Comp Plan; and stated that the goals for this presentation were: review of recent changes in Florida Statutes regarding Airport DRI's, the MOU between Lee County and Lee County Port Authority, and a Draft Lee Plan application update summary and requested action; and explained that the local Master Plan must be incorporated into the local Comprehensive Plan. He reviewed the following maps: the refined alternative; Future Land Use Map; future airport land use; and the non-aviation related development, calling attention to the five uses: hotel/motel, office use, gas station/convenience store, warehouse/distribution, and light manufacturing/assembly (maps are on file in the Minutes Office). He stated that the desired action requested today is to endorse submittal of a Comprehensive Plan Amendment Application to incorporate the 2020 SWFIA Master Plan Update into the Lee County Comprehensive Plan. Mr. Lazzell moved approval, seconded by Ms. Myers, called and carried with Mr. Geml and Mr. Fridkin absent.

(d) Request Board award PAP 03-04, Request for Proposals for a Disadvantaged Business Enterprise (DBE) firm to operate an On-Airport Rental Car Concession at Southwest Florida International Airport, to Nitelines USA, Inc.; and authorize staff to begin contractual negotiations. Staff recommends approval.

Finance Department Director Benjamin Siegel reviewed the history of the item, and stated that during the presentations in January 2003, AKI Holdings withdrew their proposal; and noted that, after hearing the Nitelines USA presentation, the Committee requested additional information, and the item was rescheduled. Mr. Siegel reported that, at this time, staff recommends Nitelines USA, Inc. be awarded the contract; and requested staff be allowed to commence contract negotiations with the firm. Mr. Lazzell moved approval, seconded by Mr. Thimlar. In response to Mr. Taylor's query, Mr. Siegel affirmed that after the contract has been negotiated, it will be brought back before the Committee and the Board. The motion was called and carried with Mr. Geml and Mr. Fridkin absent.

(e) Request Board of County Commissioners hold a public hearing to approve a resolution to allow Aero Fort Myers, LLC and the Capital Trust Agency to issue tax-exempt bonds for the acquisition and rehabilitation of the cargo building at Southwest Florida International Airport. Staff recommends approval.

Finance Department Director Benjamin Siegel reviewed the issues and stated this hearing is required under Federal law. Ms. Myers moved the item, seconded by Mr. Taylor, called and carried with Mr. Geml and Mr. Fridkin absent.

(f) Request Board of County Commissioners approve an interlocal agreement, with the Capital Trust Agency, to allow the Agency to issue tax-exempt bonds for the acquisition and rehabilitation of the cargo building at Southwest Florida International Airport, on behalf of the lessee Aero Fort Myers, LLC. Staff recommends approval.

Finance Department Director Benjamin Siegel briefly reviewed the request. Mr. Taylor moved the item, seconded by Mr. Lazzell, called and carried with Mr. Geml and Mr. Fridkin absent.

(g) Request Board approve leasehold mortgage between Aero Fort Myers, LLC and Bank One, National Association, as trustee; and authorize the chairman to execute the required documents upon closing of the transaction. Staff recommends approval.

Finance Department Director Benjamin Siegel briefly reviewed the request. Ms. Myers moved the item, seconded by Mr. Taylor, called and carried with Mr. Geml and Mr. Fridkin absent.

EXECUTIVE DIRECTOR ITEMS

EXECUTIVE DIRECTOR MONTHLY REPORT - Executive Director Robert M. Ball stated he would forego his usual report until the Joint Meeting.

THANK YOU – Mr. Ball thanked the County Staff for their hard work and know how in helping the airport with their Comprehensive Plan and planning efforts; and added that he believed the airport is heading toward a very good Plan for Lee County. In response to Mr. Taylor, Mr. Ball stated that he believed SWFIA will be one of the first airports in Florida to attempt and bring about this endeavor.

ALSO PROVIDED**:** (copies are on file in the Minutes Office)

February 2003 SWFIA and Page Field Monthly Project Summary
February 17, 2002 Status on Bids/Quotes/LOQs Procurement Status
December 2002 SWFIA Statistical Reports

AIRPORT SPECIAL MANAGEMENT COMMITTEE ITEMS

AIR SHOW - Mr. Lazzell reminded everyone that Charlotte County would be having an International Air Show on March 22/23 with the Blue Angels as one of the attractions; and invited one and all to attend.

The Chairman adjourned the meeting at 2:40 p.m.

ATTEST:
CHARLIE GREEN, CLERK

_____
Deputy Clerk

_____
Chairman, Lee County Airports
Special Management Committee

JANUARY 28, 2002

A Meeting of the Airports Special Management Committee was held this date in the Training Facility at the Southwest Florida International Airport (SWFIA), with the following Members present:

Hugh Thimlar, Chairman
Robert Taylor, Vice-Chairman
Gateley Daniel
Michael Geml
Fran Myers
REGIONAL MEMBER(S):
Representing Charlotte County,
Brigadier General Rufus Lazzell (U.S. Army Retired)
Representing Collier County, Jeffrey D. Fridkin

The Chairman called the meeting to order at 1:30 p.m., followed by the Pledge of Allegiance to the Flag.

REORGANIZATION OF THE AIRPORTS SPECIAL MANAGEMENT COMMITTEE

Chairman Thimlar thanked the Committee members for their assistance during the past year; and commended Executive Director Robert M. Ball, General Services Director Pamela L. Conner, and staff for their work. He then called for nominations for the new Chairman. Mr. Taylor nominated Michael Geml to serve, and the Committee approved unanimously. After Mr. Geml assumed the chair and thanked the Committee members for the opportunity to serve as Chairman for a third term, he nominated Robert Taylor to serve as Vice-Chairman, to return to the same cycle the Committee had been in for a few years. He requested that Hugh Thimlar continue as ASMC representative on the Horizon Council, and that Fran Myers continue with the Tourist Development Council. After Mr. Thimlar and Ms. Myers agreed, Chairman Geml's recommendations were unanimously approved.

PRESENTATIONS

General Aviation Services Director Peter Modys, Assistant Executive Director Edmunde J. Henke, and Chairman Geml presented Length of Service Awards to the following Port Authority employees:

FIFTEEN YEAR SERVICE AWARD

Thomas J. Nichols, Senior Manager, Operations Department - December 4, 2001

TEN YEAR SERVICE AWARD

Benjamin R. Siegel, Department Director, Finance - January 16, 2002

PUBLIC AGENDA - Public Comment on Agenda Items
Consent (CA) and Administrative (AA)

C(d) - Cliff Berry Inc. (CBI) representative Jeff Smith explained CBI's position that the bid process was fair; commented on the high cost to rebid; and requested that PAB 02-03 be awarded to CBI as the lowest responsive bidder.

The following are the Consent Agenda items that each Committee member wished to have discussed:

Mr. Lazzell - None
Mr. Daniel - None
Ms. Myers - None
Mr. Thimlar - None
Mr. Taylor - C(d)
Mr. Fridkin - C(d)
Mr. Geml - None

CONSENT AGENDA

(a) Request Board approve a transfer of funds, between the Lee County Port Authority and the Lee County Department of Transportation, in order to provide Alico Road improvements necessary for the

construction of the Southwest Florida International Airport Midfield Terminal Project. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Mr. Daniel, called and carried.

(b) Request Board approve an Airport Provider Permit agreement, with Superior Aircraft Services, Inc., to allow provision of skycap and security screening services for airlines at Southwest Florida International Airport. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Mr. Daniel, called and carried.

(c) Request Board approve an amended and restated lease of offices, in the GAC Building at Page Field, to Beaver Aviation Service, Inc. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Mr. Daniel, called and carried.

(d) Request Board reject bids received for PAB 02-03, pursuant to the recommendation of the Bid Dispute Committee; and direct staff to re-advertise for this project. Staff recommends approval.

PULLED FOR DISCUSSION

In response to Mr. Taylor's question, Development Director Mark Fisher confirmed that the Bid Dispute Committee had reviewed the specifications for the bid and found them to be unclear in specifying the type of bid that was acceptable. Mr. Fisher explained that presentations had been made to the Bid Dispute Committee by TKW, the consulting engineer; by Florida Environmental Compliance Corporation (FECC), the bid protestor; and by Cliff Berry Inc. (CBI), the affected party. Mr. Fridkin stated that he would abstain from voting on this request, because one of his current clients is included on the bid list. Mr. Fisher responded to Mr. Geml's inquiries by stating that the rebid would be done in the most economical way possible after TKW reformats the bid documents to clarify the acceptable procedures and methodologies; that the only costs would be for staff time; and that all bid prices become public record upon opening of the bids. Mr. Thimlar remarked that he was on the Bid Dispute Committee; and opined that the request to rebid was a matter of fairness, regardless of the cost. Mr. Taylor moved approval, seconded by Ms. Myers. Mr. Taylor opined that the cost of a long dispute on the issue would exceed the cost to rebid. TKW representative John Barker confirmed that there would be no additional cost for preparation of the new bid documents. Mr. Taylor asked whether the delay would cause problems in completing the project; and Mr. Fisher stated that, because there are no grant, compliance, or other deadlines, there is no timeline associated with this project. The motion was called and carried with Mr. Fridkin abstaining.

(e) Request Board approve budget amendments in Funds 41200 - Operating Fund, in the amount of $1,850,000.00; and 41250 - PFC Revenue Fund, in the amount of $9,300,000.00, for Fiscal Year 2001, to reflect additional reimbursement to the Airport Discretionary - 41231. Staff recommends approval.

Mr. Lazzell moved approval, seconded by Mr. Daniel, called and carried.

ADMINISTRATIVE AGENDA

(a) Request Board approve an agreement between the Lee County Port Authority and the U.S. Department of Transportation, Transportation Security Administration (TSA). The agreement defines the operating requirements for TSA training certification of the Port Authority's three existing canine explosive detection teams, and provides for the reimbursement of canine team expenses up to $40,000.00 per year per team. Staff recommends approval.

General Aviation Services Director Peter Modys briefly described the request, and remarked that up to $120,000.00 per year could be authorized for reimbursement. Mr. Lazzell moved approval, seconded by Mr. Daniel. In response to Ms. Myers' question, Mr. Modys explained that the recent drug bust was a U.S. Customs operation that did not involve the Port Authority. The motion was called and carried.

(b) Presentation on information comprising the draft Southwest Florida International Airport Master Plan Update.

Development Director Mark Fisher commented that this item is a result of the Committee's request for a more in-depth explanation of the analyses and assumptions involved in the Master Plan Update. He added that, although no specific action is requested, any comments, guidance, or direction from Committee members would be incorporated in the final Master Plan documents. Birk Hillman Project Manager Mike Arnold reviewed and explained the information contained in a PowerPoint slide presentation (printed copy on file in the Minutes Office); and responded to questions

from Committee members throughout the program. He noted that the SWFIA Master Plan is different from others only in that utility mapping was included as part of the inventory process; and that the focus of this presentation would be the forecasts and the alternatives, which make up the heart of the Master Plan. After briefly summarizing the slides dealing with the Overview, Goals, and Objectives, Mr. Arnold responded to questions from Mr. Taylor regarding the correct projections of future demands and the fleet mix as the bases for the remainder of the Master Plan (slides 1 thru 5). Ricondo representative Garfield Eaton pointed out that the five-county Air Trade Area, which drives the area's activities, involves economic factors such as population, retail sales, and employment (slides 6 thru 8). He explained the use and significance of historical enplanement figures, enplanement projection methodologies, market share forecasts, socioeconomic regression and trend forecasts, and the possible effects of a new low-fare entrant or an economic downturn; and described how these factors were incorporated and analyzed to obtain the recommended projections of 3.8% annual growth over the next 20 years for a total of 5.6 million enplanements by 2020 (slides 9 thru 12). During his description of the factors contributing to fleet mix and total airport operations, Mr. Eaton commented on SWFIA's increased market share of domestic and international air carrier operations; increases in air carrier load factors and average seats per aircraft; changes in aircraft types; and increases in regional/commuter and general aviation operations (slides 13 thru 18). After briefly reviewing information on increases in air cargo volume, Mr. Eaton explained the translation of enplanement and operational projections into "peak month/average day/peak hour" enplanement projections to allow for the planning of various airport facilities (slides 19 thru 24). Following a brief description of the local and national effects of the September 11 attacks and the economic recession, Mr. Eaton noted that enplanements at SWFIA are nearly back to the 1999-2000 levels after dropping drastically in September (slides 25 thru 26). Mr. Arnold described slides 27 thru 31, which include information regarding projected runway system demand vs. capacity, effects of the extreme seasonal peak, facility requirements, and factors influencing site and facility layout. After pointing out that a Facility Requirements Summary Table is included at the back of the handout, he reviewed slides 32 thru 44, which illustrate each of the three options considered for various facilities; and explained the rationale for selection of specific options (highlighted in yellow) included in the Composite Alternative on slide 45. Mr. Arnold concluded the presentation by reviewing the timetables for the Environmental Assessment/DRI and the "Next Steps" (slides 46 & 47), which indicate that the DRI is to be submitted to the agencies by August 2002 and that the Draft Final Report should be ready in Early Summer 2002. In response to members' questions during the presentation, Mr. Eaton stated that census population figures are utilized separately from seasonal population peaks; that the possibility of SWFIA becoming an alternate hub for Miami or some other city had not been considered in these forecasts due to the high level of speculation involved; that the increased activity level in airports with new low-fare carriers also benefited the existing carriers; that the Federal Aviation Administration (FAA) requires a valid explanation if Master Plan projections are not within 10% of the FAA Terminal Area Forecast (TAF); and that airline ordering trends and current orders for aircraft provide fairly reliable data for aircraft type projections. Following the presentation, Mr. Arnold answered questions from Executive Director Robert M. Ball as to the timing of repair projects and the options selected for the Composite Alternative.

EXECUTIVE DIRECTOR ITEMS

Executive Director Robert M. Ball utilized the second page of the Executive Director's Update "From the Top", dated January 28, 2002 (copy is on file in the Minutes Office) to summarize some of the statistics brought to light during the presentation:

STATISTICS

Total passengers for the month of December 2001 were 424,483, a decrease of 10.98%. America West, ATA, Continental, jetBlue, and Midwest Express all had increased passenger activity for the month.

Commuter traffic was down 29.46% and international traffic was down over 43%. Air Canada had a significant increase over prior year, up 283%, because it flew 30 flights compared to 19 last year.

Total passengers for calendar year ending December 31, 2001 were 5,277,708, an increase of 1.35% over prior year.

Total airfreight was 2,958,843 pounds, an increase of 3.62%

Total rental car revenue for November was $7,338,540.00, a decrease of 18%. Total parking for November was $479,742, a 14.78 decrease from prior year.

Total retail concessions were down 16.96% for November, with Paradies News, the PGA Golf Shop and Smarte Carte showing increased sales for the month and Florida Pantry and Star Gifts having decreased sales.

Food concessions were up for the month, with an increase of 6.28% over the previous month, up 2.65% for the year.

Total landed weight for December was 306,226 units, down approximately 28,800 units from last year.

ALSO INCLUDED IN "FROM THE TOP":

Aircraft Rescue and Fire Fighting (ARFF) Training Classes

In January, the ARFF department began offering training classes on fire extinguisher handling and safety, CPR, and Automatic External Defibrillators (AED) to airport employees and tenants. The department's four newly state-certified instructors teach the classes; and, upon completion, participants are given a certificate. CPR/AED participants will receive a certificate from the American Heart Association.

Another class, called Aircraft Crash, Fire, and Rescue for First Responders, is scheduled for the near future. The instructor, Captain Robert Roper, is a licensed Airline Transport Pilot with over 22 years of fire fighting experience. The course is offered to all airport employees, tenants, and emergency services personnel in Lee and Collier counties.

The ARFF department has also provided opportunities for staff members to attend various anti-terrorism classes, in an ongoing effort to remain prepared in the event of a bio-terrorism incident. Staff members attending the classes bring the information back and share it with department members.

AIRPORT SPECIAL MANAGEMENT COMMITTEE ITEMS

Request for Figures on Cargo Decreases - Mr. Lazzell inquired as to the decreases in cargo for September and October 2001, and whether there was as much of a decrease as in the passenger numbers. Finance Department Director Benjamin Siegel stated that the total freight for the year was up approximately 2%, and indicated that he would provide the requested monthly data.

Southwest Florida International Airport Calendar - Mr. Thimlar pointed out that SWFIA has put out a beautiful post-card calendar and congratulated whoever was responsible. He noted that there are four postcards from Charlotte Harbor, four from Naples, one each from Sanibel and Captiva Islands, and two from Lee County; but that there are none from the most beautiful beach in Southwest Florida, Fort Myers Beach, where he lives.

The Chairman adjourned the meeting at 3:00 p.m.

ATTEST:
CHARLIE GREEN, CLERK

_____
Deputy Clerk

_____
Chairman, Lee County Airports
Special Management Committee

JANUARY 14, 2002

The Joint Meeting of the Board of Port Commissioners of the Lee County Port Authority, with the Airports Special Management Committee, was held on this date in the Training Facility at the Southwest Florida International Airport (SWFIA), with the following members present:

LEE COUNTY PORT AUTHORITY	AIRPORTS SPECIAL MANAGEMENT COMMITTEE
Douglas R. St. Cerny, Chairman	Hugh Thimlar, Chairman
Ray Judah	Robert Taylor, Vice-Chairman
John E. Albion	Michael Geml
Robert P. Janes	Gateley Daniel
	REGIONAL MEMBER(S)
	Representing Charlotte County,
	Brigadier General Rufus Lazzell (U.S. Army Retired)
	Representing Collier County, Jeffrey D. Fridkin

COMMISSIONER COY AND COMMITTEE MEMBER MYERS WERE ABSENT FOR THE ENTIRE MEETING.

The Chairman called the meeting to order at 9:30 a.m. The Invocation was given by Dr. Norman Hutchinson, Buckingham Presbyterian Church, followed by the Pledge of Allegiance to the Flag.

REORGANIZATION OF BOARD OF PORT COMMISSIONERS

After expressing appreciation to Executive Director Robert M. Ball and his Staff, and to the Airports Special Management Committee, Commissioner St. Cerny announced that he was passing the gavel to Commissioner Janes, who would be the new Port Commission Chairman. Commissioner Janes thanked Commissioner St. Cerny, and suggested that Commissioner Judah serve as the Vice-Chairman. Commissioner St. Cerny so moved, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

9:30 A.M. AGENDA ITEM - Public Comment on Agenda Items
Consent (C) and Administrative (A)

No one came forward to offer comment.

The following are the Consent Agenda items that each Board member wished to have discussed:

Commissioner Judah -None
Commissioner Albion - C4(g)
Commissioner St. Cerny - None
Commissioner Janes - None

CONSENT AGENDA

1. COMMUNICATIONS

(a) Request Board approve the Minutes of the following meetings of the Board of Port Commissioners:

May 8, 2000	September 5, 2001
November 13, 2000	September 10, 2001
May 29, 2001	September 19, 2001

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

2. COMMITTEES AND BOARDS

No requests received.

3. LEGISLATION

(a) Request Board approve the revised Lee County Port Authority Personnel Policies and Procedures Manual. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

4. BUDGETING, PURCHASES, CONTRACTS AND AGREEMENTS

(a) Request Board approve a permit agreement, with Jet Aircraft Maintenance, Inc., for ground service and airliner maintenance and repair. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

(b) Request Board approve an Airport Provider Permit agreement, allowing Frank R. Burrelli to conduct aircraft flight instruction at Page Field. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

(c) Request Board approve an amendment to the lease agreement with PrivateSky Aviation Realty, LLC. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

(d) Request Board approve an agreement, with PrivateSky Aviation Realty, LLC, to amend the Fixed Base Operator (FBO) lease purchased by PrivateSky from Jet South, Inc. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

(e) Request Board approve a permit agreement with, Diamond Air Freight, Inc. for ground service at Southwest Florida International Airport. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

(f) Request Board approve an Assumption Agreement, with Aero Ft. Myers, LLC, relating to the cargo building site at Southwest Florida International Airport. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

(g) Request Board accept a state grant by adopting a Resolution authorizing the execution of a Joint Participation Agreement, between the Florida Department of Transportation and the Lee County Port Authority, for $1,540,980.00, towards design and construction of T-hangars at Page Field. The Airports Special Management Committee and Staff recommend approval.

In response to Commissioner Albion's inquiries, General Aviation Services Director Peter Modys explained that the average waiting list for the T-hangers at Page Field contains about 100 names of persons who want hangars; that the list will become smaller as more hangars are built; and that the pricing structure will be reviewed in the near future. Commissioner Albion noted that, although increased hangar prices could assist in continuing improvements the Page Field facilities, costs should be low enough to encourage demand. He then moved approval of the item, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent. RESOLUTION NO. PA02-01-18

(h) Request Board accept a state grant by adopting a Resolution authorizing the execution of a Joint Participation Agreement, between the Florida Department of Transportation and the Lee County Port Authority, for $544,500.00, towards design and construction of multi-use hangars at Page Field. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent. RESOLUTION NO. PA02-01-19

(i) Request Board approve a retainer agreement, with the law firm of Foley and Lardner, to provide outside counsel services, on an as-needed basis, related to construction of the Midfield Terminal Complex at Southwest Florida International Airport. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

(j) Request Board approve a Nonparticipating Airline Airport Use Permit agreement with Comair, Inc. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

(k) Request Board accept a state grant by adopting a Resolution authorizing the execution of Joint Participation Agreement 40578819401, between the Florida Department of Transportation and the Lee County Port Authority, providing for $1,112,000.00 of state participation for design and construction of a general aviation terminal building, with associated landside and airside support facilities, at Page Field. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent. RESOLUTION NO. PA02-01-20

(l) Request Board authorize the execution of Supplemental Agreement No. 27, between the Lee County Port Authority and DMJM Aviation, Inc., for construction administration, construction management, and project management services related to the expansion of the Southwest Florida International Airport, in the amount of $18,696,896.00. Funds are available. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

5. DEPARTMENTAL MATTERS

No requests received.

6. EXECUTIVE DIRECTOR

No requests received.

7. PORT ATTORNEY

No requests received.

ADMINISTRATIVE AGENDA

1. COMMUNICATIONS

No requests received.

2. COMMITTEES AND BOARDS

No requests received.

3. LEGISLATION

No requests received.

4. BUDGETING, PURCHASES, CONTRACTS AND AGREEMENTS

(a) Request Board approve an increase in the maximum 24-hour parking rates at the Southwest Florida International Airport. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner St. Cerny, called and carried with Commissioner Coy absent.

(b) Request Board award PAB 02-02, Southwest Florida International Airport Midfield Terminal Complex Site Preparation, to Phoenix Construction Services, Inc., the lowest, most responsive, responsible bidder, in the amount of $29,702,852.30; and authorize Notice to Proceed after final permits are received. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent.

CONVENE AS BOARD OF COUNTY COMMISSIONERS

(c) Request Board authorize the execution of a conservation easement, to the South Florida Water Management District, on the Airport Mitigation lands formerly known as Site H and the Stairstep Parcels.

FOR ACTION TAKEN, REFER TO THE MINUTES OF THE BOARD OF COUNTY COMMISSIONERS.

(d) Request Board approve an amendment to Resolution #01-09-54, to extend the authorization date until May 31, 2002 to refund the $36,995,000.00 Lee County, Florida Airport Revenue Bonds, Series 1992A, utilizing a forward delivery purchase contract.

FOR ACTION TAKEN, REFER TO THE MINUTES OF THE BOARD OF COUNTY COMMISSIONERS.

RECONVENE AS BOARD OF PORT COMMISSIONERS

(e) Request Board approve an amendment to the concurring Resolution #PA01-09-55, to extend the authorization date until May 31, 2002 to refund the $36,995,000.00 Lee County, Florida Airport Revenue Bonds, Series 1992A, utilizing a forward delivery purchase contract. The Airports Special Management Committee and Staff recommend approval.

Commissioner Judah moved approval, seconded by Commissioner Albion, called and carried with Commissioner Coy absent. RESOLUTION NO. PA02-01-22

(f) Request Board approve the status of the Southwest Florida International Airport Master Plan Update, as presented by the DMJM Aviation/Birk Hillman/Ricondo team. The Airports Special Management Committee and Staff recommend approval.

Development Director Mark Fisher briefly described the purpose of the presentation, and noted that the Airports Special Management Committee will receive a more detailed report at their meeting later this month. Birk Hillman Project Manager Mike Arnold and Ricondo representative Garfield Eaton reviewed and summarized the information contained in a PowerPoint slide presentation (printed copy on file in Minutes Office). Among the topics reviewed were: enplanement projections up to 5.6 million by 2020, aircraft operations projections up to 139,700 in 2020, impacts on the airlines from the events of September 11 and the national recession, historical monthly enplanements, airfield demand/capacity assessment, facility requirements, alternatives, land use strategies, and current status of the master plan process. Steps to be taken in the next six months include completion of the I-75 access analyses, refinement of the selected alternative, development of capital program costs and phasing, identification of the recommended implementation plan, and continued work on the Environmental Analysis and the Development of Regional Impact. After Commissioner Janes thanked Mr. Arnold and Mr. Eaton for an informative presentation, Commissioner Judah moved approval of the request, seconded by Commissioner St. Cerny. In response to Commissioner Judah's question regarding the original plan for four runways, Mr. Fisher explained that the Federal Aviation Administration (FAA) mandates a 20-year plan; that the consultants always keep in mind the 30-, 40-, and 50-year plans; and that there is room for a third parallel runway and for a fourth if it is ever needed. Executive Director Robert M. Ball remarked that getting to a fourth runway would mean getting to the size of Atlanta; and replied to Commissioner Albion's question by stating that permit paperwork is being processed by the US Army Corps of Engineers. The motion was called and carried with Commissioner Coy absent.

5. DEPARTMENTAL MATTERS

No requests received.

6. EXECUTIVE DIRECTOR

No requests received.

7. PORT ATTORNEY

No requests received.

COMMISSIONER ITEMS

POSSIBLE SECURITY MEASURES AT PAGE FIELD - Commissioner Judah asked whether staff is investigating enhancements and improvements in security measures, such as a "Club" in the propellers of general aviation aircraft. Executive Director Robert M. Ball pointed out that, although the Authority cannot require such a measure, staff is meeting with the Florida Department of Law Enforcement (FDLE) and with the Federal Aviation Administration (FAA) to discuss various means to improve security; and added that Page Field has better security than most general aviation airports.

STATE REDISTRICTING AND OTHER CONCERNS - Commissioner Albion emphasized the need to closely monitor redistricting proposals; and noted that one of the proposed state redistricting maps shows I-75 as the dividing line, placing the Southwest Florida International Airport, which serves all of Southwest Florida, with an east coast congressperson. He suggested that officials and staff need to lobby to ensure that the airport and the university remain with a west coast district. Commissioner Janes added that it is important to work with the legislature to protect what has already been promised by the state in terms of money for road-building; and that the redistricting and budget shortfall will result in a chaotic legislative session. Commissioner Albion requested a staff report, no later than February 1, regarding items of concern that may come up in the legislative session, so that anyone in Tallahassee for a meeting or convention will be able to lobby for County interests. After Commissioner Janes commented that lobbying is more effective when there is early warning of potential actions, Commissioner Albion pointed out that the County's lobbying firm should be on the alert for any matters affecting the airlines, airports, and other areas of concern to the County.

COMMITTEE APPOINTMENTS

There were no appointments offered by the individual Commissioners.

COMMENTS FROM THE CHAIRMAN OF THE AIRPORTS SPECIAL MANAGEMENT COMMITTEE

On behalf of the Committee, Chairman Hugh Thimlar commended Executive Director Robert M. Ball and staff for the smooth and efficient operation of the Southwest Florida International Airport and Page Field; and wished a happy, prosperous, and safe New Year for everybody.

In the absence of Committee member Myers, Commissioner St. Cerny distributed copies of "Fran's Lee Island Coast VCB HOT LIST" to the Board and Committee members (copy is on file in the Minutes Office).

EXECUTIVE DIRECTOR ITEMS

CONGRATULATIONS TO ED FINK - Referring to a one-page report entitled "Executive Director's Comments" (copy is on file in the Minutes Office), Executive Director Robert M. Ball offered congratulations to Page Field Flight and Ground Instructor Ed Fink, who recently renewed his Master Instructor designation and is the first Florida Certificated Flight Instructor to earn the designation three times.

AVIATION SECURITY UPDATE -Mr. Ball provided an update regarding passage by Congress of an Aviation Security bill to implement changes in aviation security, including the creation of a Transportation Safety Administration (TSA) which will federalize all functions currently performed at screening checkpoints, along with other functions related to airport security. He noted that, before January 15, airlines are required to initiate a new form of baggage screening and positive match; that electronic explosive detection equipment will be required before the end of 2002; and that the 300-foot rule has required screening of vehicles entering the parking lot and elimination of parking in front of the terminal building. Mr. Ball reported that a blast analysis has been initiated to meet some of the structural criteria established by the new regulations, with the possibility that modification to the terminal building can be provided in lieu of the screening requirements; and that building modifications may be needed to install the explosive detection equipment. After noting that the legislation would also attempt to quicken the screening process, which could also require building changes, Mr. Ball stated that the consultants have been requested to make the new Midfield Terminal among the most secure in the country; and reviewed possible plan modifications to meet the new

criteria. He stated that staff will meet next week with the Federal Aviation Administration (FAA) and come back to the Board with any modifications that might need to be made.

REPRESENTATIVE KYLE TO TOUR AIRPORT - Mr. Lazzell asked whether Representative Bruce Kyle was "on board" regarding the aviation fuel tax, and Mr. Ball reported that Representative Kyle will be touring the airport this afternoon. Mr. Ball added that he would call Mr. Lazzell later in the day with a report on the results.

DEPARTURE OF NATIONAL GUARDSMEN - In response to Commissioner Albion's question, Mr. Ball commented that twelve National Guard representatives will remain on duty at the airport until April 1; and that the two who left on January 5 were additional Guardsmen provided for the busy holiday season.

The Chairman adjourned the meeting at 10:15 a.m.

ATTEST:
CHARLIE GREEN, CLERK

_____ _____

Deputy Clerk Chairman, Lee County Port Authority

10.4 Appendix D – FAA Comments and Responses

Exhibit 2: Comparison of TAF and RSW Master Plan Enplanement Forecasts

Year	Annual Enplanements			Percent Difference
	Actual [1]	Master Plan (M.P.)	TAF (Updated Since 9.11.01)	M.P. and updated TAF
2000	2,632,088	2,632,088	2,496,956	-5.13%
2001	2,665,387	2,789,300	2,688,420	-3.62%
2002	2,618,297	2,924,100	2,456,179	-16.00%
2003	2,894,932	3,046,400	2,827,534	-7.18%
2004		3,169,500	2,930,527	-7.54%
2005		3,294,000	3,051,186	-7.37%
2006		3,421,200	3,171,846	-7.29%
2007		3,551,400	3,292,507	-7.29%
2008		3,686,700	3,413,168	-7.42%
2009		3,829,700	3,533,828	-7.73%
2010		3,978,800	3,654,489	-8.15%
2011		4,130,200	3,775,150	-8.60%
2012		4,286,800	3,895,811	-9.12%
2013		4,446,600	4,016,471	-9.67%
2014		4,609,500	4,137,132	-10.25%
2015		4,775,800	4,257,793	-10.85%

[1] Year 2003 total estimated from January to June, 2003 actual and historical trends

Sources: Lee County Port Authority
FAA Terminal Area Forecast

Prepared by: Ricondo & Associates, Inc.

In conclusion, we believe that the activity forecasts prepared in conjunction with the Southwest Florida International Airport Master Plan still adequately projects the activity levels expected to occur over the next 20 years. Furthermore, the differences that exist between the forecasts are minimal and can be partly explained by non-revenue passengers not included in the TAF.

Exhibit 1: Annual Percent Difference Between Original TAF and Updated TAF

Year	Terminal Area Forecast (FAA)		Percent Difference Between
	(Forecast prior to 9.11.01)	(Updated Since 9.11.01)	Original TAF and Updated TAF
2003	2,880,015	2,827,534	-1.8%
2004	2,999,046	2,930,527	-2.3%
2005	3,118,077	3,051,186	-2.2%
2006	3,237,108	3,171,846	-2.0%
2007	3,356,140	3,292,507	-1.9%
2008	3,475,171	3,413,168	-1.8%
2009	3,594,202	3,533,828	-1.7%
2010	3,713,233	3,654,489	-1.6%
2011	3,832,264	3,775,150	-1.5%
2012	3,951,295	3,895,811	-1.4%
2013	4,070,327	4,016,471	-1.3%
2014	4,189,358	4,137,132	-1.3%
2015	4,308,391	4,257,793	-1.2%
Average Annual Difference			-1.6%

3. The Master Plan forecast is still wthin 10 percent of the updated RSW TAF

Exhibit 2 below compares actual enplanements at RSW provided by the Lee County Port Authority with the updated TAF and Master Plan forecast. The difference between the updated TAF and the Master Plan forecast varies from approximately 7 percent in 2003 to just over 10 percent in 2015.

Another caveat that should be noted is that the TAF does not include non-revenue passengers. Non-revenue passengers include those that are flying on passes (such as travel agents), reduced rate tickets and airline employees. These passenger counts can be significant in a destination market such as Ft. Myers, Florida. This is the main reasoning behind using actual Southwest Florida International Airport Enplanements in the Master Plan forecast, as opposed to TAF base year enplanements. The phenomena detailed above can be seen in the 2000 base year enplanements found in Exhibit 2.

The actual enplanements reported by the Lee County Port Authority and those provided in the TAF are significantly different in 2000 (135,000 enplanement difference). When taking into account non-revenue passengers, the difference between the two forecasts would be significantly smaller.

RESPONSE TO COMMENTS ON SOUTHWEST FLORIDA INTERNATIONAL AIRPORT MASTER PLAN

The following provides a response to comments provided by the Florida Department of Transportation (FDOT) and the Federal Aviation Administration (FAA) in their review of the Southwest Florida International Airport (RSW) Master Plan. Specifically, we address the concern that the passenger enplanement forecast used in the Master Planning process had not been updated to include the impact of the September 11, 2001 terrorist attacks. In addition, the FAA's updated Terminal Area Forecast (TAF) is cited as the necessary comparison tool when testing the validity of the Master Plan enplanement forecast.

Due to the fact that the Master Plan forecast was prepared in the year 2000, the forecast does not take into account the impacts of the September 11, 2001 terrorist attacks. Despite this fact, however, we believe that the Master Plan forecasts still adequately projects the Airport's activity levels, as described in the following paragraphs.

1. ***RSW's Enplanement Levels Have Rebounded Following September 11th, 2001***

As a result of the September 11th terrorist attacks, enplanements at RSW decreased by only 1.8 percent in 2002 over 2001 levels, and by 0.5 percent over 2000 levels. Furthermore, based on actual figures available through June 2003 and historical monthly trends, enplanements are estimated to be approximately 2.9 million in 2003, which is an increase of over 10 percent over 2002 levels. As a result of the region's strong leisure and O&D market, RSW has recovered much better than most airports in the U.S. As a result of this rebound in 2003, RSW's estimated 2003 enplanements are expected to be only 5 percent lower than what was projected in the Master Plan forecast, and 2 percent higher than the FAA's updated TAF.

2. ***The RSW TAF does not change significantly once updated for the effects of September 11, 2001.***

Since the Master Plan forecast was prepared, the FAA's TAF for RSW has been updated to take into account potential changes in the demand for air travel following the September 11th terrorist attacks. However, over the forecast horizon, the annual percent difference in the enplanement forecast between the original TAF and updated TAF (i.e. updated for the effects of September 11, 2001) is only about 1.6 percent. An annual comparison between the original and updated TAF's for RSW is shown in Exhibit 1 below.

FDOT RESPONSE TO COMMENTS

Comment
1. Chapter 1 - Introduction, 1.3 Previous Studies: Top of the third paragraph states "The airport has also been included in the Continuing Florida Aviation System Plan (CFASP). The latest CFASP, complied in 1992, is currently in the process of being updated". Please replace CFASP with the Florida Aviation System Plan (FASP).
Response
The comment was addressed and CFASP was changed to FASP.

Comment
2. Chapter 3 – Aviation System forecasts: This chapter (working paper No. 1) was written before September 11, 2001, and the chapter remains unchanged in the final draft. Market share methodology was chosen as the preferred enplanement forecast for the airport and the FAA Aerospace Forecasts were used as the basis for market share analysis. FAA forecasts have been changed as well as most major commercial airports in Florida have changed their forecasts in response to the impacts following the events of September 11, 2001. We recommend that this master plan analyze the impacts following the events of September 11, 2001, and address the reason for not changing the forecast.
Response
See attachment titled "Response to comments on Southwest Florida International Airport Master Plan.

Comment
3. Chapter 6 – Alternatives, 6.1 Introduction: Typing error in third paragraph "The will not only change the operational characteristics of the airport,……" needs to be corrected.
Response
This was corrected in the text.

Comment
4. Public Participation: Documents related to public participation in this master plan updating process needs to be part of this master plan update.
Response
The public meeting minutes are now included as part of Appendix C.

FAA RESPONSE TO COMMENTS

Master Plan

Comment

1. The forecast should include the impact of the terrorists' events of September 11, 2001 and the recent economic downturn resulting from these events.

Response

See attachment titled "Response to comments on Southwest Florida International Airport Master Plan.

Comment

2. The base year data utilized in the forecast should be consistent with the actual data used in the Terminal Area Forecast (TAF). Activity data from 2001 or 2002is recommended.

Response

See attachment titled "Response to comments on Southwest Florida International Airport Master Plan.

Airport Layout Plan

Comment

1. Wind Rose – Include allowable crosswind conditions up to 20 knots. Note that 20 knots is the allowable crosswind for ARC D-V.

Response

The 20 knot crosswind conditions are now included on the ALP sheet.

Comment

2. Scale – Stay within the range of 1"=200' to 1"=600' and provide scale bar.

Response

This was corrected on the drawing.

Comment

3. Show holding position signs and markings. Use dimension lines to depict the distance from the runway centerline.

Response

This was added to the ALP drawing.

Comment

4. Once the location of the new runway is completely defined, provide the coordinates, threshold elevation and TDZ so that the approach areas are protected from encroachment.

Response

This was noted.

Land Use Map

Comment

1. Include property line in legend

Response

Done – See Drawing

Comment

2. Drawing should be scaled within the range of 1”=200’ to 1”=600’

Response

Done – See Drawing

Comment

3. Land uses should be depicted by general use categories (e.g. agriculture, recreational, industrial, aviation, commercial, etc.)

Response

The land uses prepared for this study are more specific to the local Land Development Code and local Comprehensive Plan in lieu of general land use categories typically found in master planning documents. These more specific land uses will allow the land use sheet to be a more effective tool in coordinating on-airport land uses between the airport owner and the local government. We therefore suggest maintaining the land uses as depicted.

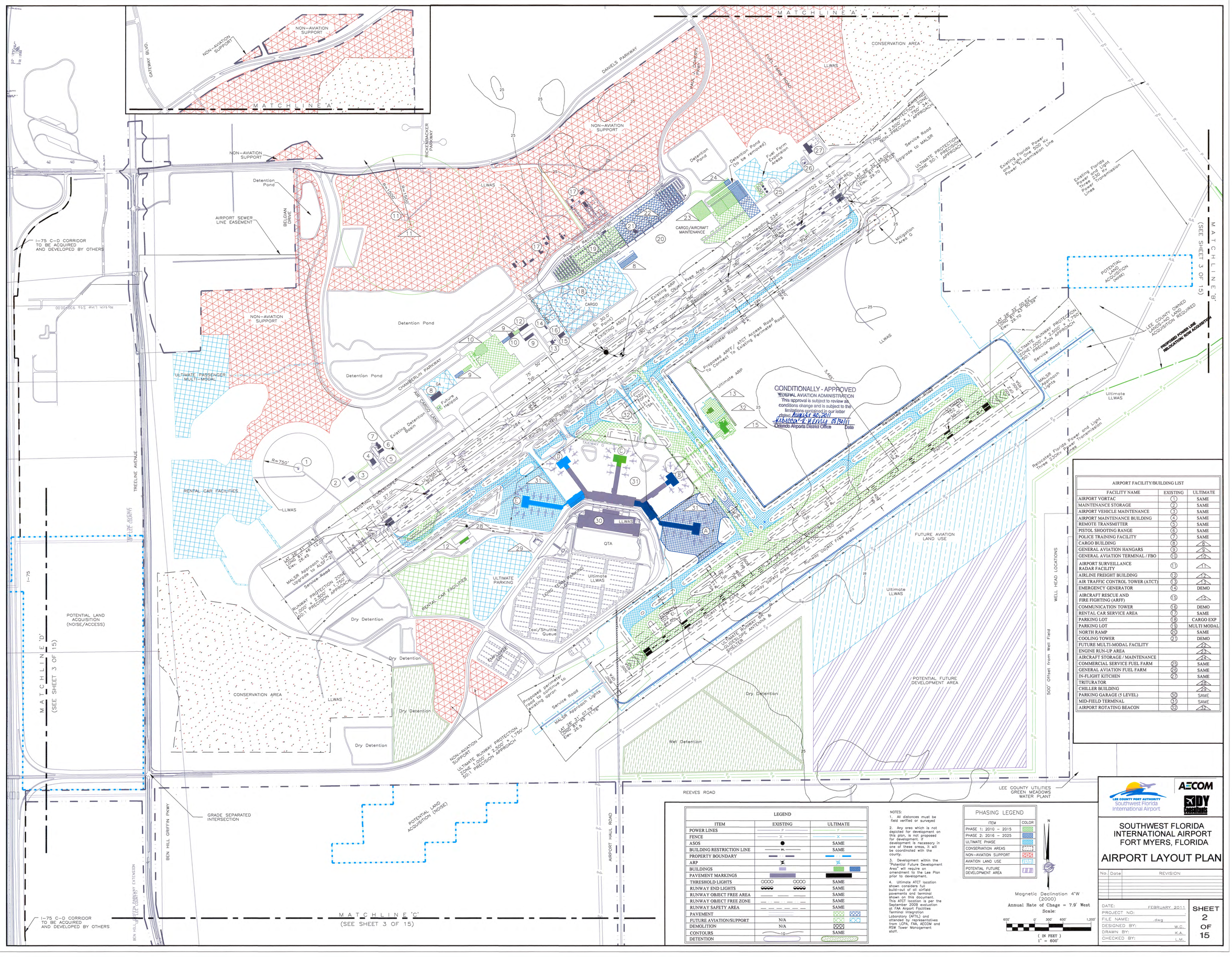
Property Map

Comment

1. Drawing should be scaled within the range of 1”=200’ to 1”=600’

Response

Done – See Drawing



AIRPORT FACILITY/BUILDING LIST		
FACILITY NAME	EXISTING	ULTIMATE
AIRPORT VORTAC	1	SAME
MAINTENANCE STORAGE	2	SAME
AIRPORT VEHICLE MAINTENANCE	3	SAME
AIRPORT MAINTENANCE BUILDING	4	SAME
REMOTE TRANSMITTER	5	SAME
PISTOL SHOOTING RANGE	6	SAME
POLICE TRAINING FACILITY	7	SAME
CARGO BUILDING	8	8
GENERAL AVIATION HANGARS	9	9
GENERAL AVIATION TERMINAL / FBO	10	10
AIRPORT SURVEILLANCE RADAR FACILITY	11	11
AIRLINE FREIGHT BUILDING	12	12
AIR TRAFFIC CONTROL TOWER (ATCT)	13	13
EMERGENCY GENERATOR	14	DEMO
AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF)	15	15
COMMUNICATION TOWER	16	DEMO
RENTAL CAR SERVICE AREA	17	SAME
PARKING LOT	18	CARGO EXP
PARKING LOT	19	MULTI MODAL
NORTH RAMP	20	SAME
COOLING TOWER	21	DEMO
FUTURE MULTI-MODAL FACILITY		22
ENGINE RUN-UP AREA		23
AIRCRAFT STORAGE / MAINTENANCE		24
COMMERCIAL SERVICE FUEL FARM	25	SAME
GENERAL AVIATION FUEL FARM	26	SAME
IN-FLIGHT KITCHEN	27	SAME
TRITURATOR		28
CHILLER BUILDING		29
PARKING GARAGE (5 LEVEL)	30	SAME
MID-FIELD TERMINAL	31	SAME
AIRPORT ROTATING BEACON	32	32

LEGEND		
ITEM	EXISTING	ULTIMATE
POWER LINES	P	P
FENCE	X	X
ASOS	●	SAME
BUILDING RESTRICTION LINE	BRL	SAME
PROPERTY BOUNDARY		
ARP		
BUILDINGS		
PAVEMENT MARKINGS		
THRESHOLD LIGHTS		SAME
RUNWAY END LIGHTS		SAME
RUNWAY OBJECT FREE AREA		SAME
RUNWAY OBJECT FREE ZONE		SAME
RUNWAY SAFETY AREA		SAME
PAVEMENT		
FUTURE AVIATION/SUPPORT	N/A	
DEMOLITION	N/A	
CONTOURS	10	SAME
DETENTION		

NOTES:
1. All distances must be field verified or surveyed
2. Any area which is not depicted for development on this plan, is not proposed for development. If development is necessary in one of these areas, it will be coordinated with the county.
3. Development within the "Potential Future Development Area" will require an amendment to the Lee Plan prior to development.
4. Ultimate ATCT location shown considers full build-out of all airfield pavements and terminal shown on this document. This ATCT location is per the September 2009 evaluation at FAA Airport Facilities Terminal Integration Laboratory (AFTIL) and attended by representatives from LCPA, FAA, AECOM and PDW Tower Management staff.

PHASING LEGEND	
ITEM	COLOR
PHASE 1: 2010 – 2015	
PHASE 2: 2016 – 2025	
ULTIMATE PHASE	
CONSERVATION AREAS	Existing
NON-AVIATION SUPPORT	
AVIATION LAND USE	
POTENTIAL FUTURE DEVELOPMENT AREA	

N

Magnetic Declination 4°W (2000)
Annual Rate of Chage = 7.9' West
Scale:
600' 0' 300' 600' 1,200'
(IN FEET)
1" = 600'

LEE COUNTY PORT AUTHORITY
SOUTHWEST FLORIDA International Airport
AECOM
DY Consultants

SOUTHWEST FLORIDA INTERNATIONAL AIRPORT FORT MYERS, FLORIDA

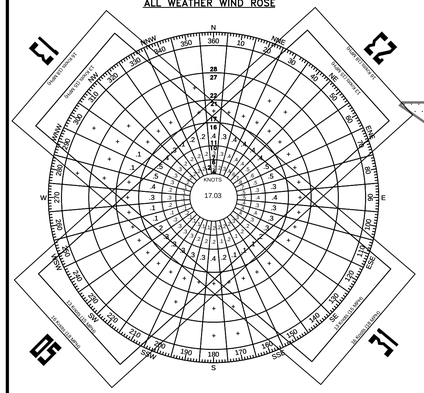
AIRPORT LAYOUT PLAN

No.	Date	REVISION

DATE: FEBRUARY 2011
PROJECT NO: -
FILE NAME: .dwg
DESIGNED BY: W.C.
DRAWN BY: K.A.
CHECKED BY: L.M.

SHEET 2 OF 15

ALL WEATHER WIND ROSE



CROSSWIND COMPONENT: 16 KTS. (18 MPH)

RUNWAY	COVERAGE
05/23	99.68%
13/31	99.67%

CROSSWIND COMPONENT: 13 KTS. (15 MPH)

RUNWAY	COVERAGE
05/23	98.04%
13/31	97.31%

CROSSWIND COMPONENT: 10.5 KTS. (12 MPH)

RUNWAY	COVERAGE
05/23	95.79%
13/31	94.61%

OBSERVATION PERIOD: 1990 – 1995
TOTAL OBSERVATIONS: 50,439

SOURCE: NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, N.C.

PHASING PLAN

PAVEMENT BUILDING ROADWAY

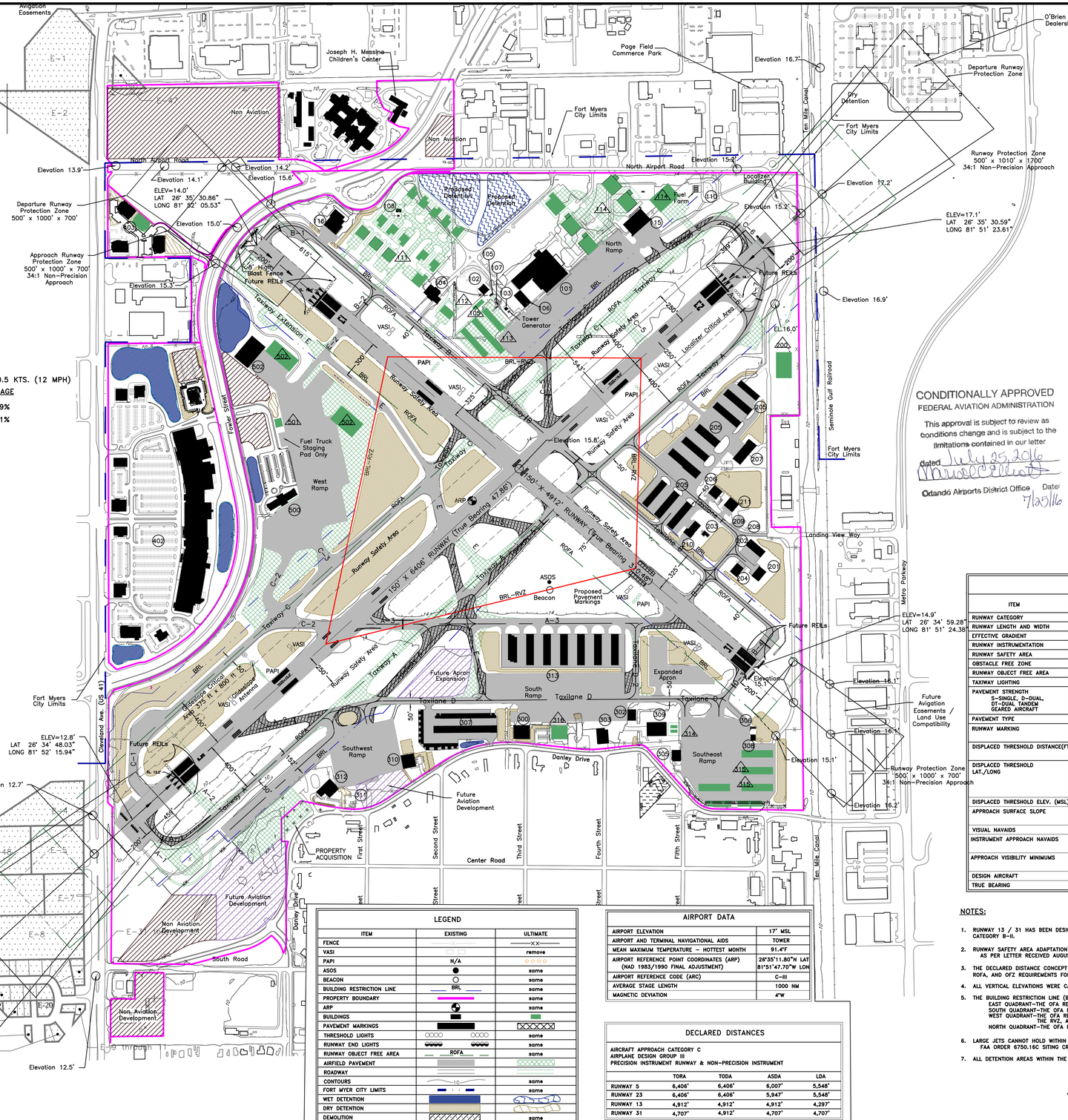
2015–2025

LAND USE

- Non– Aviation Support Development
- Existing Avigation Easements
- Surplus Land Sale
- Land Acquisition
- Future Aviation

CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND FUTURE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION. FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS.


Avigation Easements
E-1
E-2
E-4
Non Aviation
Joseph H. Messina Children's Center
Page Field Commerce Park
Elevation 16.7'
O'Brien Car Dealerships
Departure Runway Protection Zone
Fort Myers City Limits
Ten Mile Canal
Dry Detention
Non Aviation
Fort Myers City Limits
Elevation 15.2'
North Airport Road
Runway Protection Zone 500' x 1010' x 1700' 34:1 Non-Precision Approach
Localizer Building
Elevation 17.2'
Elevation 13.9'
Elevation 14.2'
Elevation 14.1'
Elevation 15.6'
ELEV=14.0'
LAT 26° 35' 30.86"
LONG 81° 32' 05.53"
Elevation 15.0'
Departure Runway Protection Zone 500' x 1000' x 700'
Approach Runway Protection Zone 500' x 1000' x 700' 34:1 Non–Precision Approach
Proposed Detention
Proposed Detention
Fuel Farm
Elevation 15.2'
ELEV=17.1'
LAT 26° 35' 30.59"
LONG 81° 51' 23.61"
Elevation 15.3'
Future REILs
North Ramp
Taxiway
Tower Generator
Future REILs
Elevation 16.9'
Taxiway Extension E
Runway Safety Area
Localizer Critical Area
Taxiway A-1
Runway Protection Zone
Elevation 16.0'
Seminole Gulf Railroad
Fuel Truck Staging Pad Only
West Ramp
Elevation 15.8'
Runway Safety Area
Taxiway C
Taxiway B
Taxiway A
Taxiway E
Taxiway D
Taxiway F
Taxiway G
Taxiway H
Taxiway J
Taxiway K
Taxiway L
Taxiway M
Taxiway P
Taxiway Q
Taxiway R
Taxiway S
Taxiway T
Taxiway U
Taxiway V
Taxiway W
Taxiway Y
Taxiway Z
Taxiway A-1
Taxiway A-2
Taxiway A-3
Taxiway A-4
Taxiway A-5
Taxiway A-6
Taxiway A-7
Taxiway A-8
Taxiway A-9
Taxiway A-10
Taxiway A-11
Taxiway A-12
Taxiway A-13
Taxiway A-14
Taxiway A-15
Taxiway A-16
Taxiway A-17
Taxiway A-18
Taxiway A-19
Taxiway A-20
Taxiway

U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Consolidated AC includes Changes 1 and 2

Subject: Airport Master Plans

Date: July 29, 2005 **AC No.:** 150/5070-6B
Initiated by: APP-400 **Change:**

1. PURPOSE. This Advisory Circular (AC) provides guidance for the preparation of master plans for airports that range in size and function from small general aviation to large commercial service facilities. The intent of this AC is to foster a flexible approach to master planning that directs attention and resources to critical issues. The scope of each master plan must be tailored to the individual airport under evaluation.

2. CANCELLATION. This publication cancels Advisory Circular 150/5070-6A, *Airport Master Plans*, dated June 1985. Chapter 10 and Appendix F of this document cancel Chapter 1, Section 5, *Airport Layout Plan*; Appendix 6, Section 2, *Typical Airport Layout Plan*; and Appendix 7, *Airport Layout Plan Components and Preparation*, of Advisory Circular 150/5300-13, *Airport Design*, dated September 1989.

Dennis E. Roberts, Director
Office of Airport Planning and Programming

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PART I: THE PROCESS OF PREPARING MASTER PLAN STUDIES

Chapter 1 Introduction

101. PURPOSE AND APPLICATION

This Advisory Circular (AC) provides guidance for the preparation of master plans for all airports. Its intent is to foster the development and adoption of a flexible approach to master planning that devotes resources and attention to critical issues. Planners should tailor an individual master plan to the unique conditions at the study airport. As a result, master plans for individual airports will vary in what elements they include and in the level of detail.

An airport master plan is a comprehensive study of an airport and usually describes the short-, medium-, and long-term development plans to meet future aviation demand. The category of study that includes master plans and master plan updates can therefore be thought of as a continuum that varies by level of detail and associated effort.

The elements of a master planning process will vary in complexity and level of detail, depending on the size, function, issues, and problems of the individual airport. The technical steps described in this AC are generally applicable, although each step should be undertaken only to the extent necessary to produce a meaningful product for a specific airport. However, study elements for large and/or complex airports may involve unique technical analyses beyond those detailed in this AC. The sponsor, the sponsor's consultant, and FAA representatives must carefully prepare a scope of work that reflects the circumstances of the individual airport.

102. INTENDED USERS

This publication is intended primarily for use by members of the aviation community, especially those directly involved in preparing master plans: airport sponsors, airport staff, airport consultants, FAA representatives, and state aviation officials. It will also be useful to airport board members; municipal officials; state, regional, and local planning personnel; and the general public.

103. NEED FOR NEW GUIDANCE

Methods and techniques associated with airport master plan studies have evolved since the last version of this AC was published in 1985. This update incorporates current industry methods and procedures commonly employed in the preparation and documentation of master plan studies.

104. FUNCTION OF MASTER PLAN STUDIES

a. Airport master plans are prepared to support the modernization or expansion of existing airports or the creation of a new airport. The master plan is the sponsor's strategy for the development of the airport.

b. The goal of a master plan is to provide the framework needed to guide future airport development that will cost-effectively satisfy aviation demand, while considering potential environmental and socioeconomic impacts. The FAA strongly encourages that planners consider the possible environmental and socioeconomic costs associated with alternative development concepts, and the possible means of avoiding, minimizing, or mitigating impacts to sensitive resources at the appropriate level of detail for facilities planning.

c. Each master plan should meet the following objectives:

1) Document the issues that the proposed development will address.

2) Justify the proposed development through the technical, economic, and environmental investigation of concepts and alternatives.

3) Provide an effective graphic presentation of the development of the airport and anticipated land uses in the vicinity of the airport.

4) Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.

5) Propose an achievable financial plan to support the implementation schedule.

6) Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved.

7) Present a plan that adequately addresses the issues and satisfies local, state, and Federal regulations.

8) Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls, and other policies necessary to preserve the integrity of the airport and its surroundings.

9) Set the stage and establish the framework for a continuing planning process. Such a process should monitor key conditions and permit changes in plan recommendations as required.

105. ORGANIZATION AND USE OF THE ADVISORY CIRCULAR

a. **Structure of the Advisory Circular** – The Advisory Circular is presented in two parts:

1) ***Part I – The Process of Preparing Master Plan Studies*** provides an introduction to the Advisory Circular, an overview of master plan studies, and a summary of the pre-planning process.

2) ***Part II – Elements of Master Plan Studies*** provides a detailed discussion of the various elements of master plan studies, including the components of master plan technical reports and the plan drawings that accompany them.

b. As noted above, Part II of the AC details the individual elements of a master plan study. Although they are presented in the order found in a typical master plan report, issues in some chapters may have a direct bearing on those in other chapters. Environmental and financial feasibility considerations, for example, must be considered throughout the process. These cross-linkages are explicitly identified in the relevant chapters of Part II.

c. The AC includes several appendices of supplemental materials. Appendix A presents a glossary of terms that are commonly used in airport master planning. Appendix B provides a list of useful reference materials, including other advisory circulars, FAA orders, appropriate Code of Federal Regulations, Transportation Security Regulations, security-related publications, FAA reports, and general airport publications. Appendix C provides a listing of potential stakeholders in the public involvement program of the master planning process. Appendix D provides a discussion of environmental factors in airport master planning. Appendix E provides guidance on the site selection process. Appendix F shows the general guidelines in preparing the airport layout plan drawing set.

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Chapter 2 Content of Master Planning Studies

201. TAILORING STUDIES TO THE NEEDS OF INDIVIDUAL AIRPORTS

The guidance in this AC covers planning requirements for all airports, regardless of size, complexity, or role. However, each master plan study must focus on the specific needs of the airport for which a plan is being prepared and the scope of a study must be tailored to the individual airport. Therefore, in a given study certain master planning elements may be emphasized while others may not be considered at all. Although the FAA does not require airports to prepare master plans, it strongly recommends that they do so.

The intent of this AC is to foster a flexible approach in the preparation of airport master plans, enabling planners to focus their resources and effort on critical issues. As a scope of work is developed, the planners and airport sponsors must make decisions regarding two key questions: (1) what type of study should be conducted, and (2) what level of detail should be assigned to the individual elements of the study?

202. TYPES OF MASTER PLANNING STUDIES

a. The master planning process will vary with the size, complexity, and role of the study airport and may include a variety of supporting studies. However, all master planning studies will fall within one of two basic types: Airport Master Plans or Airport Layout Plan (ALP) Updates.

b. **Airport Master Plans** – An airport master plan is a comprehensive study of the airport and typically describes short-, medium-, and long-term plans for airport development. Master planning studies that address major revisions are commonly referred to as "Master Plans," while those that change only parts of the existing document and require a relatively low level of effort tend to be known as "Master Plan Updates." In common usage, however, the distinction refers to the relative levels of effort and detail of master planning studies. In most cases, the master plan will include the following elements:

   1) ***Pre-planning*** – The pre-planning process includes an Initial Needs Determination, Request for Proposal and Consultant Selection, Development of Study Design, Negotiation of Consultant Contract, and Application for Study Funding.

   2) ***Public Involvement*** – Once the consultant team is under contract and has been issued a notice-to-proceed, establish a public involvement program and identify and document the key issues of various stakeholders.

   3) ***Environmental Considerations*** – A clear understanding of the environmental requirements needed to move forward with each project in the recommended development program.

   4) ***Existing Conditions*** – An inventory of pertinent data for use in subsequent plan elements.

5) ***Aviation Forecasts*** – Forecasts of aeronautical demand for short-, medium-, and long-term time frames.

6) ***Facility Requirements*** – Assess the ability of the existing airport, both airside and landside, to support the forecast demand. Identify the demand levels that will trigger the need for facility additions or improvements and estimate the extent of new facilities that may be required to meet that demand.

7) ***Alternatives Development and Evaluation*** – Identify options to meet projected facility requirements and alternative configurations for each major component. Assess the expected performance of each alternative against a wide range of evaluation criteria, including its operational, environmental, and financial impacts. A recommended development alternative will emerge from this process and will be further refined in subsequent tasks. This element should aid in developing the purpose and need for subsequent environmental documents.

8) ***Airport Layout Plans*** – One of the key products of a master plan is a set of drawings that provides a graphic representation of the long-term development plan for an airport. The primary drawing in this set is the Airport Layout Plan. Other drawings may also be included, depending on the size and complexity of the individual airport.

9) ***Facilities Implementation Plan*** – Provides a summary description of the recommended improvements and associated costs. The schedule of improvements depends, in large part, on the levels of demand that trigger the need for expansion of existing facilities.

10) ***Financial Feasibility Analysis*** – Identify the financial plan for the airport, describe how the sponsor will finance the projects recommended in the master plan, and demonstrate the financial feasibility of the program.

c. **Airport Layout Plan Updates** – An update of the airport layout plan (ALP) drawing set should be an element of any master plan study. In fact, keeping the ALP current is a legal requirement for airports that receive Federal assistance. An update of the ALP drawing set will reflect actual or planned modifications to the airport and significant off-airport development. An accompanying ALP Narrative Report should explain and document those changes and contain at least the following elements:

1) Basic aeronautical forecasts.

2) Basis for the proposed items of development.

3) Rationale for unusual design features and/or modifications to FAA Airport Design Standards.

4) Summary of the various stages of airport development and layout sketches of the major items of development in each stage.

An ALP drawing set update is an appropriate alternative to a full master plan whenever the fundamental assumptions of the previous master plan have not changed. If there have not been any major changes in airport activity or improvements that have had unanticipated consequences, a master plan update is not necessary. Another situation where only an ALP update would be appropriate is the examination of a single development item, such as runway safety area improvements. As indicated above, an ALP update will typically involve fewer elements than a full master plan study, including only the aviation demand forecasts, an assessment of facility requirements, a facility implementation and financing plan, and an airport layout plan drawing set. If additional steps are required to complete the ALP update, a full master plan study is probably a better choice.

203. LEVEL OF STUDY DETAIL

Although almost every master plan includes the full list of elements discussed above, the complexity of the individual elements will vary, depending on an airport's size, function, and particular issues and problems. Each element should be analyzed only to the extent required to produce a meaningful product for that particular airport. The planning process should consider the facility planning needed to enable a seamless transition to subsequent projects.

The scoping process used by the airport sponsor, the sponsor's consultant, and the FAA to develop a work program for the planning study should determine the appropriate level of detail for each study element. The availability of planning information from Federal, state and local organizations may eliminate the need to develop similar information in a study effort. Chapter 3 contains additional information on the scoping process, while Part II provides greater detail on the various elements of an airport master plan.

204. PRODUCTS OF THE MASTER PLANNING PROCESS

a. The products of the master planning process will vary with the complexity of the effort. Master plans can include the following deliverables:

1) ***A Technical Report*** contains the results of the analyses conducted during the development of the master plan. For complex studies, interim reports may be produced to facilitate coordination with various government agencies, tenants, users, the general public, and other interested parties. At the conclusion of the study, the interim reports are assembled into the final technical report.

2) ***A Summary Report*** is useful in bringing together pertinent facts, conclusions and recommendations for public review.

3) ***An Airport Layout Plan Drawing Set*** contains a graphical representation of the proposed development in the master plan and is typically produced as a separate set of full-sized drawings. In addition, the ALP drawing set is typically included in the Technical Report in reduced form.

4) ***A Web Page*** – Many airport sponsors maintain a public access web page with general information about the governmental unit involved and specific information regarding

the airport or airports operated by the sponsor. The Internet provides an excellent forum for the distribution of information on the progress of the study and its final findings and recommendations.

5) ***Public Information Kit*** – Throughout the master plan study, airport sponsor representatives may be asked to speak to community associations, civic clubs, and other organizations with an active interest in the airport. Visual aids such as models, summary brochures, or computer presentations are excellent tools to use at these events to maintain support for the airport development program.

b. The master plan technical report, summary report, and airport layout plan may be produced as paper versions and/or in an electronic format, as determined by the airport sponsor and the FAA. The electronic format will ease distribution of the final reports after the initial printing is exhausted.

c. It is again emphasized here that the level of complexity of each of these products should be determined during the development of the study design. The airport sponsor and the FAA have the flexibility to assess the level of detail that is appropriate for the individual airport and may identify other deliverables that should be produced to support the study effort.

205. MASTER PLAN REVIEWS BY THE FAA

a. The recommendations contained in an airport master plan represent the views, policies and development plans of the airport sponsor and do not necessarily represent the views of the FAA. Acceptance of the master plan by the FAA does not constitute a commitment on the part of the United States to participate in any development depicted in the plan, nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public law. The FAA reviews all elements of the master plan to ensure that sound planning techniques have been applied. However, the FAA only approves the following elements of airport master plans:

1) ***Forecasts of Demand*** – The master plan forecast should be reviewed to ensure that the underlying assumptions and forecast methodologies are appropriate. Paragraph 704.h of this guidance should be used to determine consistency of the master plan forecast levels and the Terminal Area Forecast (TAF). Inconsistencies between the master plan forecast and TAF must be resolved, and the forecast approved, before proceeding with subsequent planning work.

2) ***Airport Layout Plan*** – All airport development at Federally-obligated airports must be done in accordance with an FAA- and sponsor-approved ALP. Furthermore, proposed development must be shown on an approved ALP to be eligible for Airport Improvement Program (AIP) funding. FAA approval of the ALP indicates that the existing facilities and proposed development depicted on the ALP conforms to the FAA airport design standards in effect at the time of the approval or that an approved modification to standard has been issued. Such approval also indicates that the FAA finds the proposed development to be safe and efficient.

Chapter 3 Pre-planning

Planners, along with airport sponsors, must make two major decisions in tailoring a study to the needs of an individual airport: what type of study to conduct and what level of detail to use for the individual elements of the study. This chapter outlines these and other steps of the pre-planning process.

301. INITIAL NEEDS DETERMINATION

a. **Identifying General Need for Study** – The airport sponsor usually identifies the need for a planning study, based on existing or potential shortcomings in the existing plan or airport. These deficiencies may be the result of demand exceeding capacity, the introduction of new aircraft types, or the emergence of a critical environmental problem. The airport sponsor's strategic vision or business plan for the airport may drive the need for a planning study. In addition, national, state, or regional planners may have identified issues requiring the airport sponsor's attention. Alternatively, airport users, such as the scheduled airlines and general aviation pilots, may have identified needs that prompted the airport sponsor to undertake a study. The airport sponsor should formulate priorities to establish which issues are most important. Periodic meetings between the airport sponsor and FAA representatives offer an excellent opportunity to review these issues.

b. **Determining Type of Study** – Deciding whether the study in question will lead to a master plan or to an ALP update largely determines the elements to be included and the required level of effort. Even at this early stage of the process, the airport sponsor and the FAA should be able jointly to determine what type of study is appropriate. The sponsor usually will not make decisions regarding specific variations on the basic study type until the consultant has come on board. Although a master plan study will always include a technical report and an airport layout plan drawing set, supplemental products, which may often be related to public outreach efforts, will usually be determined during the scoping process.

302. REQUEST FOR QUALIFICATIONS AND CONSULTANT SELECTION

a. The current version of AC 150/5100-14 *Architectural, Engineering and Planning Consultant Services for Airport Grant Projects* provides important guidance for consultant selection, and its use is recommended. Another useful reference is "Guidelines to Selecting Airport Consultants" published by the Airport Consultants Council, an aviation industry trade association.

b. As a general rule, airport sponsors hire a consultant to prepare planning studies. Before soliciting statements of qualifications (SOQs) from consultants, the airport sponsor should have a clear understanding of the issues that have defined the need for the study. This information should be provided in the Request for Qualifications (RFQ) that the airport sponsor will issue.

c. The sponsor should assemble an unbiased and technically qualified selection panel to conduct the consultant selection. The qualifications of a firm should be judged on its

experience in similar work and its staff's professional credentials. The planning team that is proposed by the consultant should include firms with relevant experience that can commit to complete the study in the amount of time specified. It is not uncommon for several firms to join together in a master planning effort for the purpose of providing specialized skills or local knowledge and expertise.

d. The sponsor should avoid the use of elaborate submittal requirements or interviews, which add substantially to the cost of the selection process for both the sponsor and the prospective consultants. If the sponsor determines that interviews or requests for additional information are necessary, the sponsor should limit this activity to a short list of three to five firms selected by the evaluation panel.

e. If sponsors anticipate an Environmental Assessment (EA) or Environmental Impact Statement (EIS), they should consult with the local FAA Airports office to determine the appropriate time to begin the consultant selection process. If a sponsor or the local FAA Airports office anticipates the need for an Environmental Assessment, the sponsor should select a qualified environmental contractor to prepare the EA. Sometimes, it may be appropriate for the sponsor to expand the scope of the master plan consultant's responsibilities to include the EA. When the sponsor or the FAA have substantial concerns that the EA may suggest that an action may cause significant impacts, the appropriate FAA Airports office should select the contractor to prepare the EA. This is because if the EA shows that significant impacts would occur, the FAA must select the contractor to prepare its EIS. FAA's selection of the EA contractor in this case saves time by eliminating the need for later contractor selection to prepare the EIS.

303. DEVELOPMENT OF STUDY DESIGN

a. The second decision in designing an effective planning study is to determine the level of detail or depth of analysis for each element. The airport sponsor and the selected consultant should negotiate these basic decisions as the work program is established.

b. The airport sponsor, the consultant, the FAA, and others (as appropriate) begin this process by (1) identifying the airport development issues to be addressed in the master plan and (2) determining the types of analyses and level of effort needed to address each issue individually. Known as "scoping," this is an important step in designing any planning study.

c. The sponsor and the selected consultant should address a broad range of topics during the scoping process. As the scoping process proceeds, the planners must remember that each master plan study is unique and the appropriate scope of work will vary from airport to airport. The airport sponsor is encouraged to develop a scope of work that is appropriate to the circumstances of the individual airport. Some of the specific topics that should be addressed at this time include:

1) ***Goals and Objectives*** – Discuss key airport development issues that the master plan will attempt to resolve. This discussion should answer questions such as: "Why is this master plan study being conducted?," "What are the key issues that need to be addressed in the future development of the airport?," and so forth.

2) ***Data Availability*** – Review the availability of activity forecasts and capacity assessments produced by state and regional system plans and FAA Terminal Area Forecasts and decide how to use them. If these data are not used, the reasons should be discussed with and accepted by all parties, including the FAA. This is especially true for low activity airports where demand/capacity relationships are usually not a critical consideration. Current inventory data may also be available to the consultant as a result of continuous planning efforts by the airport sponsor. Use of these data may reduce the need for new data collection efforts or surveys by the consultant.

3) ***Forecast Horizons*** – Although 5-, 10-, and 20-year time frames are typical for short-, medium-, and long-term forecasts, some studies may want to use different time frames. For any forecast horizon, the short-term forecast should support a capital improvement program, the intermediate-term a realistic assessment of needs, and the long-term a concept-oriented statement of needs. Schedules for airport development that are directly related to demand levels should be tied to those demand levels, rather than dates, since the actual demand will often vary from that forecast, particularly as the time frame increases. At some airports, it may be necessary to look beyond the 20-year time frame to protect the airport from incompatible land use development. The need to do longer range planning must clearly be justified during the scoping process.

4) ***Environmental Considerations*** – Identify the level of environmental documentation that is likely to move forward with the recommendations of the completed master plan study. Sponsors, in consultation with the appropriate FAA Airport's environmental specialist, should identify whether an Environmental Assessment (EA) or Environmental Impact Statement (EIS) may be required or whether categorical exclusions may apply. As noted previously, if sponsors anticipate an EA or EIS, they should consult with the local FAA Airports office to determine the appropriate time to begin the consultant selection process. Consideration should also be given to the appropriate state environmental regulations and the need to develop applicable documentation.

5) ***Schedules*** – Agree upon schedules showing milestones for the completion of technical products and for coordination and review. The schedule should clearly indicate decision points beyond which work should not proceed without FAA or airport sponsor approval, such as FAA review and approval of the master plan forecast.

   Realistic schedule development is important. From a practical standpoint, adhering to the schedule for a complex study, such as a long-range plan for a high activity airport, is very difficult. Less complex studies should not have such a problem. In any case, the schedule for a master plan study should be firm so that all reviewers are aware of their responsibilities with respect to it. The airport sponsor should emphasize the importance of meeting planning process deadlines.

6) ***Deliverables*** – The specific draft and final products of the planning process, and the general level of detail, should be listed in the scope of work and include the number, type, and format of paper reports, drawings, and electronic files.

7) ***Coordination and Public Involvement Program*** – For less complex studies, the FAA, the airport sponsor and the consultant may be the only participants as long as they coordinate with appropriate local officials, stakeholders, and ensure citizen participation through public information sessions. These sessions may be conducted separately or in conjunction with other public meetings. Often written updates for regional or state aviation, transportation and comprehensive planning agencies will be sufficient.

   For complex studies, it may be necessary to organize formal policy, technical, and review committees that meet regularly and use structured communications systems, including public hearings, public information workshops, and web-based information sharing tools. The committee membership may consist of representatives of local, state, and Federal government agencies as well as airport tenants, user groups, community associations, and business organizations. In addition, the active participation of the FAA concerning airspace management, navigational aid and approach aid installation, designation of instrument runways, potential financing of planning and development, and safety and security matters is essential.

   The local FAA Airports office can coordinate the involvement of the FAA organizations that are interested in the development of the airport. Advice from the airlines concerning aircraft types they plan to use and other operational and financial matters will also be essential to the development of an effective plan.

   The airport sponsors staff probably will participate in the day-to-day activities of the planning study. A large airport sponsor will likely have a more extensive management and staff structure than the sponsors of smaller airports.

8) ***Budget*** – Development of the work scope and the associated fees is usually an iterative process. The work scope contemplated in early draft narratives may require fees that exceed a sponsor's budget. Planners must adjust the scope of work, the proposed fees, or the available budget until all three components have been balanced to the satisfaction of the sponsor, the consultant, and the FAA.

d. Careful attention to the development of the scope of work for the master plan study sets the stage for a successful study. Establishing a sound scope of work will also allow the sponsor, consultant, and the FAA to develop a budget that meets the goals and objectives of the study. Failure to do so may result in a study that is lacking vital details that affect the decision making process. It is important to note that Federal planning grants cannot be amended to cover increased costs. If additional work is needed beyond the original scope of work, an additional grant would probably be required. Many of the decisions made at this point will have an impact on the degree of difficulty that is encountered as the development program moves from planning to implementation.

304. NEGOTIATING CONSULTANT CONTRACTS

After scoping the study and negotiating a price for the consulting services, a contractual arrangement must be negotiated.

a. The recommended type of agreement between the airport sponsor and the consultant is a firm, fixed price contract. This is advisable whenever the level of effort can be fairly well predicted and where reasonable fees can be established at the outset. This type of contract imposes a minimum administrative burden and provides incentives for effective cost control and contract performance.

b. Where the level of effort or duration of the study is uncertain, a cost plus fixed-fee contract or a time and materials contract may be required. Also, some airport sponsors, recognizing that master planning often uncovers unanticipated issues that need study, add an on-call component to their consultant contract, which allows the scope and fees to be developed as new tasks are identified. These contract provisions typically provide for payment on a time and materials basis, but not to exceed a specified amount. The use of such contracts must be well justified if Federal financial assistance will be provided. The FAA does not recommend contracts based on a cost-plus percentage of cost and they are not permitted if Federal financial assistance will be provided for the study.

c. Advisory Circular 150/5100-14, *Architectural, Engineering and Planning Consultant Services for Airport Grant Projects,* is also a good reference for guidance on the options for a contract format. The procedures in this AC must be followed if Federal funds are involved.

305. APPLICATION FOR FEDERAL FUNDING

The point at which a sponsor submits a grant application to the FAA varies with the individual study. For large and complex master plans, the sponsor should divide the total grant funding into two phases. The initial phase can fund early tasks such as the definition of issues, inventory of existing conditions, preparation of forecasts, and determination of facility requirements. The second phase grant application could be prepared after the study team has gained a better grasp of the key issues and a more precise cost estimate of the effort needed to complete the master plan. The FAA should be involved in the overall process as early as possible. The FAA can advise the sponsor on the best strategy for obtaining funding and on questions of the eligibility of the elements of the proposed scope of work.

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PART II: ELEMENTS OF MASTER PLAN STUDIES

Part II of this Advisory Circular provides detailed discussions of the elements of a typical master plan study. As noted in Chapter 1, the elements to be included in a particular study will vary depending on the size, function, and challenges facing the study airport. The following key elements of master plan studies are discussed in Part II of this Advisory Circular:

- Chapter 4: Public Involvement Program
- Chapter 5: Environmental Considerations in Airport Master Planning
- Chapter 6: Existing Conditions
- Chapter 7: Aviation Forecasts
- Chapter 8: Facility Requirements
- Chapter 9: Alternatives Development and Evaluation
- Chapter 10: Airport Layout Plans
- Chapter 11: Facilities Implementation Plan
- Chapter 12: Financial Feasibility Analysis

Each chapter in Part II ends with a section titled "Documentation Guidelines." These guidelines are not mandatory, and planners should use their discretion in adopting only the guidelines that are consistent with their negotiated scope of work. Planners also have the flexibility to adopt other documentation guidelines that they feel are better suited to the particular circumstances of a study. Appendix B contains a comprehensive listing of other planning documents and guidelines that may be helpful.

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Chapter 4 Public Involvement Program

The first task in a master plan study, after the consultant receives a notice-to-proceed, is the creation of a public involvement program. The level of public involvement in airport planning should be proportional to the complexity of the planning study and to the degree of public interest. Most planning studies will fall between the minimal requirements of a small airport study and extensive public involvement required of a large and complex study. Particularly complex studies may merit the use of a consultant experienced in the public involvement process.

Figure 4-1: Public Meeting

Source: Portland Airport Project Advisory Committee

Over the course of the study, the public involvement program will encourage information-sharing and collaboration among the airport sponsor, users and tenants, resource agencies, elected and appointed public officials, residents, travelers, and the general public. Collectively, these various groups form the stakeholders who have an interest in the outcome of the study. An effective public involvement program should provide these stakeholders with an early opportunity to comment, before major decisions are made; provide adequate notice of opportunities for their involvement; and should provide for regular forums throughout the study.

401. TIMING

Public involvement has its greatest impact during the early stages of the planning process, before irreversible decisions have been made and while many alternatives can be considered. When the stakeholders become involved before major decisions or commitments are made, the planners can better deal with issues of community concern and improve the chances of reaching a consensus on controversial matters. If stakeholders become aware that the important decisions were made before they were invited to participate, they may distrust the planners. In addition, when public involvement opportunities are not provided until late in the planning process, there may not be enough time to make significant changes. The tendency, instead, will be for planners to merely defend previously determined courses of action, rather than exploring any new alternatives. An effective public involvement program will usually avoid such an undesirable outcome.

402. TOOLS AND TECHNIQUES

The study team may use a variety of forums, such as committees, public information meetings, small group meetings, and public awareness campaigns in a public involvement program. The selection of a specific platform depends on the particular complexities associated with the airport, the expected public interest in the master plan, the practices and policies of the airport sponsor, and budget considerations. In addition, it may be necessary to consider the special needs and sensitivities of low income and minority populations, consistent with the provisions in Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Although the public involvement program is important to the master plan effort, planners must balance the need for stakeholder involvement with the costs of such a process. Complex, large, or unfocused stakeholder groups can impede meaningful input, unnecessarily raise study costs, and frustrate participants as they struggle to communicate with the study group.

a. **Committees** – Committees that facilitate the public involvement program often include a Technical Advisory Committee (TAC) and a Citizen's Advisory Committee (CAC). The TAC is responsible for providing input and insight on technical issues. Committee members typically have a high level of technical competency associated with some aspect of aviation or airport operations and are major stakeholders in the airport's operation. The CAC serves as a sounding board and information exchange group for stakeholders, reviews the planning team's plans and proposals, interacts with the planning team members during the review, makes consensus recommendations to the planning team, and finally gives its recommendations on the finished plan to the airport sponsor. The membership of the CAC should be representative of all stakeholders.

   In reviewing the master plan, the TAC will evaluate its technical merit, while the CAC will weigh the recommendations against community goals, values, and needs. The committees are advisory, however, and have no decision making power of their own. In establishing these committees, the airport sponsor does not delegate its authority and responsibilities to them. The specific roles of such committees should be clearly defined at the outset and carefully explained at the initial meeting to prevent later misunderstandings. The size of both the TAC and CAC should be kept manageable. In some cases, it may be appropriate to combine the committees into a single group.

   The public involvement program should also include a management/policy/oversight committee to advise the planning team on policy decisions that will likely need to be made throughout the study. Committee members would typically include senior airport or airport sponsor staff that have the responsibility for decision making for the airport.

b. **Public Information Meetings** – Traditional public hearings, where stakeholders are given the opportunity to make public statements about the study, are not a good forum in which to conduct a continuing discussion of issues and alternatives because of the formal and inflexible nature of such hearings. An "open house" format with interactive information stations staffed by knowledgeable staff or consultants is more informal, yet a very effective method by which to engage the public and stakeholders in soliciting their opinions on development options. A public information meeting using the open house format will permit stakeholders to visit a meeting site at their convenience and visit with

planners on an informal one-on-one basis. A short slideshow or videotape, which all attendees can view upon arrival at the open-house site, may be a useful introduction to the study process. If a more formal meeting is desired, starting with an open house and moving into a more formal forum can be effective.

The number of public information meetings to be held over the course of the study can vary depending on the complexity of the study. It may also be necessary to hold meetings in more than one location to provide adequate geographic coverage for communities affected by the planning proposals. Public information meetings are typically held in the evening to provide most people the opportunity to attend. In some unique conditions, such as with a large elderly population, a day meeting may be needed. Complex projects may require that these meetings be scheduled throughout the day.

c. **Small Group Meetings and Briefings** – Small group meetings may be held throughout the study to provide opportunities for detailed discussions of plan alternatives. These informal sessions allow study team members to learn about local concerns. Such meetings may be scheduled with community boards, elected officials, civic organizations, and other interested organizations.

d. **Public Awareness Campaign** – An effective public awareness campaign is an essential part of the public involvement program. It is instrumental in generating initial stakeholder involvement, in maintaining stakeholder interest throughout the program, and in keeping the general public informed of the progress of the study.

   1) ***Informational and Educational Materials*** – Informational materials designed to educate a broad audience about all aspects of the study may be distributed to stakeholders. These materials might include fact sheets, flyers, press releases, newspaper ads, and general information packets. Planners should provide translations of this material if the airport is located in an area where English is not the first language for a large percentage of the residents. A mechanism should be provided for individuals or organizations to add their names to a mailing list to receive these materials.

   2) ***Web Pages*** – Web pages, with interactive or self-guided presentations, as well as electronic copies of study documents, are increasingly used as part of a public awareness campaign. Planners often link the master plan web page to the airport's web site.

e. Public involvement programs can place special requirements on an airport planning team. The team must be sensitive to the interests of stakeholders and have a positive attitude toward their participation in the planning process. The members of the team must also be aware of the extra time and personal effort that will be required, since they will have to meet regularly with the stakeholders at committee and public information meetings.

The same planners who work with the stakeholders at the various stakeholder forums should do the actual planning. Experience shows that planners must gain the confidence of the stakeholders and overcome their initial concerns before any real progress can be

achieved. Extensive public involvement from start to finish in the planning process enhances all plans and proposals and satisfies the goals of long-range planning.

403. IDENTIFY THE STAKEHOLDERS

The types of stakeholders will vary at each airport, depending on the size of the airport and the complexity of the planning issues. The following is a list of the general categories of potential stakeholders, from which a list of appropriate participants can be developed:

- Users and tenants
- Groups and individuals from within the sponsor's organization
- FAA personnel from the appropriate Regional and Field offices
- Resource agencies and other governmental units with regulatory or review authority
- Other interested groups

The individuals from a particular stakeholder group must be able to effectively represent their interests in discussions with the master plan preparation team. Furthermore, they should present the consensus view of the stakeholder group and not a special interest minority opinion. Although planners should make every effort to identify and communicate with all appropriate stakeholders early in the master plan process, it may also be necessary to add stakeholders as the study progresses. They must also be able to take study information back to their group to keep them informed throughout the planning process. Appendix C contains a more detailed list of potential stakeholders.

404. IDENTIFY KEY ISSUES

a. The identification of key issues is an early product of a well-designed public involvement program. Recall that the pre-planning activities identified in Chapter 3 included establishing which issues are of greatest concern to the airport. The results of that effort are essential in determining the type of study to be completed and in developing the scope of work. These will probably not include all issues that are of concern to each of the stakeholders. Discussions with the stakeholders (through use of the tools and techniques described earlier in this chapter) will help identify a broader set of problems, challenges, and opportunities that should be examined. These key issues will shape policy decisions, influence technical criteria and standards, and help identify development alternatives.

b. Once the key issues are identified, the sponsor may want to modify the study approach to address any important issues that had not been previously included in the proposed study. Some issues may be raised during this process that are not appropriate to include in the master plan study; these should be addressed outside of the master plan effort. The airport sponsor may establish a separate forum to handle such issues.

405. DOCUMENTATION GUIDELINES

a. **Document Key Issues** – Accurate documentation of the key issues is essential, because stakeholders will track how the planning team addresses them throughout the study. Grouping the critical issues into major functional categories, such as facilities, business,

operational, properties, and environmental issues, will help planners understand the stakeholders' concerns. The documentation should divide issues into those that will be addressed by the master plan study and those that will be addressed in a different forum.

b. **Document Public Involvement Program** – Documentation of the public involvement program should appear in an appendix to the Master Plan. Copies of committee rosters, meeting minutes, advertisements, newsletters, and other elements of the Public Awareness Campaign can be placed in an appendix as the official record of the public involvement program. This documentation should be revised regularly over the course of the study rather than being prepared at the end of the process.

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Chapter 5 Environmental Considerations

501. GENERAL

a. The purpose of considering environmental factors in airport master planning is to help the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing. By using existing maps of the airport area, prior environmental documents, and the Internet, planners and environmental specialists can get an excellent overview of sensitive environmental resources in and around the airport. The planner should understand that the consideration of environmental factors in the evaluation of alternatives should be tailored to each airport's size, unique setting, and operating environment, and will typically not be as detailed as that in subsequent environmental reviews. The consideration of environmental factors in the planning process will typically result in an inventory (overview) of the airport's environmental setting, the identification of potential environmental impacts of airport development alternatives, and the identification of environmentally related permits that may be required for recommended development projects.

b. The FAA recommends that the planning process consider the needs of subsequent environmental review processes. The master plan should include thoroughly supported project justifications and thorough documentation of alternatives that meet the planning need and are reasonable and feasible (environmentally as well as technically); and should note any effects of the airport development alternatives on sensitive environmental resources. Considering environmental factors in master planning provides useful information and planning principles that will help expedite the environmental review of projects.

c. Planners should develop each chapter of the master plan with environmental considerations in mind. Normally the environmental considerations should not be in a stand-alone chapter, but should be incorporated into the appropriate chapters, such as existing conditions and alternatives development and evaluation.

d. When considering environmental factors in master planning, the planner and environmental specialist do not need to follow the specific impact categories outlined in FAA Order 5050.4, NEPA Implementing Instructions for Airport Projects. Rather, FAA Order 5050.4 should be consulted as a guide to help planners identify potential environmental impacts specific to the study airport that should be considered as planning continues.

e. During the master plan scoping process, planners and environmental specialists should attempt to identify key environmental issues that will be involved in analyzing airport development alternatives to ensure that the master plan budget provides enough resources to analyze them. If such early identification is not possible, planners should propose an initial budget for the issues that may be identified during the master planning inventory and data collection process. If additional environmental issues are uncovered later in the planning process, the planner can prepare a separate scope and budget for a more detailed

analysis. However, sponsors and planners should be aware that Federal planning grants cannot be amended and the more detailed analysis would need to be accomplished in a separate study.

f. Planners, in consultation with environmental specialists, should consider appropriate Federal environmental laws and regulations when analyzing proposed airport development alternatives. There are approximately 40 Federal laws, executive orders, and regulations protecting particular parts of the environment, such as the Clean Air, Clean Water, and Endangered Species Acts, and an Executive Order on Protection of Wetlands. There are also many state and local environmental laws and regulations that should be considered in the master planning process.

g. During the master plan scoping process, planners should try to identify any potential short-term capital development projects that might be recommended in the master plan that are known to trigger additional environmental processing, such as safety related projects. For such projects, the airport sponsor should consider beginning the environmental processing before the master planning process is completed. Otherwise, the various agencies and public involved may perceive that the NEPA analysis is biased because a recommended alternative was selected in the master plan before the NEPA process began. This guidance can be extended to longer-term projects in the case of new airports or major reconfigurations of existing airports.

h. Planners should recognize the need to achieve a balance between the manmade and the natural environment. Although every proposed development project will have some impact on the natural environment, the use of prudent planning criteria, along with sound environmental data and analysis, will help minimize unavoidable environmental impacts and the delay of project design and construction.

502. ENVIRONMENTAL CONSIDERATIONS IN MASTER PLANNING ALTERNATIVES ANALYSIS

a. In the airport master planning process, the planner, along with an environmental specialist, should identify potential key environmental impacts of the various airport development alternatives so that those alternatives that avoid or minimize impacts on sensitive resources are considered. The planner should understand that the consideration of environmental factors in the evaluation of alternatives should be tailored to each airport's size, unique setting, and operating environment, and will typically not be as detailed as that in subsequent environmental reviews. The evaluation of potential environmental impacts should only be done to the level necessary to evaluate and compare how each alternative would involve sensitive environmental resources.

b. Project justifications and the analysis and selection of alternatives, including an explanation of why certain alternatives were not carried forward, should be completed and documented in the master plan before the NEPA process is started. Only those alternatives that could solve the identified problems and have aeronautical utility should be forwarded for NEPA analysis. (See Appendix E, "Consideration of Environmental Factors in Airport Master Planning," for additional discussion of this topic.)

c. Environmental factors should be considered during the development and analysis of airport project alternatives. This evaluation can help an airport sponsor identify a recommended alternative that the FAA may eventually select as its preferred alternative during the NEPA review process. It also facilitates the decision making process the FAA must complete as part of its project approval process.

1) The facility requirements and alternatives analysis chapters of the master plan should provide sufficient documentation regarding the justification for each project so that these chapters may serve as the basis for the purpose and need section of any environmental document.

2) Planners and environmental specialists should identify the potential key environmental impacts of each development project as part of the master plan alternatives analysis. Categories of potential impacts are defined in FAA Order 1050.1, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4, FAA Airports guidance for complying with NEPA. A matrix showing each alternative and its potential environmental impacts may be useful for subsequent environmental processing.

3) For some airports, only a few of the environmental impact categories will need to be discussed in the alternatives analysis (such as noise, wetlands, and social impacts), based on location-specific environmental issues identified in the environmental overview. Planners do not need to list each specific impact category mentioned in FAA Order 5050.4, but only those resources the alternatives would likely affect. In many cases, a simple environmental screening will be sufficient to identify those impacts. Detailed impact analyses will be conducted in any Environmental Assessment or Environmental Impact Statement that follow the master plan.

d. Permits that may be needed for each proposed project should be identified in the alternatives analysis. Although such requirements can vary greatly from state to state and within each locality, some of the permits that are usually necessary include:

- Clean Water Act, Section 404 Dredge and Fill Permit
- Air Quality Permit for on-site batch plants or other construction-related activities
- Local government construction permits
- Growth Management Permits
- United States Fish and Wildlife Service, National Marine Fisheries Service opinions, or State Wildlife and Game Commission Permits, if protected and endangered species could be impacted
- Clean Water Act, National Pollution Discharge Elimination System Permits

503. FURTHER GUIDANCE ON CONSIDERATION OF ENVIRONMENTAL FACTORS IN AIRPORT MASTER PLANNING

Appendix D, "Consideration of Environmental Factors in Airport Master Planning," contains recommendations on how to evaluate environmental factors for large or complex projects in airport master planning. It contains a discussion of the interaction of the airport planning and environmental processes and recommendations on how to effectively integrate these processes. The appropriate treatment of environmental factors in airport master planning can make subsequent detailed environmental processing more efficient and speed the completion of airport development. Although Appendix D is primarily intended for large and complex projects, many of the techniques in the guide can be applied to all levels of master planning.

504. DOCUMENTATION GUIDELINES

a. The existing conditions chapter should document the airport's environmental setting. The alternatives analysis chapter should document the potential environmental impacts associated with each development project alternative. In addition, the master plan should identify potential Federal, State, and local permits that may be required for each project alternative. Planners, with the help of environmental specialists, should include a matrix in the alternatives analysis chapter of the master plan that lists each development project alternative and its associated potential environmental impacts and required permits. This will be beneficial in subsequent environmental processing.

b. Planners should use appendices for the majority of the technical documentation, such as noise analysis, wetland mapping, and threatened and endangered species reports to improve the readability and organizational flow of the alternatives analysis chapter.

c. The potential environmental impacts of the proposed airport development alternatives should be addressed in a candid manner and written so that the public easily understands them.

Chapter 6 Existing Conditions

601. GENERAL

a. Most data gathering for a master plan study takes place when planners evaluate existing conditions. Typical broad categories of information to be collected include: the history of the airport; description and condition of physical facilities on the airport including buildings and airfield pavement; the regional setting of the airport and surrounding land uses; the environmental setting of the airport; socioeconomic and demographic data for the airport service area; historical aviation activity; and airport business affairs.

b. To initiate data collection, planners should carefully review the scope of work and verify the type and quantity of data needed for subsequent analyses. It is easy to collect information that is not really necessary or to fail to gather critical information needed for later analyses. Planners can avoid these mistakes by carefully reviewing the scope of the study.

c. To avoid unnecessary data gathering, planners should use existing data as much as possible. Previous master plans, other recent planning studies, and regional planning agencies can provide useful information that should be reviewed before any data gathering begins. However, planners should ensure the validity of the existing data before using them for the master plan study.

602. BACKGROUND SECTION

a. The background section should provide a brief overview of the history of the airport, describe its aeronautical role in the national aviation system, and identify its role in the community's infrastructure. Many sponsors periodically assemble information about the economic benefits of their airport, such as employment, direct salaries, and air service, which can be summarized in the background section.

b. Major milestone events in the history of the airport, such as ownership changes, construction of significant facilities, and the introduction of air service can be identified. A timeline, like that shown in Figure 6-1, may be used to present this information.

603. INVENTORY AND DESCRIPTION OF EXISTING FACILITIES

a. A significant portion of the inventory will be devoted to identifying the existing physical facilities at the airport. Drawings and other documents in FAA databases and on file with airport management are a good source of data and should be reviewed early in the inventory effort. These data may need to be supplemented with field observations, personal interviews with tenants and users, Internet searches, and surveys of passengers and employees.

Figure 6-1: Timeline of Events

1928 – Original land donation

1934 – Airport officially opened

1934

1937 – First commercial airline flight

1941 – Additional 40 acres donated

1953 – Dedication of new terminal building and ATCT

1960 – VORTAC installed

1975

1970 – Passenger terminal expanded

1975 – New ATCT constructed

1987 – Airport Authority established

1990 – Airport master plan updated

1998 – Terminal expansion began

1998

b. Classifications that are commonly used to organize this information include the following:

1) ***Airfield/Airspace*** – The functional use and geometry of runways, taxiways, and holding aprons; lighting, marking, and signing of runways and taxiways; navigational aids; visual approach aids, and instrument approach procedures. Information on the use of the airspace and how air traffic is managed should also be collected, including operational limitations resulting from traffic interaction with other airports or reserved airspace, obstructions to air navigation, noise abatement procedures, and airfield or navigational aid shortcomings. Planners should also compile historical data on weather conditions, such as prevailing wind direction and speed, as well as the occurrence of critical combinations of ceiling and visibility. The existence of, and the need for, Remain-Overnight-Parking (RON) should also be determined.

2) ***Commercial Passenger Terminal Facilities*** – Inventory of terminal building space by functional use and size: check-in hall/ticket lobby, number of gates, lineal feet of gate frontage, aircraft parking apron area, restaurants and other concession space, and passenger security screening procedures. Surveys conducted in hold rooms are often used to gather information about passenger characteristics that can be useful in determining future facility requirements.

3) ***General Aviation Facilities*** – The quantity and type of hangars; transient aircraft parking apron areas, tie-down positions; general aviation terminal facilities; aircraft parking aprons; fixed base operators; flight schools; pilot shops; and the number and mix of based aircraft.

4) ***Cargo Facilities*** – The quantity and area of air cargo buildings and aircraft parking aprons. At airports with significant air cargo activity, freight forwarders and other support functions are often located in areas adjacent to the airport. These should be identified on the airport layout plan.

5) ***Support Facilities*** – The quantity and type of support facilities at an airport that encompass a broad set of functions that ensure smooth and efficient airport operation, include Aircraft Rescue and Fire Fighting stations, airport administrative areas, airport maintenance facilities, airline maintenance hangars, flight kitchens, aircraft fuel storage, heating and cooling systems, FAA facilities. For airport towers, determine their hours of operation.

6) ***Access, Circulation and Parking*** – The quantity and type of ground access systems and commercial areas that serve the airport, or are served by it, such as on-airport access roads, circulation and service roads, parking and curb space, including information on their alignment, condition and capacity. Also include information on public transportation services, such as bus, rail, taxi and limousine, and the split between personal and public transportation. Consultation with state and local transportation agencies responsible for planning and operating surface transportation systems should produce data on proposed highway and transit plans, as well as traffic density statistics relative to surface systems leading to and from the airport. Furthermore, include information on rental car facilities and activity. It may difficult

to obtain information from rental car companies, but rental car facility planning is typically a critical element of planning for the terminal area and parking facilities, even at smaller airports.

7) ***Utilities*** – Description of major elements of the infrastructure that service the airport's utility demands for water, sanitary sewer, communications, heating and cooling, and power. Historical consumption data may be necessary to quantify future utility loads. Storm-water drainage, deicing and industrial waste disposal systems should also be included.

8) ***Other*** – Non-aeronautical uses such as recreational facilities and parks, industrial parks, agricultural or grazing leases, and retail businesses.

c. The inventory of existing facilities need not include all the classifications described above. That list is a general outline that should be modified to conform to the specific circumstances of an individual airport. For example, a general aviation master plan does not need a section on commercial passenger terminal facilities. Similarly, a plan for a large commercial service airport with little general aviation or air cargo activity could include the inventory of those facilities in a subsection describing support facilities.

d. Whatever format is used to describe existing conditions should be followed in subsequent chapters, using a parallel structure, to describe demand/capacity and determination of facility requirements, identification and evaluation of alternatives, presentations of estimated capital costs, and the airport plans chapter.

e. The inventory of existing conditions at an airport is a critical task in a master plan study and must be closely managed. Data should be collected only when there is a clear understanding of the need for the information to support the demand/capacity analyses and determination of facility requirements.

604. DESCRIBE REGIONAL SETTING AND LAND USE

a. A master plan study should examine the regional setting of an airport and the land use patterns around it. This is a critical task, because the impact of airport planning decisions can extend well beyond the airport property line.

b. Collect information on the political boundaries of the airport and the political entities with jurisdiction over the operation of the airport and adjacent land uses. Identify the airport service area and the presence and role of airports that might compete with the study airport.

c. Collect all applicable documents, such as official maps, the latest area-wide comprehensive land use and transportation plan, applicable municipal zoning ordinances and other land use controls and unusual building code provisions, including height zoning ordinances, noise overlay zones, and airport overlay districts. The development of practical land use strategies requires an understanding of the political context and local preferences regarding land use.

d. Identify the land uses in areas that will be exposed to airport operations. Land use is a continuously changing process, particularly in urban environments, so the land use inventory should collect information on planned and proposed land uses, as well as on existing uses. Note if there are any governmental programs designed to direct land use patterns in the area under review. For example, if the airport sponsor has completed a noise compatibility-planning program, it should contain valuable information on land use.

e. Identify land uses that may affect the safe operation of the airport or influence its expansion. Structures that could obstruct air navigation, or the presence of other airports that may interfere with the study airport, are the principal safety concern. Also identify areas located near the airport that may represent a potential hazard to aircraft, such as flood control areas, stockyards, and sanitary landfills.

f. Use geographic information systems (GIS), aerial photographs, topographical maps, obstruction charts, aeronautical charts, approach plates and other mapping tools to examine and display land use details. Many local governments have comprehensive GIS systems that contain electronic files for land use analysis and zoning.

g. Consider off-airport drainage and flood control issues, which may be affected by airport development.

605. ENVIRONMENTAL OVERVIEW

a. The principal objective of an environmental overview is to document environmental conditions that should be considered in the identification and analysis of airport development alternatives. In the past, master plan studies often focused only on the environmental consequences of the recommended development plan. In those cases, much of the environmental overview would be conducted while other technical analyses were already underway and the environmental data would not be considered in the formulation of alternative development concepts. Current practice is to develop the alternatives with the subsequent environmental processes in mind and to consider environmental data in the evaluation of the alternatives. As a result, the master plan may aid in the formation of the purpose and need statements in subsequent environmental documents.

b. Noise levels and air and water quality are the most common environmental concerns. However, other environmental conditions in and around the airport should also be examined, including: solid waste generation and disposal; toxic material disposal; floodplains and wetlands; endangered and threatened species of flora and fauna; biotic communities; parklands and recreational areas; historic, architectural, archaeological and cultural resources; and prime and unique farmland. Planners should refer to the current version of FAA Order 1050.1, *Environmental Impacts: Policies and Procedures,* for a complete list of environmental impact categories that may need to be examined. In addition to NEPA requirements, planners should consider appropriate state environmental regulations. Past and current uses of airport property should be examined to identify areas that may be contaminated, including fuel farms, chemical or agricultural aerial application refilling stations, and hangar areas used for various industrial processes such as aircraft maintenance and plating.

c. Planners should ask local resource agencies to provide any information they think should be considered in the process of identifying and evaluating alternative development options.

d. Any existing airport noise or environmental programs should be discussed in the environmental overview.

e. When cost effective, data collected in the environmental inventory can be placed in a GIS database for better data visualization, communication, and analysis.

606. DEVELOP SOCIOECONOMIC DATA

a. Socioeconomic data serve two purposes in a master plan study: to ascertain the nature of the community and market the airport serves and/or impacts and to provide specific inputs for the preparation of aviation demand forecasts, particularly econometric demand models.

b. An effective understanding of the community is helpful in ensuring that the planning is responsive to its long-term needs. Planners should focus on those socioeconomic factors that affect the community's need for air transportation. For example, an economy based on tourism would have air transportation needs that would be quite different from those of an agricultural region.

c. A vast array of socioeconomic data are available from many different sources, including a number of commercial vendors; the U.S. Bureau of the Census; metropolitan planning commissions; and state, county, or local agencies. Planners should be careful when using different sources of socioeconomic data to ensure compatibility.

607. ASSEMBLE HISTORICAL AVIATION ACTIVITY

a. The historical data necessary for forecasting aviation demand are generally available in the records maintained by the airport. At airports with FAA airport traffic control towers, FAA records of operations by commercial service, air taxi, military, and general aviation aircraft and revenue passenger enplanements are available in the Air Traffic Activity Data System (ATADS) on the FAA Policy Office's data system website at http://www.apo.data.faa.gov/. At airports without control towers, airport records, FAA Form 5010, *Airport Master Record,* and airport system plan studies are good sources of information.

For commercial service activity, planners should collect data that identify the air carriers; the proportion of operations and enplanements by each; markets served; the number of originating, terminating, and connecting passengers; the proportions of domestic and international passengers; and air cargo activity. It will also be useful to have a breakdown of the fleet mix of aircraft using the airport.

For general aviation activity, planners should collect data that identify the category and class of aircraft, types of fuels those aircraft use, the type of airport services used, and the availability of hangars for tenant and transient aircraft.

b. Master plans for large airports often involve the use of computer simulation models. For an airfield simulation, planners will need a detailed schedule of arrival and departure times for all commercial operations. Records for average or peak days can often be obtained from airport tower records, radar tapes, or noise monitoring systems. Commercial vendors such as the *Official Airline Guide* can also be helpful. For terminal and landside simulations, planners will need the passenger flow volumes in each terminal associated with the aircraft schedules.

608. FINANCIAL DATA

Airport master planners must examine an airport's financial resources, including its basic business model, operating revenues and expenses, and sources and uses of capital funds.

a. **Airport Business Model** – Summarize the airport's basic business model to help planners organize the vast amount of financial data available at most airports. The business model summary should describe the financial operations of the airport, including how its costs and revenues are charged or credited to airport users and how any operational surplus or deficit is handled. In addition, the business model summary should outline how the airport typically funds capital projects (i.e., with AIP and other grants, Passenger Facility Charges, airport revenue bonds, and so forth). If the airport sponsor owns and operates a multi-airport system, the business model summary should discuss how the financials for the study airport are addressed in relation to the whole airport system.

b. **Operating Revenues and Expenses** – Summarize broad categories of operating revenues and expenses. The FAA requires all commercial service airports to submit financial information to the FAA annually on FAA Form 127 and these reports may provide a good starting point. Airport managers often divide operating revenues into airline revenues and non-airline revenues. Non-airline revenues are often subdivided into categories such as terminal concessions; rental car; parking; hangar, land, and other rentals; other; and tax revenues. Operating expenses are often divided into broad categories such as personnel, maintenance, utilities and supplies, other, and debt service.

c. **Capital Funding** – Summarize the airport's ongoing capital improvement program and how it funds its capital development program. The capital improvement program can be funded from many sources, including revenues from the airlines, concessionaires, other airport tenants, tax levies (if applicable), passenger facility charges, AIP grants, other federal and state grants-in-aid, and airport revenue bond proceeds.

   The financial feasibility of the capital improvement program will be determined largely by the magnitude and reasonableness of the charges, rents, and taxes paid by airport users, tenants, and others. The information collected in this inventory will be used to prepare a financial plan for the recommended development program.

   Much of the information discussed in the preceding paragraphs relates primarily to the financial data for commercial service airports and larger general aviation airports. Many

smaller general aviation airports will not have such data readily available; however, such information may be part of the financial records of the sponsor.

609. DOCUMENTATION GUIDELINES

a. The documentation of existing airport conditions should make liberal use of drawings, tables, aerial photographs, and exhibits produced from geographic information system databases. Presented in this manner, such information is easy to understand, interpret, and locate for later reference.

b. Planners do not need to include all collected information in the report. Some should simply remain in work files until needed to support the technical analyses.

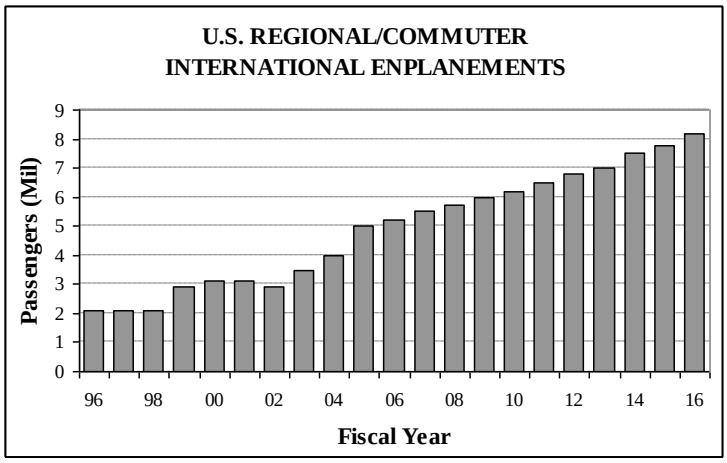
Chapter 7 Aviation Forecasts

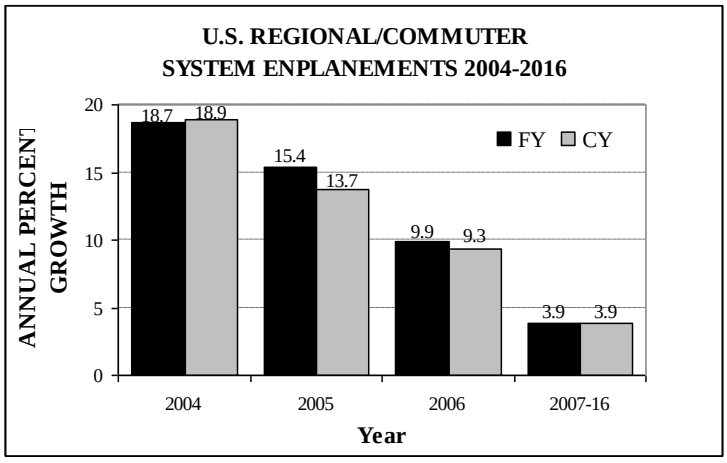
701. GENERAL

a. **Purpose of Aviation Forecasts** – Forecasts of future levels of aviation activity are the basis for effective decisions in airport planning. These projections are used to determine the need for new or expanded facilities. In general, forecasts should be realistic, based upon the latest available data, be supported by information in the study, and provide an adequate justification for airport planning and development. Any activity that could potentially create a facility need should be included in the forecast.

Planners should prepare a reliable activity baseline, select an appropriate forecast methodology, develop a forecast, compare it to other forecasts for reasonableness, and submit the forecasts to the FAA for approval. The planning agency should use appropriate statistical techniques to estimate activity where actual operations counts are not available.

Figure 7-1: Sample of FAA Forecast Graphs





Source: FAA Aerospace Forecasts, Fiscal Years 2005-2016, U.S. Department of Transportation, Federal Aviation Administration, Office of Aviation Policy & Plans, March 2005

b. **Level of Forecast Effort** – The level of effort required to produce a planning forecast will vary significantly from airport to airport. Considerable effort, including the use of elaborate forecasting tools and techniques, may be warranted in the case of more complex projects. An existing forecast, on the other hand, may be all that is required for simpler projects. Planners should determine the appropriate level of forecasting effort in the course of pre-planning and scoping the study.

   A number of forecasts are readily available for use in developing and evaluating the master plan forecast. These include the Terminal Area Forecast (TAF), state aviation system plans, and other planning efforts.

c. **Use of the Forecasts** – Prior to use in the master plan, the proposed forecasts must be submitted to the FAA for review and approval. Once approved, the forecasts may be used to provide an initial timetable for facility improvements, as a basis for the development of alternatives to meet the projected demand, and as a basis for environmental analyses and economic and financial plans

702. FORECAST ELEMENTS

a. **Types of Aviation Activity** – To establish the demands likely to be placed on airport facilities, forecasts should include all relevant aviation demand elements, including both the type and level of aviation activity expected at the airport over the planning horizon. The specific activity elements to be forecast will vary depending on the size and category of an airport and the objectives of the master plan study. Planners should note if the forecast projects the introduction of jet aircraft at the study airport, since this will be important to the future environmental review process.

   Aviation demand forecasts typically include aircraft operations and identify the critical aircraft. Forecasts for commercial service airports will also include, at a minimum, passenger enplanements, while forecasts for general aviation airports will include the number and type of based aircraft. The aviation demand elements to be forecast are shown below in Figure 7-2.

Figure 7-2: Aviation Demand Elements

Required	Included Where Appropriate
Operations (annual) Itinerant Air Carrier Air Taxi and Commuter (Regional) General Aviation Military Local General Aviation Military	 Domestic vs. International Annual Instrument Approaches IFR vs. VFR Operations Air Cargo Aircraft Operations Touch and Go Operations (Training) Helicopter Operations Average Load Factor Fuel Use
Passengers (annual) Enplanements Air Carrier Commuter Enplanements Originating Connecting	 Passenger and Cargo Data Domestic vs. International General Aviation Passengers Helicopter Air Taxi Other Number of Student Pilots Number of Hours Flown
Aircraft Based Aircraft Aircraft Mix Critical Aircraft	 Average Seats/Aircraft

b. **Term of Aviation Forecasts** – Prepare forecasts for short-, medium- and long-term periods and specify the existing and future critical aircraft. Short-term forecasts, for up to five years, are used to justify near-term development and support operational planning and environmental improvement programs. Medium-term forecasts (a 6- to 10-year time frame) are typically used in planning capital improvements and long-term forecasts (beyond 10 years) are helpful in general planning.

c. **Peak Period Forecasts** – Forecasts of annual aircraft operations or passenger activity may not adequately describe the needs of individual airport facilities. Because they average demand levels over the course of an entire year, annual metrics are only useful when activity tends to be evenly distributed over the hours, days, and months of a particular airport facility's operation. However, most airports have peak periods where demand far surpasses those averages. Stresses arising from activity peaks are critical at commercial service airports serving as hubs or that have substantial international traffic. Master plan forecasts must include appropriately defined peak period activity levels for facilities planning, such as terminal buildings and ground access systems.

703. FACTORS AFFECTING AVIATION ACTIVITY

Planners preparing forecasts of demand or updating existing forecasts should consider socioeconomic data, demographics, disposable income, geographic attributes, and external factors such as fuel costs and local attitudes towards aviation.

a. **Economic Characteristics** – The economic characteristics of a community will affect the demand for air traffic. In addition to national and regional economic activity, these include specific, identifiable, local activities that distinguish the geographic area served by the airport. The type of industry in an airport's service area also will affect aviation demand, with manufacturing and service industries tending to generate more aviation activity than resource industries such as mining.

b. **Demographic Characteristics** – The demographic characteristics of an area's population also affect the demand for aviation services. Demographic characteristics influence the level, composition, and growth of both local traffic and traffic from other areas. Factors such as leisure time and recreational activity are important in estimating activity, but can be difficult to measure. Another important demographic characteristic is the level of disposable income, usually measured on a per capita basis, which is a good indicator of the propensity to travel and general aviation aircraft purchases and use.

c. **Geographic Attributes** – The geographic distances between populations and centers of commerce within the airport's service area may have a direct bearing on the type and level of transportation demand. The existence of populations and centers of commerce beyond an airport's service area may indicate the need for additional airports that serve transportation demand. The physical characteristics of the area and the local climate may also be important, since they may stimulate holiday traffic and tourism. The role of the airport within the airport system and its relationship to other airports may also have an effect on the services that are demanded at the airport.

d. **Aviation-related Factors** – Business activity, changes in the aviation industry, and local aviation actions can markedly affect the demand for airport services. Business developments in the airline industry, such as consolidations, mergers, and new marketing agreements, can affect airline operations at a particular airport, while fractional ownership can affect others. Wider industry trends, such as the introduction of new low-fare service, the introduction of new classes of aircraft, and the growth or curtailment of airline hubbing, may also alter the level and pattern of demand. To the extent that such actions affect all aviation activity in a region or the country, their effects will be captured in the FAA's forecasts. If, however, only the demand at a particular airport is affected, appropriate adjustments should be made in that airport's forecast. Actions taken by local airport authorities, such as changes in user charges, ground access policies or their support services can also stimulate or hinder the demand for airport services. Investment decisions made as a result of the planning process itself can also produce change by removing physical constraints to airport growth, which should be reflected in the forecasts.

e. **Other Factors** – External factors may also influence the demand for airport services. These include economic actions such as fuel price changes, availability of aviation fuels, currency restrictions, and changes in the level and type of aviation taxes. Political developments, including rising international tensions, changes in the regulatory environment, and shifting attitudes toward the environmental impacts of aviation, may also impact future demand and should be considered in developing or updating airport forecasts.

704. STEPS IN THE FORECAST PROCESS

The forecast process for airport master plan studies consists of a series of basic steps that may vary from airport to airport, depending on the issues to be addressed and the level of effort required to develop the forecast. Steps in this process include the identification of parameters and measures to forecast, review of previous forecasts, determination of data needs, identification of data sources, collection of the data, selection of the forecast methods, preparation of the forecasts, and evaluation and documentation of the results.

Planners should refer to a report prepared by the FAA's Office of Aviation Policy and Plans (APO-110), *Forecasting Aviation Activity by Airport*, dated July 2001, to help them determine what approach to use. That report can be accessed at http://www.faa.gov/data_research/aviation_data_statistics/. The APO data systems web site, at http://www.apo.data.faa.gov, provides historical traffic counts, forecasts of aviation activity, and delay statistics. The forecast process can be summarized as follows:

a. **Identify Aviation Activity Measures** – The aviation activity measures that planners need to forecast are the level and type of activities that are likely to affect facility needs. For airfield planning, the most important activities are aircraft operations and the fleet mix, since these define the runway and taxiway requirements. As a general rule, plans for general aviation airports require forecasts of aircraft operations and based aircraft. Airports with commercial service require forecasts of aircraft operations, fleet mix, and passenger enplanements. Passenger levels are particularly important, since they determine the size of the terminal building and other important elements of airport infrastructure such as parking facilities and access roads. Planners should forecast instrument operations and instrument approaches, since these data will be needed if they expect to add or upgrade navigational aids and instrument landing systems. For some airports, additional forecast elements may be required, including peak hour operations and peak hour passenger flows.

b. **Review Previous Airport Forecasts** – Planners should review the latest published FAA Terminal Area Forecast for the study airport and any forecasts from an earlier master plan. Contact regional planning bodies and state aviation agencies to determine whether they have conducted airport system planning studies that included forecasts of demand for the study airport.

c. **Gather Data** – Determine what data are required to prepare the forecasts, identify the data sources, and collect historical and forecast data. What data to gather, and for what time period, will depend not only on the parameters to be forecast but also on what data are available from previous airport forecasts. In some cases, it may be necessary to conduct additional activity counts.

d. **Select Forecast Methods** – There are several appropriate methodologies and techniques for forecasting aviation activity at a specific airport. The selection and application of appropriate methodologies and techniques requires professional judgment. A forecast effort may involve a number of different techniques. The FAA report referenced above provides a detailed discussion of several forecasting techniques. The most common techniques include the following:

1) ***Regression Analysis*** – A statistical technique that ties aviation demand (dependent variables), such as enplanements, to economic measures (independent variables), such as population and income. Regression analysis should be restricted to relatively simple models with independent variables for which reliable forecasts are available.

2) ***Trend Analysis and Extrapolation*** – Typically uses the historical pattern of an activity and projects this trend into the future. This approach is useful where unusual local conditions differentiate the study airport from other airports in the region.

3) ***Market Share Analysis or Ratio Analysis*** – This technique assumes a top-down relationship between national, regional, and local forecasts. Local forecasts are a market share (percentage) of regional forecasts, which are a market share (percentage) of national forecasts. Historical market shares are calculated and used as a basis for projecting future market shares. This type of forecast is useful when the activity to be forecast has a constant share of a larger aggregate forecast.

4) ***Smoothing*** – A statistical technique applied to historical data, giving greater weight to the latest trend and conditions at the airport; it can be effective in generating short-term forecasts.

e. **Apply Forecast Methods and Evaluate Results** – After the list of activities to forecast has been identified, the appropriate forecast methods have been selected, and necessary data have been assembled, the actual forecasts can be prepared. If several methods are used to project specific aviation activities, they will probably produce different estimates. Therefore, an evaluation of the reasonableness of the results and their consistency with other forecasts should be conducted.

A useful procedure in such an evaluation is to prepare a time line showing both forecast results and historical trends. Similarly, one might compare the history and forecast for the airport with the FAA national history and forecast for the same activity parameter. If the comparison of the growth rates shows a significant difference, the planners must be able to explain it. Forecast results may also be evaluated by comparing them with other forecasts prepared for the airport, such as those contained in state or regional aviation system plans. One might also review the operational factors and events implicit in the forecast to determine if differing assumptions regarding those factors have affected the forecast results. For example, a constraint on operations associated with runway and apron limitations at the airport could affect the results. Therefore, it is useful to evaluate forecasts both with these constraints and with the constraints removed, i.e., a constrained and an unconstrained forecast.

If demand levels are likely to be particularly sensitive to one or more factors, the planner should estimate the impact of reasonable changes in the underlying assumptions about those factors. For example, if expected growth in aircraft operations is highly dependent on the continued operation of a fixed base operator (FBO) and there is a reasonable possibility that the FBO will close, the planner should estimate how much that closing would change the predicted demand. The planner should also examine general aviation hangar activity, including the airport hangar waiting list, and estimate how much increased hangar space would change predicted demand.

If the timing of important demand-generating factors (specific local or national events or activities resulting in an increased demand for aviation services) is uncertain, the forecaster can construct a time line showing the period of uncertainty, during which demand constraints or the diversion of traffic to another airport may be needed. In this respect, the actual number of operations or enplanements in any specific future year is less important than the certainty that a particular threshold will be reached during the planning period. This approach acknowledges that demand is expected to exceed the airport's capacity, but that there is a range of time (with a range of forecast error costs, i.e., costs in terms of delays and reduced service levels as a result of airport capacity not keeping up with aviation demand because of forecast inaccuracy) during which this problem needs to be considered.

When preparing forecasts for airports with declining activity, the forecast should identify the underlying cause for the decline, including a review of national and local trends. A sudden decrease in activity may be temporary, particularly if local income and population are steady or advancing. If the drop in activity takes place more gradually and is sustained, the decline is more likely to continue during the forecast period.

To document an expected upward trend in activity, planners should get letters of support from airlines, fixed base operators, or other users; information from the *Official Airline Guide*, general aviation associations, news articles that document changes at nearby airports, survey data for aircraft activity, and trend data for based aircraft. Such letters should state that the writers plan changes in their operations at the study airport.

Most forecasts should include a sensitivity analysis to measure likely variations in activity if the factors influencing activity change. One method of measuring the uncertainty in the forecast is to use a number of alternative assumptions in preparing it. The use of alternative scenarios should be discussed with FAA staff during master plan study scoping.

It is often useful to provide a range of activity forecasts, that is, to forecast a high level of activity as well as a lower level and to try to determine where within this range the most likely forecast will be found. If a plan uses scenario forecasting and other techniques that develop alternative projections, the airport sponsor can then provide the most likely forecast projections to the FAA for its approval. Having a range of forecast activity allows airport planners to develop flexibility in facilities to accommodate different activity levels.

It may also be useful to develop Planning Activity Levels (PALs) based on the forecast. PALs are selected activity levels that the planner believes may trigger the need for additional airport capacity or other development and may be used for analyzing the benefits of proposed development alternatives. They may also be used to establish thresholds for the implementation of airport development projects. The use of PALs focuses the airport sponsor and the public on the need to plan for aviation activity levels rather than specific timelines.

f. **Compare Forecast Results with the FAA's Terminal Area Forecasts** – Planners should compare their forecast results with those contained in the most recent Terminal

Area Forecast. To facilitate this comparison, the FAA recommends completing the template in Appendix C of the document titled *Forecasting Aviation Activity by Airport* (July 2001).

g. **Approval of the Forecasts** – The general requirement for FAA approval of the master plan study's forecasts is that they are supported by an acceptable forecasting analysis and are consistent with the TAF. Master plan forecasts for operations, based aircraft, and enplanements are considered to be consistent with the TAF if they meet the following criteria:

1) Large, Medium, and Small Hub Airports

a) Forecasts differ by less than 10 percent in the 5-year forecast and 15 percent in the 10-year period, or

b) Forecasts do not affect the timing or scale of an airport project.

2) Other Commercial Service Airports

a) Forecasts differ by less than 10 percent in the 5-year forecast and 15 percent in the 10-year period, or

b) Forecasts do not affect the timing or scale of an airport project, or

c) Forecasts do not affect the role of the airport as defined in the current version of FAA Order 5090.3, *Field Formulation of the National Plan of Integrated Airport Systems*.

3) General Aviation and Reliever Airports

Where the 5- or 10-year forecasts exceed 100,000 total annual operations or 100 based aircraft:

a) Forecasts differ by less than 10 percent in the 5-year forecast and 15 percent in the 10-year period, or

b) Forecasts do not affect the timing or scale of an airport project, or

c) Forecasts do not affect the role of the airport as defined in the current version of FAA Order 5090.3, *Field Formulation of the National Plan of Integrated Airport Systems*.

When the 5- or 10-year forecast is for less than 100,000 total annual operations or 100 based aircraft, the forecast does not need to be reviewed at FAA Headquarters, but the data should be provided to the FAA for the annual update of the TAF.

Further guidance on FAA review and approval of aviation forecasts is defined in a memorandum dated June 2008 that can be found at http://www.faa.gov/airports/planning_capacity/.

Any substantial differences between the master plan forecasts and the TAF must be resolved before moving onto subsequent parts of the master plan. If the planner expects the master plan forecasts to be inconsistent with the TAF for any reason, the FAA's Project Manager should be contacted early in the forecast development process to discuss the implications of the variance.

Locally prepared forecasts may contain a more detailed analysis of local economic conditions or development that is not considered in preparing the TAF. Therefore, airport sponsors should review the FAA's TAF for their airport on a regular basis and notify their FAA Planner/Planning Program Manager when they believe local conditions merit a revision to the TAF. When requesting a change to the TAF, the airport sponsor should provide reliable historical data and letters from individuals with the authority to affect operations, which document planned changes in operations.

705. DOCUMENTATION

Present the results of the forecast process and a description of the process itself as a separate chapter in the master plan report. The forecast chapter should contain extensive documentation. The level of detail provided should be sufficient to enable both the FAA to analyze the results, for planners to use them later in the planning and environmental process, and so the forecast can be adapted for future planning efforts.

The master plan report should summarize each forecast element, explain the forecast methods used, highlight significant assumptions, clearly and concisely present the forecast results, and provide an evaluation of the forecast. Tabulations of historical and forecast data should be included for each forecast element; graphical presentations of key time series and forecasts are usually helpful. FAA recommends completing the template of the report titled *Forecasting Aviation Activity by Airport* dated July 2001. Explanations should be provided if major variances from historic trends are forecast. For complicated forecasts, an appendix to the technical report should provide detailed documentation of the methodology.

706. SOURCE DATA

The following sources may provide assistance for planners in preparing forecasts for master plan studies:

a. **Terminal Area Forecasts** – The FAA's Terminal Area Forecast (TAF) contains historical data for at least the past 10 years and forecast data for the next 15 years. The TAF summary report for each airport includes, as appropriate: aircraft operations (landings and takeoffs, local and itinerant; total operations; and air carrier, commuter/air taxi, general aviation, and military operations), enplanements (total, air carrier and commuter), and total instrument operations. The TAF presumes an unconstrained demand for aviation services.

b. **National Forecasts** – The FAA's Office of Aviation Policy and Plans publishes two other major forecasts, the FAA Aerospace Forecasts and the FAA Long-Range Aerospace Forecasts. The FAA Aerospace Forecasts are estimates of national aviation demand for the next 12 years.

Figure 7-3: Sample Table from Terminal Area Forecast Summary Report

Summary of Enplanements and Airport Operations at FAA Towers and Contract Towers

Enplanements at Towered Airports

	Count	2003	2010	2020	Annual Compound Growth Rate 2003-2010	2010-2020
Large Hubs	33	460,486,763	623,735,048	832,432,922	4.43	2.93
Medium Hubs	35	113,930,143	146,148,406	191,273,310	3.62	2.73
Small Hubs	66	43,914,690	63,050,236	80,139,022	3.69	2.43
Non Hub Towers	351	17,122,217	19,602,930	23,380,002	1.95	1.78
Total	485	635,453,813	852,536,620	1,127,225,256	4.17	2.83

Operations at Towered Airports

	Count	2003	2010	2020	Annual Compound Growth Rate 2003-2010	2010-2020
Large Hubs	33	14,356,535	17,766,287	22,010,896	3.09	2.17
Medium Hubs	35	6,972,068	7,846,402	9,413,334	1.70	1.84
Small Hubs	66	8,217,052	8,788,618	9,838,151	0.97	1.13
Non Hub Towers	351	33,230,486	35,369,207	40,008,626	0.90	1.24
Total	485	62,776,141	69,770,514	81,271,007	1.52	1.54

Source: Terminal Area Forecast Summary Report, Fiscal Years 2004 – 2020, Prepared March 2005, U.S. Department of Transportation, Federal Aviation Administration, FAA-APO-05-1

c. **Historical Data** – The FAA's Air Traffic Activity Data System (ATADS) contains historical aviation operations data for operations at Air Route Traffic Control Centers and FAA- and contract-towered airports. Monthly and annual counts of aircraft operations and instrument operations by user group are available at the facility, state, regional, and national level. These data can also be accessed at the APO website.

d. **Historical Data at Non-towered Airports** – Estimating current activity at non-towered airports can be difficult. The traditional method of using operations data from a similar towered airport to estimate the activity at a non-towered airport has been found to be unreliable. Records of fuel sales at the non-towered airport may be a more reliable indicator. However, the most reliable method has been found to be using a relatively inexpensive acoustical aircraft activity counter to obtain a series of cluster samples systematically drawn throughout the year and estimating the annual activity from these samples. The samples not only provide information on total annual operations, but also on the seasonal variability and peaking characteristics of the activity. For further information on this subject, see Transportation Research Record 958: "Ford-Shirack Study," *Estimating Aircraft Activity at Non-towered Airports: Results of the Aircraft Activity Counter Demonstration Project*.

The characteristics of operations at a non-towered airport, such as whether the operations are local or itinerant and what type of aircraft are using the airport, are as important as the number of operations. Visual surveys to determine these and other observable

characteristics can be expensive. A statistical sample can greatly reduce the cost. In 1987, the Oregon Department of Transportation published the results of a study in which the characteristics of operations at non-towered airports were determined through statistical sampling. See *Statistical Sampling and Estimating Procedure for Aircraft Activity Characteristics*, Oregon Aeronautics Division, Oregon Department of Transportation, April 1987.

e. **State and Regional Airport System Planning Data** – State and regional airport system plans can provide information, direction, and policy guidance for airport master planners. An airport system plan (at least for all NPIAS airports) provides forecasts and describes the roles of the various airports in the area and the distribution of traffic among them.

f. **Socioeconomic Data** – Planners should use recognized sources of socioeconomic data available from local, regional, state, and federal planning organizations. Key data elements include population, employment, income, and other measures. If possible, data should be presented on an historical basis and projected into the future.

g. **Other Data Sources** – Additional sources of data that should be reviewed are the *Official Airline Guide (OAG)*, FAA Form 5010, Airport Master Record, and other existing studies or reports.

The local FAA Airports office can provide additional guidance on using forecasting tools, techniques, and methods. Whether the aviation forecasts are being prepared by the airport planning staff or by consultants, early consultation and periodic discussion with FAA airports and forecasting staff are encouraged. Such discussions are particularly important when planners are considering using significantly different forecast assumptions and methods in developing the basis for a specific airport master plan or where there are differences between existing forecasts. These early discussions will be especially useful when the forecasts indicate that federal grants for airport improvements at the study airport would be justified sooner than called for in the existing TAF.

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Chapter 8 Facility Requirements

801. GENERAL

a. Planners should determine what, if any, additional facilities will be required to accommodate forecast activity. This task begins with an assessment of the ability of existing facilities to meet current and future demand.

In some cases, the airport sponsor may decide that it is in the community's best interest for the airport not to continue to grow to accommodate forecast activity, or to accommodate forecast activity only up to a point. In these cases, the master plan should document this decision and indicate the probable consequences of the decision (e.g., demand will be capped, the demand will go unmet, or the demand will be diverted to another airport).

This analysis needs to clearly define the aviation problems and why the airport needs to resolve them. Findings supporting a problem, and the potential solutions to that problem, must be clearly documented. Planners should ensure that this needs analysis provides information sufficient to provide a basis for describing the purpose and need for proposed Federal actions. Care should be taken that the facility requirements are not so narrowly defined that they point to a single solution.

b. Although this AC provides guidance on the facilities commonly found at airports of all sizes, planners should limit their efforts to those elements that are applicable to the study airport. Preparation of an appropriate scope of work in the pre-planning process will ensure that both the airport sponsor and the planners understand what elements should be studied.

c. The requirements for new or expanded facilities reflect the unique circumstances of each airport, such as, but not limited to, the following:

1) Capacity shortfalls, which are commonly driven by growing demand.

2) Enhanced security requirements mandated by the Transportation Security Administration, including the flexibility to respond to changes in threat levels.

3) Updated standards developed and adopted by the FAA or other regulatory agencies, to correct existing non-standard conditions and eliminate existing modifications to standards. If there are approved modifications to standards, planners should review the reasoning that led to those adjustments. The facility requirements chapter should indicate if those deviations will continue or will be eliminated in the new master plan.

4) The airport sponsor's strategic vision for the airport. Such needs are typically associated with a sponsor's strategic business plan, mission statement, or similar plans that will require modification of the airport.

5) The outdated condition, arrangement, or functionality of existing facilities.

d. At some airports, planners can use simulation models to help determine facility requirements. For large airports, simulations can model major components of an airport, including the airfield system, airspace environment, passenger and baggage flows in the terminal, and ground access networks. For smaller airports, simulations can model usage projections, passenger flows, and other support requirements including fixed base operator, maintenance, flight school, and fuel support requirements.

e. Many of the significant improvements needed at an airport are actually driven by the demand level, not a time frame or a specific year. Therefore, planners should identify what demand levels will trigger the need for the expansion or improvement of a specific facility. In this way, the sponsor can monitor growth trends and expand the airport as demand warrants. (For a discussion of the use of Planning Activity Levels, see Section 704.e.)

f. The findings from capacity analyses and facility requirement determinations help develop alternatives that can best meet future demand. Since critical investment decisions will be based on these analyses, the planner, airport sponsor, and FAA should consider the cost of inadequate analysis in determining the level of effort and sophistication of the capacity and delay analyses. If the analyses are not sophisticated enough, development funds could be wasted on alternatives that do not meet future demand. On the other hand, planning funds can be wasted by capacity and delay analyses that are more sophisticated than they need to be. Future facility needs and investment are to be based on these analyses and it is critical that these analyses be adequate, supportable, and defendable. Therefore, the need for more refined analysis is an important consideration during master plan scope of work development.

802. EMERGING TRENDS

a. The aviation industry is always evolving, and these changes affect the size, quantity, and type of airport facilities needed to accommodate future demand. The FAA, airport management, and planning professionals must remain aware of changes that impact airport planning and development, some of which currently include:

1) Airline industry consolidation, changes in air service patterns, and aircraft fleet decision making.

2) The continued introduction of new generation aircraft, which may present airport-aircraft compatibility challenges for airports as some may need to adapt their airside and terminal facilities to accommodate longer and wider aircraft with greater seating capacity than the aircraft they replaced.

3) Transformation of the National Airspace System (NAS) by Next Generation Air Transportation System (NextGen) initiatives. NextGen is the FAA's plan for modernizing the national air transportation system. Airspace optimization and performance-based navigation are key components of NextGen. NextGen initiatives may affect airspace and airfield capacity, airfield and terminal area operations,

aircraft equipage requirements, and on- and off-airport obstruction management requirements. Airport master plans should consider the specific NextGen initiatives and related technologies and flight procedures that may be implemented over the planning horizon.

4) Enhancements in information technology that are enabling more data to be transferred faster, influencing everything from airline scheduling and weather planning to advances in self-service passenger processing such as ticketing and check-in. Terminal automation systems will affect both functional space requirements in the terminal building as well as space allocation among tenant airlines and others.

5) Greater focus on sustainability. In the master plan, the planner should identify or consider practices that will enhance the airport's overall sustainability. These may include initiatives that maximize linkages with public transportation to reduce private vehicle trips to the airport, promote recycling and waste minimization, increase energy efficiency (including the use of alternative energy sources), reduce airport-related emissions, facilitate airport-related community and economic development, and increase community engagement in the airport planning and development process. Specific sustainability goals and objectives and strategies or measures may be identified during the planning process.

b. Planners should examine emerging industry trends and identify those that may influence airport capacity and facility needs, bearing in mind that not all trends will affect all airports in the same manner (and some may not be affected at all). Where considerable uncertainty about future demand or the role of the airport exists, plans that can be implemented in phases or adapted to new industry requirements and demands will allow the airport to meet future needs in a timely and sustainable manner.

803. DESIGN HOUR DEMAND

a. For master plans, estimates of annual and peak-hour demand for airline passengers, aircraft operations, cargo, and vehicle trips should be used to identify future facility needs. Peaking characteristics can provide insight on seasonal and time-of-day variations in demand; failure to consider these characteristics can result in high congestion and low levels of service during peak hours.

b. In the U.S., the evaluation of peak-hour demand is often based on the peak hour of the average day of the peak month. This approach provides sufficient facility capacity for most days of the year, but recognizes there will be some very busy days that experience congestion, queues, and delays, and that it is important that facilities are neither under nor overbuilt. However, for some critical airport systems, the peak hour of the average day of the peak month can substantially understate the demand at peak times, resulting in unacceptable levels of service or overloading of systems to a point that may approach gridlock. Some components of the passenger terminal complex, such as baggage handling systems and security screening checkpoints, are particularly sensitive to this issue.

c. To address these problems, planners may wish to consider alternate methodologies for determining peak-hour demand, such as the percentile of busy hours throughout the year (for example, 90th or 95th percentile). A facility sized to meet such demands should have sufficient capacity and service levels during 90 percent or 95 percent of the hours throughout the year. The specific percentile will depend on the facility being evaluated, the desired level of service, and the unique demand characteristics of the study airport. Methodologies for calculating peak hour demand are further descripted in ACRP Report 82, *Preparing Peak Period and Operational Profiles – Guidebook.*

804. SECURITY CONSIDERATIONS

Security requirements have become very important in planning airport facilities. Planning for security early in the development process can produce designs that accommodate security requirements in a more efficient, less costly, and less intrusive manner. However, specific measures for implementing security requirements will vary in response to shifting threats, evolving technology, and the physical and operational circumstances of individual airports. Planners should meet with representatives of the Transportation Security Administration (TSA) early in the process and be familiar with the current versions of applicable documents, including TSA's *Recommended Security Guidelines for Airport Planning, Design, and Construction* and relevant sections of the Transportation Security Regulations (TSRs). Appendix B, Useful Reference Materials, has a list of applicable TSRs and other security-related publications.

Security requirements will vary depending on the role and service provided at the airport. The information contained in 49 CFR Part 1542, *Airport Security,* describes the security rules and requirements for commercial service airports. Operators of general aviation airports are encouraged to use the recommended guidelines in appropriate TSA publications discussing security at general aviation airports to enhance the security of their facilities. Both commercial service and general aviation airports are extremely diverse and appropriate security measures can be determined only after careful examination of an individual airport.

Terminal facilities also have extensive security requirements, particularly with regard to the location of passenger and baggage screening. Ground access facilities, such as roadways and parking structures, may be subject to security-based siting considerations, including terminal proximity limitations. Security requirements are also becoming an increasingly important element in planning air cargo and general aviation facilities.

805. AIRFIELD AND AIRSPACE REQUIREMENTS

The determination of airfield and airspace requirements includes an assessment of the airports' ability to handle forecast activity levels, analysis of its compliance with design and safety standards, and a determination of design standards for new facilities or the improvement of existing facilities.

FAA Advisory Circular 150/5300-13, *Airport Design*, is a key resource for the planner in virtually all analyses to determine airfield requirements and is frequently referenced in this chapter.

a. **Airfield Capacity Analysis** – Airfield capacity is expressed in terms of the number of aircraft operations that can be conducted in a given period of time. Capacity is most often expressed as annual capacity (or annual service volume) and hourly capacity (or throughput capacity) for a particular runway and taxiway configuration.

   At low activity airports, airfield capacity often exceeds the anticipated level of demand and only a minimal analysis is necessary. For airports with higher activity levels, several techniques for determining airfield capacity are available to airport planners. The methodology in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, commonly referred to as the "handbook methods," yields hourly capacities and annual service volumes (ASV) and permits the estimation of aircraft delay levels as demand approaches and exceeds the throughput capacity of each airfield configuration. The handbook methods are typically used for long range planning and the results should be discussed with FAA representatives.

   Although the handbook methodology is adequate for many master plans, congested airports may incur higher levels of delay than are typically used in the ASV definitions. ASVs may not be appropriate to use at airports with a 24-hour operation, such as late night cargo operations. For such airports, computer simulation modeling may be necessary to provide the depth of analysis necessary to support major airfield investment decisions. There is no universally adopted simulation tool that must be used in airfield capacity analyses. The FAA's Technical Center supports the simulation engine for the most current version of the FAA Airport and Airspace Simulation Model, which is available to the public free of charge. Both public domain software and proprietary software developed by the private sector are also available for modeling. If simulation modeling is employed, planners must be careful to explain modeling capabilities and limitations, and review key assumptions, inputs, operating configurations and results with appropriate representatives of the FAA.

   Aircraft operational delay costs or savings are often used as the measure for comparing various airfield development alternatives. Delay is typically expressed in minutes per aircraft operation, which can be translated into hours of annual delay and easily converted into dollar estimates to be used as a basis for comparison. Traditionally, four to six minutes of average delay per aircraft operation is used in ASV calculation. This can be considered as an acceptable level of delay. When the average annual delays per aircraft operation reaches four to six minutes, the airport is approaching its practical capacity and is generally considered congested.

   The selection of a particular airfield capacity analysis technique should be made in the pre-planning phase of the master plan study. The selected technique should be clearly defined in the negotiated scope of work. At the conclusion of the airfield capacity analysis, planners will have a sense of whether an additional runway or taxiway should be included in the alternatives analysis.

b. **Runway Requirements** – Existing and future runways should be examined with respect to dimensional criteria, orientation, length, width, and pavement design strength:

1) ***Dimensional Criteria*** – FAA guidance on dimensional standards is based on a coding system known as the Runway Design Code (RDC). This system is used to relate critical design criteria to the operational and physical characteristics of the aircraft that will utilize a runway. Existing and future RDC classifications are determined from a review of the aviation demand forecasts and an understanding of the airport's existing and future role in the air transportation system. While the RDC classification is assigned to a specific runway, it is appropriate to apply a less demanding RDC to other runways that will not be used by the primary critical aircraft. See FAA AC 150/5300-13, *Airport Design*, for more information on appropriate RDC codes and dimensional criteria requirements.

2) ***Orientation*** – Runway orientation is primarily a function of wind coverage requirements for the existing and projected aircraft fleet mix. Historical wind and weather data can be obtained from the National Oceanic and Atmospheric Administration (NOAA). This analysis is used to determine if additional runways are needed to provide the necessary wind coverage. See FAA AC 150/5300-13, *Airport Design,* for guidance on wind coverage analysis techniques.

   Planners should also review runway designation. Periodic changes in magnetic declination may necessitate renumbering the runways. A declination calculator can be found at http://www.ngdc.noaa.gov/seg/geomag/jsp/Declination.jsp. The existence of obstructions and environmental and physical features, either man-made or natural, in approach and departure routes should also be considered in determining runway orientation.

3) ***Length*** – The length of a runway is a function of many factors, the most notable of which are the selection of an appropriate design aircraft and the longest nonstop distance to be flown by the design aircraft from the airport. Aircraft-specific runway length requirements are a function of aircraft physical characteristics at time of flight, weather conditions, and runway conditions. See FAA AC 150/5325-4, *Runway Length Requirements for Airport Design,* for guidance on this analysis. Other common resources for runway length assessments are the aircraft characteristics information published by aircraft manufacturers, consultation with aircraft operators at the airport, and the FAA document, *Best Practices: Planning Airports for Business Jets*. Aircraft manufacturers may be able to provide airport-specific runway length requirements for their aircraft, especially at airports with severe conditions such as high temperatures or high airport elevations.

4) ***Width*** – The required width of a runway is a function of the approach minimums, airplane approach category, and airplane design group for the design aircraft using the runway and is discussed in FAA AC 150/5300-13, *Airport Design*.

5) ***Pavement Design Strength*** – What aircraft types and the critical aircraft expected to use the airport should be used to determine the required pavement design strength, or weight bearing capacity, of airfield surfaces. The required pavement design strength is an estimate based on average levels of activity, and is expressed in terms of aircraft landing gear type and geometry (i.e., load distribution). The pavement design strength is not the maximum allowable weight. Limited operations by heavier aircraft

than the critical aircraft may be permissible. Pavement design and load distribution assumptions can be found in FAA AC 150/5320-6, *Airport Pavement Design and Evaluation*.

c. **Taxiway Requirements** – The taxiway system must provide safe and efficient aircraft movement between the runways and the aprons that serve passenger terminals, cargo, and general aviation facilities. Planners must consider 'cockpit-over-centerline' as the taxiway method for safe and efficient taxiing throughout the airport.

1) The Taxiway Design Group (TDG) relates to the undercarriage dimensions of the aircraft. Taxiway width and fillet standards may require a specific runway to taxiway, and taxiway to taxiway/taxilane separation. Aircraft Design Group (ADG) separation criteria are based on aircraft wingspans and tail heights. ADG separation criteria is the minimum separation criteria for avoidance of collisions, however greater separation may be recommended based on TDG for efficiency in ground maneuvering. Planners should consider upgrading intersections designed using slower judgmental oversteer taxi method to accommodate cockpit-over-center line taxi. Advisory Circular AC 150/5300-13, Airport Design, provides specific fillet geometry to accommodate cockpit over centerline maneuvering at existing runway to taxiway and taxiway to taxiway/taxilane separations. It is appropriate for a series of taxiways on an airport to be planned to a different TDG than another based on expected use. As traffic increases, the taxiway system can become the limiting operational factor, especially if the airfield configuration results in frequent runway crossings by taxiing aircraft, or does not provide sufficient access or bypass capability. The location of taxiway exits may also reduce runway occupancy time, thereby increasing capacity.

2) Planners should re-examine intersections with more than three possible turns "three-node" intersection (see Taxiway Design, AC 150/5300-13), the location and type of runway exit/entrance taxiways as well as the location of parallel taxiways, crossover taxiways, bypass taxiways, perimeter taxiways, and holding pads. At congested airports, computer simulation can aid this analysis.

d. **Electronic, Visual, and Satellite Aids to Navigation** – Aids to navigation provide pilots with information to assist them in locating the airport and provide horizontal and/or vertical guidance during landing. Navigational aids also permit access to the airport during poor weather conditions. The need for new or additional navigational aids is a function of the fleet mix, the percentage of time that poor weather conditions are present, and the cost to users of not being able to use the airport when it is not accessible. Important navigational aids include instrument landing systems (ILS), approach lighting systems (ALS), Precision Approach Path Indicators (PAPI) or other visual approach slope indicators, and global positioning systems (GPS), such as the Wide Area Augmentation System (WAAS). Airport users can assist planners in identifying the need for navigational aids and the development of WAAS approaches. The installation of new navigational aids may require airspace coordination.

e. Air traffic control facilities include air surveillance radars, airport surface detection equipment, remote transmitters and receivers, wind shear detectors, weather observing

equipment, and others. The general siting of future air traffic control facilities should take place during the master plan process so that adequate space is reserved for them and their critical areas are protected from development that would interfere with their operation.

f. **Airspace Requirements** – For complex master plans, particularly for a commercial service airport located near another commercial service airport, determining airspace requirements may require a detailed investigation, often using computer simulations. Such efforts need to be carefully coordinated with FAA air traffic representatives so as to reach agreement regarding key modeling assumptions. In addition, if the airfield capacity analyses call for new runways or major airfield reconfigurations, significant airspace changes or redesign may be required and FAA air traffic representatives should participate in the discussions.

In most master plan studies, however, the focus will be on reviewing the airport's existing airspace classifications and determining if growth at the study airport or at neighboring airports could require an upgrade to a higher airspace classification.

At non-towered airports, the master plan should determine if the growth in aircraft operations will exceed threshold values for the establishment of an airport traffic control tower. For towered airports, line of sight investigations may reveal that the airport traffic control tower should be relocated. See FAA Order 6480.4, *Airport Traffic Control Tower Siting Criteria*, for help in making such a determination.

Planners should identify penetrations of imaginary surfaces (as defined in 14 CFR Part 77, *Objects Affecting Navigable Airspace)* to determine their disposition. Obstacle clearance surfaces associated with *United States Standard for Terminal Instrument Procedures (TERPS)*, and obstacle clearance requirements found in FAA AC 150/5300-13, *Airport Design*, should be evaluated as appropriate. In some cases, the TERPS surface may be the controlling airspace surface.

With the ongoing implementation of NextGen technologies and flight procedures including new approaches using Wide Area Augmentation Systems (WAAS), Localizer Performance with Vertical Guidance (LPV), and area navigation (RNAV) and Required Navigation Performance (RNP), the master plan should evaluate existing and potential future approach capabilities and include airspace obstruction analysis to ensure appropriate planning for existing and future approach procedures.

806. COMMERCIAL SERVICE PASSENGER TERMINAL COMPLEX

a. The commercial service passenger terminal complex extends from the aircraft parking positions on the airside interface to the vehicle curbside on the landside interface. The role of an airport in the national, state and regional air transportation systems will influence passenger terminal facility requirements. A major connecting hub, for example, will need terminals that are functionally different from those at an origin and destination airport. Similarly, airports serving major tourist destinations or business centers may have special needs.

The scope of analysis will be based on a number of factors, including but not limited to, the size and type of airport, available land, state of existing facilities, activity levels (passengers and aircraft operations), demographics of the passengers served, airport goals and objectives, and funding considerations. Planners should also consider the level of detail needed for the master plan. It may be appropriate to provide only the general location and footprint of a future terminal complex in the master plan, and complete a more extensive terminal requirements analysis in a separate study, especially if existing facilities will not accommodate future demand or industry requirements.

1) ***Airside Requirements*** –

a) Planners should identify the number and type of aircraft gates and parking positions that will be needed to accommodate future activity. The mix of aircraft expected to operate at the airport during the design hour will determine the linear feet of apron frontage and the gate dimensions. The location of aircraft parking positions relative to air traffic movement areas should be considered to avoid or limit the effects of aircraft pushbacks on aircraft taxiing flows. Aircraft gate requirements should include consideration of the functionality of jet bridges to serve the current and forecast aircraft fleet mix.

b) The availability of and need for remain-overnight (RON) aircraft parking should be evaluated. RON aircraft parking may be provided at aircraft gates or in proximity to the passenger terminal building or in remote locations (remote hardstands).

c) For airports that experience cold winter weather, deicing facilities should be evaluated.

d) The parking and storage of ground service equipment should also be considered in determining apron frontage requirements. Planners should strive to separate ground vehicle movement areas from aircraft movement areas as much as possible to ensure safety.

e) Some airports operators are exploring the possibility of accommodating commercial space activities, including the possibility of either horizontal or vertical launch capabilities as well as reentry activities.

In such cases, it is important for the airport planning process to consider a broad range of associated issues, particularly in order to prevent or minimize any potential impacts to the safety, efficiency or utility of the airport, including (but not limited to) airside facilities. The FAA will address associated issues in future guidance and policy documents, addressing not only airport planning but also environmental, financial, safety and compliance issues.

2) ***Passenger Terminal Building Requirements*** –

a) Within the terminal building, requirements are commonly expressed in terms of square footage for major functional elements, such as ticket counter/kiosk areas, security screening checkpoints, aircraft gates and holdroom/departure lounges, concessions, airline operations, baggage makeup, baggage claim, circulation, public space, restrooms, airport offices, and mechanical space. Airports that serve international flights also require facilities for customs and immigration. Planners should evaluate the special requirements for these facilities by referencing the latest guidance from U.S. Customs and Border Protection (CBP) and the Centers for Disease Control and Prevention (CDC).

b) Understanding the space requirements of these elements will assist planners in configuring the terminal complex. In master plans where terminal building expansion or reconfiguration may be recommended for the long term, it may be appropriate to provide only a general location and footprint of the future terminal building, rather than specific functional area requirements. Industry planning, design and level of service standards are often used to develop generalized gross terminal space requirements necessary to properly size the terminal footprint (refer to Section 806.c for relevant reference materials).

3) ***Landside Requirements*** –

a) The length of curbside area required is a function of the modal splits of originating and terminating passengers, pedestrian circulation, dwell time assumptions and occupancies for the vehicles at the curbside, and the assignment of different types of vehicles to the curbside. Airport sponsor policies regarding dwell time and other airport roadway management practices (including use of inner and outer and upper and lower level roadways and curbs for specific roadway users such as arriving and departing passengers, taxi/limousine, shared ride, hotel/parking/rental car shuttles, etc.) will influence curbside requirements. The availability of convenient, short-term parking within walking distance of the passenger terminal building, the availability of public transit, the extent of consolidation among the various door-to-door shuttles, and the use of cell-phone waiting areas or parking lots will reduce the amount of curbside area required.

b) To facilitate the flow of traffic in front of the terminal, the number of lanes should be assessed.

b. **Passenger Convenience and Access to Airport Facilities** – Section 131 of the FAA Modernization and Reform Act of 2012 (49 U.S.C. § 47101(g)(2)) requires airport master plans to consider passenger convenience, access to airport facilities, and ground access. In accordance with this provision, the following sections identify some of the considerations that an airport master plan may evaluate in order to improve the overall passenger experience – enhancing the passenger's sense of convenience and facilitating access to and from and through the airport complex. Section 810.i provides specific information on passenger convenience as it relates to ground access.

1) ***Passenger Convenience*** – Key measures of passenger convenience focus on passengers being processed in an efficient amount of time and with minimal imposition. Passenger convenience also may be evaluated in terms of comfort. It will be perceived differently by every passenger at every phase of travel, and is a function of a passenger's demographic characteristics, place of residence, trip purpose, and travel habits. Passengers with mobility and sensory impairments, language barriers, elderly travelers, families traveling with small children, and nursing mothers traveling on business may face more hurdles when traveling, leading to negative perceptions about convenience.

   Many aspects of the traveler's experience don't fall wholly within the direct control of the airport sponsor, and are influenced to a greater or lesser degree by airlines and other service providers at the airport. In 2009 and 2011, in response to a series of significant delays in which passengers were held on board aircraft for lengthy periods (and also in response to the high incidence of flight delays and other consumer problems), the U.S. Department of Transportation issued two final rules entitled Enhancing Airline Passenger Protections (74 FR 68983 and 76 FR 23109), which became effective on April 29, 2010, and August 23, 2011, respectively. These two rules put in place a number of consumer protection measures to "improve the air travel environment for consumers" (see Federal Register Notice dated April 25, 2011, announcing the Final Rule (https://federalregister.gov/a/E9-30615 and https://www.federalregister.gov/articles/2011/04/25/2011-9736/enhancing-airline-passenger-protections).

1) Even with these new consumer protection rules for air travelers, within the terminal complex, passengers often continue to experience long wait times or delays due to problems with facilities or staffing at key points in their journey (such as during the check-in and/or baggage drop-off process, at TSA or CBP checkpoints, at baggage claim, and at rental car facilities) or other inconveniences due to facility design (such as long unassisted walking distances, which often contribute to passenger complaints regarding their travel experience).

   Airports do, however, have a lot of influence over other aspects of the passenger experience including the overall balance between airside, landside and terminal facilities; airport signage and messaging systems; curbside management; various aspects of the airport concessions program; and decision making related to other facilities and amenities within the airport's public areas.

   a) As appropriate to the level of detail included in the overall terminal plan, planners should consider the basic types of services provided to travelers at various points within the terminal building, as well as the degree of congestion, waiting and processing times during each phase of the journey from airport curb to aircraft gate. Shorter wait times and walking distances, intuitive way finding, accessible and reliable flight information displays, and sufficient and accessible restrooms, and reasonable distribution of space for a variety of concessions, among other

considerations, may enhance the passengers' overall travel experience and contribute to a sense of convenience.

b) Providing amenities to make passenger wait-time more productive, comfortable or more entertaining may improve the passenger experience and perceptions of convenience. Amenities should be shown as appropriate to a level of detail to determine rough blocked-out areas for these functions. Examples include comfortable holdroom seating, dedicated work areas, accessible power connections, Wi-Fi, full-service restaurants, children's play areas, facilities for nursing mothers (such as lounges or non-bathroom spaces)[1], family restrooms, gym/fitness centers with shower facilities, library/reading rooms, public art and museum exhibits or displays, and entertainment options. The types of amenities offered by an airport in or in close proximity to their passenger terminal complex will vary greatly depending on the airport's passenger characteristics, airline composition, facility layout, and other factors.

c) Planners should also consider an appropriate balance of pre-security screening facilities and amenities for airport employees, airport visitors, and meeters and greeters. At a minimum, restroom requirements and at least limited concessions (such as a coffee kiosk and news and gift store) should be evaluated. The type and quantity of these pre-security screening amenities will depend on the characteristics of the airport and the local market.

d) Many publications describe common metrics and accepted standards for evaluating the passenger experience at an airport. Some of these publications are listed in Appendix B of this AC. Planners should consult the appropriate publications depending on the size and scope of the project. Airport surveys or comment kiosks can also be useful in determining the public's perception of the functionality and convenience of the terminal facility. Airport customer service representatives, airport passengers, airport duty managers and airline station managers, Travelers Aid agencies and the United Service Organization (USO) also provide valuable insight to improvements needed in terminal facilities.

2) ***Access to Airport Facilities*** – Access to airport facilities refers to the ease with which passengers can navigate and travel through the airport complex. Passengers should be able to access the airport's landside facilities and terminal building, and travel between each, in a seamless flow.

a) Planners should evaluate parking and curbside capacity and designated areas for travelers waiting for their next mode of transportation. Access to shuttles, buses, trains, and automated people movers (APM) where warranted should be evaluated, as well as the frequency of service relative to aircraft arrival and departure times.

[1] In addition to facilities for passengers, in accordance with Section 4207 of the Affordable Care Act (the Health Care Reform Act), many airports and airport employers are required to provide reasonable break time and a private, non-bathroom place for nursing mothers to express breast milk during the workday. These requirements became effective on March 23, 2010.

b) Inside the terminal building, planners should evaluate passenger pathways, vertical transitions, clarity of signage and wayfinding, space and queue lengths at check-in and security, space and wait times at baggage claim, access to airport information and airline schedules, and convenience of restrooms, concessions, and departure lounges.

c) Planners at international airports should evaluate CBP facilities where immigration and infectious diseases are addressed. This evaluation should include an assessment of passenger processing times to ensure that the facilities and associated staffing levels provide acceptable levels of service throughout the day. Coordination with CBP is important during the planning study and on an on-going basis to ensure that the facilities and staffing continue to meet the needs of the traveling public.

d) Access to airport facilities for people with disabilities, impairments, and limited mobility can be particularly challenging. Planners should evaluate whether airport facilities meet the Americans with Disabilities Act (ADA) and other building code requirements. Existing facilities that are in noncompliance with these requirements should be remedied as required by law. New facilities should be planned and designed to improve accessibility and convenience for all passengers while meeting the special needs of disabled passengers. The master plan should identify requirements for service animal relief areas within the terminal complex. AC 150/5360-14, Access to Airports by Individuals will Disabilities, should be consulted for additional guidance.

e) Planners should be cognizant of the specific needs of passengers using wheelchairs or other types of mobility assistance, and those with specific medical requirements. Planners should identify any specific terminal layout requirements, amenities (including concessions, information booths, medical clinics, and restroom facilities) and staffing considerations necessary to best accommodate these passengers and improve their travel experience.

c. **Methodologies** – Information on methodologies that can be used to determine passenger terminal facility requirements is provided in several sources, including:

1) FAA Advisory Circulars 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities,* and 150/5360-9, *Planning and Design of Airport Terminal Facilities at Non-Hub Locations*

2) *Airport Development Reference Manual*, published by the International Air Transport Association

3) *ACRP Report 25, Airport Passenger Terminal Planning and Design, Volume 1: Guidebook* (http://www.trb.org/Publications/Blurbs/163252.aspx)

ACRP Report 25, Airport Passenger Terminal Planning and Design, Volume 2: Spreadsheet Models and User's Guide (http://www.trb.org/Publications/Blurbs/163171.aspx)

4) *Recommended Security Guidelines for Airport Planning, Design and Construction*, published by the Transportation Security Administration (http://www.tsa.gov/sites/default/files/assets/pdf/airport_security_design_guidelines.pdf)

5) Proprietary computer simulation modeling tools can also be used to evaluate passenger and baggage flows through airport terminals.

Additional references are provided in Appendix B.

807. GENERAL AVIATION REQUIREMENTS

a. General aviation (GA) encompasses a variety of users and activities, such as corporate flight departments, cargo operators, recreational flyers, business commuters, flight training, agricultural applications, law enforcement, emergency medical services, firefighting, and fixed base operators (FBOs). As a result of the variety of GA aircraft activity, GA needs include aircraft storage facilities, transient parking aprons, terminal facilities, automobile parking areas, and vehicle access from adjacent roads. Planners should consult appropriate publications for specific information regarding GA airport facilities planning, such as FAA AC 150/5300-13, *Airport Design* and applicable ACRP reports.

1) ***Aircraft Storage Facilities*** – Physical requirements of GA users vary from tie-down aprons to large conventional hangars with major maintenance services and transient aircraft aprons. Conventional hangars and T-hangars protect aircraft from the weather and provide security against vandalism or theft. Planners should evaluate the demand for outdoor aircraft parking versus covered aircraft parking and storage facilities in t-hangars or enclosed hangars. The demand for enclosed hangars may be higher in areas of the country that experience extreme winter and summer weather conditions.

2) ***Transient Aircraft Parking Aprons*** – Temporary parking for visiting aircraft may be provided on a transient apron adjacent to the terminal building, or on aprons managed or leased by an FBO. Parking apron requirements should be based on the regular use needs of the airport.

3) ***Terminal Facilities*** – Terminal buildings at GA airports range from very modest structures with little more than a waiting room and a telephone to multistory buildings with extensive amenities, such as pilot briefing rooms and lounges, restaurants, gift shops, conference and training rooms, and rental car counters. At GA airports, the terminal building may also house administrative offices. At commercial service airports, general aviation terminal facilities are often provided by one or more FBOs. In such cases, the facilities are provided principally for customers of the FBO and access for the general public is limited.

b. Planners should analyze existing and forecast activity, including based aircraft activity and transient aircraft operations, and the types of users when assessing future facility requirements at GA airports. The role of the GA airport in the region as well as the also

may influence facility requirements. More information on evaluating airports as part of a system is provided in FAA AC 150/5070-7, *The Airport System Planning Process.*

c. Planners should be aware of factors that may influence existing demand for GA facilities. For example, if facilities are in disrepair compared with facilities at nearby airports with overlapping service areas, demand may shift from the study airport to the nearby airport. The airport sponsor's pricing policies may also affect demand. A useful barometer of facility needs, particularly short-term needs, is the existence of waiting lists for hangars, T-hangars, and aircraft tiedown positions.

d. Planners should carefully evaluate the existing and future GA aircraft fleet mix. Business jets have different facility and service requirements than single-engine aircraft.

e. Additionally, in accordance with (49 U.S.C. § 47101(g)(2)), passenger convenience considerations for GA facilities at commercial service airports and at GA airports include automobile parking, rental car facilities, aircraft parking (transient and long term), signage, comfort and cleanliness of FBO facilities, services such as aircraft maintenance and catering, and dedicated work areas for pilots.

808. AIR CARGO REQUIREMENTS

a. For commercial service airports and larger GA airports, air cargo activity is generated by a diverse collection of companies with differing business strategies and market roles, including the following:

1) ***Integrated Carriers***, which transport freight from door-to-door using their own fleet of trucks and aircraft.

2) ***Freight Forwarders***, which act as brokers that link shippers with freight carriers; they coordinate the shipment of freight, but do not transport it.

3) ***All-Cargo Operators***, which sell space to freight forwarders or individual companies and ship the air cargo on their aircraft.

4) ***Combination Carriers***, which carry both passengers and freight on a single aircraft, typically with a reconfigured cabin.

5) ***Belly Freight Carriers***, which carry cargo in the baggage compartment or belly of a passenger aircraft.

Airport planners should assess the capacity of existing cargo processing facilities and determine future requirements for buildings, aircraft parking aprons, and ground access facilities. Each type of cargo operation has somewhat different site requirements, so a range of spaces will need to be provided for cargo development. In planning for future air cargo facilities, planners should consider: (1) the existing air cargo market and demand at the airport including existing fleet mix and activity (operations and tonnage) and facilities (on- and off-airport office, warehousing and sorting facilities, truck/loading dock areas, airside apron and aircraft parking areas, and employee parking), (2) the type and number of cargo companies expected to expand or initiate

operations; (3) annual air cargo operations projected for all cargo operators; (4) the number of existing apron parking spaces; (5) projected growth in annual enplaned cargo tonnage; (6) the availability of ground access for the heavy commercial trucks associated with cargo activity; (7) the availability of ground access and parking for employees in air cargo facilities, and (8) any security needs and requirements. Planners should consider providing a means of separating cargo trucks from other airport traffic for security purposes.

b. At most GA airports, air cargo facilities are included in the broad category of general aviation facilities. Air-cargo-related activities are accommodated in the hangar, apron, and ground access facilities of the general aviation tenants and operators. In such cases, an independent analysis of air cargo needs is unnecessary.

809. SUPPORT FACILITIES

a. Support facilities at an airport encompass a broad range of functions that ensure the smooth, efficient, and safe operation of the airport. As applicable, the future requirements for the following support facilities should be assessed:

1) ***Aircraft Rescue and Firefighting*** – For airports that require 14 CFR Part 139 certification, planners should review the aircraft operations forecast to determine if the airport's Aircraft Rescue and Firefighting (ARFF) index will change during the planning period. If 14 CFR Part 139 certification is not currently provided at the study airport, but will be required during the planning period, the applicable ARFF building and equipment requirements should be defined in the master plan. See 14 CFR Part 139, *Certification of Airports*, particularly sections 139.315 through 139.319, for ARFF index definitions, and FAA AC 150/5210-15, *Aircraft Rescue and Firefighting Station Building Design*, for standards and guidance in planning an ARFF station. Planners should also consider if multiple ARFF stations will be required to meet response time requirements as defined in 14 CFR Part 139. For airports that do not require 14 CFR Part 139 certification, planners should identify any existing mutual aid agreements with local authorities for emergency response services, or the lack thereof.

2) ***Airport Maintenance*** – Airports provide a wide variety of services to ensure a a safe, efficient, and reliable environment for airport tenants and users. The facilities needed to support these services include administrative offices, buildings for storage and maintenance of airport equipment, shop space, and buildings for supply storage. Northern airports need equipment for snow removal operations (refer to FAA AC 150/5220-18A, *Buildings for Storage and Maintenance of Airport Snow and Ice Control Equipment and Materials).*

3) ***Fuel Storage*** – FBOs often provide fuel storage and supply at general aviation airports. At some airports, unattended self-service facilities may be provided when activity does not warrant full-time attendants. At commercial service airports, fuel storage facilities provide jet fuel if the supply through pipelines or tanker trucks is interrupted. To support general aviation, planners should address the types of approved aviation fuel needed to meet current and future public demand.

4) ***Aircraft Maintenance*** – For the general aviation community, aircraft maintenance is typically provided by an FBO. The types of services provided include, but are not limited to, airframe and power plant repair by an FAA-certified repair station. The facilities required to sustain these services include: (1) an aircraft maintenance hangar with sufficient work space for any aircraft upon which maintenance is being performed; (2) suitable storage and shop space for equipment and tools; (3) office space, customer lounge, restrooms, and telephone; (4) apron area with pavement type and strength adequate to support the expected aircraft fleet; (5) adequate automobile parking and ground access; and (6) proximity to the engine run-up area to limit taxiing times and fuel costs. At larger airports, a tenant airline may have established a maintenance base for the periodic inspection and maintenance of its aircraft. To determine the space requirements for such a maintenance facility, planners should ask airline representatives about the types of aircraft they plan to service at the airport and their expected facility needs.

5) ***Deicing*** – Airports in locations with winter weather conditions that can cause accumulation of frost, snow, slush, or ice on aircraft surfaces must have aircraft deicing facilities. These airports should consider deicing pads to maintain departure flow rates and avoid unacceptable aircraft delays. Any new aircraft deicing facility must have runoff mitigating structures to collect deicing fluid runoff, and must comply with U.S. Environmental Protection Agency (EPA) requirements. See FAA AC 150/5300-14B, *Design of Aircraft Deicing Facilities,* for standards and guidance in planning deicing facilities.

Guidance for assessing the future needs of aviation support facilities is provided in the referenced ACs. In many cases, planners may rely on interviews with airport management and airport tenants and users to better understand existing and future facility requirements..

810. GROUND ACCESS, CIRCULATION, AND PARKING REQUIREMENTS

One of the key elements in choosing a mode of travel to the airport is the total trip time between the passenger's point of origin and their destination. Travelers are particularly sensitive to the duration of the ground access portion of an air travel trip. The regional roadway network, on-airport circulation roadways, and parking facilities are the principal components of the ground access system. The capacity and reliability of this system will determine the levels of service and convenience provided to air travelers during the ground access segment of their trips.

a. **Regional Transportation Network and Public Transportation** – Coordination with local transportation planning agencies during the review of existing conditions should produce enough information to enable an assessment of ground access capability, and to confirm whether or not the existing and planned networks can accommodate projected aviation demand.

   At airports where the capacity of the airport ground access or regional roadway system may be a concern, discussions between the airport and local transportation planning agencies may help in identifying roadway capacity needs and potential roadway improvements or management techniques to improve roadway level of service and reduce congestion. At busy and complex airports, planners can benefit from the use of a variety

of analytical computer models and simulation models to evaluate existing conditions, analyze future scenarios, and consider alternative strategies to manage future airport roadway and curbside demand.

b. Larger commercial-service airports may implement strategies or policies to reduce the number of single-occupant private vehicle trips and to encourage greater use of high-occupancy vehicles. In major urban areas, the Metropolitan Planning Organization (MPO) or other regional planning agency may be able to provide assistance to airport planners. Where roadway congestion is determined to be a constraint, a separate ground access study may be required to identify near-term and long-term improvements or traffic management techniques to manage demand.

   Public transportation has the potential to reduce roadway congestion and the amount of land required for automobile parking while reducing total air pollutant emissions and other environmental impacts. Public transportation services, including scheduled bus and passenger rail, or other alternate modes of transportation, are often examined as part of an airport master plan.

   Airport plans (for new roadways, transit/rail corridors, and other transportation improvements) should be integrated into regional and state transportation plans to ensure that these long-range plans reflect future airport-related transportation improvements.

c. **On-Airport Circulation Roadways** – This roadway access system is shared by a wide range of users having different trip purposes, which include:

   1) ***Originating and terminating airline travelers*** who most often arrive at the airport in a private vehicle, but may also use a taxicab, limousine, courtesy bus, mass transit, charter bus, door-to-door shuttle, rental car, or bicycle.

   2) ***Employees*** who travel to and from the airport each day using private vehicles, public transportation, shuttles from remote parking facilities, or bicycles.

   3) ***Delivery vehicles*** that supply the goods and materials consumed or purchased at the airport.

   4) ***Other vehicles*** that may require access to air cargo facilities, general aviation facilities, support facilities, and other activity centers.

d. Each user group has a different pattern of arrival and departure times for its airport trips. Analytical methods and computer models may be used to evaluate roadway capacities and the levels of service they provide. Such analyses should also identify potential capacity increases in the form of additional lanes or operational modifications. Security provisions for vehicle screening may be required. Other users of the roadway facilities that should be evaluated may include:

   1) ***Taxicab/Limousine/Courtesy Shuttle Staging Areas*** – Locations where vehicles can be parked and dispatched as needed to pick up passengers at terminal curbsides. A

staging area is a critical resource at busy airports where terminal curbside space is scarce.

2) ***Rental Car Facilities*** – At smaller airports, the rental car ready and return parking spaces are often located in lots adjacent to the terminal building or in the public parking garage. At larger airports, ready and return spaces may be provided in a consolidated rental car facility or at remote locations that are accessed via courtesy shuttles or buses. Rental car operations also require space for cleaning, fueling, maintaining, and storing vehicles.

3) ***Courtesy Shuttles and Buses*** – Courtesy buses and other types of shuttles serving on- and off-airport rental car facilities, hotels, and parking facilities are major users of on-airport roadways. At the larger commercial service airports, courtesy vehicles are often allocated dedicated curbside space to pick up and drop off passengers.

4) ***Charter Bus Operations*** – Airports that are gateways to major tourist destinations may accommodate high volumes of charter bus operations. Cruise ships, for example, may impose extraordinary passenger surges on airport facilities when they use charter buses to transfer passengers between the airport terminal and the marine port.

e. **Public Parking Facilities** – Public parking facilities at general aviation airports are generally small surface lots located next to the terminal building, while parking facilities at commercial service airports range from surface lots next to the passenger terminal to a combination of structured parking facilities and surface lots for short-term hourly, daily, and long-term parkers. Close-in parking often includes separate areas for hourly and daily parking. At larger airports, remote parking facilities with shuttle bus service may need to be considered.

f. **Cell Phone Waiting Lots –** At many airports, cell phone lots for meeters and greeters of arriving passengers reduce the amount of recirculating traffic on airport roadways. These lots may include amenities such as flight information displays, restrooms and concessions depending on the volume of traffic to support such facilities.

g. **Employee Parking** – At small commercial service airports, parking for employees whose worksite is inside the commercial passenger terminal building can usually be accommodated in small surface lots near the terminal. At larger airports, however, public parking in surface lots or garages is often given higher priority over terminal area employee parking. In these cases, planners should evaluate existing and future employee parking requirements to determine the the need for terminal area employee parking and remote employee parking, and associated employee parking facility shuttle bus service requirements. Employee parking and ground transportation surveys provide useful data to aid in establishing future facility requirements.

h. **Bicycle Lanes and Racks/Storage** – Planners should evaluate the extent of bicycle use by passengers and employees within the airport complex to determine requirements for

bicycle lanes and bicycle storage (racks and storage lockers). Consider co-locating bicycle storage within transit and parking facilities.

i. **Ground Access Passenger Convenience Considerations** – Per 49 U.S.C. § 47101(g)(2), planners should examine the various components of the airport's ground access system (including roadways, curbside, ground transportation services, signage, and parking facilities) in terms of passenger convenience. Passengers that need to travel to and from an airport must select a mode of transportation for that travel, taking into account mode efficiency and comfort, cost of trip, duration of trip, vehicular traffic, complexity of routing, and potential impacts of road closures and accidents.

On the airport, signage should be simple, concise, and uniform to aid in wayfinding. At airports with multiple terminal facilities, roadway and curbside signage identifying airline locations is critical. Poor signage can reduce the level of service provided to airport patrons and result in increased recirculating traffic (refer to FAA AC 150/5360-12E, *Airport Signing and Graphics).* Passengers traveling by automobile will be most concerned with how easy it is to find parking, parking options and costs, signage and wayfinding to/from rental car facilities if renting a vehicle, and signage denoting airline terminal assignments. Variable or dynamic message signs may provide real-time information to passengers in the event of roadway closures, detours, or changes in airline terminal assignments or other facility locations that are not yet captured by the airport's signage system.

Good connectivity between an airport terminal and the various modes of transportation is essential. Public transportation options should be examined for frequency, travel time, cost, and number of segments (additional time required for connections), as well as type of intermodal facilities available on the airport to provide seamless and convenient connections for passengers on the next leg of their journeys. Walking distances to parking garages, frequency of shuttles to rental car facilities and nearby hotels on and off airport, and amount of curbside for vehicle staging should be examined for passengers not using public transportation.

811. UTILITIES

The master plan should address existing and future utility needs, such as for water, sanitary sewer, drainage and deicing, industrial waste, communications, power supply, and back-up power and water in case of emergencies. Existing systems should be evaluated and their capacity verified at the airport boundary. Historical ratios of utility demand to the level of enplanements or aircraft operations can form the basis for projecting future demand. Since an airport can be a large consumer of utility services, planners should discuss their projections with local utility providers to ensure that the airport's needs are included in their long-term service plans. Planners should also consult local building codes to ensure any specific local requirements are identified during the planning phase.

812. OTHER REQUIREMENTS

Many airports have significant acreage devoted to non-aeronautical uses, such as industrial parks, recreational uses, agricultural or grazing leases, or retail businesses. Some uses are considered temporary, to remain only until a higher aviation use materializes, while others are expected to remain as surplus to anticipated aviation needs. In either case, the revenue from these activities provides supplemental revenue to the airport and improve the airport's overall financial position. The planner should review the infrastructure needs of such activities and identify improvements that preserve the revenue-generating performance of a valuable asset.

813. DOCUMENTATION GUIDELINES

a. A stand-alone chapter of the technical report should describe the analyses and techniques used to determine future facility requirements. A summary at the beginning or end of the chapter and in the report's executive summary should highlight findings for key components.

b. Planners should use appendices to improve the readability and organizational flow of the documentation. However, they should avoid making the appendices a depository for unnecessary information, which can result in lengthy reports that may confuse and discourage the reader.

c. It is not necessary for the chapter documentation to mirror the outline of major sections provided in this chapter of the AC. However, it should follow the structure of the chapter of the technical report that describes existing conditions.

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Chapter 9 Alternatives Development and Evaluation

901. GENERAL

a. This chapter brings together many different elements of the planning process to identify and evaluate alternatives for meeting the needs of airport users as well as the strategic vision of the airport sponsor. Airports have a wide variety of development options, so an organized approach to identifying and evaluating alternative development options is essential for effective planning. The key elements of this process are:

   1) Identification of alternative ways to address previously identified facility requirements.

   2) Evaluation of the alternatives, individually and collectively, so that planners gain a thorough understanding of the strengths, weaknesses, and other implications of each.

   3) Selection of the recommended alternative.

   Planners should carefully organize the analysis because it is easy to consider alternatives that do not meet the airport's needs, or fail to consider certain long-term development options, particularly if one highly visible issue seems to overshadow other planning elements. Both of those outcomes can be avoided by the careful review of the scope of work, and by verifying that the facility requirements (including timing) are complete; that other considerations, such as the sponsor's strategic development objectives, unusual site or environmental consideration and other factors are documented and understood; and that there has been sufficient stakeholder participation.

b. Planners should also review the scope of work to ensure that the alternatives process conforms to the overall study design. In simple master plans, alternatives development may be limited. In these instances, facility improvements are simply an extension of existing land use patterns and can be best addressed in the Airport Layout Plan.

c. Planners should meet the airport's development needs in order to improve the airport as a system, while remaining responsive to environmental, fiscal, and other objectives. To do so, the planner must balance competing needs among the airport's various functional elements. Although the process varies by airport, planners typically consider the airside first; terminal, general aviation, and cargo facilities next; and then airport access. Since a master plan covers a 20-year time frame, planners should recognize that the recommended alternative should be functional through various stages of the plan. For example, it would not be a good idea to develop a new location for general aviation operations early on if the airside improvements needed to support it would not be provided until a later phase. A 20-year plan should also have the flexibility to meet unforeseen future conditions.

   In some cases where it is appropriate to identify major development alternatives, such as a new runway, that meet demand beyond a 20-year time frame. For example, if an airport is experiencing urban encroachment that would lead to land use incompatibility,

planners should assess alternatives that would help protect aviation assets from that encroachment, or to plan for long-term land acquisition. However, planning beyond the 20-year period should be general in nature and in much less detail than that for the short- or even mid-term development. For example, if planning for a future runway, the master plan might only indicate the general location and potential length of the runway. The alternatives analysis would only consider key evaluation criteria and would be at a low level of detail.

d. Effective facility planning must consider environmental issues in the alternatives identification, evaluation, and selection effort. The early consideration of the potential environmental impacts of alternatives can avoid later problems. Some master planning efforts will produce short-term recommendations that will require an Environmental Assessment or Environmental Impact Statement. In these situations, the master plan must provide a good technical foundation for the subsequent environmental process. In some complex situations, it may be helpful to include an environmental consultant or FAA Airports Environmental Specialist as an advisor to the master plan. However, the planner should carefully review the master plan scope of work to avoid undertaking tasks better suited for the follow-on environmental analysis, such as wetland delineation or cultural resources surveys. To better understand how a master plan alternatives analysis fits within the overall development process, planners should concurrently review the following FAA guidance:

   1) FAA Order 5050.4, FAA Airports guidance for complying with NEPA,

   2) FAA Order 1050.1, *Environmental Impacts: Policies and Procedures*

   3) AC 150/5300-13, *Airport Design*

   4) Chapter 5 of this AC, *Consideration of Environmental Factors in Airport Master Planning*

   Master plans that address controversial undertakings, such as capacity projects at larger airports, should pay particular attention to environmental factors and the National Environmental Policy Act (NEPA) process during alternatives identification, analysis, and selection. The plan's environmental evaluation is intended to support the NEPA process. The planning and environmental review will be less likely to experience delays if the master plan supports the subsequent NEPA analysis.

   Although master planning is not part of the NEPA process, the master plan alternatives development and evaluation can provide an important component of an efficient NEPA process. In complex cases, the careful scope of work preparation (with assistance from an environmental consultant or FAA Airports Environmental Specialist) can ensure that the master plan provides information useful to subsequent environmental analyses under NEPA. Items of particular interest during planning include the types of reasonable alternatives that the sponsor and FAA can implement. The analysis of these alternatives must be consistent and well documented.

e. The alternatives effort should also consider fiscal issues. Planners must be aware of the practical fiscal limitations imposed on the airport by the availability of grant funds, passenger facility charges (PFCs), user fees and other sources of development dollars and their development options should reflect the fiscal capabilities of the airport. Cost should not be a factor in rejecting an alternative unless the cost of the alternative makes the alternative infeasible. A plan that is not realistic in terms of what can be funded will not provide much benefit to the sponsor or airport users. Note, however, that under NEPA, cost alone is not necessarily a valid reason for rejecting an alternative.

f. The alternatives identification, evaluation, and selection process should be the most collaborative portion of the master plan study as part of an effective public involvement program. The foundation for a successful effort in the alternatives analysis process is careful consideration of this task in the pre-planning activities. The level of detail to be undertaken in this task will greatly affect the cost of the master plan study.

902. ALTERNATIVES ANALYSIS PROCESS IN AIRPORT MASTER PLANNING

a. A general process of identifying, analyzing, and recommending alternatives is illustrated in Figure 9-1. The steps shown are an example of a comprehensive process that can be used on large and complex projects. For many airport planning projects, some of the steps may not be applicable. The process should be adapted to the needs of the study airport and the level of detail may vary considerably from study to study. The alternatives analysis process may be adapted in several ways, but variations should be clearly described in the study's scope of work; they may include changes such as:

   1) What airport elements are included in the process

   2) How the elements are ranked in the planning hierarchy

   3) What type and level of analysis will be used to differentiate among the alternatives

b. Where a particular functional element does not exist, it can be eliminated from the alternatives analysis process; for example, planners need not consider an airline passenger terminal at general aviation airports. In addition, if there are no facility needs associated with a functional element, it is not appropriate to consider alternatives for that element. Thus, it is possible, if there are no facility improvements for primary elements and those for secondary elements are simply extensions of existing land use patterns, that the alternatives analysis process can be materially reduced or even skipped altogether.

c. The alternatives analysis process planning hierarchy that addresses the primary analysis first examines recommended alternatives for those elements that require large land areas and must be considered as a functional whole. For most airports, this will include the airside. For larger airports, airline passenger terminal and ground access elements may be included. For smaller airports, general aviation facilities may be included in the primary analysis.

   The secondary analysis addresses elements that have greater planning flexibility, however, not all airport planning will have secondary analysis. For example, the support

facilities at some airports will include an Aircraft Rescue and Fire Fighting (ARFF) building. While an ARFF building will have specific size, location, and functional requirements, these requirements are significantly easier to satisfy than those for a new runway or passenger terminal.

The order of the elements in the planning hierarchy may vary by airport. For example, at an airport with particularly complex airside, airline passenger terminal, and cargo situations, but a very simple ground access element, the alternatives analysis process would be adapted to make the ground access element a secondary analysis element while making the cargo element a primary analysis element.

d. Planners may also adapt the analysis to the unique circumstances of the study airport. For example, an airport may have ample airfield capacity, but significant terminal and ground access congestion. In such a case, planners might conduct a relatively simple airfield capacity analysis, or none at all, while the airline passenger terminal and ground access elements would get a more intensive analysis, including computer simulation.

e. The alternatives analysis process is an iterative process, intended to be flexible enough to permit creative thinking about the future of the airport, but sufficiently structured to ensure consideration of all pertinent factors. The planner, in following this process, should focus on issues that shape how the airport will function as a system, as well as on narrower technical analyses.

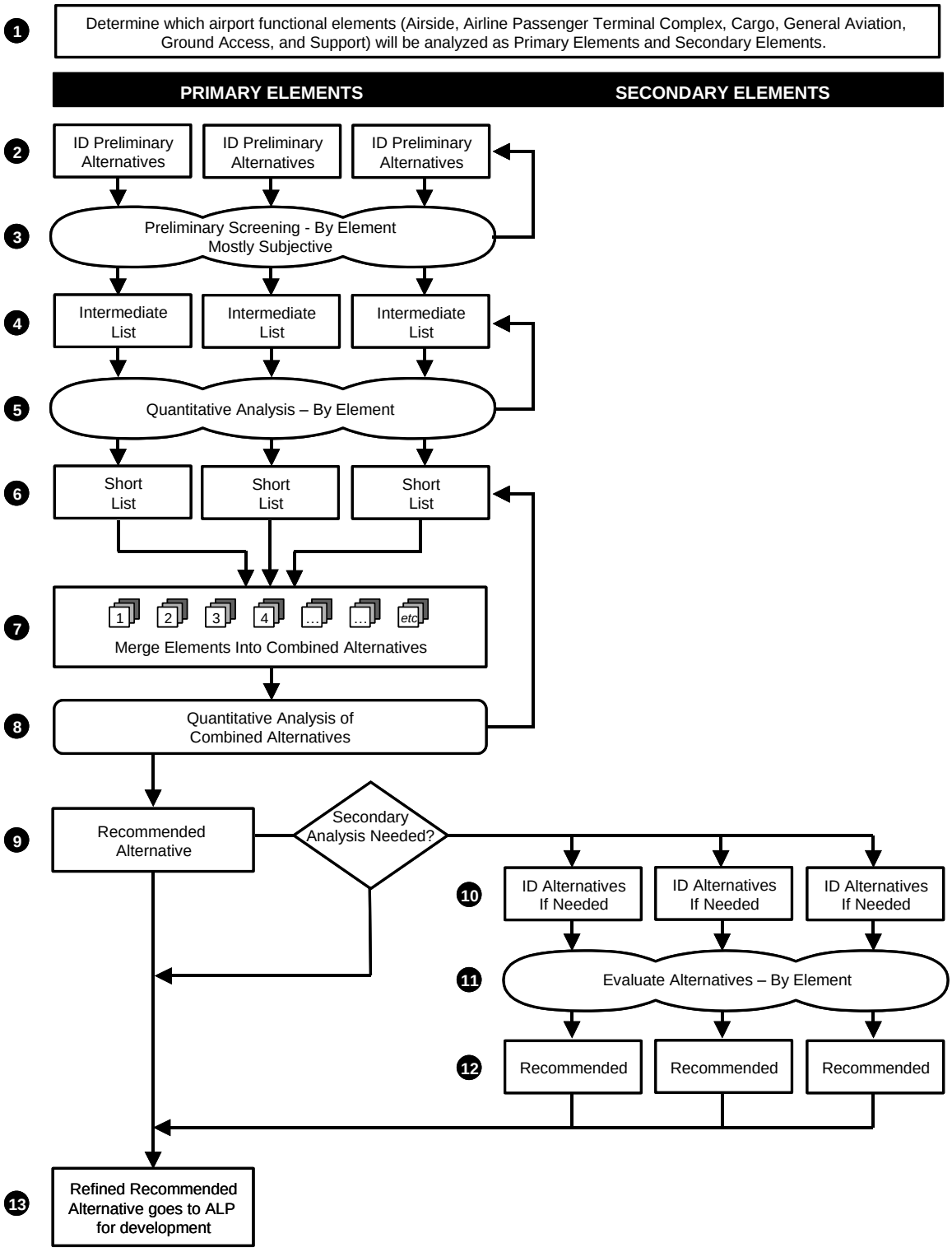
f. The alternatives analysis process should incorporate the public involvement program. Although the appropriate level of public involvement will vary, a meaningful involvement program is important and will provide a number of important benefits.

g. As shown in Figure 9-1, the alternatives analysis process should start with a broad group of alternatives for the primary elements and progressively screen them to produce reasonable alternatives that meet the planning need. The sponsor may identify a recommended single alternative.

1) ***Determine Primary and Secondary Elements (Step 1)*** – Determine which functional elements (airside, airline passenger terminal complex, cargo, general aviation, ground access, and support) should be considered in the primary analysis and which ones can be in the secondary analysis. Primary elements require large, contiguous land areas. Secondary elements have greater planning flexibility, can often be subdivided, and fill-in around the primary elements.

2) ***Identify Preliminary Primary Element Alternatives (Step 2)*** – After the principal elements for primary and secondary analysis are identified, select preliminary alternatives for the primary elements.

Figure 9-1: Alternatives Analysis Process Example



3) ***Screen Alternatives for Intermediate List of Primary Element Alternatives (Steps 3 and 4)*** – Screen the preliminary alternatives, using a mostly subjective, qualitative analysis, to make an intermediate list of alternatives. This screening will eliminate some alternatives for each of the primary elements, and may introduce others. Any subsequent environmental analysis will be aided by clear documentation of this screening, focusing on why alternatives were eliminated.

4) ***Quantitative Analysis for Short List of Primary Element Alternatives (Steps 5 and 6)*** – As appropriate, subject the selected alternatives to a more rigorous, and often quantitative, analysis to get a short list of alternatives by element. Again, clear documentation of this analysis will help in any subsequent environmental analysis.

5) ***Combine and Analyze Primary Element Alternatives (Steps 7 and 8)*** – Identify combined alternatives, consisting of the logical matching of the individual primary element alternatives, and subject them to a further analysis, based on previous work.

6) ***Select Preferred Primary Element Alternative (Step 9)*** – Select and document the recommended alternative for the primary elements. Note that subsequent environmental processing will materially benefit from clear documentation of this selection with a focus on why alternatives were eliminated.

7) ***Identify Alternatives for the Secondary Elements (Step 10)*** – Identify alternatives or options for the secondary elements. In some cases, the simplicity of the situation may eliminate the need for some or all of the secondary component alternatives.

8) ***Evaluate and Select Recommended Alternatives for Secondary Elements (Steps 11 and 12)*** – As appropriate, evaluate secondary elements alternatives, typically using a mix of qualitative and quantitative analysis, and select and document reasonable alternatives or options. Note that subsequent environmental processing will materially benefit from clear documentation of this analysis. It provides a focus on why some alternatives were eliminated and why reasonable alternatives were retained for consideration and environmental analyses.

9) ***Prepare Refined Recommended Alternative (Step 13)*** – The final step in the process is the combination of the recommended alternatives for the primary and secondary elements.

h. During the alternatives analysis process, planners will get new information and input that will help refine the alternatives or result in the introduction of new alternatives. Therefore, planners should view the alternatives analysis process as an iterative one.

903. IDENTIFICATION OF ALTERNATIVES

a. The alternatives identification (steps 2 and 10 in Figure 9-1) should consider only those alternatives meeting the sponsor's planning need and that the FAA or the airport sponsor will be able to implement. Planners should examine each identified alternative's technical feasibility, economic and fiscal soundness, and aeronautical utility (i.e., build and operated safely). Alternatives not meeting those criteria should be dismissed, while

providing reasons for their respective dismissals. The master plan should include reasons why planners rejected any alternative that would avoid environmentally sensitive resources or that would require extensive mitigation. This planning information is critically important to efficient project development. It is also critical to streamlining the subsequent NEPA process, since that process must consider the above master plan alternatives and those outside the FAA's or sponsor's jurisdiction.

b. To avoid an unnecessarily complex alternatives analysis process, the planner should carefully select different ways of addressing the identified need that are not simply variations on the same basic approach. Alternatives should have discrete, measurable, and materially different impacts on the established alternative evaluation criteria. Early work should consider a number of ideas, but these should be reduced to a manageable number of true alternative approaches through the initial steps of the process, taking care to adequately document what concepts were examined and why certain ones were dismissed. The need to work with a manageable number of alternatives in the master plan must be balanced with NEPA requirements to consider all reasonable planning alternatives to avoid or minimize impacts to environmental resources.

   Planners should understand the condition of the airport, the business relationships between the airport and tenants, the future vision of the airport sponsor, the environmentally sensitive features of the airport, and other factors that make each airport unique.

c. There should be a direct link between the facility requirements and the development alternatives. Not all facility requirements are related to capacity shortfalls, as some will improve operations, comply with standards, or meet the sponsor's strategic objectives. However, the basis for all facility requirements should be clearly documented.

d. The alternatives should address those airport elements that are the focus of the particular master plan (airside, airline passenger terminal, or ground access) and de-emphasize functional elements that are less important to the airport's overall function.

e. The process of identifying alternatives should be iterative. It should begin with the identification of a broad range of possibilities, often generated by using a collaborative brainstorming approach. The focus should be on the primary elements. The elements should be reviewed to ensure that necessary interrelationships are considered (i.e., make sure there is a ground access option and airside option that supports each terminal option). The elements may conflict (i.e., a terminal option may conflict with an airside option). Initial screening should narrow the range of possibilities to those reasonable alternatives that meet the planning need for each element, which will then undergo more intensive development and evaluation.

f. As the alternatives are evaluated, planners may need to apply more specialized skills. In some cases, they may need to conduct airspace reviews to determine an alternative's aeronautical utility. In very complex cases, they may need to conduct preliminary engineering studies and prepare cost estimates.

g. In many cases, the secondary element may not require the formulation and analysis of alternatives, but may be integrated directly into the recommended primary element alternative. This is particularly true when the secondary element can follow an extension of an existing land use pattern and no environmental resources are affected.

904. EVALUATION OF ALTERNATIVES

The evaluation of alternatives (steps 3, 5, 8 and 11 in Figure 9-1) should be adapted to each airport's unique situation. Sophisticated and expensive analyses should be done only when deemed necessary to differentiate among alternatives. In all cases, the analysis should follow generally accepted planning practices, be replicable, consistently applied, and well documented.

The alternatives analysis process uses increasing levels of detail as the evaluation of alternatives proceeds. The initial rounds of evaluation should be qualitative and more subjective, based on a combination of good planning judgment, relatively simple-to-use models and simplified calculations. However, subsequent rounds of analysis should be more rigorous.

Evaluation criteria should be determined in advance, but may be adjusted based on information uncovered as part of the alternatives analysis process. Since the selection of appropriate evaluation criteria involves a significant degree of subjectivity, planners must be careful to achieve a balanced evaluation, while still being responsive to the various study participants' points of view. The planner must carefully consider factors of particular importance at the study airport, but make sure that the evaluation addresses all aspects of the alternatives. Therefore, the planner should include a broad range of evaluation criteria to ensure the adequate consideration of all aspects of the alternatives.

Evaluation criteria are divided into four broad categories: operational performance, best planning tenets and other factors, environmental factors, and fiscal factors. For most airports with relatively straightforward planning issues, a simple analysis across a broad range of evaluation categories will be sufficient. The following evaluation criteria should be adapted for each airport to achieve a balance between the need for a thorough evaluation and the inefficiency of over-analysis:

a. **Operational Performance** – How well the airport functions as a system can be evaluated from several perspectives, including capacity, capability, and efficiency.

   1) ***Capacity*** – Test for the capability of accommodating future activity levels. Various capacity techniques can be applied to the airside, terminal, and ground access elements. Consistent application of the technique to each alternative will permit the planner to compare them.

   2) ***Capability*** – Test for the capability of meeting specific functional objectives, such as accommodating the design aircraft, providing the required number of aircraft parking positions or gates, or allowing space for the runway length requirement.

   3) ***Efficiency*** – Test how well the alternatives work as a system by examining combined alternative elements. For example, airfield taxiing efficiency can be evaluated by

combining terminal and airside alternatives to measure which combination yields the lowest weighted average aircraft taxiing time and the fewest runway crossings.

Several FAA offices have a role in assessing the aeronautical utility of various alternatives. These include the FAA's Air Traffic Organization (generally the terminal, technical operations, and planning units), Flight Procedures, and Flight Standards. Questions to be addressed may include the feasibility of approach procedures, navigational aid siting, and airspace interaction.

b. **Best Planning Tenets and Other Factors** – Planners should determine the relative strengths and weaknesses of the alternatives. The following best planning tenets will apply to the evaluation of alternatives at most airports, but others may be applicable at a specific airport:

1) Conforms to best practices for safety and security

2) Conforms to the intent of applicable FAA design standards and other appropriate planning guidelines

3) Provides for the highest and best on- and off-airport land use

4) Allows for forecast growth throughout the planning period

5) Provides for growth beyond the planning horizon, as applicable

6) Provides balance (typically capacity) between elements

7) Provides the flexibility to adjust to unforeseen changes

8) Conforms to the airport sponsor's strategic vision

9) Conforms to appropriate local, regional, and state transportation plans and other applicable plans

10) Technically feasible (limited site constraints)

11) Socially and politically feasible

12) Satisfies user needs

c. **Environmental Factors** – The potential environmental effects of the alternatives are an important consideration. The impact categories defined in FAA Order 1050.1, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4, FAA Airports guidance for complying with NEPA, offer significant insight about the likely impacts of various alternatives. At some airports, only a few of the items will be applicable, such as noise, wetlands, or social impacts and a simple approach will be sufficient to differentiate among the alternatives. Where an Environmental Assessment or Environmental Impact Statement is likely to be prepared, a more detailed evaluation of environmental factors will be useful. An environmental consultant may provide significant insight in such cases.

Early consideration of the environmental effects of the alternatives can help ensure that they remain responsive to the overall environmental objectives of the airport sponsor. If early examination indicates that the principal alternatives are likely to have extensive environmental effects, it may be appropriate to develop additional alternatives. If there are no additional alternatives, the decision to move forward with the existing alternatives should be made only after careful consideration by the airport sponsor.

d. **Fiscal Factors** – Preparing rough cost estimates is a very effective way to compare alternatives and should be done in all alternatives analyses. Cost estimates should account for any special differences among alternatives. For example, in comparing a green-field site versus the redevelopment of an existing site, the evaluation should consider the respective cost advantages and disadvantages. A green-field site might have cost premiums associated with site work, installation of support infrastructure, and access roadways. At the same time, redevelopment might have cost premiums associated with demolition, phasing, and relocations.

Early fiscal analysis may also be necessary to determine if the alternatives are responsive to the fiscal constraints of the study airport. The identification of likely funding sources and their funding potential are important factors in determining the feasibility of the alternatives. If early estimates indicate that the principal alternatives are beyond the realistic fiscal capability of the airport, planners should include that information in the master plan and develop more fiscally responsible alternatives.

Planners may also prepare a preliminary benefit-cost analysis, following the current benefit/cost analysis guidance from the FAA Office of Airports. However, for most alternatives reviews, a summary analysis using reasonable estimates and judgment will be sufficient. Planners should conduct any required benefit-cost analyses in accordance with FAA guidelines when the development and financing plans are sufficiently refined to allow a more accurate estimate of the costs, benefits, and other factors.

905. SELECTION OF A RECOMMENDED ALTERNATIVE

a. The selection of an airport sponsor's recommended alternative (steps 9 and 12 in Figure 9-1) will usually be based on a combination of efforts, including: summation of the alternative evaluation criteria, supplemental analyses and evaluations, stakeholder input through the public involvement process, and sponsor preferences. The level of complexity of the selection process typically reflects the complexity of the airport's situation. However, in all cases the reasons for the selection of the recommended alternative should be clearly documented.

b. Summation of the alternative evaluation criteria can take many forms. Because this effort typically relies heavily on the judgment of the planning team, particular care must be taken to ensure that the summation process is clear and understood by the airport sponsor and study participants. In simple situations with relatively few evaluation criteria, a recommended alternative can often be selected with little or no summation of the evaluation criteria. In more complex settings, a matrix of findings can be effective in selecting a recommended alternative. In addition, a matrix of findings can document

matters of judgment; facilitate the sponsor's, the FAA's, and others' participation in the decision making process; and build consensus regarding the recommended alternative.

In master plans that are controversial or will lead to an Environmental Assessment or that may require an Environmental Impact Statement, the planner should ensure that the process used to select a recommended alternative is comprehensive, logical, well documented, and has meaningful public participation. The public involvement process during a master plan serves an important function, but it does not replace the public involvement process required by NEPA and described in FAA Order 1050.1, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4, FAA Airports guidance for complying with NEPA. If the master plan contains short-term development projects that are known to require additional environmental processing, the airport sponsor should consider beginning the environmental processing prior to selecting a recommended alternative. Selecting a recommended alternative prior to beginning the environmental processing may complicate the NEPA process because the various agencies and public involved may perceive that the NEPA analysis is biased.

906. AIRPORT SITE SELECTION

The emphasis in airport planning is normally on the expansion and improvement of existing airports. Sometimes, however, an existing airport cannot be expanded to meet the future demand and a new or supplemental airport is required. In these cases, a new airport site may be selected as part of the airport planning process. The process of identifying, evaluating, and selecting a potential site for a new airport is similar to the process of identifying, evaluating, and selecting alternatives for individual airport projects. Appendix E contains guidance on the airport site selection process. If planners want to use Federal financial assistance under the AIP for follow-on planning or site acquisition and development, the FAA must approve the selected site before any additional planning work is started.

907. DOCUMENTATION GUIDELINES

a. The documentation of the alternatives identification, evaluation, and selection process should be a separate chapter in the master plan technical report. The planner should provide a summary at the beginning of the chapter that describes the recommended alternative and its principal benefits.

b. Planners should move technical information to appendices to improve the readability and organizational flow of the documentation.

c. Since this documentation may be heavily relied upon in a subsequent Environmental Assessment or Environmental Impact Statement, the planner should ensure that the documentation is logical and thorough. It should make clear what alternatives were considered, why particular alternatives were eliminated from further consideration, and why the recommended alternative was selected.

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Chapter 10 Airport Layout Plans

1001. GENERAL

a. This chapter provides guidance for the preparation of the drawings that make up the Airport Layout Plan (ALP) drawing set. The ALP depicts existing airport facilities and proposed developments as determined from the planners' review of the aviation activity forecasts, facility requirements, and alternatives analysis. The process outlined in this chapter also applies to ALPs that are prepared without a master plan.

b. FAA Order 5100.38, *Airport Improvement Program Handbook*, provides supplemental guidance for the preparation of an ALP. United States Code (USC) 47107(a) requires, in part, a current ALP approved by both the sponsor and FAA prior to the approval of an airport development project. USC 47107(a)(16) requires that the airport sponsor maintain an ALP that ensures the safety, utility and efficiency of the airport. Grant assurance number 29 requires that the sponsor keep the ALP up to date at all times. As stated in Order 5100.38, an ALP remains current for a five-year period, or longer, unless major changes at the airport are made or planned.

c. The minimum elements of the ALP drawing set are defined in Appendix F, *Airport Layout Plan,* of this AC. This chapter complements the ALP drawing set requirements in Appendix F.

d. The ALP preparer must work closely with the airport sponsor, the responsible FAA office, and if appropriate, the applicable state agency, to define the requirements, standards, and criteria to be employed. To ensure that the ALP is comprehensive, all parties must agree to its content and standards. ARP Standard Operating Procedure (ARP SOP) 2.00, FAA Review and Approval of Airport Layout Plans (ALPs), and ARP SOP 3.00, FAA Review of Exhibit 'A' Airport Property Inventory Maps, should be referenced for specific ALP review and approval procedures and additional preparation guidance. Current versions of these SOPs are located at http://www.faa.gov/airports/resources/sops/.

e. The five primary functions of the ALP that define its purpose are:

1) An ALP creates a blueprint for airport development by depicting proposed facility improvements. The ALP provides a guideline by which the airport sponsor can ensure that development maintains airport design standards and safety requirements, and is consistent with airport and community land use plans.

2) The ALP is a public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.

3) The approved ALP enables the airport sponsor and the FAA to plan for facility improvements at the airport. It also allows the FAA to anticipate budgetary and

procedural needs. The approved ALP will also allow the FAA to protect the airspace required for facility or approach procedure improvements.

4) The ALP can be a working tool for the airport sponsor, including its development and maintenance staff.

5) An approved ALP is necessary for the airport to receive financial assistance under the terms of the Airport and Airway Improvement Act of 1982, as amended, and to be able to impose and use Passenger Facility Charges. An airport must keep its ALP current and follow that plan, because those are grant assurance requirements of the AIP and previous airport development programs, including the 1970 Airport Development Aid Program (ADAP) and Federal Aid Airports Program (FAAP) of 1946, as amended.

f. The ALP drawing set is a set of planning drawings and is not intended to provide design engineering accuracy. Individual items such as runway coordinates, obstruction survey data, and application of airport design standards must comply with Federal survey standards. The ALP preparer will need to define accuracy requirements for specific elements of the ALP in cooperation with the airport sponsor and approving agencies.

g. Airport Layout Plans are prepared either as first time ALPs, formal revisions based on changes to the airport, or informal revisions based on minor improvements to the airport. Informal revisions, often referred to as pen-and-ink revisions, can be made to individual sheets of the ALP drawing set, although the responsibility for review and approval must still be coordinated with the FAA. These and other requirements are discussed in FAA Order 5100.38, *Airport Improvement Program Handbook*.

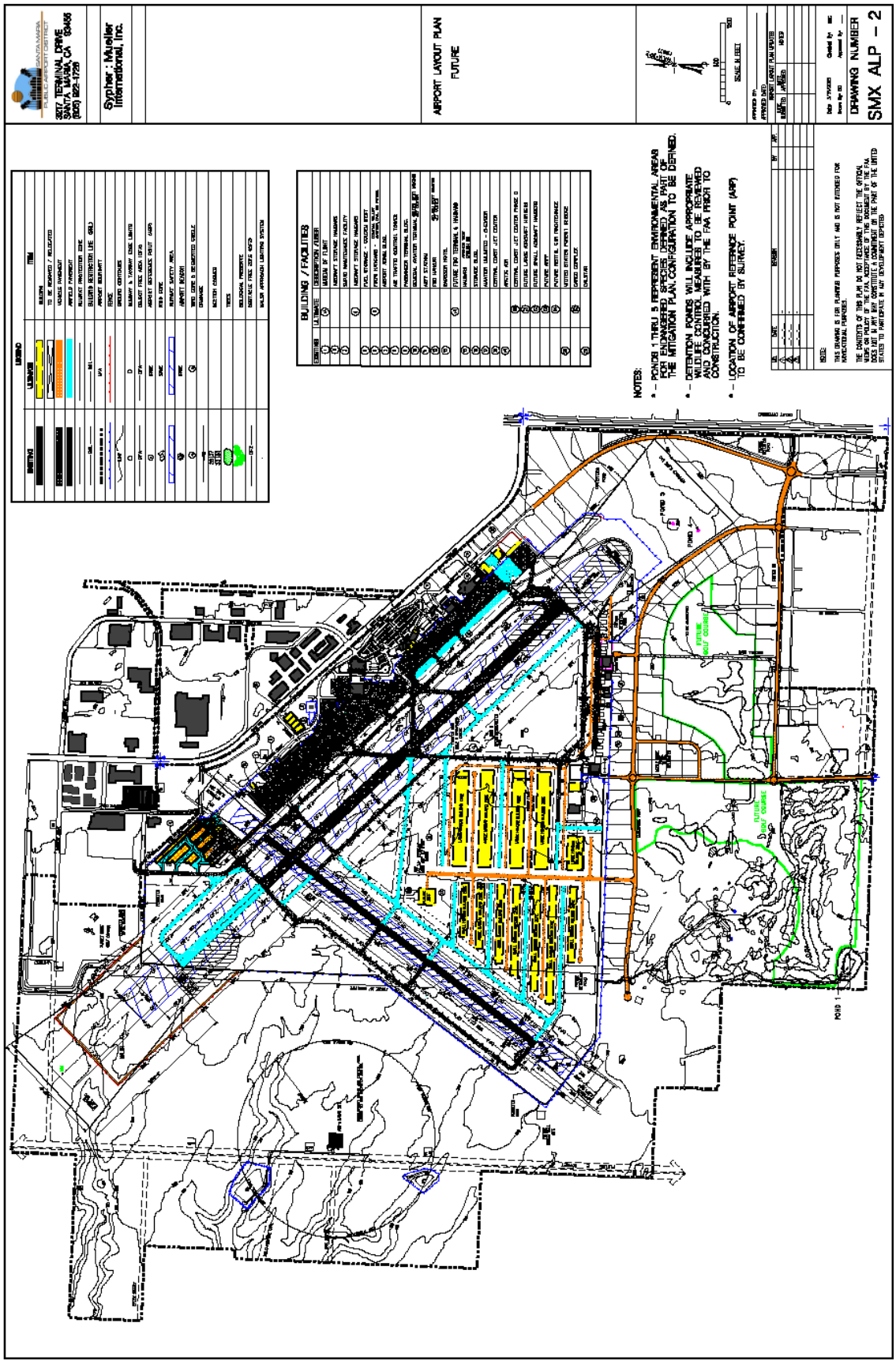
1002. AIRPORT LAYOUT PLAN DRAWING SET

a. The individual sheets that comprise the Airport Layout Plan drawing set will vary with each planning effort. The ALP preparer, airport sponsor, FAA and any other approving agency must determine which sheets are necessary during the project scoping activities. ARP SOP 2.00, Appendix A, ALP Review Checklist, may be used to guide the scope development. The following sheets are described further in the SOP:

1) ***Cover Sheet*** – A separate cover sheet, with approval signature blocks, airport location maps, and other pertinent information as required by the local FAA Airports office.

2) ***Airport Layout Plan*** –A drawing depicting the existing and future airport facilities. The drawing should include the depiction of all applicable design standards contained in the latest version of Advisory Circular 150/5300-13, including but not limited to, landing areas, movement areas and aircraft parking areas (e.g., runways, taxiways, helipads, aprons, etc.), required facility identifications, description labels, imaginary surfaces, Runway Protection Zones, Runway and Taxiway Safety Areas, Runway and Taxiway Object Free Areas, Runway Obstacle Free Zones and basic airport and runway data tables. It may be necessary to include the data tables on a separate sheet. Figure 10-1 is an example of an ALP drawing.

Figure 10-1: Airport Layout Plan Drawing



Source: Santa Maria Airport (SMX), prepared by Sypher:Mueller.
Note: This is a draft airport layout plan and has not yet been reviewed or approved by FAA.

3) ***Data Sheet*** – A separate sheet containing basic airport and runway data tables.

4) ***Facilities Layout Plan*** – A drawing that depicts existing and future facilities, and only critical, non-overlapping clearance criteria, with minimal text. It is essentially a simplified ALP.

5) ***Terminal Area Plan(s)*** – This plan consists of one or more drawings that present a large-scale depiction of areas with significant terminal facility development. Such a drawing is typically an enlargement of a portion of the ALP. At a commercial service airport, the drawing would include the passenger terminal area, but might also include general aviation facilities and cargo facilities.

6) ***Airport Airspace Drawing*** –14 CFR Part 77, *Objects Affecting Navigable Airspace*, defines this as a drawing depicting obstacle identification surfaces for the full extent of all airport development. It should also depict airspace obstructions for the portions of the surfaces excluded from the Inner Portion of the Approach Surface Drawing.

7) ***Inner Portion of the Approach Surface Drawing*** –Drawings containing the plan and profile view of the inner portion of the approach surface to the runway and a tabular listing of all surface penetrations. The drawing will depict the obstacle identification approach surfaces contained in 14 CFR Part 77, *Objects Affecting Navigable Airspace*. The drawing may also depict other approach surfaces, including the threshold-siting surface, those surfaces associated with United States Standards for Instrument Procedures (TERPS), or those required by the local FAA office or state agency. The extent of the approach surface and the number of airspace obstructions shown may restrict each sheet to only one runway end or approach.

8) ***On-Airport Land Use Drawing*** – A drawing depicting the land uses within the airport property boundary.

9) ***Off-Airport Land Use Drawing*** – A drawing depicting land uses and zoning in the area around the airport. At a minimum, the drawing must contain land within the DNL 65 db noise contour and to the extents of the future RPZs, if they extend beyond the airport property. For general aviation airports or low activity commercial service airports, where noise issues are less important, on-airport land use and off-airport land use drawings may be combined.

10) ***Airport Property Map*** – A drawing depicting the airport property boundary, the various tracts of land that were acquired to develop the airport, and the method of acquisition. This drawing is only required for those airports that have acquired land with Federal funds or through an FAA-administered land transfer program; however, it may be useful to all airport sponsors. If any obligations were incurred as a result of obtaining property or an interest therein, they should be noted. Obligations that stem from Federal grant or an FAA-administered land transfer program, such as surplus property programs, should also be noted. The drawing should also depict easements beyond the airport boundary. An airport property map is not a substitute for an Exhibit A unless it is prepared in accordance with AC 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects.*

11) ***Runway Departure Surface Drawing*** – This drawing depicts the applicable departure surfaces as defined in Table 3-2 and Figure 3-4 in FAA AC 150/5300-13. The surfaces are shown for runway end(s) designated primarily for instrument departures. The one-engine inoperative (OEI) obstacle identification surface (OIS) should be shown for departure runway end(s) supporting air carrier operations.

12) ***Utility Drawing*** – This drawing depicts the location and capacity of major utilities on the airport and in the surrounding area.

13) ***Airport Access Plans*** – If access to the airport is a significant issue, a separate airport access drawing should be created, depicting the major routes of various modes of transportation that serve the airport. Such a drawing could also include proposed improvements to the system.

14) ***Other Plan(s)*** – Drawings that address a specific, unique need at the airport. For example, these drawings may include a Well Site Plan for on-airport oil and gas extraction, or a Launch Site Boundary for commercial spaceport facilities[2], etc.. The sponsor, FAA and other approving agencies must discuss and agree to include them.

1003. COMPUTER-AIDED DESIGN STANDARDS

a. ALP drawings may be produced electronically using design software. The sponsor and responsible reviewing agency will select what program to use. Design standards should be established and may include defined line types, line weight/thickness, lettering styles, symbols, and file-naming conventions. The sponsor, FAA and/or state agency must determine which standards must be followed in development of the Airport Layout Plan drawing set.

b. Following computer design standards will facilitate the review and approval of the drawings by the responsible agency, reduce the chance of someone misunderstanding the drawings, produce drawings that are useful for the reviewing agency and the airport sponsor, and produce drawings that may be used in subsequent planning and design efforts.

1004. GEOGRAPHIC INFORMATION SYSTEMS APPLICATIONS

a. Geographic Information Systems (GIS) allows users to visualize, question, analyze, interpret, and understand data to reveal relationships, patterns, and trends. GIS may be used by the airport sponsor for a number of purposes, including the inventory and maintenance of airport facilities, preparation for emergency services, planning for airport improvements, the inventory of airport property, and the inventory of sensitive environmental areas.

b. The ALP may be linked to an existing GIS or the airport sponsor may implement a new GIS incorporating the ALP. Airports are required to submit digital geospatial data in

[2] See FAA's publication entitled "Proposed commercial space facilities and operations at Federally-obligated or Part 139 airports," dated October 20, 2014, available online at http://www.faa.gov/airports/airport_safety/

conformance with the most current version of AC 150/5300-18, *General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards*.

1005. BASE MAPPING AND DATA SOURCES

Base mapping and data source issues should be discussed as part of the master plan scoping, since they may affect not only the ALP drawings, but also subsequent environmental matters. These issues might include the following:

a. **Base Mapping** – The level of detail required for the base mapping of the ALP must be determined by the airport sponsor, FAA, state agency, and the ALP preparer. Although some sponsors may already have the necessary data, new base mapping will often be required. Base mapping is typically done at the outset of the planning effort and is used in the facility requirements determination and alternatives analysis and selection. Since these processes ultimately establish the total area that will be depicted on the drawings, the preparer should establish the area that must be mapped by considering the following:

- Potential airport expansion beyond the existing boundaries
- The extent of noise contours
- Location of other potential environmental impact areas
- The area required to address ground access issues
- The area to be depicted on the Approach Surface Drawing
- Implications of the use of GIS

The ALP preparer will need to determine, based on topography, budget, and future uses of the base mapping, what intervals of topographical contours to use on the maps. Topographic issues may be important in the alternatives analysis, which may require that reduced contour intervals be used. The ALP preparer should also consider how to analyze airspace obstructions and violations. If aerial photogrammetry is used for the obstruction analysis, mapping can be paired with it, but parameters for both products must be established.

b. **Airspace Obstruction Identification and Analysis** – An assessment of airspace obstructions near the airport should be included on the Approach and Departure Surfaces Drawings and the Airspace Drawing. The ALP preparer and reviewing agency must establish data sources and parameters for this assessment. Obstruction data sources include airport obstruction removal programs, previous obstruction survey data, the airport's Obstruction Chart, and the FAA Digital Obstacle File. Numerous methods may be used for inventorying new obstructions or for verification of identified obstructions, including a physical site survey using traditional methods, aerial photogrammetry; and laser mapping. Obstruction analysis parameters include the extent of the approach surfaces to be surveyed and analyzed, and the survey of areas off the sides of the runways. Existing obstruction clearing and maintenance programs at the airport may minimize the need for extensive obstruction surveying. Conversely, development of a new airport, construction of new runways, and the extension, reclassification, or approach procedure revisions to existing runways may require additional surveying. Surveys should be done in accordance with FAA Advisory Circulars 150/5300-16, 17, and 18.

c. **Off-Airport Property** – The airport property map will identify the parcels that were acquired to develop the airport. The airport alternatives analysis may benefit from an inventory of parcels surrounding the airport boundary, particularly in areas of anticipated airport development. Being able to identify these parcels by size and use may also benefit potential subsequent environmental studies. The ALP preparer, the responsible agency, and airport sponsor should determine if expanding the property map to include these areas is necessary.

1006. CHECKLISTS

a. ARP SOP 2.00, Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs) should be referenced for the most current ALP Checklist for use in scoping the ALP and managing the ALP review and approval process. This SOP replaces earlier checklists provided by individual Regions and District Offices.

b. For airports not included in the NPIAS, the FAA's checklist may not apply; states may have separate requirements.

c. Planners must verify that the ALP checklist is current, since it is continually revised to reflect changing Federal and state standards.

d. Once the applicable checklist has been identified, the ALP preparer should consult with the reviewing agencies to define the specific items on the checklist that are applicable to the project. The checklist is comprehensive and not all items are applicable to a specific project.

1007. APPROVALS

a. The ALP drawing set approval process may vary, depending on the requirements of the state aviation agency. The airport sponsor, FAA, state, and ALP preparer need to identify a review and approval process at the outset of ALP preparation.

b. FAA Order 5100.38, *Airport Improvement Program Handbook*, states that FAA review and coordination of the ALP will cover Federal interests and must consider any required coordination that was not completed at the local or state level.

c. The review of the Airport Layout Plan drawing set will typically be completed through multiple submittals. Milestones must be determined by the reviewing agency, but typically include:

1) ***Preliminary ALP submittal*** – The drawing set should be submitted to the sponsor for review and comment to ensure that the graphic depictions correctly present the sponsor's goals.

2) ***Draft ALP Submittal*** – The drawing set and support documentation should be submitted to the FAA and state aviation agencies for review and comment. Supporting documentation will include the ALP checklist and must be predetermined

with reviewing agencies. Review comments may be addressed prior to submittal of the Draft ALP drawing set for airspace review.

3) ***Draft ALP Airspace submittal*** – The Draft ALP drawing set should be submitted to the reviewing agency for distribution to various FAA offices for airspace review. As noted above, in some cases the FAA or state may require that the Draft ALP drawing set be submitted for review and comment and then resubmitted for airspace review after their comments have been addressed. In other cases, the FAA may conduct the airspace review at the same time as its general review of the Draft ALP drawing set.

4) ***Final ALP submittal*** – The ALP drawing set should be revised, as needed, based on the airspace determination and review comments if these were not addressed prior to submitting the Draft ALP drawing set for airspace review. The final ALP drawing set and accompanying narrative (Master Plan Report or ALP Narrative Report) should be sent to the reviewing agency for distribution.

d. Conditional Approval – The FAA may approve the ALP drawing set conditionally, based on specific components that will be subject to further review and approvals prior to funding and implementation. See Chapter 5 for additional information regarding master plan environmental review and ALP approval.

e. Unconditional Approval – The FAA may unconditionally approve the ALP drawing set when all proposed development projects are either categorically excluded from additional environmental processing, have received a Finding of No Significant Impact resulting from an Environmental Assessment, or have received a Record of Decision resulting from an Environmental Impact Statement.

1008. DOCUMENTATION GUIDELINES

a. The requirements for documentation of the ALP drawing set must be determined with the airport sponsor and the reviewing agency or State agency. Documentation will typically include a complete reduced-size set of the ALP drawing set and the accompanying text. The master plan will provide the narrative if the ALP is prepared as part of a master plan. If the ALP is prepared separately as an ALP Update, an ALP narrative is required. The narrative will typically describe ALP development criteria and the rationale for the development shown on the ALP. Examples of these include airport reference code-related design criteria unique to specific areas of the airfield, or known or proposed modifications to FAA design standards. (See Section 202.c of this AC for further guidance on the ALP Narrative Report.)

b. The quantity and form of ALP drawing sets must also be defined by the airport sponsor, FAA and state agencies. A reproducible, signed original copy and multiple paper copies of the drawings set may be required. Distribution requirements should be established during the project scoping.

c. Electronic files of the Airport Layout Plan drawing set may be prepared. These files are typically provided to the reviewing agency and may also be provided to the sponsor.

d. Once approved by the sponsor and approving agency, the ALP becomes a legal document and the sponsor should consider placing security controls on the ALP drawing set to prevent unauthorized changes to the drawings.

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Chapter 11 Facilities Implementation Plan

1101. GENERAL

a. The facilities implementation plan provides guidance on how to implement the findings and recommendations of the planning effort. Facility implementation plans will vary considerably, depending on the complexity of the projects and the airport sponsor's preferences. In some cases, a simple schedule, listing of key projects, project descriptions, timing of key activities, estimated development cost, interrelated projects, and any special considerations will be sufficient. Other situations may warrant a detailed implementation plan that includes a comprehensive master schedule for the implementation of the major projects, a detailed coordination plan outlining key activities and responsibilities, and detailed project descriptions in the form of project data sheets or project booklets for each major project. In all cases, an implementation plan should provide the airport sponsor and FAA with the information they will need to integrate the master plan's recommendations with the daily activities of the airport.

The airport sponsor, FAA, and other involved parties may use similar terms to describe somewhat different components of the facility implementation plan, particularly in regard to what makes up a Capital Improvement Plan (CIP). Airport sponsors maintain a "capital improvement program" or a "capital improvement plan" that includes all of their airport planning and development projects, both eligible and ineligible for AIP funding. The FAA considers actual funding requests through the Airports Capital Improvement Plan (ACIP) process.

Regardless of the terms used, the facilities implementation plan must address all of the airport's planned capital projects (even those projects that are not associated with the recommendations of the master plan) to ensure that adequate fiscal, staff, scheduling, and other resources are available. In addition, all documentation should be prepared so that it will be clearly understood by all parties.

The facilities implementation plan must balance funding constraints; project sequencing limitations; environmental processing requirements; agency and tenant approvals and coordination processes; business issues, such as leases and property acquisition; and sponsor preferences. The plan must also be coordinated with the master plan ALP and the airport's financial plan.

The facilities implementation plan may change from year to year in response to changing conditions. Therefore, the facility implementation plan should be prepared so that it is easy to update after the master plan is completed. For example, future aviation activity may grow more quickly than the initial facilities implementation plan anticipated, requiring modification of the plan to allow earlier implementation of projects. It should be more detailed in its early years than in the later years to reflect the imprecise nature of long-range facility planning.

1102. FORMULATION OF THE CAPITAL IMPROVEMENT PLAN

a. A new or revised Capital Improvement Plan (CIP) is a key element of the facility implementation plan. The projects illustrated on the ALP should be more precisely described in the sponsor's CIP. While the ALP illustrates facility improvements for broad time periods, (5, 10, and 20 years), those descriptions must be refined into specific projects for the CIP. The airport sponsor will then be able to integrate the master plan projects into its overall program of facility improvement projects, repair projects and maintenance projects. In some cases, planners may need to significantly revise the sponsor's existing CIP if it includes projects that are no longer relevant to the airport's development as a result of changes in the master plan. At large airports, where there may be many ongoing development projects, it can be difficult to integrate the projects identified in the master plan into the sponsor's existing CIP. The planner should work with the sponsor to define ongoing projects with regard to schedule, scope, and sources and uses of funds in order to integrate the master plan projects into a realistic CIP.

b. Given the wide variability in project descriptions and CIP processes, the planner needs to understand the requirements of the sponsor, FAA, and other applicable agencies before undertaking this task. Effective coordination among the planner, FAA, and the sponsor is essential. The airport's CIP contains all projects including those that may not be reflected in the FAA's planning module of SOAR. The level of detail in the sponsor's CIP may also vary considerably, depending on the complexity of the study airport and sponsor preference.

   Specific projects, based on the ALP, should be divided into smaller projects that reflect how projects are approved, designed, and constructed. Planners should maintain an appropriate project scope in designing individual projects. For example, if the master plan recommends the extension of a runway, the project would include extending the runway, as well as associated projects such as extending the parallel taxiway and adding associated navigational aids, electrical systems, and service roadways. However, if the master plan recommends the relocation of a passenger terminal, the subsequent projects associated with that could be extensive in themselves, including projects to address access roadway modifications, terminal area parking, terminal curb and roadway, terminal building and concourse, terminal apron, access taxiways, and miscellaneous support infrastructure. In all cases, however, the standard descriptions outlined in the SOAR planning module should be used for projects submitted to the FAA for funding consideration. Each component of an overall project should be described. For example, the land acquisition that is part of a runway extension should be described as "Extend Runway – Land Acquisition, Phase 1."

   Specific projects can be described as project listings on a master table, on individual project data sheets, or in projects booklets. The approach used will vary with the level of detail needed to support the sponsor's needs. Project descriptions may include the following types of information:

   - Project identification (name and project number)
   - Project scope (detailed project description and illustrations)
   - Concise project purpose or objective (why the project is needed)

- Project schedule (begin/end dates for pre-design, design, construction, close out, and start-up)
- Prerequisites, dependent, and interrelated projects
- Project budget (construction cost estimate, including quantities and unit costs, soft costs, and contingencies)
- Environmental processing required
- Funding information (AIP grant and PFC estimates, other funding source),
- Special considerations (lease considerations, property acquisition requirements, known environmental mitigation requirements, and site constraints)
- Identification of responsibilities (key activities and when they must be completed, by agency, organization, position, or person)
- Benefit/cost information (see Chapter 12 for a discussion of the FAA's *Airport Benefit Cost Analysis Guidance*)

1103. PROJECT SEQUENCING AND THE COMPREHENSIVE MASTER SCHEDULE

a. Airport projects may be complex, so the implementation plan should consider the interrelationships among the projects in the sponsor's existing and revised CIP. Planners should examine all projects to establish interrelationships, determine a sequence to minimize conflicts, and establish a master schedule to ensure the sequence is maintained throughout the implementation plan.

The facility implementation plan should cover the same years as the forecasts in the planning effort. Typically, detailed information should be provided for the five-year horizon, with less detail provided for the longer planning periods.

In addition to the technical aspects of designing and constructing the projects, the project sequencing plan or master schedule should reflect the sponsor's overall financial, environmental, and strategic plans. Developing the project-sequencing plan is an iterative process and may result in the reformulation of projects or revisions to the airport's financial, environmental, and strategic plans.

Since activity rarely grows exactly as forecast in the master plan, establishing triggers for key improvements, such as an aircraft apron expansion, additional aircraft storage hangars, or additional runway capacity, is recommended to allow a sponsor to respond to actual activity levels as they occur. The project-sequencing plan should document these triggers along with the year in which planners expect them to be reached. Such an approach will be particularly useful for the longer-range part of the implementation plan.

Preparation of the project-sequencing plan should be undertaken with a full understanding of how the airport sponsor will use the implementation plan. Given the high levels of complexity associated with such an effort, planners should ensure that planning resources are efficiently used to meet the sponsor's needs. In many cases, a plan that simply highlights the order of the projects and key activity triggers will be sufficient. In more complex situations, an implementation plan should include the preparation of an actual master schedule that incorporates project sequencing, key activities, and the identification of the responsible parties.

1104. KEY ACTIVITIES AND RESPONSIBILITIES

a. The implementation plan should provide information regarding key activities and responsibilities. Because the lead-time associated with many projects is significant, the early identification of key activities and responsibilities can help ensure that essential preparatory activities are completed on a timely basis. As with other elements of the implementation plan, the level of detail regarding key activities and responsibilities will vary, depending on the sponsor's needs and the complexity of the program.

The key activities and responsibilities will vary from airport to airport, but will include many of the following:

1. ***Sponsor-specific project approval activities***, such as airport board, council, or other administrative body approvals; various budgetary approvals and funding appropriations; and similar sponsor-specific items
2. ***Airline and other tenant approvals*** and lease modifications
3. ***Project funding activities***, such as FAA and other agency grant applications, PFC application, and long-term debt financing.
4. ***Environmental processing activities***, as appropriate, under current versions of FAA Order 1050.1, Environmental Impacts: Policies and Procedures and FAA Order 5050.4, FAA Airports guidance for complying with NEPA.
5. ***Land acquisition activities***
6. ***Sponsor-specific project implementation process activities*** associated with designing and constructing the projects
7. ***Agency coordination activities***, including the FAA, local metropolitan planning organization or its equivalent, Transportation Security Administration, Department of Defense, and other agencies that may have direct involvement with the airport
8. ***Public Coordination activities*** that carry the public involvement process into the project implementation phase

At a minimum, the listing of key activities and responsibilities should include what activities should be undertaken, by what party, and when. In more complex situations, it may be useful to provide a schedule of activities or to incorporate the key activities and responsibilities into the overall sponsor's CIP master schedule.

1105. DOCUMENTATION GUIDELINES

a. The documentation of the facilities implementation plan will vary, depending on the complexity of the study airport and sponsor objectives. Because the implementation plan may be read as a stand-alone document, planners should provide enough source documentation so the plan can be independent of the master plan. Planners should use appendices to improve the readability and organizational flow of the documentation, particularly if project data sheets, project booklets, or benefit/cost analyses are included. The documentation should include any electronic spreadsheets and files so as to facilitate the modification of the facilities implementation plan as needed. Prior coordination with the local FAA Airports office will facilitate the integration of the sponsor's CIP into the planning module of SOAR.

b. The documentation of the facilities implementation plan should normally include a new or revised CIP for at least the short-term airport development projects. Planners should address major developments in sufficient detail so the sponsor will know how to fund each project in the CIP. The plan should clearly indicate other agencies that are anticipated to provide grants-in-aid so they can determine the appropriate level of their involvement.

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Chapter 12 Financial Feasibility Analysis

1201. GENERAL

a. This chapter provides guidance on what will be required to demonstrate the airport sponsor's ability to fund the projects in the master plan. Planners should emphasize the projects that they expect to implement over the near-term, as presented in the capital improvement plan (CIP). A more general discussion of the funding of the medium- and long-term projects is more appropriate because of the uncertainty of future funding and - possible shifts in the importance of those projects.

b. The sponsor's ability to fund the recommended projects should be a major consideration in preparing the CIP and facilities implementation plans. The financial feasibility analysis should take place concurrently with the development of the CIP and the facilities implementation plan.

c. The level of effort necessary to conduct a financial feasibility analysis will vary considerably, based on the size of the airport. In general, items to consider are: the funding sources for the CIP, a projection of revenues and expenses (pro forma cash flow analysis) for each year of the CIP, and methods to enhance airport revenues.

d. During the scoping process for the master plan, planners may determine that the financial feasibility analysis need not be a stand-alone chapter. The CIP and facilities implementation plan should provide adequate information on how the projects in the CIP will be funded.

1202. SOURCES OF FUNDING

a. Airport development can be financed from several sources, including Federal and state grants-in-aid, private financing or third party development, passenger facility charges, customer facility charges, a variety of bonds, and local funds.

1) **Federal Funding** – Some airport projects are eligible for FAA funding through the Airport Improvement Program (AIP), which provides entitlement funds for primary airports (based upon their annual enplaned passengers), airports supporting significant cargo activity (based upon the proportion of landed cargo weight), state apportionment and nonprimary entitlement funds. Additional AIP funds, designated as discretionary, may also be available for eligible projects, based on the FAA's national priority system and several other factors.

Although the AIP has been reauthorized several times and the funding formulas have been periodically revised to reflect changing national priorities, the program has remained essentially the same. Public use airports included in the NPIAS and that serve civil aviation may receive AIP funding for eligible and justified projects, as described in FAA Order 5100.38, *Airport Improvement Program Handbook*. The airport sponsor must fund the remaining project cost, using a combination of the funding sources discussed in this section.

2) **State Funding** – Many states have programs to assist in airport capital development. The administration of these funds depends on the mechanisms established in each state. The most common source is a state aeronautics commission or department. State funds are often used to provide some part of the non-Federal share of projects supported by the FAA and for other projects that have been included in the state airport or aviation system plan. Most states have established a priority system for the allocation of state funds. Some states also provide limited funding to airports to support local economic development.

3) **Third Party Development** – Third party financing may be appropriate in a case where an airport sponsor uses a third party developer or a tenant to finance a construction project. Only projects with a strong positive cash flow can support this type of financing. Generally, the third party would lease the structure for a period of years to the tenant paying the airport ground rents. According to the terms of the agreement, the airport sponsor receives ownership of the asset upon expiration of the lease. This method of financing preserves the airport sponsor's cash to fund higher priority projects. Examples of projects that are funded in this manner include the development of passenger terminals, general aviation hangars, corporate hangars, and cargo facilities.

4) **Passenger Facility Charge** – The Aviation Safety and Capacity Expansion Act of 1990 authorized the Secretary of Transportation to grant public agencies the authority to impose a Passenger Facility Charge (PFC) to fund eligible airport projects. PFC revenue may be used on a "pay-as-you-go" basis or leveraged to pay debt service on bonds or other debt used to pay for PFC-eligible projects. Although the FAA is required to approve the collection and use of PFCs, the program permits local collection of PFC revenue through the airlines operating at an airport and provides more flexibility to airport sponsors than AIP funds.

   To be eligible for PFC funding, a project must preserve, enhance, or make a significant contribution to the safety, security, or capacity of the national air transportation system; reduce noise or mitigate noise impacts resulting from an airport; improve local air quality in accordance with the Voluntary Airport Low Emission program; or furnish opportunities for enhanced competition between or among air carriers; reduce current or anticipated congestion; or other qualification that may be added to the program over time. Allowable project costs include only those incurred on or after November 5, 1990. Regulations associated with the imposition of a PFC are described in 14 CFR Part 158, as implemented through FAA Order 5500.1, *Passenger Facility Charge*.

5) **Customer Facility Charge** – A customer facility charge (CFC) is a fee paid by airport customers for the use of some non-aeronautical service at the airport. These charges are commonly collected from on-airport rental car agencies. The funds are collected by the rental car agency from their customers and then paid to the airport for use in paying the debt service on, for example, a consolidated rental car facility. The airport constructs the facilities on behalf of the agency, allowing them to finance major projects, but keeping the debt off their balance sheets.

6) **Bonds** – A variety of bonds can be issued to support airport development projects.

a) ***General obligation bonds*** are backed by the creditworthiness and taxing power of the municipality operating the airport. They usually bear low interest rates because of their high degree of security. However, state laws may limit a municipality's overall debt, and competition from other community financing requirements may preclude their use for an airport project. Some states have an exemption from the debt limitation rule for general obligation bonds because they are used for a revenue producing enterprise.

b) ***Revenue bonds*** pledge the revenues of an airport sponsor to the repayment of debt service. These are the most common source of funding at larger commercial service airports. Revenue bonds are popular because they do not burden the taxpayer or affect the bonding capacity of the municipality. However, their use is limited to airports with a sufficient operating surplus to cover the debt service. Projected Net Revenues must exceed debt service requirements by at least 1.25 times and up to 2.0 times, depending on the strength of the bond issuer and the underlying assumptions with respect to the market risk for the bonds. Interest rates are dependent on the coverage ratio, but in any case will be higher than for general obligation bonds. Other factors that may affect the interest rates on revenue bonds are the strength of the local passenger market and the financial condition of the airlines serving the market.

c) ***Special facility revenue bonds*** are normally issued by the airport sponsor for the construction of a facility for a third party and backed by the revenues generated from that facility. This method of funding can be used for such facilities as maintenance hangars, airline reservation centers, terminal buildings, and air cargo terminals.

d) ***Industrial development bonds*** can be issued by states, local government, or an airport authority to fund the construction of an airport industrial park or other facilities that may attract business and increase non-aeronautical leasing revenues at the airport.

7) **Local Funds** – The remaining portion of project costs must be funded from local sources. The local share of project costs can come from the annual cash flow at the airport or with unrestricted cash balances available to the airport sponsor. The local municipality may provide the local share from its annual cash flow or available cash reserves.

1203. FINANCIAL FEASIBILITY

a. **Prepare CIP Funding Plan** – The CIP and development-phasing plan for the CIP prepared in the facilities implementation plan should be summarized, with the potential funding sources clearly identified for each year of the financial plan. The planner should use realistic assumptions about the amount of external funding available so an accurate plan of finance can be carried forward in the financial feasibility analysis.

If the airport sponsor needs to issue debt for projects included in the CIP, it should identify the financing assumptions for the amount of bond proceeds needed to cover the local share and annual debt service requirements.

b. **Review Airport's Financial Structure** – Planners should analyze the financial structure of the airport to determine the composition of the airport's management, relevant airport leases, and other operating issues that will affect future cash flow at the airport.

1) Airports are typically operated under the jurisdiction of city or county government, with airport or aviation departments or public authorities dedicated either to airports or aviation, or with a department responsible for aviation or airports. The ability of the airport to finance capital improvement projects depends upon the political, management, and financial structure under which these entities operate. The airport's ability to support development is based on the likelihood of obtaining Federal and state aid, its ability and willingness to issue a financial instrument to fund a portion of the costs, and the amount of revenue from airport operations.

2) Revenue-producing areas, or direct cost centers, for a high activity commercial service airport typically include the landing area (airfield), aircraft aprons, terminal, (both space rental and concessions), parking and ground transportation, cargo buildings, aircraft maintenance facilities, fixed base operator facilities, and other leased areas. Many of these revenue-producing facilities will not exist at smaller airports.

Airports commonly use two mechanisms for the recovery of airport operating costs from airlines and other tenants in the airport terminal: the compensatory cost method and the residual cost method. The compensatory approach allocates all airport costs to cost centers and the rates and charges are assigned to airport tenants based upon recovering these costs in proportion to the tenant's use of these facilities and services. A residual methodology has one or more signatory airlines agree to pay the net costs of operating the airport not recovered from other tenants or other sources of airport revenue. One of the basic differences in these two funding mechanisms is the assignment of risk. In the compensatory cost method, the airport sponsor assumes the financial risk, whereas in the residual cost method the signatory airlines assume the risk. These two methodologies represent either end of the airline rate-setting methodology spectrum. Many "hybrid" allocation methodologies are used at commercial service airports.

3) Planners should examine the budgeting process used by the airport to establish the financial management plan for operating revenue, operating and maintenance (O&M) expenses, and capital expenditures.

4) At larger airports where the complexity of the financial analysis increases, the planner should recognize that constraints may occur because of the various legal documents relating to the airport, including any bond ordinance, airline use and lease agreements, and other operating agreements at the airport, such as:

a) ***A Bond Ordinance or Trust Indenture*** limits the amount of additional debt that an airport sponsor can issue to fund capital projects and may include the application of revenue, rate covenant, and additional bonds test. The application of revenue refers to the priority of the flow of funds of the airport's gross revenues. A rate covenant requires the airport sponsor to set rates, fees, and charges at the airport at a level that will produce net revenues that will satisfy the debt service coverage requirement. An additional bonds test is the documentation the airport sponsor must produce to prove that the airport can generate the necessary coverage before it can issue additional bonds.

b) ***The Airline Use and Lease Agreement (AULA)*** is the contractual relationship between the airport and the airlines serving the airport. Normally this agreement would specify the airfield facilities available to each airline, the terminal space leased by each airline, and the rates and charges for use of the various facilities, landing fees, apron fees and any other charges. In a residual cost center arrangement, the airlines often have majority-in-interest (MII) approval, which is a weighted "vote" to construct capital projects that are included in the airline rate base. This allows an airport sponsor to include the net cost of a capital project in the airlines' rate base if a majority of the airlines approves that project, based on the terms of the AULA.

c) ***Lease documents*** are established between the airport and aeronautical and non-aeronautical tenants, such as fixed based operators, concessionaires, and airport service providers. Normally these lease agreements specify the term of the lease, the specific assignment of space for these business enterprises, the rental rate or fees for use of the facilities, and a concession fee.

d) ***Analyze Historical Cash Flow*** – The planner should examine both the airport revenues and O&M expenses by cost center, where applicable, for the prior three-to-five years and a historical cash flow profile for the airport that describes financial operating trends. The planner may decide to exclude non-cash expenditures such as depreciation and amortization. The historical cash flow will be useful in projecting future revenues and O&M expenses.

e) ***Prepare Pro Forma Cash Flow Analysis*** – The planner should prepare a pro forma cash flow analysis that projects airport revenues, O&M expenses, existing and new debt service requirements, and other non operating revenues and expenses for each year of the CIP. The general test of financial feasibility applied throughout the planning process is the ability of the airport sponsor to cover the local cost of the CIP through airport cash flow.

(1) Planners for low activity airports should recognize their dependence on Federal and state aid for improvements, but should not rely on the availability of such funds. Instead, they should consider alternative strategies for financing in an effort to become more self-sufficient, in accordance with AIP grant assurances. The master plan should discuss the investment requirements and the benefits of the proposed development, so the airport sponsor can make

practical decisions predicated on availability of funds and public investment priorities.

(2) High activity commercial service airports usually generate sufficient revenue to support revenue bond financing for capital improvements. Such airports' need to supplement bond financing with Federal aid will vary in degree, usually depending on activity levels. High activity commercial service airports are usually self-sufficient and produce adequate cash flow from setting rates, fees, and charges at the airport in accordance with the Bond Ordinance, airline use and lease agreements, and other operating agreements.

(3) In conducting the pro-forma cash flow analysis, the planner should focus on the three to five year time frame that coincides with the CIP. The planner should also emphasize the first 10 years of development, since the CIP is generally better defined during that period. Discuss development during the 10 to 20 year horizon in a broader manner, because projects during this period are often demand driven and will have a neutral effect on the airport's cash flow. In addition, over the longer-term, priorities for airport capital projects may change and a new master plan or update may be completed.

(4) In analyzing the financial feasibility of an airport's CIP, the planner may choose to value construction expenses, operating revenues, and O&M expenses in current year dollars.

(5) The planner may decide to increase the capital cost from current year dollars to the year in which construction is expected. If the planner conducts the analysis in this manner, inflationary impacts must be included in the projection of revenues and O&M expenses, along with increases because of operational factors.

f) ***Conduct Sensitivity Analysis*** – In some cases, a sensitivity test may be warranted to assess financial risk. For example, the planner may want to test different rates of passenger growth to determine how sensitive the financial plan is to this, particularly where PFCs or revenue bonds are being heavily relied upon in the CIP.

1204. REVENUE ENHANCEMENT

a. Airports are often under pressure to improve their financial condition to keep user costs at reasonable levels. In preparing the pro forma cash flow analysis, the planner should compare the financial performance of the study airport to that of comparable airports to identify ways to increase concession, airline, and non-aeronautical revenues.

b. Increases in concession revenues will be subject to the terms of existing operating agreements. Certain concessions may not be subject to operating agreement constraints, including automobile parking rates, future land rental rates, fuel flowage fees, and aircraft tie down fees, but may be subject to others constraints.

c. The existing AULA may not allow the airport sponsor to recover the cost of operating the airport from the airlines, or the terms of the existing airline agreement may no longer meet the needs of the airport sponsor. Alternatively, the airport sponsor may have sufficient unrestricted funds and wish to reduce airline-operating costs. In either case, the master planning process is a good time for the airport sponsor to examine its AULA and make appropriate revisions, to the extent it is able, particularly if there are projects in the CIP that will require funding from the airlines.

d. Non-aeronautical revenues provide the best opportunity for an airport sponsor to establish new types of lease revenue, based on the use of existing land parcels at the airport. An example of such an arrangement is a short-term lease of land to grow hay, grass or to graze cattle, which would allow the airport sponsor to increase revenues while maintaining control of the future use of the land. The airport sponsor should be aware of the restrictions placed on these activities by 14 CFR Part 139, wildlife hazard concerns, and grant assurances.

1205. BENEFIT COST ANALYSIS

a. The FAA *Airports Benefit Cost Analysis (BCA)*, December 1999, states that when possible, airport sponsors should conduct a BCA as part of the development of the master plan. FAA utilizes BCA to assess aviation user benefits of a proposed investment against its estimated costs. In an October 24, 2011, Federal Register notice, FAA stipulated that formal BCA is required for projects that enhance capacity at an airport and are expected to receive $10 million or more in AIP discretionary funds or apply for a Letter of Intent. If the airport sponsor decides to submit a complete BCA to the FAA, more detailed cost estimates for a project(s) will be required than those prepared for the facilities implementation plan.

1206. DOCUMENTATION GUIDELINES

a. The documentation of this chapter in the master plan should clearly show the financial feasibility of the CIP.

b. The financial planning chapter of a master plan for a large commercial service airport will be more complex than one for a low activity general aviation airport. In this chapter, planners should consider the funding plan for the CIP, historical cash flow, existing and future debt service requirements, airline rates and charges, airline cost per enplanement, concession revenues per enplanement, and pro forma cash flow analysis.

c. If a BCA has been prepared during the master plan process, it should be included as an Appendix to the master plan report.

d. Documentation provided to the airport should include any electronic spreadsheets and files to facilitate planners in modifying the financial plan on an as-needed basis.

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Appendix A Glossary

Advisory Circular – External publications issued by the FAA consisting of non-regulatory material providing for the recommendations relative to a policy, and guidance and information relative to a specific aviation subject.

Aircraft Approach Category – An alphabetic classification of aircraft based upon 1.3 times the stall speed in a landing configuration at their maximum certified landing weight.

Aircraft Operation – The landing, takeoff or touch-and-go procedure by an aircraft on a runway at an airport.

Aircraft Rescue and Fire Fighting – A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

Airfield – The portion of an airport that contains the facilities necessary for the operation of aircraft.

Airplane Design Group – A Roman numerical classification of aircraft based upon wingspan.

Airport Authority – A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

Airports Capital Improvement Plan – The planning program used by the Federal Aviation Administration to identify, prioritize and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

Airport Improvement Program – A program authorized by the Airport and Airway Improvement Act of 1982 that provides funding for airport planning and development.

Airport Layout Plan – A scaled drawing of the existing and planned land and facilities necessary for the operation and development of an airport.

Airport Master Plan – The airport's concept of the long-term development and use of an airport's land and facilities.

Airport Obstruction Chart – A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

Airport Reference Code – A coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to use the airport. It is a two character code consisting of the aircraft approach category and the airplane design group.

Airport Reference Point – The latitude and longitude of the geometric center of the runway system at an airport.

Airport Sponsor – The entity that is legally responsible for the management and operation of an airport including the fulfillment of the requirements of laws and regulations related thereto.

Airside – The portion of an airport that contains the facilities necessary for the operation of aircraft.

Air Taxi – An aircraft operated under an air taxi operating certificate for the purpose of carrying passengers, mail, or cargo for revenue in accordance with FAR Part 121 and FAR Part 135.

Airport Traffic Control Tower – A facility in the terminal air traffic control system located at an airport which consists of a tower cab structure and an associated instrument flight rules room, if radar equipped, that uses ground-to-air and air-to-ground communications and radar, visual signaling, and other devices to provide for the safe and expeditious movement of terminal area air traffic in the airspace and airports within its jurisdiction.

Annual Service Volume (ASV) – The number of annual operations that can reasonably be expected to occur at the airport based on a given level of delay.

Approach Surface – An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

Apron – A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

Avigation Easement – A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

Based Aircraft – The general aviation aircraft that use a specific airport as a home base.

Benefit Cost Analysis (BCA) – An analysis of the benefit, cost, and uncertainty associated with a project or action. A formal BCA is required for capacity projects of $10 million or more in AIP discretionary funds.

Building Restriction Line – A line defined by specifications and displayed on an airport layout plan beyond which airport buildings must not be located to limit building proximity to aircraft movement areas.

Capital Improvement Plan – The individual airport sponsor's plan for the capital needs of the airport, typically including their planned capital funding sources. This is separate and distinct from the FAA's Airports Capital Improvement Plan (ACIP), which is the FAA's plan for how to allocate AIP funds. .

Cargo Service Airport – An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

Citizen's Advisory Committee (CAC) – A group of individuals that weigh recommendations against community goals, values, and needs.

Commercial Service Airport – A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

Computer Aided Design – Software that is commonly used for drafting architectural and engineering drawings.

Conical Surface – An imaginary obstruction-limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

Critical (Design) Aircraft – The most demanding aircraft with at least 500 annual operations that operates, or is expected to operate, at the airport.

Crosswind – A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

Crosswind Component – The component of wind that is not parallel to the runway centerline or the intended flight path of an aircraft.

Discretionary Funds – Federal grant funds that may be awarded to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety or security, or mitigating noise.

Displaced Threshold – An aircraft runway landing area that begins at a point on the runway other than the designated physical end of the runway.

Enplanement – The boarding of a passenger, cargo, freight or mail on an aircraft at an airport.

Entitlement – Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

Environmental Assessment – An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

Environmental Impact Statement – A document required of federal agencies by the National Environmental Policy Act for major projects or legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

Federal Aviation Regulations – The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

Finding of No Significant Impact (FONSI) – A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

Fixed Base Operator – A business enterprise located at on airport that provides services to pilots including aircraft rental, training, fueling, maintenance, parking, and the sale of pilot supplies.

General Aviation – The segment of aviation that encompasses all aspects of civil aviation except certified air carriers and other commercial operators such as airfreight carriers.

General Aviation Airport – An airport that supports air service primarily for general aviation purposes.

Geographic Information System (GIS) – A GIS is a computer system capable of capturing, storing, analyzing, and displaying geographically referenced information according to location. It is a technology that manages, analyzes, and disseminates geographic data.

Global Positioning System – A satellite based navigational system that provides signals in the cockpit of aircraft defining aircraft position in terms of latitude, longitude and altitude.

Ground Access – The transportation system on and around the airport that provides access to and from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

Horizontal Surface– An imaginary obstruction-limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

Instrument Flight Rules – Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

Instrument Meteorological Conditions – Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

Itinerant Operations – Operations by aircraft that leaves the local airspace.

Landside – The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

Local Operations – Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

Military Operations – Aircraft operations that are preformed in military aircraft.

National Airspace System – The network of air traffic control facilities, air traffic control areas, and navigational facilities throughout the U.S.

National Environmental Policy Act (NEPA) – Federal legislation that establishes environmental policy for the nation. It requires an interdisciplinary framework for federal agencies to evaluate and disclose environmental impacts and contains procedures to ensure that federal agency decision makers take environmental factors into account.

National Plan of Integrated Airport Systems – The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

Navigational Aid – A facility used as, available for use as, or designed for use as an aid to air navigation.

Operation – The landing, takeoff or touch-and-go procedure by an aircraft on a runway at an airport.

Passenger Facility Charge (PFC) – The collection of PFC fees for every enplaned passenger at commercial airports controlled by public agencies to be used to fund FAA-approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition.

Peak Hour (PH) – An estimate of the busiest hour in a day. This is also known as the design hour.

Planning Activity Level (PAL) – Selected activity levels that may trigger the need for additional facilities or improvements.

Primary Airport – A commercial service airport that enplanes at least 10,000 annual passengers.

Primary Surface – An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

Record of Decision (ROD) – A public document that reflects the FAA's final decision, rationale behind that decision, and commitments to enforce and monitor mitigation.

Regression Analysis – A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

Reliever Airport – General aviation airports in major metropolitan areas that provide pilots with attractive alternatives to using congested hub airports.

Runway – A defined rectangular area at an airport designated for the landing and taking-off of an aircraft.

Runway Gradient – The ratio of the change in elevation divided by the length of the runway expressed as a percentage.

Scope – The document that identifies and defines the tasks, emphasis and level of effort associated with a project or study.

System Of Airports Reporting (SOAR) – The FAA Office of Airports integrated database that contains airport planning, development, and financial information.

Technical Advisory Committee (TAC) – A group of individuals that provide input on technical issues.

Terminal Area Forecast – The official forecast of aviation activity, both aircraft and enplanements, at FAA facilities. This includes FAA-towered airports, federally contracted towered airports, non-federal towered airports, and many non-towered airports.

Terminal Instrument Procedures – Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

Transient Operations – Operations by aircraft that are not based at a specified airport.

Transitional Surface – An imaginary obstruction-limiting surface defined in FAR Part 77 that extends outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary and approach surface.

Uncontrolled Airport – An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

Visual Flight Rules – Procedures for the conduct of flight in weather conditions above Visual Flight Rules (VFR) weather minimums. The term VFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

Visual Meteorological Conditions – Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

Wide Area Augmentation System – An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Appendix B Useful Reference Materials

1. FAA ADVISORY CIRCULARS

Most of these Advisory Circulars are available for viewing and/or printing on the FAA website at http://www.faa.gov/regulations_policies/advisory_circulars/. See the most recent versions.

70/7460-1 Obstruction Marking and Lighting. Describes the FAA standards for marking and lighting structures to promote safety.

90-66 Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports without Operating Control Tower. Calls attention to regulatory requirements and recommended procedures for aeronautical operations at airports without operating control towers. It recommends traffic patterns and operational procedures for aircraft, lighter than air, glider, parachute, rotorcraft, and ultra-light vehicle operations where such use is not in conflict with existing procedures in effect at those airports.

90-98 Simultaneous Closely Spaced Parallel Operations at Airports Using Precision Runway Monitor (PRM) Systems. Notify pilots and operators about the establishment of specific air traffic procedures to conduct flight operations into airports identified for simultaneous closely-spaced parallel approaches using PRM systems.

150/5020-1 Noise Control and Compatibility Planning for Airports. Provides general guidance for noise control and compatibility planning for airports. Provides specific guidance for preparation of airport noise exposure maps and airport noise compatibility programs by airport sponsors for submission under FAR Part 150 and the Aviation Safety and Noise Abatement Act of 1979.

150/5060-5 Airport Capacity And Delay. Explains how to compute airport capacity and aircraft delay for airport planning and design.

150/5100-14 Architectural, Engineering, and Planning Consultant Services for Airport Grant Projects. Provides guidance for airport sponsors in the selection and employment of architectural, engineering, and planning consultants under Federal Aviation Administration airport grant programs.

150/5100-17 Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects. Provides guidance to sponsors of airport projects developed under the Airport Improvement Program to meet the requirements of the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (PL 91-646, as amended) and the regulations of the Office of the Secretary of Transportation, 49 CFR Part 24.

150/5100-19 Guide for Airport Financial Reports Filed by Airport Sponsor. Provides airport sponsors with guidance for complying with the airport financial reporting requirements required by 49 USC §47107(a)(15).

150/5190-4 A Model Zoning Ordinance to Limit Height of Objects around Airports. Provides a model zoning ordinance to be used as a guide to control the height of objects around airports.

150/5190-7 Minimum Standards for Commercial Aeronautical Activities. Provides basic information about the FAA's recommendations on commercial minimum standards and related policies.

150/5200-30 Airport Winter Safety and Operations. Provides guidance to assist airport owners/sponsors in the development of an acceptable airport snow and ice control program and to provide guidance on appropriate field condition reporting procedures.

150/5200-31 Airport Emergency Plan. Provides guidance for the preparation of emergency plans at civil airports.

150/5200-33 Hazardous Wildlife Attractants On or Near Airports. Provides guidance on locating certain land uses having the potential to attract hazardous wildlife to or in the vicinity of public-use airports.

150/5200-34 Construction or Establishments of Landfills Near Public Airport. Contains guidance on complying with new Federal statutory requirements regarding the construction of establishment of landfills near public airports.

150/5210-15 Airport Rescue and Firefighting Station Building Design. Provides standards and guidance for planning, designing, and constructing and airport rescue and firefighting station.

150/5220-18 Buildings for Storage and Maintenance of Airport Snow and Ice Control Equipment and Materials. Provides guidance for site selection, design and construction of buildings used to store and maintain airport snow and ice control equipment and materials.

150/5300-7 FAA Policy on Facility Relocations Occasioned by Airport Improvements or Changes. Reaffirms the aviation community of the FAA policy governing responsibility for funding relocation, replacement and modification to air traffic control and air navigation facilities that are made necessary by improvements or changes to the airport.

150/5300-9 Predesign, Prebid, and Preconstruction Conferences for Airport Grant Projects. Provides guidance for conducting predesign, prebid, and preconstruction conferences for projects funded under the FAA airport grant program.

150/5300-13 Airport Design. Contains the FAA’s standards and recommendations for airport design.

150/5300-14 Design of Aircraft Deicing Facilities. Provides standards, specifications, and guidance for designing aircraft deicing facilities.

150/5300-15 Use of Value Engineering for Engineering and Design of Airport Grant Projects. Provides guidance for the use of value engineering in airport projects funded under

the FAA's Airport Grant Program. This Advisory Circular should be used by sponsors of airport development projects considering the application of value engineering to projects involving grant funds.

150/5320-5 Airport Drainage. Provides guidance for engineers, airport managers, and the public in the design and maintenance of airport drainage systems.

150/5320-6 Airport Pavement Design and Evaluation. Provides guidance to the public for the design and evaluation of pavement at civil airports.

150/5325-4 Runway Length Requirements for Airport Design. Provides design standards and guidelines for determining recommended runway lengths.

150/5340-1 Standards for Airport Markings. Contains the FAA standards for markings used on airport runways, taxiways, and aprons.

150/5340-18 Standards for Airport Sign Systems. Contains the FAA standards for the siting and installation of signs on airport runways and taxiways.

150/5360-9 Planning and Design of Airport Terminal Facilities at Non-Hub Locations. Provides guidance material for the planning and design of airport terminal buildings at non-hub locations.

150/5360-12 Airport Signing and Graphics. Provides guidance on airport related signs and graphics.

150/5360-13 Planning and Design Guidelines for Airport Terminal Facilities. Provides guidelines for the planning and design of airport terminal buildings and related access facilities.

150/5390-2 Heliport Design. Provides recommendations and standards for heliport design.

150/5395-1 Seaplane Bases. Provides guidance to assist operators in planning, designing, and constructing seaplane base facilities.

2. FAA ORDERS

Virtually all of the following orders are available for viewing and/or printing on the FAA website at http://www.faa.gov/regulations_policies/orders_notices/.

1050.1 Environmental Impacts: Policies and Procedures. Provides policies and procedures to ensure FAA compliance with the provisions of the National Environmental Policy Act.

5050.4 National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects. FAA Airports guidance for complying with NEPA. Provides instructions and guidance for the preparation and processing of environmental assessments, findings of no significant impact, and environmental impact statements for airport development proposals and other airport activities.

5090.3 (current version) Field Formulation of the National Plan of Integrated Airport Systems. This order contains instructions for FAA Regional offices in the formulation and maintenance of the NPIAS computer database and on the preparation of the Secretary of Transportation's biennial Report to Congress.

5500.1 Passenger Facility Charge. Provides guidance and the processes to be used by FAA personnel in administering the Passenger Facility Charge program.

5100.38 Airport Improvement Program Handbook. Provides guidance and sets forth policies and procedures for the administration of the Airport Improvement Program by the FAA.

5100.39 Airports Capital Improvement Plan. Prescribes the development of the national Airports Capital Improvement Program that serves as the primary planning tool for systematically identifying, prioritizing and assigning funds to critical airport development and associated capital needs for the National Airspace Program.

8260.3 United States Standard for Terminal Instrument Procedures (TERPS). Contains criteria for instrument approach and departure procedures.

3. FEDERAL AVIATION REGULATIONS

Virtually all of the following Federal regulations addressing aviation are available for viewing and/or printing on the FAA website at http://www.faa.gov/regulations_policies/faa_regulations/.

14 CFR Part 77 Safe, Efficient Use, and Preservation of the Navigable Airspace

14 CFR Part 150 Airport Noise Compatibility Planning

14 CFR Part 158 Passenger Facility Charges (PFCs)

4. TRANSPORTATION SECURITY REGULATIONS

The following Transportation Security Regulations (TSRs) are available for viewing and/or printing on the Transportation Security Administration website at www.tsa.gov/.

TSR Part 1540 Civil Aviation Security: General Rules. Definitions and rules for all aspects of aviation.

TSR Part 1542 Airport Security. Requirements for airport security programs including establishment of secured areas, air operation areas, security identification display areas, and access control systems. Also describes requirements related to Security Directives.

TSR Part 1544 Aircraft Operator Security: Air Carriers and Commercial Operators. Applies primarily to operators holding certificates for scheduled and charter passenger operations. Details the requirements for security program and screening of passengers and property.

TSR Part 1546 Foreign Air Carrier Security. Discusses security and screening requirements.

TSR Part 1548 Indirect Air Carrier Security. Describes requirements for indirect carriers such as freight forwarders.

TSR Part 1550 Aircraft Security Under General Operating and Flight Rules. Applies to operation of all other aircraft such as general aviation aircraft.

5. SECURITY-RELATED PUBLICATIONS

Recommended Security Guidelines for Airport Planning, Design, and Construction. (Formerly DOT/FAA/AR-00-52, June 2001. TSA Revised May 2011.) Available from TSA at http://www.tsa.gov/aviation-security-advisory-committee.

Security Guidelines for General Aviation Airports (Information Publication A-001), Transportation Security Administration, May 2004. Available from TSA at http://www.tsa.gov/stakeholders/security-directives.

Integrated Security System Standard for Airport Access Control. (RTCA DO-230C, June 2011) Available from RTCA at http://www.rtca.org.

6. FAA REPORTS

Airport Noise Compatibility Planning (ANCP) Toolkit, FAA Office of Environment and Energy (http://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/planning_toolkit/).

FAA Airport Benefit-Cost Analysis Guidance, Office of Aviation Policy and Plans (http://www.faa.gov/airports/aip/bc_analysis/).

FAA Guide to the Best Practices for Environmental Impact Statement Management, FAA Office of Airport Planning and Programming (http://www.faa.gov/airports/environmental/eis_best_practices/).

Forecasting Aviation Activity by Airport, GRA, Inc., FAA Office of Aviation Policy and Plans (APO-110), July 2001. (http://www.faa.gov/data_research/aviation_data_statistics/).

Intermodal Ground Access to Airports: A Planning Guide, Federal Highway Administration, Intermodal Division and Federal Aviation Administration, National Planning Division, Report No. DOT/FAA/PP/96-3. Available from National Technical Information Service as PB97-189484 (www.ntis.gov).

National Plan of Integrated Airport Systems (NPIAS), FAA Office of Airport Planning and Programming, Airport Planning and Environmental Division (http://www.faa.gov/airports/planning_capacity/npias/).

Terminal Area Forecast (TAF), FAA Office of Aviation Policy and Plans (http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/).

Recycling, Reuse and Waste Reduction at Airports: A Synthesis, FAA Office of Airport Planning and Programming, July 2013.

7. GENERAL AIRPORT PUBLICATIONS

Aerodromes, Annex 14 to the Convention on International Civil Aviation, International Civil Aviation Organization.

Aerodromes, Annex 14 Vol. 1 Aerodrome Design and Operations to the Convention on International Civil Aviation, International Civil Aviation Organization.

Aerodromes, Annex 14 Vol. 2 Heliports to the Convention on International Civil Aviation, International Civil Aviation Organization.

Aerodrome Design Manual, Part 1, Runways, International Civil Aviation Organization.

Aerodrome Design Manual, Part 2, Taxiways, Aprons and Holding Bays, International Civil Aviation Organization.

Airport Engineering, Ashford and Wright, John Wiley & Sons, Inc.

Airport Finance, Ashford and Moore, Van Nostrand Reinhold, Inc.

Airport Planning and Management, Smith, Odegard and Shea, Wadsworth Publishing Company.

Airport Planning and Management, Wells and Young, McGraw-Hill Companies, Inc.

Airport Planning Manual, Part 1 – Master Planning, International Civil Aviation Organization.

Airport Planning Manual Part 2 – Land Use and Environmental Control, International Civil Aviation Organization.

Airport Systems Planning, Design, and Management, deNeufville and Odoni, McGraw-Hill Companies, Inc.

Airport Terminals Reference Manual, International Air Transportation Association.

Construction of Visual and Instrument Flight Procedures (PANS-OPS), International Civil Aviation Organization.

Environmental Protection, Annex 16 to the Convention on Civil Aviation, International Civil Aviation Organization.

Planning and Design of Airports, Horonjeff and McKelvey, McGraw-Hill Companies, Inc.

STOL Port Manual, International Civil Aviation Organization.

8. AIRPORT COOPERATIVE RESEARCH PROGRAM (ACRP) REPORTS

The following ACRP publications are available for viewing and/or printing on the Transportation Research Board website at http://www.trb.org/Publications/PubsACRPPublications.aspx.

ACRP Synthesis 2, Airport Aviation Activity Forecasting, Airport Cooperative Research Program, March 31, 2007.

ACRP Synthesis 10, Airport Sustainability Practices, Airport Cooperative Research Program, October 23, 2008.

ACRP Synthesis 33, Airport Climate Adaptation and Resilience, Airport Cooperative Research Program, June 18, 2012.

ACRP Synthesis 37, Lessons Learned from Airport Safety Management Systems Pilot Studies, Airport Cooperative Research Program, August 6, 2012.

ACRP Report 1, Safety Management Systems for Airports, Airport Cooperative Research Program, September 4, 2007.

ACRP Report 4, Ground Access to Major Airports by Public Transportation, Airport Cooperative Research Program, July 9, 2008.

ACRP Report 10, Innovations for Airport Terminal Facilities, Airport Cooperative Research Program, February 26, 2009.

ACRP Report 23, Airport Passenger-Related Processing Rates Guidebook, Airport Cooperative Research Program, November 11, 2009.

ACRP Report 25, Airport Passenger Terminal Planning and Design, Volume 1: Guidebook, Airport Cooperative Research Program, April 7, 2010.

ACRP Report 25, Airport Passenger Terminal Planning and Design, Volume 2: Spreadsheet Models and User's Guide, Airport Cooperative Research Program, March 18, 2010.

ACRP Report 30, Reference Guide on Understanding Common Use at Airports, Airport Cooperative Research Program, May 26, 2010.

ACRP Report 35, Planning for Offsite Airport Terminals, Airport Cooperative Research Program, September 27, 2010.

ACRP Report 40, Airport Curbside and Terminal Area Roadway Operations, Airport Cooperative Research Program, December 2, 2010.

ACRP Report 55, Passenger Level of Service and Spatial Planning for Airport Terminals, Airport Cooperative Research Program, October 13, 2011.

ACRP Report 56, Handbook for Considering Practical Greenhouse Gas Emission Reduction Strategies for Airports, Airport Cooperative Research Program, January 7, 2012.

ACRP Report 77, Guidebook for Developing General Aviation Airport Business Plans, Airport Cooperative Research Program, November 15, 2012.

ACRP Report 79, Evaluating Airfield Capacity, Airport Cooperative Research Program, December 17, 2012.

ACRP Report 80, Guidebook for Incorporating Sustainability into Traditional Airport Projects, Airport Cooperative Research Program, November 4, 2012.

ACRP Report 82, *Preparing Peak Period and Operational Profiles – Guidebook*, Airport Cooperative Research Program, February 15, 2003.

Appendix C List of Potential Stakeholders

Users and tenants:

- Commercial service and charter airlines
- Air cargo airlines and operators
- Corporate aircraft owners
- Freight forwarders
- Airline ground handling and catering companies
- Airline maintenance base operators
- Aircraft fueling and storage operators
- General aviation aircraft owners
- General aviation hangar owners and tenants
- Fixed base operators
- Air tour operators
- Air ambulance and rescue operators
- Flight schools
- Flying clubs/Civil Air Patrol
- Military users and tenants of the airport
- Rental car operators
- Parking lot operators
- Concessionaires
- Ground transportation companies (taxi, shuttle bus, limousine operators, and public transportation)

Groups and individuals from within the airport sponsor's organization:

- Airport board or similar executive group
- Airport executive director or manager
- Airport executive management team (operations director, engineering/planning director, maintenance director, finance director, and others.
- Airport senior line operations and line maintenance personnel
- Airport senior fire and safety officer

FAA personnel from these offices:

- Airports District Office
- Air Traffic Organization
- Airport Traffic Control Tower
- Regional Technical Operations
- System Management Office
- Regional Flight Standards
- Runway Safety Office
- Flight Procedures Office
- NAS Implementation Center
- Flight Service Station

Resource agencies and other governmental units with regulatory or review authority:

- Federal Inspection Service agencies
- Federal agencies with responsibility for affected resources
- Transportation Security Administration
- Federal, state, regional, and local air quality, water quality, and wildlife agencies
- Representatives of local political jurisdictions
- State, regional, metropolitan and local planning office
- State, regional, metropolitan and local transportation and land use planning agencies
- State aeronautics office
- State and local environmental regulatory authorities
- Native American and Alaska Native tribes and pueblos
- On-airport law enforcement agency
- Local fire and police departments

Other interested groups:

- Private land owners and developers
- Airport hotel and business associations
- Local tourism board or authorities
- Chamber of Commerce and other economic development groups
- Citizens and others with a strong economic or social tie to the airport
- Non-government organizations
- Neighborhood associations
- Traveling public

Appendix D Consideration of Environmental Factors in Airport Master Planning

1. INTRODUCTION

This appendix presents practices that can be applied to airport master planning to make the planning process and subsequent environmental analysis more efficient. A more integrated and efficient planning and decision making process should reflect environmental values, result in less delay, and avoid conflicts in the completion of needed airport development.

The consideration of environmental factors by Federal agencies is delineated in Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA), reference 40 CFR 1500.5(a) and 1501.2. The NEPA statute and CEQ regulations require all Federal agencies to integrate the NEPA process with other planning at the earliest possible time. This is to ensure that planning and decisions reflect environmental values. CEQ regulations require Federal agencies to "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment." Doing this early in the planning process helps incorporate environmental factors in project planning and development, avoid delays and second-guessing later in the NEPA process, and can head off potential conflicts.

This guidance is not intended to make master planning a part of the NEPA process. It is to ensure that supportable and consistent planning data and environmental, technical, economic and other planning analyses are provided for use in FAA decision making. Airport planning provides the basis for a project's purpose and need in environmental evaluation and the alternatives that the FAA will carry into its NEPA analysis.

a. **Applicability**

This guidance is primarily intended for complex and controversial undertakings such as capacity projects at larger airports. It may also be helpful in the planning of projects smaller in scope, and should be reviewed prior to starting an airport master plan that has the potential to impact resources. It is intended for airport development professionals (e.g., planners, environmental specialists, project managers, engineers) employed by airport sponsors, consultants, FAA and state agencies.

b. **Clarifications**

When this document refers to airport planners it means individuals engaged in airport planning, no matter their specific job title. When the document refers to environmental specialists it means individuals engaged in environmental analysis or review, no matter their specific job title. When the document refers to engineers it means individuals engaged in engineering, no matter their specific job title. The term "project (program) manager" is not used, although it is recognized that many organizations employ "project managers" in airport planning, environmental analysis, and engineering.

2. PRACTICE AND PROCESS

a. Background

This section summarizes the key points of NEPA as it relates to project planning. When the term "agency" is used, it refers to Federal agency.

CEQ regulations require agencies to identify environmental effects and values in adequate detail so they can be compared to economic and technical analyses. Agencies must study, develop and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources. To permit these, environmental analysis must be integrated early in planning along with other planning analyses.

In cases where actions are planned by private applicants or other non-Federal entities before Federal involvement, agencies must ensure that 1) policies or designated staff are available to advise potential applicants of studies or other information likely required for later Federal action; 2) applicants are aware of the Federal agencies need to consult with State and local agencies and Indian tribes and with interested private persons and organizations when its own involvement is reasonably foreseeable; and 3) the Federal agency commences its NEPA process at the earliest possible time after the project proponent or sponsor has completed planning sufficient to allow environmental impact analysis.

b. Timing of Airport Planning and Environmental Analysis

Environmental considerations are integral to the planning process, and should be identified and evaluated at the same time as economic and technical analyses and prior to commencing preparation of an EA or EIS. This will assist in defining those projects that are reasonably foreseeable, and therefore may be subject to the NEPA analysis.

Airport planning should be complete or nearly so when the airport sponsor begins preparing its EA or FAA begins preparing its EIS. If a sponsor selects a recommended alternative and completes its planning process before beginning environmental processing, the FAA is not obligated to select that recommended alternative as its preferred alternative. FAA will select its preferred alternative during the NEPA process. Starting preparation of a NEPA document immediately after the completion of planning may improve the likelihood that aviation forecast and modeling data remain current during the environmental analysis process. In the case of an Environmental Impact Statement, the start of the NEPA process would be considered the issuance of a Notice of Intent to prepare the EIS. For an Environmental Assessment, the start of the NEPA process (for the purpose of this guidance) should be considered the earlier of: the approval of an AIP grant for the EA; or the initiation of the environmental resource agency/community coordination. The airport sponsor and FAA should always complete (and document) the following prior to commencing preparation of an EIS or EA.

- Local aviation forecasts that are current and approved by the FAA
- Justification of the scope and timing of the project's planned facilities based on airport planning, operational requirements, and design standards
- Identification and consideration of all reasonable planning alternatives (within the sponsor's or FAA's jurisdiction), eliminating (and documenting) those not meeting the stated aeronautical need. If an alternative does potentially meet the aeronautical need, but is not considered reasonable, provide sufficient explanation as to why not
- Tentative identification of studies or other information likely required for later Federal action, as well as appropriate State and local agencies, Indian tribes, private persons and organizations likely to have an interest in the project.

Also, it is important that only those alternatives that have aeronautical utility (i.e., can be built and operated safely) are forwarded for analysis under NEPA. Sometimes it may be necessary to conduct airspace reviews (during planning) of various planning alternatives to determine their aeronautical utility and safety.

Additional discussion on forecasts, project requirements and alternative analysis is included below.

c. **Local Government and Community Involvement in Airport Planning**

Establishing long-term cooperative consultation between the airport sponsor and local, regional, and state governments and planning organizations with land use, zoning, and surface access responsibilities can improve consistency between community and airport planning. This consultation makes it easier to gain local agreement on individual airport projects. Such consultation enables the airport sponsor to voice its interests in future land compatibility, obstruction control, and surface transportation access. Local planners benefit by learning airport needs for the promotion of community access and the local economy. Information on the future airport expansion and improvement contained in an airport master plan should be incorporated into the development of comprehensive land use plans to ensure land use compatibility around airports.

History shows that successful projects involve the community early in airport master planning. This involvement educates and informs local citizens, and allows them to provide constructive input to guide the airport sponsor and FAA decision-making. Community involvement during master planning should include information on the airport's proposed project, its aviation need (problem) and possible alternative ways to address the need. Input should be solicited and questions from the community should be encouraged. Input received should be considered and timely responses to questions raised should be provided. The community includes the public and local government in the vicinity of the airport, including Native American Tribal Organizations, metropolitan and regional planning organizations, and airport businesses and tenants.

Community involvement in the planning process, as described above, should ensure community awareness of proposed action prior to commencing preparation of an EA or

EIS. The NEPA process should not be the first time that the community hears about the proposal. Community involvement during planning is a natural part of good planning and is separate and distinct from public comment under NEPA. In developing a community involvement process, the airport sponsor should strike a balance between soliciting meaningful participation and keeping the master plan process on track. Depending on the scope of the project and the degree of anticipated controversy, community involvement specialists may need to become involved. Early involvement is critical to getting a sense of perspective about where and how the airport fits within the community and what concerns the community has and why. Such involvement may be needed to develop local agreement, which is often necessary to secure support from local officials for the project. A public consultation plan should be prepared identifying the type, number, and timing of public forums and identifying the public sector(s) having concerns about the proposal. It is essential that the community be advised as to its role throughout the planning process.

AIP grant assurances require that airport sponsors take appropriate action, to the extent reasonable, to restrict the use of land adjacent to airports to activities consistent with normal airport operations. Zoning authorities should be strongly encouraged to put height limits in place to protect current and planned aircraft approaches. The airport sponsor should also emphasize to local officials the importance of zoning for airport-compatible land use, including noise sensitive areas and airport design surfaces, so that the airport may remain a transportation asset to the community. In addition, frequent coordination with local, regional, and state organizations responsible for surface transportation planning helps ensure that improvements in airport capacity are matched with commensurate improvements in surface access.

The "FAA Community Involvement Manual", document FAA-EE-90-03, should be consulted to help develop a community involvement program. This manual can be accessed in the "Communications Tools" section of the Airport Noise Compatibility Planning Toolkit at http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/. There are a number of State DOTs that have similar guidance. Additional discussion on community involvement can be found under the "Community Consultation" section of the FAA document "Best Practices Guide-Initiative 6 to May 2001 Report to Congress on Streamlining the Environmental Process," which is available at http://www.faa.gov/airports/environmental/.

d. **FAA Role in Airport Master Planning**

The primary responsible party for airport master planning is the airport sponsor. However, early coordination with FAA is essential to efficient project management. FAA is involved in airport planning to ensure that proposed airport development is safe, has utility, and meets airport design standards, and identifies obvious issues that could become environmental concerns. Additionally, if Airport Improvement Program (AIP) money is needed, FAA ensures that the scope and timing of the proposed development is appropriate for Federal financial participation. FAA carries out these requirements through the following actions:

- Review and approval of local aviation forecasts and design aircraft
- Review and approval of site selection studies
- Review and approval of airport layout plans, including completion of airspace studies*
- Review the adequacy of the planning alternative analysis for incorporation into the subsequent NEPA Analysis
- Review of capital improvement planning

**Refer to the FAA "Community and Environmental Needs Division" memorandum of November 18, 2003 for guidance on how to treat airport layout plans that show proposed development that is undergoing NEPA analysis and review.*

When AIP funds are involved, FAA ensures that the scope of a project's planned facilities is justified.

Finally, FAA reviews master plan work scopes where the airport sponsor is seeking AIP or Passenger Facility Charge (PFC) funds to help finance preparation of the master plan.

e. **EIS Conceptual Engineering**

For complex projects, it is often necessary to conduct some engineering analysis to enable the airport sponsor and/or the FAA to make planning and environmental decisions. To avoid prejudging alternatives, the engineering should be limited to that necessary to:

- Define alternatives within FAA or sponsor's jurisdiction for environmental analysis
- Assess aeronautical safety and utility of these alternatives
- Comparatively analyze environmental impacts
- Inform the public and environmental resource agencies
- Identify potential environmental mitigation during the environmental analysis, and
- Determine the order of magnitude of project costs

Early in the planning process, airport planners, environmental specialists and engineers should agree to the appropriate extent of conceptual engineering effort, the responsible parties for the effort, and the schedule for accomplishing such engineering.

f. **Facility Requirements/Purpose and Need**

"Facility requirements" is a term used in airport planning to describe the development required to address documented airport needs. The analysis and documentation supporting the facility requirements are normally contained in an airport master plan. This analysis needs clearly to define the aviation problem(s) and why the airport needs to solve it (them). Care should be taken that the facility requirements are not so narrowly defined so that they unreasonably point to a single solution.

"Purpose and Need" is a NEPA term that refers to a section of an environmental document, which describes the purpose of, and need for, the proposed Federal action. The problem to be addressed is identified (need), the requested Federal action is noted as a possible solution to the problem (purpose), and information that supports that a problem exists is presented (or referenced).

FAA planners should ensure that the "Facility Requirements" analysis provides information sufficient to provide a basis for describing the "Purpose and Need" for proposed Federal actions. FAA environmental professionals can be helpful in determining the adequacy of "Facility Requirements" documentation for use in defining purpose and need under NEPA.

As always, projects that are seeking AIP or PFC funding need to be justified on aeronautical grounds. Economic development should not be a basis for justifying AIP or PFC assistance.

g. **Alternative Analysis**

The master plan is not intended to establish a single project alternative for NEPA evaluation, but to identify alternatives that meet the airport's aeronautical needs. It may establish the sponsor's recommended alternative. It should consider all reasonable alternatives normally within the jurisdiction of the airport sponsor and the FAA, including operational alternatives. Those alternatives that do not meet the planning need (i.e., facility requirements), or are not feasible or prudent, should be dismissed, with the reasons for dismissal appropriately documented in the master plan. This should include reasons why planning did not consider alternatives that avoided or minimized environmental areas or conditions contributing to extensive mitigation. The master plan should also document the justification for any sponsor recommended alternative, as well as the reasons for not recommending others. An airspace review (i.e., NRA case) of alternatives may be necessary to determine if alternatives can be built and are operationally feasible before their environmental impacts are evaluated in a NEPA document. A preliminary cost estimate, similar in detail to cost estimates normally prepared in master plans and depicted in capital improvement plans, should be developed for all alternatives to be analyzed in a NEPA document.

Unlike the master plan, a NEPA document may consider alternatives that are not within the jurisdiction of the airport sponsor or the FAA, such as the development of alternative airports or the use of other transportation modes. As stated previously, NEPA requires Federal agencies to "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have an impact on man's environment." In preparing NEPA documents, FAA typically considers environmental impact, cost and other factors in its alternative analysis. It is possible that during the NEPA process, FAA will identify alternatives not previously considered during the planning process. Airport planners should be called upon to advise the environmental specialists on whether additional alternatives developed during the NEPA process meet planning needs and can be constructed and operated safely and efficiently.

h. **Currency of Aviation Forecasts**

A master plan uses locally generated aviation forecasts as the basis for identifying the need and timing of airport development. FAA reviews the local forecasts and forecast methodology to ensure that they are appropriate and that they provide an adequate justification for the scope, and timing of proposed airport development. Local forecasts developed in a master plan can be adopted for use in an environmental impact analysis provided that the FAA has approved them. FAA field offices can approve local forecasts if the forecast methodology is reasonable and the forecast is consistent with the FAA's Terminal Area Forecast (TAF) or differences with the TAF have been resolved by the FAA. Consistency with the TAF is discussed in separate planning guidance provided by the FAA, which also has special provisions for FAA approval of forecasts at lower activity general aviation airports. It is important that the local forecasts of aircraft activity and enplanements used in NEPA analysis were recently approved by the FAA and, in the process of approving these forecasts, the most recent published TAF was used for comparison.

It is also important that the same forecasts be used throughout project formulation including project justification, airfield modeling, environmental analysis, and benefit cost analysis. Where updated forecasts are approved, or separate forecasting used, the new information should be clearly distinguished from a prior forecast.

3. TOOLS

a. Planning Team

Airport planners, environmental specialists, and engineers should work together throughout the project formulation and development processes. This includes from the beginning of the master plan, through the preparation of an EA or EIS and subsequent decision document, as well as through design and construction to ensure that mitigation measures are properly accomplished. The team should first meet with the airport sponsor during pre-planning to insure that important issues are identified early. The extent of planner, environmental specialist and engineer involvement would depend on project complexity and controversy.

When preparation of an EA or EIS is anticipated, environmental specialists should take an active role in determining the adequacy of the master plan's alternative analysis. This ensures that the master plan and the EA or EIS are consistent in data and in rationale on the reasonable alternatives. In addition, the environmental specialist may assist the airport planner in reviewing the scope of work for the master plan relative to the scope of environmental work to be performed, provide guidance on developing the overview of sensitive environmental features, assist in developing and conducting the public consultation and help in deciding that project justification is sufficient to develop a strong and clear purpose and need statement in the EA or EIS. The airport sponsor's planning consultant should include, as part of their team, a specialist familiar with NEPA and environmental analysis requirements for airport projects.

The airport planner's role in the NEPA process is to: review the planning aspects of the NEPA document for accuracy and consistency with airport planning, design standards, operational requirements and land use compatibility considerations; review the adequacy of discussions of technological solutions that address the purpose and need; and review the consistency of the local aviation forecasts with the TAF and with the aviation forecasts used in other project documents.

During the planning and environmental analysis, engineers should provide conceptual engineering, if required, provide "planning-level" project cost estimates, and if required determine the constructability of various alternatives, including construction sequencing and timing.

b. Overview of Environmental Features

A recommended practice for the airport sponsor/consultant is to prepare an "overview of environmentally sensitive features of an airport" as part of the airport master plan. Such an overview can help an airport sponsor judge if the airport's environmental features affect day-to-day decisions as well as longer-term development strategies. The level of detail would be airport specific as determined by the sponsor and its consultant after consultation with the local FAA Airports office. The overview should include readily available information including:

- Items known from prior environmental and planning documents, and from the expertise of environmental professionals, community planners, and resource agencies
- Items that can be easily seen during a walking survey of the airport or off-airport area.
- Information from various types of available environmental resource maps of the airport area.

The findings from the literature search and airport walking survey should be documented.

This overview is not intended to substitute for the "Affected Environment" section of an EA or EIS. It is intended to provide information on, or an overview of obvious environmental resources, which could affect the planning of the proposed development. Therefore, it is not necessary to carry out substantial investigations such as cultural resource studies or wetland delineations in order to define all environmental factors needed for master planning. If an airport sponsor wishes to conduct such detailed studies under a master plan, the local FAA Airports office should be consulted. If concurrence is provided the FAA should work with the sponsor to ensure that the selected consultant is, or selected consultants are, experienced in the discipline(s) being investigated.

The overview should also include easily seen and/or readily documented environmental features and resources beyond the airport property line. The area of consideration beyond the property line will vary depending on the environmental resource. For noise, it may be set at the DNL 65 dB contour, while for coastal zones it may stretch well beyond the airport boundaries. A text of the environmental overview should be included in the master plan report together with appropriate graphics. Sensitive features may also be

shown on a separate ALP drawing. Attachment 3 to this appendix lists suggested features that may be included as parts of the overview. Information on land uses or features that surround the airport and whether or not such uses are zoned compatibly with aviation uses should also be included. If not zoned compatible, the reasons should be investigated and the sponsor should provide information on its efforts to promote aviation-compatible land uses near the airport.

The master plan report and/or ALP should note the source (i.e., May 2004 walking survey, NWI maps, 2003 regional land use plan, etc.) of flood plain, wetland, or cultural resource information that is presented. This will ensure that resource data that is approximate, such as wetland locations based on a recent walk-through or older NWI maps, is identified as approximate data. For example, a possible ALP note for wetlands is: "Wetland areas bounded by dashed lines are based on an April 2003 NWI map and March 19, 2004 walk-through of the area. The walk-through suggests wetland presence due to standing water and certain vegetation. The NEPA analysis will include a wetland delineation of that area, if alternatives under consideration are located in this area."

This information will alert planning and environmental reviewers of the possible presence of sensitive resources. As a result, further investigation of these areas during the NEPA process may be necessary. Project layout or design could change based on further information obtained during preparation of a NEPA document. The master plan report and/or ALP should clearly note if the environmental overview uses data more than five years old or of questionable quality.

An environmental overview may provide the information necessary to: 1) determine if additional alternatives are needed to avoid or minimize the impact of the project to sensitive environmental features; 2) define future environmental coordination and analysis work to develop more thorough work scope for an EA or EIS and; 3) properly understand the anticipated costs of preliminary/final design as well as how best to estimate the cost of and schedule for the NEPA process.

c. Electronic Data Information Systems

Airport sponsors typically have a great deal of spatial information to support infrastructure development. Although electronic data sources such as Computer Aided Design (CAD), Geographic Information Systems (GIS), and other spatial data formats are common, there is often redundancy due to a lack of knowledge about existing data sets and differing standards. A common data source is more efficient in the identification of environmentally sensitive features such as residential areas, parks, and hazardous waste sites and in quantifying the potential impact of various proposed development. Therefore, airport sponsors should consider developing an electronic spatial data standard for all planning, environmental, and engineering documents. Although GIS is typically used to implement such a standard, also consider other options that may offer more ready access and basic skill requirements should be considered.

Notwithstanding the above, hard copies of ALP drawings and master plan reports shall be provided for FAA retention and use.

d. If AIP or PFC funds are to be used for the development of a GIS or similar format, the scope of the GIS development should be discussed with the FAA to ensure that eligibility is established. See FAA Order 5100.38, *Airport Improvement Program Handbook*. The GIS should be in a standard format that is consistent with the data formats used by the surrounding units of government.

4. NEPA DOCUMENTS OF OTHER FEDERAL AGENCIES

An airport development proposal may require that a Federal agency other than the FAA is the lead agency for NEPA purposes. Although this usually involves development by a military entity, such as the Air National Guard, it may involve such actions as a roadway funded by the Federal Highway Administration, an apron/hangar for the U.S. Forest Service, or a recreational area by the Army Corps of Engineers. The master plan should recognize such proposed development, ensuring that the proposal is an appropriate use for the airport, and that the FAA's Federal actions associated with the development, such as ALP revisions or approval of land releases, are adequately addressed in the lead agency's NEPA document. The master plan should also describe how the proponent's potential plans would ultimately affect the airport sponsor's proposed airport development. FAA's environmental role will vary from project to project. Normally the FAA will be either a joint lead agency, or at least a cooperating agency during the preparation of an environmental document. The "other" Federal agency should come to FAA early to see what we look for in our environmental documentation and processing. Some laws, such as Section 4(f) of the DOT Act, or policies, such as noise, apply to FAA but not to other agencies, and must be addressed in the NEPA document.

ATTACHMENT D-1
ENVIRONMENTAL OVERVIEW FOR MASTER PLAN PURPOSES

Air Quality Classification	Attainment Area:	
	Non-attainment Area:	
	List Pollutant(s):	
	Maintenance Area:	
	List Pollutant(s):	
Aquatic Concerns	Bay:	Wetlands:
	Creek:	Floodplains:
	Ocean:	Potable Water Aquifer:
	Pond:	Sole-Source Aquifer:
	Habitat-Endangered/Threatened Species:	
	Drinking Water Reservoir:	
	Pond:	Streams:
	River:	Other:
Terrestrial Concerns	Contaminated Areas:	
	Habitat-Endangered/Threatened Species:	
	Farmland, Prime and Unique:	
	Hazardous Material Storage Areas:	
	Landfills:	
Cultural	Historic Properties*:	
	Archeological Resources:	
	Parks:	
	Wildlife Refuges:	
	Residential Areas:	
	Noise Sensitive Areas (church, school, hospital, etc.):	
	Other:	
Land Use Concerns	Traffic:	
	Noise:	
	Lighting:	
	Obstructions:	
	Environmental Justice:	
	Zoning:	

*Historic resources should be identified but the planning consultants should be wary of disclosing some information due to the sensitivity certain parties (i.e., Native Americans, Native Hawaiians) attach to these resources. A discussion should be held with these parties to decide if maps should include the identified resources.

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Appendix E Airport Site Selection

1. GENERAL

a. In some cases, the planner may determine that the existing airport cannot be expanded to meet the future demand and that a new or supplemental airport may be needed. In these cases, it may be necessary to look for a new airport site. The process of identifying, evaluating, and selecting new airport sites is very similar to the process of identifying, evaluating, and selecting alternatives for individual airport projects.

b. A comparison of new airport sites with the alternative of continuing operations at the existing airport may have been completed during the master plan alternatives analysis. In these cases, the site selection process may be a refinement of the preliminary investigation of alternatives for the existing airport. A site selection process may also result from the need for a new airport identified in a regional or state system plan study.

c. Prior to initiating a detailed site selection study, the planner should collect data that justifies the need for the new airport and its viability. Community and user support, along with an airport sponsor's legal and financial capability to build and operate the new airport, should be documented. There should be a consensus among Federal, state and local officials as to the intended role of the new airport, at least to the extent that its requirements and size can be determined. However, this does not rule out changing the role of the new airport as a result of the study findings.

2. SITE SELECTION PROCESS OVERVIEW

a. The scope of the site selection process will vary with the size, complexity, and role of the new airport. The sophistication of the analysis and the complexity of the decision making process can vary greatly.

b. If the planner determines that a new airport is needed, he or she should develop initial criteria that can be used to evaluate different sites and determine if each can function as an airport and meet the needs of the community and users. Such criteria might include that the sites are within a certain radius of the existing airport and are of a minimum size in terms of land area.

c. Once the preliminary sites have been identified, a screening process should be applied to each site. An evaluation of all potential sites that meet the initial criteria should be conducted, screening out those with the most obvious shortcomings. Screening factors might include topography, natural and man-made obstructions, airspace, access, environmental impacts, and development costs. If any sites are eliminated from further consideration, thorough documentation of the reasons for that decision is encouraged and will facilitate the subsequent environmental processing.

d. The remaining potential sites should then undergo a detailed comparison using comprehensive evaluation criteria. While the criteria will vary, the following should be considered:

- Operational Capability – the site should provide the operational capability necessary to serve the defined role of the airport and the needs of its users
- Capacity potential – If the new airport is needed to provide additional capacity, the capability of the site in providing long-term capacity growth is important.
- Ground access – an important factor is the ability of the users to get to and from the airport easily and in a timely manner.
- Development Costs – Simple cost estimates are useful in determining the financial feasibility of building a new airport.
- Environmental Consequences – The potential environmental impacts associated with a new site may be critical to gaining approval.

Consistency with Area-wide Planning – The site should be consistent with regional and local land use and transportation plans.

e. While a weighting of the evaluation criteria and a weighted ranking of the alternative sites may be used in selecting a site, planners should use caution in applying this technique since it introduces an element of subjectivity into the analysis. They should focus on providing decision makers with information on the various sites in a manner that is understandable and unbiased.

f. The site finally selected will be subject to the review of alternatives as required under NEPA. Planners will then make commitments on specific environmental mitigation measures. The selection will probably receive scrutiny through public information sessions, review by policy and advisory committees, and at public hearings.

g. The planner should not assume that the site selection process described here conclusively results in the selection of the best site. Overriding political, jurisdictional, institutional, environmental or financial considerations may influence the decision makers' choice of sites.

3. SITE APPROVAL

a. Once a site is selected, timely site approval by the airport sponsor who will develop and operate the new airport is important. Such action will permit the prompt establishment of the airport while the decision-making apparatus is politically and organizationally intact.

b. If state and regional approval procedures have been followed, an important next step will be Federal approval. FAA approval is necessary if planners intend to seek Federal financial assistance under the AIP for follow-on planning or site acquisition and development. Such approval must be supported by appropriate environmental documentation, public hearings, and evidence that the proposed airport will be reasonable consistent with local planning. The FAA must approve the selected site before any additional planning work is started.

c. Regardless of the applicability of Federal financial assistance in the planning or development of the airport, the FAA will advise on the aeronautical suitability of the site after having studied the site from the standpoint of airspace use as required by 14 CFR Part 157, *Notice of Proposed Construction, Alteration, Activation, and Deactivation of Airports.*

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Appendix F Airport Layout Plan Drawing Set

The following list provides general guidelines in preparing the Airport Layout Plan drawing set. The individual sheets that comprise the Airport Layout Plan drawing set will vary with each planning effort. During the project scoping activities, planners must determine which sheets will be necessary. Refer to ARP Standard Operating Procedure (ARP SOP) 2.00, Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs), and ARP SOP 3.00, Standard Operating Procedure (SOP) for FAA Review of Exhibit 'A' Airport Property Inventory Maps, for specific ALP review and approval procedures and additional preparation guidance.

1. AIRPORT LAYOUT DRAWING

a. Sheet size – Minimum 24" x 36"

b. Scale –Within a range of 1" = 200' to 1" = 600'

c. North Arrow

1) True and Magnetic North

2) Year of the magnetic declination

3) Orient drawing so that north is to the top or left of the sheet

d. Wind Rose

1) Data source and the time period covered

2) Include individual and combined coverage for:

a) Runways with 10.5 knots crosswind

b) Runways with 13 knots crosswind

c) Runways with 16 knots crosswind

d) Runways with 20 knots crosswind

e. Airport Reference Point (ARP) – Existing and ultimate, with latitude and longitude to the nearest second based on NAD 83

f. Ground contours at intervals of 2' to 10', lightly drawn

g. Elevations (Existing and Ultimate to 1/10 of a foot)

1) Runway

2) Displaced thresholds

3) Touchdown zones

4) Intersections

5) Runway high and low points

6) Roadways where they intersect the RPZ edges and extended runway centerlines

7) Structures on Airport – If a terminal area plan is not included indicate structure top elevations on this sheet.

h. Building limit lines – Show on both sides of the runways and extend to the airport property line or RPZ.

i. Runway Details (Existing and Ultimate)

1) Runway Design Code (RDC) designation

2) Dimensions – length and width within the outline of the runway

3) Orientation – Runway end numbers and true bearing to the nearest 0.01 degree

4) Markings

5) Lighting – Threshold lights only

6) Runway Safety Areas – Dimensions may be included in the Runway Data Table

7) End Coordinates – Note near end (existing and ultimate) of each runway end, to nearest 0.01 second

8) Displaced threshold coordinates, to the nearest 0.01 second

9) Declared Distances – For each runway direction if applicable. Identify any clearway/stopway portions in the declared distances

j. Taxiway Details (Existing and Ultimate)

1) Taxiway Design Group (TDG) designation

2) Taxiway widths and separation from the runway centerlines, parallel taxiway, aircraft parking, and objects

k. RPZ Details (Existing and Ultimate)

1) Dimensions

2) Type of property acquisition (fee or easement)

l. Approach slope ratio (20:1; 34:1; 50:1)

m. Airport Data Table (Existing and Ultimate)

1) Airport elevation (MSL)

2) Airport Reference Point data

3) Mean maximum temperature

4) Airport Reference Code for each runway

5) Design Aircraft for each runway or airfield component

n. Runway Data Table (Existing and Ultimate)

1) Percent effective gradient

2) Percent wind coverage

3) Maximum elevation above MSL

4) Runway length and width

5) Runway surface type

6) Runway strength

7) FAR Part 77 approach category

8) Approach type

9) Approach slope

10) Runway lighting (HIRL, MIRL, LIRL)

11) Runway marking

12) Navigational and visual aids

13) RSA dimensions

o. Title and Revision Blocks

1) Name and location of the airport

2) Name of preparer

3) Date of drawing

4) Drawing title

5) Revision block

6) FAA disclaimer

7) Approval block

p. Other

1) Standard legend

2) Existing and Ultimate airport facility and building list

3) Location map

4) Vicinity map

2. AIRPORT AIRSPACE DRAWING

a. Plan view of all FAR Part 77 surfaces, based on ultimate runway lengths

b. Small scale profile views of existing and ultimate approaches

c. Obstruction data tables, as appropriate

d. Sheet size – same as the airport layout drawing

e. Scale – 1" = 2,000' for the plan view; 1" = 1,000' for approach profiles; and 1" = 100' (vertical) for approach profiles

f. Title and revision blocks - same as the airport layout drawing

g. Approach Plan View Details

1) USGS for base map

2) Show runway end numbers

3) Include 50' elevation contours on all slopes

4) Show the most demanding surfaces with solid lines and others with dashed lines

5) Identify top elevations of objects that penetrate any of the surfaces. For objects in the inner approach, add note "See inner portion of the approach plan view for close-in obstructions."

6) For precision instrument runways, show balance of 40,000' approach on a separate sheet.

h. Approach Profile Details

1) Depict the ground profile along the extended runway centerline representing the composite profile, based on the highest terrain across the width and along the length of the approach surface.

2) Identify all significant objects (roads, rivers, and so forth) and top elevations within the approach surfaces, regardless of whether or not they are obstructions

3) Show existing and ultimate runway ends and FAR Part 77 approach slopes.

3. INNER PORTION OF THE APPROACH SURFACE DRAWING

a. Large scale plan views of inner portions of approaches for each runway, usually limited to the RPZ areas

b. Large scale projected profile views of inner portions of approaches for each runway, usually limited to the RPZ areas

c. Interim stage RPZs when plans for interim runways extensions are firm and construction is expected in the near future

d. Sheet size – Same as Airport Layout drawing

e. Scale – Horizontal 1" = 200'; vertical 1" = 20'

f. Title and revision blocks – Same as for Airport Layout drawing

g. Plan View Details

1) Aerial photos for base maps

2) Numbering system to identify obstructions

3) Depict property line

4) Identify, by numbers, all traverse ways with elevations and computed vertical clearance in the approach

5) Depict the existing and ultimate physical end of the runways. Note runway end number and elevation

6) Show ground contours, lightly drawn

h. Profile View Details

1) Depict terrain and significant items (fences, roadways, and so forth)

2) Identify obstructions with numbers on the plan view

3) Show roads and railroads with dashed lines at edge of the approach

i. Obstruction Table Details

1) Depict terrain and significant items (fences, roadways, and so forth)

2) Identify obstructions with numbers on the plan view

3) Show roads and railroads with dashed lines at edge of the approach

4) Prepare a separate table for each RPZ

5) Include obstruction identification number and description, the amount of the approach surface penetration, and the proposed disposition of the obstructions

4. TERMINAL AREA DRAWING

The need for this drawing will be decided on a case-by-case basis. For small airports, where the Airport Layout drawing is prepared to a fairly large scale, a separate drawing for the terminal area may not be needed.

a. Large scale plan view of the area or areas where aprons, buildings, hangars, and parking lots are located

b. Sheet size – Same as Airport Layout drawing

c. Scale – Range of 1” = 50’ to 1” = 100’

d. Title and revision blocks – Same as for Airport Layout drawing

e. Building Data Table – To list structures and show pertinent information about them. Include space and columns for:

1) A numbering system to identify structures

2) Top elevation of structures

3) Existing and planned obstruction markings

5. LAND USE DRAWING

a. Include all land uses (industrial, residential, and so forth), on and off the airport, to at least the 65 DNL contour

b. Sheet size – Same as Airport Layout drawing

c. Scale – Same as the Airport Layout drawing

d. Title and revision blocks – Same as for Airport Layout drawing

e. Aerial base map

f. Legend (symbols and land use descriptions)

g. Identify public facilities (such as schools, parks, and others)

h. Drawing details – Normally limited to existing and future airport features (i.e., runways, taxiways, aprons, RPZs, terminal buildings and navigational aids)

6. RUNWAY DEPARTURE SURFACES DRAWING

a. Large scale plan views of departure surfaces for each runway end that is designated primarily for instrument departures. The one-engine inoperative (OEI) obstacle identification surface (OIS) should be shown for any departure runway end supporting air carrier operations.

b. Large scale projected profile views of departure surfaces for each runway that is designated primarily for instrument departures.

c. Sheet size – Same as Airport Layout drawing

d. Scale – Horizontal 1" = 1000'; vertical 1" = 100' (runway departure surfaces); and Scale – Horizontal 1" = 2000'; vertical 1" = 100' (OEI obstacle identification surfaces)

e. Title and revision blocks – Same as for Airport Layout drawing

j. Plan View Details

7) Aerial photos for base maps

8) Numbering system to identify obstructions

9) Depict property line, including easements

10) Identify, by numbers, all traverse ways with elevations and computed vertical clearance in the departure surface

11) Depict the existing and ultimate physical end of the runways. Note runway end number and elevation

12) Show ground contours, lightly drawn

k. Profile View Details

4) Depict terrain and significant objects, including fences, roadways, rivers, structures, and buildings.

5) Identify obstructions with numbers on the plan view

6) Show roads and railroads with dashed lines at edge of the departure surface

l. Obstruction Table Details

6) Depict terrain and significant objects, including fences, roadways, rivers, structures and buildings

7) Identify obstructions with numbers on the plan view

8) Show roads and railroads with dashed lines at edge of the approach

9) Prepare a separate table for each departure surface

10) Include obstruction identification number and description, the amount of the departure surface penetration, and the proposed disposition of the obstructions

7. AIRPORT PROPERTY MAP

a. Sheet size – Same as Airport Layout drawing

b. Scale – Same as the Airport Layout drawing

c. Title and revision blocks – Same as for Airport Layout drawing

d. Legend

e. Data Table

1) A numbering or lettering system to identify tracts of land

2) The date the property was acquired

3) The Federal aid project number under which it was acquired

4) Type of ownership (fee, easement, federal surplus, and others)

f. Show existing and future airport features (i.e., runways, RPZs, navigational aids and so forth) that would indicate a future aeronautical need for airport property.

U.S. Department
of Transportation

Federal Aviation Administration

Advisory Circular

Subject: HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS	**Date:** 8/28/2007	**AC No:** 150/5200-33B
	Initiated by: AAS-300	**Change:**

1. PURPOSE. This Advisory Circular (AC) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants. Appendix 1 provides definitions of terms used in this AC.

2. APPLICABILITY. The Federal Aviation Administration (FAA) recommends that public-use airport operators implement the standards and practices contained in this AC. The holders of Airport Operating Certificates issued under Title 14, Code of Federal Regulations (CFR), Part 139, Certification of Airports, Subpart D (Part 139), may use the standards, practices, and recommendations contained in this AC to comply with the wildlife hazard management requirements of Part 139. Airports that have received Federal grant-in-aid assistance must use these standards. The FAA also recommends the guidance in this AC for land-use planners, operators of non-certificated airports, and developers of projects, facilities, and activities on or near airports.

3. CANCELLATION. This AC cancels AC 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports*, dated July 27, 2004.

4. PRINCIPAL CHANGES. This AC contains the following major changes, which are marked with vertical bars in the margin:

a. Technical changes to paragraph references.

b. Wording on storm water detention ponds.

c. Deleted paragraph 4-3.b, *Additional Coordination.*

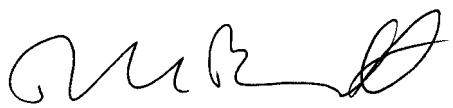
5. BACKGROUND. Information about the risks posed to aircraft by certain wildlife species has increased a great deal in recent years. Improved reporting, studies, documentation, and statistics clearly show that aircraft collisions with birds and other wildlife are a serious economic and public safety problem. While many species of wildlife can pose a threat to aircraft safety, they are not equally hazardous. Table 1

ranks the wildlife groups commonly involved in damaging strikes in the United States according to their relative hazard to aircraft. The ranking is based on the 47,212 records in the FAA National Wildlife Strike Database for the years 1990 through 2003. These hazard rankings, in conjunction with site-specific Wildlife Hazards Assessments (WHA), will help airport operators determine the relative abundance and use patterns of wildlife species and help focus hazardous wildlife management efforts on those species most likely to cause problems at an airport.

Most public-use airports have large tracts of open, undeveloped land that provide added margins of safety and noise mitigation. These areas can also present potential hazards to aviation if they encourage wildlife to enter an airport's approach or departure airspace or air operations area (AOA). Constructed or natural areas—such as poorly drained locations, detention/retention ponds, roosting habitats on buildings, landscaping, odor-causing rotting organic matter (putrescible waste) disposal operations, wastewater treatment plants, agricultural or aquaculture activities, surface mining, or wetlands—can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Even small facilities, such as fast food restaurants, taxicab staging areas, rental car facilities, aircraft viewing areas, and public parks, can produce substantial attractions for hazardous wildlife.

During the past century, wildlife-aircraft strikes have resulted in the loss of hundreds of lives worldwide, as well as billions of dollars in aircraft damage. Hazardous wildlife attractants on and near airports can jeopardize future airport expansion, making proper community land-use planning essential. This AC provides airport operators and those parties with whom they cooperate with the guidance they need to assess and address potentially hazardous wildlife attractants when locating new facilities and implementing certain land-use practices on or near public-use airports.

6. MEMORANDUM OF AGREEMENT BETWEEN FEDERAL RESOURCE AGENCIES. The FAA, the U.S. Air Force, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture - Wildlife Services signed a Memorandum of Agreement (MOA) in July 2003 to acknowledge their respective missions in protecting aviation from wildlife hazards. Through the MOA, the agencies established procedures necessary to coordinate their missions to address more effectively existing and future environmental conditions contributing to collisions between wildlife and aircraft (wildlife strikes) throughout the United States. These efforts are intended to minimize wildlife risks to aviation and human safety while protecting the Nation’s valuable environmental resources.



DAVID L. BENNETT
Director, Office of Airport Safety
and Standards

Table 1. Ranking of 25 species groups as to relative hazard to aircraft (1=most hazardous) based on three criteria (damage, major damage, and effect-on-flight), a composite ranking based on all three rankings, and a relative hazard score. Data were derived from the FAA National Wildlife Strike Database, January 1990–April 2003.[1]

Species group	Ranking by criteria			Composite ranking[2]	Relative hazard score[3]
	Damage[4]	Major damage[5]	Effect on flight[6]		
Deer	1	1	1	1	100
Vultures	2	2	2	2	64
Geese	3	3	6	3	55
Cormorants/pelicans	4	5	3	4	54
Cranes	7	6	4	5	47
Eagles	6	9	7	6	41
Ducks	5	8	10	7	39
Osprey	8	4	8	8	39
Turkey/pheasants	9	7	11	9	33
Herons	11	14	9	10	27
Hawks (buteos)	10	12	12	11	25
Gulls	12	11	13	12	24
Rock pigeon	13	10	14	13	23
Owls	14	13	20	14	23
H. lark/s. bunting	18	15	15	15	17
Crows/ravens	15	16	16	16	16
Coyote	16	19	5	17	14
Mourning dove	17	17	17	18	14
Shorebirds	19	21	18	19	10
Blackbirds/starling	20	22	19	20	10
American kestrel	21	18	21	21	9
Meadowlarks	22	20	22	22	7
Swallows	24	23	24	23	4
Sparrows	25	24	23	24	4
Nighthawks	23	25	25	25	1

[1] Excerpted from the *Special Report for the FAA, "Ranking the Hazard Level of Wildlife Species to Civil Aviation in the USA: Update #1, July 2, 2003".* Refer to this report for additional explanations of criteria and method of ranking.

[2] Relative rank of each species group was compared with every other group for the three variables, placing the species group with the greatest hazard rank for $\geq$ 2 of the 3 variables above the next highest ranked group, then proceeding down the list.

[3] Percentage values, from Tables 3 and 4 in Footnote 1 of the *Special Report*, for the three criteria were summed and scaled down from 100, with 100 as the score for the species group with the maximum summed values and the greatest potential hazard to aircraft.

[4] Aircraft incurred at least some damage (destroyed, substantial, minor, or unknown) from strike.

[5] Aircraft incurred damage or structural failure, which adversely affected the structure strength, performance, or flight characteristics, and which would normally require major repair or replacement of the affected component, or the damage sustained makes it inadvisable to restore aircraft to airworthy condition.

[6] Aborted takeoff, engine shutdown, precautionary landing, or other.

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SECTION 1.

GENERAL SEPARATION CRITERIA FOR HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS.

1-1. INTRODUCTION. When considering proposed land uses, airport operators, local planners, and developers must take into account whether the proposed land uses, including new development projects, will increase wildlife hazards. Land-use practices that attract or sustain hazardous wildlife populations on or near airports can significantly increase the potential for wildlife strikes.

The FAA recommends the minimum separation criteria outlined below for land-use practices that attract hazardous wildlife to the vicinity of airports. Please note that FAA criteria include land uses that cause movement of hazardous wildlife onto, into, or across the airport's approach or departure airspace or air operations area (AOA). (See the discussion of the synergistic effects of surrounding land uses in Section 2-8 of this AC.)

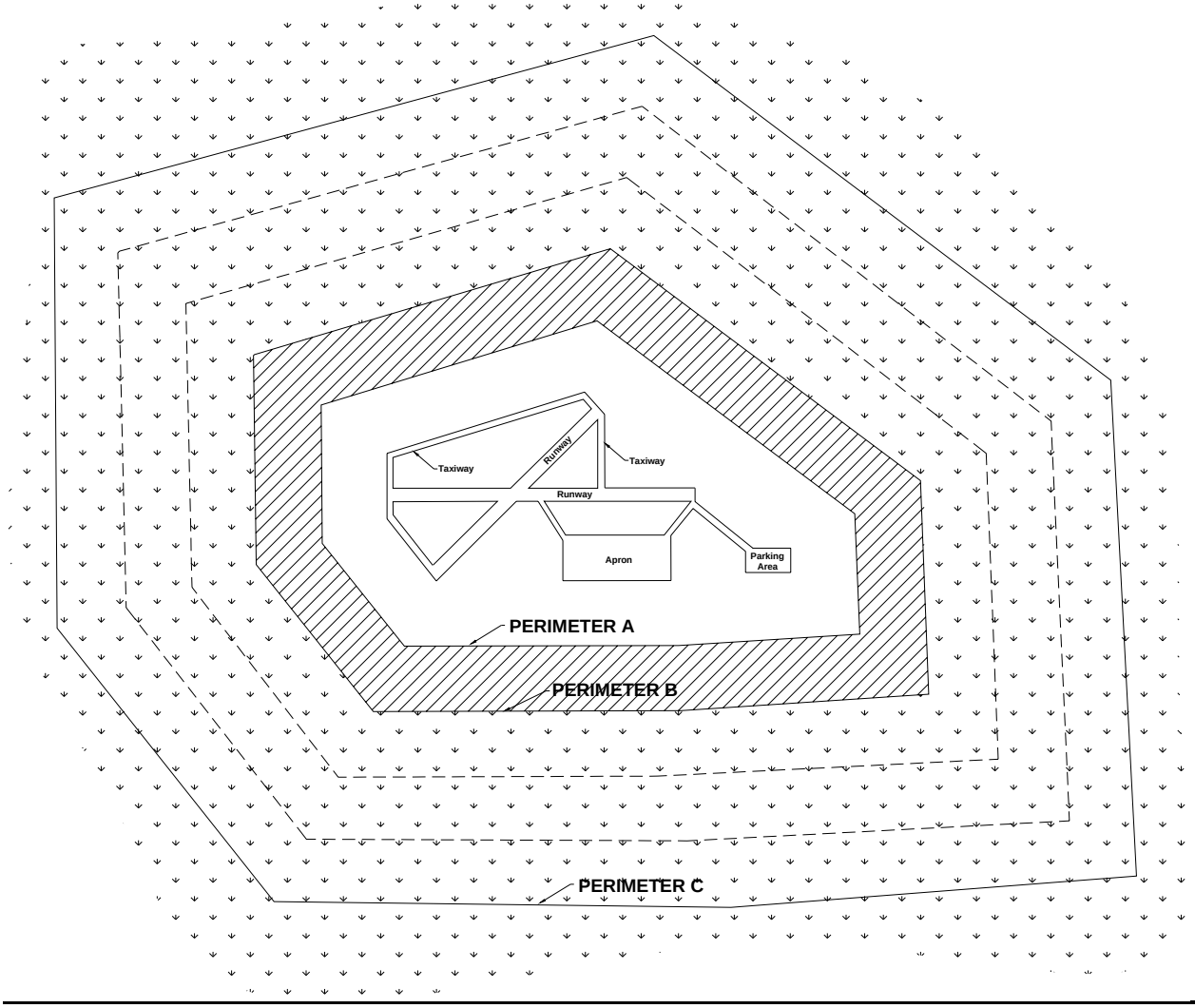
The basis for the separation criteria contained in this section can be found in existing FAA regulations. The separation distances are based on (1) flight patterns of piston-powered aircraft and turbine-powered aircraft, (2) the altitude at which most strikes happen (78 percent occur under 1,000 feet and 90 percent occur under 3,000 feet above ground level), and (3) National Transportation Safety Board (NTSB) recommendations.

1-2. AIRPORTS SERVING PISTON-POWERED AIRCRAFT. Airports that do not sell Jet-A fuel normally serve piston-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 5,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant. Figure 1 depicts this separation distance measured from the nearest aircraft operations areas.

1-3. AIRPORTS SERVING TURBINE-POWERED AIRCRAFT. Airports selling Jet-A fuel normally serve turbine-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 10,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant. Figure 1 depicts this separation distance from the nearest aircraft movement areas.

1-4. PROTECTION OF APPROACH, DEPARTURE, AND CIRCLING AIRSPACE. For all airports, the FAA recommends a distance of 5 statute miles between the farthest edge of the airport's AOA and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

Figure 1. Separation distances within which hazardous wildlife attractants should be avoided, eliminated, or mitigated.



PERIMETER A: For airports serving piston-powered aircraft, hazardous wildlife attractants must be 5,000 feet from the nearest air operations area.

PERIMETER B: For airports serving turbine-powered aircraft, hazardous wildlife attractants must be 10,000 feet from the nearest air operations area.

PERIMETER C: 5-mile range to protect approach, departure and circling airspace.

SECTION 2.

LAND-USE PRACTICES ON OR NEAR AIRPORTS THAT POTENTIALLY ATTRACT HAZARDOUS WILDLIFE.

2-1. GENERAL. The wildlife species and the size of the populations attracted to the airport environment vary considerably, depending on several factors, including land-use practices on or near the airport. This section discusses land-use practices having the potential to attract hazardous wildlife and threaten aviation safety. In addition to the specific considerations outlined below, airport operators should refer to *Wildlife Hazard Management at Airports,* prepared by FAA and U.S. Department of Agriculture (USDA) staff. (This manual is available in English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: http://wildlife-mitigation.tc.FAA.gov.). And, *Prevention and Control of Wildlife Damage,* compiled by the University of Nebraska Cooperative Extension Division. (This manual is available online in a periodically updated version at: ianrwww.unl.edu/wildlife/solutions/handbook/.)

2-2. WASTE DISPOSAL OPERATIONS. Municipal solid waste landfills (MSWLF) are known to attract large numbers of hazardous wildlife, particularly birds. Because of this, these operations, when located within the separations identified in the siting criteria in Sections 1-2 through 1-4, are considered incompatible with safe airport operations.

a. Siting for new municipal solid waste landfills subject to AIR 21. Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181) (AIR 21) prohibits the construction or establishment of a new MSWLF within 6 statute miles of certain public-use airports. Before these prohibitions apply, both the airport and the landfill must meet the very specific conditions described below. These restrictions do not apply to airports or landfills located within the state of Alaska.

The airport must (1) have received a Federal grant(s) under 49 U.S.C. § 47101, et. seq.; (2) be under control of a public agency; (3) serve some scheduled air carrier operations conducted in aircraft with less than 60 seats; and (4) have total annual enplanements consisting of at least 51 percent of scheduled air carrier enplanements conducted in aircraft with less than 60 passenger seats.

The proposed MSWLF must (1) be within 6 miles of the airport, as measured from airport property line to MSWLF property line, and (2) have started construction or establishment on or after April 5, 2001. Public Law 106-181 only limits the construction or establishment of some new MSWLF. It does not limit the expansion, either vertical or horizontal, of existing landfills.

NOTE: Consult the most recent version of AC 150/5200-34, *Construction or Establishment of Landfills Near Public Airports,* for a more detailed discussion of these restrictions.

b. Siting for new MSWLF not subject to AIR 21. If an airport and MSWLF do not meet the restrictions of Public Law 106-181, the FAA recommends against locating MSWLF within the separation distances identified in Sections 1-2 through 1-4. The separation distances should be measured from the closest point of the airport's AOA to the closest planned MSWLF cell.

c. Considerations for existing waste disposal facilities within the limits of separation criteria. The FAA recommends against airport development projects that would increase the number of aircraft operations or accommodate larger or faster aircraft near MSWLF operations located within the separations identified in Sections 1-2 through 1-4. In addition, in accordance with 40 CFR 258.10, owners or operators of existing MSWLF units that are located within the separations listed in Sections 1-2 through 1-4 must demonstrate that the unit is designed and operated so it does not pose a bird hazard to aircraft. (See Section 4-2(b) of this AC for a discussion of this demonstration requirement.)

d. Enclosed trash transfer stations. Enclosed waste-handling facilities that receive garbage behind closed doors; process it via compaction, incineration, or similar manner; and remove all residue by enclosed vehicles generally are compatible with safe airport operations, provided they are not located on airport property or within the Runway Protection Zone (RPZ). These facilities should not handle or store putrescible waste outside or in a partially enclosed structure accessible to hazardous wildlife. Trash transfer facilities that are open on one or more sides; that store uncovered quantities of municipal solid waste outside, even if only for a short time; that use semi-trailers that leak or have trash clinging to the outside; or that do not control odors by ventilation and filtration systems (odor masking is not acceptable) do not meet the FAA's definition of fully enclosed trash transfer stations. The FAA considers these facilities incompatible with safe airport operations if they are located closer than the separation distances specified in Sections 1-2 through 1-4.

e. Composting operations on or near airport property. Composting operations that accept only yard waste (e.g., leaves, lawn clippings, or branches) generally do not attract hazardous wildlife. Sewage sludge, woodchips, and similar material are not municipal solid wastes and may be used as compost bulking agents. The compost, however, must never include food or other municipal solid waste. Composting operations should not be located on airport property. Off-airport property composting operations should be located no closer than the greater of the following distances: 1,200 feet from any AOA or the distance called for by airport design requirements (see AC 150/5300-13, *Airport Design*). This spacing should prevent material, personnel, or equipment from penetrating any Object Free Area (OFA), Obstacle Free Zone (OFZ), Threshold Siting Surface (TSS), or Clearway. Airport operators should monitor composting operations located in proximity to the airport to ensure that steam or thermal rise does not adversely affect air traffic. On-airport disposal of compost by-products should not be conducted for the reasons stated in 2-3f.

f. Underwater waste discharges. The FAA recommends against the underwater discharge of any food waste (e.g., fish processing offal) within the separations identified in Sections 1-2 through 1-4 because it could attract scavenging hazardous wildlife.

g. Recycling centers. Recycling centers that accept previously sorted non-food items, such as glass, newspaper, cardboard, or aluminum, are, in most cases, not attractive to hazardous wildlife and are acceptable.

h. Construction and demolition (C&D) debris facilities. C&D landfills do not generally attract hazardous wildlife and are acceptable if maintained in an orderly manner, admit no putrescible waste, and are not co-located with other waste disposal operations. However, C&D landfills have similar visual and operational characteristics to putrescible waste disposal sites. When co-located with putrescible waste disposal operations, C&D landfills are more likely to attract hazardous wildlife because of the similarities between these disposal facilities. Therefore, a C&D landfill co-located with another waste disposal operation should be located outside of the separations identified in Sections 1-2 through 1-4.

i. Fly ash disposal. The incinerated residue from resource recovery power/heat-generating facilities that are fired by municipal solid waste, coal, or wood is generally not a wildlife attractant because it no longer contains putrescible matter. Landfills accepting only fly ash are generally not considered to be wildlife attractants and are acceptable as long as they are maintained in an orderly manner, admit no putrescible waste of any kind, and are not co-located with other disposal operations that attract hazardous wildlife.

Since varying degrees of waste consumption are associated with general incineration (not resource recovery power/heat-generating facilities), the FAA considers the ash from general incinerators a regular waste disposal by-product and, therefore, a hazardous wildlife attractant if disposed of within the separation criteria outlined in Sections 1-2 through 1-4.

2-3. WATER MANAGEMENT FACILITIES. Drinking water intake and treatment facilities, storm water and wastewater treatment facilities, associated retention and settling ponds, ponds built for recreational use, and ponds that result from mining activities often attract large numbers of potentially hazardous wildlife. To prevent wildlife hazards, land-use developers and airport operators may need to develop management plans, in compliance with local and state regulations, to support the operation of storm water management facilities on or near all public-use airports to ensure a safe airport environment.

a. Existing storm water management facilities. On-airport storm water management facilities allow the quick removal of surface water, including discharges related to aircraft deicing, from impervious surfaces, such as pavement and terminal/hangar building roofs. Existing on-airport detention ponds collect storm water, protect water quality, and control runoff. Because they slowly release water

after storms, they create standing bodies of water that can attract hazardous wildlife. Where the airport has developed a Wildlife Hazard Management Plan (WHMP) in accordance with Part 139, the FAA requires immediate correction of any wildlife hazards arising from existing storm water facilities located on or near airports, using appropriate wildlife hazard mitigation techniques. Airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a wildlife damage management biologist.

Where possible, airport operators should modify storm water detention ponds to allow a maximum 48-hour detention period for the design storm. The FAA recommends that airport operators avoid or remove retention ponds and detention ponds featuring dead storage to eliminate standing water. Detention basins should remain totally dry between rainfalls. Where constant flow of water is anticipated through the basin, or where any portion of the basin bottom may remain wet, the detention facility should include a concrete or paved pad and/or ditch/swale in the bottom to prevent vegetation that may provide nesting habitat.

When it is not possible to drain a large detention pond completely, airport operators may use physical barriers, such as bird balls, wires grids, pillows, or netting, to deter birds and other hazardous wildlife. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office.

The FAA recommends that airport operators encourage off-airport storm water treatment facility operators to incorporate appropriate wildlife hazard mitigation techniques into storm water treatment facility operating practices when their facility is located within the separation criteria specified in Sections 1-2 through 1-4.

b. New storm water management facilities. The FAA strongly recommends that off-airport storm water management systems located within the separations identified in Sections 1-2 through 1-4 be designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48–hour detention period after the design storm and remain completely dry between storms. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap lined, narrow, linearly shaped water detention basins. When it is not possible to place these ponds away from an airport's AOA, airport operators should use physical barriers, such as bird balls, wires grids, pillows, or netting, to prevent access of hazardous wildlife to open water and minimize aircraft-wildlife interactions. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office. All vegetation in or around detention basins that provide food or cover for hazardous wildlife should be eliminated. If soil conditions and other requirements allow, the FAA encourages

the use of underground storm water infiltration systems, such as French drains or buried rock fields, because they are less attractive to wildlife.

c. Existing wastewater treatment facilities. The FAA strongly recommends that airport operators immediately correct any wildlife hazards arising from existing wastewater treatment facilities located on or near the airport. Where required, a WHMP developed in accordance with Part 139 will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should encourage wastewater treatment facility operators to incorporate measures, developed in consultation with a wildlife damage management biologist, to minimize hazardous wildlife attractants. Airport operators should also encourage those wastewater treatment facility operators to incorporate these mitigation techniques into their standard operating practices. In addition, airport operators should consider the existence of wastewater treatment facilities when evaluating proposed sites for new airport development projects and avoid such sites when practicable.

d. New wastewater treatment facilities. The FAA strongly recommends against the construction of new wastewater treatment facilities or associated settling ponds within the separations identified in Sections 1-2 through 1-4. Appendix 1 defines wastewater treatment facility as “any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes.” The definition includes any pretreatment involving the reduction of the amount of pollutants or the elimination of pollutants prior to introducing such pollutants into a publicly owned treatment works (wastewater treatment facility). During the site-location analysis for wastewater treatment facilities, developers should consider the potential to attract hazardous wildlife if an airport is in the vicinity of the proposed site, and airport operators should voice their opposition to such facilities if they are in proximity to the airport.

e. Artificial marshes. In warmer climates, wastewater treatment facilities sometimes employ artificial marshes and use submergent and emergent aquatic vegetation as natural filters. These artificial marshes may be used by some species of flocking birds, such as blackbirds and waterfowl, for breeding or roosting activities. The FAA strongly recommends against establishing artificial marshes within the separations identified in Sections 1-2 through 1-4.

f. Wastewater discharge and sludge disposal. The FAA recommends against the discharge of wastewater or sludge on airport property because it may improve soil moisture and quality on unpaved areas and lead to improved turf growth that can be an attractive food source for many species of animals. Also, the turf requires more frequent mowing, which in turn may mutilate or flush insects or small animals and produce straw, both of which can attract hazardous wildlife. In addition, the improved turf may attract grazing wildlife, such as deer and geese. Problems may also occur when discharges saturate unpaved airport areas. The resultant soft, muddy conditions can severely restrict or prevent emergency vehicles from reaching accident sites in a timely manner.

2-4. WETLANDS. Wetlands provide a variety of functions and can be regulated by local, state, and Federal laws. Normally, wetlands are attractive to many types of wildlife, including many which rank high on the list of hazardous wildlife species (Table 1).

NOTE: If questions exist as to whether an area qualifies as a wetland, contact the local division of the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, or a wetland consultant qualified to delineate wetlands.

a. Existing wetlands on or near airport property. If wetlands are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. At public-use airports, the FAA recommends immediately correcting, in cooperation with local, state, and Federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports. Where required, a WHMP will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a wildlife damage management biologist.

b. New airport development. Whenever possible, the FAA recommends locating new airports using the separations from wetlands identified in Sections 1-2 through 1-4. Where alternative sites are not practicable, or when airport operators are expanding an existing airport into or near wetlands, a wildlife damage management biologist, in consultation with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the state wildlife management agency should evaluate the wildlife hazards and prepare a WHMP that indicates methods of minimizing the hazards.

c. Mitigation for wetland impacts from airport projects. Wetland mitigation may be necessary when unavoidable wetland disturbances result from new airport development projects or projects required to correct wildlife hazards from wetlands. Wetland mitigation must be designed so it does not create a wildlife hazard. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Sections 1-2 through 1-4.

(1) Onsite mitigation of wetland functions. The FAA may consider exceptions to locating mitigation activities outside the separations identified in Sections 1-2 through 1-4 if the affected wetlands provide unique ecological functions, such as critical habitat for threatened or endangered species or ground water recharge, which cannot be replicated when moved to a different location. Using existing airport property is sometimes the only feasible way to achieve the mitigation ratios mandated in regulatory orders and/or settlement agreements with the resource agencies. Conservation easements are an additional means of providing mitigation for project impacts. Typically the airport operator continues to own the property, and an easement is created stipulating that the property will be maintained as habitat for state or Federally listed species.

Mitigation must not inhibit the airport operator's ability to effectively control hazardous wildlife on or near the mitigation site or effectively maintain other aspects of safe airport operations. Enhancing such mitigation areas to attract hazardous wildlife must be avoided. The FAA will review any onsite mitigation proposals to determine compatibility with safe airport operations. A wildlife damage management biologist should evaluate any wetland mitigation projects that are needed to protect unique wetland functions and that must be located in the separation criteria in Sections 1-2 through 1-4 before the mitigation is implemented. A WHMP should be developed to reduce the wildlife hazards.

(2) Offsite mitigation of wetland functions. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Sections 1-2 through 1-4 unless they provide unique functions that must remain onsite (see 2-4c(1)). Agencies that regulate impacts to or around wetlands recognize that it may be necessary to split wetland functions in mitigation schemes. Therefore, regulatory agencies may, under certain circumstances, allow portions of mitigation to take place in different locations.

(3) Mitigation banking. Wetland mitigation banking is the creation or restoration of wetlands in order to provide mitigation credits that can be used to offset permitted wetland losses. Mitigation banking benefits wetland resources by providing advance replacement for permitted wetland losses; consolidating small projects into larger, better-designed and managed units; and encouraging integration of wetland mitigation projects with watershed planning. This last benefit is most helpful for airport projects, as wetland impacts mitigated outside of the separations identified in Sections 1-2 through 1-4 can still be located within the same watershed. Wetland mitigation banks meeting the separation criteria offer an ecologically sound approach to mitigation in these situations. Airport operators should work with local watershed management agencies or organizations to develop mitigation banking for wetland impacts on airport property.

2-5. DREDGE SPOIL CONTAINMENT AREAS. The FAA recommends against locating dredge spoil containment areas (also known as Confined Disposal Facilities) within the separations identified in Sections 1-2 through 1-4 if the containment area or the spoils contain material that would attract hazardous wildlife.

2-6. AGRICULTURAL ACTIVITIES. Because most, if not all, agricultural crops can attract hazardous wildlife during some phase of production, the FAA recommends against the used of airport property for agricultural production, including hay crops, within the separations identified in Sections 1-2 through 1-4. . If the airport has no financial alternative to agricultural crops to produce income necessary to maintain the viability of the airport, then the airport shall follow the crop distance guidelines listed in the table titled "Minimum Distances between Certain Airport Features and Any On-Airport Agricultural Crops" found in AC 150/5300-13, *Airport Design*, Appendix 17. The cost of wildlife control and potential accidents should be weighed against the income produced by the on-airport crops when deciding whether to allow crops on the airport.

a. Livestock production. Confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg laying operations) often attract flocking birds, such as starlings, that pose a hazard to aviation. Therefore, The FAA recommends against such facilities within the separations identified in Sections 1-2 through 1-4. Any livestock operation within these separations should have a program developed to reduce the attractiveness of the site to species that are hazardous to aviation safety. Free-ranging livestock must not be grazed on airport property because the animals may wander onto the AOA. Furthermore, livestock feed, water, and manure may attract birds.

b. Aquaculture. Aquaculture activities (i.e. catfish or trout production) conducted outside of fully enclosed buildings are inherently attractive to a wide variety of birds. Existing aquaculture facilities/activities within the separations listed in Sections 1-2 through 1-4 must have a program developed to reduce the attractiveness of the sites to species that are hazardous to aviation safety. Airport operators should also oppose the establishment of new aquaculture facilities/activities within the separations listed in Sections 1-2 through 1-4.

c. Alternative uses of agricultural land. Some airports are surrounded by vast areas of farmed land within the distances specified in Sections 1-2 through 1-4. Seasonal uses of agricultural land for activities such as hunting can create a hazardous wildlife situation. In some areas, farmers will rent their land for hunting purposes. Rice farmers, for example, flood their land during waterfowl hunting season and obtain additional revenue by renting out duck blinds. The duck hunters then use decoys and call in hundreds, if not thousands, of birds, creating a tremendous threat to aircraft safety. A wildlife damage management biologist should review, in coordination with local farmers and producers, these types of seasonal land uses and incorporate them into the WHMP.

2-7. GOLF COURSES, LANDSCAPING AND OTHER LAND-USE CONSIDERATIONS.

a. Golf courses. The large grassy areas and open water found on most golf courses are attractive to hazardous wildlife, particularly Canada geese and some species of gulls. These species can pose a threat to aviation safety. The FAA recommends against construction of new golf courses within the separations identified in Sections 1-2 through 1-4. Existing golf courses located within these separations must develop a program to reduce the attractiveness of the sites to species that are hazardous to aviation safety. Airport operators should ensure these golf courses are monitored on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.

b. Landscaping and landscape maintenance. Depending on its geographic location, landscaping can attract hazardous wildlife. The FAA recommends that airport operators approach landscaping with caution and confine it to airport areas not associated with aircraft movements. A wildlife damage management biologist should review all landscaping plans. Airport operators should also monitor all landscaped areas on a continuing basis for the presence of hazardous wildlife. If

hazardous wildlife is detected, corrective actions should be immediately implemented.

Turf grass areas can be highly attractive to a variety of hazardous wildlife species. Research conducted by the USDA Wildlife Services' National Wildlife Research Center has shown that no one grass management regime will deter all species of hazardous wildlife in all situations. In cooperation with wildlife damage management biologist, airport operators should develop airport turf grass management plans on a prescription basis, depending on the airport's geographic locations and the type of hazardous wildlife likely to frequent the airport

Airport operators should ensure that plant varieties attractive to hazardous wildlife are not used on the airport. Disturbed areas or areas in need of re-vegetating should not be planted with seed mixtures containing millet or any other large-seed producing grass. For airport property already planted with seed mixtures containing millet, rye grass, or other large-seed producing grasses, the FAA recommends disking, plowing, or another suitable agricultural practice to prevent plant maturation and seed head production. Plantings should follow the specific recommendations for grass management and seed and plant selection made by the State University Cooperative Extension Service, the local office of Wildlife Services, or a qualified wildlife damage management biologist. Airport operators should also consider developing and implementing a preferred/prohibited plant species list, reviewed by a wildlife damage management biologist, which has been designed for the geographic location to reduce the attractiveness to hazardous wildlife for landscaping airport property.

c. Airports surrounded by wildlife habitat. The FAA recommends that operators of airports surrounded by woodlands, water, or wetlands refer to Section 2.4 of this AC. Operators of such airports should provide for a Wildlife Hazard Assessment (WHA) conducted by a wildlife damage management biologist. This WHA is the first step in preparing a WHMP, where required.

d. Other hazardous wildlife attractants. Other specific land uses or activities (e.g., sport or commercial fishing, shellfish harvesting, etc.), perhaps unique to certain regions of the country, have the potential to attract hazardous wildlife. Regardless of the source of the attraction, when hazardous wildlife is noted on a public-use airport, airport operators must take prompt remedial action(s) to protect aviation safety.

2-8. SYNERGISTIC EFFECTS OF SURROUNDING LAND USES. There may be circumstances where two (or more) different land uses that would not, by themselves, be considered hazardous wildlife attractants or that are located outside of the separations identified in Sections 1-2 through 1-4 that are in such an alignment with the airport as to create a wildlife corridor directly through the airport and/or surrounding airspace. An example of this situation may involve a lake located outside of the separation criteria on the east side of an airport and a large hayfield on the west side of an airport, land uses that together could create a flyway for Canada geese directly across the airspace of the airport. There are numerous examples of such situations;

therefore, airport operators and the wildlife damage management biologist must consider the entire surrounding landscape and community when developing the WHMP.

SECTION 3.

PROCEDURES FOR WILDLIFE HAZARD MANAGEMENT BY OPERATORS OF PUBLIC-USE AIRPORTS.

3.1. INTRODUCTION. In recognition of the increased risk of serious aircraft damage or the loss of human life that can result from a wildlife strike, the FAA may require the development of a Wildlife Hazard Management Plan (WHMP) when specific triggering events occur on or near the airport. Part 139.337 discusses the specific events that trigger a Wildlife Hazard Assessment (WHA) and the specific issues that a WHMP must address for FAA approval and inclusion in an Airport Certification Manual.

3.2. COORDINATION WITH USDA WILDLIFE SERVICES OR OTHER QUALIFIED WILDLIFE DAMAGE MANAGEMENT BIOLOGISTS. The FAA will use the Wildlife Hazard Assessment (WHA) conducted in accordance with Part 139 to determine if the airport needs a WHMP. Therefore, persons having the education, training, and expertise necessary to assess wildlife hazards must conduct the WHA. The airport operator may look to Wildlife Services or to qualified private consultants to conduct the WHA. When the services of a wildlife damage management biologist are required, the FAA recommends that land-use developers or airport operators contact a consultant specializing in wildlife damage management or the appropriate state director of Wildlife Services.

NOTE: Telephone numbers for the respective USDA Wildlife Services state offices can be obtained by contacting USDA Wildlife Services Operational Support Staff, 4700 River Road, Unit 87, Riverdale, MD, 20737-1234, Telephone (301) 734-7921, Fax (301) 734-5157 *(http://www.aphis.usda.gov/ws/)*.

3-3. WILDLIFE HAZARD MANAGEMENT AT AIRPORTS: A MANUAL FOR AIRPORT PERSONNEL. This manual, prepared by FAA and USDA Wildlife Services staff, contains a compilation of information to assist airport personnel in the development, implementation, and evaluation of WHMPs at airports. The manual includes specific information on the nature of wildlife strikes, legal authority, regulations, wildlife management techniques, WHAs, WHMPs, and sources of help and information. The manual is available in three languages: English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: http://wildlife-mitigation.tc.FAA.gov/. This manual only provides a starting point for addressing wildlife hazard issues at airports. Hazardous wildlife management is a complex discipline and conditions vary widely across the United States. Therefore, qualified wildlife damage management biologists must direct the development of a WHMP and the implementation of management actions by airport personnel.

There are many other resources complementary to this manual for use in developing and implementing WHMPs. Several are listed in the manual's bibliography.

3-4. WILDLIFE HAZARD ASSESSMENTS, TITLE 14, CODE OF FEDERAL REGULATIONS, PART 139. Part 139.337(b) requires airport operators to conduct a Wildlife Hazard Assessment (WHA) when certain events occur on or near the airport.

Part 139.337 (c) provides specific guidance as to what facts must be addressed in a WHA.

3-5. WILDLIFE HAZARD MANAGEMENT PLAN (WHMP). The FAA will consider the results of the WHA, along with the aeronautical activity at the airport and the views of the airport operator and airport users, in determining whether a formal WHMP is needed, in accordance with Part 139.337. If the FAA determines that a WHMP is needed, the airport operator must formulate and implement a WHMP, using the WHA as the basis for the plan.

The goal of an airport's Wildlife Hazard Management Plan is to minimize the risk to aviation safety, airport structures or equipment, or human health posed by populations of hazardous wildlife on and around the airport.

The WHMP must identify hazardous wildlife attractants on or near the airport and the appropriate wildlife damage management techniques to minimize the wildlife hazard. It must also prioritize the management measures.

3-6. LOCAL COORDINATION. The establishment of a Wildlife Hazards Working Group (WHWG) will facilitate the communication, cooperation, and coordination of the airport and its surrounding community necessary to ensure the effectiveness of the WHMP. The cooperation of the airport community is also necessary when new projects are considered. Whether on or off the airport, the input from all involved parties must be considered when a potentially hazardous wildlife attractant is being proposed. Airport operators should also incorporate public education activities with the local coordination efforts because some activities in the vicinity of your airport, while harmless under normal leisure conditions, can attract wildlife and present a danger to aircraft. For example, if public trails are planned near wetlands or in parks adjoining airport property, the public should know that feeding birds and other wildlife in the area may pose a risk to aircraft.

Airport operators should work with local and regional planning and zoning boards so as to be aware of proposed land-use changes, or modification of existing land uses, that could create hazardous wildlife attractants within the separations identified in Sections 1-2 through 1-4. Pay particular attention to proposed land uses involving creation or expansion of waste water treatment facilities, development of wetland mitigation sites, or development or expansion of dredge spoil containment areas. At the very least, airport operators must ensure they are on the notification list of the local planning board or equivalent review entity for all communities located within 5 miles of the airport, so they will receive notification of any proposed project and have the opportunity to review it for attractiveness to hazardous wildlife.

3-7 COORDINATION/NOTIFICATION OF AIRMEN OF WILDLIFE HAZARDS. If an existing land-use practice creates a wildlife hazard and the land-use practice or wildlife hazard cannot be immediately eliminated, airport operators must issue a Notice to Airmen (NOTAM) and encourage the land–owner or manager to take steps to control the wildlife hazard and minimize further attraction.

SECTION 4.

FAA NOTIFICATION AND REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS

4-1. FAA REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS.

a. The FAA discourages the development of waste disposal and other facilities, discussed in Section 2, located within the 5,000/10,000-foot criteria specified in Sections 1-2 through 1-4.

b. For projects that are located outside the 5,000/10,000-foot criteria but within 5 statute miles of the airport's AOA, the FAA may review development plans, proposed land-use changes, operational changes, or wetland mitigation plans to determine if such changes present potential wildlife hazards to aircraft operations. The FAA considers sensitive airport areas as those that lie under or next to approach or departure airspace. This brief examination should indicate if further investigation is warranted.

c. Where a wildlife damage management biologist has conducted a further study to evaluate a site's compatibility with airport operations, the FAA may use the study results to make a determination.

4-2. WASTE MANAGEMENT FACILITIES.

a. Notification of new/expanded project proposal. Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181) limits the construction or establishment of new MSWLF within 6 statute miles of certain public-use airports, when both the airport and the landfill meet very specific conditions. See Section 2-2 of this AC and AC 150/5200-34 for a more detailed discussion of these restrictions.

The Environmental Protection Agency (EPA) requires any MSWLF operator proposing a new or expanded waste disposal operation within 5 statute miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal (40 CFR 258, *Criteria for Municipal Solid Waste Landfills*, Section 258.10, *Airport Safety*). The EPA also requires owners or operators of new MSWLF units, or lateral expansions of existing MSWLF units, that are located within 10,000 feet of any airport runway end used by turbojet aircraft, or within 5,000 feet of any airport runway end used only by piston-type aircraft, to demonstrate successfully that such units are not hazards to aircraft. (See 4-2.b below.)

When new or expanded MSWLF are being proposed near airports, MSWLF operators must notify the airport operator and the FAA of the proposal as early as possible pursuant to 40 CFR 258.

b. Waste handling facilities within separations identified in Sections 1-2 through 1-4. To claim successfully that a waste-handling facility sited within the separations identified in Sections 1-2 through 1-4 does not attract hazardous wildlife and does not threaten aviation, the developer must establish convincingly that the facility will not handle putrescible material other than that as outlined in 2-2.d. The FAA strongly recommends against any facility other than that as outlined in 2-2.d (enclosed transfer stations). The FAA will use this information to determine if the facility will be a hazard to aviation.

c. Putrescible-Waste Facilities. In their effort to satisfy the EPA requirement, some putrescible-waste facility proponents may offer to undertake experimental measures to demonstrate that their proposed facility will not be a hazard to aircraft. To date, no such facility has been able to demonstrate an ability to reduce and sustain hazardous wildlife to levels that existed before the putrescible-waste landfill began operating. For this reason, demonstrations of experimental wildlife control measures may not be conducted within the separation identified in Sections 1-2 through 1-4.

4-3. OTHER LAND-USE PRACTICE CHANGES. As a matter of policy, the FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 statute miles of their airports to promptly notify the FAA. The FAA also encourages proponents of such land use changes to notify the FAA as early in the planning process as possible. Advanced notice affords the FAA an opportunity (1) to evaluate the effect of a particular land-use change on aviation safety and (2) to support efforts by the airport sponsor to restrict the use of land next to or near the airport to uses that are compatible with the airport.

The airport operator, project proponent, or land-use operator may use FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, or other suitable documents similar to FAA Form 7460-1 to notify the appropriate FAA Regional Airports Division Office. Project proponents can contact the appropriate FAA Regional Airports Division Office for assistance with the notification process.

It is helpful if the notification includes a 15-minute quadrangle map of the area identifying the location of the proposed activity. The land-use operator or project proponent should also forward specific details of the proposed land-use change or operational change or expansion. In the case of solid waste landfills, the information should include the type of waste to be handled, how the waste will be processed, and final disposal methods.

a. Airports that have received Federal grant-in-aid assistance. Airports that have received Federal grant-in-aid assistance are required by their grant assurances to take appropriate actions to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. The FAA recommends that airport operators to the extent practicable oppose off-airport land-use changes or practices within the separations identified in Sections 1-2 through 1-4 that may attract hazardous wildlife. Failure to do so may lead to noncompliance with applicable grant assurances. The FAA will not approve the placement of airport

development projects pertaining to aircraft movement in the vicinity of hazardous wildlife attractants without appropriate mitigating measures. Increasing the intensity of wildlife control efforts is not a substitute for eliminating or reducing a proposed wildlife hazard. Airport operators should identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for new airport development projects.

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APPENDIX 1. DEFINITIONS OF TERMS USED IN THIS ADVISORY CIRCULAR.

1. **GENERAL.** This appendix provides definitions of terms used throughout this AC.

    1. **Air operations area.** Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron.

    2. **Airport operator.** The operator (private or public) or sponsor of a public-use airport.

    3. **Approach or departure airspace.** The airspace, within 5 statute miles of an airport, through which aircraft move during landing or takeoff.

    4. **Bird balls.** High-density plastic floating balls that can be used to cover ponds and prevent birds from using the sites.

    5. **Certificate holder.** The holder of an Airport Operating Certificate issued under Title 14, Code of Federal Regulations, Part 139.

    6. **Construct a new MSWLF.** To begin to excavate, grade land, or raise structures to prepare a municipal solid waste landfill as permitted by the appropriate regulatory or permitting agency.

    7. **Detention ponds.** Storm water management ponds that hold storm water for short periods of time, a few hours to a few days.

    8. **Establish a new MSWLF.** When the first load of putrescible waste is received on-site for placement in a prepared municipal solid waste landfill.

    9. **Fly ash.** The fine, sand-like residue resulting from the complete incineration of an organic fuel source. Fly ash typically results from the combustion of coal or waste used to operate a power generating plant.

    10. **General aviation aircraft.** Any civil aviation aircraft not operating under 14 CFR Part 119, Certification: Air Carriers and Commercial Operators.

    11. **Hazardous wildlife.** Species of wildlife (birds, mammals, reptiles), including feral animals and domesticated animals not under control, that are associated with aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a strike hazard

    12. **Municipal Solid Waste Landfill (MSWLF).** A publicly or privately owned discrete area of land or an excavation that receives household waste and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR § 257.2. An MSWLF may receive

other types wastes, such as commercial solid waste, non-hazardous sludge, small-quantity generator waste, and industrial solid waste, as defined under 40 CFR § 258.2. An MSWLF can consist of either a stand alone unit or several cells that receive household waste.

13. **New MSWLF.** A municipal solid waste landfill that was established or constructed after April 5, 2001.

14. **Piston-powered aircraft.** Fixed-wing aircraft powered by piston engines.

15. **Piston-use airport.** Any airport that does not sell Jet-A fuel for fixed-wing turbine-powered aircraft, and primarily serves fixed-wing, piston-powered aircraft. Incidental use of the airport by turbine-powered, fixed-wing aircraft would not affect this designation. However, such aircraft should not be based at the airport.

16. **Public agency.** A State or political subdivision of a State, a tax-supported organization, or an Indian tribe or pueblo (49 U.S.C. § 47102(19)).

17. **Public airport.** An airport used or intended to be used for public purposes that is under the control of a public agency; and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft is publicly owned (49 U.S.C. § 47102(20)).

18. **Public-use airport.** An airport used or intended to be used for public purposes, and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft may be under the control of a public agency or privately owned and used for public purposes (49 U.S.C. § 47102(21)).

19. **Putrescible waste.** Solid waste that contains organic matter capable of being decomposed by micro-organisms and of such a character and proportion as to be capable of attracting or providing food for birds (40 CFR §257.3-8).

20. **Putrescible-waste disposal operation.** Landfills, garbage dumps, underwater waste discharges, or similar facilities where activities include processing, burying, storing, or otherwise disposing of putrescible material, trash, and refuse.

21. **Retention ponds.** Storm water management ponds that hold water for several months.

22. **Runway protection zone (RPZ).** An area off the runway end to enhance the protection of people and property on the ground (see AC 150/5300-13). The dimensions of this zone vary with the airport design, aircraft, type of operation, and visibility minimum.

23. **Scheduled air carrier operation.** Any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial

operator for which the air carrier, commercial operator, or their representative offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation under 14 CFR Part 119 or as a public charter operation under 14 CFR Part 380 (14 CFR § 119.3).

24. **Sewage sludge.** Any solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (40 CFR 257.2)

25. **Sludge.** Any solid, semi-solid, or liquid waste generated form a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. (40 CFR 257.2)

26. **Solid waste.** Any garbage, refuse, sludge, from a waste treatment plant, water supply treatment plant or air pollution control facility and other discarded material, including, solid liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by product material as defined by the Atomic Energy Act of 1954, as amended, (68 Stat. 923). (40 CFR 257.2)

27. **Turbine-powered aircraft.** Aircraft powered by turbine engines including turbojets and turboprops but excluding turbo-shaft rotary-wing aircraft.

28. **Turbine-use airport.** Any airport that sells Jet-A fuel for fixed-wing turbine-powered aircraft.

29. **Wastewater treatment facility.** Any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes, including Publicly Owned Treatment Works (POTW), as defined by Section 212 of the Federal Water Pollution Control Act (P.L. 92-500) as amended by the Clean Water Act of 1977 (P.L. 95-576) and the Water Quality Act of 1987 (P.L. 100-4). This definition includes any pretreatment involving the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. (See 40 CFR Section 403.3 (q), (r), & (s)).

30. Wildlife. Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring thereof (50 CFR 10.12, *Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants*). As used in this AC, wildlife includes feral animals and domestic animals out of the control of their owners (14 CFR Part 139, Certification of Airports).

31. Wildlife attractants. Any human-made structure, land-use practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace or the airport's AOA. These attractants can include architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquaculture activities, surface mining, or wetlands.

32. Wildlife hazard. A potential for a damaging aircraft collision with wildlife on or near an airport.

33. Wildlife strike. A wildlife strike is deemed to have occurred when:

a. A pilot reports striking 1 or more birds or other wildlife;

b. Aircraft maintenance personnel identify aircraft damage as having been caused by a wildlife strike;

c. Personnel on the ground report seeing an aircraft strike 1 or more birds or other wildlife;

d. Bird or other wildlife remains, whether in whole or in part, are found within 200 feet of a runway centerline, unless another reason for the animal's death is identified;

e. The animal's presence on the airport had a significant negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, aircraft left pavement area to avoid collision with animal) (Transport Canada, Airports Group, *Wildlife Control Procedures Manual*, Technical Publication 11500E, 1994).

2. RESERVED.