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Dual Track Airport Planning Process

New Airport Comprehensive Plan

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Metropolitan Airports Commission

June 1995



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DUAL TRACK AIRPORT PLANNING PROCESS

A Dual Track Airport Planning Process – designed to study the region’s long-term aviation needs – was established in 1989 by the Minnesota Legislature’s Metropolitan Airport Planning Act. The seven-year planning process is being conducted by the Metropolitan Airports Commission (MAC) and the Metropolitan Council.

One track addresses providing the region’s long-term aviation needs by expanding Minneapolis-St. Paul International Airport (MSP). The other track studies meeting capacity needs by building a new (replacement) airport in Dakota County.

The Metropolitan Council conducted the new airport search area study and prepared an MSP Airport reuse study. The MAC is responsible for selection of a new airport site within the search area, preparing a comprehensive plan for an airport on the selected site, developing the Long Term Comprehensive Plan for MSP, and preparing the state environmental documentation.

The Airport Planning Act requires the MAC and Metropolitan Council to make a recommendation to the Legislature in July 1996 on which approach should be taken to meet future airport development needs.



SUMMARY OF NEW AIRPORT ACTIVITIES

The Metropolitan Airport Planning Act requires the Metropolitan Airports Commission to develop a comprehensive plan for a potential new air carrier airport on the site previously selected in the Dakota Search Area. The plan, as directed by the Minnesota Legislature, assumes that if the new airport option is selected, Minneapolis-St. Paul International Airport will close and the new airport will be designed to accommodate the region's Year 2020 aviation needs.

The process for developing a New Airport Comprehensive Plan spanned nearly six years and included four major tasks:

1. Develop a conceptual airport layout.
2. Designate a search area.
3. Select a site in the search area.
4. Develop a comprehensive plan for the site.

New Airport Conceptual Design

The first step in the new airport planning process was development of a conceptual layout to be used for new airport search area and site selection purposes. The latest available forecasts were used to determine airfield, terminal and land-side facility requirements.

The conceptual layout consisted of four parallel primary runways and two crosswind runways surrounding a centrally located terminal. The runways were separated by enough distance to permit triple simultaneous landings in poor

weather conditions and were "staggered" to eliminate runway crossings by taxiing aircraft.

The Metropolitan Airports Commission adopted the new airport conceptual layout in December 1990.



Search Area Selection

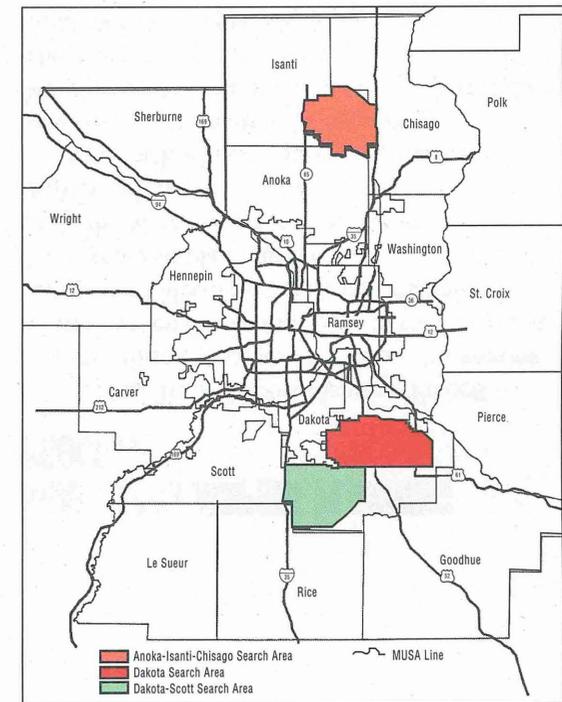
Using the conceptual layout developed by the MAC, the Metropolitan Council identified three potential search areas for the location of a new airport:

1. North of Minneapolis-St. Paul overlapping portions of Anoka, Isanti and Chisago counties.
2. South of Minneapolis-St. Paul in east

central Dakota County.

3. South of Minneapolis-St. Paul in southwest Dakota County, overlapping a small portion of Scott County.

In 1991, the 17-mile by 8-mile search area in east central Dakota County was selected by the Metropolitan Council. This location was the closest to the Twin Cities, had the fewest environmental impacts and the lowest population densities of the three search areas.





SUMMARY OF NEW AIRPORT ACTIVITIES (continued)

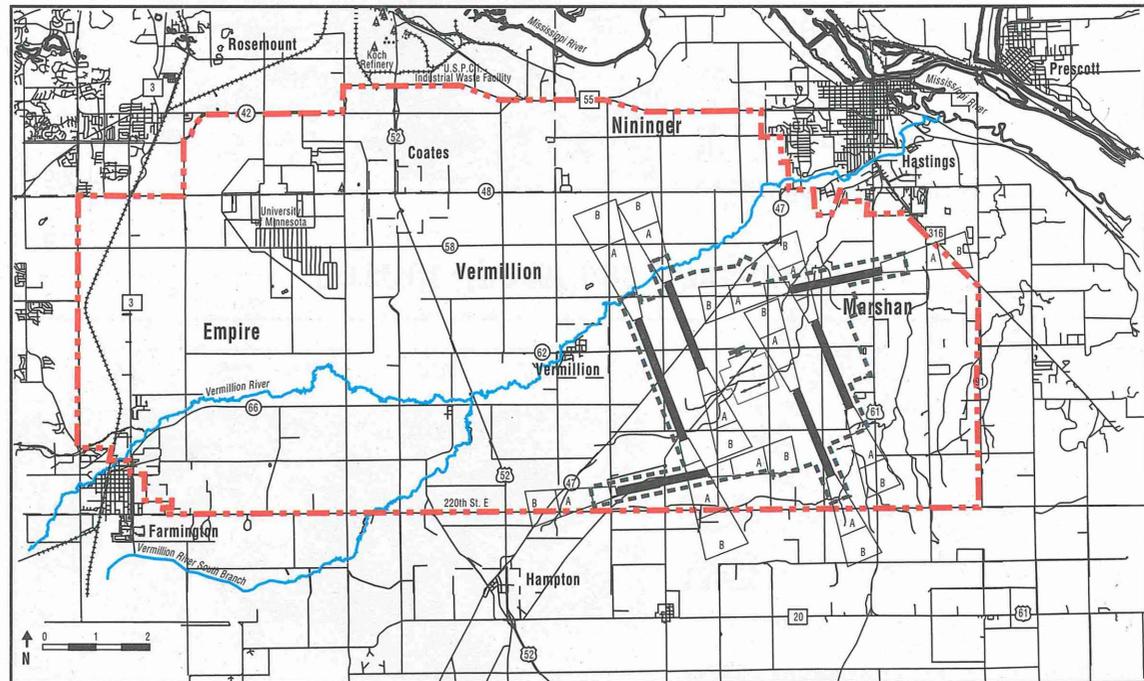
Site Selection

In January 1992, the MAC began the process of identifying a site within the Dakota Search Area. A three-step site selection process was used:

- Site Identification,
- Site Screening, and
- Site Selection.

The purpose of the first step, site identification, was to identify an initial set of potential sites within the Search Area. The number and scope of criteria were limited to permit the identification of as many sites as possible, while eliminating portions of the Search Area where locating an airport would be extremely difficult. The site identification exercise resulted in seven potential sites: three east of the Vermillion River and four west of the Vermillion.

Under site screening, the seven potential sites were evaluated using a set of 56 criteria, in order to screen out the least promising sites. The analysis resulted in four of the seven sites being eliminated from further consideration. The remaining candidate sites, two east of the Vermillion River and one west of the river were carried forward to the last phase of the site selection process.



Site 3

The purpose of the last step of the process – site selection – was to select a preferred site for the new airport from among the three remaining candidate sites. A comprehensive set of 67 criteria addressing operational, socioeconomic, community and environmental factors was used to identify the most favorable site.

On Jan. 27, 1994, following public review and comment, the MAC selected Site 3, in the southeastern part of the search area, as the preferred location for a potential new air carrier airport for the Twin Cities.



DEVELOPING A NEW AIRPORT COMPREHENSIVE PLAN

After the new airport site was selected, the process began for developing a New Airport Comprehensive Plan. Initially, revised aviation activity forecasts and facility requirements were incorporated to confirm airfield requirements and terminal size and to make necessary refinements.

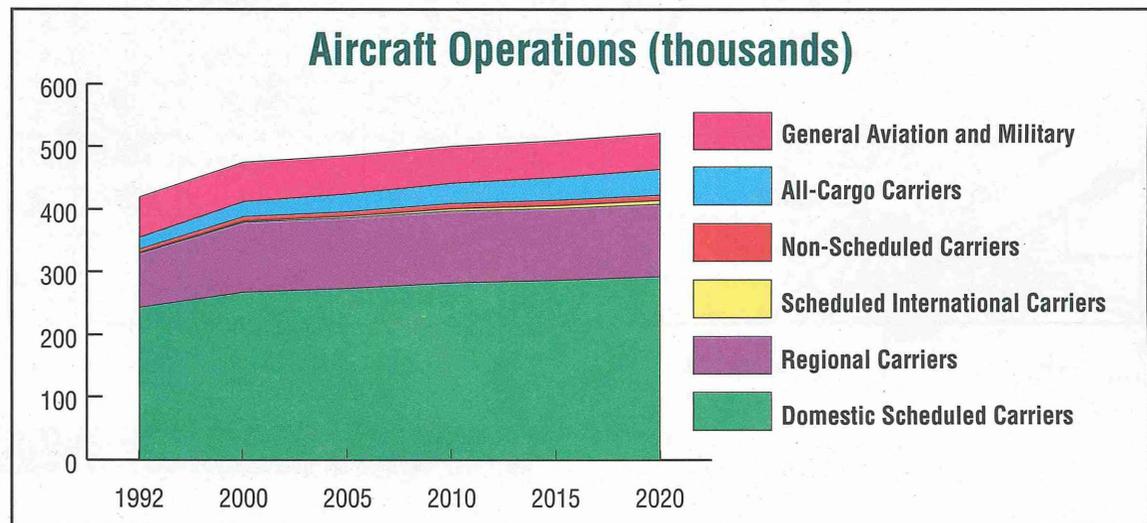
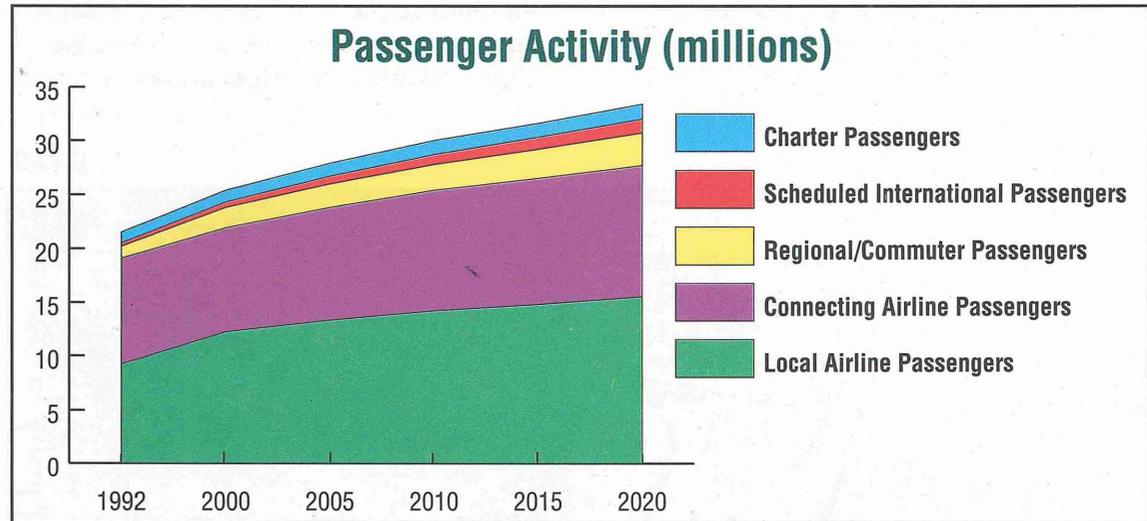
Then, alternative layouts were developed to test operational and environmental impacts of various airfield and support facility configurations. Finally, a New Airport Comprehensive Plan was developed based on analysis of the alternatives.

Activity Forecasts

The New Airport Comprehensive Plan used the same aviation activity forecasts and facility requirements as the MSP Long Term Comprehensive Plan. The 2020 forecasts were updated in 1993 to account for airline industry changes. Should a new airport be developed, activity levels could vary slightly from those forecast for MSP.

The forecast update process included recent industry changes caused by airline financial status, aircraft fleet plans, the role of regional (commuter) airlines, and local and national economies.

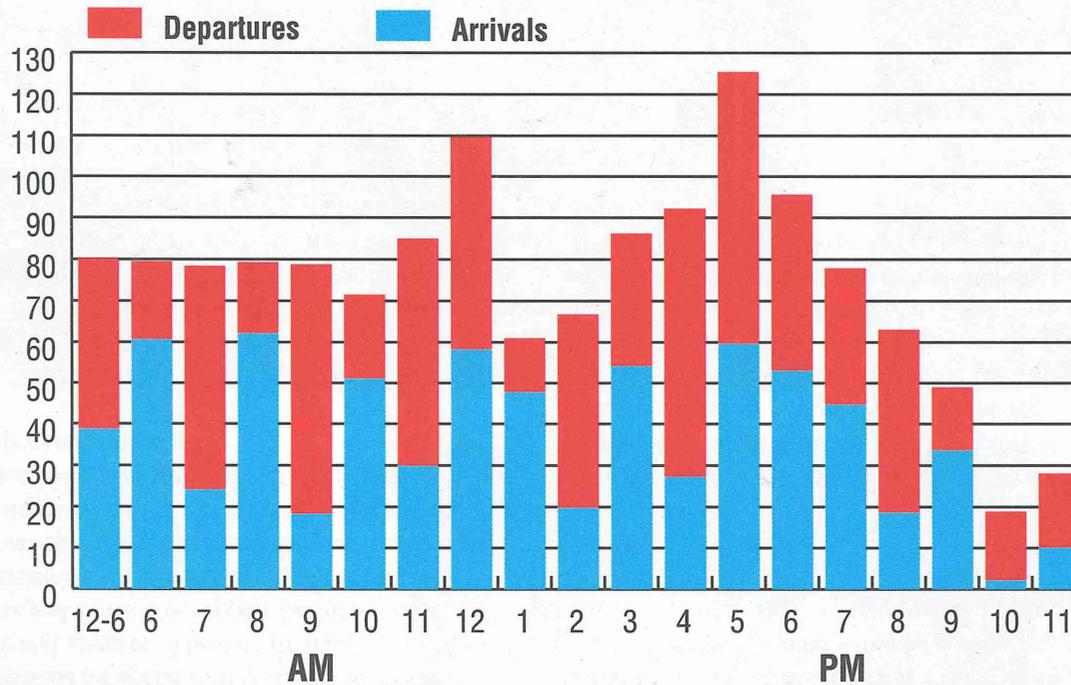
In order to ensure that the revised forecasts considered all viewpoints, four "expert panel" workshops were convened in 1992 and 1993 by the MAC and Metropolitan Council. The forecasts estimate passengers will grow from 21 million in 1992 to 33 million in 2020, and operations will increase from 418,000 to 520,000.





DEVELOPING A NEW AIRPORT COMPREHENSIVE PLAN – Activity Forecasts (continued)

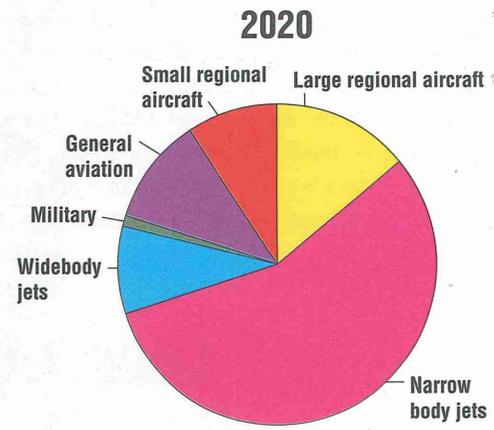
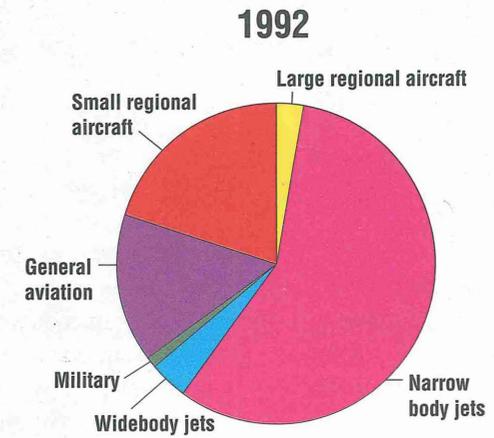
2020 Hourly Distribution of Aircraft Arrivals and Departures



Future increases in aircraft arrivals and departures will occur in all hours of the day, with peak operations occurring in the afternoon. In the future, the total aircraft fleet mix will include an increased percentage of large regional aircraft (30-50 seats) and more widebody jets.

The updated forecasts were used to revise the facility requirements – originally identified during development of the conceptual layout – to ensure that the proposed airport could accommodate future demand.

1992 and 2020 Total Fleet Mix





DESCRIPTION OF NEW AIRPORT COMPREHENSIVE PLAN ALTERNATIVES

Following facility requirement revisions, four alternative new airport layouts were developed and analyzed for operational efficiency and environmental impacts. The four alternatives varied in size and location of support facilities, while preserving the general layout of the original conceptual design. One of these alternatives was eliminated during the environmental scoping process because it would significantly reduce operational capacity.

Alternative 1 – the largest of the three alternatives at approximately 9,600 acres – is designed to maximize the amount of time the runways could operate in the most efficient manner. This is accomplished by moving the crosswind runways farther from the parallel runways. A drawback of this design is the greater taxiing distance between the terminal and the crosswind runways.

The longest runway, to be used for international flights, is located on the west side of the airport. Aircraft maintenance is located on the western edge of the site, while cargo facilities are located between the two western parallel runways. Military facilities are positioned north of the passenger terminal.

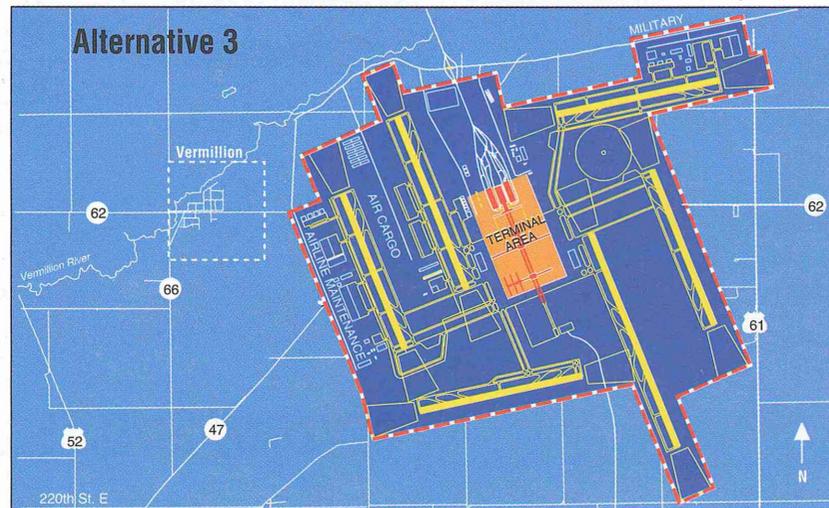
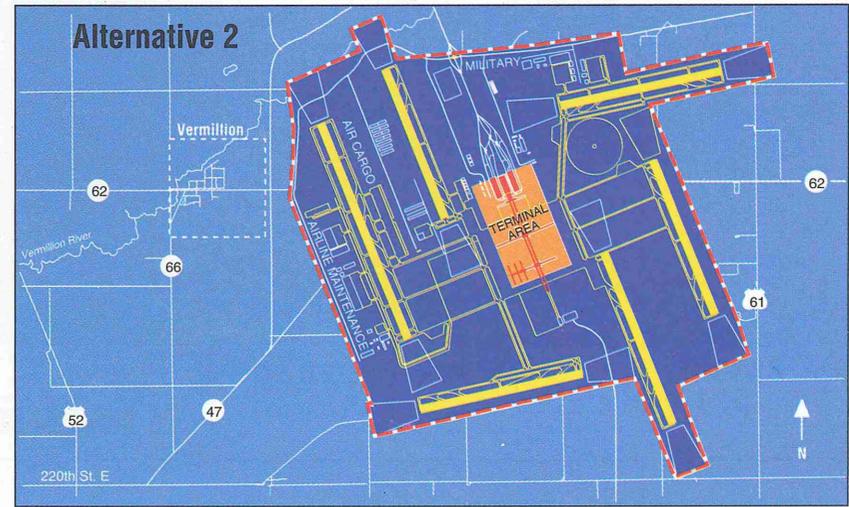
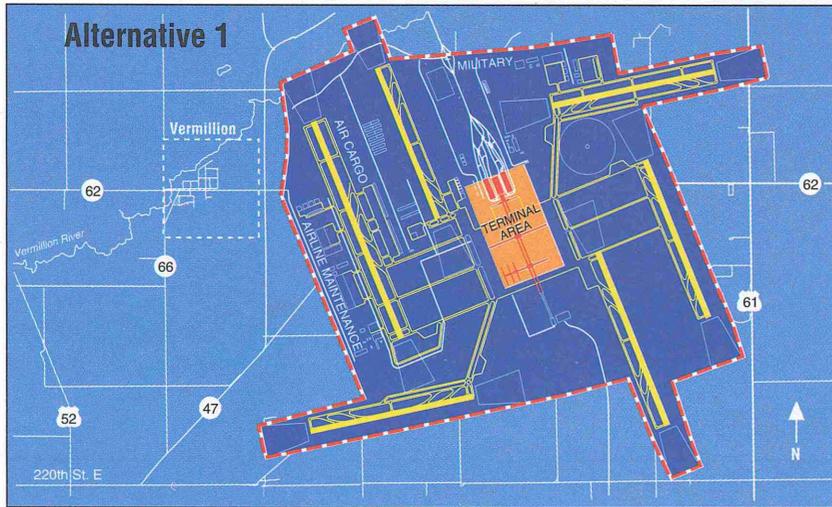
Alternative 2 – approximately 9,330 acres – is similar to Alternative 1 except the southern crosswind runway is shifted closer to the terminal. Although this adjustment lowers the percentage of time the most efficient operation can be used, the taxiing distance from this runway to the terminal is reduced. Maintenance, cargo and military facilities are all located in the same position as in Alternative 1.

Alternative 3 – approximately 8,640 acres – is designed to minimize the site's size. The crosswind runway locations are similar to Alternative 2; however, the parallel runways are less staggered to reduce overall taxiing distances. With this design, some taxiing aircraft would have to cross active runways. During busy periods, delays would result as aircraft wait for clearance to cross the runways.

With Alternative 3, the longest runway is located on the east side of the airport. Cargo faces the inboard western runway, and military facilities are located at the eastern end of the northern crosswind runway.



AIRPORT ALTERNATIVES ILLUSTRATIONS





RESULT OF ALTERNATIVES ANALYSIS

The alternatives were evaluated based on a number of factors, addressing both operational and environmental issues.

Operational Issues

Airport efficiency (including the percentage of time the highest capacity runway modes could be used and average aircraft system travel time), airport and airspace interaction, location and efficiency of support facilities (including military,

cargo, general aviation, maintenance) and expansion potential were all analyzed.

The results showed that the three alternatives met future requirements with minimal aircraft delay, with Alternatives 1 and 2 preferable to Alternative 3.

Environmental Issues

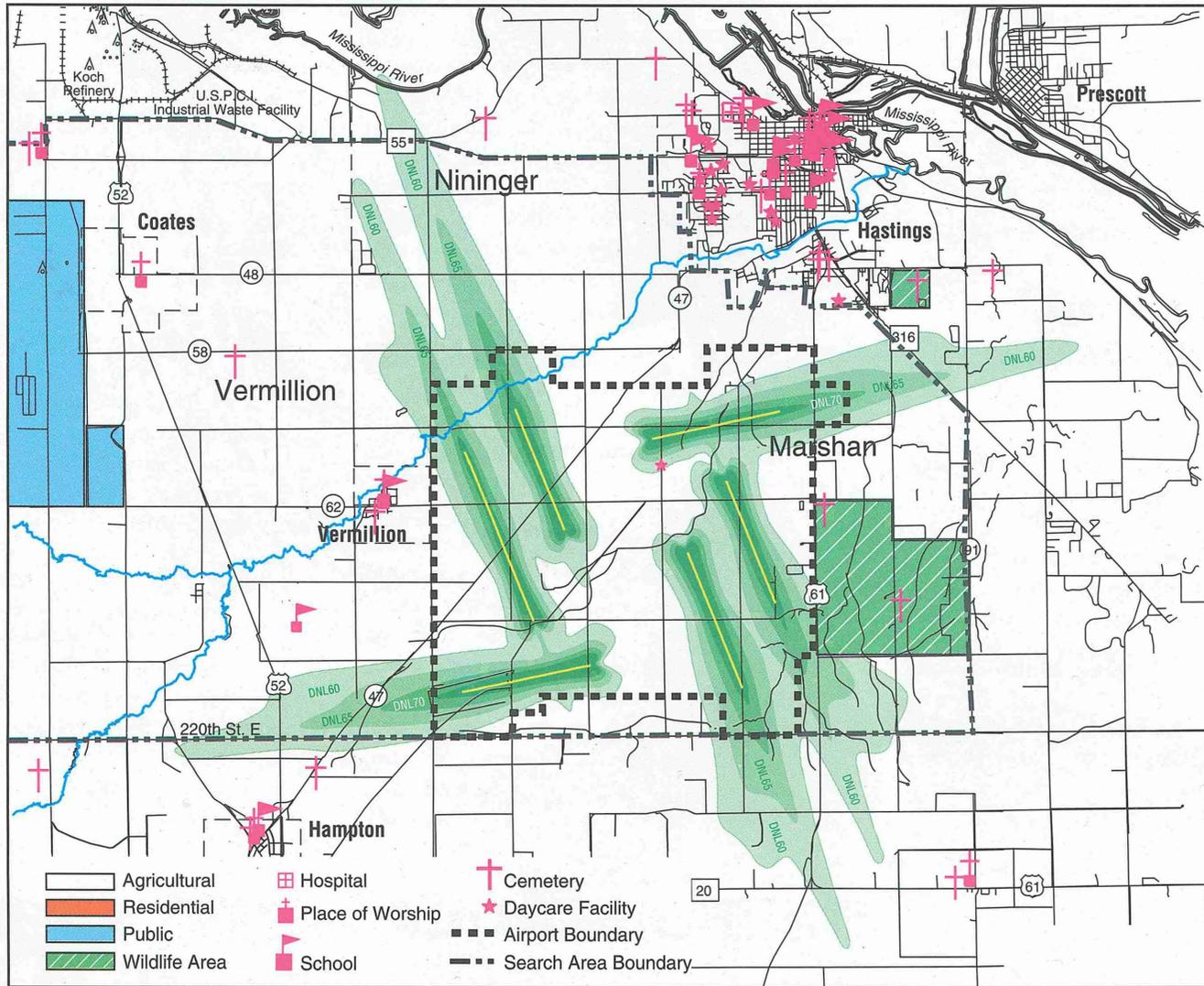
As with operational issues, the three alternatives had similar environmental impacts, with

Alternatives 1 and 2 preferable in terms of floodway fringe impacts and stormwater management. Alternative 3 was preferable in terms of displaced population, archaeological and historical impacts, and park/recreation impacts. Given the similarities among the three alternatives, a composite alternative was developed using the best characteristics of each.

Environmental Factors				
Factor	Alternative 1	Alternative 2	Alternative 3	
Displaced population	590	560	470	
Year 2000 population within state safety zones, DNL 60 and DNL 65 noise zones.	900	880	910	
Potential Nat'l Reg. of Historic Places archaeological sites affected by airport facilities	3	3	2	
Potential Nat'l Reg. of Historic Places structures, districts, and rural historic landscapes affected by airport facilities, and/or DNL 65 noise levels:	5	5	4	
Acres of prime farmland within minimum site boundary (including undrained land)	6,370	6,250	5,870	
Acres of park/recreation land outside site boundary and within DNL 65 noise contour	44	27	9	
Acres of wetlands likely to be removed by construction and operation of airport facilities:	0	0	0.2	
Acres of floodway fringe likely to be eliminated by airport facilities:	230	160	320	
Ability to create adequate stormwater management ponding on site:	Good.	Good.	Need add't'l acreage.	



NEW AIRPORT NOISE CONTOUR AND LAND USE





RECOMMENDED NEW AIRPORT COMPREHENSIVE PLAN

At its April 17, 1995 meeting, the Metropolitan Airports Commission approved a New Airport Comprehensive Plan. The plan incorporates the best operational and environmental features of each of the three alternatives analyzed during the planning process.

Airfield

The New Airport Comprehensive Plan layout is similar to the original conceptual layout. It includes six runways – four parallel runways and two crosswind runways – surrounding a centrally located terminal. The parallel runways are staggered to decrease taxiing distance and to allow for taxiing routes which eliminate runway crossings. The two crosswind runways provide additional capacity, increased airspace efficiency for east and west bound flights, and improved wind coverage.

The two crosswind runways and two of the parallel runways are 9,000 feet long and 150 feet wide. A longer runway is provided on either side of the terminal for international flights. One runway is 10,000 feet and one is 12,500 feet long. Both are 200 feet wide to meet the requirements of future generation high capacity aircraft.

Terminal

The terminal area, centrally located between the middle pair of runways, includes a passenger terminal and a parking garage on either side. One garage is dedicated to private vehicles, while the

other garage is dedicated to rental cars, taxis, hotel/motel courtesy vehicles, and other public transportation.

Regional/commuter gates are immediately adjacent to the main terminal; two mid-field concourses provide domestic and international air carrier gates. An underground people mover provides access between the terminals and concourses. The terminal area includes a de-icing facility on either side of the mid-field concourses. These locations maintain good aircraft circulation and minimize taxiing times even during de-icing activities.

Support Facilities

The cargo area is located between the two western parallel runways, facing the inboard runway. This location provides for less restricted cargo building heights and good aircraft circulation. Maintenance is located on the western side of the airport to take advantage of fewer building height restrictions. Military facilities are positioned north of the northern crosswind runway. General aviation facilities are north of the main terminal near the western inboard runway.

Property Boundary

The property boundary has been adjusted to reflect the plan's changing needs. The boundary, which initially included a minimum area for airport facilities and Federal Runway Protection

Zones, has been refined to follow property lines and roadways. The resulting property contains approximately 14,100 acres.

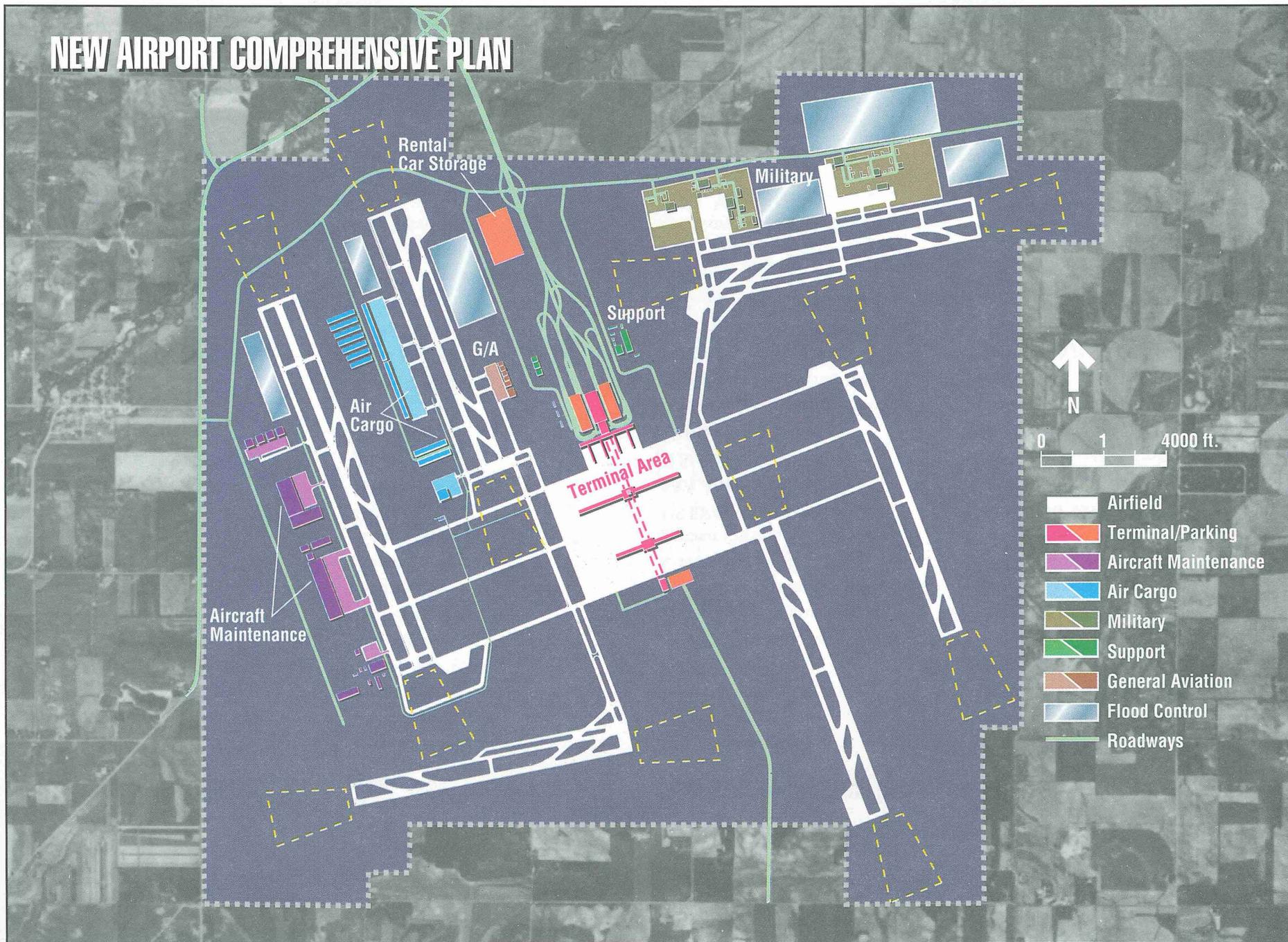
Development Costs

Preliminary costs, in 1994 dollars, were identified for airfield, terminal, runway and support facilities. These cost estimates represent direct costs of acquisition and construction of major facilities. The estimated cost for development of the selected alternative is approximately \$4 billion.

New Airport Cost Summary (millions of 1994 dollars)

Property Acquisition.....	\$53
Airfield.....	\$301
Terminal	\$1,242
Roadways (including terminal and circulation roadways and freeway connection).....	\$91
Other Facilities	\$1,459
Major Utilities	\$58
Design and Contingencies.....	\$801
Total Development Costs	\$4,005

NEW AIRPORT COMPREHENSIVE PLAN





APPENDIX

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