Westchester County Airport
Master Plan Update

December 1986

Prepared for

Westchester County Department of Public Works

by

HNTB Howard Needles Tammen & Bergendoff

WESTCHESTER COUNTY AIRPORT

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Alexandria, Virginia

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CHAPTER 1. INTRODUCTION

This report describes the process of updating the Master Plan and Airport Layout Plan for Westchester County Airport in New York. This chapter discusses the background and previous airport planning, the issues involved in updating the Master Plan, and airport policy guiding the Master Plan Update.

Chapter 2 of this report describes existing conditions at the airport. Chapter 3 analyzes airport capacity and presents an analysis of existing and forecast aviation activity under the policy constraints. Chapter 4 discusses airport requirements and concepts developed under the policy guidelines. Chapter 5 presents the recommended development plan, including the Airport Layout Plan sheets. Chapter 6 discusses plan implementation and financing.

1.1 BACKGROUND

Westchester County Airport was constructed by the federal government in 1942 and 1943 as an air defense satellite base for New York City. In late 1943 the facility was turned over to the County. The airport is currently managed for the County under contract by Pan Am World Services, Inc.

Between 1978 and 1980, HNTB developed a Master Plan for Westchester County Airport. With the airport then operating near its capacity, the emphasis of the plan was on improving facilities for existing users. The two principal recommendations of the 1980 plan were construction of a new passenger terminal and development of a short runway parallel to Runway 16-34, to be used for general aviation.

Following publication of the Master Plan in 1980, the County began a study of the environmental impacts of the proposed improvements. The environmental study included preparation of an Environmental Assessment (EA) following the Federal Aviation Administration guidelines, combined with preparation of a Generic Environmental Impact Statement (GEIS) to satisfy New York State requirements.

Work on the EA/GEIS was halted in 1983 when the County became involved in a study of policy regarding the airport's future role and development. Also at that time, Midway Airlines, which wanted to serve the airport, brought suit against the County. Other parties, including other airlines and the FAA, joined in the litigation. The litigation was settled with a "Stipulation and Order of Partial Settlement and Dismissal," agreed to by the parties involved in February 1985. Following the Stipulation agreement, the County Board of Legislators adopted a Statement of Airport Policy in October 1985. The policy statement directs the preparation of this update of the Master Plan and Airport Layout Plan. The airport policy statement is reproduced as Appendix A and the Stipulation agreement as Appendix B.

1.2 ISSUES

The major issues involved in updating the Master Plan are similar to those at the time of the previous Master Plan Study. They include concern over aircraft noise, airport expansion and growth, and development of a new passenger terminal.

The introduction of quieter aircraft into the air carrier and general aviation fleet has reduced aircraft noise in recent years. Nevertheless, the high level of corporate jet use and the growth in air carrier service at the airport have resulted in the continued concern of airport neighbors over aircraft noise.

Tied to the concern over noise, vehicular traffic and other impacts of the airport is the underlying issue of airport expansion and development. A specific point of debate is the development of a new passenger terminal. The existing facility is inadequate by almost any measure, and the issue is whether the County should proceed with the construction of a new modern terminal building, providing a suitable gateway for Westchester County.

Another issue is who should use the limited facilities available at the airport. With the airport's limited capacity, the various user groups are in competition with one another for runway use, apron space, and land for new aviation and airport-related development. Competing interests include the air carriers, corporate aviation, and light general aviation and flight training.

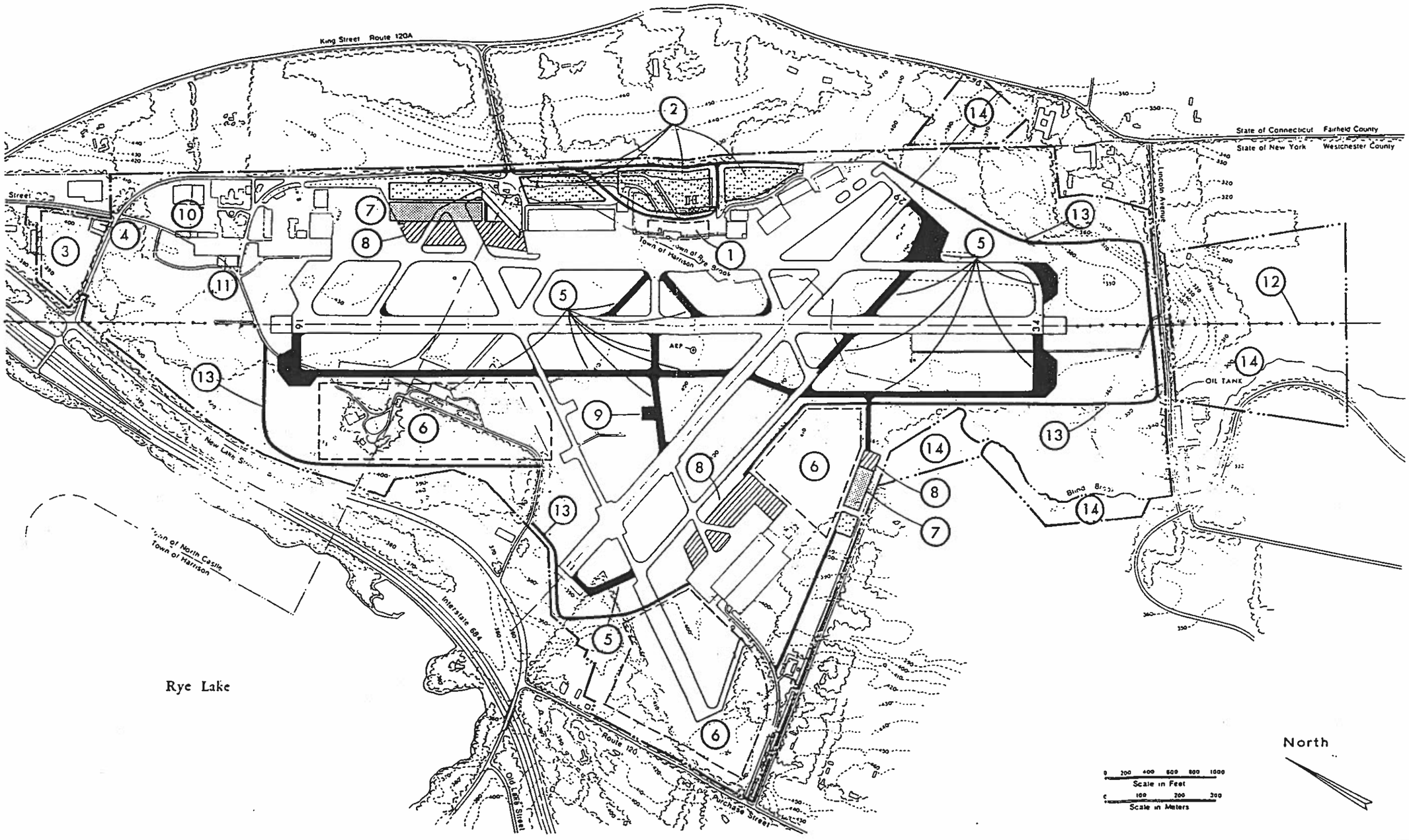
A factor in development of the airport, which is owned by Westchester County, is that it is located within the boundaries of three separate towns. Each has its own concerns and priorities over tax revenues, induced development and traffic impacts. In addition, the airport is located adjacent to and also serves the Town of Greenwich in the State of Connecticut.

1.3 AIRPORT POLICY

The Stipulation agreement and the County's October 1985 Statement of Airport Policy represent an attempt to resolve these issues and competing interests. Those documents serve as guidelines for this Master Plan Update.

The Stipulation ending the airlines' litigation against the County establishes parameters for growth in commercial air service. The Stipulation limits the passenger flow to the terminal's capacity of 240 commercial passengers each half hour. It also establishes a mechanism for distributing these passengers and the four available apron positions among the various airlines. The Stipulation is discussed further in Chapter 3.

The policy statement addresses other issues of concern to airport users and neighbors. The policy calls for use of the airport primarily by general aviation and use consistent with the Stipulation. It does not



Roads and Taxiways
Aircraft Apron
Structures
Automobile Parking

WESTCHESTER COUNTY AIRPORT ENVIRONMENTAL STUDY

Proposed Facilities Improvements

Figure 1.2

permit increasing the airport's capacity, but it does encourage improvements to increase safety and efficiency. It establishes as a goal that the airport shall not be a noisy neighbor.

The policy statement directs the preparation of this updated Master Plan and revised Airport Layout Plan (ALP). The statement also specifies a number of the details of the plan, including the provision of a new terminal building, parallel taxiway, fixed base operator facilities, and additional hangars. It prohibits the new parallel runway that was a part of the previous ALP.

CHAPTER 2. EXISTING CONDITIONS

Westchester County Airport is located in the northern suburbs of New York City, in an area of large estates, middle class residences and major corporate headquarters (see location map, Figure 2.1).

The airport is about four miles northeast of the City of White Plains. It includes parts of three towns -- Harrison, North Castle and Rye Brook. The airport is adjacent to the New York - Connecticut border and serves Fairfield County in Connecticut as well as Westchester County in New York (see Figure 2.2, vicinity map).

2.1 AIRPORT FACILITIES

Existing airport facilities are shown in the aerial photograph presented in Figure 2.3. The airport comprises 692 acres. Approximately 400 aircraft are based at the airport, including a large number of corporate jets. Based aircraft and aviation activity are discussed in more detail in Chapter 3.

2.1.1 Airfield

The airport has two runways. Runway 16-34 is 6,550 feet long and 150 feet wide. Runway 11-29 is 4,451 feet long and 150 feet wide.

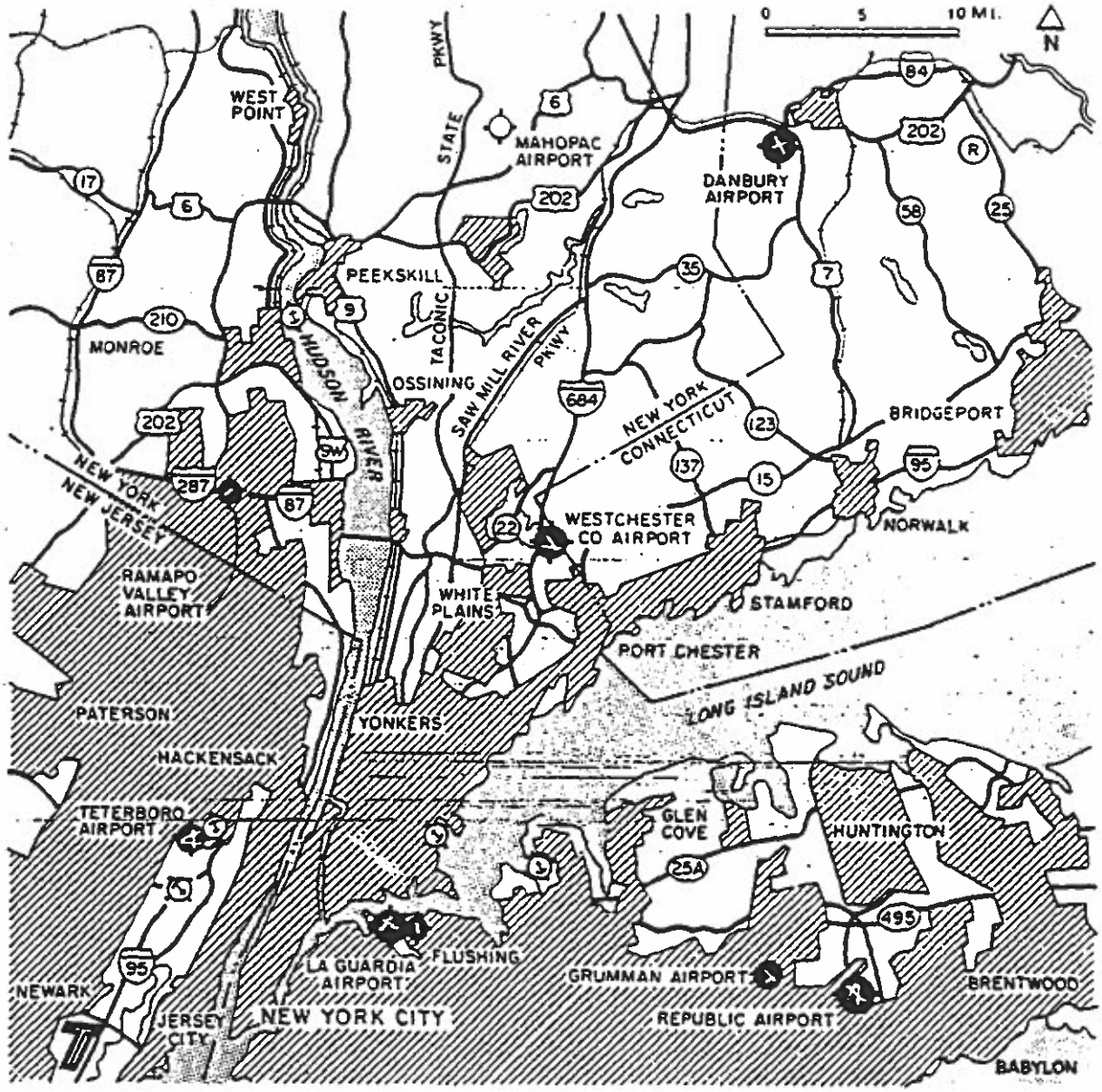
Taxiway "E" is parallel to and northeast of Runway 16-34. Taxiway "H" is a partial parallel south of Runway 11-29. Taxiways "A," "B," "C," "D," "F," and "G" serve as connectors. Taxiways vary in width from 40 to 75 feet. Former Runway 5-23 is now designated Taxiway "T." Its center section has been narrowed and repaved.

2.1.2 Aircraft Hangars and Services

Most of the airport's aviation facilities are located on the northeast side of the airport, along Taxiway "E." These include a number of large corporate hangars and three fixed base operators (FBOs). International Aviation and United Skyport are FBOs principally serving large corporate planes and jets. Panorama Flight Services provides fuel and service to light general aviation aircraft.

On the west side of the airport is Westair School of Aviation, also providing FBO services to light general aviation aircraft. To the south of Runway 11-29 is Hangar E, housing corporate aircraft and Aero Services, another jet FBO.

All fuel at the airport is delivered to the aircraft by truck, from the fuel farm north of Hangar D. Tiedowns are provided by the airport in the vicinity of the terminal and by the FBOs. Additional tiedown areas are controlled by Panorama at the northeast end of Taxiway "T" and by Westair at the southwest end of Taxiway "T." The airport currently does not provide covered aircraft parking.



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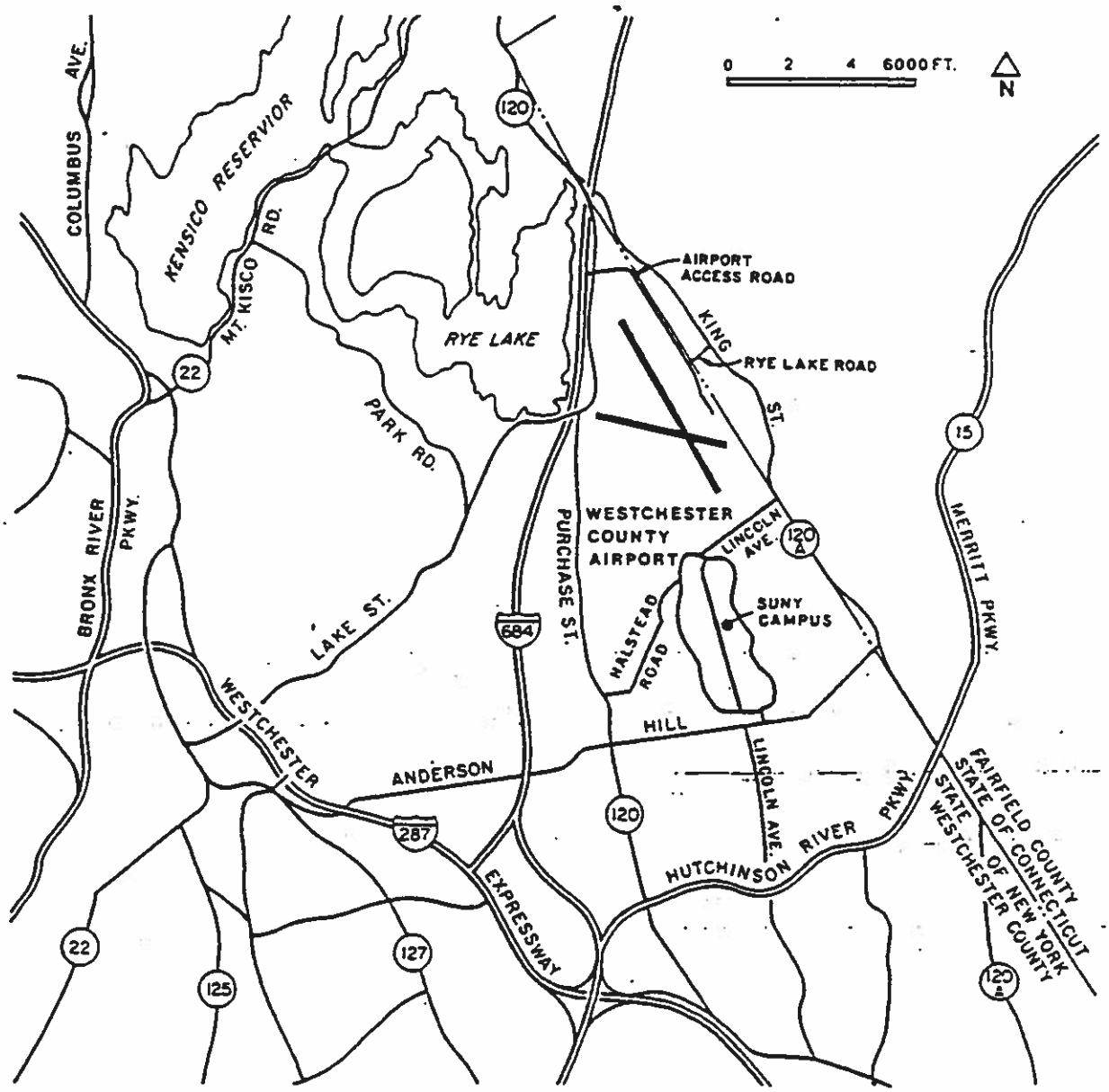
Water
Urbanized Area
Paved Airport
Unpaved Airport
Seaplane Base

Location Map

Figure 2.1



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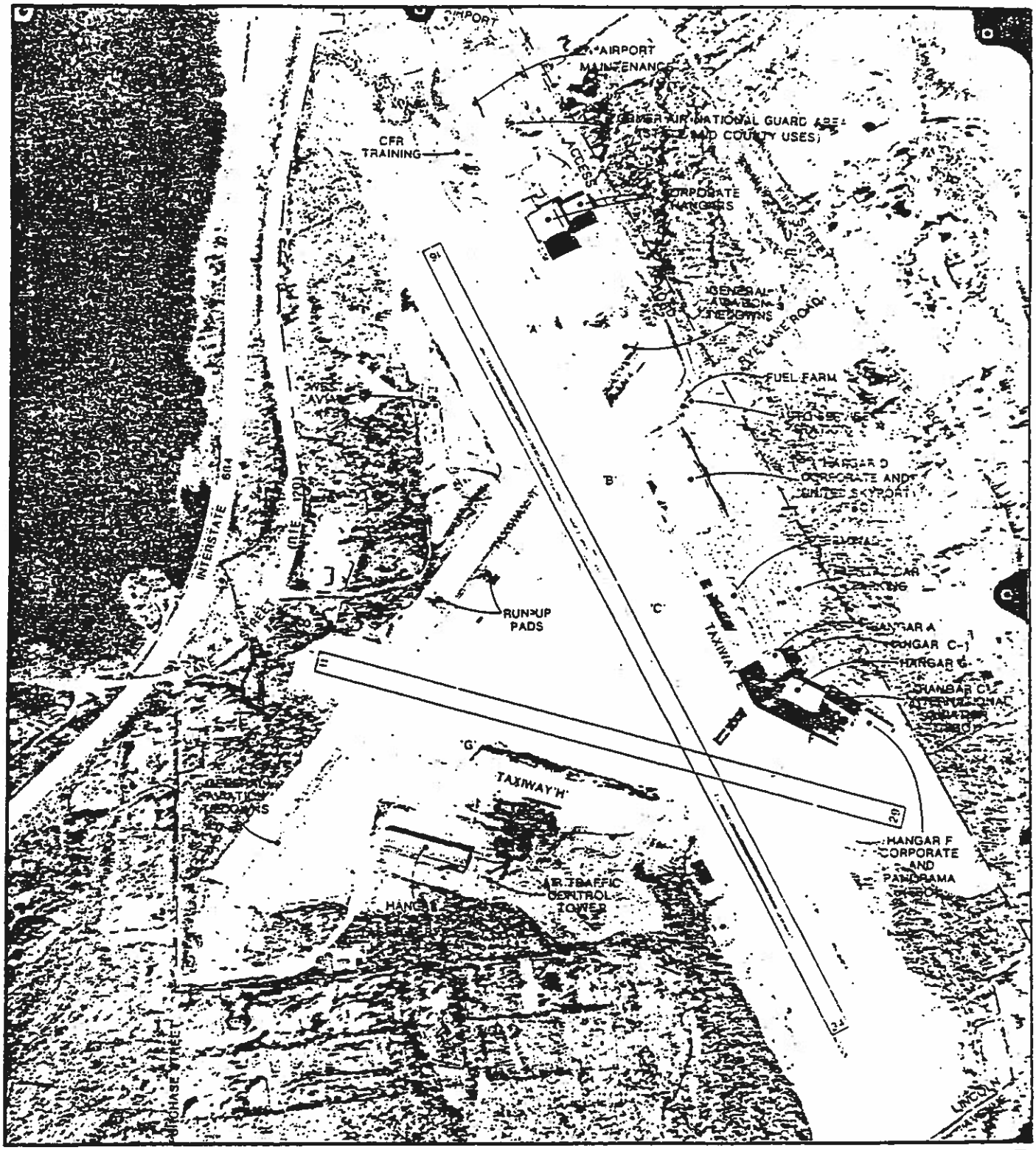
Vicinity Map

Figure 2.2



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Scale: 0 1000 2000 Feet

N

Existing Airport Facilities

Figure 2.3

Engine maintenance runup pads are located on either side of the center section of Taxiway "T."

2.1.3 Passenger Terminal

A passenger terminal is located east of Runway 16-34 near its midpoint. This terminal serves air carriers, commuter airlines and transient general aviation. The terminal building encompasses about 10,000 square feet; its facilities are severely crowded during several hours of an average day.

Public parking near the terminal is available for approximately 700 cars, but these parking areas also serve corporate and FBO hangars. Like the terminal, the parking facilities are overcrowded during most days.

To the east of the public parking area is a 257-space lot for rental cars, along with fuel and service facilities.

2.1.4 Navigational Aids

An air traffic control tower is located on the south side of the airport. It is operated by the FAA and is staffed from 6 a.m. to 11 p.m.

Runway 16-34 has high intensity runway lighting (HIRL) and Runway 11-29 has medium intensity runway lighting (MIRL). Runways 16 and 34 both have Instrument Landing Systems and 4-box visual approach slope indicators (VASI-4). Runway 16 also has a simplified short approach lighting system with runway alignment indicator lights (SSALSR). Runways 11 and 29 have runway end identifier lights (REIL) and Runway 11 has a VASI-4.

2.1.5 Other Facilities

The airport management office and operations office are located in the terminal building. The Crash/Fire/Rescue (CFR) facility is located adjacent to the terminal building, allowing for cross-manning by other airport employees. The airport is CFR Index B according to Federal Aviation Regulation (FAR) Part 139. There are two CFR vehicles. An area used for CFR training (firefighting) is located near the north end of Runway 16-34.

The airport's maintenance facility is located at the north end of the airport in what was formerly the Air National Guard area. Other airport maintenance vehicles are also housed in some old buildings near Westair Aviation. Several of the buildings in the former Air National Guard complex are used by the County and state and other tenants for a variety of functions, some of them unrelated to the airport and its operation.

An automobile service station is located on the airport at the intersection of Rye Lake Road and Airport Access Road.

2.2 LAND USE

Much of the land on the airport, especially on the east side, is tightly developed with hangars and other buildings. Three sizeable parcels with good access to the airfield remain: the area around Westair Aviation on the airport's vest side, the southwest end of Taxiway "T," and the area to the east of the air traffic control tower and Hangar E.

Figure 2.4 shows generalized land use in the vicinity of the airport. The land use surrounding the airport is a mix of low-density residential, institutional, office parks and large undeveloped tracts of land. To the north of the airport is an area of offices and light industry and a residential area. To the east, in Connecticut, are undeveloped tracts, golf courses and institutions. To the southeast are some nev office park developments. A campus of the State University of Nev York lies to the south of the airport. To the southwest are lov density residential areas, large estates and undeveloped tracts. Northwest of the airport is Rye Lake, a water supply reservoir.

Within a fev miles of the airport, both in New York State and Connecticut, are many corporate offices. These include the freestanding headquarters of major corporations and office park developments with the main offices of smaller compaines and regional headquarters of others. The employees of these corporate offices form a major user group of the airport, both commercial air service and general aviation.

2.3 ACCESS AND CIRCULATION

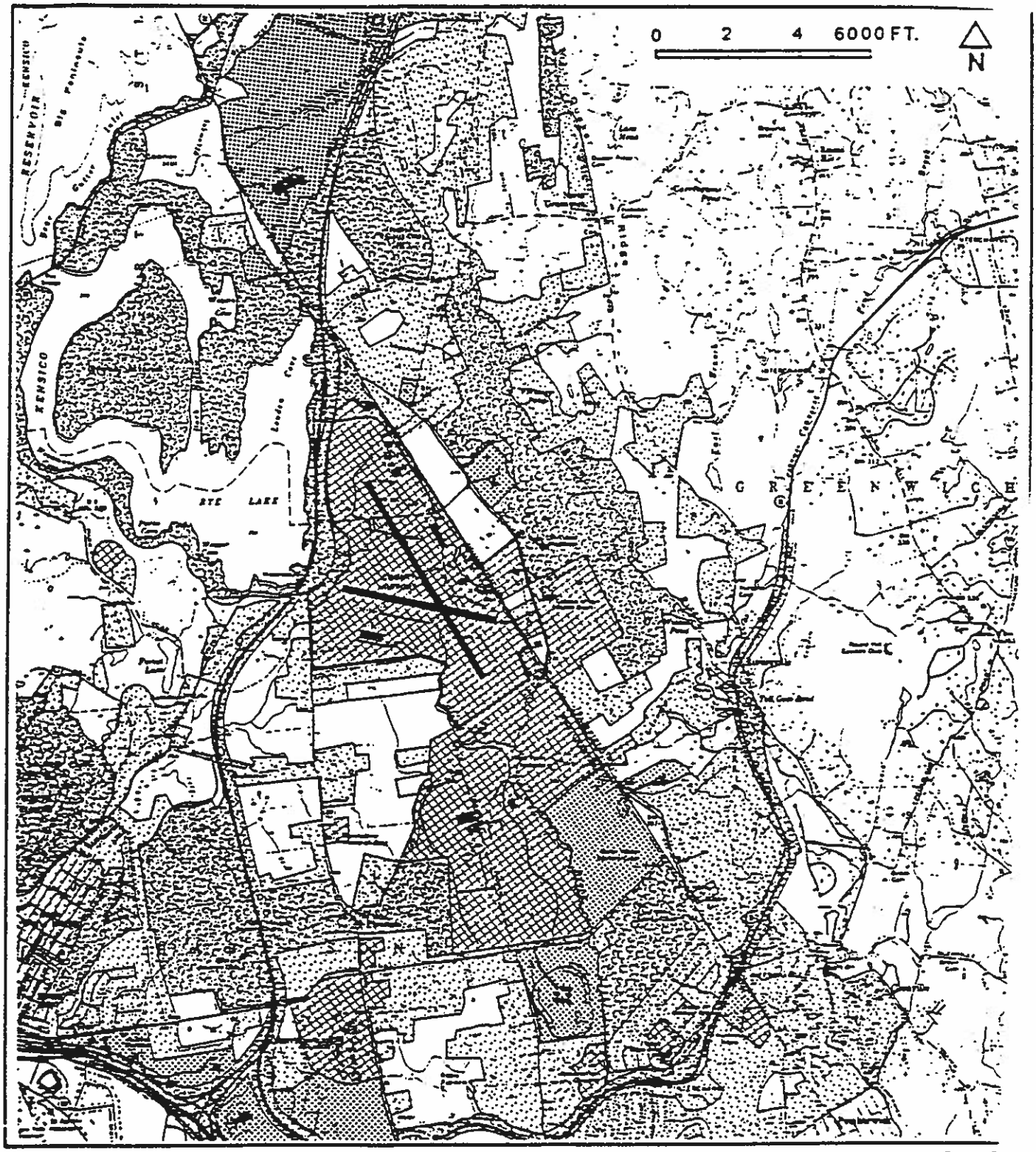
The airport enjoys good access from much of Westchester County, New York City, and southwestern Connecticut.

2.3.1 Highway Network

The Westchester County Airport is served by a system of expressvays and arterial highways, as shown in Figure 2.2. The primary roadvays include the following.

Interstate Highvay 684. I-684 is a six-lane divided highvay extending from the Hutchinson River Parkway and I-278 to I-84 in Putnam County. In addition to its interchanges with I-287 and the Hutchinson River Parkway (each connected by spurs with I-684) there is an interchange located at Airport Access Road, the airport's main entrance.

Anderson Hill Road. Anderson Hill road extends in an east-vest direction from King Street in Greenvich, Connecticut, to Westchester Avenue in White Plains, Nev York. It is generally a two-lane road except at the intersections with the SUNY/Pepsico access roads and with Lincoln Avenue, where it is widened to provide turn lanes and a median. The intersections with Purchase Street, Lincoln Avenue and SUNY/Pepsico are signalized. The posted speed limit is 40 mph, except in the vicinity of Purchase Street, where it is 25 mph.



WESTCHESTER COUNTY AIRPORT MASTER PLAN UPDA

Residential

Office/Business

Recreation/Open Space

Governmental/Institutional

Vacant

Generalized Land Use

Figure 2

King Street. King Street (Route 120A) is a two-lane roadway extending from downtown Port Chester to Route 120, running partially in New York and partially in Connecticut.

Purchase Street. South of Route 120A, near the airport, Purchase Street (Route 120) is a two-lane roadway. Where it joins with Route 22, Route 120 becomes a four-lane roadway with a median. North of this section the roadway again narrows to two lanes. Signalized intersections are located at Anderson Hill Road and Airport Access Road. The posted speed limit is 30 mph.

Rye Lake Road. Rye Lake Road (also called Old Lake Road or Old Lake Street) extends from King Street to Airport Access Road. It is a two-lane roadway with a posted speed limit of 35 mph.

Airport Access Road. Airport Access Road connects I-684 with Westchester County Airport. It is a two-lane roadway and its intersection with Route 120 is signalized. The posted speed limit is 30 mph.

2.3.2 Traffic Conditions

As part of a previous study, traffic data were collected from several sources including the New York State Department of Transportation, the Westchester County Department of Public Works, and Connecticut State Department of Transportation. Based on a review of this information, it was determined that with the exception of King Street, volumes on the local roadway system are below 10,000 vehicles per day. Less than desirable traffic operations are experienced on I-684, along parts of King Street, at the intersection of I-684 with Airport Access road and Route 120, and along sections of Purchase Street and Anderson Hill Road during peak periods. A significant portion of this congestion can be directly attributed to several major office developments in Rye and Harrison.

2.3.3 Airport Access

The main entrance to the airport is from an intersection of Airport Access Road with Interstate 684 and State Route 120 (Lake Street), at the northwest corner of the airport. Airport Access Road serves the terminal and the hangar area on the northeast side of the airport. Another entrance to this part of the airport is by Rye Lake Road, which connects Airport Access road with King Street (Route 120A) in Connecticut to the east.

Two other entrances serve other parts of the airport. An entrance from Lake Street on the west serves the Westair area. An entrance from Purchase Street, also on the west, provides access to Hangar E and the air traffic control tower.

2.4 ENVIRONMENTAL CONSIDERATIONS

The consideration of potential environmental consequences played a major role in evaluating development concepts and in recommending facility improvements at Westchester County Airport. An Environmental Assessment report is being prepared as a separate document in conjunction with this Master Plan Update.

Because of the importance of aircraft noise as a concern of the community, the existing noise environment is discussed in some detail here. Other environmental considerations are summarized here and covered in the Environmental Assessment.

2.4.1 Aircraft Noise

The principal environmental concern of the airport's neighbors is aircraft noise. To describe the existing airport noise environment, a noise analysis was performed. The FAA's Integrated Noise Model (INM), Version 3.8, was used to develop day-night noise level (DNL or Ldn) contours.

The INM is a computer model used to calculate aircraft noise levels. Input data include average daily operations and aircraft mix, day-night split, runway use, landing and takeoff profiles, and flight tracks. The flight tracks used in the model are shown in Figure 2.5. These tracks are based on observations of aircraft flight operations, discussions with air traffic control personnel, and published noise abatement procedures. Daily operations and aircraft mix used in the model are presented in Table 2.1. These are averages based on yearly operations totals.

The Ldn metric is a noise descriptor that is intended to characterize with a single number noise that varies greatly over time. It permits comparison among disparate sources of community noise. Ldn was developed by the U.S. Environmental Protection Agency and is widely used by the FAA, the U.S. Department of Housing and Urban Development, and many other federal, state, and local agencies to describe and compare community noise from a variety of sources.

Figure 2.6 shows Ldn noise contours calculated for 1985 aircraft operations at Westchester County Airport. The contours shown are Ldn 60, 65, 70, and 75. The contour connects points of equal noise levels. All areas inside a particular contour have noise levels above that contour's value, while those areas outside a contour have noise levels below the contour value. Measured aircraft Ldn values at the airport's permanent noise monitoring sites are also shown on Figure 2.6. The calculated Ldn contours show a good relationship to the measured aircraft Ldn values.

According to recommended FAA criteria, all land uses are generally considered compatible with noise levels below Ldn 65.

2.4.2 Other Factors

Other environmental factors were considered during the development of concepts, evaluation of alternatives for the design and location of facilities, and recommendation of airport development. Among these environmental considerations are the following.

Air Quality. During a three-month period in 1982, the county monitored levels of carbon monoxide in the vicinity of the airport to determine background pollutant levels. Using these and other available monitoring data, the background levels were estimated for various pollutants at several sites around the airport. These estimates indicated that there were no violations of applicable state or federal air quality standards in

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Flight Tracks Used in Noise Analysis:

- Arrival Tracks
- Touch-and-Go Tracks
- Departure Tracks

Flight Tracks Figure 2.5

TABLE 2.1

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Daily Operations by Aircraft Category, 1985

Aircraft	Aircraft Daily Operations Day	Night
Air Carrier		
737-200 (QN)	3.0	0
DC-9-30 (QN)	9.5	1.7
DC-9-10 (QN)	3.0	0
Commuter & General Aviation		
DHC-7	28.0	0
MTETP (Medium Turboprop)	43.0	1.2
DHC-6 (Small Turboprop)	3.6	0
GALQTF (bizjet)	18.3	1.1
GAMTF (bizjet)	49.7	1.5
GALTJ (bizjet)	7.2	0
CL600 (bizjet)	20.3	0.5
G-II/III (bizjet)	19.0	0.7
BAC-111	3.6	0
COMTEP (Twin piston)	39.6	1.2
COMSEP (Single piston)	356.0	2.3
	603.8	10.2

Source: HNTB analysis.

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Ldn 65	Calculated Noise Contours
50.1	Measured Ldn Value
●	Permanent Monitoring Sites
6	Site Number

Existing (1985) Ldn Noise Contours Figure

the vicinity of the airport. It can be assumed that this is still the case, since federal controls on vehicular emissions generally have resulted in decreases in air pollution.

The environmental effect of the occasional firefighting training by the CFR crews at the airport was a consideration in locating the new CFR training facility. The existing CFR training area is near the north end of Runway 16-34. The location of a new facility was selected with the goal of minimizing off-airport air quality impacts.

Water Quality and Runoff. The airport in general slopes from north to south, with more than half of the surface drainage discharging into Blind Brook to the south and the rest into Rye Lake to the west. Most of the airfield and apron areas drain into Blind Brook. Rye Lake is a water supply reservoir supplying water to New York City. The water quality classification of Blind Brook is D. This means that the waters are suitable for secondary contact recreation, but due to natural conditions, the aquatic ecosystem of the brook will not support the propogation of fish.

Stormwater runoff can contribute to water pollution in two ways. First, rainfall washes fuel, oil, grease, hydraulic fluids, etc., from airport pavement into the storm drainage system, which channels the runoff into nearby drainage basins. Second, high velocity stormwater runoff can erode exposed soil and transport it downstream, creating siltation and sedimentation.

Existing buildings at the airport where petroleum products are normally handled have storm drains equipped with oil-water separators.

The County's policy statement for the airport states, "This plan shall not be construed so as to increase existing run-off levels." This is interpreted to mean that any increase in impervious surfaces from buildings or paved surfaces will require adequate detention areas and/or percolation pits to handle the additional runoff.

Wetlands and Ecological Resources. A field survey of the ecological resources at the airport was conducted during May 1982 and additional field work was done in 1986. The vegetation varies from old fields to a wooded drainage area and small wet meadow, shrub fields, and moved grasses. The old fields are found on the periphery of the airport property. They are largely secondary growth woodlands and remnant planted trees. The wooded drainage area and small wet meadow occur along the intermittent headwaters of Blind Brook. The shrub fields occur in the undeveloped areas that were cleared of trees over 20 years ago. The mowed grasses occur adjacent to the runways and buildings on the property.

The wet meadow, adjacent to the eastern bank of Blind Brook, is within the proposed acquisition for a runoff retention basin. This wet meadow, approximately 1.7 acres, is not a designated freshwater wetland as defined by 6 NYCRR Part 664 or as defined by the Town of Harrison's wetlands ordinance. Standing water occurs in this wet meadow only after moderate to heavy precipitation. The dominant vegetation types are horsetails, wild

asparagus grass, common burdock, dewdrop, brambles, and wood ferns. The designated wetland nearest to the airport is located on the Blind Brook floodplain to the south of the airport boundary.

Cultural Resources. In 1982, a Stage 1A cultural resources survey was conducted at Westchester County Airport of areas to be affected by construction recommended in the previous Master Plan Study. The purpose of the Stage 1A survey was to evaluate the overall sensitivity of the project area for the presence of cultural resources, as well as to guide subsequent field investigation (i.e., a Stage 1B survey) if required. The survey consisted of a background literature search and a walk-through survey.

In carrying out the literature search, sources at the State Historic Preservation Office (SHPO), universities, local libraries, museums, historical societies, etc., were consulted. The literature search indicated that no building, structure, object or site within the Westchester County Airport property or in adjacent areas is listed on the National Register of Historic Places.

All sites of construction proposed under the previous Master Plan were visited. The areas delineated for easement or acquisition and the entire northwest part of the airport were walked over in a search for historic and prehistoric cultural remains. From observations made during the site walkover phase of the Stage 1A survey, it appears that in an effort to level the area during construction of the airport, sand was brought in from elsewhere and dumped on the surface to build up low areas. This construction method would have the effect of protecting any cultural materials in the subsurface. Bulldozing of high ground to bring it to grade is not much in evidence.

Surface cultural features observed during the walkover included two sets of ruined parallel stone walls at the north end of the airport, which are probably Colonial and may mark 18th Century Quaker fields. A substantial estate was located adjacent to some existing maintenance buildings, which incorporate the original stable. Available information indicates that the house had a cornerstone that dated it to 1849. The only artifacts of note found were a brick fragment of Colonial period manufacture and a piece of "willow ware" pottery probably of the 19th Century.

Engine Run-Up Noise. Two engine maintenance run-up pads are located near the midpoint of Taxiway "T." The noise generated by engine maintenance run-ups was a consideration in recommending whether to relocate these areas and where to locate any additional run-up areas.

2.5 AIRSPACE AND AIR TRAFFIC CONTROL

Westchester County Airport lies on the periphery of one of the most congested regions of air traffic in the world. Dense VFR traffic exists in the area of the airport and this traffic must co-exist with substantial volumes of IFR traffic operating into New York Area airports.

IFR airspace in the airport vicinity is especially complex. Within the area are five high activity airports whose traffic must be coordinated with the New York Air Route Traffic Control Center (ARTCC). Because of the proximity of the New York airports, particularly LaGuardia, most departures on Runway 16 are restricted from climbing above 3,000 feet until they are turned away from the neighboring airspace. Approaches to Runway 34 are also constrained for the same reason.

Improvements and changes in the air traffic control system are foreseen during the planning period. Such changes can be expected to increase the overall ATC system capacity and enhance safety. The system can therefore be expected to accommodate the existing demand levels at a higher level of service or increased demand levels at the present level of service or better.

2.6 WEATHER

At the time of the previous Master Plan Study, an analysis of meteorological data was made to determine runway usability under various conditions of wind and of ceiling and visibility. A five-year record (1968-1972) of hourly weather observations at the airport was obtained from the National Climatic Center in Asheville, North Carolina.

FAA standards require that airports served by large general aviation aircraft (business jets) provide a 95 percent wind coverage with a maximum crosswind component of 15 mph (13 knots). Should the runway system be unable to meet these requirements, an additional runway(s) is recommended to meet the requirements.

Table 2.2 presents a summary of runway wind coverage for three categories of weather:

- All weather.
- IFR 1, ceiling greater than or equal to 500 feet and less than 1000 feet, visibility greater than or equal to one mile and less than three miles.
- IFR 2, ceiling greater than or equal to 200 feet and less than 500 feet, visibility greater than one-half mile and less than one mile.

The overall wind coverage of both Runways 16-34 and 11-29 is 99.1 percent at 15 mph and 97.4 percent at 12 mph. These satisfy the FAA wind coverage criteria.

The wind roses for Westchester County Airport for all-weather, IFR 1 and IFR 2 conditions are presented in Figures 2.7, 2.8, and 2.9.

TABLE 2.2

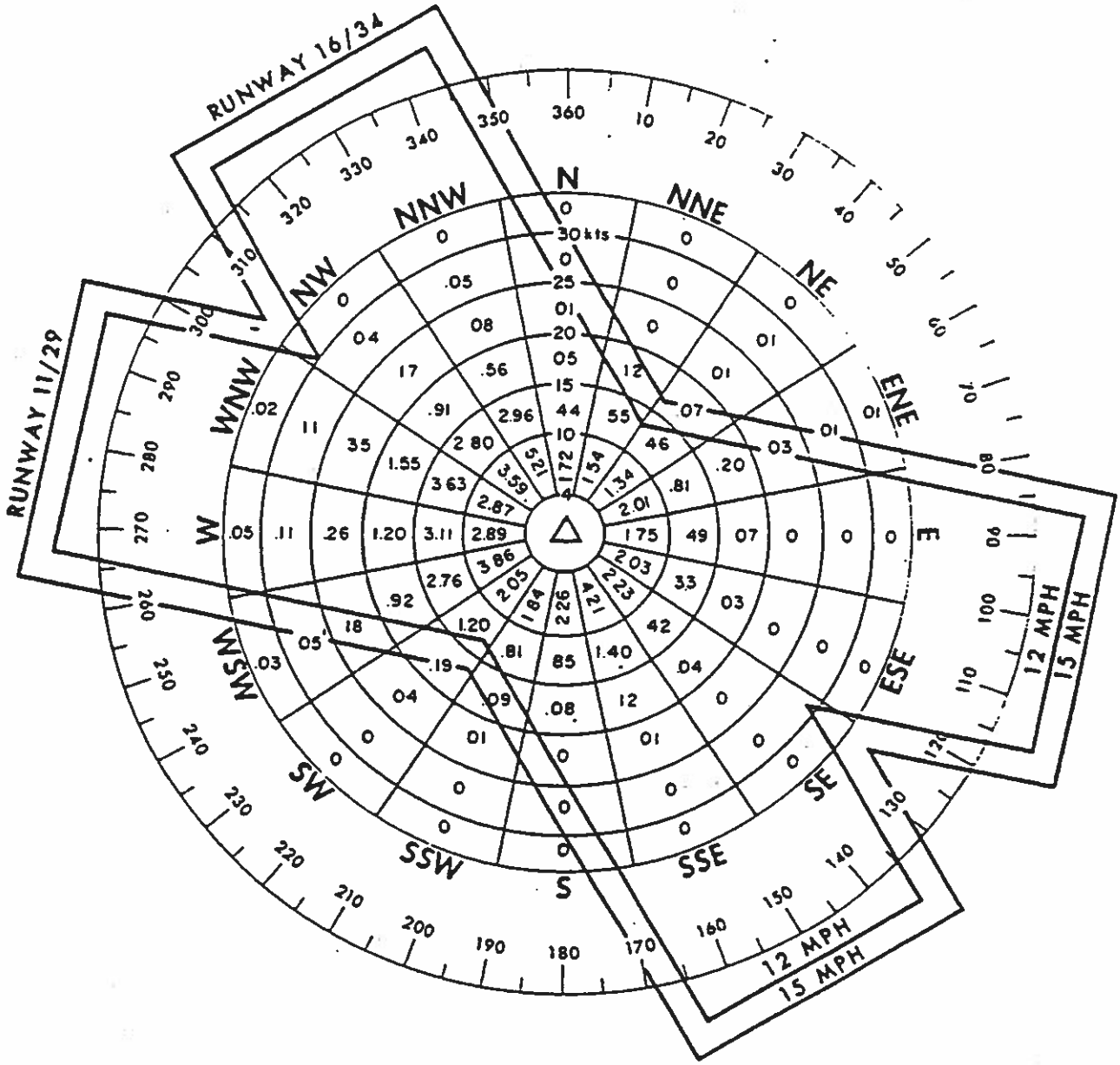
WESTCHESTER COUNTY AIRPORT

Summary of Wind Rose Analysis

	Weather Category		
	All Weather	IFR 1	IFR 2
Incidence	100.0%	8.8%	5.8%
Calms plus 1-3 knot	27.7%	33.2%	32.9%
Runway Wind Coverage - 15 mph (13 knots) Crosswind Component			
Runway			
16-34 and 11-29	99.3%	98.8%	98.8%
16-34	94.1%	95.1%	94.8%
11-29	97.3%	95.8%	96.7%
16 useable	52.5%	69.4%	74.1%
34 useable	69.3%	58.9%	53.6%
11 useable	50.3%	70.7%	81.7%
29 useable	74.7%	58.3%	47.8%
Runway Wind Coverage - 12 mph (10.5 knots) Crosswind Component			
Runway			
16-34 and 11-29	97.4%	96.2%	96.9%
16-34	88.1%	89.9%	90.2%
11-29	92.4%	90.5%	93.1%
16 useable	50.7%	66.7%	71.1%
34 useable	65.1%	56.4%	52.0%
11 useable	48.7%	67.8%	79.1%
29 useable	71.5%	55.9%	47.0%

Notes: - Calms plus 1-3 knots included in coverages shown.
- IFR 1 conditions: ceiling $\geq$ 500 feet, < 1000 feet; visibility $\geq$ 1 mile, >3 miles.
- IFR 2 conditions: ceiling $\geq$ 200 feet, < 500 feet; visibility $\leq$ 1/2 mile, < 1 miles.

Source: HNTB analysis of 1968-1972 hourly observations.



Source: National Weather Record Center
Asheville, N.C.
HNTB Analysis of Period Jan. 1968 - Dec. 1972

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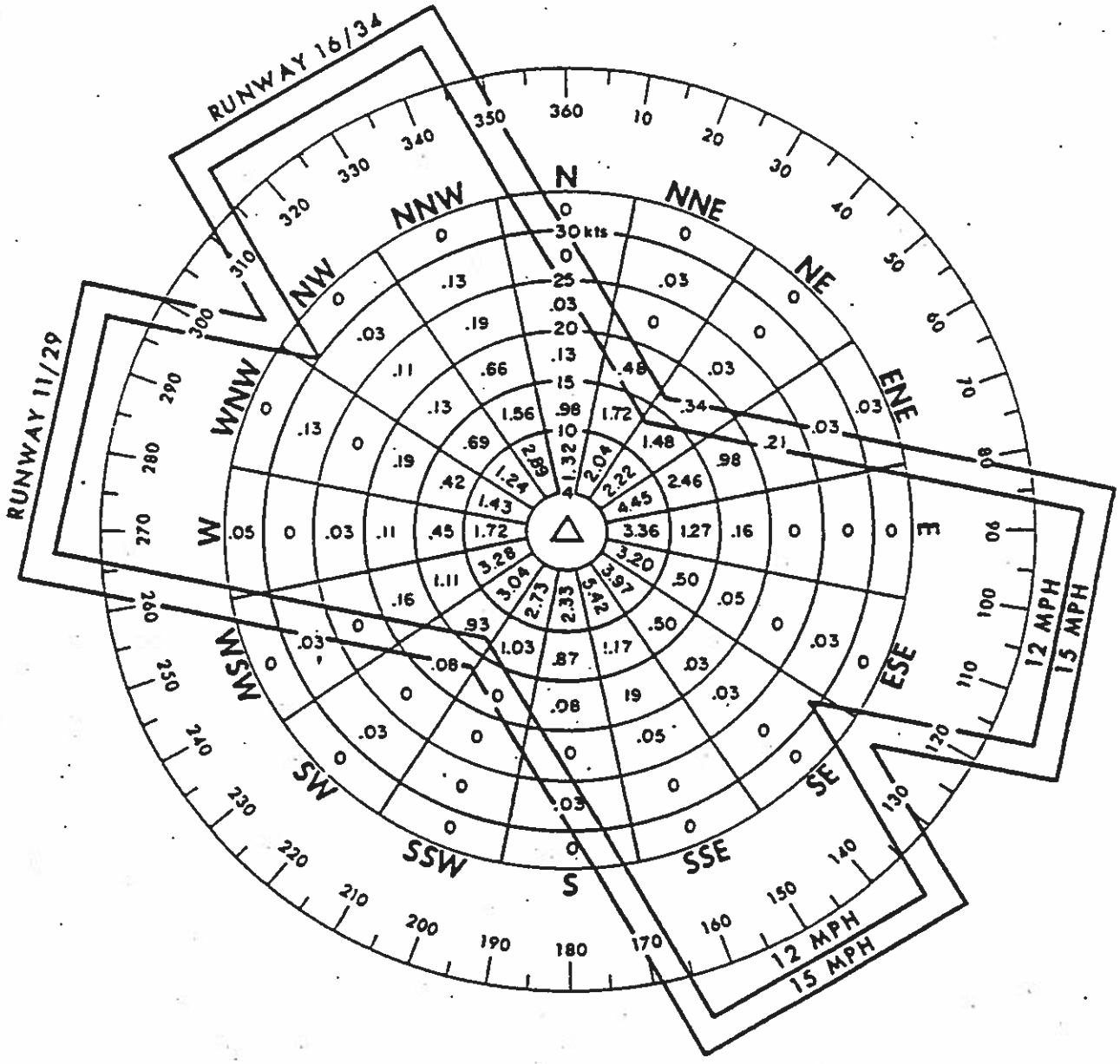
100% Incidence

△ Calms + 1-3 kts = 27.74%

Wind Rose - All Weather Figure 2.7



Source: National Weather Record Center
Asheville, N.C.
HNTB Analysis of Period Jan. 1968 - Dec. 1972

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8.84% Incidence

△ Calms + 1-3 kts = 33.22%

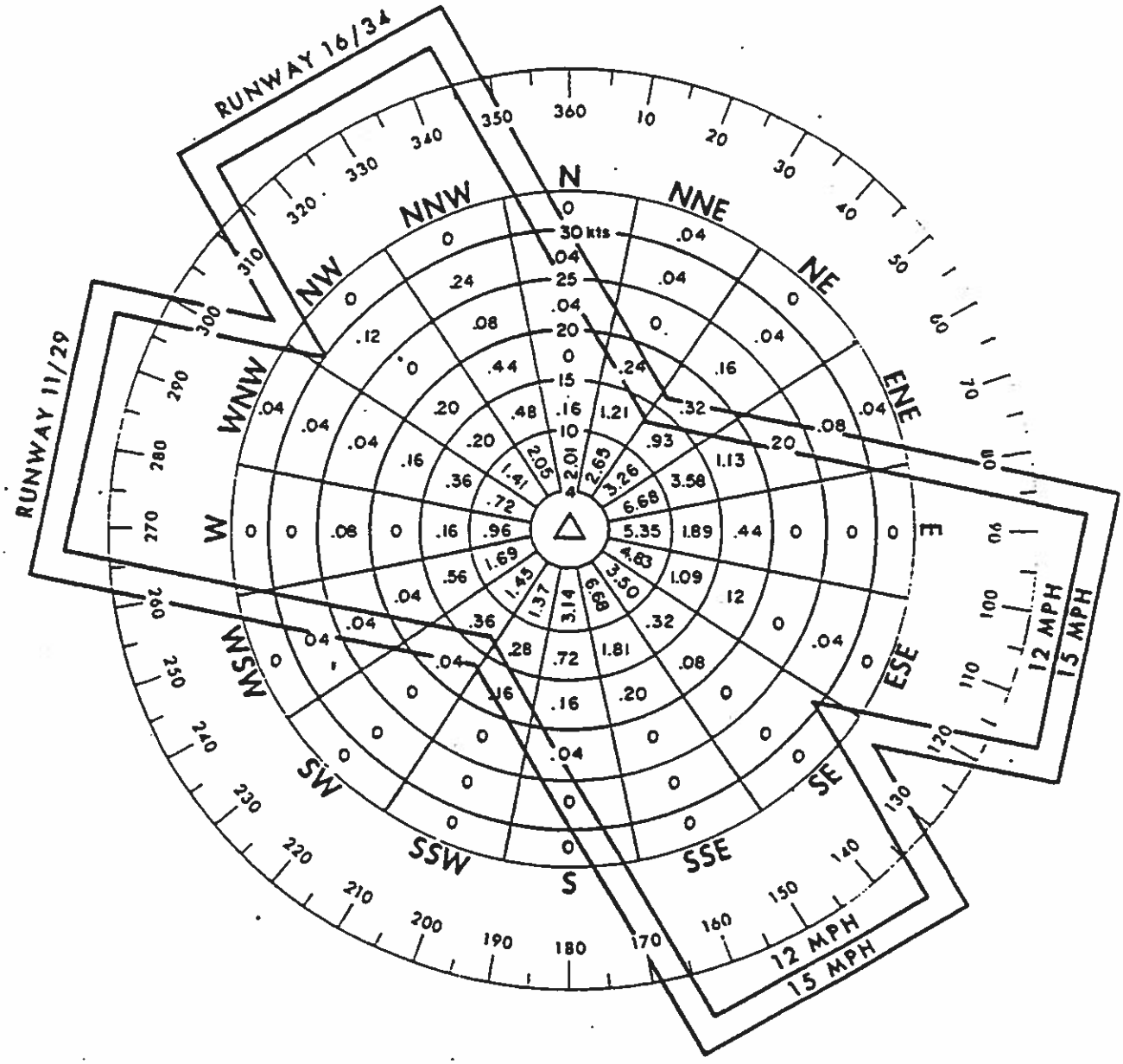
IFR 1 Conditions:

500≤C<1000

1≤V<3

Wind Rose - IFR 1

Figure 2.8



Source: National Weather Record Center
Asheville, N.C.
HNTB Analysis of Period Jan. 1968 - Dec. 1972

WESTCHESTER COUNTY AIRPORT MASTER PLAN UPDATE

5.82% Incidence

△ Calms + 1-3 kts = 32.93%

IFR 2 Conditions:

200≤C<500

½≤V<1

Wind Rose - IFR 2

Figure 2.9

2.7 FINANCIAL ASPECTS

Westchester County Airport is owned by Westchester County and managed under contract by Pan Am World Services, Inc. Under the operating agreement, renewable every five years, Pan Am makes recommendations on rents, landing and fuel flowage fees and expenditures, which the County then adjusts as necessary and approves.

Table 2.3 presents revenues and expenditures for Westchester County Airport in 1985. As shown, rents account for almost 67.8 percent of total airport income. Most of the rental income is generated by the fixed base operators and corporate flight centers. Other major sources of income are concessionaire fees (12.4 percent), fuel flowage fees (7.8 percent), and landing fees (5.3 percent). Total airport revenue in 1985 was $5,895,659.

Personnel costs acconted for 43.6 percent of total expenditures in 1985. Materials and supplies were 15.4 percent of the total and equipment purchases acocunted for another 1.3 percent. Other expenses, including non-recurring expenses, contractual services, and insurance, accounted for the remaining 39.7 percent. Total airport expenditures in 1985 were $2,556,169.

After the operator incentive fee (3.5 percent of net revenue) was subtracted, Westchester County Airport generated $3,225,679 in net revenue for the County. The County funds the debt service for previous airport captial expenditures and also incurs overhead costs resulting from administration budgeting, public affairs, and environmental coordination. Consequently, the net County revenue listed in Table 2.3 overstates the true net income generated by Westchester County Airport.

TABLE 2.3

WESTCHESTER COUNTY AIRPORT

Revenues and Expenses, 1985

Revenues	
Rentals	$3,995,152
Permits	39,058
Concessionaires	731,634
Landing Fees	309,801
Parking Fees	40,521
Fuel Flowage Fees	458,481
Other[a]	321,013
TOTAL REVENUES	5,895,659
Expenses	
Personnel Services	$1,113,830
Equipment Purchase	32,108
Materials and Supplies	394,707
Other Expenses	1,015,525
TOTAL EXPENSES	2,556,169
EXCESS REVENUES OVER EXPENSES	$3,339,490
PAN AM INCENTIVE FEE	$113,811
NET TO COUNTY[b]	$3,225,679

[a]Includes expense recovery, interdepartmental billings, newspaper sales and miscellaneous.

[b]Net County revenue is not adjusted for County outlays for debt service and overhead costs.

Source: Pan Am General Aviation Services Division.

CHAPTER 3. AIRPORT CAPACITY AND AVIATION ACTIVITY

Westchester County Airport has capacity limitations both in the number of hourly passengers permitted as a matter of policy and in the ability of the airfield to handle aircraft operations. In this chapter, the passenger and airfield capacity limitations are first discussed. Forecasts are derived for air passengers and for aircraft operations. The forecasts of both passengers and operations are first developed for unconstrained demand and are then reduced to meet capacity limitations.

3.1 CAPACITY

The limitations on passenger movements imposed by the 1985 Stipulation agreement are discussed and the calculation of airfield capacity is presented.

3.1.1 Passenger Limits

The "Stipulation and Order of Partial Settlement and Dismissal" was agreed to as settlement of the legal action brought by Midway Airlines against Westchester County. The Stipulation went into effect in April 1985. Parties to the agreement also include other airlines, the FAA and the National Business Aircraft Association.

The Stipulation agreement limits the number of commercial air passengers to 240 per half hour. It sets up a procedure for allocating both passengers and apron parking positions among the airlines. Aircraft parking is restricted to four gate positions, two for aircraft with wingspans of less than 75 feet, and two for all aircraft up to 120,000 pounds and 120 feet in length.

The allocation procedure covers both air carrier and commuter passengers. Carriers operating when the Stipulation was signed were given their existing apron and passenger allocations. A quarterly bidding procedure was established for unused apron slots and passenger allocations. A lottery mechanism is used when more than one airline bids for an available apron spot or the passenger bids are above available capacity in any half-hour period.

The airport monitors compliance with the passenger allocations. If the average load falls below 85 percent of the allocation, that allocation is reduced accordingly. If an airline goes above its allocation and there is excess passenger capacity available in that period, the allocation is raised. Otherwise the airline must reduce its passenger loads to comply.

For purposes of this Master Plan Update, it is assumed that the provisions of the Stipulation agreement will be in effect throughout the planning period. The passenger cap and the allocation mechanism are used in developing forecasts of passenger movements and air carrier operations.

3.1.2. Airfield Capacity Analysis

The capacity of the runway system at the airport was calculated using FAA's new Airport Capacity and Delay Manual (AC 150/5060-5, 9-23-83). This method employs a different technique than the Airport Capacity Handbook used in the previous Master Plan, and generally yields slightly different results.

Runway capacities are measured in terms of both hourly and annual figures. The hourly capacity represents the physical capability of a runway or runway combination to handle a continuous flow of traffic over an hour's time. This capacity will vary only with the aircraft mix and/or level of touch-and-go activity. In contrast, the annual capacity, called Annual Service Volume (ASV), represents a level of activity that can be accommodated assuming a reasonable level of delay (averaging 1-3 minutes per operation) and taking into consideration the monthly, daily, and hourly peaking characteristics of the airport. In actual practice, the calculated ASV for an airport can be exceeded if higher delay levels are tolerated or if peaking characteristics change over time. At Westchester, the ASV with existing peaking characteristics was determined to be about 198,000 operations. In 1985, there were 245,140 operations at the airport, 24 percent above the theoretical capacity. Average delays for this level of activity would be about 3-5 minutes instead of the 1-3 minute range for the airfield operating at capacity.

Hourly Capacity. The hourly capacities of the principal operating configurations were calculated for both Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) conditions. They are presented in Table 3.1. These capacities range from 94 operations for the Runway 29-34 combination in VFR to 55 operations for Runway 16 or 34 in IFR conditions.

The individual runways at the airport cannot operate at their full capacities because of a shortage of exit taxiways, particularly on Runway 16-34. The addition of up to five exit taxiways (depending on placement) will improve landing aircraft traffic flows and optimize the capacity of the existing runway system. These improved capacities are also presented in Table 3.1.

On weekends, the individual hourly runway capacities are higher than those shown, because the traffic mix and touch-and-go level is different than the annual average mix and touch-and-go level used for capacity calculations.

Annual Capacity. The annual capacity or ASV for the existing aircraft mix and peaking characteristics was calculated to be about 198,000 operations. In calculating future capacity, it is assumed that the spreading of peaks will continue, as it has since the previous Master Plan. In 1977, typical peak hour operations represented 13 percent of average daily

Table 3.1

WESTCHESTER COUNTY AIRPORT

Hourly Runway Capacities

Runway Combination	Weather Conditions	Overall Usage	Existing Capacity	Capacity with Taxiway Improvements
34 and 29	VFR	41.4%	94	95
11 and 16	VFR	27.9%	94	95
16 or 34	VFR	8.8%	78	84
11 or 29	VFR	4.6%	70	84
16 or 34	IFR	17.3%	55	60

operations. By 1985, this figure had decreased to 10 percent. It is anticipated that a further reduction to 9 percent will be achieved in the short term. In addition, as the percentage of annual traffic that occurs in the summer months continues to decrease, it is assumed that the monthly peak will decrease to 9 percent from a 1985 level of 10 percent. These lower peaking factors by themselves would increase ASV to 238,000 operations.

A combination of the spreading of the peaks and the taxiway improvements will result in a calculated ASV of 255,000 operations. This figure is considered to be the best estimate of the future ASV of the airport, and will be used for general planning purposes.

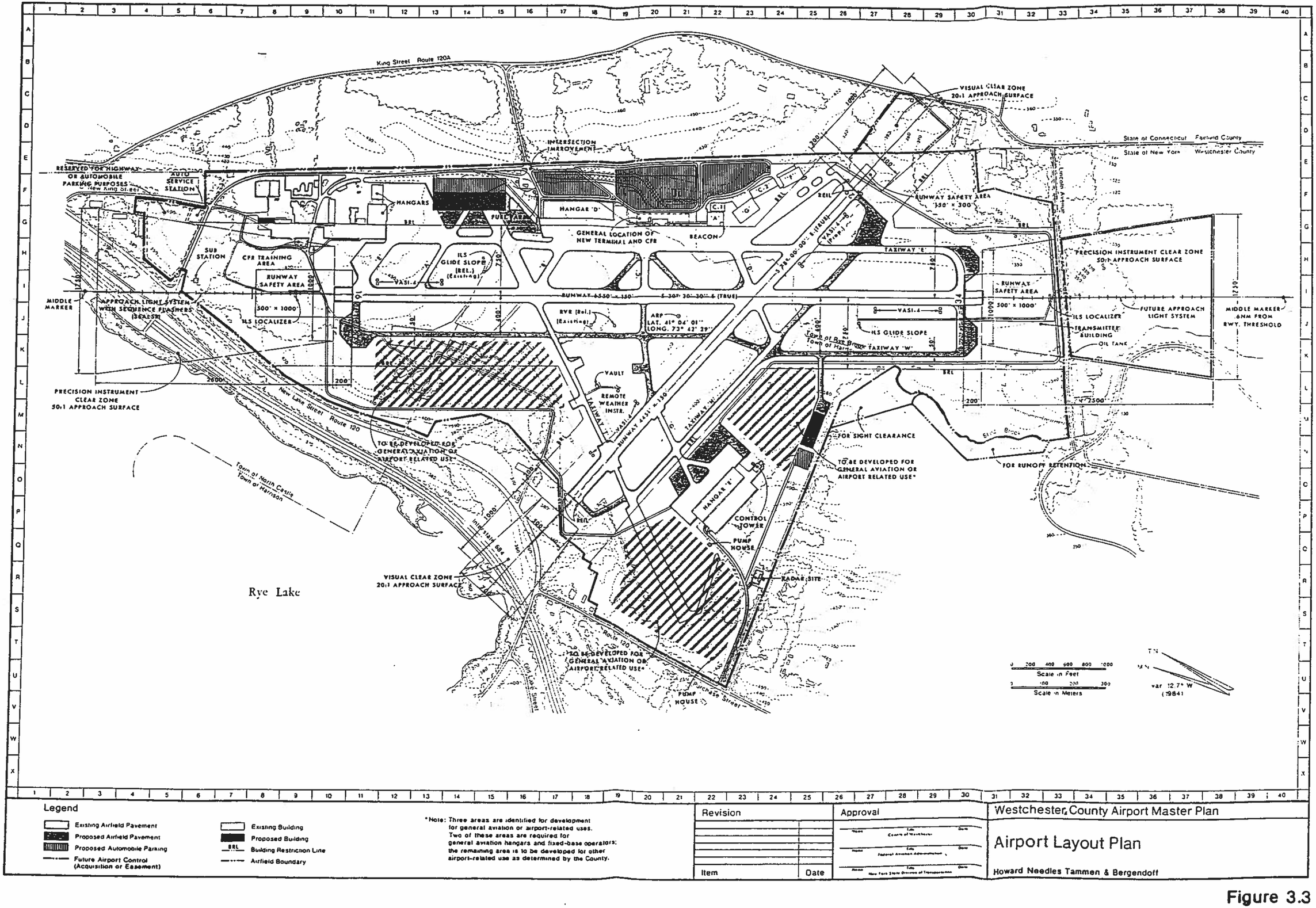
Actual annual traffic volumes can be expected to exceed the planning ASV for the airport as aircraft operators become willing to accept higher delays. To provide for a margin in assessing future noise and environmental impacts, a level of operations 10 percent higher than the calculated ASV, or 280,000 operations, will be used in forecasting future aircraft activity.

3.2 PASSENGER FORECASTS

This section of the report describes the methodology employed in developing the passenger forecasts for Westchester County Airport and presents the results of that process. The analysis includes the historical context and the impact of the 1985 Stipulation agreement, which established new passenger constraints.

3.2.1. Historical Background

Table 3.2 shows historical passenger enplanements for air carriers and for commuters and air taxis. Until 1980, total passenger enplanements demonstrated overall moderate growth, but with substantial annual fluctuations. A significant increase in passenger enplanements occurred in 1981 in response to the introduction of Air Florida service, and another increase was registered in 1985, in response to new service by New York Air and Republic Airlines.



Legend

- Existing Airfield Pavement
- Proposed Airfield Pavement
- Proposed Automobile Parking
- Future Airport Control (Acquisition or Easement)
- Existing Building
- Proposed Building
- BRL — Building Restriction Line
- Airfield Boundary

*Note: Three areas are identified for development for general aviation or airport-related uses. Two of these areas are required for general aviation hangars and fixed-base operators; the remaining area is to be developed for other airport-related use as determined by the County.

Revision		Approval	
Item	Date		

Westchester County Airport Master Plan

Airport Layout Plan

Howard Needles Tammen & Bergendoff

Figure 3.3

TABLE 3.2

WESTCHESTER COUNTY AIRPORT

Historical Passenger Enplanements

Year	Air Carrier Enplanements	Commuter and Air Taxi Enplanements	Total Enplanements
1965	31,540	N/A	31,540[a]
1966	31,127	N/A	31,127[a]
1967	26,993	N/A	26,993[a]
1968	1,695	N/A	1,695[a]
1969	49,912	N/A	49,912[a]
1970	44,839	N/A	44,839[a]
1971	32,700	N/A	32,700[a]
1972	53,352	N/A	53,352[a]
1973	51,542	N/A	51,542[a]
1974	47,418	N/A	47,418[a]
1975	39,353	25,528	64,881
1976	35,392	11,000	46,392
1977	32,671	24,000	56,671
1978	30,185	22,000	52,185
1979	26,742	26,000	52,742
1980	45,664	34,000	79,664
1981	90,240	29,926	120,166
1982	66,808	28,816	95,624
1983	66,109	45,720	111,829
1984	56,681	61,279	117,960
1985	105,356	89,311	194,667

[a]Does not include commuter and air taxi enplanements.

Sources: 1965-1980 Air Carrier: Airport Activity Statistics, FAA.
1976-1980 Commuter and Air Taxi: Terminal Area Forecasts, FAA.
1981-1985: Westchester County Airport.

Overall, passenger enplanements between 1982 and 1985 increased from 95,624 to 194,667, an increase of 104 percent. The corresponding national growth during this period was 36 percent. Passenger enplanements were 62,911 in the last quarter of 1985, a level of activity which has been sustained during the first two months of 1986. If traffic continues at this level as seems probable, passenger enplanements in 1986 will be approximately 250,000.

Between 1968 and 1984, air carriers were restricted to ten aircraft departures per day, with no restriction on commuter activity. The Stipulation agreement modified the restrictions to include commuter carriers, and the capacity constraint was changed from ten aircraft departures per day to 240 passengers per half hour. The more flexible provisions of the new agreement permitted the most recent activity increase to occur.

3.2.2. Forecasting Methodology

Among the factors considered in developing the forecasting methodology were:

1. The demand for air service by the Westchester County population is much greater than the capability of the airport to provide these services. The percentage of the demand accommodated at the airport is dependent on the service actually provided by the airlines, which in turn is dependent on airport policy.

2. The Stipulation agreement significantly altered the local regulatory environment governing airline activity at the airport, so past traffic levels are of limited value in developing future forecasts. Traditional forecasting methods such as trend analysis and regression analysis could not be employed.

3. Since the current airport capacity restrictions do not differentiate between air carrier passengers and commuter passengers, the passenger forecasts for the two types of service were estimated concurrently.

The forecasting procedures started with development of unconstrained growth rates for both air carrier and commuter passenger movements. Passenger movements increased significantly in 1985, in part because of the introduction of service by New York Air and Republic Airlines. There is no indication that additional airlines will enter the market or that existing airlines will make major expansions in service in the near future. In fact, since the fourth quarter of 1985, passenger levels have remained relatively constant. It is projected that passenger movements will continue to grow, but at a rate below that of 1985.

Table 3.3 presents the assumptions used in estimating future unconstrained growth rates. During the first forecast period, air carrier movements were forecast to grow at a faster rate at Westchester County Airport (7.5 percent) than in the United States. It was judged that there would be a "catch-up" effect as passenger movements continued to rebound from the artificially low levels imposed by the pre-1985 constraints. It was assumed that this "catch-up" effect would be complete by 1991, and that during the two subsequent forecast periods, 1992-1996 and 1997-2006, passenger movements at Westchester County Airport would grow at an annual rate of 4.7 percent, the same rate forecast for the United States in the FAA Aviation Forecasts: Fiscal Years 1986-1997.

Unconstrained commuter air passenger movements were forecast to rise at the FAA projected rate for United States commuter enplanements, namely 8.9 percent in 1987, and 7 percent annually thereafter. This growth rate is much less than the commuter passenger movement growth rate actually experienced at Westchester County Airport between 1982 and 1985 (46 percent). However, since the Stipulation agreement liberalized restrictions on air carriers, it was judged that the air carriers would be better able to capture their share of the air passenger market than in the past. This would serve to reduce commuter growth rates from their past high levels.

3.2.3 Passenger Forecasts

To permit comparisons between the unconstrained passenger movement forecast and the airport's capacity constraints, passenger forecasts were developed for each half-hour period of the airport's normal operating day. Table 3.4 shows the unconstrained forecasts for each half-hour period. The growth factors developed in Table 3.3 were applied to the 1986 passenger allocations to generate unconstrained forecasts of passenger movements for 1991, 1996, and 2006.

The Stipulation agreement specified a cap of 240 passenger movements per half-hour. As a practical matter, it would be difficult for several carriers using different apron slots and passenger allocations to coordinate their operations to exactly achieve the 240 passenger cap over a long period of time. Therefore, it was assumed that, for forecasting purposes, 204 passengers per half-hour (85 percent of the cap) would be a more realistic measure of the constraining effect of the Stipulation agreement.

Forecast passenger movements in excess of 204 per half-hour were calculated for each forecast year. It was assumed that business travelers would select an alternative airport if they were unable to obtain a flight at or very close to their desired flight time due to the capacity constraints. This appears reasonable given the frequent service to primary business destinations from other nearby airports. It was assumed that travelers on personal business would be more inclined to wait for a less congested time rather than travel the additional distance to another airport. According to the Westchester County Airport Parking, Traffic, Driver Survey conducted in 1985 by the Westchester County Department of Planning, 80 percent of passengers at Westchester County Airport were

TABLE 3.3

WESTCHESTER COUNTY AIRPORT

Assumptions for Unconstrained Passenger Movement Forecasts

Air Carrier Passenger Movement Growth Rate

1986-1991 - Assumed to be 7.5 percent: Somewhat higher than national average because of "catch-up" effect due to long period of time under 10 departure constraint.

1991-1996, and
1996-2006 - 4.7 percent FAA projected national growth rate for air carrier enplanements.

Commuter/Regional Carrier Movement Growth Rate

1986-1991 - Assumed to grow at FAA forecast national growth rate, 8.9 percent in 1987, 7.0 percent thereafter.

1991-1996, and
1996-2006 - 7.0 percent FAA projected national growth rate for commuter/regional carrier enplanements.

Calculation of Growth Factors

1985 Westchester distribution of passenger movements:
54 percent - Air Carrier
46 percent - Regional (commuter)

$.54 \times (1.075)^5 =$	.775	(54%)
$.46 \times (1.089) \times (1.07)^4 =$	.656	(46 %)
	1.431	= 1986-1991 Growth Factor
$.54 \times (1.047)^5 =$	.675	(51%)
$.46 \times (1.07)^5 =$	.645	(49 %)
	1.320	= 1991-1996 Growth Factor
$.51 \times (1.047)^{10} =$	.808	(46%)
$.49 \times (1.07)^{10} =$	.964	(54 %)
	1.772	= 1996-2006 Growth Factor

TABLE 3.4

WESTCHESTER COUNTY AIRPORT

Half-Hourly Unconstrained Passenger Allocations[a]

Hour	1986[a]	1991	1996	2006
0630-0700	87	124	164	291 (87)[b]
0701-0730	120	172	227 (23)[b]	402 (198)
0731-0800	185	265 (61)[b]	349 (145)	619 (415)
0801-0830	110	157	208 (4)	368 (164)
0831-0900	54	77	102	181
0901-0930	55	79	104	184
0931-1000	88	126	166	265 (91)
1001-1030	13	19	25	44
1031-1100	48	69	91	161
1101-1130	20	29	38	67
1131-1200	9	13	17	30
1201-1230	5	7	9	17
1231-1300	34	49	64	114
1301-1330	20	29	38	67
1331-1400	59	84	111	197
1401-1430	46	66	87	154
1431-1500	109	156	206 (2)	365 (161)
1501-1530	66	94	125	221 (17)
1531-1600	67	96	127	224 (20)
1601-1630	55	79	104	184
1631-1700	154	220 (16)	291 (87)	515 (311)
1701-1730	124	177	234 (30)	415 (211)
1731-1800	142	203	268 (64)	475 (271)
1801-1830	115	165	217 (13)	385 (181)
1831-1900	110	157	208 (4)	368 (164)
1901-1930	70	100	132	234 (30)
1931-2000	30	43	57	100
2001-2030	36	52	68	120
2031-2100	62	89	117	208 (4)
2101-2130	5	7	9	17
2131-2200	40	57	76	134
2201-2230	36	52	68	120
2231-2300	31	44	59	104
Unconstrained Total	2,205	3,156	4,166	7,380
Excess	0	(77)	(372)	(2,325)

[a]Based on March 26, 1986, allocation.
[b]Numbers in parentheses indicate passenger movements exceeding 204 limit.

business travelers and the other 20 percent were traveling on personal business. Therefore, 80 percent of the excess half-hourly passenger demand was not served at the airport, and 20 percent was moved to neighboring half-hour periods.

Table 3.5 shows constrained daily passenger allocations; these are projected to increase by 40.3 percent between 1986 and 1991, 25 percent between 1991 and 1996, and 42.7 percent between 1996 and 2006.

Table 3.6 presents the forecasts of annual passenger movements for 1991, 1996, and 2006. Included for purposes of comparison is a forecast done by the Tri-State Regional Planning Commission of passengers originating in Westchester County, using all airports in the region. The Tri-State forecast is a conservative estimate of the demand for air services, since, according to the Civil Aeronautics Board, total passenger originations at the Tri-State airports were 24.1 million in 1984, compared to the 18.3 million forecast for the region in 1985. In addition to the Westchester County demand, there is demand generated by residents of Fairfield County, Connecticut, for many of whom Westchester County Airport is the nearest airport.

As shown in Table 3.6, annual passenger movements would be expected to rise from 500,000 in 1986 to 1,674,000 in 2006 without the passenger constraints at the airport. Assuming that the 1985 Stipulation agreement remains in place through 2006, constrained passenger movements are forecast to rise to 702,000 in 1991, to 877,000 in 1996, and to 1,251,000 in 2006.

Currently, most of the airlines at Westchester County Airport operate on a five day per week schedule and have the option of introducing additional service during weekends without violating the capacity restrictions. If the air carriers were to increase the relative number of weekend operations, the constrained forecasts of passenger movements could increase.

Table 3.7 distributes the annual constrained passenger forecasts between air carrier passengers and commuter passengers. Air carrier passenger movements are forecast to increase from 270,000 in 1986 to 575,000 in 2006. Commuter passenger movements are forecast to rise from 230,000 in 1986 to 676,000 in 2006. It should be noted that the differences between air carriers and commuters are becoming increasingly less distinct. Commuters are using larger aircraft, and are competing more in markets that were formerly the exclusive domain of the air carriers. In addition, there has been a recent trend for air carriers to purchase commuter airlines or to enter into code sharing agreements. Forecasting the split between air carrier and commuter carriers has become subject to less certainty than forecasts of total passenger movements.

TABLE 3.5

WESTCHESTER COUNTY AIRPORT

Calculations of Constrained Growth Factors

	1986	1991	1996	2006
Unconstrained Daily Allocations	2,205	3,156	4,166	7,380
Excess Passenger Movements	0	77	372	2,325
20% of Excess Passenger Movements[a]	0	15	74	465
80% of Excess Passenger Movements[b]	0	62	298	1,860
Constrained Passenger Movements[c]	2,205	3,094	3,868	5,520
Constrained Growth Factor		1.403	1.250	1.427

[a] Percentage of Excess Passenger Movements which are for personal travel. (Source: Westchester County Department of Planning.) It is assumed that these displaced passengers will use Westchester County Airport at a less congested time.

[b] Percentage of Excess Passenger Movements which are business related. (Source: Westchester County Department of Planning.) It is assumed that these displaced passengers will use a different airport because of their schedule requirements.

[c] (Unconstrained Passenger Movements) - (80% of Excess Passenger Movements).

TABLE 3.6

WESTCHESTER COUNTY AIRPORT

Constrained Total Passenger Movement Forecasts

	1980	1986	1991	1996	2006
Westchester County Originations[a] (All Airports)	1,494,000	1,705,000	1,805,000	1,905,000	N/A
Unconstrained Passenger Movements	159,000[b]	500,000[c]	716,000	944,000	1,674,000
Constrained Passenger Movements	159,000[b]	500,000[c]	702,000	877,000	1,251,000

[a] Source: Tri-State Regional Planning Commission, Air Carrier and General Aviation Demand in the Tri-State Region 1975-1995 as reported in Westchester County Airport Master Plan Study. Forecast years interpolated.
[b] Estimated from passenger enplanements.
[c] Estimated based on passenger movement data from the 4th Quarter of 1985 and first two months of 1986.

TABLE 3.7

WESTCHESTER COUNTY AIRPORT

Constrained Air Carrier and Commuter Passenger Movement Forecasts

	Air Carrier	Commuter	Total
1986	270,000	230,000	500,000
Percent	54	46	100
1991	379,000	323,000	702,000
Percent	54	46	100
1996	447,000	430,000	877,000
Percent	51	49	100
2006	575,000	676,000	1,251,000
Percent	46	54	100

3.3. AIRCRAFT OPERATIONS

Forecasts of operations in 1991, 1996, and 2006 for air carrier, commuter, and general aviation operations at Westchester County Airport are developed in this section. First, the historical context is analyzed. Forecasts of air carrier, commuter and general aviation operations unconstrained by airfield capacity are described. The section concludes with a forecast of operations under the airfield capacity constraints, and a forecast of instrumented operations.

3.3.1 Historical Operations

Table 3.8 presents historical operations at Westchester County Airport. Local operations after 1976 include all operations by airport-based aircraft, and itinerant operations include all operations by non-airport-based aircraft. No data on air taxi and commuter operations were available prior to 1972.

Air carrier operations reached a low in the late 1970s, but have begun to recover since the 1985 Stipulation agreement. Commuter and air taxi operations have demonstrated steady improvement since the early 1970s. General aviation operations reached a peak in the late 1960s and early 1970s, registering 267,654 operations in 1971. General aviation operations diminished until 1977 and have since slowly increased to 213,094 operations in 1985. Total operations reached a peak of 281,462 operations in 1971, declined to 167,182 in 1977, and have since grown to 245,440 in 1985.

Table 3.9 is a more detailed listing of historical operations at Westchester County Airport since 1977. Between 1977 and 1985, airport-based business jet operations increased 68 percent and transient business jet operations increased 86 percent. Turboprop operations demonstrated a larger increase: transient operations increased 64 percent and airport-based operations increased 408 percent.

3.3.2 Air Carrier Operations Forecasts

The entry of New York Air and Republic Airlines into the Westchester market in 1985 resulted in a much higher number of air carrier operations at the end of the year than at the beginning. Recently this rapid growth in air carrier operations has abated. Consequently, an estimate of 1986 operations was used as a base for the forecast. Air carrier operations in 1986 were estimated at 7,000, based on airline schedules from the Official Airline Guide in conjunction with recent airport operations data.

Because of existing restrictions on takeoff weight, aircraft length and maneuvering radius, together with the restriction on the number of enplanements and deplanements in each half hour, the fleet characteristics of air carriers serving Westchester County Airport are not expected to change (in terms of average seat capacity) between 1986 and 2006. This forecast assumption does not preclude the substitution of new generation aircraft for the existing fleet of DC-9-10s, DC-9-30s, and Boeing 737-200s.

TABLE 3.8

WESTCHESTER COUNTY AIRPORT

Historical Operations

Year	Air Carriers	Air Taxi & Commuter	Total Commer.	Local[a] G.A.	Itin.[b] G.A.	Total G.A.	Total
1960	9,768	--	9,768	41,772	80,469	122,191	131,959
1964	9,661	--	9,661	83,414	109,054	192,468	202,129
1968	7,231	--	7,231	108,302	145,743	254,045	261,276
1970	5,513	--	5,513	99,208	159,163	258,361	263,884
1971	5,701	--	5,701	122,483	153,278	267,654	281,462
1972	6,432	3,359	9,791	103,610	141,481	245,091	254,882
1973	4,213	6,072	10,285	99,171	145,776	239,332	255,232
1974	5,157	6,755	11,912	77,065	129,720	206,785	218,697
1975	2,813	10,200	13,013	64,198	127,534	191,732	204,745
1976	2,435	12,175	14,610	69,887	134,899	204,786	219,396
1977	1,804	11,148	12,952	112,100	42,130	154,230	167,182
1978	1,990	12,156	14,146	124,878	50,526	175,404	189,550
1979	1,562	12,718	14,280	129,590	56,944	186,534	200,814
1980	1,252	12,570	13,822	135,958	60,236	196,194	210,016
1981	2,858	13,368	16,226	119,062	58,314	177,376	193,602
1982	2,284	12,850	15,134	131,124	53,810	184,934	200,068
1983	1,910	18,084	19,994	138,442	55,194	193,636	213,630
1984	2,810	23,858	26,668	141,794	52,602	194,396	221,064
1985	5,640	26,406	32,046	159,634	53,460	213,094	245,140

[a] Airport-based G.A. after 1976.
[b] Transient G.A. after 1976.

Sources: 1960-1976 FAA, Air Traffic Activity Calendar Year.
1977-1985 Westchester County Airport, Aircraft Landings.

TABLE 3.9

WESTCHESTER COUNTY AIRPORT

Historical Aircraft Operations

Year	Air Carrier	Commuter	Government	General Aviation			Airport Based[a]		Transient[a]		Subtotal[a]		Total
				Airport Based	Touch & Go	Transient	Turbo-Props	Jets	Turbo-Props	Jets	Turbo-Props	Jets	
1977	1,804	11,148	3,310	62,250	43,850	38,820	4,528	14,954	5,598	10,408	10,126	25,362	167,182
1978	1,990	12,156	3,958	83,658	41,220	46,568	6,972	19,696	5,322	12,100	12,294	31,796	189,550
1979	1,562	12,718	3,956	78,898	50,692	52,988	5,688	20,962	5,562	15,462	11,250	36,424	200,814
1980	1,252	12,570	3,818	83,618	52,340	56,418	6,374	22,374	7,082	16,884	13,456	39,258	210,016
1981	2,858	13,368	3,998	77,982	41,080	54,316	6,980	21,990	7,552	17,452	14,532	39,442	193,602
1982	2,284	12,850	4,186	89,058	42,066	49,624	9,760	21,542	6,920	15,264	16,680	36,806	200,068
1983	1,910	18,084	2,280	98,250	41,192	52,914	13,166	23,606	8,044	16,238	21,210	39,844	213,630
1984	2,810	23,858	470	96,088	43,706	52,132	11,624	23,192	9,116	17,750	20,740	40,942	221,064
1985	5,640	26,406	418	112,440	47,194	53,042	23,024	25,058	9,186	19,350	32,210	44,408	245,140

[a]Does not include Air Carrier, Commuter, or Government Operations.

Source: Westchester County Airport, Aircraft Landings, 1977-1985.

It was assumed that boarding load factors at Westchester County Airport would increase by the same percentage as that forecast for the nation in FAA Aviation Forecasts: Fiscal Years 1986-1997. The total increase in boarding load factor is projected to be 3.0 percent between 1986 and 1991, 1.3 percent between 1991 and 1996, and 1.6 percent in 1997. Boarding load factors are not forecast to grow past 1997.

Air carrier operations were forecast to increase at the same rate as air carrier passenger movements, adjusted for the forecast changes in load factor. Table 3.10 presents the forecast of air carrier operations for 1991, 1996, and 2006. These forecasts were developed from the constrained forecast of passenger movements and reflect the airport policies established by the 1985 Stipulation agreement. They do not include constraints in airfield capacity.

3.3.3 Commuter Forecasts

Commuter operations also were in a state of flux in 1985, ranging from a low of 1,776 operations in February to a high of 2,789 operations in October. This variation made 1985 a poor selection as a base year. Therefore, an estimate of 1986 operations was used as a base for the forecast. Commuter and air taxi operations in 1986 were estimated at 27,000, based on airline schedules from the Official Airline Guide in conjunction with recent data on operations at the Airport. The estimate assumes no major net changes in commuter and air taxi service patterns during the remainder of 1986.

The size of the average commuter aircraft in the United States has been steadily increasing, and is forecast by the FAA to continue to increase through 1997. It was assumed that the average commuter aircraft size, in terms of seat capacity, would continue to grow at the rate forecast for the national commuter fleet. The average seat capacity for commuter aircraft at Westchester County Airport is forecast to rise from an estimated 28.6 seats per aircraft in 1996 to 40.2 seats per aircraft in 1996. Because aircraft averaging 40.2 seats are much larger than the average commuter aircraft[1], no growth in average aircraft size was projected beyond 1996.

The FAA does not provide forecasts of commuter load factors or enplanements per operation. An average annual increase of 1 percent in the boarding load factor[2] was assumed. This is reasonable because the existing boarding load factor, approximately 29 percent, implies excess capacity and because slot restrictions in peak periods would reduce the number of operations available to serve passenger demand.

Commuter operations were forecast to increase at the same rate as enplanements, adjusted for projected changes in average aircraft seat capacity and boarding load factor. Table 3.11 presents the forecast of commuter and air taxi operations for 1991, 1996, and 2006. As with air carrier operations, forecasts of commuter operations were developed from the constrained forecast of commuter passenger movements and reflect the airport policies resulting from the 1985 Stipulation agreement, but do not include the airfield capacity constraints.

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[1] Projected U.S. average commuter seat capacity is 26.6 in 1986.
[2] Number of boarding passengers as a percentage of the total passenger seat capacity.

TABLE 3.10

WESTCHESTER COUNTY AIRPORT

Air Carrier Operations Forecast
Unconstrained by Airfield Capacity

Year	Growth in Enplanements	Change in Average Seat Capacity	Change in Load Factor	Air Carrier[a] Operations
1986	--	--	--	7,000
1991	1.404	1.00	1.030	9,500
1996	1.179	1.00	1.013	11,100
2006	1.286	1.00	1.016	14,000

[a] Forecast Change in Air Carrier Operations = (Growth in Enplanements) / (Change in Seat Capacity) x (Change in Load Factor)

Source: HNTB

TABLE 3.11

WESTCHESTER OPERATIONS FORECAST

Commuter Operations Forecast
Unconstrained by Airfield Capacity

Year	Growth in Enplanements	Change In Average Seat Capacity	Change in Load Factor	Commuter[a] Operations
1986	--	--	--	27,000
1991	1.404	1.201	1.051	30,000
1996	1.331	1.172	1.051	32,400
2006	1.572	1.000	1.105	46,100

[a] Forecast Change in Air Commuter Operations = (Growth in Enplanements) / (Change in Seat Capacity) x (Change in Load Factor)

Source: HNTB

The projected level of aircraft activity could be managed using the four terminal apron positions currently available. Assuming one aircraft per apron position per half-hour, and the same distribution between weekday and weekend flights as in 1986, approximately 80 percent of available positions will be utilized by air carrier or commuters during an average weekday by 2006. Under some conditions, more than one commuter aircraft per half-hour can use an apron position. Consequently, the available capacity may be understated.

3.3.4 General Aviation

The forecast of general aviation operations is divided into operations by aircraft based at the airport and operations by aircraft not based at the airport (transient).

Table 3.12 presents historical based aircraft for Westchester County Airport. Since 1970, single-engine piston aircraft have represented approximately one-half the total based aircraft population. The remainder includes twin-engine piston powered aircraft, turboprops, business jets, and helicopters. The number of based aircraft grew rapidly in the 1960s, declined in the 1970s, and then began growing again in the early 1980s. At the beginning of 1986, 392 aircraft were based at Westchester County Airport.

The drawing area for based aircraft at Westchester County Airport includes Westchester County and part of Fairfield County in Connecticut. Table 3.13 shows the total number of general aviation aircraft registered by owners residing in Westchester and Fairfield Counties in 1975, 1980, and 1983. Aircraft registered by Westchester County owners roughly approximated the number of based aircraft at the airport. When the additional demand from Fairfield County is included, the potential demand for based aircraft significantly exceeds the number of actual based aircraft at Westchester County Airport.

Table 3.14 presents the forecast of based aircraft at Westchester County Airport for 1991, 1996, and 2006. The number of based aircraft was assumed to grow at the FAA forecast growth rate for active general aviation aircraft in the United States until the airport's capacity is achieved. The greatest number of based aircraft in any one year was 433 in 1983. For the purposes of this study, it is assumed that this represents the airport's capacity for based aircraft. The airport's policy is to maintain the existing mix of based aircraft. Therefore it was assumed that the 1986 distribution of based aircraft would continue throughout the forecast period. Based aircraft are forecast to rise to 423 in 1991, and to 430 in 1996 and 2006.

Operations for airport-based general aviation aircraft were forecast to increase at the same rate as the number of based aircraft, adjusted for the FAA forecast change in local operations per general aviation aircraft. Operations for transient general aviation aircraft were forecast to increase at the same rate as the FAA forecast of itinerant general aviation operations. Touch-and-go operations between 1977 and 1985 averaged approximately 45,000 per year with no discernible trend. It was therefore assumed that, under the unconstrained forecast, touch-and-go operations would continue at an annual rate of 45,000.

TABLE 3.12

WESTCHESTER COUNTY AIRPORT

General Aviation Based Aircraft[a]

Year	Single-Engine	Multi-Engine	Jets[b]	Helicopters	Other[c]	Total
1960	95	130	--	--	--	225
1965	184	115	--	6	0	305
1970	217	186	--	5	1	409
1975	180	175	--	6	1	362
1976	180	175	--	6	1	362
1977	N/A	N/A	--	N/A	N/A	N/A
1978	174	161	--	6	1	342
1979	N/A	N/A	--	N/A	N/A	N/A
1980	N/A	N/A	--	N/A	N/A	N/A
1981	N/A	N/A	--	N/A	N/A	N/A
1982	161	68	106	11	0	346
1983	174	81	111	9	0	375
1984	232	77	114	10	0	433
1985	N/A	N/A	N/A	N/A	N/A	425
1986	205	79	95	13	0	392

[a] Data do not include military.
[b] Jets included with multi-engine aircraft prior to 1982.
[c] Include seaplanes and military aircraft.

Source: HNTB: Westchester County Airport Master Plan Study: Phase I Report, and Westchester County Airport.

TABLE 3.13

WESTCHESTER COUNTY AIRPORT

General Aviation Aircraft Registered by Owners
In Westchester and Fairfield Counties

	Total	Turbo-Jet	Turbo-Prop	Other
1975				
Westchester	381	76	21	284
Fairfield	356	5	7	344
TOTAL	737	81	28	628
1980				
Westchester	393	31	14	348
Fairfield	579	36	26	517
TOTAL	972	67	40	865
1983				
Westchester	408	57	13	338
Fairfield	669	67	45	537
TOTAL	1077	124	58	875

Source: FAA, Census of Civil Aircraft, 1975, 1980, and 1983.

TABLE 3.14

WESTCHESTER COUNTY AIRPORT

Forecast of General Aviation Based Aircraft[1]

Year	Single-Engine	Multi-Engine	Jets	Helicopters	Total
1986	205	79	95	13	392
1991	221	85	103	14	423
1996	225	87	104	14	430
2006	225	87	104	14	430

[1]Assumed to grow at FAA forecast growth rate for active G.A Aircraft until capacity of 430 aircraft is achieved.

Source: HNTB analysis.

In keeping with Westchester County Airport policy, it was assumed that the distribution between business jet operations and other general aviation operations would remain constant for both airport-based operations and transient operations.

Table 3.15 presents the forecast of unconstrained general aviation operations for Westchester County Airport in 1991, 1996, and 2006. Separate forecasts are presented for touch-and-go operations, airport-based operations, and transient operations. In addition, forecasts are disaggregated by business jet operations and other general aviation operations. As shown, unconstrained general aviation operations are projected at 248,000 in 1991, 273,000 in 1996, and 283,000 in 2006.

3.3.5 Constrained Forecasts

Table 3.16 is a summary of the general aviation and air carrier operations forecast for Westchester County Airport, unconstrained by airfield capacity. Included are forecasts of air carrier and commuter operations that have already been constrained by the policies of the 1985 Stipulation agreement. Likewise, airport-based general aviation operations would be indirectly constrained by the limits on based aircraft. As shown, without airfield capacity restrictions, total operations would be expected to increase 17 percent to 287,500 by 1991, 10 percent to 316,000 by 1996, and 8 percent to 343,100 by 2006.

The estimate of airfield capacity at Westchester County Airport determined that a limit of 280,000 annual operations would be used for operations at the airport. In accord with airport policy, the capacity constraint would be borne by all four principal operational categories.

It was assumed that air carriers would respond to the airfield capacity constraints by reducing the growth in their operations until a 50 percent boarding load factor was achieved by the year 2006. This would entail an average annual increase of 1.305 percent from the existing estimated boarding load factor of 38.5 percent. Commuters were also assumed to respond by reducing the growth in their operations so that the boarding load factor would increase 2.76 percent annually from an estimated 29.0 percent in 1986 to 50 percent in 2006.

Among general aviation operations it was assumed that flight training, as reflected in touch-and-go operations, would first be reduced in response to the airfield capacity constraints. A reduction of 5,000 touch-and-go operations is forecast for 1991. In 1996 and 2006, it was assumed that jet and non-jet general aviation operations would be reduced on a pro-rata basis in response to capacity restrictions imposed by the airfield configuration.

Table 3.17 presents the preliminary constrained operations forecast for Westchester County Airport in 1991, 1996, and 2006. As shown, the airport is projected to reach the 280,000 operations limit by 1991, and level off thereafter. After 1991, commercial operations are forecast to increase slightly, while general aviation is projected to sustain a corresponding decrease in operations.

TABLE 3.15

WESTCHESTER COUNTY AIRPORT

Forecast of General Aviation Operations
Unconstrained by Airfield Capacity

Year	Touch & Go	Airport Based Operations Non-Jet[a]	Jet	Total	Transient Operations Non-Jet[a]	Jet	Total	Total Operations Non-Jet[a]	Jet	Total
1985	47,194	87,382	25,058	112,440	33,692	19,350	53,042	168,268	44,408	212,676
1991	45,000	107,000	31,000	138,000	41,000	24,000	65,000	193,000	55,000	248,000
1996	45,000	118,000	34,000	152,000	48,000	28,000	76,000	211,000	62,000	273,000
2006	45,000	118,000	34,000	152,000	55,000	31,000	86,000	218,000	65,000	283,000

[a]Includes turbo-prop operations.

Source: HNTB analysis.

TABLE 3.16

WESTCHESTER COUNTY AIRPORT

Forecast of Total Operations
Unconstrained by Airfield Capacity

Year	G.A. Operations Non-Jet[b]	Jet	Commuter	Air Carrier	Total
1985	168,268	44,408	26,406	5,640	245,140[c]
1991	193,000	55,000	30,000	9,500	287,500
1996	211,000	62,000	32,400	11,100	316,500
2006	218,000	65,000	46,100	14,000	343,100

[a] Includes air passenger constraints.
[b] Includes turbo-prop operations.
[c] Includes 418 government operations.

Source: Tables 3.10, 3.11 and 3.17.

TABLE 3.17

WESTCHESTER COUNTY AIRPORT

Constrained Operations Forecast[a]

Year	G.A. Operations Non-Jet[b]	G.A. Operations Jet	Commuter[c]	Air Carrier[d]	Total
1985	168,268	44,408	26,406	5,640	245,140[e]
1991	188,000[f]	55,000	27,500	9,200	279,700
1996	187,000[g]	55,000[g]	27,300	10,200	279,500
2006	183,000[g]	53,000[g]	32,700	11,500	280,200

[a] Includes airfield capacity limit of 280,000 operations.
[b] Includes turbo-prop operations.
[c] Commuter operations forecast based on assumption that commuter boarding load factor would increase at an annual rate of 2.76 percent until a 50 percent boarding load factor is achieved in 2006.
[d] Air carrier operations forecast based on assumption that air carrier boarding load factor would increase at an annual rate of 1.305 percent until a 50 percent boarding load factor is achieved in 2006.
[e] Includes 418 government operations.
[f] Assumed that 5,000 touch-and-go operations would be eliminated.
[g] Reduction in general aviation operations pro rated among jet and non-jet operations.

3.3.6 Instrument Operations

Forecasts of primary instrument operations at Westchester County Airport were developed for 1991, 1996, and 2006. Since all air carrier operations are instrumented, it was assumed that instrument operations by air carriers would equal projected air carrier operations. Separate forecasts of instrument operations were developed for commuters and general aviation.

Primary instrument operations by commuters, as a percentage of total commuter operations, were projected to grow at the same rate as the corresponding ratio of FAA national forecasts of instrument to total commuter operations. Primary instrument operations by general aviation, as a percentage of total general aviation operations, were projected to grow at the same rate as the corresponding ratio of FAA national forecasts of instrument to total general aviation operations.

Table 3.20 is a summary of the forecast of instrument operations at Westchester County Airport, assuming no changes in airfield capacity. Instrument operations are forecast to grow to 112,600 in 1991, then decline to 106,000 in 1996, and rise to 109,000 in 2006. The decline is because the FAA national forecasts show general aviation instrument operations to be a smaller percentage of total general aviation operations in 1996.

TABLE 3.18

WESTCHESTER COUNTY AIRPORT

Constrained Forecast of Instrument Operations

Year	Instrument Operations			
	G.A. Operations	Commuter	Air Carrier	Total
1984	62,596[a]	15,198[a]	2,810	80,604
1991	85,000	18,400	9,200	112,600
1996	77,000	18,800	10,200	106,100
2006	75,000	22,500	11,500	109,000

[a]Estimated by applying percentage of FY 1984 instrument operations to total operations for Calendar Year 1984.

CHAPTER 4. REQUIREMENTS AND CONCEPTS

The conventional airport master planning process determines facility requirements to meet projected aviation demand and analyzes alternative concepts to best satisfy those requirements. For Westchester County Airport, this process has been largely replaced by the Statement of Airport Policy, which describes the principal facilities that are and are not to be included on the Airport Layout Plan.

The previous Master Plan study initially considered a combination of five airfield development alternatives and six terminal development alternatives for a total of thirty separate development concepts. The recent policy statement limits the Master Plan Update to one of these thirty concepts.

Within the policy limitations, there are a number of facilities that were analyzed and a variety of options that were considered in developing the Airport Layout Plan. This chapter looks at these specific areas of airport development, outlines facility requirements, discusses the policy guidelines, and presents the concepts that were considered and the plan recommendations.

4.1 AIRFIELD

4.1.1 Runways

The runway configuration was evaluated with regard to wind coverage, capacity, and individual runway lengths.

The wind rose analysis presented in Table 2.2 shows that the total wind coverage of 97.4 percent provided by Runways 16-34 and 11-29 for light aircraft (maximum 12 MPH crosswind) meets the FAA recommendation of at least 95 percent coverage for the runway system.

A detailed discussion of airfield capacity was presented in Chapter 3. Since the County policy prohibits increases in airfield capacity, no analysis was undertaken to address capacity shortfalls.

The previous Master Plan concluded that the existing 6550-foot length of Runway 16-34 was sufficient to accommodate then existing and future airport needs. Given the current limitations imposed by the policy and Stipulation, this conclusion remains valid.

4.1.2 Taxiways

The existing taxiway system was assessed with regard to its adequacy for existing and expected future ground traffic flows. Deficiencies in the system were identified with the help of the FAA Air Traffic Control Tower Manager. These deficiencies included:

- the lack of a parallel taxiway on the west side of Runway 16-34, which requires numerous crossings of the active runway by aircraft originating from facilities on the west side of the Airport (this was also a previous Master Plan finding);

- insufficient exit taxiways (and in some cases less than ideal geometry of existing exit taxiways) serving the east side of Runway 16-34;

- poor access to Runway ends 11 and 29, particularly from the south side of the runway; and

- the need for a direct connection between Hangar E (and future west side airport development) and the midpoint of Runway 16-34.

A series of taxiway improvements were developed to meet the identified deficiencies, and to improve overall ground traffic flows. A preliminary taxiway development concept was presented at a meeting of the Airport Advisory Board in May 1986, and was revised based on comments from airport users and others.

4.1.3 Aircraft Holding Aprons and Run-Up Areas

The existing air traffic control system has resulted in an increased need for aircraft holding aprons at key runway ends. The "flow control" system utilized by ATC often results in ground delays for aircraft bound for particular destinations, while aircraft bound for other destinations are permitted to take off. In order to provide for bypass and/or holding capabilities at the ends of Runway 16-34 for the purposes stated above, and for pre-flight and queueing requirements of other aircraft, holding aprons on the east and west sides of both runway ends are recommended.

In addition, with the limited terminal area aircraft parking, a holding area capable of accommodating the occasional overnight parking or emergency maintenance needs of the air carriers serving the airport is recommended. A suitable location for this area is on the recommended taxiway connector to the south side of the Runway 29 threshold.

Two areas for aircraft maintenance run-ups are currently provided on the airport, along Taxiway "T." However, since aircraft using the areas need to be pointed into the wind while being run up, only one of the areas is usable at many times. Demand for the run-up areas has shown that on many occasions two pads are needed at the same time. An additional run-up area, is recommended on the taxiway between the midpoint of Runway 16-34 and Runway 11-29. This location near the center of the airport provides good accessibility and is also desirable from the point of view of minimizing noise impacts. The proposed run-up pad (as well as the existing ones) is remote from any noise-sensitive land uses in the airport vicinity.

The installation of noise barriers or noise supression structures at the runup pads was investigated. Noise barriers are most effective in reducing noise at distances close to the barrier. At longer distances from the barrier, as would be the case at the airport, their effectiveness is limited. Noise supression structures, or "hush houses," are in limited use by the military. They are most effective when designed for a single aircraft type. At a general aviation airport, such a structure would need to accommodate a variety of aircraft sizes and types and would not be an effective method of reducing engine noise. Requiring the use of a single facility for runups would also be less efficient than providing more than one area for use at a time.

The installation of noise barriers or structures is not recommended as a part of the Master Plan. This, however, could be investigated further as part of an airport noise abatement program.

4.1.4 Navigational Aids and Lighting

The existing complement of Navigational Aids (NAVAIDS) on the airport provide a good level of service to airport users. However, additional or relocated facilities could provide worthwhile improvements in the overall capability. The installation of an approach light system to Runway 34 will provide better guidance and all-weather capability to the existing Instrument Landing System on the airport (this improvement is shown on the previous ALP). The approach light system is included in the airport policy statement. A VASI-4 is recommended for Runway 29, as shown on the previous ALP. The FAA will entirely fund these and other NAVAID projects.

Two other recommended changes to NAVAIDS include a relocation of the Runway 16 Glide Slope antenna by 150 feet to the west, which will provide for unrestricted use of Taxiway E during ILS operations; and a relocation of the Runway 16-34 RVR to make room for the proposed parallel taxiway west of Runway 16-34.

No changes to the lighting systems on the airport are recommended, other than providing edge lighting for new taxiway construction.

4.2 TERMINAL

A new terminal is clearly needed and the County policy states that the plan shall provide for improved terminal area facilities. The location of the new terminal is specified to be at or near the existing terminal.

The terminal will be designed to accommodate the flow of 240 passengers per half hour specified in the Stipulation agreement. The existing terminal apron areas, which limit the size and number of aircraft that can serve the terminal, will be maintained.

The configuration and design of the terminal complex is currently the subject of a separate study. An analysis of terminal requirements therefore is not included in this report.

4.3 ACCESS AND PARKING

Vehicular access and parking requirements to serve the proposed facility improvements were studied. With only a slight increase in based aircraft projected, very little change is expected in automobile traffic to the corporate and fixed base operator facilities on the airport. Airline passenger traffic is forecast to more than double over the planning period, but with the limits in hourly passengers imposed by the Stipulation agreement there will be little difference in the peak period traffic to the terminal.

4.3.1 Access Roads

Airport roads and intersections are generally adequate. It is recommended that the intersection of Rye Lake Road and Airport Access Road be improved. This is needed principally to handle the through traffic that uses Rye Lake Road and Airport Access Road to travel between New York State and Connecticut.

New access roads will be required in the area of the new terminal and parking facilities. The specific configuration of these roads south of the Rye Lake Road/Airport Access Road intersection will be determined in conjunction with the planning for the new terminal.

A new on-airport road will be required to the south of Hangar E and the ATC tower, to serve the proposed corporate and FBO/airport-related development area.

4.3.2 Parking

While peak period traffic will not change significantly, with the overall growth in passenger traffic the daily traffic and the parking requirements will increase. A preliminary analysis indicates the need to approximately double the amount of public parking spaces serving the terminal and the area between Hangars E and F.

4.3.3 Rental Car Facilities

The requirements for car rental facilities are being evaluated as part of the separate terminal area study. Presently, three rental companies, Hertz, Avis, and National, have parking and service facilities in the terminal area. Some of these facilities may need to be relocated to provide additional area and flexibility for locating the new terminal and parking facilities, and to facilitate staging of terminal area development.

The County has moved to terminate the leases of the car rental companies for their present facilities. If it is not feasible to relocate all car rental parking and maintenance within the terminal area, a separate location could be provided for car rental companies on airport property to the north of Airport Access Road. This land is conveniently located near the main airport entrance, yet it is separated from the airfield and cannot easily be used for development of aviation facilities.

Even if some of their facilities were located away from the terminal area, it is expected that car rental companies could continue to provide pickup and/or dropoff at the terminal by leasing a limited number of spaces in a "ready lot" in the new terminal-area parking facilities.

A recent County planning study had shown the need for future improvements to Interchange 2 on I-684. Some of the conceptual schemes for this interchange redesign would require a portion of the airport property north of Airport Access Road. Currently the state has no plans for reconstruction of this interchange. It appears that any improvements would be many years in the future, if ever. In the event that this highway interchange project does go forward at some future date, it would be feasible then to move any car rental functions from this area to a new location either on or off the airport. Lease agreements should be written to cover this contingency.

4.3.4 Rye Lake Road Closing

The Master Plan Update study investigated the feasibility of closing Rye Lake Road at the Connecticut border. Much of the traffic using Rye Lake Road is traveling through the airport and not to or from facilites on the airport. Closing the road would eliminate this traffic and reduce its interference with airport users.

Operationally, however, there appears to be no reason to close Rye Lake Road. Improvements to the intersection with Airport Access Road could handle future traffic levels. The closing would inconvenience many residents and employees in both New York State and Connecticut. It would also inconvenience many airport users. A recent survey of license plates on cars parked near the terminal revealed that one-third were from Connecticut. Rye Lake Road is the preferred access for many Connecticut residents.

Closing Rye Lake Road would also affect firefighting and other emergency services to the airport. The airport has its own crash/fire/rescue capability that meets the FAA's Index B, but it still must depend on the surrounding area for firefighting assistance and emergency medical service. Two of the three volunteer fire departments serving the airport are from Connecticut and use Rye Lake Road for access.

For these reasons, it is recommended that Rye Lake Road not be closed.

4.4 GENERAL AVIATION

The analysis of general aviation requirements addresses corporate facilities, most of which serve business jets, and fixed base operator facilities to serve light general aviation based and transient aircraft.

4.4.1 Corporate Aviation Facilities

The number of business jets based at the airport has dropped slightly between 1984 and 1986. This is due to some reduction in individual fleets, corporate consolidations and relocations.

Nevertheless, a number of companies in the area have recently expressed an interest in developing new facilites at the airport. These would most likely be financed and constructed by the companies themselves, with the airport then obtaining title and receiving income from the lease.

Two locations have been identified for new corporate hangar development. They are at the northeast end of Taxiway "T" and east of the ATC tower. The configuration and size of these facilities would depend on the development proposals made for them. The concepts shown for these facilities are based on previous preliminary proposals.

4.4.2 Fixed Base Operator Facilities

Two fixed base operators (FBOs) serving light general aviation are located at the airport. Westair, northwest of Taxiway "T," has been on a short-term lease pending development of the previously proposed new runway. Even without this additional runway, the construction of a new parallel taxiway will displace this facility. The other FBO, Panorama, is located in Hangar F. This location is also temporary, pending development of new FBO areas on the airport. Both Westair and Panorama operate aircraft tiedown areas separated from their maintenance facilities.

The County airport policy is to maintain the airport's emphasis on general aviation, and it calls for new FBO facilities primarily to serve light general aviation, to be located southwest of Runway 16-34. The policy also specifies that the Airport Layout Plan shall provide for new hangars to replace outside parking for currently based aircraft.

In line with current operating policy, it is expected that new non-corporate aircraft hangars will be provided by the FBOs and not by the airport. To maintain the balance of aviation called for in the airport policy, it may be necessary for the County to subsidize light general aviation by providing site preparation, apron construction or hangar development for the FBOs.

To accommodate the required hangars and to promote competition among FBOs, it is recommended that two separate areas be provided on the airport for development of new FBO facilities. Three potential areas for FBO development were identified that meet the locational and spatial requirements. They are:

1) Northwest of Taxiway "T" and southwest of Runway 16-34, near the current Westair facilities.

2) At the southwest end of Taxiway "T," where existing aircraft tiedowns are located.

3) East of the ATC tower and north of the proposed corporate hangar, an area currently undeveloped.

Area 1 provides a large area (about 30 acres), with good access to both runways. However, it is an area of uneven terrain and would require extensive site preparation and grading.

Area 2 is ideal for FBO development. It is similar in size to Area 1, it is level and generally cleared, and parts of it are already paved.

Area 3 does not have the site preparation problems of Area 1, but it is a smaller area (about 15 acres), which will restrict its development as a competitive FBO.

At the direction of the County staff, all three potential FBO areas are identified on the ALP, with the understanding that only two of them will be needed for FBO development. The third area would be available for other "airport-related development" that could serve County residents and airport users and provide income to the County.

4.4.3 Aircraft Parking

Apron space for additional aircraft parking is needed near Hangar E and at the new corporate hangar areas. It is estimated that 17,500 square yards of additional apron are will be needed in front of Hangar E and a total of 14,000 square yards at the new corporate hangars.

The airport may elect to construct apron areas for the new FBO developments, while the FBOs build the hangars for maintenance and aircraft parking.

4.5 OTHER FACILITIES

4.5.1 Crash/Fire/Rescue Facilities

The airport's two crash/fire/rescue (CFR) vehicles are housed in a heated structure adjacent to the terminal building. All personnel who work in airport operations are trained and qualified to operate the CFR equipment. There are at least two persons on duty in operations at all times.

The CFR facilities meet the requirements of Index B under Federal Aviation Regulations Part 139. Under this Index, certain CFR equipment and accessibility to air carrier runways is specified. In accord with the airport policy, the airport is to remain Index B.

The County policy statement directed that the Master Plan study investigate the feasibility of placing the new CFR facility adjacent to the FBO facilities south of Runway 16-34. The present location is adjacent to the midpoint of the air carrier runway (Runway 16-34) and is ideal from the point of view of accessibility. Any other location would not provide an

improvement. The location adjacent to the airport operations office in the terminal allows the CFR vehicles to be manned by operations personnel otherwise performing their routine duties. Locating the CFR facility on the other side of the runway would require a separate crew assigned to that facility, increasing airport operating costs by an estimated $300,000 annually.

For this reason it is recommended that the new CFR facility be located adjacent to the airport operations office, which is expected to be in the new terminal complex.

The policy statement also specifies that the ALP designate a CFR training area. The previous ALP located a new training area southeast of the Runway 29 end. This site was investigated along with the present CFR training area northeast of the Runway 16 end. To minimize off-airport impacts of firefighting training, such as noise and smoke, it is recommended that a new CFR training facility be constructed at the present location. The new facility should be designed to minimize adverse environmental impacts such as runoff or groundwater contamination by fuel or other pollutants.

4.5.2 Airport Maintenance

The policy statement specifies a new heated maintenance garage. The airport has a relatively new maintenance building at the north end of the airport, which is generally adequate. Some of the maintenance vehicles, however, are stored in old garage buildings on the west side of the airport. It is recommended that the new maintenance garage be constructed adjacent to the present maintenance building. To avoid blocking the view of the entrance to the main building of the old Air National Guard complex, the site recommended for the new garage is on the north side of the existing maintenance building. It is estimated that a garage structure of approximately 10,000 square feet will be required.

4.5.3 Perimeter Road

At the present time, CFR vehicles, fuel trucks and other vehicles must cross active runways and taxiways. To improve safety (by minimizing vehicle/aircraft interactions) and increase operational efficiency, an airport perimeter road is recommended to provide access to the west side of the airport from the fuel storage and airport maintenance and operations areas. This road would also improve CFR access to areas of the airport away from the paved airfield.

The road should be 18 to 20 feet wide to permit two way traffic and should be paved to accommodate loaded fuel trucks and to minimize dust and air pollution in the airport vicinity.

4.5.4 Automobile Service Station

The policy provides that an automobile service station be located on airport property. There is an existing service station on airport property just west of the intersection of Airport Access Road and Rye Lake Road. The redesign of this intersection and expected traffic considerations dictate that this facility be moved.

The recommended location for a new service station is at the northwest corner of the intersection of Airport Access Road and New King Street. This location is accessible and highly visible. It has the further advantage of not pre-empting land adjacent to the airfield that could more appropriately be used for aviation-related facilities.

4.5.5 Water Supply

The existing airport water supply system is deficient. With a single-line system, a break in the line can deprive downstream connections of water supply. Lov water pressure has been experienced at the north end of the airport and flov rates are insufficient to meet fire codes and FAA requirements.

A recent study of the airport water supply recommended a 12-inch looped water main and a ground storage tank to provide water for fire fighting. As a part of the Master Plan update, these recommendations were reviewed. The review indicated that a 16-inch looped main might be required and that providing additional storage capacity in an off-airport storage tank would appear to be more cost effective. Because the County Public Works Department is re-evaulating the recommendations of the previous study, specific water supply improvements are not included in the Master Plan.

4.6 LAND USE

With no increase in airport capacity or additional runways permitted under the County policy, there is no need to acquire additional land for airport development.

No need was found to acquire land for noise mitigation purposes. As seen from Figure 2.6, the Ldn 75 noise contour does not extend off airport property. The Ldn 70 contour affects areas off the airport boundary but does not include any noise sensitive uses.

There are areas beyond the present boundaries where it is recommended that the airport obtain control through fee simple purchase or easements. These include clear zones off the ends of Runways 34 and 29, and areas on the south side of the airport needed for sight clearance and runoff retention.

4.6.1 Clear Zones

The previous Airport Layout Plan depicts runway clear zones according to FAA criteria of the late 1970's. These criteria permitted clear zones to be truncated at a point where the approach surface reached 50 feet above ground elevation. As a result, clear zones for Runways 16, 34, and 11 were not depicted at their full dimensions. Current FAA policy is to no longer permit truncated clear zones; instead, the full area of the appropriate clear zone for each runway end should be depicted to provide better protection against incompatible land uses in close proximity to runway ends.

A portion of the land area for each of the runway clear zones currently extends beyond airport property. The updated ALP recommends that the Runway 29 clear zone be acquired in fee simple and that easements be obtained to maintain control of the Runway 34 clear zone.

4.6.2 Runoff Retention and Sight Clearance

The previous ALP designated an area southwest of the ATC tower to be purchased for ATC sight clearance and an adjacent area on the west bank of Blind Brook to be purchased for runoff retention.

It is recommended that the airport obtain easements on these areas to prevent uses that would interfere with the specified purposes.

CHAPTER 5. AIRPORT PLANS

The recommended facility development for Westchester County Airport is detailed in a series of five drawings, called the Airport Layout Plan (ALP) Set. The ALP Set includes:

Sheet 1. Title Sheet
Sheet 2. Airport Layout Plan
Sheet 3. Approach and Clear Zone Plan and Profiles
Sheet 4. Access Plan
Sheet 5. Land Use Plan

There are no Terminal Area Plan or Terminal Floor Plan sheets as in the previous ALP Set. The development of the terminal area and design of the terminal are the subject of a separate study and will be presented separately.

The previous ALP Set also included a General Aviation Terminal Area Plan sheet. Because the configuration and specific development of the general aviation areas will be dependent on proposals presented by private developers, this sheet was not included in the updated Master Plan.

Sheet 1, the Title Sheet, includes basic data tables and the wind roses and vicinity and location maps that were shown in Chapter 2.

The remaining sheets of the ALP Set are presented in reduced format in this chapter.

5.1 AIRPORT LAYOUT PLAN

Sheet 2 of the ALP Set, the Airport Layout Plan is presented in Figure 5.1. The Airport Layout Plan depicts the existing airport facilities as well as the planned development, as discussed in Chapter 4. Locations of planned facilities are shown as are such features as navigational aids, clear zones, safety areas and building restriction lines.

The ALP does not include the parallel runway that was proposed previously. It does show a new taxiway parallel to Runway 16-34, additional exit taxiways and connecting taxiways, and improved geometry on some existing taxiways. Additional aircraft holding and parking aprons and run-up areas are also provided.

The general location of the new terminal in the area of the present terminal is shown on the ALP, along with new terminal access roads. The terminal is being studied separately and details are not shown on the ALP. The terminal complex is also recommended as the location of the CFR facility. A new automobile service station and an area reserved for highway or automobile parking purposes are shown on the north end of the airport.

New corporate hangars are shown at two locations on the airport. Three potential areas for development by general aviation fixed base operators are located on the ALP. Only two of these will be needed for general aviation maintenance and parking and the third is expected to be developed for other airport-related uses to be determined by the County Board of Legislators.

Other facilities located on the ALP include a maintenance garage, a new CFR training facility, and an airport perimeter road. The ALP also depicts areas outside the present airport boundary where it is recommended the airport obtain control through purchase or other means.

The ALP shown in Figure 5.1 is preliminary. It has not received FAA approval. The final approved ALP could differ in some details from that shown.

5.2 APPROACH AND CLEAR ZONES

Sheet 3 of the ALP Set, Approach and Clear Zone Plan and Profiles, shows the runway profiles and the airspace that should be protected in the airport vicinity. It is depicted in Figure 5.2.

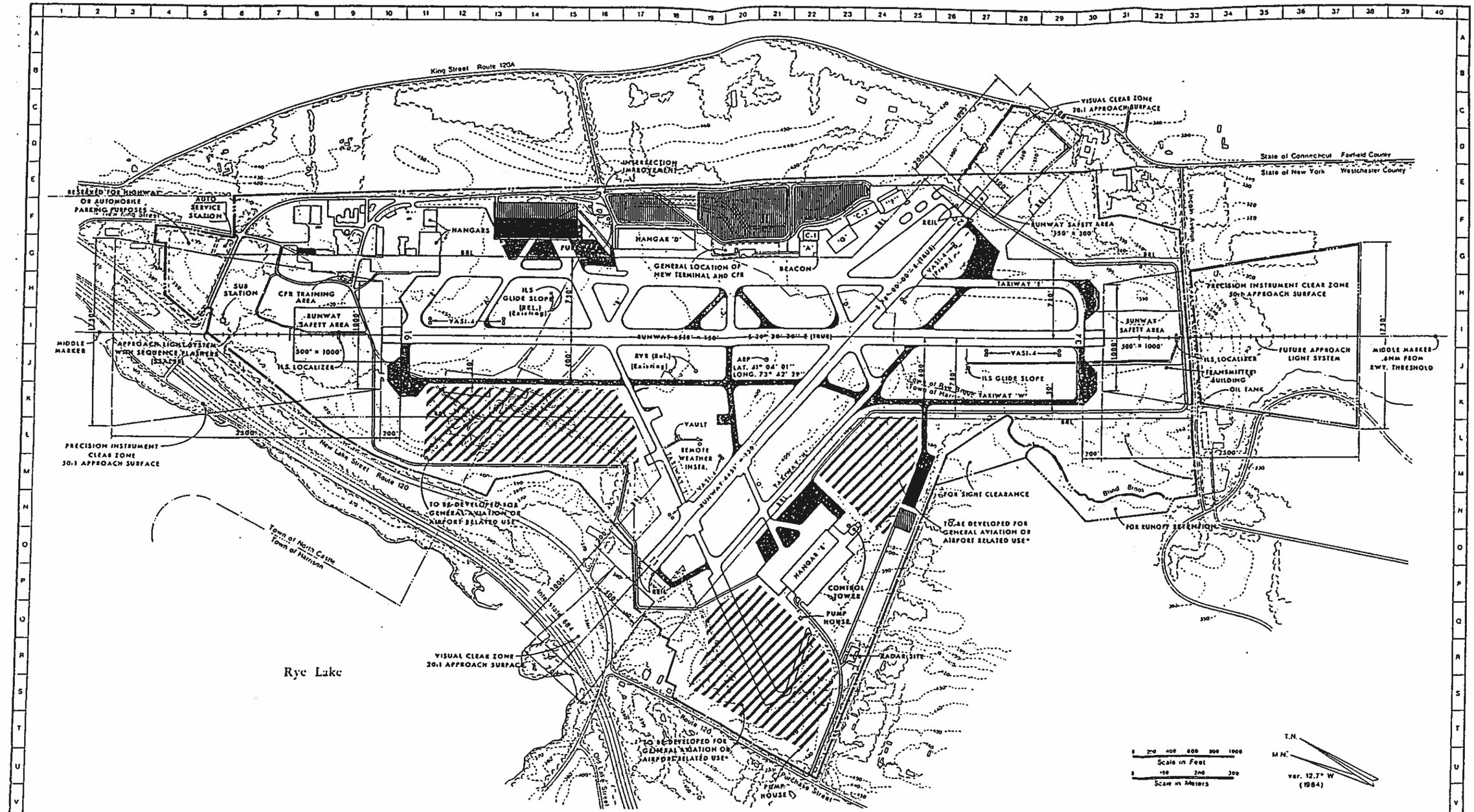
This drawing is based on the recently published obstruction chart for Westchester County Airport (OC 651). This chart was surveyed and published by the National Ocean Service of the National Oceanographic and Atmospheric Administration.

5.3 ACCESS PLAN

Sheet 4 of the ALP Set, the Access Plan, is reproduced as Figure 5.3. This sheet shows the street and highway network providing access to the airport.

5.4 LAND USE PLAN

Sheet 5 of the ALP Set, the Future Land Use Plan, is shown in Figure 5.4. This plan provides recommendations for future use of land in the vicinity of the airport that would be compatible with planned airport development. It was prepared with the assistance of the County Planning Department.



Legend

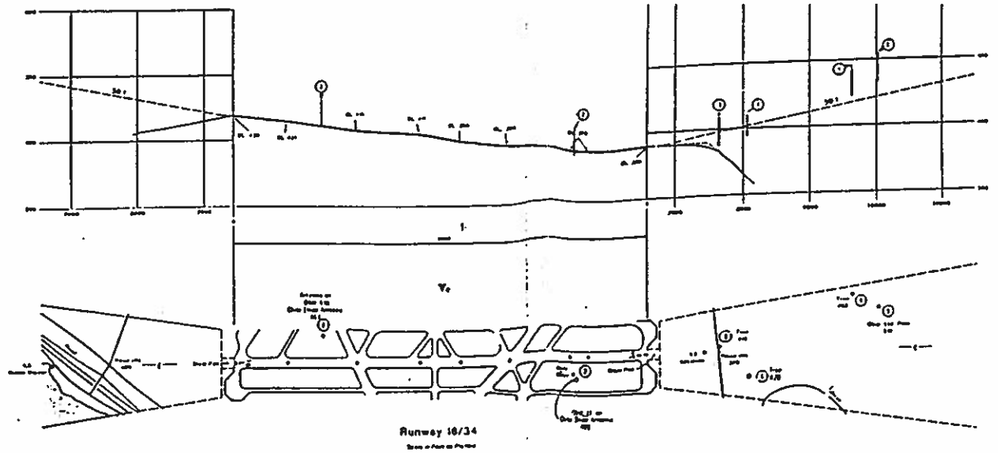
- Existing Airfield Pavement
- Proposed Airfield Pavement
- Proposed Automobile Parking
- Future Airport Control (Acquisition or Easement)
- Existing Building
- Proposed Building
- BRL Building Restriction Line
- Airfield Boundary

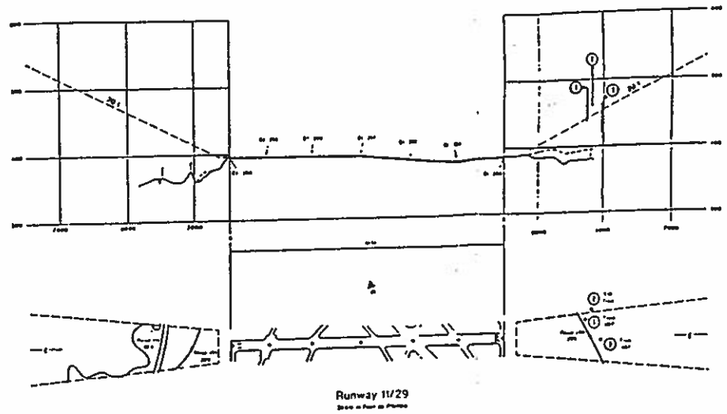
*Note: Three areas are identified for development for general aviation or airport-related uses. Two of these areas are required for general aviation hangars and fixed-base operators; the remaining area is to be developed for other airport-related use as determined by the County.

Revision		Approval	Westchester County Airport Master Plan
Item	Date	County of Westchester / Federal Aviation Administration / New York State Division of Transportation	Airport Layout Plan

Howard Needles Tammen & Bergendoff

Figure 5.1





Legend for Approach Surface Plan

- Part 77 Obstruction Surfaces
- Non-Critical Extent of Part 77 Obstruction Surface
- 7:1 Transition Surface Beneath Horizontal Surface

Legend for Runway Profiles

- Highest Ground Elevation Profile
- Centerline Ground Elevation Profile
- (I) Interstate Highway 17 Feet Added to Road Elevation
- (N) Noninterstate Highway 15 Feet Added to Road Elevation

Revision	
Item	Date

Westchester County Airport Master Plan

Approach and Clear Zone Plan and Profiles

Howard Needles Tammen & Bergendoff December 1986

Figure 5.2

CHAPTER 6. PLAN IMPLEMENTATION

This chapter discusses the schedule of implementation and the costs and financial feasibility of the recommended airport improvements.

6.1 SCHEDULE

An airport master plan usually includes recommended short-range (0-5 years), mid-range (5-10 years) and long-range (10-20 years) improvements. At Westchester County Airport, the improvements recommended for development by the airport are needed to improve safety and efficiency and to serve existing demand. Therefore, all improvements are short term and are recommended for construction within the next five years.

A possible exception to this is the terminal parking. The required parking capacity will grow year by year, and it may be desirable to stage construction of the parking facilities. The terminal and parking requirements are being studied separately from this Master Plan update.

Full development of the privately constructed facilities, including the FBO areas and rental car facilities, may also be staged over a longer period. Hangars to house based aircraft will be constructed by the FBO operators, and it is anticipted that this development will take place gradually over a period of time as market demand warrants.

6.2 CAPITAL COSTS

Capital costs for the recommended facilities are anticipated to be funded by a combination of public and private monies. It is assumed that the privately financed capital improvements will include:

- Development of two new areas for FBO facilities.
- Development of a third area for other airport-related development.
- Development of new corporate hangars and offices at two airport locations.
- Any rental car parking facilities located away from the terminal area.
- New automobile service station at the Airport Access Road and New King Street.

Since the above improvements are expected to be funded by the private sector, they will not be included in the financial plan.

Proposed capital improvements in the existing terminal area are being studied under a separate contract. They include:

- A new passenger terminal building, including airport administration and operations and a Crash/Fire/Rescue (CFR) facility.

- Relocated terminal access roadways.

- Improved terminal-area parking facilities.

These proposed improvements are not included in the financial feasibility analysis in order to avoid constraining or precluding development options for the terminal area, which will be evaluated in a separate study.

The items included in the evaluation of capital costs are listed in Table 6.1 and include taxiway improvements, additional apron space, an engine maintenance run-up pad, an airport maintenance vehicle garage, a CFR training facility, access roads, and land acquisition or control. Quantities, unit costs, and total costs are included in the Table.

For the purpose of calculating capital costs, it was assumed that control of the land to the south of Runway 34 and southeast of Runway 29 would be obtained by purchasing the land in question. Obtaining easements on the land would be an alternative, less costly, option.

Unit costs for taxiway improvements, apron expansion, and the engine maintenance run-up pad were developed from recent HNTB airport experience and escalated 20 percent to reflect higher Westchester County construction costs. Construction costs for the CFR training facility are based on the costs of a similar facility built at Atlanta Hartsfield International Airport, adjusted for inflation, higher Westchester County construction costs, and an additional oil-water separator. Maintenance building construction costs were estimated from the 1986 Dodge Digest, and the perimeter and access road unit construction costs were based on recent HNTB experience in New York City area. Unit land costs are based on 1984 assessed values for unimproved land in Westchester County, increased by 5 percent to compensate for inflation. Costs for the proposed runway approach lighting system and other NAVAIDS were not included because navigational aid improvements are funded by the FAA at the 100 percent level.

As shown in Table 6.1, total construction costs for the improvements are estimated at $14,193,000. Administrative, engineering, and legal costs were estimated at $2,129,500, 15 percent of the construction costs. Total capital costs are estimated to be $16,322,000. It should be noted that the costs of terminal area development are not included.

Table 6.2 presents estimated project capital costs and the costs eligible for federal and state funding. Under the Airport Improvement Program (AIP), the federal government can fund 90 percent of all airfield and safety-related improvements for commercial service airports such as Westchester, which are not defined as large primary airports. The New York State Department of Transportation policy is to fund 75 percent of all remaining eligible costs. As shown in the table, costs eligible for federal funding are estimated at $14,689,800, costs eligible for state funding are estimated at $1,220,800, and the remaining local costs are estimated at $411,400.

TABLE 6.1

WESTCHESTER COUNTY AIRPORT

Public Sector Capital Costs
1986 Dollars

Development Item	Quantity	Unit Cost	Total Cost
Airfield[a]			
Parallel Taxiway to Runway 16-34	32,800 SY	$90.00/SY	$2,952,000
Taxiway Connections, Exit Taxiways and Holding Pad	52,400 SY	90.00/SY	4,716,000
Hangar E Apron	17,500 SY	90.00/SY	1,575,000
Corporate Area 1 Apron	12,000 SY	90.00/SY	1,080,000
Corporate Area 2 Apron	2,200 SY	90.00/SY	198,000
Engine Maintenance Runup Pad	1,800 SY	90.00/SY	162,000
Lighting for Runway 34[b]	--	--	--
TOTAL AIRFIELD			10,683,000
CFR Training Facility[c]	Lump Sum		450,000
Maintenance Vehicle Garage[d]	10,000 SF	59.00/SF	590,000
Vehicular Roads[e]			
Perimeter Road	30,000 SY	$28.00/SY	840,000
Access Road	3,000 SY	28.00/SY	84,000
TOTAL ROADS			924,000
Land Control[f]			
Visual Clear Zone	8.9 acres	$20,000/acre	178,000
Precision Instrument Clear Zone	56.0 acres	$20,000/acre	1,120,000
Sight Clearance Zone	6.4 acres	$20,000/acre	128,000
Runoff Retention Zone	6.0 acres	$20,000/acre	120,000
TOTAL LAND CONTROL	77.3 acres		1,546,000
Subtotal			14,193,000
Administrative, Engineering, Legal & Contingencies @ 15 percent			2,129,000
Total Capital Costs			$16,322,000

[a] Taxiway and apron construction costs calculated from recent HNTB experience at other airports escalated 20 percent to reflect higher construction costs in Westchester County.
[b] Runway approach lighting funded completely by FAA.
[c] Based on bid construction cost for CFR training facility at Atlanta Hartsfield.
[d] Sourced from 1986 Dodge Digest.
[e] Based on recent HNTB experience in New York.
[f] Based on Westchester County assessed prices for unimproved land in 1984, increased 5 percent for inflation. Cost shown is for fee simple acquisition. The cost of obtaining easements would be somewhat less.

TABLE 6.2

WESTCHESTER COUNTY AIRPORT

Potential Sources of Capital Funding

Development Item	Federal[a]	State[b]	Local	Total
Airfield				
Parallel Taxiway to Runway 16-34	$2,656,800	$221,400	$73,800	$2,952,000
Taxiway Connections, Exit Taxiways and Holding Pads	4,244,400	353,700	117,900	4,716,000
Hangar E Apron	1,417,500	118,100	39,400	1,575,000
Corporate Area 1 Apron	972,000	81,000	27,000	1,080,000
Corporate Area 2 Apron	178,200	12,200	4,000	162,000
Engine Maintenance Run-Up Pad	145,800	14,800	5,000	198,000
Lighting for Runway 34[c]	--	--	--	--
TOTAL AIRFIELD	9,614,700	801,200	267,100	10,683,000
CFR Training Facility	405,000	30,400	14,600	450,000
Maintenance Vehicle Garage	531,000	44,200	14,800	590,000
Vehicular Roads, Lighting and Signing				
Perimeter Road	756,000	63,000	21,000	840,000
Access Road	75,600	6,300	2,100	84,000
TOTAL ROADS	831,600	69,300	23,100	924,000
Land Control				
Visual Clear Zone	160,200	13,400	4,400	178,000
Precision Instrument Clear Zone	1,008,000	84,000	28,000	1,120,000
Sight Clearance Zone	115,200	9,600	3,200	128,000
Runoff Retention Zone	108,000	9,000	3,000	120,000
TOTAL LAND CONTROL	1,391,400	116,000	38,600	1,546,000
Subtotal	12,773,700	1,061,100	358,200	14,193,000
Administrative, Engineering, Legal and Contingencies @ 15 percent	1,916,100	159,700	53,200	2,129,000
Total Capital Costs	14,689,800	1,220,800	411,400	16,322,000

[a] Equal to 90 percent of eligible costs.
[b] Equal to 75 percent of remaining eligible costs.
[c] Runway approach lighting funded completely by FAA.

The current AIP has not yet been extended beyond 1987. However, for the purpose of calculating the airport's future FAA entitlements, it was assumed that the program would be extended and that the existing formula for distributing entitlements would continue to apply. Based on the enplanement forecasts, the airport would be eligible for a maximum of $4,109,000 in AIP entitlements during the Fiscal Year 1987 to Fiscal Year 1991 period. The remaining $10,580,800 of federally eligible funding would have to be obtained from FAA discretionary funds.

Table 6.3 presents the estimated annual debt service required to fund the project improvements. Serial bonds funded through an ad valorem tax were assumed. An interest rate of 6.95 percent was obtained from the Wall Street Journal Municipal Bond Index for County General Obligation Bonds, and a 30 year term was estimated. If maximum federal and state funding are assumed, the annual debt service would be $33,000. However, if no AIP discretionary funding were available for the project, the annual debt service would rise to an estimated $952,100. If the entire cost were borne locally, the annual debt service would be $1,309,000.

The debt service estimates in Table 6.3 do not include the costs of any terminal area facilities. The addition of these facilities would increase the debt service requirements, particularly since only part of the terminal area improvements would be eligible for federal funding and those at the 50 percent level. Also, it should be noted that all additional federal funding would necessarily be funded through AIP discretionary funds, since the maximum possible AIP entitlements would have been allocated.

6.3 FINANCIAL PLAN

Forecasts of revenues, operating and maintenance costs, and net income to the County for 1991, 1996, and 2006 are developed in this section. First the historical context is analyzed. Forecasts of airport revenue, and maintenance and operating costs are then described. The section concludes with an analysis of forecast net revenue and the feasibility of funding the ammortized capital costs with airport revenues. Since terminal area development is being analyzed in a separate study, no forecasts were made for revenues and maintenance and operating costs incurred in the terminal area.

6.3.1 Revenue Forecasts

Table 6.4 presents historical revenues and expenses for the airport during 1982, 1983, 1984, and 1985. As shown, during the period, total revenues rose by 84 percent. The major increase resulted from rental income, which was augmented in 1984 by the acquisition of the Air National Guard facility. Excess revenues over expenses, or net income, increased by 156 percent from $1.2 million to $3.2 million. Not included in the table are existing debt service from prior airport improvements or County overhead expenses. Therefore, the true net revenue resulting from HPN is somewhat less than indicated in the table. The historical data include terminal area revenues and maintenance and operating costs and therefore are not strictly comparable to the forecasts.

TABLE 6.3

WESTCHESTER COUNTY AIRPORT

Estimated Annual Debt Service for Capital Improvements

	Begin Debt Service	End Debt Service	Annual Debt Service
With FAA Discretionary Funding	1987	2017	$33,000
Without FAA Discretionary Funding	1987	2017	$952,100
Without Federal or State Funding	1987	2017	$1,309,000

[a]Ammortized over 30 years at 6.95 interest rate. Assumes general obligation bond funding. Interest rate sourced from Wall Street Journal (Sept. 5, 1986) Municipal Bond Index for County General Obligation Bonds.

TABLE 6.4

WESTCHESTER COUNTY AIRPORT

Historic Revenue and Expenditure Data, 1982-1986

	1982	1983	1984	1985
REVENUES				
Rentals[a]	$2,501,058	$2,991,046	$3,810,139	$4,765,844
Landing and Parking Fees	240,768	284,541	322,074	350,322
Fuel Fees	410,217	361,568	436,416	458,481
Miscellaneous	122,440	107,930	175,447	301,929
Air Flight Security	14,000	42,392	35,043	19,083
Property Tax Reimbursements	425,876	711,995	854,536	950,000[b]
TOTAL REVENUES	3,714,694	4,499,472	5,633,654	6,845,659
EXPENSES				
Personnel Services	836,923	989,975	1,037,107	1,113,830
Equipment Purchase	260,224	99,909	73,097	32,108
Materials & Supplies	207,927	230,717	383,626	394,707
Property Taxes	412,395	746,701	900,077	1,000,000[c]
Other Expenses[d]	759,239	698,227	965,503	1,129,336
TOTAL EXPENSES	2,476,708	2,765,529	3,359,410	3,669,981
EXCESS REVENUES OVER EXPENSES[e]	1,237,986	1,733,946	2,274,244	3,175,678

[a]Includes concessions.
[b]Estimate for 1985.
[c]Appropriation for 1985.
[d]Includes Pan Am incentive fee.
[e]Not adjusted for County outlays for debt service and overhead costs.

Sources: Westchester County Budget for 1983, 1984, and 1985 and Pan Am General Aviation Service, 1986.

Table 6.5 presents the forecast of rental revenue (excluding terminal area rents). The airport bases increases in its rental rates according to increases in market rates elsewhere in the County. Recently rents have been increasing at a faster rate than inflation, and this trend is expected to continue. Forecasts for national and regional rental rates are not generally available. Therefore, airport rental revenue was assumed to grow at the same rate as the Bureau of Economic Analysis OBERS forecast for finance, insurance, and real estate income for the New York metropolitan area. As shown in the table, rental revenue is projected to increase from $3.9 million in 1985 to $6.1 million in 2006, a 53 percent increase. The forecast is conservative, since it does not include rents for the additional FBO facilities and corporate hangars which are anticipated.

Table 6.6 presents the forecasts for non-terminal concessionaire revenue for the 1985-2006 period. Concessionaire revenue is sensitive to passenger traffic; therefore it was assumed to increase at the same rate as the forecast of passenger movements. As shown, concessionaire revenue is projected to grow from $212,283 in 1985 to $688,000 in 2006, a 224 percent increase.

Table 6.7 presents the forecast of landing fee revenue for the airport. Landing fee revenue is a function of two factors -- total landed aircraft weight and landing fees. The forecast changes in aircraft landing weight were based on the assumption that the average aircraft weight would remain the same for all categories, except commuter aircraft whose average weight was forecast to increase at the same rate as seating capacity. The landing fee forecast incorporates the proposed approximate 30 percent increase in landing fees scheduled for 1987, and an additional 10 percent increase assumed for 1996. Landing fee revenue is projected to increase from $309,801 in 1985 to $648,000 in 2006, a 109 percent increase.

Table 6.8 presents projected fuel flowage revenue for the airport for 1985 to 2006. Revenue is forecast to grow at the same rate as aircraft operations. As shown, fuel flowage revenue is projected to grow from $458,481 in 1985 to $524,000 in 2006, a 14 percent increase.

Non-terminal permit revenue is assumed to grow at the same rate as rental revenue, increasing from $35,458 in 1985 to $54,000 in 2006. Parking fee revenue was forecast to increase at the same rate as landing fee revenue, rising from $40,521 to $85,000 in the 1985-2006 period. Other revenue, consisting essentially of expense recovery items, was forecast to increase at the same rate as the "other expenses" cost category. Other revenue is forecast to rise from $223,000 in 1985 to $394,000 in 2006, a 46 percent increase.

6.3.2 Operating and Maintenance Cost Forecasts

Table 6.9 presents the forecast for personnel costs during the 1985-2006 period. All personnel services costs are included because it was not feasible to identify and separate personnel costs attributable solely to the terminal area. It was determined that personnel costs would increase in response to two trends. First, the workload for airport personnel was anticipated to increase in response to future increases in

TABLE 6.5

WESTCHESTER COUNTY AIRPORT

Projected Rental Revenue, 1985-2006[a]

Year	OBERS Index[b]	Rental Revenue
1985	1.000	$3,988,906
1991	1.211	4,831,000
1996	1.349	5,381,000
2006	1.531	6,107,000

[a]Does not include rental revenue from Bank of New York or Limousine Service, which are located at terminal.

[b]Bureau of Economic Analysis OBERS Regional Projections for Finance, Insurance, and Real Estate Income in the New York metropolitan area.

Sources: Pan Am General Aviation Services and Bureau of Economic Analysis, 1985 OBERS BEA Regional Projections

TABLE 6.6

WESTCHESTER COUNTY AIRPORT

Projected Concessionaire Revenue, 1985-2006

Year	Passenger Movements	Revenue/Pax Movement	Revenue
1985	389,334	$0.55	$212,283[a]
1991	702,000	$0.55	386,000
1996	877,000	$0.55	482,000
2006	1,251,000	$0.55	688,000

[a]Non-terminal concession revenue assumed to equal non-terminal portion of rental car revenues, estimated at 50 percent of total rental car revenues.

Sources: Pan Am General Aviation Services and Table 3.6.

TABLE 6.7

WESTCHESTER COUNTY AIRPORT

Projected Landing Fee Revenue, 1985-2006

Year	Growth in Total Landed Aircraft Weight[a]	Change in Landing Fees[b]	Landing Fee Revenue
1985	--	--	$309,801
1991	1.276	1.300	514,000
1996	1.362	1.430	603,000
2006	1.463	1.430	648,000

[a] Calculated using operations forecasts and existing distribution of aircraft weights for air carriers, G.A. jets and G.A. non-jets. Average weight of commuter aircraft projected to increase at the same rate as seat capacity.

[b] Assumes proposed 1987 increase in landing fee schedule will be in effect in 1991, and that an additional ten percent increase will be effective in 1996.

Sources: Table 3.19 and Pan Am General Aviation Services.

TABLE 6.8

WESTCHESTER COUNTY AIRPORT

Projected Fuel Flowage Revenue, 1985-2006

Year	Operations	Revenue/Operation	Revenue
1985	245,140	$1.87	$458,481
1991	279,700	1.87	523,000
1996	279,500	1.87	523,000
2001	280,200	1.87	524,000

Sources: Table 3.19 and Pan Am General Aviation Services.

TABLE 6.9

WESTCHESTER COUNTY AIRPORT

Projected Personnel Costs, 1985-2006

Year	Aircraft Operation Index[a]	Wage and Salary Index[b]	Personnel Costs
1985	1.000	1.000	$1,113,830
1991	1.141	1.042	1,324,000
1996	1.140	1.076	1,366,000
2006	1.143	1.156	1,472,000

[a] Calculated from forecast of total operations in Table 3.19.
[b] Calculated from Bureau of Economic Analysis OBERS forecasts for personal income and employment.

operations. Second, it was anticipated that airport personnel would be able to command greater real wages and salaries in the future, because of the increased skills they would develop to manage an increasingly sophisticated airport environment. An estimate for the projected increase in wages and salaries was developed from Bureau of Economic Analysis OBERS forecasts for personal income and employment in the New York metropolitan area. As shown, personnel costs are projected to increase from $1,113,830 in 1985 to $1,472,000 in 2006, a change of 32 percent.

Table 6.10 presents the forecast of non-terminal materials and supplies costs for the airport. This category includes a variety of items, such as auto supplies, fuel and power, and office supplies. It was assumed that these costs would increase in response to airport activity, both in terms of operations and aircraft size and sophistication. The change in total landed aircraft weight was used as a proxy for these factors. As shown, materials and supplies costs are projected to increase from $352,000 in 1985 to $701,000 in 2006, a 46 percent change.

Table 6.11 presents the forecast of other expenses from 1985 to 2006. This airport expense category is composed of a variety of services, including equipment maintenance, insurance, special non-recurring expenses, and contractual services. Recently, the expenditure for other expenses, particularly insurance, has grown more rapidly than the expenditure for materials and supplies, reflecting a worldwide trend for faster growth in the demand for services than in the demand for goods. Therefore, it was assumed that other expenses would grow in response to both the increase in total landed aircraft weight and the relative increase in service industry income as projected by the Bureau of Economic Analysis OBERS forecasts. As shown, other expenses are projected to increase from $905,000 in 1985 to $1,601,000 in 2006, a 76.9 percent increase.

Equipment purchases vary widely from year to year. In the 1982-1985 period they averaged $116,334 annually, with a recent downward trend. Non-terminal related equipment purchases were projected to average $100,000 through the forecast period.

6.3.3 Net Revenues Available for Financing

Table 6.12 presents total projected revenues and expenses for the airport. Total non-terminal airport revenues are projected to increase from $5,268,450 in 1985 to $8,500,000 in 2006, an overall increase of 61.3 percent. Total operating expenses are projected to increase from $2,402,938 in 1985 to $3,874,000 in 2006, an increase of 61.2 percent. It was assumed that the airport management incentive fee would remain 3.5 percent of excess revenue over expenses. Therefore, net income to the County from non-terminal airport activity is expected to rise 61.4 percent, from $2,765,219 in 1985 to $4,464,000 in 2006.

Again, it should be noted that the projected net income to the County has not been adjusted for existing airport-related debt service nor has it been adjusted for airport-related County overhead costs. Therefore, true airport net income to the County is less than indicated in Table 6.12. Also, it should be noted that some of the excess revenue may be required to

TABLE 6.10

WESTCHESTER COUNTY AIRPORT

Projected Materials and Supplies Costs, 1985-2006

Year	Growth in Total Landed Aircraft Weight[a]	Materials and Supplies Costs
1985	1.000	$352,000[b]
1991	1.276	449,000
1996	1.362	479,000
2006	1.463	701,000

[a]Table 6.7.
[b]Non-terminal related materials and supplies costs estimated at 89.1 percent of total materials and supplies costs based on data provided by Pan Am General Aviation Services.

TABLE 6.11

WESTCHESTER COUNTY AIRPORT

Projected Other Expenses, 1985-2006

Year	Growth in Total Landed Aircraft Weight[a]	Relative Increase In Service Demand[b]	Other Expenses[c]
1985	1.000	1.000	$905,000
1991	1.276	1.090	1,259,000
1996	1.362	1.149	1,416,000
2006	1.463	1.209	1,601,000

[a]Table 6.7.
[b]Bureau of Economic Analysis OBERS forecast increase in service sector income divided by forecast increase in total income.
[c]Estimated at 89.1 percent of total other expenses, based on data provided by Pan Am General Aviation Services. Includes maintenance, insurance, non-recurring expenses, training, and contractual services.

TABLE 6.12

WESTCHESTER COUNTY AIRPORT

Projected Non-Terminal Revenue and Expenses, 1985-2006

	1985	1991	1996	2006
REVENUES				
Rentals	$3,988,906	4,831,000	5,381,000	6,107,000
Permits[a]	35,458	43,000	48,000	54,000
Concessionaires	212,283	286,000	482,000	688,000
Landing Fees	309,801	514,000	603,000	648,000
Parking Fees[b]	40,521	67,000	79,000	85,000
Fuel Flowage Fees	458,481	523,000	523,000	524,000
Other[c]	223,000	310,000	349,000	394,000
TOTAL REVENUES	5,268,450	6,574,000	7,465,000	8,500,000
EXPENSES				
Personnel Service	1,113,830	1,324,000	1,366,000	1,472,000
Equipment Purchases	32,108	100,000	100,000	100,000
Materials and Supplies	352,000	449,000	479,000	701,000
Other Expenses	905,000	1,259,000	1,416,000	1,601,000
TOTAL EXPENSES	2,402,938	3,132,000	3,361,000	3,874,000
EXCESS REVENUES OVER EXPENSES	2,865,512	3,442,000	4,104,000	4,626,000
MANAGEMENT FEE[d]	100,293	120,000	143,000	162,000
NET TO COUNTY	2,765,219	3,322,000	3,961,000	4,464,000

[a]Estimated to grow at same rate as rentals.
[b]Estimated to grow at same rate as landing fees.
[c]Estimated to grow at same rate as other expenses.
[d]Estimated at 3.5 percent of non-terminal excess revenue.

Sources: Tables 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, and 6.11.

finance the terminal area developments. Since only a portion of terminal area developments would be eligible for AIP funding, and those for only 50 percent of the cost, it is possible that terminal area-related net income would not be sufficient to finance terminal area facility improvements. These qualifications should be recognized in evaluating the following financial feasibility analysis.

Table 6.13 presents an analysis of the financial feasibility of the non-terminal portion of the Master Plan Update, under three conditions. First, the maximum possible level of federal and state funding was assumed; second, AIP entitlement funds were assumed but no discretionary funds were assumed; third, only local funding was assumed.

According to Table 6.13, there should be no difficulty in financing the proposed non-terminal improvements, even under a "worst case" scenario in which only local funding is available. If maximum federal and state funding were available, project debt service would require 1.0 percent of net airport revenue in 1991, and 0.7 percent in 2006. If only local funding were available, debt service would require 39.4 percent of net income in 1991 and 29.3 percent in 2006.

Finances for Westchester County Airport are sound. Even if a generous allowance is made for existing debt service and County overhead costs, the airport will be able to finance the needed non-terminal area improvements out of non-terminal revenue. There should also be enough funds available in reserve to contribute significantly to the financing of terminal improvements.

6.4 INDIRECT ECONOMIC IMPACTS

The estimation of indirect economic impacts is not a precise methodology, so caution is advised in interpreting the following analysis.

The principal source of the indirect economic impact analysis was the Westchester County Airport Economic Impact Study, a study conducted in 1982 by the County Airport Committee of the County Chamber of Commerce. The study indicated that the total economic impact of the airport, including employment and construction by airport tenants and users, was $254.8 million in 1982. Because of inflation and increased airport activity, the total airport impact is no doubt greater in 1986, and it is reasonable to expect the economic impact of the airport to continue to increase during the forecast period.

It is important to make the distinction between total airport economic impacts, and those impacts attributable to the proposed improvements. The improvements are not projected to increase airport use over and above the forecast growth, therefore revenues and expenditures generated by the additional operations cannot be attributed to the plan. The new FBO areas and corporate facilities will also generate additional employment and expenditures, but since these facilities will be privately financed, they cannot be attributed to the project. Likewise, the new terminal area developments will generate economic activity, but no estimate of their economic impact can be made until the scale and configuration of those improvements has been established.

TABLE 6.13

WESTCHESTER COUNTY AIRPORT

Financial Feasibility

	1985	1991	1996	2006
Revenues	$5,268,450	$6,574,000	$7,465,000	$8,500,000
Expenses[a]	2,503,231	3,252,000	3,504,000	4,036,000
Net to County	2,765,219	3,322,000	3,961,000	4,464,000
Debt Service				
With FAA Discretionary Funding	--	33,000	33,000	33,000
Without FAA Discretionary Funding	--	952,100	952,100	952,100
Without Federal or State Funding	--	1,309,000	1,309,000	1,309,000
Surplus/Deficit				
With FAA Discretionary Funding	--	3,289,000	3,928,000	4,431,000
Without FAA Discretionary Funding	--	2,369,900	3,008,900	3,511,900
Without Federal or State Funding	--	2,013,000	2,652,000	3,255,000

[a]Includes Airport Management Fee.

Sources: Tables Tables 6.3 and 6.12.

Impacts directly attributable to the non-terminal portion of the proposed facility improvements are increased safety, efficiency, and construction activity. Although safety and efficiency improvements have real value, they cannot be satisfactorily measured. The construction cost of the proposed improvements is estimated at $12,197,000, not including engineering, administrative, legal or contingency costs. Based on data from the Chamber of Commerce, an estimated average of 52 construction jobs would be generated for each year during the 1987-1991 construction period. Assuming a local contractor is hired and an economic multiplier of 2.0, the total economic impact of public sector (non-terminal) airport construction activity is expected to be almost $25 million.

Appendices

APPENDIX A

STATEMENT OF AIRPORT POLICY

RESOLUTION 266- 1985

WHEREAS, this Honorable Board has been working with its airport consultants on the formulation of a comprehensive policy statement for the use of the Westchester County Airport, and

WHEREAS, a four-point, detailed "Statement of Airport Policy" has been developed for use by the County Administration not only as a guide for the day-to-day management of the airport, but also for planning and assessing any and all long term alternatives, NOW THEREFORE

BE IT RESOLVED, that the Westchester County Board of Legislators does hereby approve the "Statement of Airport Policy" which is annexed hereto and made a part hereof.

Statement of Airport Policy

1. Purpose

The purpose of this statement is to declare the Board's policy for the use of Westchester County Airport. This statement of policy is to be carefully utilized by the County Executive and his staff in the airport's daily management and in assessing long term alternatives and is also provided as information to the general public, airport users and the airport's neighbors.

2. Policy

A. Westchester County Airport has been designed for use primarily by general aviation, both private and corporate, light and heavy. Use of the airport shall be consistent with the limitations and design objectives of physical facilities, safety and the Stipulation Order of Partial Settlement and Dismissal, by Board Resolution 58-1985.

B. The airport's capacity, measured in terms of its capability to accept an annual number of aircraft operations, shall not be increased, but the County Board shall encourage facility modificiations and modernizations which improve safety, increase efficiency, up-grade facilities or provide better conditions for airport users, tenants, passengers, and neighbors.

C. The airport shall not be a noisy neighbor. The County Board directs the County Executive to pursue voluntary or mandatory daytime and nightime noise abatement programs as necessary to achieve this goal.

D. Federal and State financial assistance for airport modifications shall be solicited but shall not be accepted without County Board approval. Such approval may be withheld in instances where acceptance of financial assistance would compromise this airport policy.

E. The airport shall be operated and managed in a manner to maximize its benefits on behalf of the citizens of Westchester County. Lease of space for offices, hangars and similar facilities shall be based in part on the local benefits generated, including, economic.

3. Planning

A. The issuance of this policy voids and cancels many portions of previous and current airport master plans and airport layout plans.

B. The County Executive is directed to review the entire Airport Master Plan and to prepare for County Board review and approval a revised Master Plan within six (6) months of adoption of this statement.

C. The County Executive is directed to prepare for County Board review and approval a revised Airport Layout Plan for the airport's facilities. The Airport Layout Plan shall conform with the policy statement in paragraph 2, and take account of the following:

1. The plan shall contain no provision or contingency for any parallel runways.

2. The plan shall provide for new hangars to replace, on no more than a one-for-one basis, existing outside aircraft parking spaces for currently based aircraft.

3. The plan shall provide for a taxiway adjacent to Runway 16/34 and on the southwesterly side thereof.

4. The plan shall provide for fixed base operator facilities, including concrete apron, southwest of Runway 16/34 in the general vicinity of the present light general aviation operation, to serve both based and transient general aviation, but primarily light general aviation aircraft.

5. The plan shall evaluate, for County Board decision, the feasibility of the placement of a new crash-fire rescue (CFR) facility adjacent to the FBO facilities south of Runway 16/34. CFR capabilities shall be retained at Index B and a training area shall also be designated.

6. The plan shall provide for an approach light system (ALS) for Runway 34 and for improvement of all runway/taxiway lighting and signage to current standards.

7. The plan shall provide for an interior perimeter service road for airport service vehicles.

8. The plan shall provide for a heated maintenance garage.

9. The plan shall provide for an upgraded water supply, especially with respect to water flows required for structural fire fighting.

10. The plan shall provide for a holding pad on Taxiway E at the approach end to Runway 34.

11. The plan shall provide for the location and design of runup pads at locations determined to minimize off-airport noise.

12. The plan shall provide for improved passenger terminal area facilities at or near the existing location. Terminal capacity shall not be increased beyond the level established in the Stipulation Order of Partial Settlement and Dismissal authorized by Board Resolution 58-1985. The plan shall be subject to approval of the Committee on Budget and Appropriations prior to award of any contracts for construction.

13. The plan shall provide for an improved automotive service station on the airport property, at a location that will be consistent with road improvement plans for the Airport Access Road and with other applicable rules, design standard and ordinances of the County and other governmental agencies having jurisdiction.

14. The plan shall provide for improvements to the existing public and employee parking lots.

15. The plan shall investigate the feasibility of the closing of Rye Lake Road at the Connecticut border.

16. This plan shall not be construed so as to increase existing run-off levels.

4. General

This statement of policy incorporates the Board's previous statements concerning the airport, specifically Resolutions 58-1985 and 95-1984 (as amended).

STATE OF NEW YORK)
) ss.
COUNTY OF WESTCHESTER)

I HEREBY CERTIFY that I have compared the foregoing Resolution No. 266-1985 with the original on file in my office and that the same is a correct transcript therefrom and of the whole of said original resolution which was duly adopted by the Westchester County Board of Legislators of said County on October 7, 1985.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Corporate Seal of said County Board of Legislators.
October 8, 1985

Anthony J. Giambruno

The Clerk of the County
Board of Legislators and
Chief of Staff

(SEAL)

County of Westchester, New York

APPENDIX B

STIPULATION AND ORDER OF
PARTIAL SETTLEMENT AND DISMISSAL

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

MIDWAY AIRLINES, INC., Plaintiff, UNITED STATES OF AMERICA, ELIZABETH HANFORD DOLE, Secretary of Transportation, DONALD D. ENGEN, Administrator of the Federal Aviation Administration, NEW YORK AIRLINES, INC. (d/b/a NEW YORK AIR), REGIONAL AIRLINE ASSOCIATION, ANA LIMITED (d/b/a BROCKWAY AIR), ATLANTIC AIR INC (d/b/a BUSINESS EXPRESS), CLINTON AERO CORP. (d/b/a BROCKWAY AIR), COLGAN AIRWAYS CORPORATION, COMMAND AIRWAYS, INC., EMPIRE AIRLINES, INC., MALL AIRWAYS INC., PRECISION AIRLINES, INC., RANSOME AIRLINES, INC., AIR ONE, INC., ALASKA AIRLINES, INC., ALOHA AIRLINES, INC., BEST AIRLINES, INC., BRANIFF, INC., CAPITAL AIR, INC., CONTINENTAL AIRLINES, INC., DELTA AIR LINES, INC., EASTERN AIR LINES, INC., EVERGREEN INTERNATIONAL AIRLINES, INC., FEDERAL EXPRESS CORPORATION, FRONTIER AIRLINES, INC., HAWAIIAN AIRLINES, INC., JET AMERICA AIRLINES, INC., MUSE AIR CORPORATION, OZARK AIR LINES, INC., TRANS WORLD AIRLINES, INC., USAIR INC., UNITED PARCEL SERVICE, INC., WESTERN AIR LINES, INC., WIEN AIR ALASKA, INC. and SOUTHWEST AIRLINES CO., Plaintiffs-Intervenors, -against- COUNTY OF WESTCHESTER, NEW YORK, ANDREW P. O'ROURKE, County Executive, and WESTCHESTER COUNTY BOARD OF LEGISLATORS, Defendants, NATIONAL BUSINESS AIRCRAFT ASSOCIATION, Defendant-Intervenor.	84 Civ. 2229 (EW) STIPULATION AND ORDER OF PARTIAL SETTLEMENT AND DISMISSAL

WHEREAS, on April 19, 1984, the Honorable Edward Weinfeld, U.S.D.J., S.D.N.Y., issued an order denying plaintiff Midway's application for preliminary injunctive relief but directing that the County promulgate a plan for the allocation of access to Westchester County Airport (hereinafter "Airport" or "H.P.N.") to and among airlines conducting operations pursuant to Part 121 of the Federal Aviation Regulations; and,

WHEREAS, on June 6, 1984, in response to the aforesaid Order, the County Board of Legislators issued Resolution #95/1984, which resolution established an allocation mechanism to be applied to all airlines seeking to conduct operations at the said airport; and,

WHEREAS, the Parties who have signed this stipulation have discussed the issues pending before the Court with a view towards achieving an accommodation and settlement of the action; and

WHEREAS, the parties are entering into this settlement agreement for the sole purpose of settling the litigation entitled Midway Airlines, Inc., et al. v. County of Westchester, et al.; and

WHEREAS, the United States of America, Elizabeth Hanford Dole, Secretary of Transportation, and Donald D. Engen, Administrator of the Federal Aviation Administration (collec-

tively the "Federal Plaintiff-Intervenors") are charged with the duty of administering and enforcing the laws of the United States, as they may be enacted, adopted and amended from time to time; and

WHEREAS, the parties acknowledge the duties of the Federal Plaintiff-Intervenors and agree that nothing herein is intended or shall be construed to limit the authority or ability of the United States of America or of any of its officers or agencies to administer and enforce the laws of the United States, as they may be enacted, adopted or amended from time to time, or to enact or adopt or amend any law otherwise within their authority; and

WHEREAS, in entering into the following stipulation the parties have particularly considered those operational and other factors applicable to Westchester County Airport which factors may or may not be applicable to any other airport, and agree that this stipulation is site specific to Westchester County Airport and shall not be deemed as having any applicability to any other airport or aviation allocation circumstance; and,

WHEREAS, with respect to the allocation mechanism set forth herein the Parties signatory hereto acknowledge that while other mechanisms might also be suitable for H.P.N. or elsewhere, the mechanism set forth has been agreed upon on the basis of discussion and negotiation; accordingly, therefore, it is hereby,

STIPULATED AND AGREED, by and among the parties signatory hereto, as follows:

1. The County and the United States agree that the Westchester County Airport, (hereinafter "Airport" or "H.P.N.") is a public use airport serving general aviation and commercial service aviation needs within a service area comprised primarily of Westchester County and nearby adjoining areas. They further agree that the Airport's principal function at present and in the foreseeable future is one of accommodating general aviation with an emphasis on business use; by comparison its commercial service function is relatively modest.

2. The County and the United States agree that the nature and extent of facilities at the Airport are reasonably consistent with its current use. They further agree that determinations concerning new or enhanced facilities, if any, will be made by the County on the basis of the Airport's aforestated role, with due consideration for the concerns and the needs of those who might be affected, and in accordance with an airport layout plan.

3. The capacity of the existing terminal at H.P.N. has been reviewed by the County and the United States, to determine its ability to handle the processing of airline passengers. It is agreed that the normal operating capacity of the existing terminal will be 240 passengers per half hour, assuming an almost even division between arriving (deplaning) and departing (enplaning) passengers and assuming an almost uniform flow of passengers throughout the period.

4. The County has developed the mechanisms herein to allocate the Airport's terminal capacity among scheduled airlines presently serving H.P.N. and those scheduled airlines expressing a desire to provide such service according to the following criteria:

A. It should provide some recognition for incumbents and for the time, effort and expense that many incumbent airlines have expended in establishing markets and serving the public at H.P.N.

B. It should be definitive, predictable and of sufficient duration so as to permit rational planning by prospective users and the County alike.

C. It should provide a reasonable opportunity for prospective new entrants and for incumbents seeking additional capacity, consistent with the limits of both the terminal's

capacity and the Airport's technical specifications necessary to comply with Federal Aviation Regulations and the Airport's physical limitations. (A copy of the County's current Technical Specifications for the Airport is appended hereto.)

D. It should provide for a periodic review to insure that airlines do not over-utilize their allocations and to re-allocate unused capacity to scheduled airlines having a need for it.

5. In order to reasonably and equitably allocate the Airport's terminal and ramp capacity, consistent with the above criteria, it is agreed that the County will amend Resolution 95/1984 in conformity with the following provisions.

A. Any airline which conducted scheduled operations at the Airport during the months of November and/or December, 1984, and which did so pursuant to an Operating Agreement with the County or an extension thereof, shall be defined as an Incumbent Airline for the purposes of this Stipulation.

B. An Incumbent Airline may, for the term set forth in Paragraph 5L below and subject to the conditions set forth below, continue to operate the schedule of flights it operated during the months of November and/or December, 1984. For these purposes the schedule of flights shall only refer to flight times and frequencies and shall not refer to city pairs

C. Each Incumbent Airline shall be assigned an Incumbent Allocation for each such flight, which allocation shall be equal to the average number of passengers actually enplaned and deplaned, on a per flight basis, for the period July 1, 1984 through December 31, 1984, for the days each such flight was actually flown. If any flight was operated for only a portion of such period, then the allocation shall be such average passenger load for the period of service or thirty percent of the passenger capacity of the aircraft regularly scheduled to be utilized on such flight, whichever is greater.

D. In addition to the provisions of Par. 5B and 5C, Atlantic Air shall be granted a seasonable Incumbent Allocation with respect to its seasonal service during the period of May through October, based on its average actual passenger loads, emplaned and deplaned, for that period during 1984. Midway Airlines shall be granted incumbency with respect to its revised, six opertions per day, schedule in effect on February 15, 1985.

E. After establishing Incumbent Airline Allocations the County shall establish a list of available terminal and ramp capacities, on a half-hourly basis, by subtracting the Incumbent Allocations and ramp use for each half hour from the total capacity set forth in Paragraph 3 above and the ramp capacity set forth in the annexed Technical Specification. The County shall disseminate such list on February 28, 1985. By the last business day of every third month thereafter the County

shall determine then available terminal and ramp capacity by subtracting all Incumbent and all other Allocations from total capacity and shall make such determinations available to interested airlines. By no later than March 15, 1985 and by the 15th day of each third month thereafter, any scheduled airline seeking an allocation of such available capacity shall submit a request to the County on forms to be provided or approved by the County. On March 29, 1985 and on the last business day of each third month thereafter, the County shall allocate available capacity as follows:

i. In all half hour periods in which sufficient terminal and ramp capacity is available to meet the requests of all qualified airlines, such requested capacity shall be allocated directly to such airlines. A qualified airline shall be any scheduled airline which shall, at the time the application is made, hold a valid operating certificate and scheduled operations specifications from the Federal Aviation Administration and a fitness determination from the United States Department of Transportation for the type of service to be provided and who shall also have, or have immediate and demonstrable access to, sufficient aircraft and operating personnel tc provide the requested service and who shall furnish a certification of financial responsiblity and requisite insurance.

ii. For all other time periods, the allocation shall be by means of the Lottery mechanism set forth in Paragraph 7 below.

F. Routing, selection of aircraft and the like shall be the determination of the airline. All airlines operating at H.P.N. shall at all times be in compliance with all applicable and lawful airport rules and regulations including the Technical Specifications referenced above, with the applicable Operating Agreements and with this Stipulation. No such rule, regulation or Technical Specification will be amended to decrease the capacity of the Airport. Any airline violating or causing the violation of such rules, regulations or said Technical Specifications shall cure such violation within fifteen (15) days of being so notified by the County. Failure to so cure shall result in the cancellation of the appropriate flight or flights upon fifteen (15) days' written notice by the County. An airline obtaining an Allocation, by whatever means, should, in so far as practicable, utilize the allocation in such a manner that there shall be a relatively even distribution of passengers enplaned and deplaned and a relatively uniform flow of passengers through each half-hourly period.

G. In the event that during any three month period an airline has not actually utilized 85% of its total allocation on any flight, based on its average loads for the

period, then its allocation for the next three month period shall be reduced to 115% of such average loads. The review made pursuant to this paragraph shall be made for successive, and not for overlapping, three month periods.

H. If at any time an airline's calendar month average load on any flight(s) should exceed its Allocation(s), but if at such time there exists allocable capacity in such half hour time period(s), whether by means of the application of Paragraph 5G hereof to another airline, or otherwise, then such airline's allocation shall be adjusted to such average load figure or such portion thereof as the allocable capacity may allow. If, at any time an airline's calendar month average load on any flight(s) should exceed such airline's Allocation(s) for such flight(s), and if at such time there is no additional capacity during such time period which may be allocated to such airline for such purpose, then the County shall issue a written notice of violation to such airline, and the airline shall, within fifteen days from the receipt of such notice, reduce its usage to comply with its Allocation(s) or, if possible, obtain sufficient Allocations to cover its actual average usage. Should any airline fail to so comply with the allocation limits within such fifteen day period then:

i. On the sixteenth day following the receipt of the above set forth notice, such airline's then current Allocation(s) with respect to such flight(s) shall be REDUCED by

an amount equal to the amount that the airline's average loads for the thirty days preceding such notice exceeded the airline's Allocation(s) for such flight(s). The airline shall thereupon be required to comply with the new reduced Allocation; and

ii. The Airline shall also lose the privilege of participating, either directly or by assignment, in the next periodic allocation of access privileges.

iii. Should such airline not achieve compliance with its new, reduced Allocation within the next calendar month after such revised Allocation is established, on the basis of calendar month average load figures, then, in such event, the County may terminate such airline's privilege to thereafter conduct such flight(s) by providing such airline with twenty days' written notice of such termination.

I. For purposes of determining whether an airline is over utilizing its Allocation(s) under Paragraph 5H the County shall employ a calendar month average. For the purposes of determining whether an Airline should have its allocation adjusted pursuant to Paragraph 5G the County shall employ a three-month average. In calculating such averages the denominator shall be the number of such operations actually flown during that calendar month period and the numerator shall be the number of passengers enplaned and deplaned on all such operations during that period. In calculating such averages, the County

shall not include, either in the numerator or the denominator, data concerning flights flown during the following holiday periods:

i. Christmas/New Years from December 20 through January 5.

ii. The President's Birthday holiday from three (3) days before Washington's Birthday through three (3) days following Washington's Birthday.

iii. Easter from five (5) days prior to Easter through the fifth day following Easter.

iv. Memorial Day from three (3) days before Memorial Day through three (3) days after Memorial Day.

v. July 4, from July 1 through July 7.

vi. Labor Day, from three (3) days prior to Labor Day through three (3) days after Labor Day.

vii. Thanksgiving from five (5) days prior to Thanksgiving through five (5) days after Thanksgiving.

J. Airlines operating at H.P.N. shall certify actual passenger loads, on a per flight, per day, emplaned, deplaned, basis to the County weekly by the following Thursday for the preceeding calendar week, Monday through Sunday.

K. All airlines obtaining allocations at H.P.N. must initiate service within 60 days from the date of such award and must provide such service on at least a five day per

week basis, with aircraft capable of utilzing the entire Allocation, or must arrange with another airline or airlines to provide a combined service utilizing such Allocation, on at least a five day per week basis. Should any airline fail to initiate service within such sixty (60) day period, such airline shall, on the sixty-first day, lose such Allocation and such airline shall also lose the privilege of participating, either directly or by assignment, in the next periodic allocation of access privileges. Notwithstanding the foregoing, any airline may, within ten (10) days of any periodic allocation, surrender any Allocation(s) or portions thereof obtained in such periodic allocation to the County without any penalty.

L. Incumbent Scheduled Airlines may, subject to the terms and conditions hereof and of the applicable Operating Permits, continue to operate the flights and seasonal flights described in Paragraphs 5A, B and D hereof until April 30, 1988 and their Operating Agreements shall be amended in conformity with this Stipulation. Additional airlines securing access pursuant to this allocation mechanism shall be granted operating privileges, pursuant to the County's standard form Operating Agreement and the provisions hereof, until April 30, 1988. On or before December 31, 1987 the parties hereto, and non-party airlines then conducting operations at H.P.N., shall attempt to agree, as set forth next below, on the basis of the experience by then acquired in allocating resources to airlines at H.P.N. and

consistent with the criteria set forth in Paragraph 4 hereof, on any changes to the procedures and mechanisms to be implemented on and after May 1, 1988. For the purpose of this paragraph, it shall be deemed that an agreement has been reached if the County, the United States and a majority of the remaining parties to this stipulation and other airlines then conducting operations at H.P.N. shall be in accord, but in no other event. In the event the foregoing are not able to achieve such agreement by December 31, 1987 then the allocation mechanisms set forth herein shall be renewed for a two-year period commencing May 1, 1988. The parties and the scheduled airlines then operating at the Airport may then, by an agreement as defined above, modify this Stipulation on or before December 31, 1989, such modifications, if any, shall become effective on May 1, 1990. In the event no such agreement as defined above is reached on or before 1989 the Stipulation and Order shall terminate on April 30, 1990. Should this Stipulation and Order be so terminated, the County shall then be free to implement such allocation mechanism and such procedures as it may then deem appropriate and the other parties hereto shall have the right to interpose such opposition or make such legal challenge to such mechanisms and procedures, if any, as they or any of them may deem necessary and proper, the dismissal of the action herein with prejudice notwithstanding. During

any renewal period the County shall continue to make reviews and readjustments consistent with Paragraphs 5G, H, I, J, & K and Paragraph 6 hereof unless this Stipulation be otherwise modified.

6. The Airline parties and the County agree that, subsequent to the date of the first allocation set forth in Paragraph 5E, and in addition to the Incumbent Airline Allocations and the Allocations established pursuant to Paragraphs 5E (i) & (ii), airlines may, upon two (2) weeks prior written notice to the County, exchange Allocations with other airlines provided such transferor airline(s) has operated flight(s) under such allocation(s), employing aircraft capable of utilizing the entire allocation(s), for thirty (30) days on at least a 5-day per week basis. Additionally, subsequent to the date of such first allocation, airlines may move their Allocations from one time period into another time period. Notwithstanding the foregoing, no such exchanged or moved allocations shall be allowed which would result in allocations and ramp use in excess of capacity for any half-hour time period.

7. The Lottery mechanism to be utilized, in the event required pursuant to Paragraph 5E ii, shall be as follows:

A. The County shall, by no later than seven days prior to each periodic allocation, publish a list of those half hourly time periods in which a Lottery must be employed pursuant to the requirements of Paragraph 5.E.ii hereof, together with a

list of the qualified applicant airlines eligible to participate in the Lottery for such half hourly allocations.

B. On the date fixed for each such periodic allocation the County shall conduct the Lottery for the subject half hourly periods.

C. At the commencement of the Lottery all qualified airlines, by their designated representatives there present, shall draw numbers to establish their order of selection in the first round of the Lottery. Upon such establishment each scheduled airline, in its order of selection, may, consistent with its application and up to the available terminal and/or ramp capacity, whichever may first be reached, draw an Allocation for up to a total of four operations to take place in up to four half-hourly periods. Notwithstanding the sentence next above, in the first round of the first Lottery to be conducted pursuant to this Stipulation, Midway Airlines shall only draw an allocation for up to two operations based on its order of selection, but may draw an allocation for up to two additional operations after all other airlines have drawn allocations in such first round of the first Lottery. An operation shall be either an arrival or a departure. At the conclusion of the first round of the Lottery, should any terminal and ramp capacity remain in any half hourly periods the process shall be repeated, with the same order of selection, for such number of additional rounds as may be

required. To enable the County to determine the effect of any Allocation, whether by means of the Lottery or otherwise, on ramp capacity, each airline submitting an application shall designate, on the aforesaid forms to be provided or approved by the County, the type and number of aircraft to be utilized in each half hourly time period for the allocation being sought.

8. It is agreed that the provisions of this Stipulation shall be modified from time to time as may become necessary to comply with applicable federal law.

9. In consideration of the commitments of the County contained herein, the other parties signing this Stipulation shall discontinue, with prejudice the captioned actions on the date this Stipulation is implemented by the County by amending Resolution 95/1984 as provided in Paragraph 5 hereof, each party to bear its own costs and expenses.

10. To aid the County in the implementation of this Stipulation, the parties agree to establish a Task Force which shall meet with a representative of the County, on a monthly basis, or as needed, to provide advisory input concerning procedures and practices relating to the aforesaid airline access and allocation mechanism.

11. This Stipulation shall be enforceable by an action for specific performance in the United States District Court for the Southern District of New York. Further, any party may, for good cause shown and upon a demonstration of changed underlying circumstances, apply to this Court for such modification of, or relief from, this Stipulation as the Court may deem just and proper.

Dated: February , 1985
New York, New York

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COUNTY OF WESTCHESTER, NEW YORK
Andrew P. O'Rourke, County Executive
WESTCHESTER COUNTY BOARD OF LEGISLATORS

SO ORDERED:

_____
EDWARD WEINFELD
United States District Judge
Southern District, New York

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Public Works

RESOLUTION NO. 164 -1987

WHEREAS, this Honorable Board has heretofore adopted Resolution No. 266-1985 setting forth its "Statement of Airport Policy" as a guide for "daily management of the Westchester County Airport" and "for planning and assessing any and all long term alternatives"; and

WHEREAS, the Statement of Airport Policy directed that the Airport Master Plan and Layout Plan be reviewed and revisions proposed to incorporate safety and efficiency improvements for the Airport consistent with the Airport policy statement adopted by this Honorable Board as Resolution No. 266-1985; and

WHEREAS, pursuant to the statement of Airport Policy and consistent with the requirements of the Federal Aviation Administration and federal and state environmental quality review laws, a proposed Draft Master Plan Update report was prepared for the County by Howard Needles Tammen and Bergendoff (dated December 1, 1986) and the required environmental reviews were conducted; and

WHEREAS, this Honorable Board desires to make the determinations and findings pertaining to the environmental reviews conducted under federal and state law and to adopt the Master Plan Update and revised Airport Layout Plan (dated December 1, 1986; prepared for Westchester County by HNTB) as Westchester County Airport planning policy; and

WHEREAS, it is the direction and determination of this Honorable Board that approval of the Master Plan Update shall not be construed as authority for the County to proceed with any construction or land acquisition or appropriations of County, state of federal funds without prior approval of this Honorable Board.

NOW, THEREFORE, be it resolved by the County Board of the County of Westchester as follows:

RESOLVED, that pursuant to the National Environmental Policy Act and the State Environmental Quality Review Act, the findings set forth in the Findings Statement, EA/GEIS for the Westchester County Airport Master Plan Update, annexed hereto and made a part hereof, are hereby made, determined and approved; and be it further

RESOLVED, that the Master Plan Update and accompanying Airport Layout Plan, (prepared for Westchester County by Howard Needles Tammen and Bergendoff; dated Decemeber 1986), is hereby determined to be consistent with the Statement of Airport Policy and is hereby adopted; and be it further

RESOLVED, that this Resolution shall take effect immediately.

Date: May 18, 1987
White Plains, New York

COMMITTEE ON BUDGET AND APPROPRIATIONS

FINDINGS STATEMENT (AS AMEND

FINAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
WESTCHESTER COUNTY AIRPORT MASTER PLAN UPDATE

This Findings Statement has been prepared by Westchester County Legislators in accordance with Article 8 of the New York State Envir Conservation Law and Part 617 of the Implementing Regulations.

On October 14, 1986, a Draft Master Plan Update report and a Dra Environmental Assessment/Generic Environmental Impact Statement (EA/ were published, filed with the NYS DEC, and made available for publi review. The Draft EA/GEIS was prepared to meet the provisions of bo National Environmental Policy Act (NEPA) and the New York State Environmental Quality Act (SEQR). It followed the guidelines of FAA 5050.4A, Airport Environmental Handbook, October 8, 1985, for prepar an Environmental Assessment (EA); and of the Statewide Regulations, of 6NYCRR, of preparation of a Generic Environmental Impact Statemen (GEIS).

A public hearing on the Master Plan Update and Draft EA/GEIS was the Airport on November 13, 1986. Following the hearing, the public given until November 24, 1986 (extended until November 28, 1986, by r to submit written comments. A large number of thoughtful and helpful comments were received on the Draft EA/GEIS and the Master Plan Updat The comments made in the public hearing and in written statements wer summarized and responses were provided in the Final EA/GEIS. On Feb 4, 1987, Westchester County, acting as the lead agency, accepted the Environmental Assessment/Generic Environmental Impact Statement (EA/G the Westchester County Airport Master Plan Update and accompanying Ai Layout Plan. A Notice of completion of the Final EA/GEIS was publish February 11, 1987, and copies of the Final EA/GEIS were filed with th required State and Federal agencies. An additional hearing, not requ SEQR, was held by the Board of Legislators on April 8, 1987. Prepara this Findings Statement is the final step in the State EIS process, w must be completed prior to approval of the project.

LOCATION AND SETTING

A. Location

Westchester County Airport is located in the northern suburbs of N York City, Metropolitan region, about four miles northeast of the City White Plains. The Airport lies within two towns - Harrison and North - and the Village of Rye Brook, and is adjacent to the Town of Greenwi Connecticut.

B. Environmental Setting

1. Natural Resources

The Airport is in a settled area. The Airport property has been previously disturbed through residential and agricultural use and throu earthmoving for Airport construction.

Water resources include the headwaters of Blind Brook, an intermittent stream on the Airport, into which most of the Airport drains. A part of the Airport also drains into Rye Lake, a water supply reservoir.

The undeveloped areas of the Airport support wildlife, and include a small area of wet meadow. This wet meadow is not a designated freshwater wetland as defined by 6 NYCRR Part 664 or as defined by the Town of Harrison's wetlands ordinance. The Airport is not in a coastal zone. There have been no prime farmlands, wild and scenic rivers, or endangered or threatened species identified on the Airport or in the vicinity.

2. Human Resources

Land use near the Airport is characterized by a mixture of residential, recreation open space, institutional, and business-office uses. There are also a number of large vacant and underdeveloped parcels in the area. Existing and expected future land use is generally compatible with the operation of the Airport based upon the applicable criteria of the federal government and as described in the ANCLUC Study done for the Airport.

Westchester County's business community includes headquarters and offices of some of the nation's major corporations, a number of them located in the vicinity of the Airport. The Airport serves many of these corporations by providing a base for corporate general aviation. It serves private pilots of the community with a place to base their light general aviation aircraft, and it serves businesses and residents of Westchester County and neighboring areas of Connecticut by providing convenient, local air carrier service. It also provides an opportunity for pilot instruction and training.

A cultural resource survey found no resources that would be affected by construction on the Airport. No properties in the vicinity are listed on the National Register of Historic Places.

PROPOSED ACTION

The proposed local action is the approval by Westchester County of the revised Airport Master Plan and Airport Layout Plan. The proposed federal agency action is the approval by the Federal Aviation Administration, U.S. Department of Transportation, of the revised Airport Layout Plan and of possible applications for federal participation in the funding of eligible airport improvements. The proposed state action is possible participation in the funding of eligible airport improvements and State Department of Transportation approval of the Airport Layout Plan. The major facilities proposed and the need for those facilities for the Airport are described on Attachment I Proposed Facilities and Need.

PROPOSED FACILITIES AND NEEDS

1. A new passenger terminal at the general location of the existing terminal building. The size and configuration of the terminal are the subject of a separate study by the County. The terminal complex will include facilities for the Airport's crash/fire/rescue (CFR) vehicles.

NEED

The current terminal building is a World War II surplus quonset hut erected in the early 1950s. The building has drainage problems including poor roof drains, a leaky roof, and water retention on the sidewalk. The wiring system is old and piecemeal. The current electrical service is at capacity. Insulation is poor in the roof and non-existent in the walls. The window frames are loose. The building has inadequate heat and air conditioning capabilities. There is domestic water service only at the southern section of the building. The front porch supports are in poor condition and need replacement.

The building has extreme difficulty accommodating the existing passenger demand. Terminal curbside space is inadequate for appropriate passenger pick-up and drop-off. The limited space in the building forces ticket lines to stretch outside of the building. Lines for security check-in stretch the length of the building interior, thus interfering with all other building functions (i.e., rental car, restaurant or restrooms). Ingress and egress design is piecemeal and often causes unnecessary queues for passengers, both on the air and landside of the building. The baggage claim area is a 12-foot long chute with a garage door to the outside, which is inadequate for the current baggage use. The restroom facilities, concessions, and other services are not adequate for the numbers of persons using the terminal. Airport administration offices are too crowded to allow the inclusion of the Noise Abatement office. This office and some passenger support offices are housed in trailers located to the south current demand south of the current terminal.

2. Relocated access roadways and parking for the new terminal, and reconstruction of the Rye Lake Road/Airport Access Road intersection.

NEED

The existing access roadways in the terminal area are inadequate for existing demand often causing congestions and delay. The roadways system does not provide space for vehicular loading, unloading and maneuvering. This lack of adequate curbside drop off space results in passengers loading or unloading vehicles on the one lane roadway surface in front of the terminal. There is no provision for truck deliveries to the terminal area.

The terminal area does not have sufficient paved parking to accommodate existing demand. Cars are often parked on unmarked muddy or grassy areas near the terminal. The situation requires constant monitoring to prevent parking in fire lane and occasionally cars must be towed out of fire lanes. With the overall growth in passenger traffic the daily traffic and the parking requirements will increase. An analysis indicates the need to approximatley double the amount of public parking spaces serving the terminal and the area between Hangar D and Hangar A.

3. An area at the north end of the Airport reserved for highway or purposes.

NEED

It is likely that the area now occupied by the car rental compan be needed for the terminal development and parking facilities. alternate car rental site has been identified for relocation of present facilities. This land is conveniently located near the Airport entrance, yet it is separated from the airfield and cann easily be used for development of aviation facilities.

Previous studies by the County Department of Planning (Airport A Traffic Study, Technical Memorandum No. 1 Existing Conditions, a Technical Memorandum No. 2, 1990 Conditions) have shown that airp related vehicles are currently, and are expected to be in the fut minor component of traffic on roads in the area of the Airport. of this study have indicated a need for future improvements to Interchange 2 on I-684. Some of the conceptual schemes for this interchange redesign would require a portion of the Airport prope north of Airport Access Road. Currently the state has no plans f reconstruction of this interchange. It appears that any improvem would be many years in the future, if ever. In the event that th highway interchange project does go forward at some future date, would be feasible then to move any car rental functions from this to a new location either on or off the Airport.

4. A new automobile service station at Airport Access Road and New K Street, replacing the existing service station near the entrance t the Airport parking lot.

NEED

The Airport has a need for an automotive service station on the Ai site. Certain ground handling equipment (tugs, de-icing, etc.) do have long distance over the road capability and the service statio provides the fueling and service required for these vehicles. Thi of equipment is used both by the County in its ground handling ope and by FBO and corporate tenants. The present location of the ser station is restrictive and does not provide sufficient space for t type of services required.

5. A new parallel taxiway on the west side of Runway 16-34, additional taxiway connections and exit taxiways, and additional aircraft hold aprons near the ends of runways.

NEED

The Airport is currently safe. However, the recommended improvemen the taxiway system, and additional holding aprons will increase the margin of safety for aircraft operations. Proposed improvements wi reduce the need for runway crossing and potential runway incursions while reducing aircraft taxi times. The taxiway and apron will alsc help in snow removal and airfield maintenance by providing better, safer, more efficient separation of maintenance vehicles and aircraf

6. Development of new areas for fixed base operators (FBOs), primarily to serve light general aviation aircraft. Two of the areas shown are to be developed by FBOs and the third is to be used for other airport-related development.

NEED

Development of new areas for general aviation hangars and Fixed Base Operator (FBO) facilities is needed to accommodate existing and projected general aviation activity in compliance with the terms of the Statement of Airport Policy. The general aviation facilities currently include no individual hangars for privately-owned aircraft. The FBOs serving general aviation are housed in temporary spaces or in dilapidated buildings. Some of the apron areas used for aircraft parking have broken pavement which could cause damage to aircraft; other aircraft are required to walk for long distances between their automobiles and the parked aircraft, while carrying luggage or other items. There is not enough apron space and servicing facilities for transient general aviation aircraft.

Three areas were identified on the Airport that have sufficient room and accessibility to the runway system for such uses, and where development would be consistent with the provisions of the policy. The Master Plan analysis has indicated that only two of these three areas are required for FBO facilities and general avaition hangars to accommodate future general aviation needs. Two of the areas shown on the ALP will be reserved for use only for general aviation, and these areas will satisfy all future general aviation needs. The third area would be available for development in other uses. The wording in the Airport Layout Plan, "to be developed for general aviation or airport related use," was intended to provide the County with the flexibility to determine which two of these areas would be used for general aviation and which one would be available for other uses. The third area would be developed in accord with the airport policy that "Westchester County Airport has been designed for use primarily by general aviation ..." and "The airport-related use" refers to an activity that does not directly serve aircraft or air operations but would complement airport activity consistent with the policy statement.

7. New corporate hangar and offices at two locations on the Airport, with access roads and automobile parking.

NEED

The hangar would accommodate aircraft currently based at the Airport. It is needed to relieve overcrowding at existing corporate facilities and at the FBOs serving corporate aircraft. It would permit the indoor storage of costly aircraft and equipment that must now be kept outdoors and exposed to the weather. Because the facility would serve aircraft already based at the Airport, the aircraft operations and passengers attributed to the new hangar represent aircraft and passengers already using the Airport. For this reason, the hangar is not expected to result in an increase in aviation activity at the Airport or in noise or air pollution related to aircraft operations. The aircraft parking/hangar spaces freed up by the move of aircraft to the new facility would in turn provide more space to better accommodate the existing corporate aircraft fleet currently based at the Airport.

8. Extension of the aircraft parking apron in front of Hangar E, and aprons for the new corporate hangars.

NEED

Aprons are used to park aircraft and for placement of aircraft for final preparation before a flight. They are constantly being maneuvered and repositioned as the needs dictate. At the present time the aprons and hangars are overcrowded. This is an unacceptable situation.

9. An additional engine maintenance run-up pad near the center of the Airport.

NEED

Two areas for aircraft maintenance run-ups are currently provided on the Airport, along Taxiway "T." However, since aircraft using the areas need to be pointed into the wind while being run-up, only one of the areas is usable at many times. Demand for the run-up areas has shown that on many occasions two pads are needed at the same time. An additional run-up area, is recommended on the taxiway between the midpoint of Runway 16-34 and Runway 11-29. This location near the center of the Airport provides good accessibility and is also desirable from the point of view of minimizing noise impacts. The proposed run-up pad (as well as the existing ones) is remote from any noise-sensitive land uses in the Airport vicinity. Use of run-up pads is controlled and limited to favorable meteorological conditions to limit noise impact.

10. A heated garage for Airport maintenance vehicles, approximately 10,000 square feet.

NEED

Certain airport maintenance equipment such as snowplows, must be kept in a constant state of readiness in a heated environment. The existing building is in an old wooden garage which is inadequate and inefficient Also its location is in an area designated for general aviation or other airport related use and must be moved if this development takes place.

11. A new CFR training facility at the location of the existing training facility, near the Airport maintenance garage.

NEED

The FAA requires that all personnel involved in CFR at the Airport have periodic "hot drills." Since it is impossible to take CFR equipment off the Airport and still provide coverage it is necessary to construct a CFR training area on the Airport. To minimize off-airport impacts of firefighting training such as noise and smoke it is recommended that a new CFR training facility be constructed at the present site. The new facility should be designed to minimize adverse environmental impacts such as runoff or groundwater contamination by fuel or other pollutants.

12. An approach lighting system for Runway 34. There is an existing approach lighting system for Runway 16.

NEED

The Airport is currently safe. However, the recommended improvements to the lighting system for Runway 34 will increase the margin of safety. This system will provide better safer guidance and all weather capability to the existing Instrument Landing System.

13. An airport perimeter road.

NEED

At the present time in order to provide operational services needed on both sides of the Airport, CFR vehicles, fuel trucks, maintenance vehicles and other vehicles must cross the active runways and taxiways. To improve safety (by minimizing vehicle/aircraft interactions) and increase operational efficiency, an airport perimeter road is recommended to provide access to the west side of the Airport from the fuel storage and airport maintenance and operations areas. This road would also improve CFR access to areas of the Airport away from the paved airfield.

14. Control of parcels of land adjacent to the Airport for runway-end clear zones, approach lighting, sight clearance from the tower, and stormwater runoff detention.

NEED

Current FAA policy regarding clear zone at the ends of each runway recommends areas larger than can be accommodated on the Airport property. To enhance the margin of safety, control of off-airport properties, would be required to provide proper clear zones.

At certain times of the year it is not possible to see the entire end of Runway 34 from the control tower. It is necessary to cut some of the foilage to provide sight clearance. This would enable the tower to provide safer handling of aircraft using this area and the future taxiway.

The installation of a detention basin would reduce the present runoff in the future.

ALTERNATIVES

The Master Plan and the accompanying Airport Layout Plan that are the subjects of this GEIS/EA is the product of more than a decade of preparation, analysis and review. Begun even before the effective date of the State's Environmental Quality Review Act, the Master Plan and Airport Layout Plan were conducted in parallel with an associated Aiport Noise Control and Land Use Compatability Study.

The study phases of the Master Plan were concluded with the publication in 1980 of the "Westchester County Airport Master Plan Study", and its submission to the County Board of Legislators for consideration and action. This document contained an analysis of alternatives, several of which would have changed the role of the Westchester County Airport. These alternatives included:

- maintaining the function and character of the Westchester County Airport, and its mix of traffic, as it then existed;

- moving the HPN traffic to other airports in the region;

- building a new airport to replace the Westchester County Airport;

- redirecting jets or other aircraft from the Westchester County Airport;

- full development of the airport to meet unconstrained demand.

At the request of the FAA, the County commenced an Environmental Assessment pursuant to NEPA on the Airport Layout Plan. Although the Master Plan project was officially "grandfathered" with respect to the New York State Environmental Quality Review Act, the County administration voluntarily expanded the NEPA EA to fulfill the requirments of a Generic Environmental Impact Statement under SEQRA.

Consideration of the Master Plan and its alternatives by the County Board, and the preparation of the GEIS/EA, were interrupted by a lawsuit brought against the County by the major air carriers, that challenged the County's proprietary rights as airport operator and that sought a judicial mandate to obtain increased air carrier access to the Airport.

The litigation culminated in a stipulation among the County, the Federal Aviation Administration and the airlines, that affirmed Westchester County Airport's future role as a general aviation airport providing, by comparison, modest commercial service. Consistent with the airport's role as a general aviation airport, as recognized by the Midway stipulation, the number of airline passengers that could be accomodated at the existing terminal in each half hour period, was limited.

In furtherance of the stipulation, the Board of Legislators adopted Resolution No. 266-1985 which recognized the role of the Westchester County Airport, and which requested the County Executive to revise the Airport Layout Plan to incorporate certain recommended safety and efficiency improvements for the airport consistent with that role, for the further consideration and evaluation of the County Board. The resolution also directed that the Master Plan document be revised in its entirety to reflect the Stipulation and to eliminate those elements that had become outdated or extraneous since the studies were begun in the 1970's. It was the stated policy of the County Board that "The airport's capacity, measured in terms of its capability to accept an annual number of aircraft operations, shall not be increased."

With the policy elements regarding role, passenger handling, and annual movements capacity determined, therefore, the environemental review of the Airport Layout Plan could then be conducted in terms of the two options that defined the ends of the impact spectrum: The "Build" alternative, which would implement those Master Plan facility modifications and modernizations selected by the County Board which improve safety, increase efficiency, upgrade facilities or provide better conditions for airport users, tenants, passengers, and neighbors, and the "No Build Alternative", i.e., continue the operation of the airport with the present layout and facilities.

ENVIRONMENTAL IMPACTS

The following categories in which important environmental impacts could occur were examined and assessed: noise; compatible land use; social; induced socioeconomic; induced secondary growth; air quality; water quality; DOT Act, Section 4(f); historic; architectural, archaeological and cultural; biotic communities; endangered and threatened species; wetlands; floodplains; prime and unique farmlands; energy supply and natural resources; light emissions; solid waste; construction impacts; and animal hazard consideration.

A number of potential short-term impacts were identified. These are principally associated with the construction of the projects, and include:

1. airborne dust caused by earthmoving
2. temporary siltation of Blind Brook caused by earthmoving
3. noise from construction equipment
4. minor traffic delays from road construction
5. temporary vehicle traffic increases from the temporary increase in employment due to construction workers and from the delivery of materials
6. disposal of construction debris
7. inconveniences to airline passengers during construction of the terminal and parking improvements
8. aircraft delays from taxiway and apron construction
9. temporary relocation of some aircraft parking to more remote areas of the Airport, if the new corporate hangar near Hangar D is built before the new general aviation areas are completed

These impacts have been determined to be minor in nature.

Long-term impacts identified include:

10. replacement of a small area of wet meadow by a floodwater detention basin

11. clearing of some shrub and tree habitat for installation of a security fence

12. removal of similar habitat for construction of general aviation areas

13. topping or removal of tall trees in clear zones altering the visual appearance of some areas near the Airport

14. diversion of some airfield runoff from the Rye Lake reservoir, a public drinking water source

The long-term impact identified have been determined to be minor in nature.

MITIGATION MEASURES

The following mitigation measures were identified as practicable in the SEQR process and are included in the proposed project.

A. Drainage and Runoff

The improvement projects will increase impervious surfaces on the Airport and thereby generate more stormwater runoff. This will be mitigated by minor adjustments to the drainage patterns at the Airport and construction of a detention basin. The changes will not only accommodate the proposed development, but will correct deficiencies in the drainage system. The detention basin will be designed to offset peak runoff and provide downstream flood relief for all storms up to and including a 100-year storm. Construction on the Airport will be required to be in accordance with the provisions of Westchester County Best Management Practices Manual on Construction Related Activities, November 1979. These measures will counteract Impact 2, but will create Impacts 10 and 14.

B. Landscaping

Some topping or removal of tall trees will be required to remove obstructions in the runway-end clear zones and to permit visual sight clearance from the air traffic control tower. No clear-cutting is anticipated. Landscaping will be done to replace any trees removed and to maintain the attractive aesthetic character of the area. This will offset Impacts 11, 12, and 13.

C. Cultural Resources

No historic or cultural resources were found that would be affected by the construction of the proposed improvements. Before constructing the improvements in areas not previously developed, a Stage 1B survey will be performed to determine the presence or absence of significant historic or cultural resources. If resources are found during the survey of pending construction, the State Historic Preservation Officer will be contacted to determine the course of action.

D. Construction Impacts

Construction impacts will be short-term (during the construction period). They will involve air-quality considerations (primarily fugitive dust) resulting from construction equipment on the sites, and potential soil erosion and sedimentation where grading and excavation are required. As mitigation, the construction contract specifications for each facility requiring ground disturbance will require compliance with the provisions of FAA Advisory Circular 150/5370-10, Standards for Specifying Construction of Airports (change 10), Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control; and with the provisions of Westchester County Best Management Practices Manual on Construction Related Activities, November 1979. Construction of the projects will not be permitted to begin until arrangements have been made for disposal of construction debris. These measures will fully mitigate Impacts 2 and 6, and partially, if not entirely, mitigate Impact 1.

EVALUATION

Consistent with social, economic and other essential considerations from among the reasonable alternatives thereto, the action to be carried out or approved is one which minimizes or avoids adverse environmental effects to the maximum extent practicable; including the effects disclosed in the GEIS, and EA.

Consistent with social, economic and other essential considerations, to the maximum extent practicable, adverse environmental effects revealed in the Environmental Impact Statement process will be minimized or avoided by incorporating as conditions to this decision those mitigative measures which were identified as practicable.

A. Noise

Because of the obvious concern over aircraft noise in the community, significant discussion and analysis of the issue was included in the Draft EA/GEIS. This material was included even though the proposed improvements will not affect the number or types of operations enough to produce aircraft noise impacts. Any changes in aircraft noise impacts will occur as a result of operational changes that are forecast to occur independent of the construction of the proposed improvements.

B. Growth - Inducing Impacts

The proposed improvements are not expected to have any applicable or significant growth-inducing aspects. There will be no significant shifts in patterns of population growth, in public service demands, or in business and economic activity as a result of the proposed action.

A small increase in employment is posssible, depending upon the specific facilities provided in the terminal area and other areas designated for development. This could be the result of possible additional concessions, food services and other functions provided in the new terminal and in the new services in the FBO facilities on the west side of the field. It is anticipated that these increases will be insignificant. These types of services are provided at the present time and demand for these services is not expected to significantly increase.

Other aspects studied under the proposed action refer to existing employment on the Airport. There will be some relocation of jobs within the Airport boundaries. These shifts are not expected to have any significant impact on traffic patterns or other off-airport impacts, though there could be a shift of up to 200 daily vehicle trips from one side of the Airport to the other. None of these impacts is expected to require off-airport support facilities, since on-airport shifts and increases in employment are small and can be drawn from the existing labor force in the area.

C. Use and Conservation of Energy

Because the Build Alternative would not increase the number of passengers or aircraft operations compared to the No-Build Alternative, there will be no increased energy usage associated with ground or air transportation movements. There would be a slight increase in electrical usage for lighting on the new taxiways, for the new approach lighting system at the approach end of Runway 34 and for the new terminal and possible other buildings. The proposed improvements are not expected to have any applicable or significant effect on the use and conservation of energy.

D. Irreversible and Irretrievable Commitments of Resources

In the implementation of the project, the construction materials used to build the facilities improvements will be irretrievably committed, but are all readily available and in good supply. No unique virgin or undisturbed habitat will be lost nor will any unusual landforms be altered.

E. Cumulative Effects

Because this study was done as a Generic Impact Statement, all impacts were analyzed for their cumulative effect and not as site specific projects. The analysis is set forth in the attached matrix and no significant cumulative effects were identified as a result of this study.

CONCLUSION

Westchester County as Lead Agency, finds that the requirements of NYCRR Part 617 have been met and there will be no Significant Impact upon local environment stemming from this action. All impacts which have been identified have been matched with generally accepted mitigation measures. The development of this site will be carefully monitored to ensure that all impacts, both those currently identified as well as any possible unforseen impacts, will be mitigated. The Lead Agency believes that the propsoed action is consistent with the economics and social needs of the County of Westchester and that these needs can be served while maintaining a high degree of environmental quality. This decision is based on the following conditions:

The County recognizes that a review of the detailed development plans for the terminal building and associated facilities and the two general aviation areas must be conducted under the terms of Section 617.15 of SEQR to determine whether the findings of no impact are valid. The County will conduct such a supplemental environmental review when the detailed plans are forthcoming. In the meantime, the environmental processing of the development proposals to the level of detail that are currently known may continue.

The County recognizes that the forecasts of airline passengers and aviation activity in the Master Plan Update and EA/GEIS assumed the Stipulation would remain in effect throughout the forecast period. Without the Stipulation in effect, forecasts might no longer be valid. If the Stipulation were ended or changed substantially it is likely that an additional environmental review would be required.

Westchester County as Lead Agency, finds that the Airport Master Plan Update, as proposed in the Draft and Final Generic Environmental Impact Statement, which was prepared in accordance with Part 617 of the State Environmental Quality Review Act will have no significant adverse impact upon the environment.

STATE OF NEW YORK)
) ss.
COUNTY OF WESTCHESTER)

I HEREBY CERTIFY that I have compared the foregoing Resolution No. 164-1987 with the original on file in my office and that the same is a correct transcript therefrom and of the whole of said original resolution which was duly adopted by the Westchester County Board of Legislators of said County on May 26, 1987.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Corporate Seal of said County Board of Legislators.
May 27, 1987

Anthony J. Giambruno

The Clerk of the County
Board of Legislators and
Chief of Staff

(SEAL)

County of Westchester, New York