Section 9 – Inaugural Support/Ancillary Facilities

9.0 Introduction

In previous sections of this report, the primary elements of the airport, the airfield, the landside access and the passenger terminal have been discussed and preferred alternatives selected. These preferred facilities are considered to be fixed elements of the airport master plan and are located on **Exhibit 9-0** in a drawing that depicts functional areas of the inaugural airport, including zones for terminal and support facilities. The following support/ancillary facilities are analyzed and preferred alternatives selected within the appropriate zoned areas of the site as depicted on this exhibit.

9.1 Air Cargo Facility

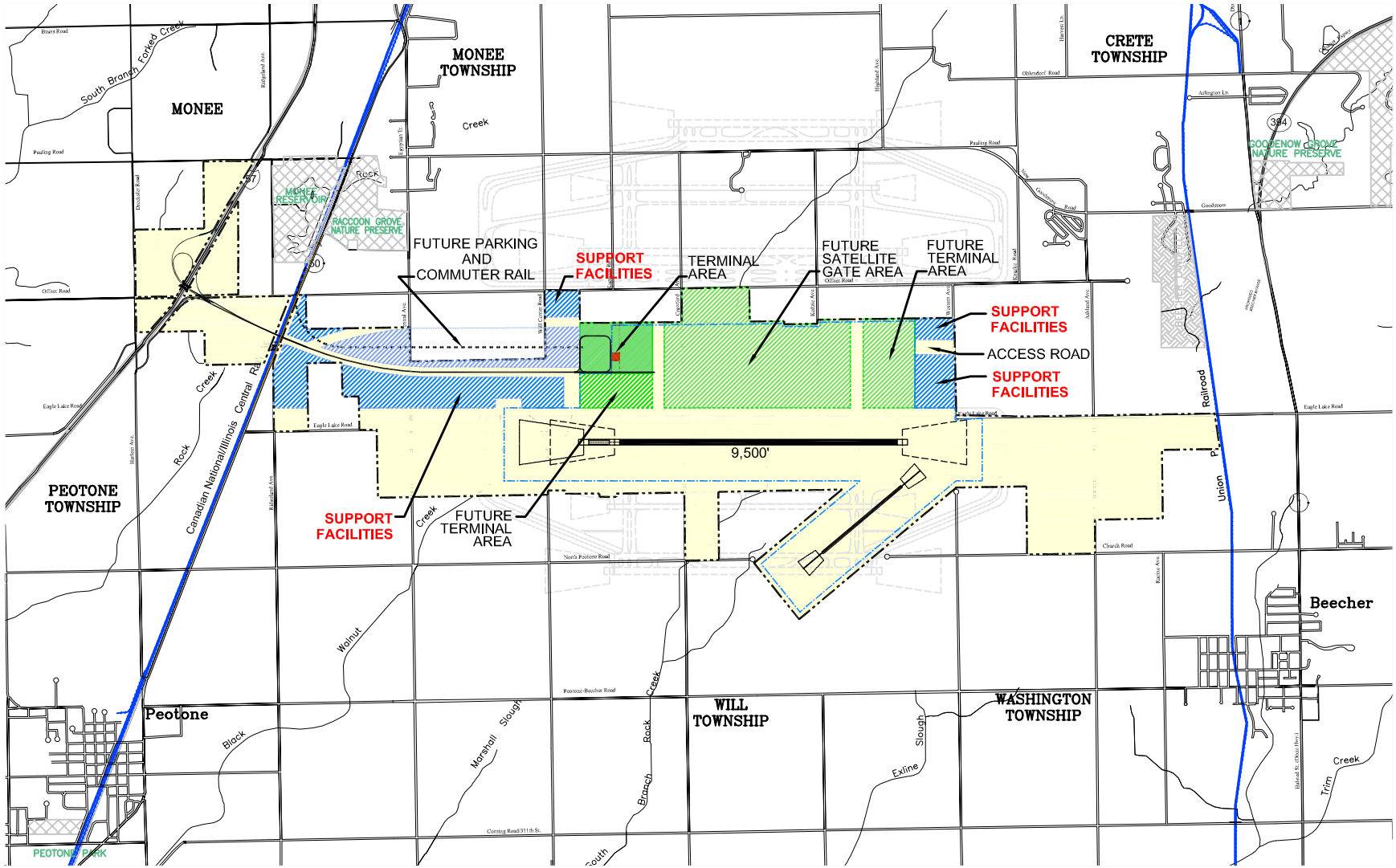
The draft *Demand/Capacity Analysis & Facility Requirements* report[1], Page 61, stated that the inaugural cargo facility would require an estimated total site area of approximately 540,000 square feet (base case forecast scenario), which includes aircraft apron, cargo building, truck loading/unloading and parking areas. Five potential sites were identified for the inaugural cargo facilities during the IAP. In addition to the areas listed above, each alternative has a landside access road component that consists of existing roads, improved roads or new roads of varying lengths. Any off-airport roadway improvements required for support facilities will be determined during the design phase of the airport. The air cargo facility alternatives are illustrated in **Exhibit 9-1**,and are described below:

9.1.1 Air Cargo Facility Alternatives

Alternative C-1 – Air cargo concept alternative C-1 is based on the State's 1998 SSA Airport Master Plan. Air Cargo C-1 is located in an air cargo facility zone to be developed on the east side of the airport. The Inaugural air cargo facility is the first phase of a series of air cargo facilities to be developed in the east cargo zone. Air Cargo C-1 is located approximately 750 feet east and 1500 feet north of primary runway 09-27. The cargo apron would be adjacent to the planned outer north-south taxiway that would connect the inaugural runway to the north parallel runway. During the Inaugural phase of development, the cargo facilities would be accessed from IL-1/IL-394 via improved local roads, west on Eagle Lake Road, then north on Western Avenue and then west to an airport cargo entrance road. A primary objective of this alternative is to separate air cargo truck traffic and passenger traffic. By focusing passenger terminal development to the west and air cargo development to the east, this alternative provides ample unconstrained expansion potential for both the passenger terminal complex as well as air cargo facilities without significant conflicts with planned facilities. Furthermore, a dedicated east airport access road can be readily developed as air cargo truck traffic increases providing direct access from IL1/I-394 to the east air cargo complex. An overall objective of concept C-1 is to developed a balanced airport development plan with access from both west and east.

Alternative C-2 – Air cargo concept alternative C-2 is based on the airport master plan concept A-2 proposed by ALNAC. (see Section 8.1 and **Exhibit 8-2)** In the proposed plan, all airport traffic including passenger and air cargo traffic will access the airport via I-57 utilizing a new dedicated airport interchange at I-57 and a dedicated airport access road to be developed by IDOT. In the proposed plan the

[1] Draft *Demand/Capacity Analysis & Facility Requirements for the Inaugural Airport Program, South Suburban Airport,* prepared for the Illinois Department of Transportation, March 21, 2005.



TAMS an *Earth Tech* Company

N

0 3000 6000 ft

Legend

- AIRPORT FOOTPRINT
- PROPOSED AIRPORT RUNWAY
- AIR OPERATION AREA (AOA)
- SUPPORT FACILITIES
- TERMINAL AREA
- FUTURE TERMINAL AREA
- PARK LAND
- LANDFILL (CLOSED)
- COMMUTER RAIL

Inaugural Airport Program
Support Facility Zones

Exhibit: 9-0

objective is to concentrate the development of all facilities on the west side of the airport. All airport facilities will be focused on the western access from I-57 and will be located along the new dedicated west airport access roadway.

This concept does not include a cargo facility at DBO but plans for the development of a cargo facility at DBO+3 contingent upon identifying an air cargo facility developer/operator. This concept was developed in conjunction with the east runway location described in Alternative F, Section 6.1, Exhibit 6-11. The air cargo facility is located on the west side of the airport 750 feet north and 3,400 feet west of the runway 09 threshold. The air cargo apron would be parallel and adjacent to a west extension of the runway 09-27 parallel taxiway. The cargo facility will be expanded linearly toward the west adjacent to the 09-27 parallel taxiway. Landside access to the air cargo facility will be from I-57 via the new west airport access roadway.

Alternative C-3 – Concept alternative C-3 proposes the possible development of an air cargo complex parallel to and south of RW 9-27. This alternative provides an air cargo development zone distinctly separate from the passenger terminal complex. This alternative will provide air cargo aircraft direct, efficient access to the primary runway and will minimize the potential conflict between passenger and air cargo aircraft and vehicles.

The Inaugural air cargo facility will be located 750' south and close to the west end of primary runway 09-27. The Inaugural air cargo apron will be accessible on the airside via a short connecting taxiway in alignment with the runway 09 threshold. The air cargo facility will be expanded linearly in an east-west orientation parallel to the 09-27 runway. This option has the advantage of expanding easily to meet the projected demand at DBO+5.. Cargo traffic could access the air cargo facilities via I-57 utilizing the west airport access road and then south on an airport cargo access road. Alternatively, landside access could be provided from the south via Crawford Avenue.

Alternative C-4 – Air cargo concept alternative C-4 proposes the development of an air cargo zone in the southeast area of the airport with a separate access point via improved local roads. The central area of the airport between the primary runways is reserved for development of the passenger terminal complex and related commercial facilities. The Inaugural air cargo facility would be located 1000 feet south and 1250 feet east of the runway 27 threshold. The cargo apron would be adjacent to the planned outer north-south cross-airport taxiway that would connect the inaugural runway to potential future south runways. Landside access to the air cargo facility will be via a dedicated cargo access road extended from Western Avenue.

Alternative C-5 – Air cargo alternative C-5 is similar to ALNAC's proposed air cargo alternative C-2. However, in alternate C-5 it is proposed to develop the inaugural air cargo facilities on the east side rather than the west side of the airport. The location proposed for alternative C-5 will permit future development of an airport access road from IL-1/I-394 to an east passenger terminal complex. Air cargo alternative C-5 would be located 1200 feet east and approximately 1500 feet north of primary runway 09-27. The cargo apron would be located east of C-1 (see **Exhibit 9-1)** and on the boundary of the airport adjacent to the existing Western Avenue. The air cargo facility would be developed linearly to the east. The inaugural air cargo facilities would be accessed via improved local roads from IL-1/IL-394, west on Eagle Lake Road, then north on Western Avenue and then west to an airport cargo entrance road. This location would provide separation of cargo and passenger traffic and offers ample expansion potential without significant conflicts with future

planned facilities. A future east airport access road can be developed as airport traffic volumes increase.

The Inaugural Air Cargo alternatives were examined and evaluated based on a number of criteria that are listed and defined in **Table 9-1**. A short description of how each criteria was used to evaluate the alternatives is provided below.

Table 9-1
Inaugural Airport – Air Cargo Facility Alternatives
Evaluation Criteria

No.	Criteria	Definition
1	**Ability to maximize airfield operational efficiency**	• Ability of cargo location to minimize aircraft taxiing distance and time to main runway 9/27.
2	**Landside access**	• Minimize travel distance from major highways providing truck access to the airport.
3	**Compatibility with future airport plan**	• Minimize possible conflicts with future airport development.
4	**Ability to avoid and/or minimize adverse land use impacts and community disruption**	• Conflicts with future regional land use development. • Population displacement • Traffic disruption on local roads
5	**Ability to avoid and/or minimize impacts on natural resources**	• Impacts to wetlands • Impacts to floodplains • Impacts to water resources • Impacts to prime farmlands
6	**Proximity to Interstate Highway I-57**	• Distance from Interstate Highway I-57
7	**Comparison of relative costs**	• Compares relative costs of each air cargo location/concept including: o off-airport roadway improvements o taxiways o environmental mitigation o earthwork

Criterion 1 – Operational Efficiency – This criterion estimated taxiing distances/times from the cargo facility to the end of the inaugural primary runway. Those alternatives with shorter taxiing distances/times rated higher than those with longer taxiing distances/times.

Criterion 2 – Landside Access – This criterion estimated access distances from the major highways providing truck access to the airport. Those alternatives with shorter average access distances/times rated higher than those with longer access distances. Preference is given to those alternatives with access from the primary airport access road.

Criterion 3 – Compatibility with Future Plan – This criterion assessed the extent to which the proposed air cargo facility location fits into the development of the future Airport Master Plan by assessing potential conflict with the development of future planned facilities.

Criterion 4 – Ability to Avoid and/or Minimize Adverse Land Use Impacts and Community Disruption

Sub-criterion 4a - *Compatibility with Regional Land Use Development Plans* – This criterion analyzes the possible future location of shippers and freight forwarders within the regional land use development plan and analyzes the most efficient relationship of these facilities to the air cargo facilities at the airport.

Sub-criterion 4b - *Social Impacts (Population displacement)* – Alternatives that minimize impacts to homes and displacement of residents were rated higher than those that had greater impacts.

Sub-criterion 4c - *Traffic Disruption on Local Roads* – Alternatives that minimize traffic disruption on local roads were rated higher than those that had greater impacts.

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

Each sub-criterion was rated separately and then averaged with ratings from the other sub-criteria for each alternative.

Sub-Criterion 5a –*Impacts to Wetlands* – Alternatives that would result in fewer impacts to wetlands rated higher than alternatives with greater impacts.

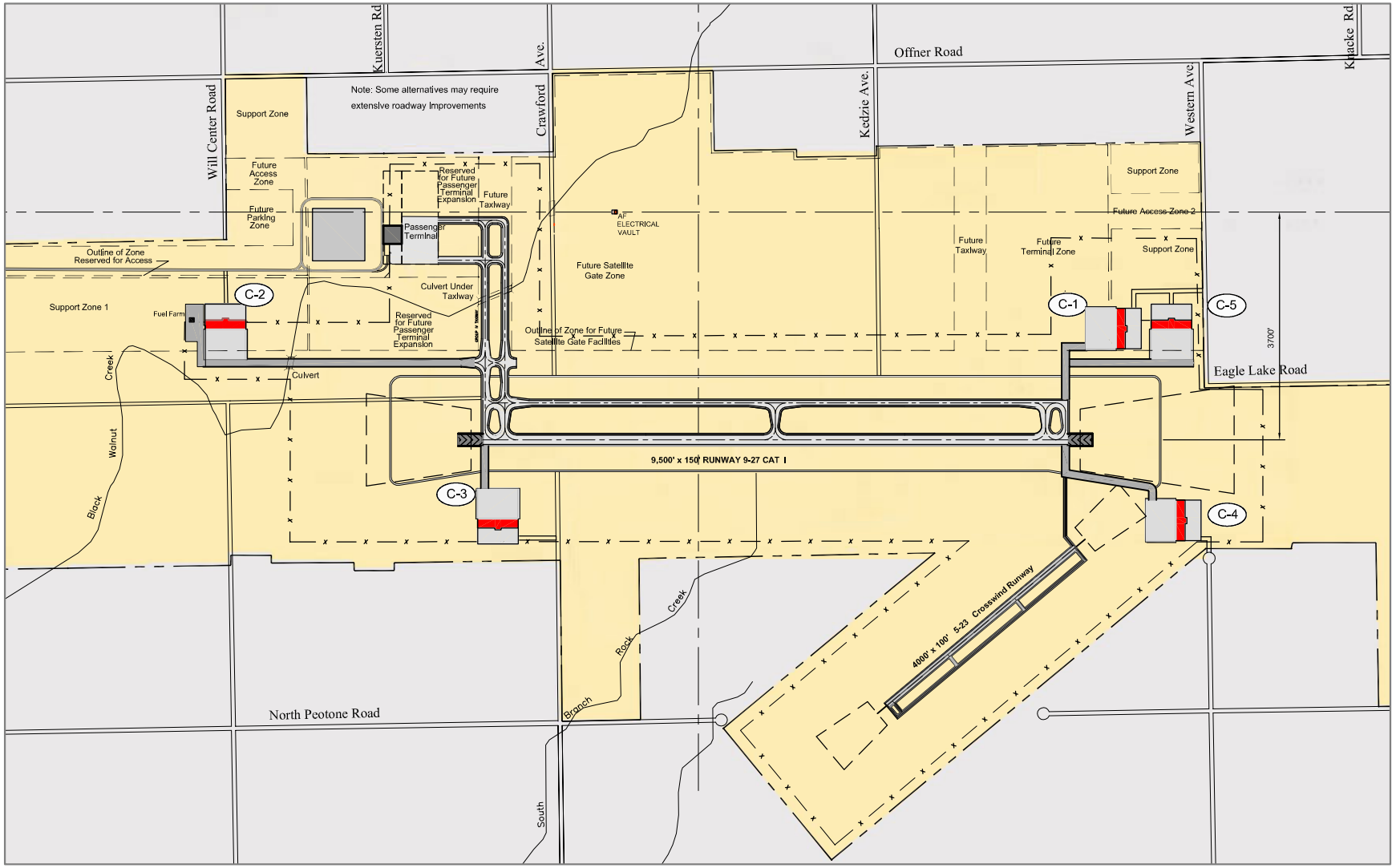
Sub-Criterion 5b –*Impacts to Floodplains* – Alternatives that would result in fewer impacts to floodplains rated higher than alternatives with greater impacts.

Sub-Criterion 5c –*Impacts to Water Resources* – Alternatives that would result in fewer impacts to water resources (streams, lakes, etc.) rated higher than alternatives with greater impacts to water resources.

Sub-Criterion 5d –*Impacts to Prime Farmland* – Alternatives that would result in fewer impacts to prime farmland rated higher than alternatives with greater impacts to prime farmland.

Criterion 6 – Proximity to Interstate Highway I-57 – This criterion rated each alternative on distance from I-57. Since the main vehicle access will be from the west during the inaugural phase, locations that were closest to I-57 were rated higher than locations farther from I-57.

Criterion 7 – Comparison of Relative Costs – Compares relative costs of each alternative. Alternatives that have higher overall costs ranked lower than alternatives that have lower costs. Items considered are taxiway length, bridge structure, new access road length, crossings of natural waterways, environmental impact areas such as wetlands, floodplains, and water resources.



TAMS an *Earth Tech* Company

N

0 1250 Ft. 2500 Ft.

Legend

- *PROPOSED AIRPORT BOUNDARY*
- *PROPOSED AIRPORT RUNWAY*
- *FUTURE TERMINAL DEVELOPMENT AREA (TA)*
- C-1 *PROPOSED SUPPORT FACILITY ALTERNATIVE*
- *SUPPORT FACILITY ACCESS ROAD*
- *PROPOSED SUPPORT FACILITY*

Inaugural Airport Support Facilities
Air Cargo
Alternatives C-1 through C-5

Exhibit 9-1

9.1.2 Air Cargo Facility Alternatives Evaluation Matrix

A rating system similar to the one used in the assessment of the airfield, landside and terminal facilities was employed in evaluating the cargo facility location alternatives. These alternatives were compared against the major criteria developed for this evaluation. **Table 9-2** illustrates the results of this evaluation. A more detailed explanation of the rating scale is shown in **Table 9-3.**

Table 9-2
Inaugural Airport - Air Cargo Facility Location Alternatives
Evaluation Matrix

No.	Criteria	C-1	C-2	C-3	C-4	C-5
1	**Ability to maximize airfield operational efficiency –** *Minimize aircraft average taxiing distances*	**5**	**1**	**4.2**	**2.5**	**4**
2	**Landside access** *Proximity to I-57*	**2**	**5**	**1**	**1**	**2**
3	**Compatibility with future airport plan**	**1**	**5**	**1**	**1**	**5**
4	**Ability to avoid and/or minimize adverse land use impacts and community disruption**	**3**	**5**	**3.7**	**3.3**	**2.3**
a	*Conflicts with comprehensive land use plans of neighboring communities.*	*5*	*5*	*5*	*5*	*5*
b	*Population displacement*	*3*	*5*	*5*	*4*	*1*
c	*Traffic disruption on local roads*	*1*	*5*	*1*	*1*	*1*
5	**Ability to avoid and/or minimize impacts on natural resources**	**4.8**	**1.5**	**4.8**	**4.5**	**3.5**
a	*Wetlands (acres impacted)*	*4*	*3*	*5*	*4*	*1*
b	*Floodplains (acres Impacted)*	*5*	*1*	*5*	*5*	*5*
c	*Water Resources (miles of stream impacted)*	*5*	*1*	*5*	*5*	*5*
d	*Prime farmland (acres impacted)*	*5*	*1*	*4*	*4*	*3*
6	**Comparison of relative costs**	**4.0**	**2.3**	**4.3**	**3.3**	**3.1**
a	*Access roadway improvements including off-airport roadway improvements. (miles)*	*1*	*5*	*3*	*1*	*1*
b	*Creek crossings*	*5*	*5*	*1*	*1*	*5*
c	*Taxiways (lineal feet)*	*5*	*1*	*5*	*3*	*4*
d	*Wetlands (acres)*	*4*	*3*	*5*	*4*	*1*
e	*Floodplains*	*5*	*1*	*5*	*5*	*5*
f	*Water Resources (streams)*	*5*	*1*	*5*	*5*	*5*
g	*Earthworks (cubic yards)*	*2*	*1*	*5*	*3*	*1*
h	*Site Preparation (construction site area)*	*5*	*1*	*5*	*4*	*3*
	Total	**19.8**	**19.8**	**19.0**	**15.6**	**19.9**
	Rating *(average score)*	**3.3**	**3.3**	**3.2**	**2.6**	**3.3**

Table 9-3 Inaugural Airport – Cargo Facility Location Alternatives Evaluation Worksheet											
Score	**Rating**	**Criterion 1** Airfield Operational Efficiency (Taxiing Distance/Time)	**Criterion 2** Landside Access	**Criterion 3** Compatibility with Future Airport Plan	**Criterion 4a** Compatibility with Regional Land Use Development Plan	**Criterion 4b** Population displacement	**Criterion 4c** Traffic disruption on local roads	**Criterion 5a** Wetlands Impacts	**Criterion 5b** Floodplain Impacts	**Criterion 5c** Water Resource Impacts	**Criterion 5d** Prime Farmland Impacts
5	**Excellent**	Shortest taxing distance/time to both ends of Runway 9-27	Shortest average access distance.	Within future support zone. Maximum operational. efficiency	No conflicts	Least population displacement	Lowest existing traffic volume impacted	Lowest acreage impacted	Lowest acreage impacted	Lowest stream length impacted	Lowest acreage impacted
4	**Good**	20 - 39% longer	20 - 39% longer	Within future support zone. Good operational. efficiency	One conflict	20 - 39% greater displacement	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact
3	**Average**	40 -59% longer	40 -59% longer	Within future support zone. Average operational efficiency	Two conflicts	40 - 59% greater displacement	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact
2	**Fair**	60 - 79% longer	60 - 79% longer	Within future support zone. Fair operational. efficiency	Three conflicts	60 - 79% greater displacement	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact
1	**Poor**	Longest taxing distance/time to both ends of Runway 9-27	Longest average access distance.	Within future support zone. Poor operational efficiency	More than three conflicts	Greatest population displacement	Lowest existing traffic volume impacted	Highest acreage impacted	Highest acreage impacted	Highest stream length impacted	Highest acreage impacted

	Table 9-3 (continued) **Inaugural Airport – Cargo Facility Location Alternatives** **Evaluation Worksheet**									
Score	**Rating**	**Criterion 6** Proximity to I-57	**Criterion 7a** Access road improvements	**Criterion 7b** Creek crossings	**Criterion7c** Taxiways (length)	**Criterion 7d** Wetlands (acres)	**Criterion 7e** Floodplains (acres)	**Criterion 7f** Water Resources (streams)	**Criterion 7g** Earthworks	**Criterion 7h** Site preparation
5	**Excellent**	Closest to I-57	Least access road improvements	None	Shortest taxiway	Lowest acreage impacted	Lowest acreage impacted	Lowest length impacted	Lowest acreage impacted	Least area impacted
4	**Good**	20-39% farther	20 - 39% greater	One	20 - 39% greater	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact
3	**Average**	40 -59% farther	40 -59% greater	Two	40 -59% greater	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact
2	**Fair**	60 - 79% farther	60 - 79% greater	Three	60 - 79% greater	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact
1	**Poor**	Farthest from I-57	Greatest access road improvements.	More than three	Longest taxiway	Highest acreage impacted	Highest acreage impacted	Highest length impacted	Highest acreage impacted	Greatest area impacted

9.1.3 Preferred Air Cargo Facility Alternative

Alternatives C-1 and C-2 were considered the best alternatives for the inaugural air cargo facility. Alternative C-5 was slightly better regarding taxiway distance, impacts on natural resources, and future separation of truck and passenger traffic when improved eastern access to the airport could be constructed. However, in the inaugural phase, impacts on local roads and traffic will be more pronounced than in C-2. Alternative C-2 was better regarding landside access and compatibility with regional land use plans considering that most of the regional trucking and warehouse facilities are currently located off the I-57 corridor. Both sites C-2 and C-5 fall within support facility zones, as shown on **Exhibit 9-0**. Alternative C-2 was judged better in consideration of the importance of locating start-up facilities where major utilities and access roads are being placed for the primary airport elements. For these reasons, Alternative C-2 was selected as the preferred alternative for the Inaugural Airport Air Cargo facilities.

9.2 General Aviation Facility

As discussed in Section 6.3, Page 71, of the Concept Alternatives Report, the results of the wind analysis[2] indicated that to handle the activity of lighter GA aircraft (less than 12,500 pounds) under strong crosswind conditions a crosswind runway is required at DBO to meet the minimum 95 percent wind coverage (FAA Advisory Circular 150/5300-13). The facility requirements analysis Section 5.2, Page 67, Tables 5-5 and 5-6 General Aviation Area Requirements, also showed that the inaugural GA facilities would require a total site area of approximately 399,563 square feet (base case forecast scenario), which includes aircraft parking 81,612sf, aircraft apron 244,836sf, hangar area 45,200sf, tie-down area 14,715 sf and public parking 13,200sf. As a result of these requirements five potential locations have been identified for potential inaugural GA facilities (see **Exhibit 9-2**):

9.2.1 General Aviation Facility Alternatives

- ***Alternative GA-1*** – Located directly to the east of crosswind runway 05-23 and south of the east end of primary runway 09-27 . Access would be from existing Western Avenue. This alternative was selected for consideration because it is the closest to the GA runway.

- ***Alternative GA-2*** – Located northeast of the east end of primary runway 09-27. Access would be from existing Western Avenue. This alternative is located in the East Support Facilities Zone.

- ***Alternative GA-3 –*** Located on the site of the existing Bult Airport GA facility north of primary runway 09-27 at the center of the future airfield. The existing Bult Airport facilities would be upgraded in accordance with the SSA Inaugural Airport facility requirements. Existing access is from Kedzie Avenue.

- ***Alternative GA-4*** – Located directly east of the existing Bult Airport GA facility. Proposed by ALNAC, a temporary GA facility would be developed for use at DBO and continuing in use until a permanent facility was developed on the west side of the airport. Landside access would be via Western Avenue.

[2] Draft *Demand/Capacity Analysis & Facility Requirements for the Inaugural Airport Program, South Suburban Airport,* prepared for the Illinois Department of Transportation, March 21, 2005.

- ***Alternative GA-5*** – Located in the same general area as the preferred cargo facility (described in Section 9.1 Alternative C2). Proposed by ALNAC, this facility would be developed by DBO+5 and would replace the temporary GA facility proposed in Alternative GA-4 above. Access would be from the main access road. This alternative is located in the west support facilities zone.

Table 9-4
Inaugural Airport – General Aviation Alternatives
Evaluation Criteria

No.	Criteria	Definition
1	**Ability to maximize airfield operational efficiency**	• Ability of GA location to minimize aircraft taxiing distance and time to main runway 9/27.
2	**Landside access**	• Minimize travel distance from major highways providing vehicle access to the airport.
3	**Compatibility with future airport plan**	• Minimize possible conflicts with future airport development.
4	**Ability to avoid and/or minimize adverse land use impacts and community disruption**	• Possible conflicts with land use plans of local communities. • Population displacement • Traffic disruption on local roads
5	**Ability to avoid and/or minimize impacts on natural resources**	• Impacts to wetlands • Impacts to floodplains • Impacts to water resources • Impacts to prime farmlands
6	**Comparison of relative costs**	• Compares relative costs of each air cargo location/concept including: o off-airport roadway improvements o taxiways o environmental mitigation o earthwork

9.2.2 GA Facility Evaluation Criteria

A rating system similar to the one used in the assessment of the airfield, landside and terminal facilities was employed in evaluating the location of the GA facility alternatives. The Inaugural General Aviation alternatives were examined and evaluated based on a number of criteria that are listed and defined in **Table 9-4**. A short description of how each evaluation criteria was used to evaluate the alternatives is provided below.

Criteria 1 – Operational Efficiency – This criterion estimated taxiing distances/times from the general aviation facility to the ends of the inaugural primary runway 9-27. Those alternatives with shorter taxiing distances/times rated higher than those with longer taxiing distances/times.

Criteria 2 – Landside Access – This criterion estimated access distances from the major highways providing vehicle access to the airport. Those alternatives with shorter average access distances/times rated higher than those with longer access distances. Preference is given to those alternatives with access from the primary airport access road.

Criteria 3 – Compatibility with Future Airport Plan – This criterion assessed the extent to which the proposed general aviation facility location fit into the

development of the future Airport Plan by assessing potential conflict with the development of future planned facilities.

Criteria 4 – Ability to Avoid and/or Minimize Adverse Land Use Impacts and Community Disruption – This criterion was divided into three sub-criteria to rate different impacts that are of concern to the landowners and communities surrounding the site. Each sub-criterion was rated separately and then averaged with ratings from the other sub-criteria for each alternative.

Sub-criterion 4a – *Conflicts with Local Land Use Plans* – Each alternative was evaluated against the *Land Use Plan for the Eastern Will County Area* (August 1997) to determine if the alternative would conflict with the plan. Conflicts were defined as airport facilities located outside of the previously defined airport boundary (as depicted on the land use map) or on land planned for other uses by the communities within the airport boundary.

Sub-criterion 4b - *Population Displacement* – Alternatives that minimize impacts to homes and residents were rated higher than those that had greater impacts.

Sub-criterion 4c - *Traffic Disruption on Local Roads* – Alternatives that would result in less vehicle traffic being placed on local roads were rated higher than those that would place more vehicle traffic on local roads.

Criteria 5 – Ability to avoid and/or Minimize Impacts on Natural Resource – 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. Each sub-criterion was rated separately and then averaged with ratings from the other sub-criteria for each alternative.

Sub-Criteria 5a – *Impacts to Wetlands* – Alternatives that would result in fewer impacts to wetlands rated higher than alternatives with greater impacts.

Sub-Criteria 5b – *Impacts to Floodplains* – Alternatives that would result in fewer impacts to floodplains rated higher than alternatives with greater impacts.

Sub-Criteria 5c – *Impacts to Water Resources* – Alternatives that would result in fewer impacts to water resources (streams, lakes, etc.) rated higher than alternatives with greater impacts to water resources.

Sub-Criteria 5d – *Impacts to Prime Farmland* – Alternatives that would result in fewer impacts to prime farmland rated higher than alternatives with greater impacts to prime farmland.

Criteria 6 – Relative Cost Comparison – Compares relative costs of each alternative. Alternatives that have higher overall costs ranked lower than alternatives that have lower costs. Items considered include earthwork, site preparation, access roads, creek crossings, and environmental impacts on wetlands, floodplains, and water resources.

9.2.3 GA Facility Alternatives Evaluation Matrix

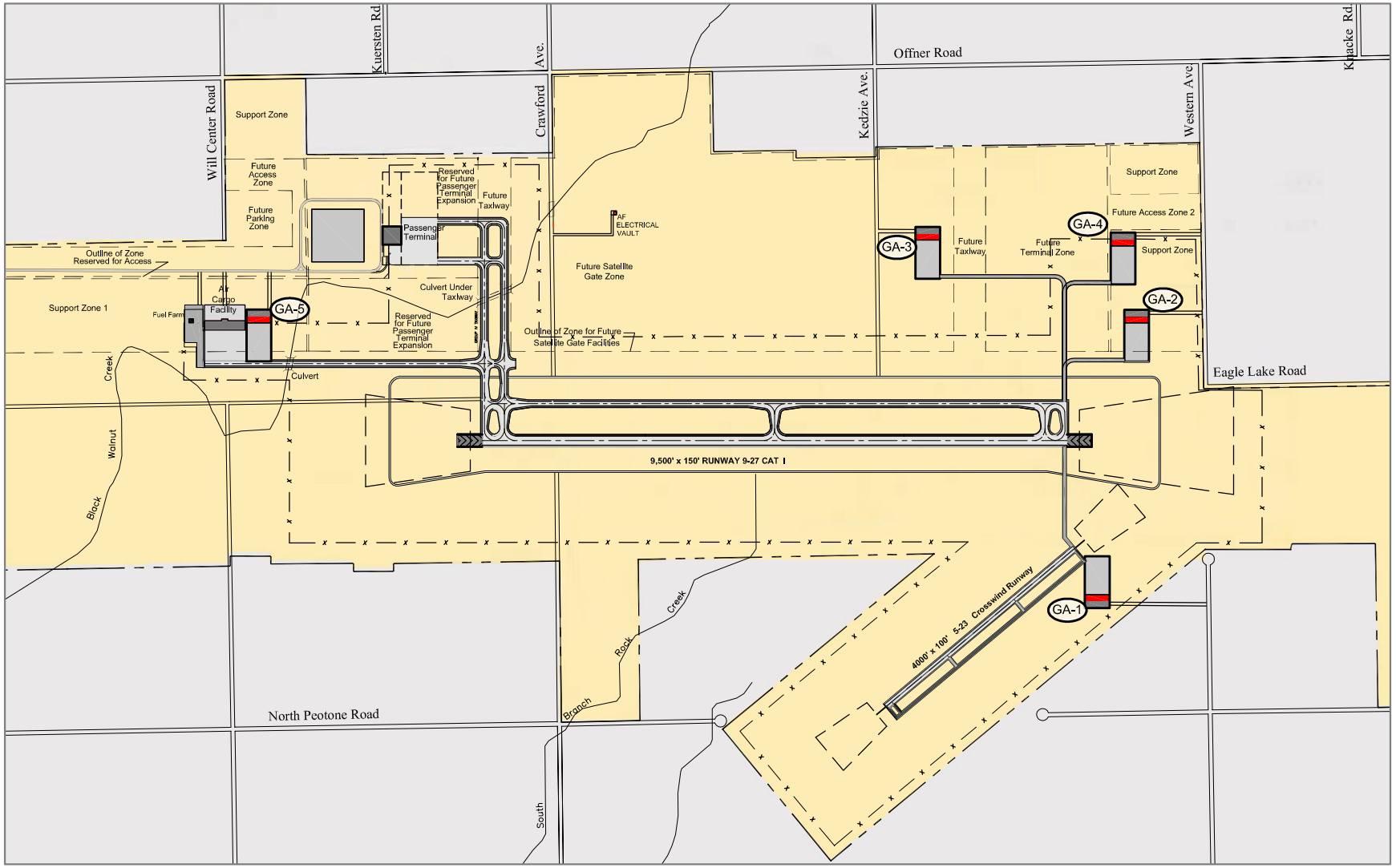
The Inaugural GA facility alternatives were compared against the six major criteria developed for this process. **Table 9-5** illustrates the results of this process. The evaluation worksheet with a more detailed explanation of the rating scale is shown in **Table 9-6.**

Table 9-5 Inaugural Airport – General Aviation Location Alternatives Evaluation Matrix						
No.	**Criteria**	**GA-1**	**GA-2**	**GA-3**	**GA-4**	**GA-5**
1	**Ability to maximize airfield operational efficiency –** *Minimize aircraft taxiing distances*	**3**	**5**	**1**	**4**	**1**
2	**Landside access** *Average access distance from major road/highway*	**1**	**5**	**5**	**5**	**5**
3	**Compatibility with future airport plan**	**4**	**5**	**4**	**5**	**5**
4	**Ability to avoid and/or minimize adverse land use impacts and community disruption**	**3.7**	**2.3**	**3.7**	**3.7**	**5.0**
a	*Conflicts with comprehensive land use plans of neighboring communities.*	*5*	*5*	*5*	*5*	*5*
b	*Population displacement*	*5*	*1*	*5*	*5*	*5*
c	*Traffic disruption on local roads*	*1*	*1*	*1*	*1*	*5*
5	**Ability to minimize impacts on natural resources**	**4**	**4.3**	**4**	**4.3**	**4**
a	*Wetlands (acres impacted)*	*5*	*5*	*1*	*2*	*5*
b	*Floodplains (acres Impacted)*	*5*	*5*	*5*	*5*	*1*
c	*Water Resources (miles of stream impacted)*	*5*	*5*	*5*	*5*	*5*
d	*Prime farmland (acres impacted)*	*1*	*2*	*5*	*5*	*5*
6	**Comparison of relative cost**	**4.1**	**4.4**	**2.8**	**4.0**	**4.0**
a	*Access roadway improvements including off-airport roadway improvements. (miles)*	*4*	*4*	*1*	*4*	*5*
b	*Creek crossings*	*5*	*5*	*5*	*5*	*5*
c	*Taxiways (lineal feet)*	*3*	*5*	*3*	*4*	*1*
d	*Wetlands*	*5*	*5*	*1*	*2*	*5*
e	*Floodplains*	*5*	*5*	*5*	*5*	*1*
f	*Water Resources (streams)*	*5*	*5*	*5*	*5*	*5*
g	*Earthworks (cubic yards)*	*3*	*3*	*1*	*3*	*5*
h	*Site Preparation (construction site area)*	*3*	*3*	*1*	*4*	*5*
	Total Score	**19.8**	**26.0**	**20.5**	**26.0**	**24.0**
	Rating *(average score)*	**3.3**	**4.3**	**3.4**	**4.3**	**4.0**

Table 9-6 Inaugural Airport – GA Facility Location Alternatives Evaluation Worksheet										
Score	**Rating**	**Criterion 1** Airfield Operational Efficiency (Taxiing Distance/Time)	**Criterion 2** Landside Access	**Criterion 3** Compatibility with Future Airport Plan	**Criterion 4a** Compatibility with regional land use plans	**Criterion 4b** Population displacement	**Criterion 4c** Traffic disruption on local roads	**Criterion 5a** Wetland Impacts	**Criterion 5b** Floodplain Impacts	**Criterion 5c** Water Resource Impacts
5	**Excellent**	Shortest taxing distance/time to both ends of Runway 9-27	Shortest access distance	Within future support zone. Maximum operational. efficiency	No conflicts	Least population displacement	Lowest existing traffic volume impacted	Lowest acreage impacted	Lowest acreage impacted	Lowest stream length impacted
4	**Good**	20 - 39% longer	20 - 39% longer	Within future support zone. Good operational. efficiency	One conflict	20 - 39% greater displacment	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact
3	**Average**	40 -59% longer	40 -59% longer	Within future support zone. Average operational efficiency	Two conflicts	40 - 59% greater displacement	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact
2	**Fair**	60 - 79% longer	60 - 79% longer	Within future support zone. Fair operational. efficiency	Three conflicts	60 - 79% greater displacement	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact
1	**Poor**	Longest taxing distance/time to both ends of Runway 9-27	Longest access distance	Within future support zone. Poor operational efficiency	More than three conflicts	Greatest population displacement	Lowest existing traffic volume impacted	Highest acreage impacted	Highest acreage impacted	Highest stream length impacted

Table 9-6 (continued)
Inaugural Airport – GA Facility Location Alternatives
Evaluation Worksheet

Score	Rating	**Criterion 5d** Minimize Prime Farmland Impacts	**Criterion 6a** Access road improvements	**Criterion 6b** Creek crossings	**Criterion 6c** Taxiways (length)	**Criterion 6d** Wetland (acres)	**Criterion 6e** Floodplains (acres)	**Criterion 6f** Water resources (streams)	**Criterion 6g** Earthworks	**Criterion 6h** Site preparation
5	**Excel-lent**	Lowest acreage impacted	Least access road improvements	None	Shortest taxiway	Lowest acreage impacted	Lowest acreage impacted	Lowest stream length impacted	Lowest acreage impacted	Lowest acreage impacted
4	**Good**	20 - 39% greater impact	20 - 39% greater	One	20 - 39% greater	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact
3	**Average**	40 - 59% greater impact	40 - 59% greater	Two	40 -59% greater	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact
2	**Fair**	60 - 79% greater impact	60 - 79% greater	Three	60 - 79% greater	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact
1	**Poor**	Highest acreage impacted	Greatest access road improvements	More than three	Longest taxiway	Highest acreage impacted	Greatest acreage impacted	Highest stream length impacted	Highest acreage impacted	Highest acreage impacted



TAMS an *Earth Tech* Company

N

0 1250 Ft. 2500 Ft.

Legend

- *PROPOSED AIRPORT BOUNDARY*
- *PROPOSED AIRPORT RUNWAY*
- *FUTURE DEVELOPMENT AREA*
- GA - 3 *PROPOSED SUPPORT FACILITY ALTERNATIVE*
- *SUPPORT FACILITY ACCESS ROAD*
- *PROPOSED SUPPORT FACILITY SYMBOL*

Inaugural Airport Support Facilities General Aviation Alternatives GA-1 to GA-5

Exhibit: 9-2

9.2.4 Preferred General Aviation Facility Alternative

Both Alternatives GA-2 and GA 4, located in the eastern areas of the site, scored well in the evaluation. Another eastern site Alternative GA-3 was rated down because it was located in a future terminal and gate zone and west of the future north/south dual taxiway. Alternative GA-5 is further away from the runways and combined with the previously selected cargo site causes significant impacts on Black Walnut Creek, therefore, is not recommended. Alternative GA-1, located south of the primary runway and near Runway 23 scored lower on operational considerations because access to and from the primary Runway 27, which would be in use over 90% of the time, would require crossing the runway to get to the parallel taxiway on the north side of the runway. Both GA-2 and GA-4 provide for unconstrained future expansion of GA facilities

GA-2 and GA-4 provide direct aircraft access to the primary runways with minimal environmental impacts. It is noted that taxiing from GA-2, GA-3, GA-4 and GA-5 to the crosswind runway 5-23 will cause aircraft to cross primary runway 9-23. Also, aircraft must travel the length of the runway to taxi from GA-5 to crosswind runway 5-12.

To access GA-2 and GA-4 from the east users would come north and south via IL-394/IL-1 to Eagle Lake Road. The traffic would then travel west on Eagle Lake Road to Western Avenue and north until it reached the GA entrance road. Traffic coming from I-57 could exit via the airport access road to Central Avenue (**Exhibit 10-1**), then travel north on Central and east on Offner Road turning south on Western Avenue to the GA entrance road. Because the vehicle traffic to GA will be much lighter than cargo, it will not be necessary to make major improvements to the existing roads. Alternative GA-4 was selected as the preferred alternate because of the lower environmental impacts contained on its site. This site also has the potential of utilizing any GA facility improvements to be made in the existing Bult Field.

9.3 Airport Traffic Control Tower

The location of a potential Airport Traffic Control Tower (ATCT) during the IAP should meet the inaugural (DBO) and intermediate (DBO+20) requirements of the airport. An evaluation of potential ATCT locations took into account that a potential second parallel runway would most likely be located north of the terminal development area. Five potential sites were examined for the ATCT location (see **Exhibit 9-3**).

9.3.1 ATCT Alternatives

Alternative ATCT-1 – Located near the inaugural passenger terminal building and north of the aircraft parking apron this site would be accessed from landside during the early days of the airport but as the terminal expands north it would be located within the aircraft parking area and require access through a AOA security gate.

Alternative ATCT-2 – Located at the center of the future (two-runway) airfield between the terminal access loop road and Kedzie Avenue. Access to the tower facility could be provided either from Kedzie Ave. or from Crawford Avenue via a secured access road.

Alternative ATCT-3 – Located south of the inaugural primary runway (09-27) about halfway between both runway ends. This option would also offer an excellent line-of-sight over the primary runway and associated taxiway system, as well as the crosswind runway, and would provide controllers with an unobstructed view of the apron ramp. However this alternative would not be ideal if a second runway parallel to 09-27 is constructed north of the passenger terminal area.

Alternative ATCT-4 – Proposed by ALNAC, the ATCT is located on the ultimate airport East-West centerline 1200 feet east of the future cross airport dual taxiway. Access would be provided via West Offner Road and Crawford Avenue with a separate secure access.

Alternative ATCT-5 – Located on the ultimate airport centerline adjacent to the future cross airport dual taxiway aligned with the runway 27 threshold. Landside access would be via a dedicated access roadway from Western Avenue.

9.3.2 ATCT Evaluation Criteria

A rating system similar to the one used in the assessment of the airfield, landside and terminal facilities was employed in evaluating the location of the ATCT facility alternatives. Additional mandatory and non-mandatory evaluation criteria were added from *FAA Order 6480.4, Airport Traffic Control Siting Criteria*. The Inaugural ATCT alternatives were examined and evaluated based on the criteria that are listed in **Table 9-7**. A short description of how each evaluation criteria was used to evaluate the alternatives is provided below.

Table 9-7
Inaugural Airport – ATCT Alternatives
Evaluation Criteria

No.	Criteria	Definition
1	**Ability to maximize ATCT operational efficiency**	• Minimize distance to runway threshold • Minimum height to achieve 35' line of sight • Maximize controller's depth of field in relation to arriving aircraft • Maintain clear view of arriving aircraft and operational surfaces of the airfield.
2	**Landside access**	• Minimize travel distance from major highways providing vehicle access to the airport.
3	**Compatibility with future airport plan**	• Minimize possible conflicts with future airport development.
4	**Ability to avoid and/or minimize adverse land use impacts and community disruption**	• Population displacement
5	**Ability to avoid and/or minimize impacts on natural resources**	• Impacts to wetlands • Impacts to floodplains • Impacts to water resources • Impacts to prime farmlands
6	**Comparison of relative costs**	• Compares relative costs of each ATCT location/concept including: o off-airport roadway improvements o taxiways o environmental mitigation o earthwork

Criterion 1 – Maximize ATCT Operational Efficiency

Sub –criterion 1a – Greatest distance to RW Threshold – This criterion defines the visual distance to the runway threshold. The shortest distance to the RW threshold is considered preferable.

Sub-criterion 1b – Minimum Height – This criteria is defined as a mandatory ATCT siting criteria by FAA Order 6480.4. The eye height of the controller must be calculated to permit a minimum 35' line of sight to all critical airport operating surfaces including runways, taxiways, and aircraft apron areas.

sub-criterion 1 c – Viewing orientation – This criterion evaluates depth of visual field relative to the arriving aircraft. The greater viewing angle relative to the line of arriving stream of aircraft is preferable.

Sub-criterion 1d – Shadowing conditions – This criterion evaluates the extent of visual shadowing of operational surfaces of the airport by buildings, other structures, or aircraft.

Criterion 2– Landside Access – This criterion estimates access distances from the major highways providing vehicle access to the airport. Those alternatives with shorter average access distances/times rated higher than those with longer access distances/times.

Criteria 3 – Compatibility with Future Plan – This criterion assessed the extent to which the proposed ATCT facility location fit into the development of the

future airport plan by assessing potential conflict with the development of future planned facilities.

Criteria 4 – Ability to Avoid and/or Minimize Adverse Land Use Impacts and Community Disruption This criterion rates impacts that are of concern to the landowners and communities surrounding the site.

Sub-criterion 4a - *Population Displacement* – Alternatives that minimize impacts to homes and residents were rated higher than those that had greater impacts.

Criterion 5 –Ability to Avoid and/or Minimize impacts to Natural Resources– 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. Each sub-criterion was rated separately and then averaged with ratings from the other sub-criteria for each alternative.

Sub-Criterion 5a –Impacts to Wetlands – Alternatives that would result in fewer impacts to wetlands rated higher than alternatives with greater impacts.

Sub-Criterion 5b –Impacts to Floodplains – Alternatives that would result in fewer impacts to floodplains rated higher than alternatives with greater impacts.

Sub-Criterion 5c –Impacts to Water Resources – Alternatives that would result in fewer impacts to water resources (streams, lakes, etc.) rated higher than alternatives with greater impacts to water resources.

Sub-Criterion 5d –Impacts to Prime Farmland – Alternatives that would result in fewer impacts to prime farmland rated higher than alternatives with greater impacts to prime farmland.

Criterion 6 – Relative Cost Comparison – Compares relative costs of each alternative. Alternatives that have higher overall costs ranked lower than alternatives that have lower costs. Items considered include earthwork, site preparation, access road improvements, creek crossings, taxiway length and environmental impacts, such as, wetlands, floodplains, and water resources.

9.3.3 ATCT Evaluation Matrix

Table 9-8 below illustrates the evaluation matrix used to assess potential sites for the inaugural ATCT facility. The evaluation worksheet with a more detailed explanation of the rating scale is shown in **Table 9-9.**

Table 9-8
Inaugural Airport – ATCT Location Alternatives
Evaluation Matrix

No.	Criteria	ATCT - 1	ATCT -2	ATCT -3	ATCT-4	ATCT-5
1	**Ability to Maximize ATCT Operational Efficiency**	**2.5**	**3.4**	**4.5**	**3.0**	**3.4**
a	*Greatest distance to RW threshold*	*1*	*4*	*5*	*3*	*2*
b	*Minimum tower height to achieve 35' line of sight.*	*1*	*3*	*5*	*1*	*3*
c	*Viewing orientation – depth of field relative to arriving aircraft*	*3*	*1.5*	*3*	*3*	*3.5*
d	*Shadowing conditions*	*5*	*5*	*5*	*5*	*5*
2	**Landside Access** *Access distance from major road/highway*	**3**	**3**	**1**	**3**	**5**
3	**Compatibility with future airport plan**	**3**	**4**	**3**	**5**	**1**
4	**Ability to avoid and/or minimize adverse land use impacts and community disruption**	**5**	**5**	**5**	**5**	**5**
a	*Population displacement*	*5*	*5*	*5*	*5*	*5*
5	**Ability to avoid and/or minimize impacts on Natural Resources**	**5**	**2**	**3.5**	**4**	**3.3**
a	*Wetlands*	*5*	*1*	*3*	*5*	*1*
b	*Floodplains*	*5*	*1*	*5*	*1*	*5*
c	*Water Resources*	*5*	*5*	*5*	*5*	*5*
d	*Prime farmland*	*5*	*1*	*1*	*5*	*2*
6	**Relative Cost Comparison**	**4.3**	**2.4**	**3.1**	**3.6**	**3.1**
a	*Relative tower height*	*1*	*3*	*5*	*1*	*3*
b	*Access roadway improvements. (miles)*	*3*	*3*	*1*	*3*	*5*
c	*Creek crossings*	*5*	*4*	*4*	*4*	*4*
d	*Taxiways (lineal feet)*	*NA*	*NA*	*NA*	*NA*	*NA*
e	*Wetlands*	*5*	*1*	*3*	*5*	*1*
f	*Floodplains*	*5*	*1*	*5*	*1*	*5*
g	*Water Resources (streams)*	*5*	*5*	*5*	*5*	*5*
h	*Earthworks (cubic yards)*	*5*	*1*	*1*	*5*	*1*
i	*Site Preparation (construction site area*	*5*	*1*	*1*	*5*	*1*
	Total	**22.8**	**19.8**	**20.1**	**23.6**	**20.8**
	Rating	**3.8**	**3.3**	**3.4**	**3.9**	**3.5**

9.3.4 Selection of Preferred ATCT location

Based on the application of the evaluation criteria, the highest rated alternative was ATCT-4, which is located on the east-west centerline of the future airport plan. This alternative was followed by ATCT-3 which is located on the north-south centerline of the future airport plan south of runway 9/27. ATCT-1 and ATCT-5 are located within the future terminal development zones and, therefore, potentially conflict with the future development of the airport.

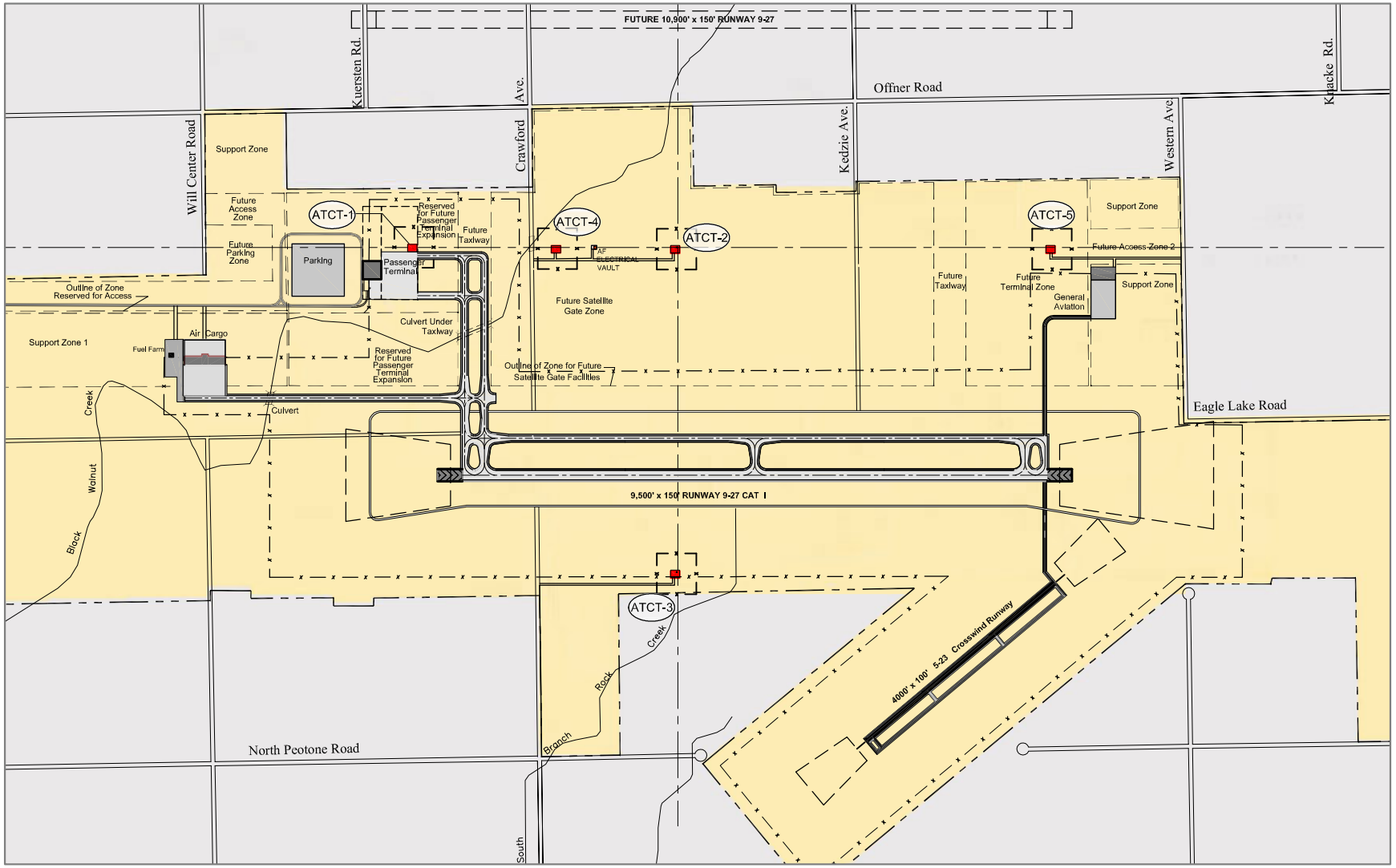
While ATCT-3, located to the south of primary runway 9/27, would provide fairly good visibility of the inaugural primary runway 9-27 and the crosswind runway 5-23, there are some concerns about depth of visual field relative to aircraft arriving on runway 9-27 and it does not perform as well on the future airfield. When considering the DBO+20 north runway, the ATCT-3 greatest length to runway threshold increase to approximately 11,025 feet and the height of the tower must be approximately 170' in order to achieve the minimum 35' line-of-sight angle. Because the life of an ATCT is quite long, it was judged that the site should be selected that would serve the airport into the intermediate phase of development rather than be limited to the inaugural phase.

However, the decision on when and where the ATCT will be constructed at SSA will be in accordance with FAA guidance and it is expected that the FAA will conduct its own study to determine the final location and elevation of the ATCT.

Table 9-9 Inaugural Airport – ATCT Location Alternatives Evaluation Worksheet							
Score	**Rating**	**Criterion 1a** Greatest Distance to RW Threshold	**Criterion 1b** Minimum Tower Height	**Criterion 1c** Viewing Orientation	**Critrtion 1d** Shadowing Conditions	**Criterion 2** Landside Access (Average access distance)	**Criterion 3** Compatibility with Future Airport Plan
5	**Excellent**	Shortest distance to RW threshold	Lowest tower height to achieve 35' line-of-sight	Greatest angle to arriving aircraft stream	Least shadowing	Shortest distance.	Within future support zone. Maximum operational. efficiency
4	**Good**	20 - 39% greater	20 - 39% greater	20 - 39% less	20 - 39% greater	20 - 39% greater	Within future support zone. Good operational. efficiency
3	**Average**	40 - 59% greater	40 - 59% greater	40 - 59% less	40 - 59% greater	40 - 59% greater	Within future support zone. Average operational efficiency
2	**Fair**	60 - 79% greater	60 - 79% greater	60 - 79% less	60 - 79% greater	60 - 79% greater	Within future support zone. Fair operational. efficiency
1	**Poor**	Longest distance to RW threshold	Greatest tower height to achieve 35' line of sight.	Least angle to arriving aircraft stream	Greatest shadowing	Greatest distance	Within future support zone. Poor operational efficiency

	Table 9-9 (continued) Inaugural Airport – ATCT Location Alternatives Evaluation Worksheet							
Score	**Rating**	**Criterion 4** Population displacement	**Criterion 5a** Wetlands Impacts	**Criterion 5b** Floodplain Impacts	**Criterion 5c** Water Resource Impacts	**Criterion 5d** Prime Farmland Impacts	**Criterion 6a** Relative Tower Height	**Criterion 6b** Access road improvements
5	**Excellent**	Least population displacement	Lowest acreage impacted	Lowest acreage impacted	Lowest stream length impacted	Lowest acreage impacted	Lowest	Least access road improvements
4	**Good**	20 - 39% greater displacment	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% greater impact	20 - 39% taller	20 - 39% greater
3	**Average**	40 - 59% greater displacement	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% greater impact	40 - 59% taller	40 - 59% greater
2	**Fair**	60 - 79% greater displacement	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% greater impact	60 - 79% taller	60 - 79% greater
1	**Poor**	Greatest population displacement	Highest acreage impacted	Highest acreage impacted	Highest stream length impacted	Highest acreage impacted	Tallest	Greatest access road improvements

Table 9-9 (continued) Inaugural Airport – ATCT Location Alternatives Evaluation Worksheet								
Score	**Rating**	**Criterion 6c** Creek crossings	**Criterion 6d** Taxiways	**Criterion 6e** Wetlands	**Criterion 6f** Floodplains	**Criterion 6g** Water resources (streams)	**Criterion 6h** Earthworks	**Criterion 6i** Site preparation
5	**Excellent**	No crossings	Shortest taxiways	Lowest acreage impacted	Lowest acreage impacted	Lowest length impacted	Lowest acreage impacted	Lowest acreage impacted
4	**Good**	One crossing	20 - 39% greater	20 - 39% greater	20 - 39% greater	20 - 39% greater impact	20 - 39% greater cost	20 - 39% greater cost
3	**Average**	Two crossings	40 - 59% greater	40 - 59% greater	40 - 59% greater	40 - 59% greater impact	40 - 59% greater cost	40 - 59% greater cost
2	**Fair**	Three crossings	60 - 79% greater	60 - 79% greater	60 - 79% greater	60 - 79% greater impact	60 - 79% greater cost	60 - 79% greater cost
1	**Poor**	Four crossings	Longest taxiways	Highest acreage impacted	Highest acreage impacted	Greatest length impacted	Greatest acreage impacted	Greatest acreage impacted



TAMS an *Earth Tech* Company

N

0 1250 2500 Ft.

Legend

- *PROPOSED AIRPORT BOUNDARY*
- *PROPOSED AIRPORT RUNWAY*
- *FUTURE TERMINAL DEVELOPMENT AREA (TA)*
- ATCT-3 *PROPOSED SUPPORT FACILITY ALTERNATIVE*
- *SUPPORT FACILITY ACCESS ROAD*
- *PROPOSED SUPPORT FACILITY SITE*

Inaugural Airport Support Facilities
Air Traffic Control Tower
Alternatives ATCT-1 to ATCT-5

Exhibit 9-3

9.4 Parking, Rental Car and Commercial Vehicle Staging Area Facilities

All of the required inaugural airport vehicle parking areas, as defined in Section 6 of the Facility Requirement Report, will be located in a centralized parking area in front of the passenger terminal building. The required parking area will include long and short term public parking, employee parking, rental car ready return, and commercial vehicle staging for taxis and limousines. As a result there is no need to evaluate alternatives for this function. These areas are summarized in **Table 9-10** and located in **Exhibit 9-4**.

Table 9-10
Inaugural Airport –Central Parking Area

	Parking Area Type	Spaces	Area *(sf)*
1	Public Parking	1400	560,000
2	Employee Parking	280	112,000
3	Rental Car Ready Return	70	28,000
4	Commercial Vehicle Staging	20	8,000
	Total Central Parking Area	**1770**	**708,000**

The draft *Demand/Capacity Analysis & Facility Requirements* report[3] indicated that approximately 1,400 spaces (base case forecast scenario) would be needed to accommodate public parking demand up to DBO+5. It is anticipated that during the inaugural phase long and short-term parking facilities would be located close to the passenger terminal facility within 300 feet of the terminal. Approximately 560,000 square feet of surface parking located across from the passenger terminal building could fulfill short and long-term public parking demand up to DBO+5.

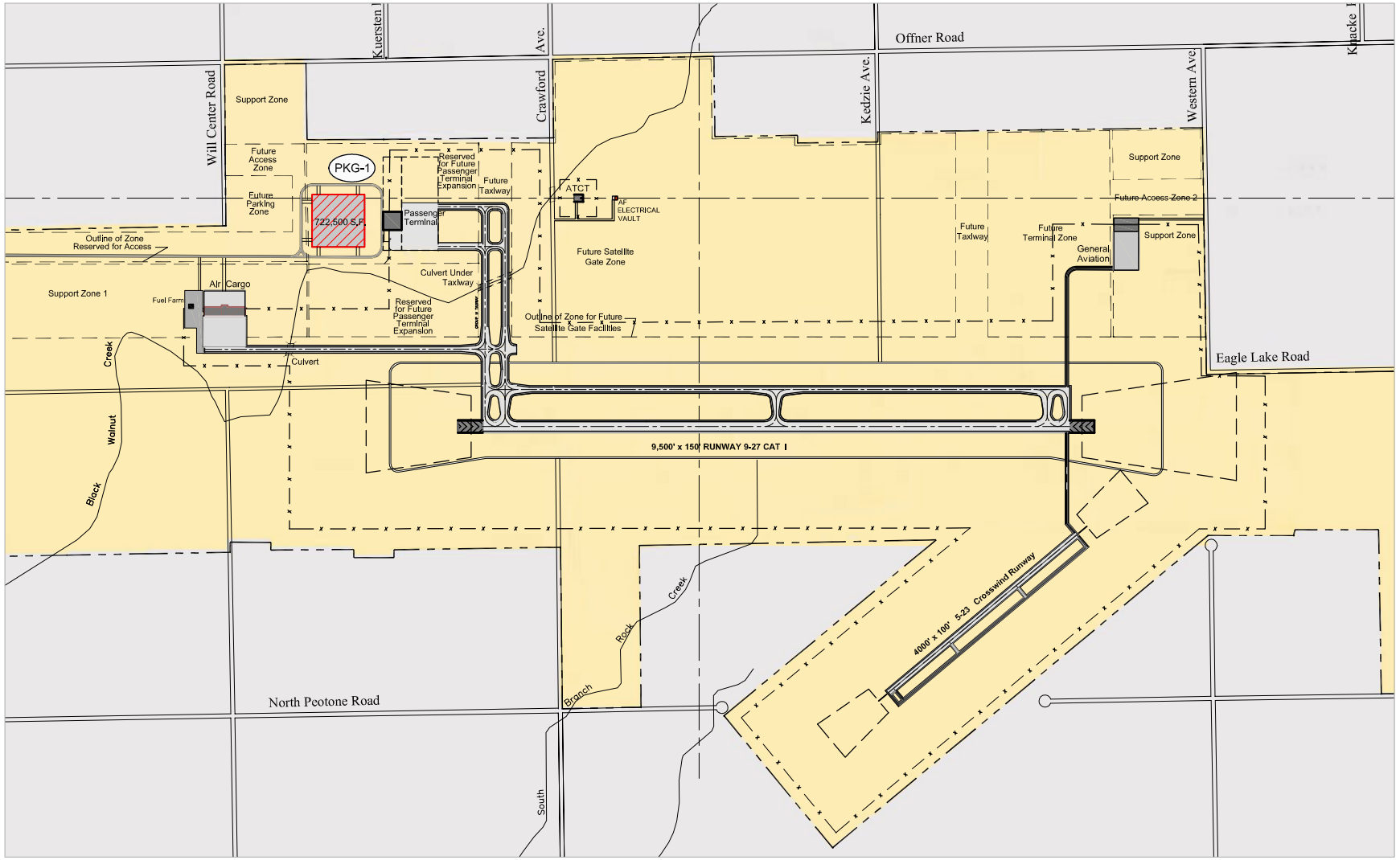
An optional and more convenient alternative would be construction of a multi-level parking structure, which could provide closer and more protected parking for passengers. Limited rental car spaces could be initially accommodated in the parking garage as well, and overflow rental car lots could be located remotely. However, construction of a parking garage would be dependent on a cost/benefit analysis and is not anticipated as part of the IAP.

Commercial vehicles (taxis and limousines) would load and unload passengers at the curbfront. A commercial vehicle staging area would be accommodated within the terminal loop roadway, providing for quick and efficient response times to the passenger terminal curb front. For passenger convenience, the parking, rental car and commercial vehicle staging area are planned to be located in close proximity to the passenger terminal and public parking lots.

When the area in the vicinity of the terminal building becomes constrained, remote economy parking lots could be provided in the southwest area of the airport, just south of the airport access road.

Employee parking would be initially located in the same general area as the public parking lots. As with public parking, if the area in the vicinity of the passenger terminal becomes constrained, employee parking could be relocated to the southwest area next to the remote economy parking lots. Employees working at other airport facilities (cargo, maintenance center, etc.) would be provided with convenient parking adjacent to their places of work. Rental car storage lots would also be relocated in the southwest area, close to the remote parking lots.

[3] Ibid.



TAMS an *Earth Tech* Company

N

0 1250 Ft. 2500 Ft.

Legend

- *PROPOSED AIRPORT BOUNDARY*
- *PROPOSED AIRPORT RUNWAY*
- *FUTURE DEVELOPMENT AREA*
- PKG-1 *PROPOSED SUPPORT FACILITY ALTERNATIVE*
- *SUPPORT FACILITY ACCESS ROAD*
- *PROPOSED PARKING*

Inaugural Airport Support Facilities Parking, Rental Car, & Commercial Vehicle Staging Location

Exhibit 9-4

9.5 Other Support Facilities

All of the following support facilities have been studied using the requirements developed in the draft Demand/Capacity Analysis & Facility Requirements report and FAA site selection criteria. Alternatives were developed for each but because of the secondary importance these facilities have in shaping the airport master plan it wasn't necessary to perform the same detailed evaluation that the major components had.

9.5.1 Aircraft Rescue and Fire Fighting Facility (ARFF)

9.5.1.1 ARFF Concept Alternatives

Three potential locations were identified for the inaugural ARFF facility (see **Exhibit 9-5**).

Alternative ARFF-1 – Located approximately 1,750 feet north and 6,000 feet west of the runway 27 threshold. This location is at the midpoint of RW 9/27 when it would be extended to 12,000'. This location has been chosen in order to place the ARFF in a central location relative to runway 09/27 with an equal response time to emergency situations toward either end of the primary runway.

Alternative ARFF-2 – Located approximately 2,500 feet north and 3,500 feet west of the runway 09 threshold. This location places the ARFF facility within the southwest support facility zone. The purpose of placing the ARFF facility in this location is to provide convenient landside access from the airport access road, to locate the ARFF facility in close proximity to other support facilities, and to provide direct access to the airside service roads. In this location, the ARFF facility could readily respond to both landside and airside emergency situations.

Alternative ARFF-3 – Located on the future east-west airport centerline near Crawford Avenue approximately 3,700 feet north and 1,350 feet east of the runway 09 threshold. The purpose of placing the ARFF facility in this location is to provide convenient landside access from Crawford Avenue, to provide an acceptable response time to inaugural runway 09/27, and to place the ARFF in a fairly central location when the north 09/27 runway is developed in the intermediate phase of the airport.

9.5.1.2 ARFF Evaluation and Preferred Alternative

Federal Aviation Regulations (FAR) Part 139, *Certification and Operations: Land Airports Serving Certain Air Carriers – Subpart D,* establishes guidelines and criteria for the response time to every emergency for aircraft rescue and fire fighting equipment. The National Fire Protection Association (NFPA) recommends that ARFF vehicles should have a maximum response time of 3 minutes from the time that an emergency occurs at an airport. In consideration of the critical importance of response time in locating the ARFF facility, alternative ARFF-1 is considered a better location for the inaugural ARFF since this location would provide a faster response time due to its proximity to the runways and to other support facilities.

9.5.2 Snow Removal Equipment Complex (SRE)

9.5.2.1 Snow Removal Equipment Complex (SRE) concept alternatives.

The draft *Demand/Capacity Analysis & Facility Requirements* report states that the Snow Removal Equipment Complex would require an estimated total site area of approximately 4.1 acres (base case forecast scenario), which includes the building, equipment parking area and employee parking areas.

Three potential locations have been identified for the inaugural SRE facility (see **Exhibit 9-6**).

Alternative SRE-1 – Located 1,350 feet north and 1,900 feet west of the runway 27 threshold. This site is in a fairly central location relative to runway 9/27 yet is well out-of-the-way of future terminal and concourse development. Direct landside access to the SRE complex is provided from Kedzie Avenue. The purpose of this location is to provide direct access to the primary runway for snow removal equipment with a short travel time from the SRE to the runway. Also, this location provides convenient landside access for maintenance personnel from Kedzie Avenue.

Alternative SRE-2 – Located 1,350 feet north and 4,250 feet west of the runway 9 threshold. This site is located in the southwest support facility zone. Direct landside access for maintenance personnel and vehicles is provided from the airport access roadway. The purpose of this location is to place the SRE in close proximity to other support facilities out-of-the-way of terminal and concourse expansion and to provide access to the runway and taxiways by airside service roads and the west taxiway extension.

Alternative SRE-3- Located 1,350 feet north and 1,800 feet east of the runway 9 threshold. This site is located near the midpoint of runway 9/27 when it would be extended to 12,000 feet. Direct landside access for maintenance personnel and vehicles to SRE-2 is provided from Crawford Avenue. The purpose of this location is to place the SRE at a fairly central point in the airport for efficient access to the runway and taxiway and, also, in close proximity to the ARFF facility and the ATCT.

9.5.2.2 Snow Removal Equipment Complex evaluation and preferred alternative.

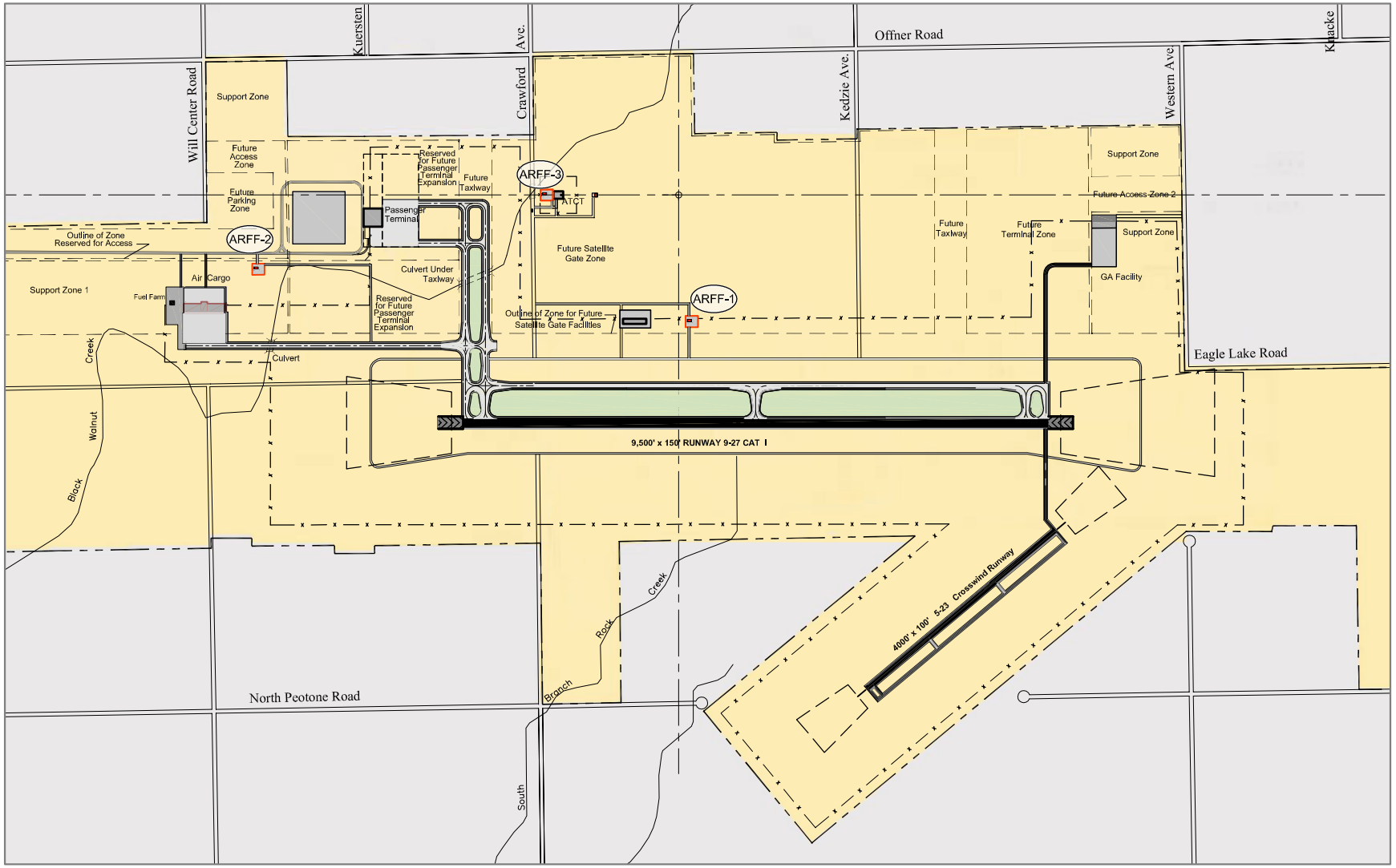
SRE-3 is the preferred concept alternative for the Snow Removal Equipment Complex. The preferred SRE site is located north of the primary runway in close proximity to the ARFF facility (see **Exhibit 9-6**). The location of SRE-3 near the center of the airport provides direct, convenient and efficient access to the runway, taxiways and apron areas for snow removal equipment.

9.5.3 Fueling Facilities

9.5.3.1 Air carrier aircraft fueling - It is anticipated that during the IAP aircraft fueling will be provided at the passenger terminal aircraft gates by aircraft fueling vehicles. Aircraft fuel storage will be in above ground tanks located within a secure fueling facility. Initially, the fueling facility will be located to the west of the cargo building. Landside access to the fueling facility will be provided for fuel tanker trucks to refill the fuel storage tanks. The fuel tanker trucks will not enter the secure airside of the airport. A fueling station will be provided on the secure airside for aircraft fueling vehicles to refill their tanks and transport the fuel to aircraft parked on the passenger terminal apron areas. As the airport grows, it may be necessary to move the fueling facility to the western borders of the airport support facility zone and construct an underground hydrant fueling system.

9.5.3.2 General aviation aircraft fueling – A secure fueling facility for general aviation aircraft will be provided at the General Aviation site. Fuel storage will be in above ground tanks.

9.5.3.3 Airport maintenance vehicle fueling - A secure fueling station with multiple vehicle fueling positions will be provided for airport maintenance and service vehicle refueling at the Snow Removal Building Complex.



TAMS an *Earth Tech* Company

N

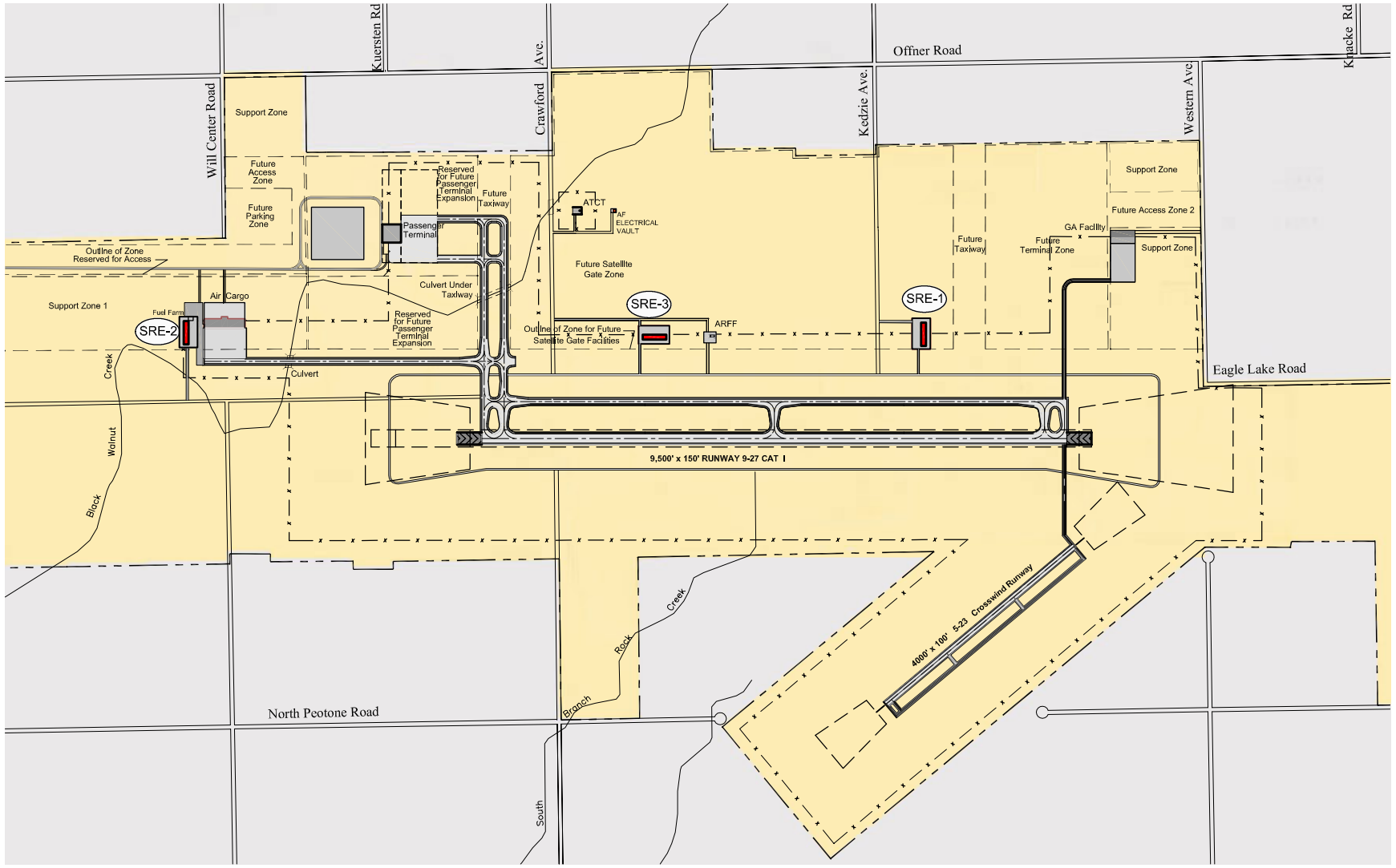
0 1250 Ft. 2500 Ft.

Legend

- *PROPOSED AIRPORT BOUNDARY*
- *PROPOSED AIRPORT RUNWAY*
- *FUTURE DEVELOPMENT AREAS*
- ATCT-3 *PROPOSED SUPPORT FACILITY ALTERNATIVE*
- *SUPPORT FACILITY ACCESS ROAD*
- *PROPOSED SUPPORT FACILITY SYMBOL*

Inaugural Airport Support Facilities
Aircraft Rescue and Fire Fighting Facility
Alternatives ARFF-1 to ARFF-3

Exhibit 9-5



TAMS an *Earth Tech* Company

N

0 1250 Ft. 2500 Ft.

Legend

- *PROPOSED AIRPORT BOUNDARY*
- *PROPOSED AIRPORT RUNWAY*
- *FUTURE TERMINAL DEVELOPMENT AREA (TA)*
- SRE-1 *PROPOSED SUPPORT FACILITY ALTERNATIVE*
- *SUPPORT FACILITY ACCESS ROAD*
- *PROPOSED SUPPORT FACILITY*

Inaugural Airport Support Facilities
Snow Removal Equipment Building
Alternatives SRE-1 to SRE-3

Exhibit 9-6

9.5.4 Service Roads and Security Access

A secure airside perimeter service road would link all facilities within the airport operations area (AOA). Access to the AOA would be restricted and entrances would have continuously manned gates. It is anticipated that in the inaugural phase all supply trucks and equipment would enter the AOA area via Kedzie Avenue. Employees working in the AOA area would access their workplace after passing through a security gate or they may be bussed to their workplace from the employee parking area.

9.5.5 Navigational Aids

The required Navigational and Visual Aids at the inaugural airport were discussed in the Facility Requirements chapter and they include runway NAVAIDS and airport visual aids. Following is a brief description of the NAVAIDS required at SSA at opening day.

The planning analysis concluded that the Inaugural Runway will be equipped with CAT I Instrument Landing System with a touchdown RVR[4] and Precision Approach Indicator Path (PAPI) for runway 27. Medium Intensity Approach Lighting System (MALSR) with Runway Alignment Indicator Lights will be installed on Runway 27. The runway lighting will also include High Intensity Runway Edge Light (HIRL). Wind cones will be installed at both ends outside the runway object free area.

A non-precision GPS approach system would be considered on both runways 9 and 27. Landings based on GPS eliminate many of the time and fuel-consuming maneuvers currently in use. Additionally, GPS can enable the addition of vertical guidance, a key component to increasing safety. The Global Positioning System (GPS) is a space-based radio-navigation system consisting of a network of satellites and ground stations used for monitoring and control, providing users with accurate information on position, velocity, and time.

Although an Airport Surveillance Radar (ASR) may not be required at DBO, an ASR may be established in the first five years *if* the level of benefits would be sufficient to warrant installation of such facility. The future ASR antenna could be sited relatively close to the ATCT, within an area approximately 2,700 feet north of and 4,400 feet west of runway 27.

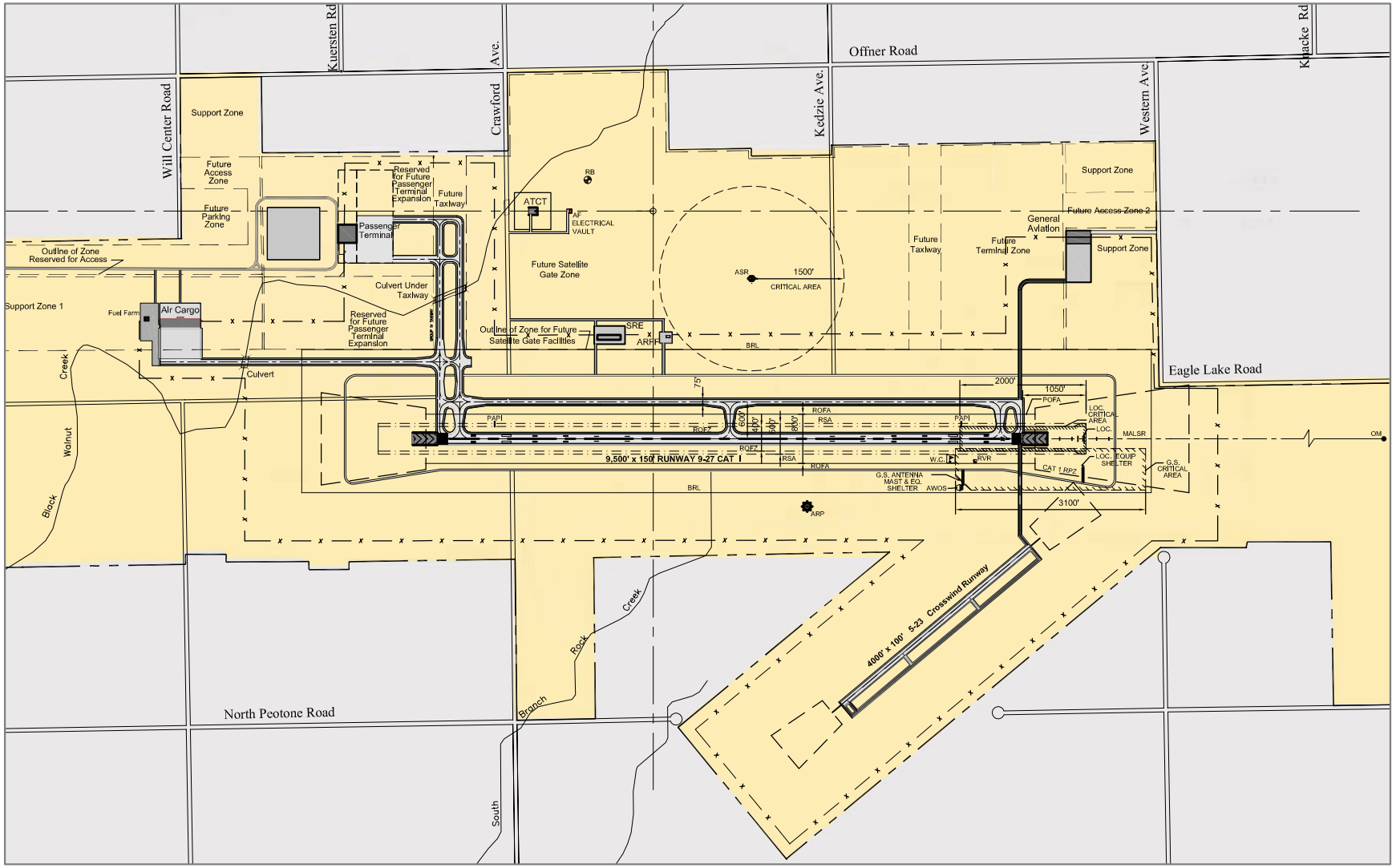
The Airport Rotating Beacon would be located in an area located approximately 4,800 feet north and 2,400 feet east of runway 9.

The Automatic Weather Observation Station[5] (AWOS) would be co-located with the glide slope antenna and equipment shelter, easily accessible for routine operations and maintenance.

Low Level Wind Shear Alert System (LLWAS) consists of a system of six sensors (or anemometers) which would be mounted on poles between 50-150 feet tall and strategically placed around the airport and runway.

[4] CAT I runways require only a touchdown RVR.

[5] The siting and installation of AWOS should conform with guidelines and in AC 150/5220-16C. Airport sponsors should coordinate with the regional FAA program manager the installation of AWOS.



TAMS an *Earth Tech* Company

N

0 1250 Ft. 2500 Ft.

Legend

- PROPOSED AIRPORT BOUNDARY
- PROPOSED AIRPORT RUNWAY
- FUTURE DEVELOPMENT AREAS
- SUPPORT FACILITY ACCESS ROAD
- AOA Fence
- BUILDING RESTRICTION LINE
- RUNWAY SAFETY AREA (RSA)
- PRECISION OBJECT FREE AREA (POFA)
- RUNWAY OBJECT FREE AREA (ROFA)

Inaugural Airport Support Facilities
Nav Aids & Service Roads

Exhibit 9-7