Alternatives Development and Evaluation Report

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Prepared for:
Illinois Department of Transportation

June 29, 2012

Table of Contents

Section 1 – Introduction

The South Suburban Airport (SSA) is a new "Greenfield" airport in Will County, Illinois proposed by the Illinois Department of Transportation - Division of Aeronautics (IDOT). The eastern Will County site was approved as a feasible location for the proposed airport by the Federal Aviation Administration (FAA) in their Record of Decision (ROD) in the Tier I Environmental Impact Statement (Tier 1 EIS) for SSA, issued July 2002.

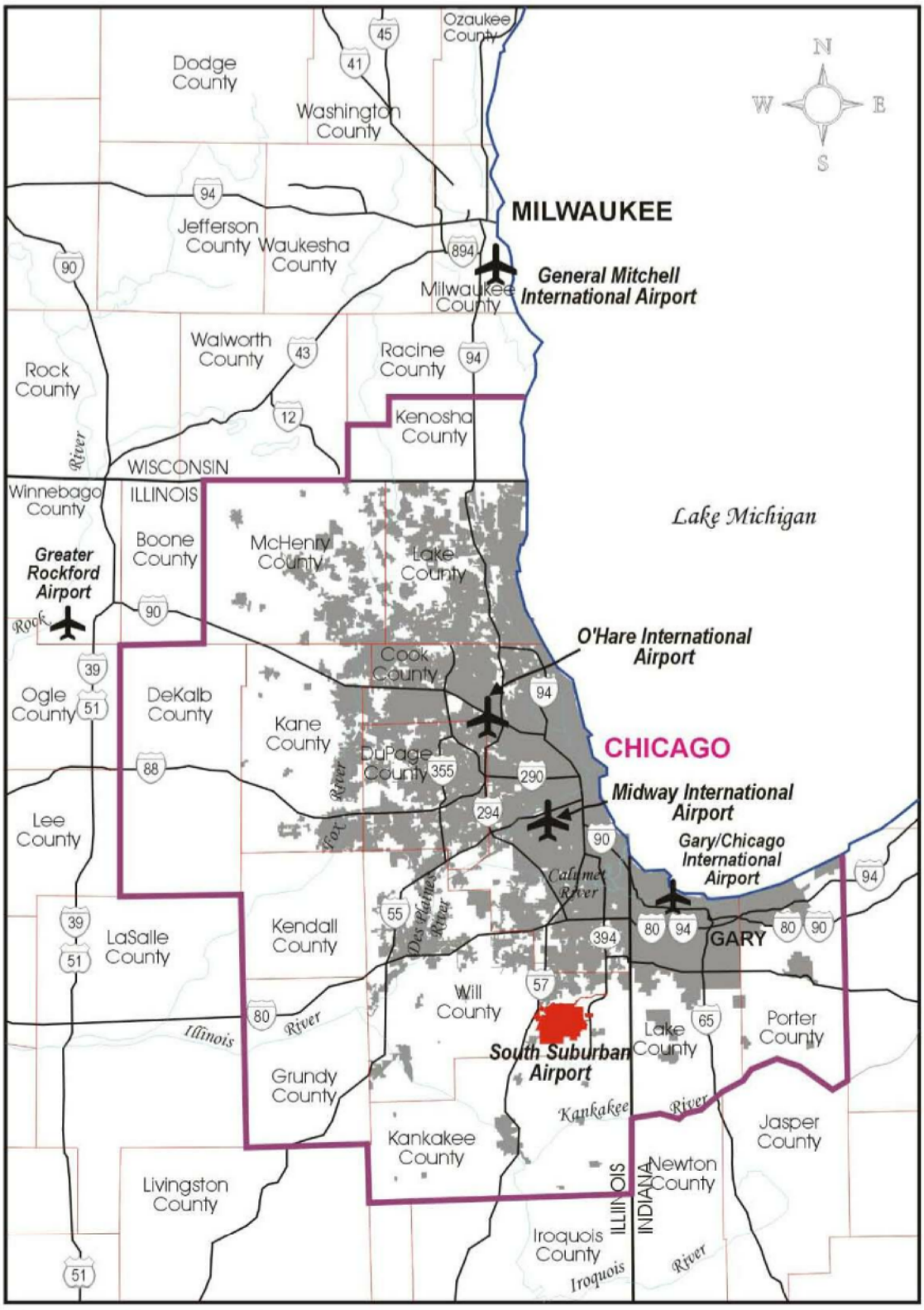
The SSA site is mostly located in unincorporated Will County, within the greater Chicago region, which includes the northeast Illinois/northwest Indiana metropolitan area. Specifically, the greater Chicago region includes seven counties located in northeastern Illinois, which are Cook, DuPage, Kane, Kankakee, Lake, McHenry and Will counties; and two counties located in northwestern Indiana, which are Lake and Porter counties. According to the U.S. Census Bureau, the greater Chicago region is the third largest metropolitan area in the United States and approximately 8.8 million people resided in the nine county project areas in 2000.

The land acquisition area for the SSA Ultimate Airport Boundary comprises approximately 20,000 acres in unincorporated eastern Will County, Illinois (see **Exhibit 1-1: South Suburban Airport Site Location).** The initial phase, referred hereafter as the Inaugural Airport Program (IAP), is located within the land acquisition area of the Ultimate Airport Boundary. The Village of Peotone lies to the southwest of the site, Monee to the northwest, University Park to the north, Crete to the northeast and Beecher to the southeast. The center of the site is approximately 35 miles south-southwest of the Chicago Central Business District (CCBD), 42 miles south-southeast of Chicago O'Hare International Airport and 29 miles south of Chicago Midway International Airport.

The site is located east of Interstate 57 and Illinois Route 50 and west of Illinois Routes 1 and 394. The site is located in unincorporated Will County, mostly in the Townships of Will and Monee, with smaller portions located in Crete and Washington townships. The majority of the development associated with the IAP will occur within Will Township, with some related development in Monee and Washington townships.

The established IAP boundary is refined as appropriate when new data and guidance becomes available throughout the course of the Master Plan. The previously established IAP Boundary is depicted in the *Facility Requirements Report*; Exhibit 1-3: IAP and Ultimate Airport Boundaries. Based on the Preliminary Access Justification Report (AJR), which incorporates input from IDOT - Division of Highways and the Federal Highway Administration (FHWA), the established IAP boundary has been revised. Additionally, a consistency review of the IAP boundary was completed to ensure continuity among the various facets of the SSA program. The IAP boundary has been adjusted to reconcile the results of that effort. All above modifications to the IAP boundary fall within the Ultimate Airport Boundary as identified in the Tier 1 EIS, the ROD and subsequent Master Plan reports. The resulting established IAP and ultimate airport boundaries used in the analysis of this report are depicted in **Exhibit 1-2: IAP and Ultimate Boundaries**.

The purpose of this report is to document the development and the evaluation of several alternatives and the process used to select a preferred airfield alternative. The timeline for the IAP starts at Date of Beneficial Occupancy (DBO) and continues through the fifth year of operation (DBO+5). While the SSA Master Plan will focus on the IAP, it will also identify potential airport facilities beyond the IAP for Intermediate and Ultimate phases.



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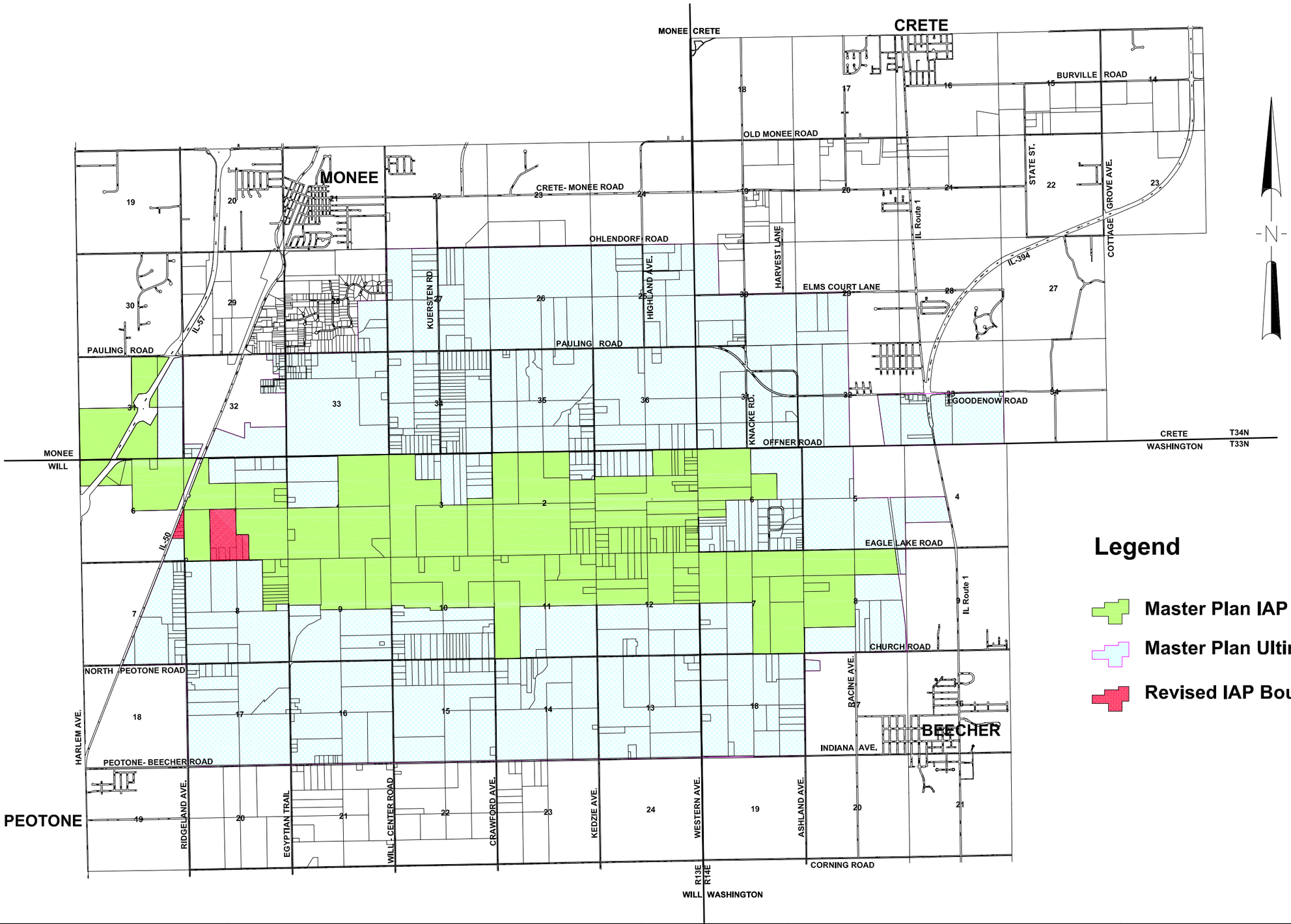
SSA SouthSuburbanAirport

SOUTH SUBURBAN AIRPORT SITE LOCATION

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 1-1



Legend

- Master Plan IAP Boundary
- Master Plan Ultimate Boundary
- Revised IAP Boundary Area

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SSA SouthSuburbanAirport

IAP AND ULTIMATE BOUNDARIES

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 1-2

Section 2 - Principal Benefits

The South Suburban Airport will:

- Satisfy the need to provide supplemental air transportation facilities to meet the existing and anticipated demands for air carrier, air cargo and general and corporate aviation use within the south suburban area of the greater Chicago region.
- Preserve the option of developing a future air carrier airport to serve the greater Chicago region as determined necessary and appropriate to meet future aviation capacity needs in the region.
- Provide market access for air carriers, increasing the opportunity for growth in one of the most rapidly developing areas in the country. The primary service area within 45 minutes of the airport is anticipated to include 2.3 million people by 2030.
- Provide air cargo handling facilities that would serve the freight forwarders, businesses, industrial and warehousing facilities presently located in the south and southwest suburbs of Chicago.
- Expand and improve existing General Aviation (GA) and corporate air services and provide access to portions of central and eastern Will County.

Section 3 - Background

3.1: Overview of Site Selection

The FAA decided to use a tiered approach to the environmental documentation of SSA as proposed by the State of Illinois. The Tier 1 EIS reviewed the alternative analyses contained in the following studies: the *Chicago Area Capacity Study,* the *Illinois Indiana Regional Airport Study*, the *Phased Development of a Greenfield Airport*, the *Joliet Arsenal Feasibility Study*, the *Phase 1 Engineering Study* and evaluated six alternative sites identified by IDOT and a No-Build option to determine which alternatives were considered feasible, prudent and reasonable. The Tier 1 EIS analysis focused on operational and environmental considerations. As a result of this analysis, the No-Build, Kankakee and Will County sites were chosen for more detailed environmental evaluation. The Will County site was selected as the preferred site in the Tier 1 ROD and Kankakee site was eliminated from further consideration. The FAA's Tier 2-Environmental Impact Statement (Tier 2 EIS) will focus on the environmental impact of the proposed SSA Master Plan alternatives for the preferred Will County site.

3.2: Existing Conditions

The purpose of this document is to describe the existing conditions of the proposed SSA site, as of May, 2010, that are affected or created by the IAP. Traditionally a portion of the chapter is devoted to identifying and documenting the physical facilities at the airport being studied. The SSA Master Plan, however, is being developed to define the needs of a facility that has not yet been constructed and is not currently in operation. Therefore, the data collected and presented focused on developing an understanding of the service area to ensure an accurate assessment of the air transportation needs. The *Existing Conditions Report, August 31, 2011,* presents a description of the existing airspace management system, the weather factors that affect flight, air carrier and GA facilities, the regional setting of the airport site, an environmental overview, (noise, air quality, water quality, floodplains, wetlands, endangered and threatened species of flora and fauna, biotic communities, park and recreation lands, cultural resources and farmlands), the regional socio-economic data and the SSA Land Acquisition Program. The greater Chicago region is the third largest metropolitan area in the United States and is highly diverse, with land uses ranging from farmland to heavy industry, major commercial centers and residential areas. Will County has realized a population increase of 25% thereby making it one of the largest numerical increases posted amongst the state's 102 counties.[1] The Chicago Metropolitan Area Agency for Planning (CMAP) projects that Will County's population will exceed 1.2+ million by the year 2040.[2]

3.3: Aviation Forecasts

In 2004, IDOT developed an initial forecast of aeronautical activity for SSA. The *Projections of Aeronautical Activity for the Inaugural Airport Program, May 11, 2004* was approved by FAA on June 4, 2004. The forecasts addressed three separate facets of aeronautical activity including: air passenger, air cargo and GA/corporate aviation. In spring 2008, FAA requested IDOT conduct a validation of the prospective airport's feasibility due to changing conditions in the economy at that time. The updated forecasts of aeronautical activity confirmed population and employment trends and were presented in the *Forecast 2009: Verification of 2004 Forecasts, May 14, 2010*, approved by FAA March 23, 2011.

3.4: Facility Requirements

IDOT used the *Forecast 2009: Verification of 2004 Forecasts, May 14, 2010,* approved by FAA March 23, 2011 to prepare the *Facility Requirements Report, October 25, 2011.* The IAP facility requirements include: a 9,500 ft. by 150 ft. Commercial Runway including a full parallel taxiway at a 09-27 orientation, Air Traffic Control Tower (ATCT), Instrument Landing System (ILS) - CAT I on Runway End 27L, Passenger Terminal with Narrowbody and Regional Jet Gates, Air Cargo Aircraft Positions and Area, General Aviation/Corporate Aviation Area, Navigational and Visual Aids, Ancillary/Support Facilities (Fuel Storage, Snow Removal Equipment Complex (SRE), Airport Rescue and Fire Fighting (ARFF)) and I-57 Interchange with a dedicated airport access road. The IAP forecast activity was extrapolated to derive a projection of SSA activity for the purpose of developing facility requirements for the

[1] Illinois Census, 2012.

[2] Chicago Metropolitan Agency for Planning, 2012.

Intermediate and Ultimate planning horizons. This approach allows for flexible airport planning and improvements to occur as needed in the future. Airfield development items identified in the *Facility Requirements Report, October 25, 2011,* were approved by FAA on November 10, 2011 and utilized as the foundation of the development and analysis of SSA alternatives.

Section 4 - Alternatives Development/Identification

4.1: Introduction

This section starts with a review of public involvement actions that have taken place in defining alternative airfield development. This section continues with an overview of previous alternative analyses that have been conducted including: *South Suburban Airport Phase I Engineering Report, 1998*; the FAA's Tier 1 EIS-ROD issued July 2002, *Concept Alternatives Analysis dated September 21, 2005*; IDOT and Abraham Lincoln National Airport Commission (ALNAC) plans dated December 19, 2006; and the development of *IDOT's Preferred Inaugural Airport Configuration, March 7, 2008*. This section concludes with a discussion on unique planning considerations and the description of final alternative airport plans.

4.2: Public Involvement Discussion

FAA Advisory Circular AC 150/5070-6B, *Airport Master Plans*, *Chapter 4 Public Involvement Program*, provides general and specific guidance for the development of a public involvement program in support of the airport master planning process. Tools and techniques an airport sponsor might use in the public involvement process includes: advisory committees, public information meetings, small group meetings and briefings and public awareness campaigns. IDOT employed all of these in the feasibility, site selection and alternatives development phases of SSA planning.

The FAA Tier 1 EIS documents the project's public involvement processes through the approval of the Will County site for a potential future supplemental air carrier airport to serve the greater Chicago region. With the completion of the Tier 1 EIS and commencement of land acquisition, IDOT developed a project website to provide the public with easier access to project information and documents related to the SSA Master Plan, environmental and land acquisition activities.

The SSA Master Plan process included refinement and further study of alternatives as approved in the FAA Tier 1 EIS. IDOT conducted meetings with local officials and the public in late 2002 and the FAA solicited public input through the SSA Tier 2 EIS scoping process. The results of the 2003 scoping process are available in the environmental section of the project website. In 2004, IDOT conducted a series of public advisory meetings that concluded with a planning workshop, at Governors State University and utilized anonymous electronic polling to collect survey data regarding identified issues for the SSA Master Plan.

During late 2004 through 2006, IDOT worked with the FAA, United States Army Corps of Engineers, United States Environmental Protection Agency, Illinois Department of Natural Resources and the Illinois Environmental Protection Agency to develop an alternative IAP layout to minimize environmental impacts, especially, impacts to Black Walnut Creek. Through this period, meetings were conducted with local stakeholders including local village presidents and administrators, county officials, state and Federal legislators and business leaders.

In December 2006, IDOT presented two revised airfield concepts to the general public for discussion and input at a public information workshop at Beecher High School. The first was the IDOT IAP and the second was the ALNAC IAP. Both plans incorporated airfield changes that would diminish the impacts to Black Walnut Creek and address the environmental concerns raised by the Federal agencies. These plans also reflected the airfield improvements undertaken at Bult Field (C56) since the release of the Preferred IAP Concept in 2005.

The purpose of the public workshop was to inform the public about the SSA planning process and to receive comments regarding alternative airport plans developed by IDOT and ALNAC. This large-scale public meeting included presentations by government officials. Comments were submitted verbally and in writing by the public.

Through 2007 and early 2008, IDOT continued to develop and analyze IAP layouts. Meetings with local, state and Federal officials continued up through submittal to the FAA of IDOT's draft *Selection of IDOT Preferred Inaugural Airport Configuration, dated March 7, 2008*. In June 2010, IDOT updated the SSA website to make it more accessible and intuitive to the public. Briefings on the SSA Master Plan to Federal, state and local agencies and the

general public, are ongoing and will be conducted as necessary to keep stakeholders apprised of project updates and activities.

4.3: Previous Alternative Identification

4.3.1 - FAA Tier I EIS - April 2002

At the request of the State of Illinois, the FAA prepared the first tier of a tiered EIS to assess impacts relative to FAA site approval and the associated land acquisition by the State for a potential future supplemental air carrier airport to serve the greater Chicago region. The Tier 1 EIS ROD, issued July 2002, considered the site-specific planning, construction, funding and operation of a new supplemental air carrier airport.

The ROD provided final agency determinations and approvals for Federal actions by the FAA related to the selection of the Will County site and the elimination of Kankakee as the site for SSA. These actions were necessary to preserve the option of developing an air carrier airport to serve the greater Chicago region as determined necessary and appropriate to meet future aviation capacity needs in the region. Site approval has allowed the State to acquire and preserve land for airport purposes consistent with FAA environmental policy. FAA's site approval was based upon the continuing need to protect the airspace and preserve a technically and environmentally feasible site from encroachment from suburban development and provide for continued protection of the airspace. The airport site, known in the Tier I EIS as the Will County site, is located approximately 35 miles south of the CCBD.

4.3.2 - Draft Concept Alternatives Analysis for the IAP, September 21, 2005

The process utilized by IDOT for the identification, evaluation and selection of alternatives is the process described in Section 902 of FAA AC 150/5070-6B, *Airport Master Plans*. The concept alternatives for the IAP studied in the *Draft Concept Alternatives Analysis for the IAP, September 21, 2005* were developed based on input from various stakeholders. Based on the FAA approved *Projections of Aeronautical Activity for the Inaugural Airport Program, May 11, 2004*, concept alternatives were developed for each of the major airport elements, including, runways, passenger terminal, airport access, airport support and ancillary facilities. Specific criteria were developed to evaluate and rate each of these facilities. A level of priority was given to each airport facility with the highest primacy given to the commercial runway facility followed by the GA runway, landside access and passenger terminal. Air cargo, GA facilities and airport support facilities were added to the previously selected airfield concepts to create the preferred IAP concept. The *Draft Concept Alternatives Analysis for the IAP, September 21, 2005* report included the best rated alternative for each of these facilities. A sensitivity analysis was then conducted to determine whether the preferred concept is truly the best overall IAP concept when compared to other logical concepts.[3]

4.3.3 - Selection of IDOT Preferred IAP Configuration - Preliminary Draft dated March 7, 2008

The *Concept Alternatives Analysis* for the IAP was submitted to the FAA for review on September 21, 2005. Subsequently, IDOT revised the concepts in the report to address the concerns raised by Federal agencies regarding the magnitude of the environmental impacts incurred by the preferred concept to Black Walnut Creek. In December 2006, IDOT presented two revised airfield concepts to the general public for discussion and input. Both plans incorporated airfield changes that would diminish potential impacts to Black Walnut Creek and address environmental concerns raised by the Federal agencies. The revised plans also reflected airfield improvements undertaken and completed at C56 at the time of the release of the *Draft Concept Alternatives Analysis for the IAP, September 21, 2005*. In early 2007, both revised airfield concepts were submitted to FAA for review. FAA declined to review the two concepts and returned the plans to IDOT for further consideration and refinement and recommended that only one preferred plan be resubmitted. In light of this guidance IDOT re-examined all alternatives with a goal of optimizing the airfield configuration.

[3] *Concept Alternatives Analysis for the Inaugural Airport Program South Suburban Airport*, September 21, 2005, prepared by AECOM, formerly TAMS, an Earth Tech Company, for the Illinois Department of Transportation.

In January 2008, IDOT undertook the evaluation of additional concept alternatives for the IAP. Initially, five alternative runway centerline locations were identified. Subsequently, based upon input from the FAA Great Lakes Airport District Office, an additional potential runway location was identified using the C56 runway centerline as the commercial runway centerline. Upon conclusion of this runway centerline analysis, an IDOT preferred alternative was identified and became the basis for the preparation of a preliminary airport layout plan.[4]

4.4: Final Alternatives Identification

Alternatives were developed in accordance with the previously approved SSA Master Plan chapters: *Forecasts 2009: Verification of 2004 Forecasts, May 14, 2010*, approved by FAA March 23, 2011 and the *Facility Requirements Report, October 25, 2011*, approved by FAA on November 10, 2011. The IAP facility requirements include the following components that are consistent among all of the alternatives: a 9,500 ft. by 150 ft. Commercial Runway including a full parallel taxiway at a 09-27 orientation, ATCT, ILS - CAT I on Runway End 27L, Passenger Terminal with Narrowbody and Regional Jet Gates, Air Cargo Aircraft Positions and Area, General Aviation/Corporate Aviation Area, Navigational and Visual Aids, Ancillary/Support Facilities SRE, ARFF and I-57 Interchange with a dedicated airport access road. Alternative airport plans developed for each centerline are analyzed below and depicted in **Exhibit 4-1: Six Alternative Commercial Runway Centerlines.**

4.4.1 - Alternative 1 - The runway alignment that resulted from the *Draft Concept Alternatives Analysis for the IAP, September 21, 2005*, was retained as Alternative 1. This alternative is illustrated in **Exhibit 4-2: IAP Concept - Alternative 1**. The airfield includes a 9,500 ft. long instrument runway in a 09-27 orientation. The horizontal separation between the IAP runway and the runway at C56 is approximately 3,700 ft. Runway End 27L and Runway End 27R are staggered approximately 2,000 ft.

Major airside facilities (runway and taxiway) would be located south of Eagle Lake Road. All other support facilities (passenger terminal, cargo, ATCT and ancillary facilities) would be located north of Eagle Lake Road. The terminal complex is located to the north and approximately 2,100 ft. east of the Runway End 09R of the IAP runway within a terminal zone sized to accommodate the landside roadway loop, terminal curb-front and parking facilities along with the airside aircraft parking apron. Direct access to/from I-57 is provided via a new interchange and access road connecting I-57 to the terminal. The horizontal alignment of the access road minimizes crossings of Black Walnut Creek. Secondary access will be provided from local roads.

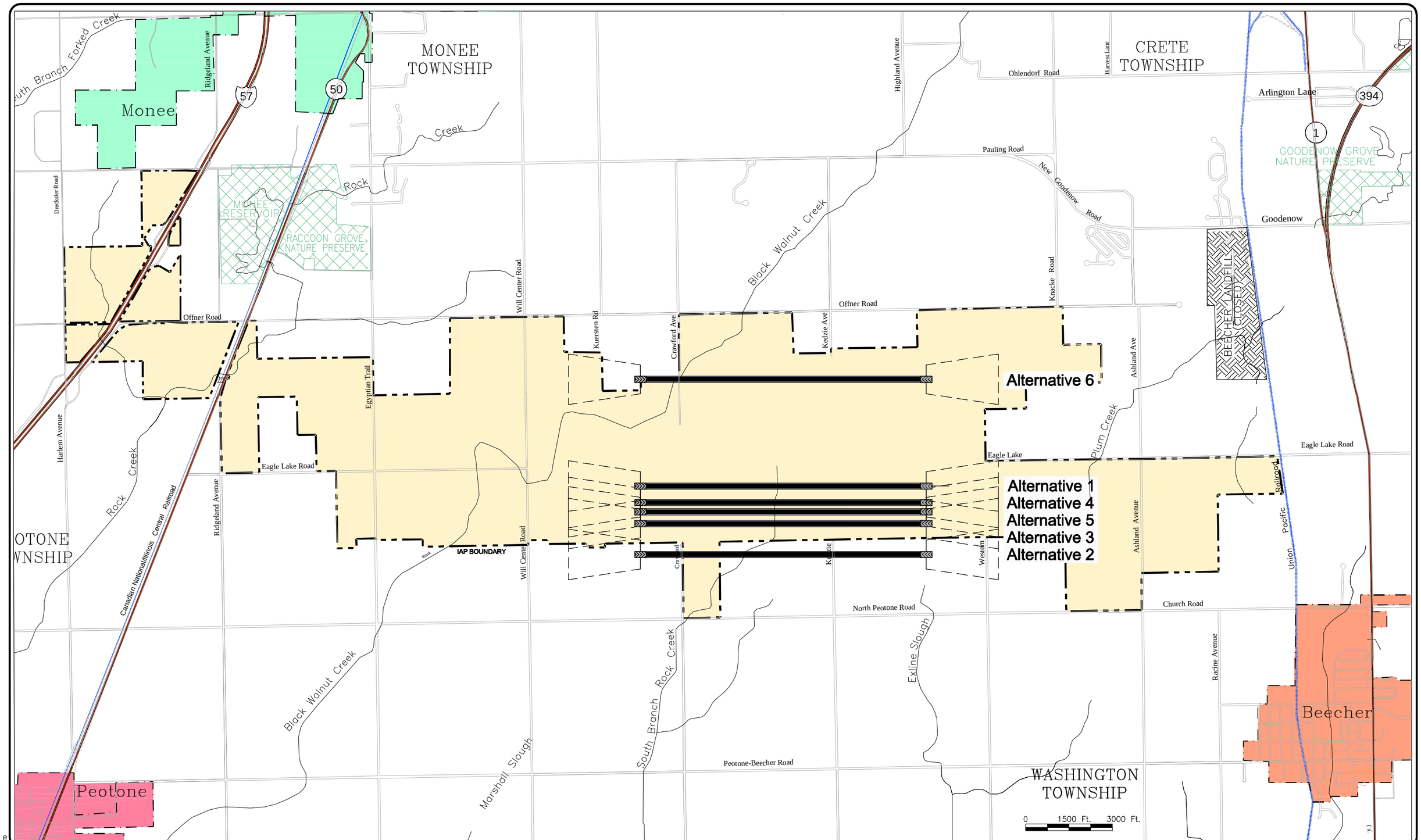
Cargo facilities are located north of the primary runway threshold with access from improved Eagle Lake Road. The existing GA/corporate runway at C56 is expected to serve the GA/corporate needs at SSA and would be connected to the primary runway by a taxiway approximately 3,700 ft. long. Access to the GA/corporate area will be provided from Offner Road via a relocated Kedzie Avenue.

The proposed facilities are located within the established IAP boundary, requiring no additional land acquisition. The land between the IAP Air Operations Area (AOA) and C56 would continue to be utilized for agricultural use until it is needed for aviation purposes. The AOA[5] is any area of an airport used or intended to be used for landing, takeoff or surface maneuvering of aircraft. An AOA 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 aprons.

4.4.2 - Alternative 2 - This alternative was introduced in 2006 after ALNAC requested a separation of 6,100 ft. from the existing C56 runway. This alternative is illustrated in **Exhibit 4-3: IAP Concept - Alternative 2**. This alternative would require additional land acquisition outside the established IAP boundary to contain airport related noise. The airfield includes a 9,500 ft. long instrument runway in a 09-27 orientation. The resulting horizontal separation between the IAP runway and the runway at C56 is approximately 6,100 ft. Runway End 27L and Runway End 27R are staggered approximately 2,000 ft.

[4] *Selection of IDOT Preferred Inaugural Airport Configuration Report*, prepared by AECOM, formerly Earth Tech, for the Illinois Department of Transportation, March 7, 2008.

[5] Federal Aviation Administration Advisory Circular 150/5200-33B, "*Hazardous Wildlife Attractants on or Near Airports*".



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SIX ALTERNATIVE COMMERCIAL RUNWAY CENTERLINES

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 4-1

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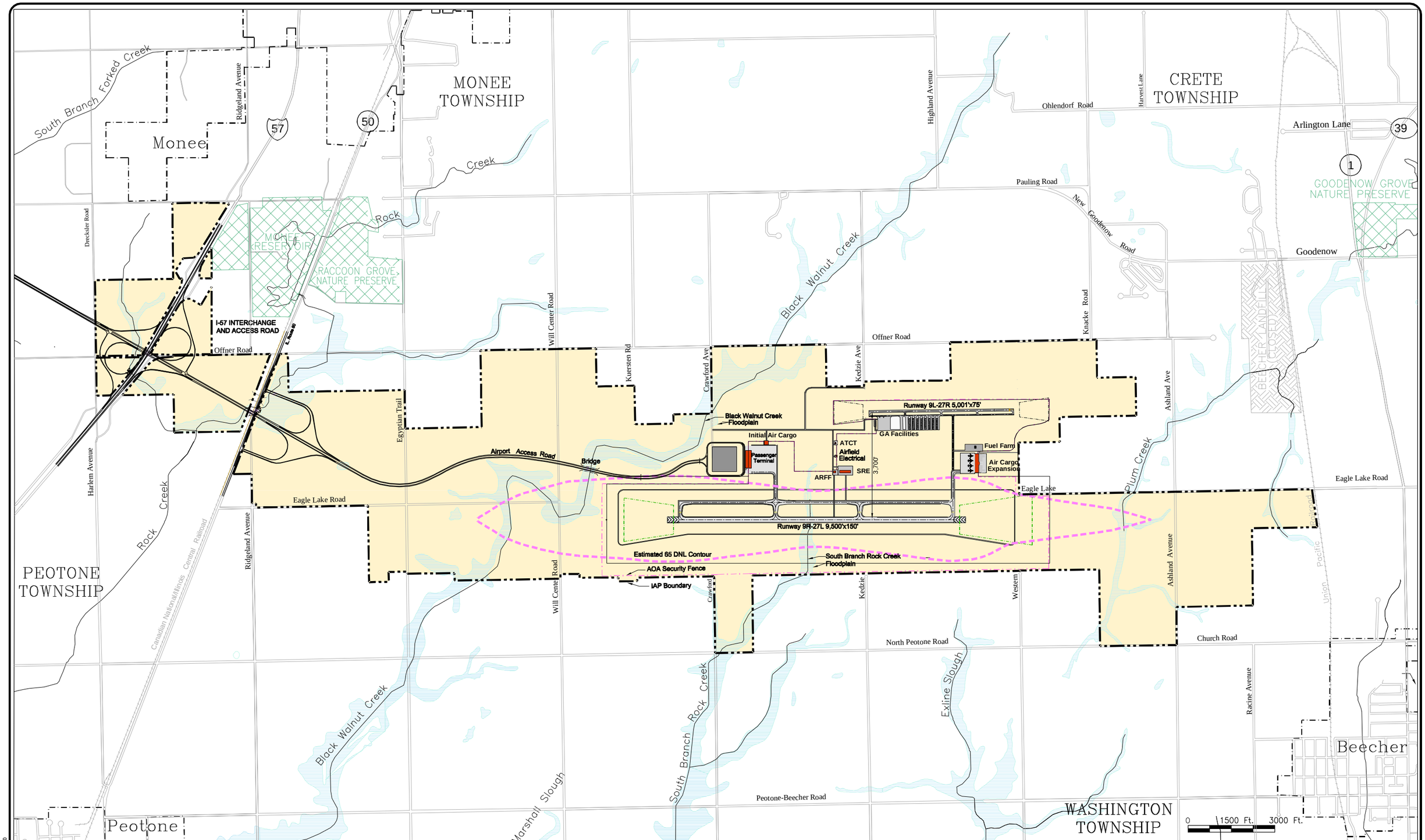

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IAP CONCEPT - ALTERNATIVE 1

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 4-2

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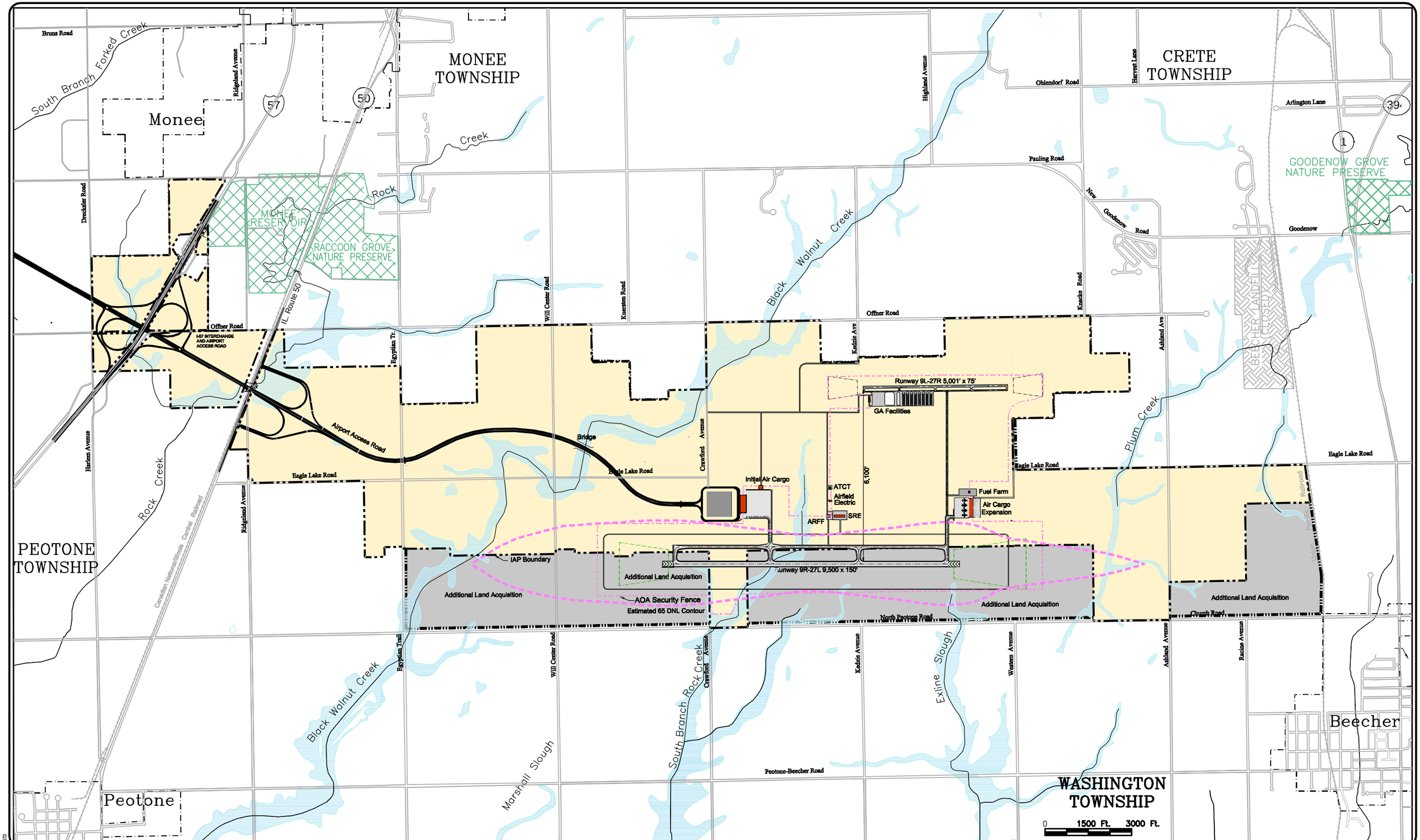

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IAP CONCEPT - ALTERNATIVE 2

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 4-3

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All aeronautical and support facilities (runway, taxiways, service roads, passenger terminal, cargo, ATCT and ancillary facilities) would be located south of Eagle Lake Road with the runway located outside the established IAP boundary. The location of airside aeronautical facilities and support facilities to the IAP runway is consistent with Alternative 1. The terminal complex is located to the north and approximately 2,100 ft. east of Runway End 9R of the IAP runway within a terminal zone sized to accommodate the landside roadway loop, terminal curb-front, parking facilities and the airside aircraft parking apron. Direct access to/from I-57 is provided via a new interchange and access road connecting I-57 to the terminal. The horizontal alignment of the access road minimizes crossings of Black Walnut Creek. Secondary access will be provided from local roads.

Cargo facilities are located off the east end of the primary runway and to the north with access from improved Western Avenue and improved Eagle Lake Road. The existing GA/corporate runway at C56 is expected to serve the GA/corporate needs at SSA and would be connected to the primary runway by a taxiway approximately 6,100 ft. long. Access to the GA/corporate area will be provided from Offner Road via a relocated Kedzie Avenue.

The proposed commercial runway is located outside the established IAP boundary. Therefore, Alternative 2 will require approximately 1,600 acres of additional land acquisition. The land between the IAP, the AOA and C56 would continue to be utilized for agricultural use until it is needed for aviation purposes.

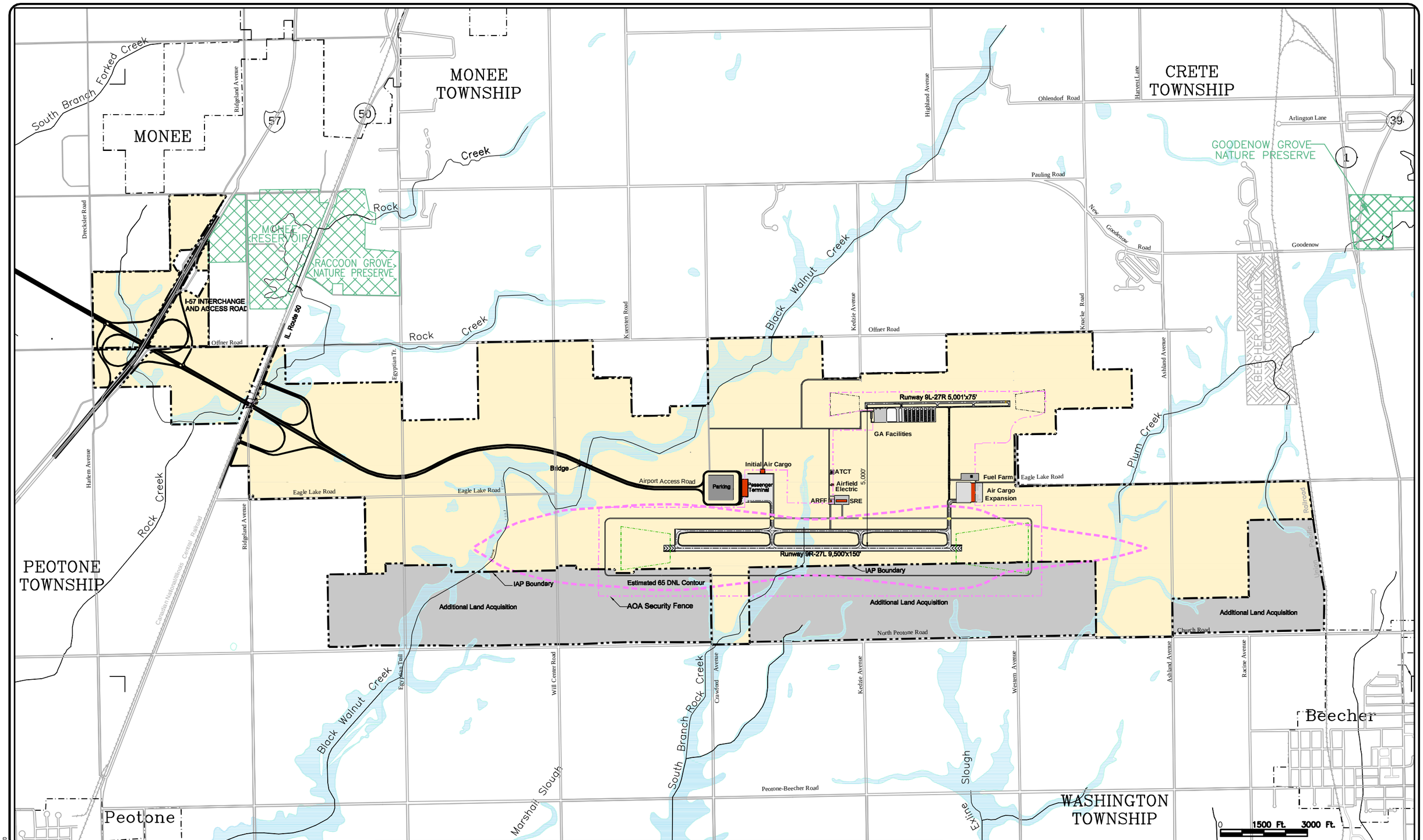
4.4.3 - Alternative 3 - This alternative was introduced in 2007 after ALNAC requested a northern shift of 1,100 ft. to their 2006 alignment. This alternative is illustrated in **Exhibit 4-4: IAP Concept - Alternative 3**. This alternative would require additional land acquisition outside the established IAP boundary to contain airport related noise. The airfield includes a 9,500 ft. long instrument runway in a 09-27 orientation. The resulting horizontal separation between the IAP runway and the runway at C56 is approximately 5,000 ft. Runway End 27L and Runway End 27R are staggered approximately 2,000 ft.

All aeronautical and support facilities (runway, taxiways, service roads, passenger terminal, cargo, air traffic control tower and ancillary facilities) would be located just north of North Peotone Road. The location of airside aeronautical facilities and support facilities to the IAP runway is consistent with Alternative 1. The terminal complex is located to the north and approximately 2,100 ft. east of Runway End 09R of the IAP runway within a terminal zone sized to accommodate the landside roadway loop, terminal curb-front, parking facilities and the airside aircraft parking apron. Direct access to/from I-57 is provided via a new interchange and access road connecting I-57 to the terminal. The horizontal alignment of the access road minimizes crossings of Black Walnut Creek. Secondary access will be provided from local roads.

Cargo facilities are located off the east end of the primary runway and to the north with access from improved Eagle Lake Road. The existing GA/corporate runway at C56 is expected to serve the GA/corporate needs at SSA and would be connected to the primary runway by a taxiway approximately 5,000 ft. long. Access to the GA/corporate area will be provided from Offner Road via a relocated Kedzie Avenue.

The proposed facilities are located within the established IAP boundary. A small portion of the 65DNL contour falls outside the IAP boundary. To ensure future compatible land use within the 65DNL, consideration may be given to future land acquisition (1,600 acres). The land between the IAP, the AOA and C56 would continue to be utilized for agricultural use until it is needed for aviation purposes.

4.4.4 - Alternative 4 - The preferred runway alignment that resulted from the *Selection of IDOT Preferred IAP Configuration, Preliminary Draft, March 7, 2008* was retained as Alternative 4. This alternative is illustrated in **Exhibit 4-5: IAP Concept - Alternative 4**. This alternative proposes to locate the IAP runway approximately 600 ft. south of the runway location proposed in Alternative 1. The airfield includes a 9,500 ft. long instrument runway in a 09-27 orientation. The resulting horizontal separation between the IAP runway and the runway at C56 is approximately 4,300 ft. The Runway End 27L and Runway End 27R are staggered approximately 2,000 ft.



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SSA SouthSuburbanAirport

IAP CONCEPT - ALTERNATIVE 3

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 4-4

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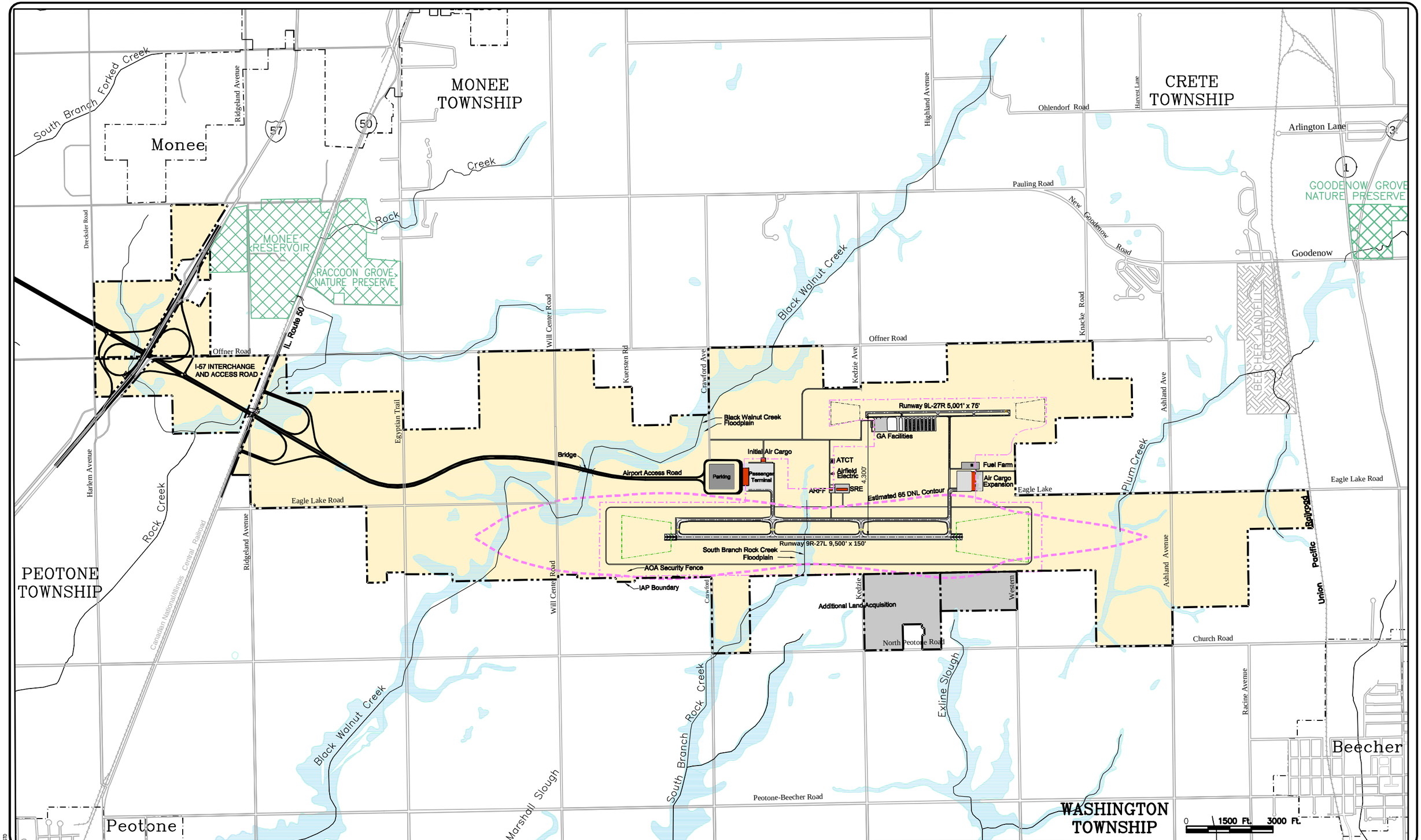

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IAP CONCEPT - ALTERNATIVE 4

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 4-5

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Major airside facilities (runway and taxiway) would be located south of Eagle Lake Road. All other support facilities (passenger terminal, cargo, ATCT and ancillary facilities) would be located north of Eagle Lake Road. The location of airside aeronautical facilities and support facilities to the IAP runway is consistent with Alternative 1.

The terminal complex is located to the north and approximately 2,100 ft. east of Runway End 09R of the IAP runway within a terminal zone sized to accommodate the landside roadway loop, terminal curb-front, parking facilities and the airside aircraft parking apron. Direct access to/from I-57 is provided via a new interchange and access road connecting I-57 to the terminal. The horizontal alignment of the access road minimizes crossings of Black Walnut Creek. Secondary access will be provided from local roads.

Cargo facilities are located off the east end of the primary runway and to the north with access from improved Eagle Lake Road. The existing GA/corporate runway at C56 is expected to serve the GA/corporate needs at SSA and would be connected to the primary runway by a taxiway approximately 4,300 ft. long. Access to the GA/corporate area will be provided from Offner Road via a relocated Kedzie Avenue.

The proposed facilities are located within the established IAP boundary. The noise/safety areas are located outside the established IAP boundary. Therefore, Alternative 4 **may** require approximately 227 acres of additional land acquisition. The land between the IAP, the AOA and C56 would continue to be utilized for agricultural use until it is needed for aviation purposes.

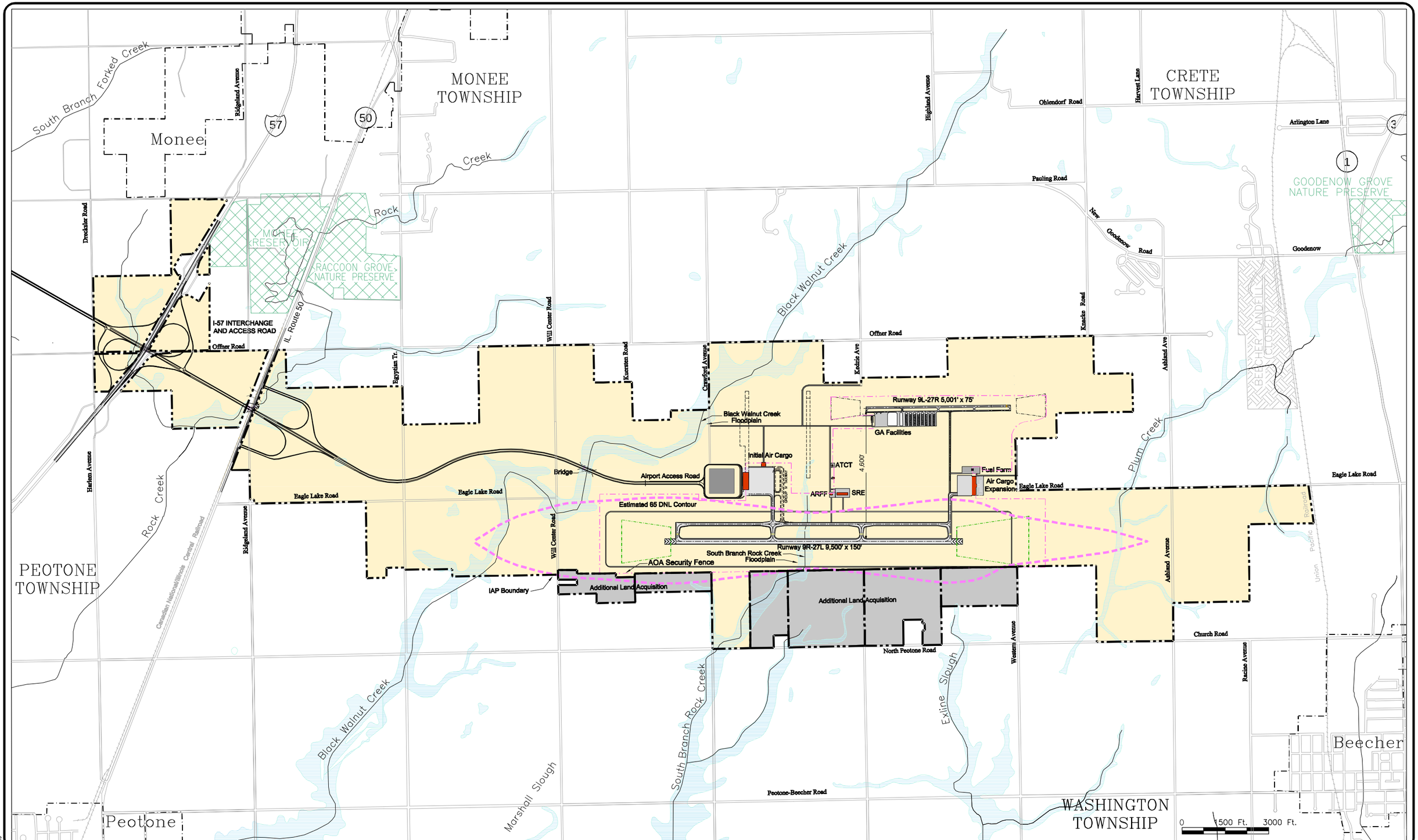
4.4.5 - Alternative 5 - This alternative was originally proposed in *Selection of IDOT Preferred IAP Configuration, Preliminary Draft dated March 7, 2008* and was retained as Alternative 5. This alternative is illustrated in **Exhibit 4-6: IAP Concept - Alternative 5**. This alternative represents the southern-most location that the IAP runway could be shifted such that all elements associated with the runway, including safety areas and NAVAID critical areas, would remain within the established IAP boundary. The airfield includes a 9,500 ft. long instrument runway in a 09-27 orientation. The resulting horizontal separation between the IAP runway and the runway at C56 is approximately 4,600 ft. Runway End 27L and Runway End 27R are staggered approximately 2,000 ft.

Major airside facilities (runway and taxiway) would be located south of Eagle Lake Road. All other support facilities (passenger terminal, cargo, ATCT and ancillary facilities) would be located along north of Eagle Lake Road. The location of airside aeronautical facilities and support facilities to the IAP runway is consistent with Alternative 1: The terminal complex is located to the north and approximately 2,100 ft. east of the Runway End 09R of the IAP runway within a terminal zone sized to accommodate the landside roadway loop, terminal curb-front, parking facilities and the airside aircraft parking apron. Direct access to/from I-57 is provided via a new interchange and access road connecting I-57 to the terminal. The horizontal alignment of the access road minimizes crossings of Black Walnut Creek. Secondary access will be provided from local roads.

Cargo facilities are located off the east end of the primary runway and to the north with access from improved Eagle Lake Road. The existing GA/corporate runway at C56 is expected to serve the GA/corporate needs at SSA and would be connected to the primary runway by a taxiway approximately 4,600 ft. long. Access to the GA/corporate area will be provided from Offner Road via a relocated Kedzie Avenue.

The proposed facilities are located within the established IAP boundary. A small portion of the 65DNL contour falls outside the IAP boundary. To ensure future compatible land use within the 65DNL, consideration may be given to future land acquisition (623 acres). The land between the IAP, the AOA and C56 would continue to be utilized for agricultural use until it is needed for aviation purposes.

4.4.6 - Alternative 6 - This alternative uses the C56 runway centerline as the commercial runway centerline and was developed as a result of input from the FAA Great Lakes Airport District Office after their review of *Selection of IDOT Preferred IAP Configuration, Preliminary Draft, March 7, 2008.* The C56 runway and its facilities were constructed to state standards for privately-owned, open to the public airports and not to FAA standards. IDOT



DATE	SOURCE

Illinois Department of Transportation
Division of Aeronautics

PROJECT		
SCALE 1"=3000'	DATE June 6, 2012	
LAYOUT		
DRAWN		
REVIEWED		

SSA SouthSuburbanAirport

IAP CONCEPT - ALTERNATIVE 5

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 4-6

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has determined that the existing GA/corporate facility has the capacity to adequately accommodate GA/corporate aircraft, however it is not currently suitable for commercial operations. Alternative 6 represents the commercial service improvements necessary to meet FAA standards and include the following:

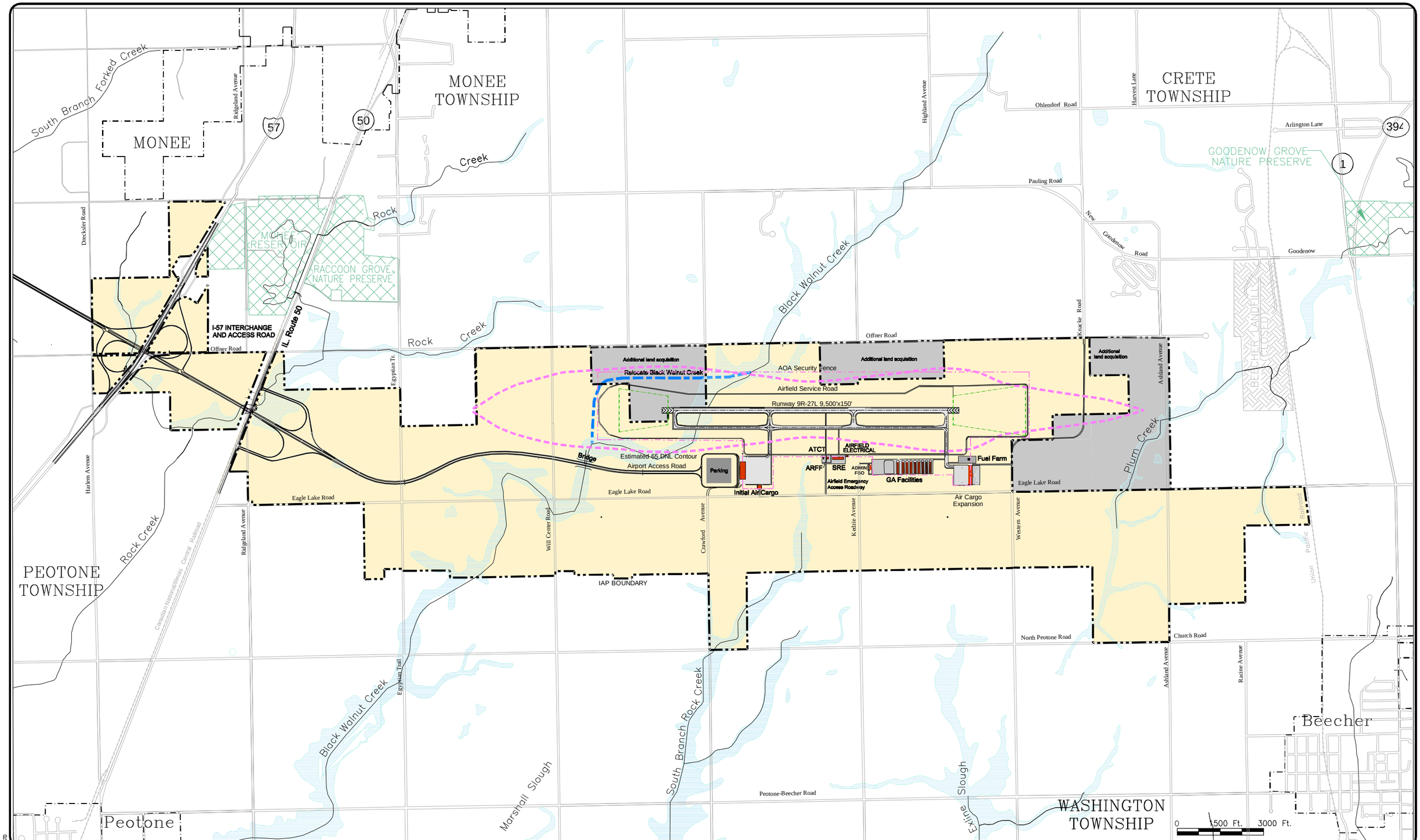
- Runway Length - The 5,000 ft. runway length does not meet the 9,500 ft. requirements of the critical aircraft as set forth in the *Forecast 2009: Verification of 2004 Forecasts* and the *Facility Requirements Report*. This existing runway length is insufficient for commercial passenger aircraft (Boeing B737 and A320) and cargo aircraft (B737-800F, B767-300F and the A300-600F) that are anticipated to operate at SSA.
- Runway Width - The runway width does not meet the requirements of the critical aircraft that will be in operation at SSA. The existing GA/corporate runway is 75 ft. in width. The B737 and A320 are Airplane Design Group III aircraft which require a runway width of 100 ft. The B767-300F and A300-600F are Airplane Design Group IV aircraft which require a runway width of 150 ft.
- Runway Strength - The weight bearing capacity does not meet the requirements of the critical aircraft that will be in operation at SSA. The existing GA/corporate runway is 60,000 lbs. single wheel, which is insufficient for the commercial passenger aircraft and cargo aircraft (174,200 lbs.) anticipated to operate at SSA.
- Runway/Taxiway Separation - The runway centerline to taxiway centerline separation and the taxiway to fixed or moveable object clearances of the GA/corporate runway do not meet the requirements of the commercial critical aircraft that will be in operation at SSA. It would be necessary to extensively reconfigure the airfield and demolish or move the existing aircraft hangars and Fixed Base Operator (FBO) office to comply with runway/taxiway separation standards.

Alternative 6 is illustrated in **Exhibit 4-7: IAP Concept - Alternative 6**. The airfield includes a 9,500 ft. long instrument runway in a 09-27 orientation. The Runway End 27 has been relocated approximately 2,000 ft. to the west to remain consistent with the east/west location of the other commercial service runway alternatives.

All aeronautical and support facilities (runway, taxiways, service roads, passenger terminal, cargo, ATCT and ancillary facilities) would be located between Eagle Lake Road and Offner Road. Because this runway alignment is north of the Ultimate airfield centerline, this runway would become the northern inboard runway. Therefore, in contrast to the other alternatives, the terminal core is located south of the Inaugural runway. The location of airside aeronautical facilities is essentially a mirroring of those presented in Alternative 1, with the exception of a relocated GA area. The terminal complex is located to the south and approximately 2,100 ft. east of the Runway End 09 of the IAP runway within a terminal zone sized to accommodate the landside roadway loop, terminal curb-front, parking facilities and the airside aircraft parking apron. Direct access to/from I-57 is provided via a new interchange and access road connecting I-57 to the terminal. The horizontal alignment of the access road minimizes crossings of Black Walnut Creek. Secondary access will be provided from local roads.

Cargo facilities are located off the east end of the runway and to the south with access from improved Eagle Lake Road. The existing GA/corporate facilities (hangars, FBO, apron, fuel, etc.) would be relocated south of the current location to meet safety/setback requirements. Access to the GA/corporate area will be provided from improved Eagle Lake Road.

The proposed commercial runway is located partially outside the established IAP boundary. Therefore, Alternative 6 will require approximately 620 acres of additional land acquisition. Land outside the AOA would continue to be utilized for agricultural use until it is needed for aviation purposes.



DATE	SOURCE

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Division of Aeronautics

PROJECT		
SCALE 1"=3000'	DATE June 6, 2012	
LAYOUT		
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SSA SouthSuburbanAirport

IAP CONCEPT - ALTERNATIVE 6

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 4-7

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Section 5 - Evaluation of Alternatives

5.1: Evaluation Criteria

The IAP facility was approved as a feasible location for the proposed airport by the FAA in their ROD in the Tier 1 EIS for SSA, issued July 2002. The IAP facility requirements include: a 9,500 ft. by 150 ft. Commercial Runway including a full parallel taxiway at a 09-27 orientation, ATCT, ILS - CAT I on Runway End 27L, Passenger Terminal with Narrowbody and Regional Jet Gates, Air Cargo Aircraft Positions and Area, GA/Corporate Aviation Area, NAVAIDS, Ancillary/Support Facilities, SRE, ARFF and I-57 Interchange with a dedicated airport access road. The IAP airfield alternatives were examined and evaluated based on a set of criteria that were selected by IDOT. These criteria are listed and defined in **Table 5-1: IAP Airport Concept Alternatives Evaluation Criteria.** A short description of how each evaluation criteria was used to evaluate the alternatives is provided below.

Table 5-1: IAP Airport Concept Alternatives Evaluation Criteria

Evaluation Criteria	Definition
Ability to Maximize Airfield Operational Efficiency - DBO+5	✈ Minimize aircraft taxiing distances ✈ Provide adequate runway separation to allow unconstrained expansion of the terminal complex and landside facilities ✈ Provide adequate runway separation to permit independent instrument approaches to both runways
Compatibility with Preferred Ultimate Airfield Concept	✈ The IAP runway should be compatible with the preferred Ultimate airfield concept o Accommodate four simultaneous precision instrument approaches o Provide for perimeter taxiways to avoid/minimize runway crossings o Provide adequate separation between inner parallel runway to allow for all potential terminal complex expansion needs
Airport Security	✈ The IAP airport should be able to meet security requirements efficiently (minimum airport perimeter length, minimum perimeter security zone)
Ability to Avoid and/or Minimize Land Use Impacts	✈ Develop an IAP airfield concept that would minimize conflicts with the land use plans of the neighboring communities ✈ Contain all significant aircraft-generated noise, as defined by FAA, on airport property or compatible land uses ✈ Minimizes area of land needed for the airport's landside and airside operations ✈ Minimum population displacement ✈ Minimum disruption to local roads
Ability to Avoid and/or Minimize Natural Resource Impacts	✈ Impacts to wetlands ✈ Impacts to floodplains ✈ Impacts to water resources ✈ Impacts to prime farmland
Potential to Minimize Costs	✈ Compare relative costs of each IAP runway concept for additional land acquisition and relocation of existing aviation facilities

Utilities (electrical, natural gas, water, sewer, etc.), access to the airport via the local road network and emergency vehicle and school bus routing were considered for inclusion as evaluation criteria. A preliminary analysis of these items determined that the relative difference amongst all six alternatives was negligible. Therefore, these development items were not included as final evaluation criteria.

Evaluation Criterion 1 - Ability to Maximize Airfield Operational Efficiency DBO+5

Each IAP airfield alternative must be capable of accommodating the level of operations forecasted for DBO+5.[6] In addition, an airfield concept that would allow for adequate runway separation for at least dual independent instrument arrivals was considered preferable to those which did not meet this criterion. Adequate area should be

[6] Draft *Projections of Aeronautical Activity for the Inaugural Airport Program, South Suburban Airport,* prepared for the Illinois Department of Transportation, May 2004.

provided for the passenger terminal and cargo facilities to expand and serve the needs of a second commercial runway.

Evaluation Criterion 2 - Compatibility with Preferred Ultimate Airfield Concept
This criterion examines whether an alternative is compatible with the selected preferred Ultimate airfield concept. If it was compatible, it received a positive (yes) designation; if the alternative was not compatible, it received a negative (no) designation.

Evaluation Criterion 3 - Airport Security
This criterion examined the airport perimeter to determine whether an alternative would have more or less area to secure. Those alternatives that were more compact were considered preferable to those alternatives that required a larger perimeter. In addition the ability of the configuration to provide a security buffer zone outside of the AOA fence was evaluated. Those alternatives that provided 1,200 ft. depth from runway centerline to AOA fence were considered preferable. The 1,200 ft. AOA depth from runway and parallel taxiway centerlines was recommended by airport security consultants.

Evaluation Criterion 4 - Ability to Avoid and/or Minimize Land Use Impacts
This criterion was divided into five sub-criteria to rate different impacts that are of concern to the landowners and communities surrounding the site.

Sub-Criterion 4a - Conflicts with Local Land Use Plans - Each alternative was evaluated against the *Will County, Illinois Land Resource Management Plan-Airport Environs Elements, dated January 2011*, to determine if the alternative would conflict with the plan. Conflicts were defined as commercial airport facilities and/or safety areas located outside of the area shown for Inaugural airport development in the Will County plan; or on land planned for other uses by the communities within the Ultimate Airport Boundary; or if the IAP runway would be located directly east or west of planned residential land uses.
Sub-Criterion 4b - Contain Aircraft Noise on Airport Property - Those alternatives that contain all significant aircraft-generated noise (as defined by FAA) on airport property were considered preferable to those that did not contain all aircraft-generated noise on airport property. Those that would result in 65 Day-Night Noise Level (DNL) noise contours over compatible land uses (as defined by FAA FAR Part 150) were considered less preferable. Other alternatives that result in 65 DNL noise contours over land outside the Ultimate Airport Boundary and on other land uses were considered least preferable.
Sub-Criterion 4c - Optimal Land Area - Alternatives that would result in less land required for airport purposes were considered preferable to those that would require more land.
Sub-Criterion 4d - Additional Land Acquisition - Alternatives that could be configured within the IAP site as determined in the Tier I ROD were considered preferable to those that required additional land beyond the IAP site.
Sub-Criterion 4e - Population Displacement - Alternatives that minimize impacts to homes and residents were considered preferable to those that had greater impacts.

Evaluation Criterion 5 - Ability to Avoid and/or Minimize Natural Resource Impacts
This criterion was divided into four sub-criteria to rate different impacts that are of concern to the Federal and state natural resource agencies, special interest groups and the general public.

Sub-Criterion 5a - Impacts to Wetlands - Alternatives that would result in fewer impacts to wetlands were considered preferable to those alternatives with greater impacts to wetlands.
Sub-Criterion 5b - Impacts to Floodplains - Alternatives that would result in fewer impacts to floodplains were considered preferable to those alternatives with greater impacts to floodplains.
Sub-Criterion 5c - Impacts to Water Resources - Alternatives that would result in fewer impacts to water resources (streams, lakes, etc.) were considered preferable to those alternatives with greater impacts to water resources.

Sub-Criterion 5d - Impacts to Prime Farmland - Alternatives that would result in fewer impacts to prime farmland were considered preferable to those alternatives with greater impacts to prime farmland.

Evaluation Criterion 6 - Potential to Minimize Costs
Alternatives that require additional land acquisition beyond the established IAP boundary were considered less preferable to those alternatives that were configured within the established IAP boundary. Alternatives that require the demolition, relocation and/or reconstruction of existing aviation facilities were considered less preferable to those that would retain use of existing facilities. Those alternatives that are less expensive were considered preferable to those that are more expensive.

5.2: Evaluation of Alternatives
Each alternative was evaluated based upon the criteria in **Section 5.1 - Evaluation Criteria.** Below is a comparison of the results of the alternatives evaluation. **Table 5-2: IAP Airport Concept Alternatives Evaluation Matrix** presents the results of the evaluation analysis in a tabular format.

Alternative 1
Ability to Maximize Airfield Operational Efficiency - DBO+5
Alternative 1 provides a "center-airfield" passenger terminal complex to minimize aircraft taxiing distances. Alternative 1 provides adequate expansion area for the terminal complex and landside facilities. The 3,700 ft. runway separation allows for simultaneous landings and take-offs on parallel runways in visual flight rule conditions. This alternative does not provide adequate runway separation between the existing GA/corporate runway and the new commercial runway to permit simultaneous precision instrument approaches to both runways.

Compatibility with Preferred Ultimate Airfield Concept
Alternative 1 is compatible with the preferred Ultimate airfield concept of four simultaneous precision instrument approaches. Alternative 1 provides adequate land for perimeter taxiways to avoid/minimize incursions. This alternative provides adequate separation (7,400 ft.) between future inner parallel commercial runways to allow for potential terminal complex expansion.

Airport Security
Of the six alternatives analyzed, Alternative 1 provides the second shortest overall airport perimeter (10.2 miles). Alternative 1 meets (1,500 ft.) the minimum perimeter security zone depth criterion of 1,200 ft.

Ability to Avoid and/or Minimize Land Use Impacts and Community Disruption
Alternative 1 has no known conflict with regional or county land use plans. Alternative 1 displaces the third largest number of residents (160). Alternative 1 accommodates aircraft noise to 65 DNL on airport land. Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the smallest AOA (1,500 acres) and the second smallest AOA of all of the alternatives This alternative is located within the established IAP boundary.

Ability to Avoid and/or Minimize Natural Resource Impacts
Of the six alternatives analyzed, Alternative 1 has the largest number of wetlands impacts (59 acres). Alternative 1 has the least impact to South Branch Rock Creek (0.7 miles) and its associated floodplain (40 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the third lowest impact to prime farmland (1,091 acres) and the fourth lowest impact to prime farmland overall.

Potential to Minimize Costs
Alternative 1 requires no additional costs for land acquisition outside the established IAP boundary. Additionally, existing GA/corporate facilities can remain in place and operational for this alternative.

Alternative 2

Ability to Maximize Airfield Operational Efficiency - DBO+5

Alternative 2 provides a "center-airfield" passenger terminal complex to minimize aircraft taxiing distances. Alternative 2 provides adequate expansion area for the terminal complex and landside facilities. This alternative provides adequate runway separation (6,100 ft.) between the existing GA/corporate runway and the new commercial runway to permit independent instrument approaches to both runways.

Compatibility with Preferred Ultimate Airfield Concept

Potential environmental impacts associated with this alternative place direct aircraft flights over the villages of Beecher and Peotone. Units of local government have expressed concern regarding the proximity of the southern flight paths and as a result have indicated their objection to this alternative. Alternative 2 provides adequate land for perimeter taxiways to avoid/minimize incursions. This alternative provides adequate separation (7,400 ft.) between future inner parallel commercial runways to allow for potential terminal complex expansion.

Airport Security

Of the six alternatives analyzed, Alternative 2 provides for the longest overall airport perimeter (11.6 miles). Alternative 2 exceeds (1,800 ft.) the minimum perimeter security zone depth criteria of 1,200 ft. when the additional land acquisition beyond the established IAP boundary is included.

Ability to Avoid and/or Minimize Land Use Impacts and Community Disruption

Alternative 2 conflicts with the Will County land use plan by locating the commercial runway, safety areas and ancillary support facilities outside the county's depicted airport area. The location of the commercial runway would also be located west of planned residential land uses. Additionally, Alternative 2 displaces the second largest number of residents (207). The commercial runway, runway protection zone, safety areas and noise mitigation areas would be located outside the established IAP boundary, requiring additional land acquisition (1,600 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the largest AOA (1,840 acres) and the largest AOA of all of the alternatives.

Ability to Avoid and/or Minimize Natural Resource Impacts

Of the six alternatives analyzed, Alternative 2 has the second lowest number of wetlands impacts (50 acres). Alternative 2 has the second highest impact to South Branch Rock Creek (1.2 miles) and its associated floodplain (69 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the highest impact to prime farmland (1,400 acres) and the highest impact to prime farmland overall.

Potential to Minimize Costs

Alternative 2 requires an additional cost for land acquisition outside the established IAP boundary (1,600 acres), which is the highest of the six alternatives. Existing GA/corporate facilities can remain in place and operational for this alternative.

Alternative 3

Ability to Maximize Airfield Operational Efficiency - DBO+5

Alternative 3 provides a "center-airfield" passenger terminal complex to minimize aircraft taxiing distances. Alternative 3 provides adequate expansion area for the terminal complex and landside facilities. This alternative provides adequate runway separation (5,000 ft.) between the existing GA/corporate runway and the new commercial runway to permit independent instrument approaches to both runways.

Compatibility with Preferred Ultimate Airfield Concept

Alternative 3 is compatible with the preferred Ultimate airfield concept of four simultaneous precision instrument approaches. Alternative 3 provides adequate land for perimeter taxiways to avoid/minimize incursions. This alternative provides adequate separation (7,400 ft.) between future inner parallel commercial runways to allow for potential terminal complex expansion.

Airport Security
Of the six alternatives analyzed, Alternative 3 provides the second longest overall airport perimeter (11.1 miles). Alternative 3 exceeds (2,700 ft.) the minimum perimeter security zone depth criteria of 1,200 ft. when the additional land acquisition beyond the established IAP boundary is included.

Ability to Avoid and/or Minimize Land Use Impacts and Community Disruption
Alternative 3 conflicts with the Will County land use plan by locating safety areas and ancillary support facilities outside the county's depicted airport area. Alternative 3 displaces the second fewest number of residents (138). The Runway End 27L runway protection zone, transitional surface and noise mitigation area are located outside the established IAP boundary, requiring additional land acquisition (1,600 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the second largest AOA (1,690 acres) and the second largest AOA of all of the alternatives.

Ability to Avoid and/or Minimize Natural Resource Impacts
Of the six alternatives analyzed, Alternative 3 has the second largest number of wetlands impacts (55 acres). Alternative 3 has the fourth highest impact to South Branch Rock Creek (1.0 miles) and its associated floodplain (55 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the second highest impact to prime farmland (1,234 acres) and the second highest impact to prime farmland overall.

Potential to Minimize Costs
Alternative 3 requires an additional cost for land acquisition outside the established IAP boundary (1,600 acres), which is the highest of the six alternatives. Existing GA/corporate facilities can remain in place and operational for this alternative.

Alternative 4
Ability to Maximize Airfield Operational Efficiency DBO+5
Alternative 4 provides a "center-airfield" passenger terminal complex to minimize aircraft taxiing distances. Alternative 4 provides adequate expansion area for the terminal complex and landside facilities. This alternative provides adequate runway separation (4,300 ft.) between the existing GA/corporate runway and the new commercial runway to permit independent instrument approaches to both runways.

Compatibility with Preferred Ultimate Airfield Concept
Alternative 4 is compatible with the preferred Ultimate airfield concept of four simultaneous precision instrument approaches. Alternative 4 provides adequate land for perimeter taxiways to avoid/minimize incursions. This alternative provides adequate separation (7,400 ft.) between future inner parallel commercial runways to allow for potential terminal complex expansion.

Airport Security
Of the six alternatives analyzed, Alternative 4 provides the shortest overall airport perimeter (10.0 miles). Alternative 4 meets (1,230 ft.) the minimum perimeter security zone depth criteria of 1,200 ft.

Ability to Avoid and/or Minimize Land Use Impacts and Community Disruption
Alternative 4 has no known conflict with regional or county land use plans. Alternative 4 displaces the fewest number of residents (99). Alternative 4 accommodates almost all aircraft noise to 65 DNL on airport land. A small portion of the 65DNL contour falls outside the IAP boundary. To ensure future compatible land use within the 65DNL, consideration may be given to future land acquisition (227 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the second smallest AOA (1,600 acres) and the third smallest AOA of all of the alternatives The facilities for this alternative fall within the established IAP boundary.

Ability to Avoid and/or Minimize Natural Resource Impacts
Of the six alternatives analyzed, Alternative 4 has the second highest number of wetlands impacts (56 acres).

Alternative 4 has the lowest impact to South Branch Rock Creek (0.7 miles) and its associated floodplain (40 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the second least impact to prime farmland (1,007 acres) and the third lowest impact to prime farmland overall.

Potential to Minimize Costs

Alternative 4 requires an additional cost for land acquisition outside the established IAP boundary (227 acres), which is the second lowest of the six alternatives. Existing GA/corporate facilities can remain in place and operational for this alternative.

Alternative 5

Ability to Maximize Airfield Operational Efficiency - DBO+5

Alternative 5 provides a "center-airfield" passenger terminal complex to minimize aircraft taxiing distances. Alternative 5 provides adequate expansion area for the terminal complex and landside facilities. This alternative provides adequate runway separation (4,600 ft.) between the existing GA/corporate runway and the new commercial runway to permit independent instrument approaches to both runways.

Compatibility with Preferred Ultimate Airfield Concept

Alternative 5 is compatible with the preferred Ultimate airfield concept of four simultaneous precision instrument approaches. Alternative 5 provides adequate land for perimeter taxiways to avoid/minimize incursions. This alternative provides adequate separation (7,400 ft.) between future inner parallel commercial runways to allow for potential terminal complex expansion.

Airport Security

Of the six alternatives analyzed, Alternative 5 provides the third longest overall airport perimeter (10.6 miles). Alternative 5 exceeds (1,700 ft.) the minimum perimeter security zone depth criteria of 1,200 ft. and therefore may require additional security provisions when the additional land acquisition beyond the established IAP boundary is included.

Ability to Avoid and/or Minimize Land Use Impacts and Community Disruption

Alternative 5 has no known conflict with regional or county land use plans. Alternative 5 displaces the third most number of residents (153). Alternative 5 accommodates almost all aircraft noise to 65 DNL on airport land. A small portion of the 65DNL contour falls outside the IAP boundary. To ensure future compatible land use within the 65DNL, consideration may be given to future land acquisition (623 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the third largest AOA (1,640 acres) of all of the alternatives. The facilities of this alternative are located within the established IAP boundary.

Ability to Avoid and/or Minimize Natural Resource Impacts

Of the six alternatives analyzed, Alternative 5 has the third lowest number of wetlands impacts (53 acres). Alternative 5 has the second lowest impact to South Branch Rock Creek (0.8 miles) and its associated floodplain (43 acres). Of the five alternatives analyzed that retain the existing GA/corporate runway, this alternative has the lowest impact to prime farmland (1,001 acres) and the second lowest impact to prime farmland overall.

Potential to Minimize Costs

Alternative 5 requires an additional cost for land acquisition outside the established IAP boundary (623 acres), which is the fourth lowest of the six alternatives. Existing GA/corporate facilities can remain in place and operational for this alternative.

Alternative 6

Ability to Maximize Airfield Operational Efficiency - DBO+5

Alternative 6 provides a "center-airfield" passenger terminal complex to minimize aircraft taxiing distances. Unlike the other five alternatives, the terminal core would be located south of the commercial runway to reduce impacts to natural resources. Alternative 6 provides adequate expansion area for the terminal complex and landside

facilities. This alternative replaces the existing GA/corporate runway with a commercial service runway and would require the complete closure of the airfield for an extended period of time, approximately two to three years.

Compatibility with Preferred Ultimate Airfield Concept

Alternative 6 only allows for three independent runways and is therefore not compatible with the preferred Ultimate airfield concept of four simultaneous precision instrument approaches. Alternative 6 provides adequate land for perimeter taxiways to avoid/minimize incursions. This alternative provides adequate separation (7,400 ft.) between future inner parallel commercial runways to allow for potential terminal complex expansion.

Airport Security

Of the six alternatives analyzed, Alternative 6 provides the third lowest airport perimeter (10.6 miles). Alternative 6 exceeds (2,600 ft.) the minimum perimeter security zone depth criteria of 1,200 ft. when the additional land acquisition beyond the IAP boundary is included.

Ability to Avoid and/or Minimize Land Use Impacts and Community Disruption

Alternative 6 conflicts with the Will County land use plan by locating the commercial runway, safety areas and ancillary support facilities outside the county's depicted airport area. Alternative 6 displaces the largest number of residents (298). Portions of the runway and its safety areas and noise mitigation areas would be located outside the established IAP boundary, requiring additional land acquisition (620 acres). This alternative has the smallest AOA (750 acres) because it is a single runway airport.

Ability to Avoid and/or Minimize Natural Resource Impacts

Of the six alternatives analyzed, Alternative 6 has the lowest number of wetlands impacts (48 acres). Alternative 6 has the highest impact to South Branch Rock Creek and Black Walnut Creek (2.0 miles) and associated floodplains (74 acres). This alternative has the lowest impact to prime farmland (691 acres).

Potential to Minimize Costs

Alternative 6 requires an additional cost for land acquisition outside the established IAP boundary (620 acres), which is the third lowest of the six alternatives. Additionally, existing GA/corporate facilities cannot remain in place and operational for this alternative and must be demolished and reconstructed to meet airport design criteria. The relocation of these facilities would require the closure of the airport for two to three years.

Table 5-2: IAP Airport Concept Alternatives Evaluation Matrix

No.	Criterion	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
1	**Ability to Maximize Airfield Operational Efficiency**						
1a	*Separation between primary commercial service runway and existing GA/corporate runway (feet)*	3,700	6,100	5,000	4,300	4,600	N/A[1]
2	**Compatibility with Preferred Ultimate Airfield Concept**						
2a	*Provides for quadruple simultaneous precision instrument approaches*	Yes	Yes	Yes	Yes	Yes	No
3	**Ability to Meet Airport Security Requirements**						
3a	*Airport perimeter (miles)*	10.2	11.6	11.1	10.0	10.6	10.6
3b	*Perimeter security zone (runway to property line depth) (feet)*	1,500	1,800[2]	2,700[2]	1,230	1,700[2]	2,600[2]
4	**Ability to Avoid and/or Minimize Adverse Land Use Impacts and Community Disruption**						
4a	*Additional land acquisition needed to ensure that all airport related uses are contained within the established IAP boundary (acres)*	0	1,600	1,600	227	623	620
4b	*Compatibility with regional land use development plans*	Yes	No	Yes	Yes	Yes	No
4c	*Contain all significant aircraft-generated noise, as defined by FAA (65 DNL), on airport property or compatible land uses*	Yes	No[2]	No[2]	No	No	No[2]
4d	*Optimization of land area (fewest acres) needed for airport-related uses (AOA in acres)*	1,500	1,840	1,690	1,600	1,640	750
4e	*Population impact (number of people displaced)*	160	207	138	99	153	298
5	**Ability to Avoid and/or Minimize Impacts to Natural Resources[3]**						
5a	*Wetlands (acres impacted)*	59	50	55	56	53	48
5b	*Floodplains (acres impacted)*	40	69	55	40	43	74
5c	*Water resources (miles of stream impacted)*	0.7	1.2	1.0	0.7	0.8	2.0
5d	*Prime farmland (acres impacted)*	1,091	1,400	1,234	1,007	1,001	691
6	**Potential to Minimize Cost**						
6a	*Facilities and impacts within the IAP Boundary as depicted in Exhibit 1-2.*	Yes	No Additional 1,600 acres	No Additional 1,600 acres	No Additional 227 acres	No Additional 623 acres	No Additional 620 acres
6b	*Demolition, relocation and/or reconstruction of existing aviation facilities*	None	None	None	None	None	Runway, parallel taxiway, hangars, terminal/FBO, apron, fuel facilities

Note 1: Single runway airport, would require closing the existing runway for two or more years during reconstruction to build a commercial runway.
Note 2: Airport facilities are located outside the established IAP boundary and meet the criterion only by acquiring additional land.
Note 3: Will County Department of Geographic Information Systems, 2012.

5.3: Selection of Recommended Alternative

Previous sections have provided information regarding the narrowed list of alternatives considered for development. This section selects the recommended alternative.

Alternative 1
When compared to other alternatives that provide the minimum separation required for simultaneous precision instrument approaches (4,300 ft), Alternative 1 does not afford this flexibility with similar operational characteristics. Alternative 1 does not allow for the approved IAP facility to exist simultaneously with the existing GA/Corporate airport. For this reason, Alternative 1 was less desirable when compared to the other alternatives and dismissed from further consideration.

Alternative 2
Alternative 2 exceeds the minimum separation required for simultaneous precision instrument approaches, but increases the airport perimeter without providing any additional operational functionality. In addition, portions of this alternative would be located outside the IDOT established IAP acquisition boundary. For these reasons, Alternative 2 is not desirable when compared to the other alternatives and dismissed from further consideration.

Alternative 3
Alternative 3 exceeds the minimum separation required for simultaneous precision instrument approaches. Alternative 3 also increases the airport footprint without providing any additional operational functionality. Portions of this alternative would be located outside the IDOT established IAP acquisition boundary. For these reasons, Alternative 3 is not desirable when compared to the other alternatives and dismissed from further consideration.

Alternative 4
Alternative 4 provides flexibility of operations by maintaining the separation required for simultaneous precision instrument approaches. This allows for independent instrument landings and takeoffs (should they be required) when runways are appropriately equipped and an ATCT is staffed by FAA.

Alternative 4 balances efficiency of combined airfields and the associated operational and environmental benefits of a smaller perimeter and shorter distances for aircraft and service vehicles, versus the flexibility to expand terminals and parking within the established IAP boundary until a second commercial runway is needed. The overall environmental impacts are less than or comparable to those identified in the other alternatives. For these reasons, Alternative 4 is considered the Sponsor's Preferred Alternative (SPA).

Alternative 5
Alternative 5 exceeds the minimum separation required for simultaneous precision instrument approaches, but increases the airport perimeter without providing any additional operational functionality. The overall environmental impacts associated with this alternative are greater than those identified in other alternatives. Additionally, a small portion of the 65DNL contour falls outside the IAP boundary. For these reasons, Alternative 5 is not desirable when compared to the other alternatives and dismissed from further consideration.

Alternative 6
The redevelopment of the existing GA alignment requires the filling and relocation of at least 5,000 ft. of Black Walnut Creek and its associated floodplain. The overall environmental impacts associated with this alternative are notably greater than those identified in other alternatives. In addition, portions of this alternative would be located outside the IDOT established IAP acquisition boundary.

It is important to note that many recent private facility improvements have occurred at C56. However, these facilities do not meet commercial service FAA design criteria. To meet these criteria, a 2-3 year impact to existing users and additional costs of demolishing facilities and reconstructing them elsewhere as part of the construction

of Alternative 6 is required. This action is deemed unacceptable. It is imperative to maximize the benefits from the privately constructed GA/corporate facilities and to keep those facilities open during the construction of a commercial runway. For these reasons, Alternative 6 is not desirable when compared to the other alternatives and dismissed from further consideration.

5.4: Sponsor's Preferred Alternative

Based upon the analysis contained in Section 5, Alternative 4 has been identified as the SPA. The following is a description of the SPA:

Commercial Runway – The SPA proposes a single 9,500 ft. long precision instrument Runway 09R-27L with a full-length, 75 ft. wide, parallel taxiway. The SPA runway is located approximately 1,200 ft. south of Eagle Lake Road. The runway conforms to the Ultimate airfield concept by allowing a future extension to the west. The proposed runway/taxiway separation is 600 ft. An ILS will be installed to serve Runway End 27L. Runway End 09R will initially be a non-precision runway.

Passenger Terminal – The passenger terminal is approximately 103,000 sq. ft. and is located approximately 2,300 ft. east and 1,800 ft. north of the Runway End 09R of the commercial runway. The terminal building will provide four passenger aircraft gates and be located within a terminal zone sized to accommodate the landside roadway loop, terminal curb-frontage, parking facilities and the airside aircraft parking apron.

GA/Corporate Area – The existing GA/corporate runway 09L-27R is 5,000 ft. long by 75 ft. wide and has a full length 35 ft. wide, parallel taxiway. The runway/taxiway separation is 150 ft. Runway 09L-27R presently has non-precision instrument approach procedures to each end of the runway and is located approximately 4,300 ft. north of the SPA runway. The Runway End 27R is staggered approximately 2,000 ft. east of the SPA runway. The existing Runway 09L-27R will be connected to the commercial runway by a taxiway. The existing GA/corporate area include T-hangars, aircraft parking apron, terminal/FBO, fuel facilities and auto parking. The AOA fence will separate and secure the airside operations from landside operations.

As noted in the approved *Facility Requirements Report*, the annual operational capacity needs for SSA at DBO+5 can be met with a single commercial service runway. However, the existing GA airfield represents a substantial financial investment in infrastructure and it is prudent to utilize all acquired land and facilities at their highest and best use if at all possible.

There are numerous safety and operational benefits for preserving use of the existing GA/corporate runway and associated facilities:

- Separating GA/corporate from commercial operations creates different movement areas for aircraft with significantly dissimilar operational characteristics (aircraft approach speed, etc.) thereby creating an overall safer facility.
- Separating GA/corporate from commercial aircraft will reduce jet blast as well as wake turbulence exposure to smaller aircraft. Small aircraft can be damaged or overturned by the wake turbulence and jet blast caused by larger/heavier commercial aircraft.
- Separating GA/corporate from commercial aircraft will reduce the potential for runway incursions since the different aircraft types can be assigned to their respective airfield areas under most circumstances. Additionally, small GA/corporate aircraft can be difficult for commercial flight crew to see which could increase the likelihood for taxiing accidents.
- Security requirements are different for commercial operations than for widely diverse GA/corporate operations. The separation of GA/corporate operations and commercial operations is logical from a security risk assessment perspective. GA/corporate operations are private and may include leisure flights, pilot training and business operations. Blending GA/corporate and commercial aircraft in the same operational

area of the airport mixes aircraft with different threat assessment profiles. The sterile zone for commercial operations would be separate from the GA/corporate operations zone.

- It is important to have an efficient airside operation for commercial carriers, especially at start-up. Taxiing distances and times must be minimized in order to achieve the shortest turnaround possible and to minimize fuel consumption. Mixing smaller, lighter and slower GA/corporate aircraft with larger, heavier and faster commercial aircraft, could create a more complicated taxiing situation. This mixing of aircraft operations could slow the commercial aircraft and make it more difficult to achieve the necessary turnaround times/schedules. Avoiding this congestion could add to the commercial viability to low cost carriers.
- Parallel runway operations can give ATCT controllers greater flexibility in management of the terminal airspace. GA/corporate and commercial aircraft have vastly different operational and performance characteristics. By separating GA/corporate and commercial aircraft operations the airspace can be managed more efficiently. Commercial operations would benefit from the resulting increase in approach and taxiing operations.
- The existing GA/corporate runway has existing non-precision approaches that could continue to serve smaller aircraft in marginal and poor weather conditions.
- If the commercial runway were closed for any reason (construction, maintenance, accident/incident, etc.), the GA/corporate runway could continue to serve the GA users of SSA, thereby avoiding a complete shutdown of the entire airport.

The cost of acquiring C56 is not inconsequential due to the extent of the existing facilities and the fact that it is a viable private airfield with numerous based aircraft. The cost of maintaining the runway in an operational state after acquisition, however, is marginal when compared to the initial acquisition cost. Financially, the benefit of having the runway remain open far outweighs the cost of future maintenance and/or closure.

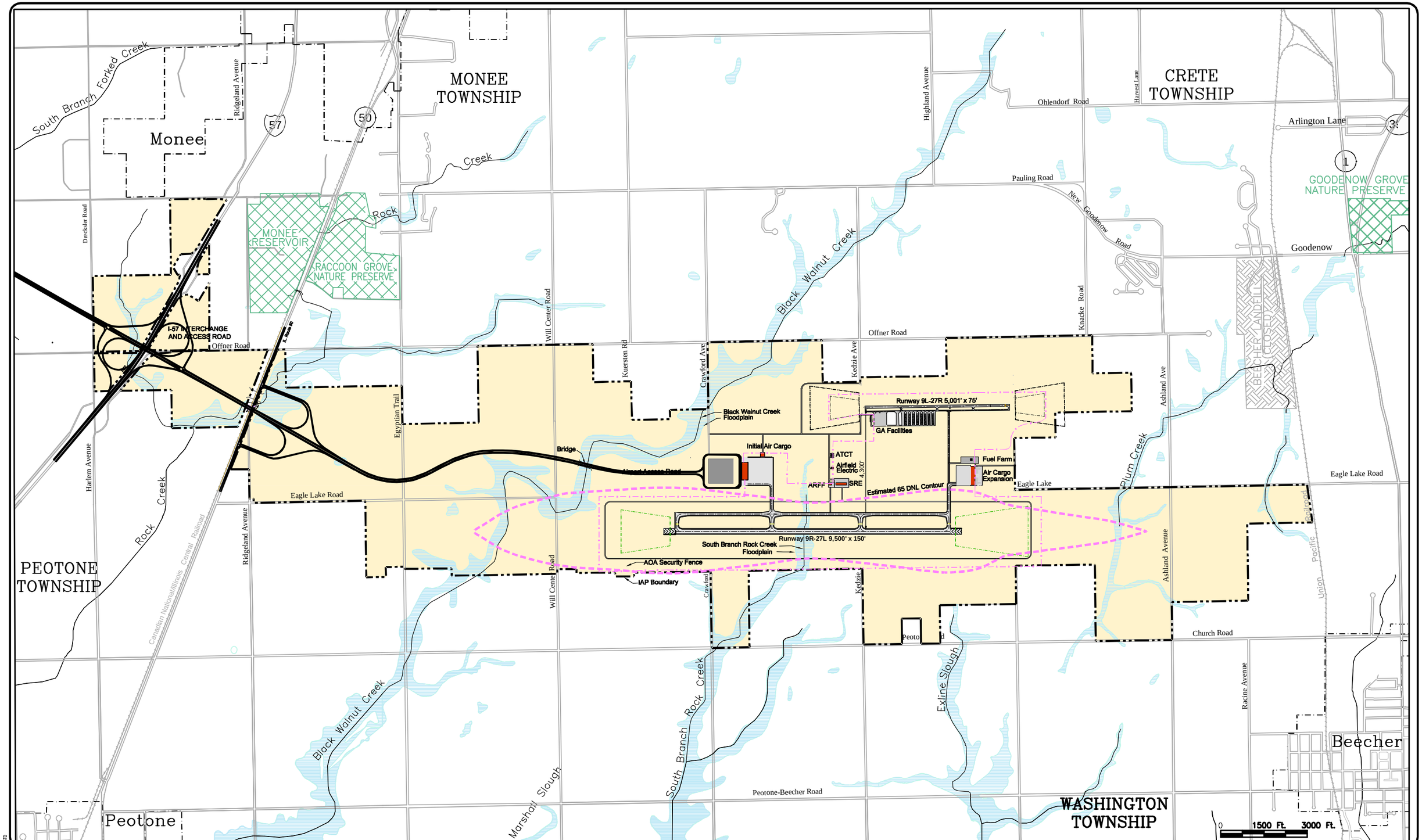
Therefore, due to the benefits from operational, safety and financial perspectives, IDOT intends to retain the GA/corporate aviation runway until that area is needed for future airfield development.

Support/Ancillary Facilities – Startup cargo facilities are initially expected to be located adjacent to the air carrier ramp. A permanent facility location has been identified north of Runway End 27L with direct access from Eagle Lake Road. IDOT recommends that an ATCT be in operation at the IAP Airport. The ATCT is located within a secured area, relatively central from runway ends, approximately 2,600 ft. north of Runway 09R-27L centerline. Access is provided from a relocated Kedzie Avenue. The decision on when and where to construct the ATCT at SSA will be in accordance with FAA guidance and it is expected that the FAA will conduct its own study to determine the location and final elevation of the ATCT. Other support facilities such as the ARFF and the SRE are also centrally located to Runway 09R-27L and approximately 1,600 ft. north of runway centerline. The fuel storage facility is located within a secure area at the east side of the airfield to the north of cargo facilities.

Navigational and Visual Aids – Runway End 27L is expected to be equipped with CAT I ILS, approach lights, Runway Visual Range system and Precision Approach Path Indicator lights. Non-precision approaches are expected to serve Runway End 09R. The Airport Surveillance Radar is located on the south airfield, approximately 2,300 ft. east of Runway End 09R and 2,300 ft. south of Runway 09R-27L centerline. The airport will have a rotating beacon and the weather observation equipment can be collocated with the glide slope antenna.

Landside Access – Direct access to/from I-57 would be provided by a new interchange and access road connecting the interstate to the terminal. The horizontal alignment of the proposed access road is designed to minimize impacts to Black Walnut Creek. The road is grade separated over Illinois Route 50 and the Canadian National Railway Corporation directly to the west. Initial cargo access would be provided via improved Eagle Lake Road. Additional access to SSA would be provided through an upgraded existing road network.

The SPA Configuration is depicted in **Exhibit 5-1: Sponsor's Preferred Alternative. Exhibit 5-2: Ultimate Airfield Concept** illustrates the future development potential for SSA. This configuration will serve as the basis for the preparation of subsequent technical and planning documents for the SSA Master Plan.



DATE	SOURCE

Illinois Department of Transportation
Division of Aeronautics

PROJECT		
SCALE 1"=3000'	DATE June 6, 2012	
LAYOUT		
DRAWN		
REVIEWED		

SSA SouthSuburbanAirport

SPONSOR'S PREFERRED IAP CONFIGURATION

SSA MASTER PLAN
ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 5-1

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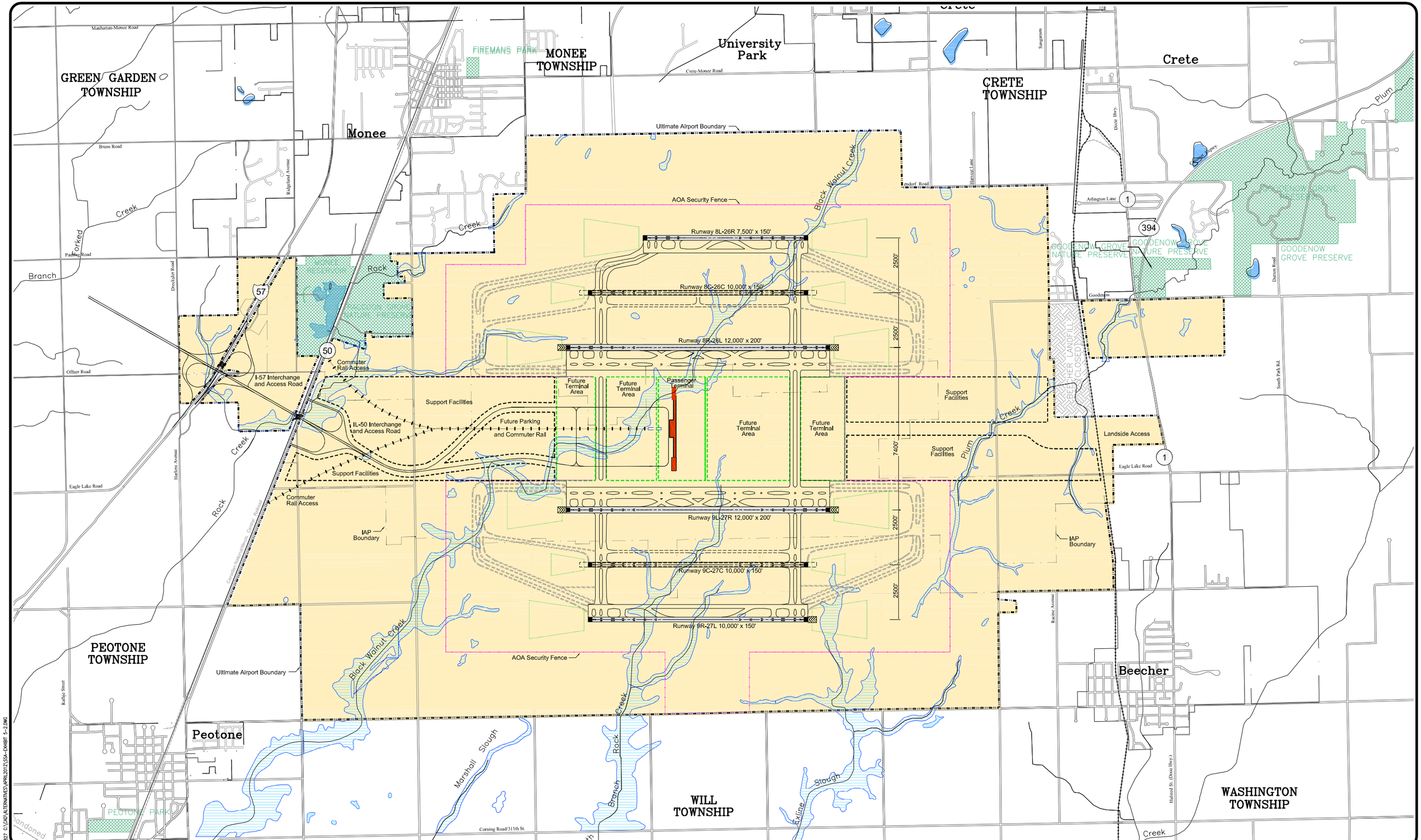

DATE	SOURCE

Illinois Department of Transportation
Division of Aeronautics

PROJECT		
SCALE N.T.S.	DATE June 6, 2012	
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SSA SouthSuburbanAirport

ULTIMATE AIRFIELD CONCEPT

SSA MASTER PLAN ALTERNATIVES DEVELOPMENT AND EVALUATION

Exhibit 5-2

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Appendix A: Acronyms

Definition of Terms

AJR	Access Justification Report
ALNAC	Abraham Lincoln National Airport Commission
ARFF	Aircraft Rescue and Firefighting Facility
AOA	Air Operations Area
ATCT	Air Traffic Control Tower
C56	Bult Field
CCBD	Chicago Central Business District
DNL	Day-Night Noise Level
DBO	Date of Beneficial Occupancy
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FBO	Fixed Base Operator
FHWA	Federal Highway Administration
GA	General Aviation
IAP	Inaugural Airport Program
IDOT	Illinois Department of Transportation-Division of Aeronautics
ILS	Instrument Landing System
ROD	Record of Decision
SPA	Sponsor's Preferred Alternative
SRE	Snow Removal Equipment Complex
SSA	South Suburban Airport
Tier 1 EIS	Tier 1 Environmental Impact Statement
Tier 2 EIS	Tier 2 Environmental Impact Statement
Tier 1 ROD	Tier 1 Record of Decision