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# BUFFALO NIAGARA INTERNATIONAL AIRPORT

DRAFT

## INTERIM REPORT No. 1

- Inventory
- Forecasts
- Facility Requirements

January 13, 1999



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3M-11

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# INVENTORY



## **2.0 INVENTORY**

The inventory chapter provides an overview of Buffalo Niagara International Airport (BNIA), including its ownership, physical facilities, operational characteristics, level of service, facility development, land use, and zoning. This information was obtained through on-site investigations of the airport, interviews with airport personnel, and review of published information. Information was also obtained from available planning documents and studies concerning the airport and the Niagara Frontier area. The information presented herein serves as a basis for the development of subsequent study tasks and master plan recommendations.

### **2.1 Airport Background**

#### **2.1.1 Airport Location, Role, and Classification**

Buffalo Niagara International Airport is located in Erie County, New York. It is approximately 5 miles northeast of Buffalo and 16 miles southeast of Niagara Falls. The airport is situated in Cheektowaga Township along the southern border of Amherst Township and the Village of Williamsville (see Figure 2.1).

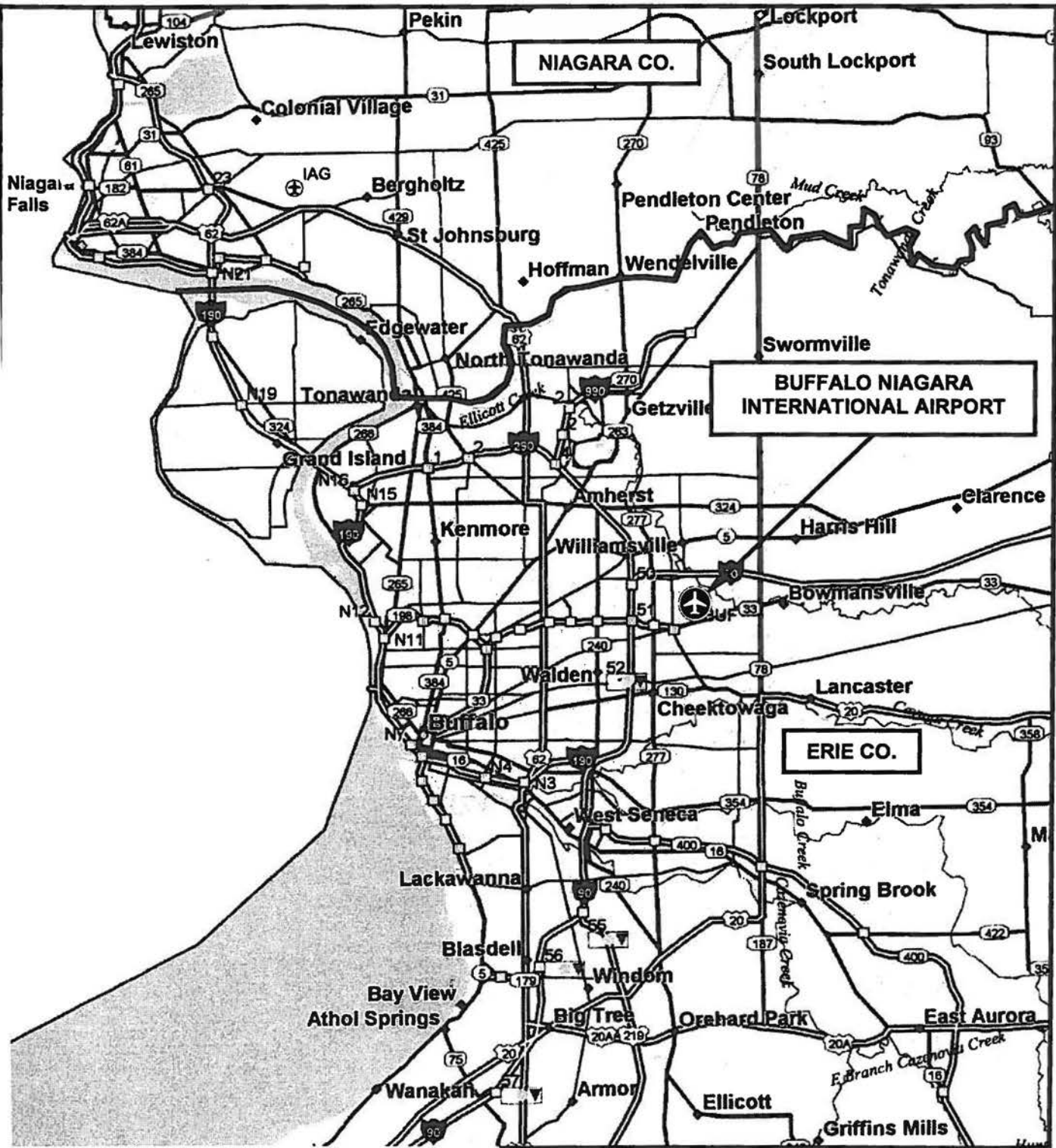
BNIA is classified as a Medium Haul, Primary Commercial Service Airport, under the National Plan of Integrated Airport Systems (NPIAS). Medium Haul airports provide non-stop commercial service for routes that are 500 to 1,500 miles in distance. A Primary Commercial Service Airport is defined as an airport that annually handles more than 10,000 enplaned passengers.




#### **2.1.2 Airport Sponsor**

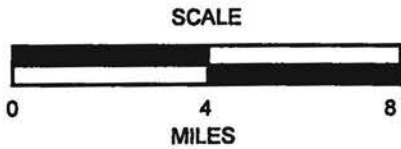
The Airport Sponsor for BNIA is the Niagara Frontier Transportation Authority (NFTA). NFTA is a public transportation authority that was established by the New York State Legislature in 1967. Currently, the NFTA owns and operates two airports in the Erie and Niagara Counties area: BNIA and Niagara Falls International Airport. In addition, NFTA is responsible for a regional bus and passenger rail transit system.

#### **2.1.3 Airport History**

The Buffalo Niagara International Airport was first opened on September 25, 1926 as Buffalo Airport. At that time it was owned and operated by the City of Buffalo. The original airport included a small terminal building, one hangar, and four cinder runways. Each of the cinder runways measured 3,000 feet long by 100 feet wide. By December 1927, Buffalo Airport was open to airmail and passenger services. Passenger services grew quickly as Buffalo became a convenient stopover for flights between New York City and certain mid-west destinations such as Cleveland and Chicago. The airport continued to be developed through the 1920's and 1930's. By 1939, a new terminal and administration building (later referred to as the East Terminal) was constructed and the airport provided services for two major airlines.



<b>BUFFALO NIAGARA INTERNATIONAL AIRPORT</b> ERIE COUNTY, NEW YORK		
<b>LOCATION MAP</b>		
SCALE: AS SHOWN	DATE: 6/98	FIGURE: 2.1
 <b>McFarland-Johnson, Inc.</b>		
		



In 1940-1941 Curtiss Aeroplane Co. built a manufacturing hangar on the southeast side of the airport (current Buffalo Airport Center property). With the onset of World War II, a major airfield expansion effort took place. This was done to facilitate aircraft manufacturing, test and acceptance flight activity; and the needs of the commercial airlines. This effort provided the airport with the following four paved runways:

- Runway 5-23: 5,630 feet by 150 feet
- Runway 13-31 (Present 14-32): 5,730 feet by 150 feet
- Runway 1-19: 5,000 feet by 150 feet
- Runway 8-26: 3,650 feet by 150 feet

In the late 1940's and early 1950's the airfield and the roadway/parking systems were reconstructed. At this time Runways 1-19 and 8-26 were closed, and Runway 13-31 was renamed Runway 14-32. In 1955, the terminal building was expanded to include the West Concourse, giving the airport a total of 11 gates. In 1956, the airport was acquired by the Niagara Frontier Port Authority (NFPA).

In 1961, the East Terminal was expanded to provide a north-south oriented concourse for use by American Airlines. To accommodate commercial jet service, Runway 5-23 was extended to 8,100 feet in length in 1965. This project involved extensive amounts of fill and included three separate runway bridge structures. In 1967, the New York State Legislature created the Niagara Frontier Transportation Authority (NFTA) to replace the NFPA. NFTA is the current owner and operator of BNIA and Niagara Falls International Airport. In 1969, development of the general aviation area on the north side of the airport began, which resulted in the hangar and apron facilities associated with Calspan CSR Corporation and the airport's Fixed Base Operator (FBO), Prior Aviation.

Major facility development continued during the 1970's with construction of the West Terminal (1971) and the Airport Rescue and Fire Fighting Facility (1971). In 1974 the Federal Services Building was constructed to accommodate the FAA Flight Service Station, U.S. Customs Office and FAA Airways Field Sector office.

NFTA has continued to maintain, expand and upgrade the airport facilities throughout the 1980's and 1990's with a wide variety of airfield maintenance, drainage, lighting, signage, and NAVAID improvements. Airport improvements include a state-of-the-art aviation fuel storage facility (1984) and a new passenger terminal facility (1997). Currently, BNIA is well positioned to accommodate the immediate and long-range needs of the airlines and passengers with respect to terminal and landside facilities. The terminal is expandable and can be developed to accommodate approximately 40 gates.

#### 2.1.4 Recent Airport Developments

The most recent notable development at BNIA is the new passenger terminal complex on the south side of the airfield. The complex includes a 275,898 square foot terminal

building which is in the process of being expanded, a 450,000 square foot parking structure, and roadway access improvements. Other recent and on-going projects include:

- North Concourse Apron rehabilitation (10/94)
- Air Cargo and General Aviation Glycol Vacuum Sweep Areas (10/95)
- Relighting Runway 5-23 (11/93)
- Automated Flight Service Station rehabilitation (9/97)
- Rest Overnight Glycol containment and storage facility (8/98)
- Runway 14-32 pavement rehabilitation (11/98)
- Airfield/storm drainage rehabilitation (12/98)
- The 28,000 square foot air cargo “flex” building (Ongoing)
- Federal Inspection Service (FIS) Facility (Ongoing)

### 2.1.5 Airport Service Area

The primary service area for BNIA is defined by the boundaries of the Buffalo Metropolitan Statistical Area (MSA), which includes Erie and Niagara Counties. However, the secondary service area for a commercial airport is generally defined as that area within a one-hour driving distance of the airport. As such, the service area for BNIA includes Erie, Niagara, Orleans, Genesee, and Wyoming Counties, as well as part of Cattaraugus, Chautauqua, Allegany Counties, and southern Ontario. Other nearby commercial-service airports in New York State include: Rochester International Airport, approximately 65 miles to the east; Niagara Falls International Airport, approximately 20 miles to the north; and Chautauqua County Airport, approximately 71 miles to the south. In Canada, the closest commercial service airports include Toronto’s Pearson International Airport and Hamilton Airport, located 65 and 55 miles to the northwest and west, respectively. As a result of the close proximity of other commercial-service airports, airline passengers may be drawn to or from BNIA seeking the best commercial air service in terms of airline destinations, scheduling, and ticket prices.

For general aviation activity, the airport service area is defined as the area within a 30-mile radius of the airport. Using this definition, BNIA’s general aviation service area includes Erie and Niagara Counties, as well as portions of Orleans, Genesee, Wyoming, and Cattaraugus Counties, and southern Ontario. Figure 2.2 illustrates the commercial and general aviation service areas associated with BNIA.

### 2.1.6 Meteorological Conditions

As with much of upstate New York, Buffalo’s climate is influenced by polar and tropical air masses. Buffalo is also in close proximity to Lake Erie and Lake Ontario. These factors result in highly varied and changeable weather in terms of cloud cover and precipitation.

The lakes often have a moderating effect on temperature conditions. Temperatures of well below zero degrees Fahrenheit over Canada and the Midwest are typically raised 10 to 30 degrees crossing the lakes. As a result, days with temperatures below zero degrees are limited to about three to five annually. The lakes also have a cooling effect in the summer, and temperatures of 90 degrees and above are infrequent. Winds blow off Lake Erie, which lies to the



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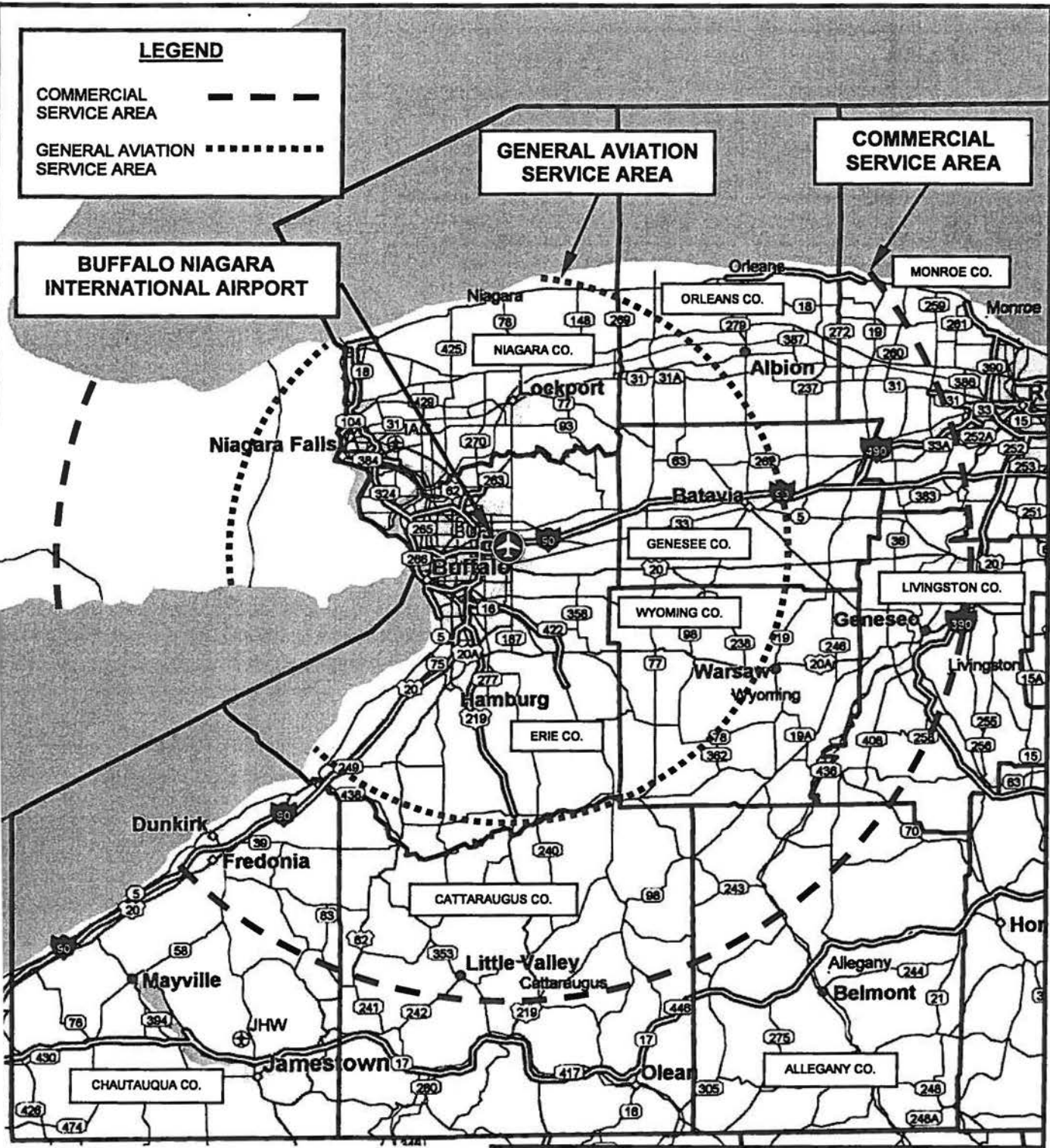
COMMERCIAL SERVICE AREA — — — —

GENERAL AVIATION SERVICE AREA ······

**BUFFALO NIAGARA INTERNATIONAL AIRPORT**

**GENERAL AVIATION SERVICE AREA**

**COMMERCIAL SERVICE AREA**



**BUFFALO NIAGARA INTERNATIONAL AIRPORT**  
ERIE COUNTY, NEW YORK

**AIRPORT SERVICE AREAS**

SCALE: AS SHOWN

DATE: 6/98

FIGURE: 2.2

**MJ** McFarland-Johnson, Inc.



**BUFFALO NIAGARA INTERNATIONAL AIRPORT**

SCALE



MILES



southwest. While the lake encourages a relatively consistent wind direction, it also increases wind velocity.

Precipitation is distributed relatively evenly throughout the year, and amounts to approximately 39 inches annually. Most months receive between 2.5 and 3.5 inches, with autumn and winter typically being dryer than spring and summer. However, cloud cover is more prevalent during the colder months.

Flying in the winter months can be limited by a weather phenomenon known as lake effect snow. The prevailing westerly and southwesterly winds blow across Lake Erie and pick up moisture. When they reach the comparatively rough land areas, vertical wind currents occur as a result of turbulence due to the terrain, and large amounts of snow are deposited in a short period of time. These snow squalls are characterized by near blizzard conditions and can result in snow fall at a rate of up to six inches per hour. They move slowly and occasionally meander through the area. Generally, the prevailing winds focus these lake effect snows south of Buffalo so that their impact on BNIA is infrequent.

Flying weather is limited by low clouds and poor visibility most often in winter months. According to data collected by the National Weather Service at BNIA, 17.5 percent of the time cloud cover is less than 1,500 feet AGL or visibility is less than three miles. This percentage goes up to 28 percent in December and is as low as 8.6 percent in July. Poor visibility occurs most often during morning hours, due to fog and low clouds associated with radiational cooling.

**Table 2.1 – WEATHER SUMMARY**

	Average Daily Maximum Temperature	Average Daily Minimum Temperature	Average Temperature	Total Precipitation (Inches)	Snowfall (Inches)	Ceiling<1,500 feet and/or Visibility<3 miles (%)	Ceiling<1,000 feet and/or Visibility<3 miles (%)
JANUARY	30.5	16.9	23.7	2.4	24.2	25.9	19.9
FEBRUARY	30.7	16.4	23.6	2.1	18.1	25.6	21.1
MARCH	40.0	25.4	32.8	2.5	12.9	25.0	20.8
APRIL	54.2	35.7	45.0	2.6	3.0	16.4	13.4
MAY	64.3	45.3	54.8	2.8	.2	11.8	9.4
JUNE	75.7	56.9	66.3	3.2	.0	9.0	7.4
JULY	79.5	61.4	70.5	3.0	.0	8.6	7.3
AUGUST	78.2	60.2	69.2	3.7	.0	11.5	9.6
SEPTEMBER	71.3	53.6	62.5	3.2	.0	13.8	11.0
OCTOBER	59.9	43.2	51.6	3.1	.5	10.5	7.8
NOVEMBER	45.6	33.4	39.5	4.1	14.1	24.5	17.5
DECEMBER	35.9	24.0	30.0	3.2	17.6	28.0	20.4
ANNUAL	55.5	39.4	47.5	36.0	90.4	17.5	13.8

SOURCE: NOAA, National Climatic Center  
Greater Buffalo International Airport (1965 – 1974)



Of more concern to aviators is the time that weather conditions are below VFR minimums (clouds at 1,000 feet AGL and 3 miles visibility). Between 1965 and 1974, these conditions existed 13.8 percent of the time at BNIA. Conditions below the IFR minimums (clouds <200 feet AGL and/or ½ mile visibility) occur only about one percent of the time. Table 2.1 provides a summary of weather conditions for BNIA.

**2.1.7 Airport Services**

Currently BNIA is served by a total of eight major/national airlines and nine regional carriers. Collectively, these carriers provide daily non-stop service to:

- Hartford, Connecticut
- Orlando, Florida
- Atlanta, Georgia
- Chicago, Illinois
- Baltimore, Maryland
- Boston, Massachusetts
- Detroit, Michigan
- Albany, New York
- Binghamton, New York
- Minneapolis, Minnesota
- New York City, New York
- Rochester, New York
- Syracuse, New York
- Charlotte, North Carolina
- Cincinnati, Ohio
- Cleveland, Ohio
- Philadelphia, Pennsylvania
- Pittsburgh, Pennsylvania
- Washington D.C.

Prior Aviation is currently the sole Fixed Base Operator (FBO) at BNIA. Prior Aviation provides a wide variety of commercial, general aviation and airport support services including:

- Aircraft maintenance
- Airline fueling
- Deicing services (radiant heat and glycol)
- Air cargo management services
- Airport vehicle maintenance services
- Maintaining jet ways and jet bridges
- Ground handling for airlines and air cargo operations
- National and international charter services
- Flight instruction
- Aircraft rentals and sales

A major air cargo facility is located on the west side of the airport. The air cargo complex includes an 843,750 square foot apron, and four apron accessible air cargo buildings totaling 194,250 square feet. United Parcel Service operates out of a 12,000 square foot building which is not located adjacent to the apron. Current air cargo service providers include the US Postal Service, Federal Express, United Parcel Services, Airborne Express, Emery Worldwide, and Superior Cargo Services.



**2.1.8 Airport Tenants**

Airport tenants at BNIA include a wide variety of aviation, commercial, and governmental organizations, as illustrated in Table 2.2.

<b>Table 2.2 – AIRPORT TENANTS</b>		
<b>AVIATION</b>		
<b>Scheduled Airlines</b>	<b>Cargo/Express</b>	<b>Prior Aviation Services, Inc., FBO</b>
US Airways/Express/Metrojet	US Postal Service	Sierra Technologies
United Airlines/Express	Federal Express	Calspan CSR Inc.
Northwest/Mesaba	United Parcel Service	
Continental Air/Express	Airborne Express	
American/Eagle	Emery Worldwide	
AirTran/Airways	Superior Cargo Services	
Delta Express/ComAir		
Shuttle America		
<b>GOVERNMENTAL ORGANIZATIONS</b>		
U. S. Dept. of Agriculture	U.S. Customs	U.S. Immigration
FAA	National Weather Service	
<b>COMMERCIAL</b>		
<b>Car Rental</b>	<b>CA-1 Services</b>	<b>Independent Taxi</b>
Alamo	Burger King	Travel Team Business Center
Avis	Monarch Gift Shop	Therapeutic Layover Care
Budget	Mattie’s Texas Hots	Interspace Advertising
Hertz	Barbershop	Smarte Carte, Inc.
National	Shoe Shine	Flying Tigers Restaurant
APCOA Parking		International Total Services

**2.1.9 Airport Access**

Regional access to BNIA is provided by the New York State Thruway (I-90), Interstate 290, and the Kensington Expressway (Route 33). I-90 provides access from points east and south of the airport, while I-290 provides access from areas to the north, including Tonawanda, North Tonawanda, Grand Island, and Niagara Falls. The Kensington Expressway provides direct access to BNIA from downtown Buffalo. These major highways have connections with the local highway network in the immediate vicinity of BNIA.

Local highways providing immediate access to BNIA include: Genesee Street to the south, Holtz Road to the east, Cayuga Road to the west, Wehrle Drive to the northwest, and





Aero Drive to the north. Genesee Street provides access to the passenger terminal facilities at BNIA while Cayuga Road provides access to the air cargo facilities, Sierra Technologies and various commercial establishments located on the west side of the airport. Wehrle Drive provides access to the general aviation area and Calspan CSR Corporation, while Aero Drive provides access to FAA's Flight Service Station, the Aviation Fuel System Facilities, and the National Weather Service facilities. Access to the FAA control tower is provided from Holtz Road, which borders the east side of the airport.

## **2.2 Airport Facilities**

Airport facilities include airside and landside facilities. Airside facilities are those associated with aircraft take-off, landing, and taxiway procedures. They include runways, taxiways, and associated lighting. Landside facilities are associated with aircraft parking, storage, and support services, as well as the accommodation of airport users, visitors and tenants. Typical landside facilities include aircraft aprons, terminal facilities, parking lots, hangars, and various aviation/airport support facilities. Existing airport facilities are illustrated in Figure 2.3. A detailed description of the airside and landside facilities at BNIA is provided in the following paragraphs.

### **2.2.1 Runway and Taxiway System**

The airfield at BNIA consists of Primary Runway 5-23, Crosswind Runway 14-32 and associated taxiway facilities. Runway 5-23 is 8,102 feet long and 150 feet wide, with 25 foot wide shoulders on each side, and 150 foot long paved overruns (blast pads) at each end. Runway 5-23 has a grooved asphalt pavement. As the primary runway, it supports regular use by commercial jet aircraft. The runway pavement has a published weight bearing capacity of 195,000 pounds for aircraft with dual landing gear and 450,000 pounds for aircraft with dual tandem landing gear. Runway 5-23 includes three bridge structures associated with the airport access road, Aero Drive, and Ellicott Creek. Runway 5-23 is equipped with High Intensity Runway Lights (HIRL), centerline lights, and Touchdown Zone Lights (TDZL).

The Runway 5 threshold is displaced 324 feet to obtain clearance over a utility pole which is the controlling obstruction within the 50:1 approach surface. In addition, due to the proximity of Cayuga Road and Genesee Street, the Runway Safety Area is limited to only 250 feet beyond the end of Runway 5 instead of the standard 1000-foot requirement.

The crosswind runway is Runway 14-32. It is 5,373 feet long and 150 feet wide. This runway has asphalt pavement and was reconstructed in mid-1998. Upon completion of the reconstruction, Runway 14-32 will have a weight bearing capacity of 150,000 pounds for aircraft with dual landing gear and 240,000 pounds for aircraft with dual tandem landing gear. Due to property constraints and adjacent development, Runway 14 has a non-standard Runway Safety Area (RSA) that extends only 200 feet beyond the end of the runway. Runway 14-32 is equipped with Medium Intensity Runway Lights (MIRL) and Visual Approach Slope Indicator (VASI-4) systems on both ends. Runway 32 also includes Runway End Identifier Lights (REIL's).

The runways are supported by a system of 21 taxiways including a full parallel taxiway to Runway 5-23 (Taxiway A) and a partial parallel taxiway to Runway 14-32

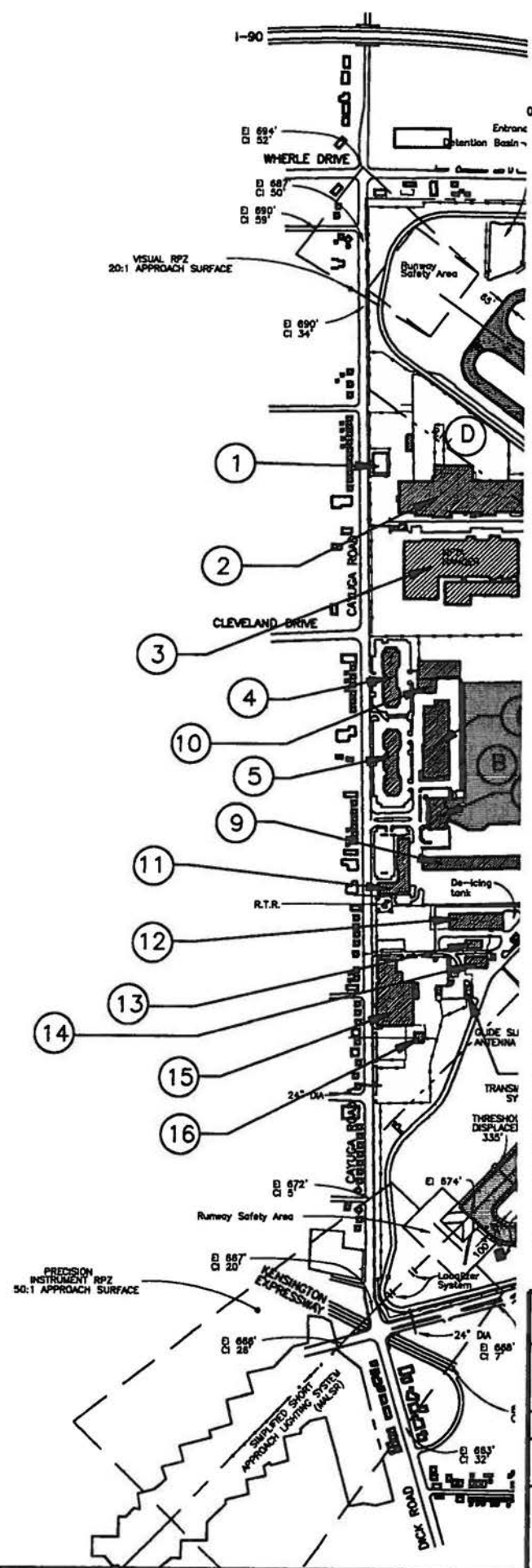
(Taxiway D). Taxiway D extends from Runway 14, crosses Runway 5-23 and connects with Taxiway A at the northeast corner of the air carrier apron. In addition, there are three holding bays, located near the ends of Runway 5 (4,600 square yards), Runway 23 (7,500 square yards), and Runway 32 (3,900 square yards). The taxiway system is configured to provide aircraft access between the airfield and the various landside functional components including the passenger terminal facilities, air cargo facilities, general aviation area, Sierra Technologies, and Calspan. BNIA's runway and taxiway system are summarized in Table 2.3 and illustrated in Figure 2.3.

**Table 2.3 – SUMMARY OF EXISTING AIRSIDE FACILITIES**

Runway/Taxiway	Length	Width	Surface	Lighting
Runway 5/23	8,102 feet	150 feet	Asphalt	MALSR, ALSF-2, HIRL, TDZ, centerline lights
Runway 14/32	5,373 feet	150 feet	Asphalt	MIRL, VASI, REIL
Taxiway A	8,500 feet	75 feet	Asphalt	MITL
Taxiway B	290 feet	75 feet	Asphalt	MITL
Taxiway C	290 feet	95 feet	Asphalt	MITL
Taxiway D	4,400 feet	75 feet	Asphalt	MITL
Taxiway E (1)	375 feet	100 feet	Asphalt	MITL
Taxiway E (2)	1,300 feet	75 feet	Asphalt	MITL
Taxiway F	400 feet	75 feet	Asphalt	MITL
Taxiway G	400 feet	100 feet	Asphalt	MITL
Taxiway H	400 feet	75 feet	Asphalt	MITL
Taxiway J	800 feet	75 feet	Asphalt	MITL
Taxiway L	250 feet	75 feet	Asphalt	MITL
Taxiway M (1)	800 feet	75 feet	Asphalt	MITL
Taxiway M (2)	600 feet	150 feet	Asphalt	MITL
Taxiway P (1)	200 feet	65 feet	Asphalt	MITL
Taxiway P (2)	1,900 feet	50 feet	Asphalt	MITL
Taxiway P1	100 feet	50 feet	Asphalt	MITL
Taxiway P2	100 feet	50 feet	Asphalt	MITL
Taxiway Q (1)	185 feet	75 feet	Asphalt	MITL
Taxiway Q (2)	950 feet	50 feet	Asphalt	MITL
Taxiway R	185 feet	75 feet	Asphalt	MITL
Sierra Taxiway	800 feet	50 feet	Asphalt	MITL
<b>Blast Pad</b>	<b>Area</b>			
RWY 5 Blast pad	3,300 s.y.		Asphalt	N/A
RWY 23 Blast pad	3,300 s.y.		Asphalt	N/A
RWY 32 Blast pad	2,550 s.y.		Asphalt	N/A

**LEGEND**

- ① - FIRE PROTECTION RESERVOIR
- ② - 485 CAYUGA ROAD (SIERRA RESEARCH)
- ③ - 455 CAYUGA ROAD (NFTA HANGAR)
- ④ - 305 CAYUGA ROAD
- ⑤ - 303 CAYUGA ROAD
- ⑥ - FEDERAL EXPRESS
- ⑦ - USPS AIRMAIL FACILITY
- ⑧ - AIRPORT RESCUE & FIRE FIGHTING FACILITY
- ⑨ - AIR CARGO FACILITY
- ⑩ - AIR CARGO FLEX BUILDING
- ⑪ - 301 CAYUGA ROAD
- ⑫ - MAINTENANCE GARAGE
- ⑬ - MAINTENANCE BUILDING
- ⑭ - GROUND SUPPORT EQUIPMENT BUILDING
- ⑮ - 247 CAYUGA ROAD
- ⑯ - ALAMO SERVICE BUILDING
- ⑰ - SALT STORAGE BUILDING
- ⑱ - NFTA FIELD OFFICE
- ⑲ - TERMINAL BUILDING
- ⑳ - PARKING STRUCTURE
- ㉑ - BAC (FORMERLY WESTINGHOUSE) PROPERTY
- ㉒ - REMOTE FUEL FARM
- ㉓ - FLYING TIGERS RESTAURANT
- ㉔ - NWS OBSERVATORY
- ㉕ - FAA CONTROL TOWER
- ㉖ - NWS WEATHER FORECAST OFFICE
- ㉗ - 195B HOLTZ ROAD
- ㉘ - 585 AERO DRIVE
- ㉙ - 195A HOLTZ ROAD
- ㉚ - FUEL FARM CONTROL BUILDING
- ㉛ - 235 AERO DRIVE
- ㉜ - NFTA-FMD/DOCUMENT STORAGE BUILDING
- ㉝ - AUTOMATED FLIGHT SERVICE BUILDING
- ㉞ - PRIOR FBO BUILDING
- ㉟ - PRIOR HANGAR 1
- ㊱ - DE-ICING FACILITY
- ㊲ - PRIOR HANGAR 2
- ㊳ - CALSPAN



**BUFFALO NIAGARA INTERNATIONAL AIRPORT  
ERIE COUNTY, NEW YORK**

**EXISTING AIRSIDE FACILITIES**

SCALE: AS SHOWN      DATE: 6/98      FIGURE: 2.3

 **McFARLAND-JOHNSON, INC.**



**BUFFALO NIAGARA  
INTERNATIONAL AIRPORT**

### 2.2.2 Aprons

There are five aircraft parking aprons and four remote aircraft parking positions BNIA (see Figure 2.3). The largest apron is the Main Terminal Apron (193,800 square yards). Other aircraft parking aprons include the 87,600 square yard Air Cargo Apron; the 31,000 square yard General Aviation Apron; the 6,300 square yard Calspan Apron; and the 28,350 square yard apron associated with Sierra Technologies. The four remote parking positions are located adjacent to Taxiway M. A listing of the various aprons at BNIA is provided in Table 2.4.

Designated Rest Over Night (RON) areas for airline aircraft are located on the west apron, and north of Taxiway K on the east apron. Rest Overnight Positions are located off Taxiway M near the air cargo facility.

**Table 2.4 – SUMMARY OF EXISTING APRON FACILITIES**

Apron	Total Area (square yards)	Surface
Main Terminal Apron	193,800 s.y.	Asphalt
Air Cargo Apron	87,600 s.y.	Asphalt
General Aviation Apron	31,000 s.y.	Asphalt
Sierra Apron	28,350 s.y.	Asphalt
Calspan Apron	6,300 s.y.	Asphalt
RWY 5 Holding Bay	4,600 s.y.	Asphalt
RWY 23 Holding Bay	7,500 s.y.	Asphalt
RWY 32 Holding Bay	3,900 s.y.	Asphalt

### 2.2.3 Aircraft Hangar Facilities

Aircraft storage facilities include a total of four separate hangar buildings associated with the General Aviation, Calspan and Sierra Technologies facilities. Size and use of hangars are detailed in Table 2.5 below. All hangars have been well maintained and are in good condition.

**Table 2.5 – BNIA HANGAR FACILITIES**

HANGAR	SIZE	USE
Prior Aviation Hangar 1	25,500 s.f.	Aircraft Storage/Vehicular Maintenance
Prior Aviation Hangar 2	29,900 s.f.	Aircraft Storage and Aircraft Maintenance
Sierra Technologies Hangars	235,000 s.f.	Private Aircraft Storage/Aviation Research
Calspan Hangar	20,965 s.f.	Private Aircraft Storage

### 2.2.4 Terminal Building

NFTA has recently completed the construction of a new 275,898 square foot terminal building, and associated parking and access road facilities. The new terminal has consolidated all passenger terminal operations into one facility. It serves as a replacement for both the East and West Terminals, which have been subsequently demolished. The new facility was opened for passenger service in November of 1997. An expansion of the new terminal, off the west end of the West Concourse, has recently been initiated. This will add 38,200 square feet of space including two (2) new airline gates and a new Federal Inspection Station. This expansion is scheduled for completion in late 1999. Figure 2.4 illustrates the general configuration of the new terminal facilities and current expansion.

The terminal building presently has fifteen gates and sixteen hold rooms; the ongoing expansion will soon raise that total to seventeen gates. Also within the building are three security checkpoints, an audible and visual alarm system, and an emergency blue intercom system. There are six public elevators and two escalators for access to the second floor. Additionally, the terminal is equipped with eight flight and baggage information displays, six on the concourse and two in the arrival area. Several concessions and retail businesses are housed in the terminal building, including nine restaurants, a barber shop, and a gift store. Other services provided in the terminal building include travel services, automated teller machines (ATM), public telephones, luggage carts, airport lost and found, rental car agencies, limousine service, taxis, hotel shuttles, and public transit services. Table 2.6 provides a tabulation of floor space allocations within the new terminal building.

### 2.2.5 Parking Facilities

Terminal parking facilities include the new 450,000 square foot parking structure, and a long-term parking lot providing approximately 860 parking spaces. The parking structure provides approximately 1300 parking spaces on three levels. The first level includes 400 rental car spaces and 70 leased spaces. The second and third levels provide 406 and 475 parking spaces, respectively.

### 2.2.6 Rental Car Facilities

There are five car rental agencies located at BNIA. Avis, Budget, Hertz, and National car rentals are all located on the first level of the parking structure and are allocated 100 parking spaces each. Alamo Car Rental facilities are located on the west side of the airfield along Cayuga Road, and include a service building and a 25 space parking lot.

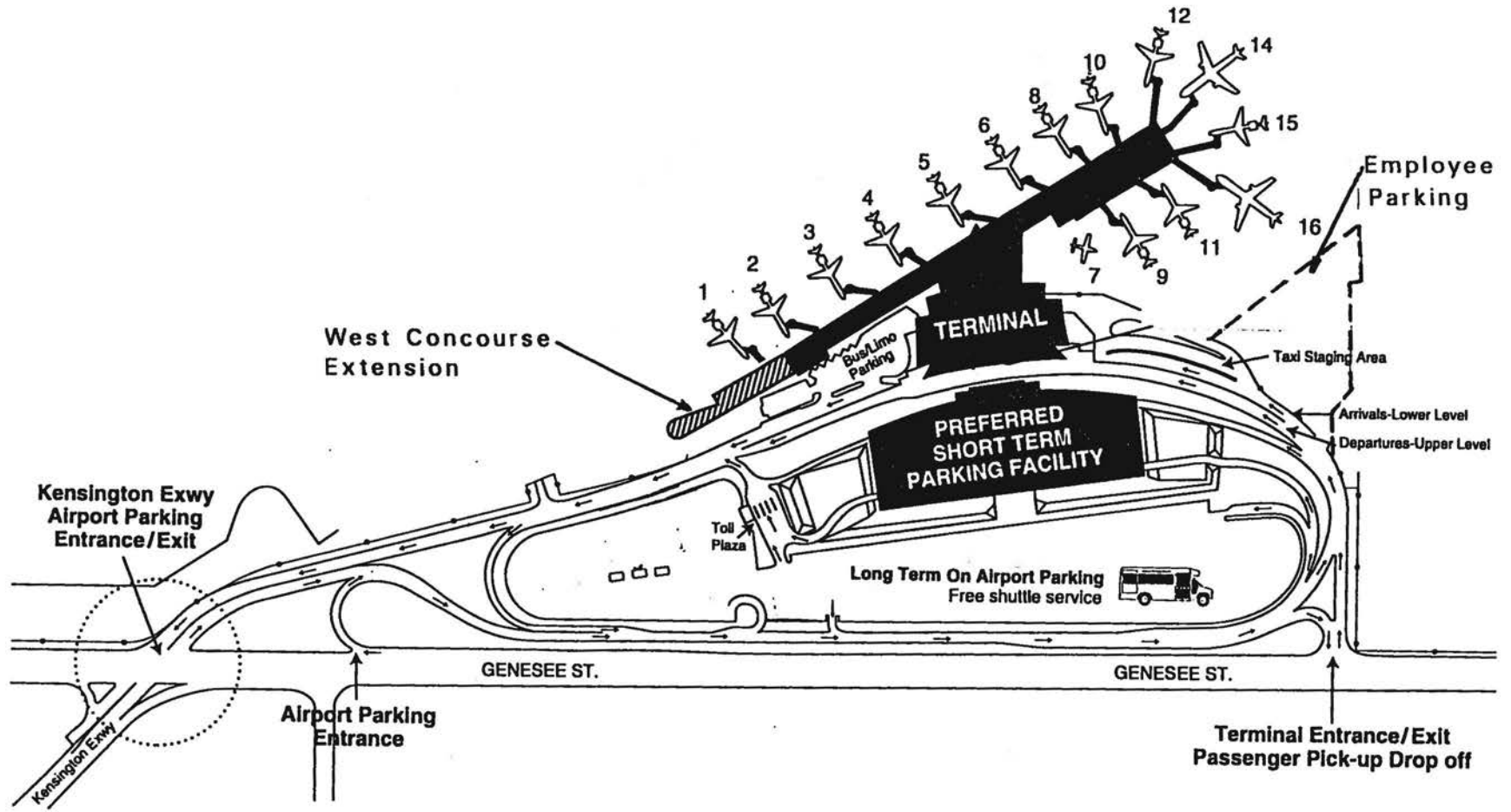
### 2.2.7 Air Cargo Facilities




BNIA serves as an important distribution center for air cargo traffic throughout the western New York region. Air cargo consists of freight, including express deliveries, and mail. Currently five all-cargo airlines operate at BNIA. These include United Parcel Service, Federal Express, Airborne Express, Superior Cargo Services and Emery Worldwide. Emery Worldwide has a contract with the US Postal Service and utilizes its aircraft to transport USPS priority and express mail in and out of the airport. Some of the passenger airlines including

American, United, Delta, Continental, Northwest and USAirways transport cargo in the belly-holds of their aircraft Superior Cargo Services, Inc. handles cargo activities for Delta, Continental, and Northwest

**Table 2.6 – TERMINAL FACILITIES**

	Square Area	Percentage
<b>Airline Functions</b>		
Airline Ticket Offices	16,395 s.f.	6 %
Airline Ops./Maint./Storage	41,538 s.f.	15 %
Airline Curb Check	1,414 s.f.	1 %
Departure Lounges/Hold Rooms	28,778 s.f.	10 %
Baggage Claim	53,373 s.f.	19 %
<b>Subtotal Airline Functions</b>	<b>141,498 s.f.</b>	<b>51 %</b>
<b>Concession Space</b>		
Food/Beverage (CA-1)	19,876 s.f.	7 %
ITA	177 s.f.	.3 %
Business Counter	987 s.f.	.5 %
Information Counter	84 s.f.	.2 %
USAir Club	2,891 s.f.	1 %
<b>Subtotal Concession Space</b>	<b>24,015 s.f.</b>	<b>9 %</b>
<b>Secure Public Area</b>		
Security	1,024 s.f.	.4 %
Circulation	38,065 s.f.	14 %
Public Restrooms	4,442 s.f.	1.6 %
<b>Subtotal Secure Public Area</b>	<b>43,531 s.f.</b>	<b>16 %</b>
<b>Non-Secure Public Areas</b>		
Circulation	35,115 s.f.	12.7 %
Restrooms	1,492 s.f.	.3 %
<b>Subtotal Non-Secure Pub. Areas</b>	<b>36,607 s.f.</b>	<b>13 %</b>
<b>Non-Public Area</b>		
Airport Operations	8,169 s.f.	3 %
Mechanical/Electrical	16,440 s.f.	6 %
Police	515 s.f.	.2 %
Miscellaneous	5,123 s.f.	1.8 %
<b>Subtotal Non-Public Area</b>	<b>30,247 s.f.</b>	<b>11 %</b>
<b>TOTAL</b>	<b>275,898 s.f.</b>	<b>100 %</b>



<b>BUFFALO NIAGARA INTERNATIONAL AIRPORT</b> ERIE COUNTY, NEW YORK		
<b>TERMINAL AREA</b>		
SCALE: N/A	DATE: 6/98	FIGURE 2.4
 <b>McFARLAND-JOHNSON, INC.</b>		
		

The air cargo area consists of four buildings located along the west side of the airport property, north of Runway 5/23 and south of Runway 14/32. A 66,250 square foot building houses Superior Cargo Services and Airborne Express, as well as the air cargo facilities associated with some of the passenger carriers. The US Postal Service has a 26,000 square foot facility, and Federal Express occupies a 74,000 square foot facility, both in the air cargo area at BNIA. The recently constructed “flex” air cargo building provides an additional 28,000 square feet of floor space.

Aircraft access to the air cargo apron is provided by Taxiway M. Automobile and truck access to the air cargo facilities is via Cayuga Road. The air cargo apron provides approximately 86,000 square yards of area for aircraft parking. Although there are only four aircraft parking spaces marked on the apron, there is space to park approximately ten narrow-body aircraft. Prior Aviation personnel are responsible for assigning parking positions for all airlines. In addition, there are four remote parking areas off of Taxiway M.

### 2.2.8 Airport Aviation Fuel System Facility

The aviation fuel storage system facility is located on the north side of the airfield and includes a small 2,350 square foot control building and five above-ground fuel storage tanks. Currently, the airport has three 225,000 gallon storage tanks for Jet-A fuel, one 42,000 gallon storage tank for AvGas, and one 20,000 gallon storage tank for gasoline. Based on the current levels of demand, the storage capacity at BNIA provides about an eight day fuel supply

The remote fuel dispensing facility is located on the south side of the airfield near the Westinghouse complex. A 12-inch distribution line connects the fuel dispensing facilities to the storage facilities on the north side of the airport. The fuel facility is owned and maintained by NFTA. However, Prior Aviation is responsible for fuel sales and delivery to the airlines and general aviation users.

### 2.2.9 Airport Rescue and Fire Fighting (ARFF) Facility

The AARF is responsible for the safety and protection of the public, and the employee staff of BNIA. This includes all fire protection and prevention, hazardous material response and control, airport communications (radio and telephone), employee safety training, and all emergency medical responses. The facility is located in a two story brick building which is east of the cargo complex and proximate to Taxiway “M” which provides rapid access to all areas of the airfield and airport complex.

The station maintains a fleet of crash and rescue vehicles capable of meeting the FAA standard for Index D certified airports as follows:

- 2 - 3,000 gallon Oskosh T-3000 crash trucks,
- 1 – 2,500 gallon Emergency One Aerial equipped crash truck,
- 1 – 1,000 gallon Rapid intervention vehicle which is configured to perform as a Class A pumper,





- 1 – Mass Casualty Response Unit equipped to provide EMS supplies and treatment for up to 100 patients,
- 1 – Command Vehicle.

The station is manned 24 hours per day, seven days per week with a minimum staff level of seven employees per shift. Recall and Community Mutual Aid agreements and procedures are in place for all emergencies as required. All firefighters and supervisory personnel are trained to basic FAA required standards and above, including New York State certification at the basic EMT level with defibrillation certification.

#### 2.2.10 Airfield Maintenance Facility

BNIA's Airfield Department is responsible for maintaining optimal airside operating and safety conditions for airport users on a year-round basis. During the winter season, snow and ice removal operations on the airport's runways, movement areas, roadways (airside and landside), and parking lots remain top priorities of the department. The Airfield Department is recognized as a leader in snow and ice removal, and has been the recipient of the American Association of Airport Executives' Post Balchen annual award (for outstanding achievement in Airport Snow and Ice Control) on numerous occasions, most recently for the 1995/96 winter season.

The Airfield Maintenance Facility is located on the west side of the airfield along Cayuga Road, south of the Air Cargo area. The buildings includes a maintenance office building (3,750 square feet), a heated maintenance garage (34,400 square feet), an equipment storage building (5,100 square feet), and a salt storage building (2,200 square feet). The maintenance garage houses the airfield equipment and also includes three service bays, a wash bay, a grit storage area, a mechanical room, a general store, a tool room, a paint storage area, and a bathroom. Currently, the garage is not large enough to house all of the airfield maintenance equipment, and many of the snow plows, trucks, and other maintenance vehicles are stored outside.

The department consists of 27 employees and is staffed 24 hours a day, seven days per week, year-round. In addition to its fleet of specialized vehicles, the airport utilizes a SCAN system, which monitors weather as well as pavement surface temperature and identifies contaminants, and the SAAB friction tester which provides computerized measurements of pavement surface friction.

The department has a 120 vehicle fleet of snow removal and other ground maintenance vehicles. Forty-two of these are dedicated exclusively to snow removal. They include:

- 8 – 22-foot snow plows,
- 8 – 16-foot high-speed runway brooms,
- 3 – loaders with 22-foot ramp plows,
- 5 – 3,000 tons-per-minute snow blowers.

In addition to maintaining its own fleet, the department also maintains the airport's ARFF fleet vehicles.



### 2.2.11 De-Icing Facility

Federal Aviation Regulations (FAR) prohibit takeoff when snow, ice, or frost is adhering to wings, propellers, control surfaces, engine inlets, and other critical surfaces of the aircraft. This rule is the basis for the *clean aircraft concept*. It is imperative that takeoff not be attempted in any aircraft unless the pilot-in-command (PIC) has ascertained that all critical components of the aircraft are free of frozen contaminants. As a result, conditions which necessitate deicing occur often in a cold weather region like Buffalo.

There are three areas on the airfield where deicing operations take place: the passenger terminal apron, the air cargo apron, and the general aviation apron. These operations involve spraying the aircraft with a glycol anti-freeze liquid, which is a very effective de-icing agent but is regarded as an environmental contaminant. The spent glycol solution is removed from the aprons by vacuum sweeper vehicles, a centralized storage area for spent glycol was implemented by NFTA southwest of the new terminal and put into operation in late 1998.

Control of spent glycol is also being achieved through modifications to the drainage system. Included in construction of the new passenger terminal building and aircraft parking apron, are a series of 2-valved inlets. During deicing operations, this system allows glycol to run off into these inlets where it is piped to four 50,000 gallon spent glycol storage tanks located south of Runway 5. From these tanks, the glycol is allowed to discharge at a maximum rate of 27,000 gallons per day into the Cheektowaga municipal treatment system, and is treated at the Buffalo Sewer Authority's treatment plant. The deicing facilities described above are depicted in Figure 2.5. The glycol collection system will be in operation for the first time during the 1998/1999 winter season. In past years, deicing fluid was allowed to run into the storm sewer system, as BNIA was not required to reclaim it. For the upcoming winter season, this new system will likely be used in combination with vacuum sweeping.

The air cargo apron is not presently connected to the spent storage tanks. Therefore, spent deicing fluid is vacuum swept from valved catch basins, and deposited into the spent tanks. During normal conditions these catch basins discharge to storm sewers. During periods of deicing, the catch basins valves are closed thus allowing the spent glycol to be contained and vacuum swept. Deicing fluid used in the general aviation area (Prior Aviation) is also vacuum swept.

In addition to the glycol deicing, the General Aviation (GA) area has a radiant energy deicing system. Completed in March, 1997, this system is a thermal rather than a chemical process. General aviation, corporate, military training aircraft and some commuter aircraft successfully used the facility during the 1997/1998 winter season, thereby reducing their need for conventional glycol spraying. The facility can accommodate aircraft up to the size of an ATR 72. The radiant energy process takes approximately 30 - 45 seconds to treat an aircraft for frost, and with heavy icing conditions, the process takes approximately 3 - 5 minutes.

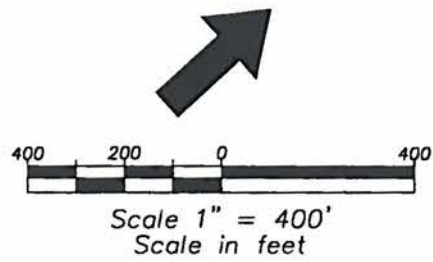
4-50,000 Gal.  
SPENT GLYCOL  
STORAGE TANKS

DEICING PIPING  
SYSTEM (TYP)

2 VALVED  
INLET (TYP)

PASSENGER  
TERMINAL


AUTO PARKING  
GARAGE



BUFFALO NIAGARA INTERNATIONAL AIRPORT  
ERIE COUNTY, NEW YORK

PASSENGER TERMINAL  
APRON DEICING FACILITIES

SCALE: AS SHOWN | DATE: 6/98 | FIGURE: 2.5

 MCFARLAND-JOHNSON, INC.



  
BUFFALO NIAGARA  
INTERNATIONAL AIRPORT

2.2.12 Airport Security

The Niagara Frontier Transportation Authority (NFTA) Police provide airport security services. In conjunction with recent terminal renovations, the NFTA Police have moved their base of operations to 247 Cayuga Road where they station 23 officers. All of the NFTA police training is done at the airport facility. They are in charge of all of the security at the airport including gate checks.

2.2.13 Other Airport Buildings

There are numerous ancillary buildings at BNIA that are leased to a wide variety of tenants. These buildings are shown in Figure 2.3 and are described below.

**Air Cargo Complex** - The entire air cargo complex is leased to Cimimelli Development Corporation and is sublet to various commercial tenants. This complex includes six buildings:

- Air Cargo Building (Freight House)      66,250 square feet
- USPS Airmail Facility                      26,000 square feet
- Federal Express Building                 74,000 square feet
- 301 Cayuga Road                            35,000 square feet
- 303 Cayuga Road                            39,200 square feet
- 305 Cayuga Road                            36,300 square feet
- Flex Air Cargo Building                    28,000 square feet

**General Aviation Area** – The general aviation area at BNIA is located on the north side of the airfield. In addition to the two hangars and the radiant heat deicing facility that were discussed in previous sections, the general aviation area includes a 9,000 square foot general aviation administration building that is leased to Prior Aviation. This building is in good condition and includes administrative offices, flight school classrooms, a pilots lounge, and operation space.

**485 Cayuga Road** - This 238,600 square foot building is leased to Sierra Technologies, Inc., an aviation research and development company. The building consists of office space, research labs, and an aircraft hangar.

**455 Cayuga Road** - This 198,000 square foot building, which is owned by NFTA, is the old Curtiss-Wright aircraft hangar and manufacturing facility. This building is in very poor condition and is no longer occupied. Currently NFTA is in the process of exploring potential redevelopment opportunities for this property.

**247 Cayuga Road** - This 82,600 square foot facility houses the NFTA Police, as well as a variety of commercial tenants, listed below:

- Acts Testing Labs
- CA-1 Vending Services
- Corporate Express

- Dubois Foods
- Feel-Rite Health Food Stores
- Independent Taxi Association
- Kirchmeyer & Wilhelm
- Klauk, Lloys, & Wilhelm
- Learning Disabilities Association
- MultiSource Funding
- O'Brien Kreitzberg
- Transportation Displays, Inc.

**NFTA Field Office** - This 3,750 square foot facility includes office space for airport personnel including the airfield superintendent.

**National Weather Service Facilities** - The National Weather Service (NWS) facilities at BNIA include: an 1,800 square foot observatory; a 6,800 square foot forecast office; and a radar tower. Services provided by the NWS at BNIA include weather forecasting for the Buffalo, Rochester, and Syracuse areas. The center collects and stores climatological data for all areas in and around these major cities. All of the NWS data is made available to the FAA control tower via telephone lines.

**Flight Service Station** - FAA's flight service station is located in an 11,500 square foot building on Aero Drive, immediately to the east of the general aviation area. Services provided by the Flight Service Station include pilot weather briefing, flight planning, and search and rescue services.

**NFTA Document Storage** - NFTA's document storage building is a 25,800 square foot structure located on Aero Drive immediately to the east of the FAA Flight Service Station.

**O'Toole's Building** - This 12,100 square foot office and storage building. It is used by the Painter's Union and located at 585 Aero Drive.

**235 Aero Drive** - This is a 16,000 square foot unoccupied commercial building that is currently available for lease.

**Flying Tigers Restaurant** - Featuring a commanding view of the airfield, this World War II theme restaurant is a popular dining choice for business travelers, tourists, and area residents. It is located south of Aero Drive and east of Taxiway A.

**195 A Holtz Road** - This building contains 26,600 square feet of unoccupied office space. NFTA is uncertain as to the future of this building.

**195 B Holtz Road** - This building contains 9,000 square feet of office space and is currently unoccupied. Like 195 A Holtz Road, alternatives include leasing space or demolishing it for future developmet.

**Westinghouse (Buffalo Airport Center) Property** - This property is located immediately to the southeast of Runway 32 and includes 1,626,000 square feet of abandoned industrial building space. NFTA anticipates acquisition of the property in early 1999. Upon its acquisition, NFTA plans on demolishing the buildings to provide improved runway safety areas, and to also pursue compatible development opportunities.

### **2.3 Air Traffic Control, Airspace, and Nav aids**

#### **2.3.1 Air Traffic Control**

Air traffic control in the United States is managed by three primary types of facilities: Air Route Traffic Control Centers (ARTCC), Terminal Radar Approach Control (TRACON), and airport traffic control towers (ATCT). A brief overview of these facilities and how they control flight to and from BNIA is provided in the following paragraphs.

**ARTCC** - Enroute airspace in the United States is managed by a series of Air Route Traffic Control Centers located in major cities across the United States. Enroute airspace in the vicinity of BNIA is controlled by the Cleveland Center. Commercial airlines and other aircraft flying under instrument flight rules in the vicinity of BNIA, that are not under the control of military or terminal facilities, are monitored by the Cleveland Center. This center controls an aircraft's route of flight between airports, and provides separation services, and traffic and weather advisories.

**TRACON** - Aircraft arriving to or departing from BNIA and other airports surrounding BNIA are controlled by the Buffalo TRACON. The purpose of the TRACON is to separate and sequence arriving and departing flights. The Buffalo TRACON controls airspace within an area of approximately 40 nautical miles of BNIA up to an altitude of 16,000 feet. The TRACON facility is located at the base of the Buffalo Air Traffic Control Tower.

**Air Traffic Control Tower** - The air traffic control tower at BNIA is located in the southeast quadrant of the airport, north of the old Westinghouse plant. Access to the tower is provided via Holtz Road. The control tower and associated TRACON is a modern facility that was opened in 1994. The area controlled by the ATCT usually encompasses the airport traffic area. The airport traffic area extends horizontally to five statute miles from the airport and upward to an altitude of 3,000 feet. Controllers in the tower are responsible for separating aircraft, sequencing aircraft in the traffic pattern, expediting arrivals and departures, separating aircraft on the ground, and providing clearance and weather information to pilots.

#### **2.3.2 Airspace Structure**

Airspace in the United States is classified into the following categories: controlled, uncontrolled, special use, and other. A brief description of these categories and how they apply to airspace in the vicinity of BNIA is provided in the following paragraphs.

**Controlled Airspace** - Controlled airspace is classified as Class A, B, C, D, and E. Each of these classes has different dimensions, purposes and requirements. Class A airspace



covers the entire United States and encompasses all airspace from 18,000 feet to 60,000 feet above BNIA. Aircraft flying in Class A airspace must operate under instrument flight rules.

Air traffic control clearance is required prior to operating an aircraft within either Class B or Class C airspace. All aircraft that have received such clearance are provided with separation services by air traffic control. Class B and Class C airspace define areas inside which all aircraft are subject to certain operating, pilot, and equipment rules. Class B airspace is usually reserved for areas surrounding the nation's busiest airports. There is no Class B airspace in the vicinity of BNIA.

BNIA is located in the center of an area defined as Class C airspace. The Class C airspace surrounding BNIA resembles a cylinder with a radius of five nautical miles, extending from the ground to an altitude of 2,200 feet above ground level (AGL). This cylinder is topped by another, larger, cylinder with a radius of ten nautical miles which extends to an altitude of 4,700 feet AGL. Figures 2.6 and 2.7 illustrate the airspace surrounding the airport.

The only Class D airspace in the vicinity of BNIA is associated with Niagara Falls International Airport, which is located 14 nautical miles northwest of BNIA. This airspace extends five nautical miles in all directions from the center of the Niagara Falls airfield and extends upward to an altitude of 3,100 feet. Aircraft operating in Class D airspace must maintain radio contact with the appropriate control facility while operating in the airspace. Pilots must also abide by certain operating, pilot, and equipment rules while operating within Class D airspace.

Class E airspace includes all the airspace that is not classified as A, B, C or D. Class E airspace has no special restrictions with respect to pilot or aircraft equipment rules. However, it is controlled airspace, meaning that aircraft can be provided with air traffic control services.

**Uncontrolled Airspace** - Class G airspace is uncontrolled airspace. It consists of all airspace that is not classified as A, B, C, D, or E.

**Special Use Airspace** - Special use airspace consists of Prohibited and Restricted Areas, Warning Areas, Military Operation Areas, Alert Areas, and Controlled Firing Areas. There are no prohibited areas in the vicinity of BNIA. However, there are several areas of restricted airspace. These include the following:

- CYA-518 located over Niagara Falls, Ontario
- CYA-513 located 25 nautical miles west of BNIA  
(a parachute jumping area)
- R-5203 located 41 nautical miles northeast of BNIA

There are no Warning Areas, Alert Areas, or Controlled Firing Areas. However, there is one Military Operation Area (MOA) in the vicinity of BNIA. This MOA, Misty 1, is located 24 nautical miles northeast of the airport. The Misty 1 MOA extends from 4,000 feet to

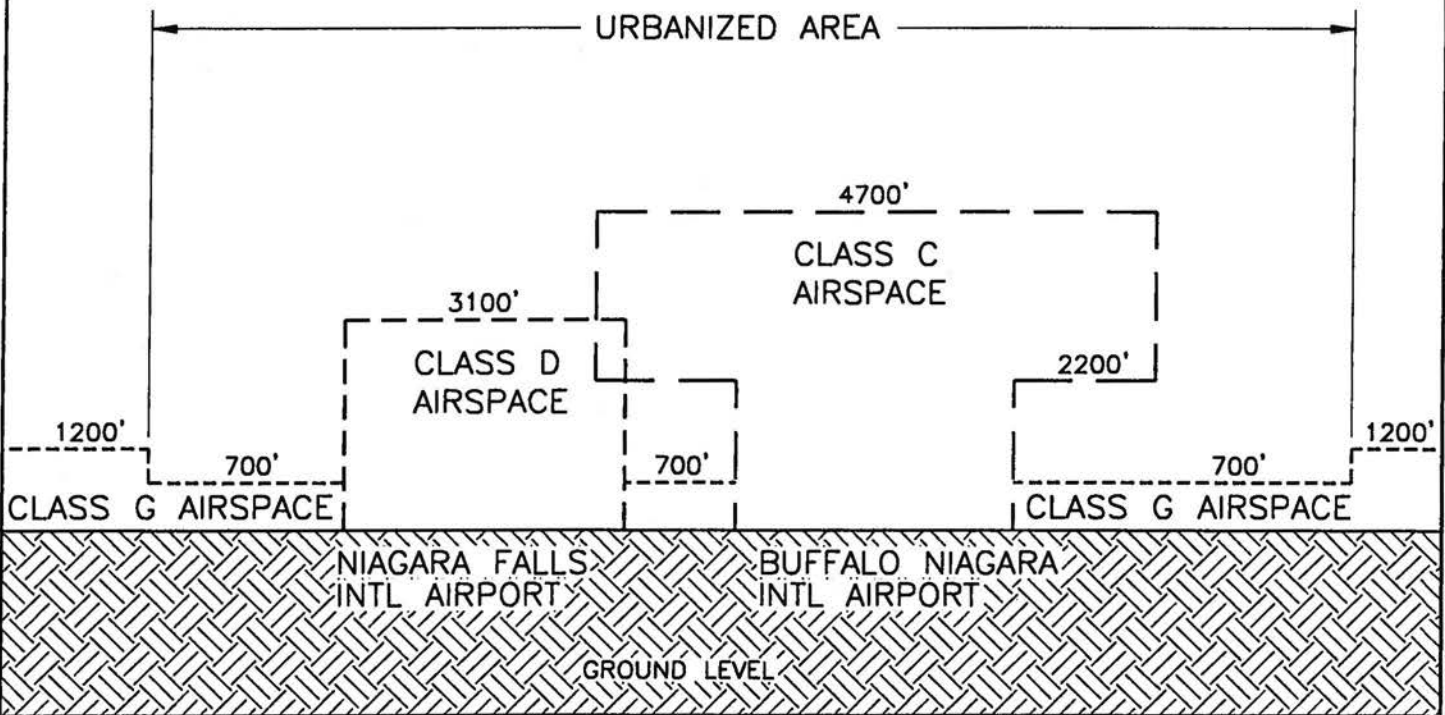


CLASS A  
AIRSPACE

18000'

CLASS E  
AIRSPACE

URBANIZED AREA



BUFFALO NIAGARA INTERNATIONAL AIRPORT  
ERIE COUNTY, NEW YORK

FAA AIRSPACE CLASSIFICATION

SCALE: N/A

DATE: 12/98

FIGURE: 2.6



McFARLAND-JOHNSON, INC.

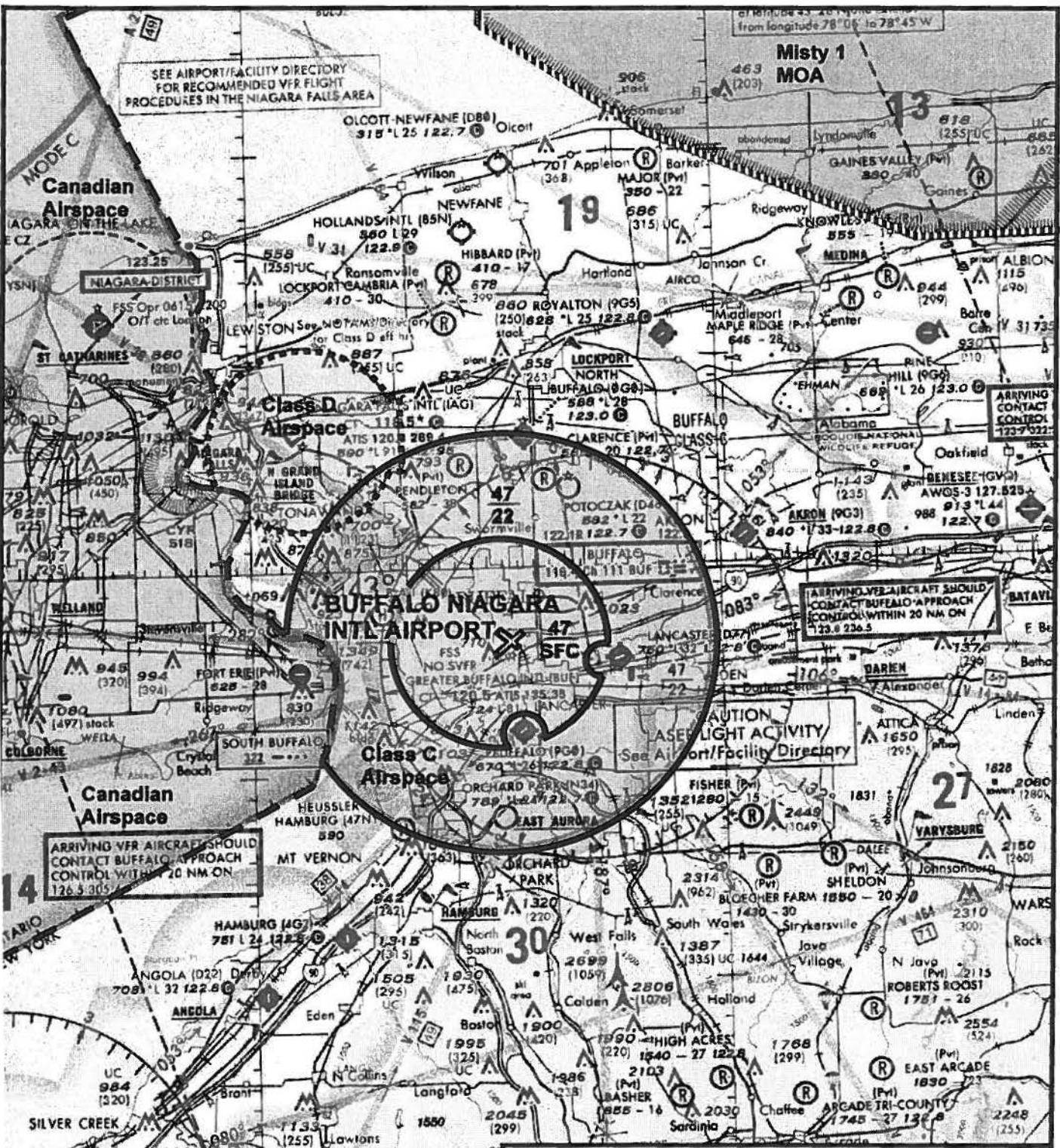


BUFFALO NIAGARA  
INTERNATIONAL AIRPORT



SEE AIRPORT/FACILITY DIRECTORY FOR RECOMMENDED VFR FLIGHT PROCEDURES IN THE NIAGARA FALLS AREA

of latitude 43° 20' 00" N from longitude 78° 00' to 78° 45' W



**BUFFALO NIAGARA INTL AIRPORT**  
**47 SFC**  
 FSS NO SVFR  
 GREATER BUFFALO INTL-BUFF  
 120.5 ATIS 135.38  
 124.18 LANCASTER  
 124.18 LANCASTER

ARRIVING VFR AIRCRAFT SHOULD CONTACT BUFFALO APPROACH CONTROL WITHIN 20 NM ON 126.3-305


CAUTION  
 AERIAL LIGHT ACTIVITY  
 See Airport/Facility Directory

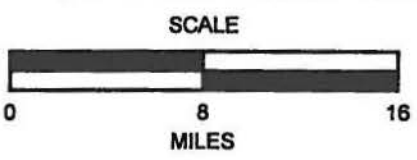
ARRIVING VFR AIRCRAFT SHOULD CONTACT BUFFALO APPROACH CONTROL WITHIN 20 NM ON 126.3-305

**BUFFALO NIAGARA INTERNATIONAL AIRPORT**  
**ERIE COUNTY, NEW YORK**

**REGIONAL AIRSPACE**

SCALE: AS SHOWN    DATE: 6/98    FIGURE: 2.7

 **McFarland-Johnson, Inc.**



**BUFFALO NIAGARA INTERNATIONAL AIRPORT**

18,000 feet and is active from 08:00 to 22:00 Monday through Friday and 08:00 to 16:00 Saturday and Sunday.

**2.3.3 Terminal Airspace**

Within the terminal airspace surrounding BNIA, a number of published flight procedures affect how the majority of aircraft are operated. These procedures are described in the following paragraphs.

**SIDS** - BNIA has one standard instrument departure (SID). A SID is a pre-planned instrument flight rule published in graphical and text form to convey air traffic control information to pilots. A SID provides information for pilots to transition from terminal to the enroute airspace structure. At BNIA, the SID is named the Buffalo One Departure.

**Noise Abatement Procedures** - In addition to the published SID, BNIA has informal noise abatement procedures that affect the routing of arrivals and departures. These are published in the *Buffalo Tower Handbook*, which is the guide used by all air traffic control personnel. These procedures were designed to minimize overflights of residential areas in the vicinity of the airport and minimize nighttime noise events. The procedures consist of the three elements listed below:

- To the extent possible, the aircraft arrival flow should be planned to preclude aircraft on visual approaches from turning base leg prior to 5 miles from the airport.
- Departing aircraft should remain on runway heading to an elevation of 3,000' MSL before proceeding on course.
- Turbojet engine run-up shall not be approved between the hours of 11:00 p.m. and 6:00 a.m.

**2.3.4 Airspace Overlaps**

FAA Order 7480.1A, Guidelines for Airport Spacing and Traffic Pattern Airspace Areas, describes the airspace standards recommended to ensure safe and efficient VFR and IFR operations. These standards were used to identify areas of potential conflict where BNIA's airspace overlaps with other airports in the vicinity.

For instrument runways serving air carrier and jet aircraft, a rectangular area with the following dimensions should be reserved:

Approach end:	15 miles
Departure end:	10 miles, plus a 5-mile buffer
Width:	10 miles

Ideally, this area should not overlap with the area created by instrument runways at other airports. Currently the BNIA airspace overlaps with that of Niagara Falls



International Airport, as well as several smaller airports including the Lancaster and Buffalo Airfields. However, the air traffic control system at BNIA is well equipped to handle any potential conflicts in the foreseeable future.

### 2.3.5 Navigational Aids

Navigational aids (NAVAIDs) are any electronic or visual devices, airborne or on the ground, which provide point-to-point guidance information or position data to aircraft in flight. All local traffic is controlled by the Air Traffic Control Tower (ATCT), which is operational 24 hours per day. BNIA has several electronic and visual navigational aids that pilots use to locate, navigate to, and land at the airport.

Currently, precision approaches are available on Runways 5 and 23; both are equipped with a Category I Instrument Landing System (CAT-I ILS). A CAT I approach provides pilots with a decision height of 200 feet and a runway visual range of approximately 1,800 feet. An ILS provides horizontal and vertical guidance to a runway end, which allows pilots to land an aircraft when visual navigation is limited.

The electronic components that comprise the ILS are the localizer, glide slope, outer marker, and middle marker. The localizer signal is used to establish and maintain the aircraft's horizontal position until visual contact confirms the runway alignment and location. The glide slope is an electronic transmitter that emits signals used to establish and maintain the aircraft's descent rate until a pilot can visually confirm the runway alignment and location. The outer marker radiates a signal that marks the point at which glide slope altitude is verified or at which descent without glide slope is initiated. The outer marker beacon for the ILS approach to Runway 5 is located 4.8 nautical miles from the runway threshold. The outer marker beacon for the ILS approach to Runway 23 is 4.4 nautical miles from the runway threshold. The middle marker radiates a signal that marks the decision point of a Category I (CAT I) approach. The middle marker beacon for the ILS approaches to Runways 5 and 23 are located 0.5 nautical mile from the respective runway thresholds.

Approach lighting systems are often used in conjunction with an ILS to assist pilots transitioning from instrument to visual conditions. Runway 5 is equipped with a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). A MALSR is an economy approach lighting system approved for CAT-I precision approaches. The Medium Intensity Approach Lighting System (MALS) portion is a series of steady burning light bars that begin at the runway threshold and extend outward 1,400 feet into the runway approach area along the extended centerline of the runway. The Runway Alignment Indicator Lights (RAIL) portion of the system is a series of single flashing lights that extend outward an additional 1,000 feet.

Runway 23 is equipped with a High Intensity Approach Lighting System with Sequenced Flashing Lights (ALSF-2). An ALSF-2 consists of a series of light bars that begin at the runway threshold and extend outward 2,400 feet into the runway approach area along the extended centerline of the runway. This type of approach lighting system is generally used in conjunction with a CAT II precision approach. As of June 1998, the FAA began installing a new end-fire antennae on Runway 23 that will provide the capability to conduct Category II approaches (i.e., a decision height of 100 feet and a runway visual range of approximately 1,300 feet). However, other facility improvements, such as the installation of an emergency power generator, will need to be



completed before a published Category II instrument approach procedure can be commissioned at the airport.

An Airport Surveillance Radar (ASR-9) facility is located east of the air cargo area. This radar system provides directional and distance information to air traffic controllers, who, in turn, use that information to provide sequencing and separation of aircraft.

To assist pilots in locating the airport at night and during periods of low visibility, an airport rotating beacon is located on the west side of the airfield, east of Taxiway Y and the air cargo area. The beacon emits alternating green and white flashes of light that pilots can identify in flight.

In addition to the rotating beacon, various visual landing aids are associated with each runway. Runways 14 and 32 are equipped with a 4-box Visual Approach Slope Indicator (VASI). A VASI system provides visual approach path and slope information. The system provides a definite white and red light projection pattern along the desired descent path to the touchdown point. Runway 32 is also equipped with Runway End Identification Lights (REILs). REILs are synchronized flashing lights located on either side of the runway threshold to provide rapid and positive identification of the end of a runway. REILs allow pilots to quickly identify runway ends when an airport is located in a concentration of other light sources, as is typically found in urban areas. Edge lights are used to outline usable operational areas of airports during periods of darkness and low visibility weather conditions. Runway 5/23 is equipped with High Intensity Runway edge Lights (HIRL), and Runway 14/32 is equipped with Medium Intensity Runway edge Lights (MIRL). Runway centerline and Touchdown Zone (TDZ) lighting systems are designed to facilitate landings, rollouts, and takeoffs. The TDZ lights are primarily a landing aid, while the centerline lights are used for both landing and taking off. Runways 5 and 23 have centerline lights and TDZ lights.

### 2.3.6 Instrument Approach Procedures

Instrument approaches to BNIA are made up of a series of predetermined maneuvers that position an aircraft to a point where the pilot can make a visual landing. Information relating to the existing instrument approaches at BNIA was obtained from *the U.S. Terminal Procedures - Northeast (NE)* Vol. 2 of 3, effective February 26, 1998. There are seven published instrument approach procedures to BNIA (see Appendix A). A listing of published approaches, including height above touchdown and visibility minimums is presented in Table 2.7.

Runways 5 and 23 have published Non-Directional Beacon (NDB) approaches. The NDB approaches provide guidance through the transmission of non-directional signals from which the aircraft receivers can calculate the bearing of the aircraft to the NDB. The NDB does not provide distance information. Precision approaches to Runways 5 and 23 are provided by an ILS (described earlier). These approaches allow pilots to land on the runway when the cloud ceiling is as low as 200 feet AGL, and the prevailing visibility is as low as 1800 feet.

At BNIA, pilots can use Global Positioning System (GPS) equipment to fly to the airport's existing VOR/DME RNAV (very high omnidirectional range/distance measuring equipment area navigation) non-precision instrument approach procedures to Runways 23 and 32, to the NDB non-precision instrument approach procedures to Runway 5, and the VOR non-precision



approach to the airport. The GPS approaches are provided by satellite navigation systems. GPS utilizes range measurements from 24 Navstar satellites to determine an aircraft’s position anywhere in the world. An aircraft must be properly equipped with antennas and receiver-processors in order to receive positioning, velocity and timing from the satellites. The VOR/DME RNAV approaches provide azimuth guidance only to the runway, and provide the pilot with a Minimum Descent Altitude (MDA). The MDA is the point at which the pilot must make a visual approach to the runway or execute the published missed approach procedures. In addition, a VOR or GPS-A non-precision approach is provided to BNIA. The VOR radiates azimuth information to the airport, but not to any particular runway. Once pilots make visual contact with the airport, they must perform a circling approach to land.

**TABLE 2.7 – PUBLISHED INSTRUMENT APPROACH LANDING MINIMUMS**

Designated Runway	Published Instrument Approach Procedure	Height Above Touchdown (Feet)	Visibility Minimum
5	ILS	200	1,800 feet
23	ILS	200	1,800 feet
23	VOR/DME RNAV and GPS	376	0.5 mile (Categories A, B, & C) 1.0 mile (Category D)
32	VOR/DME RNAV and GPS	506	1 mile (Categories A & B) 1.5 miles (Categories C & D)
Circling	VOR or GPS-A	496	1.0 mile (Categories A & B) 1.5 miles (Category C)
		556	2 miles (Category D)
5	NDB or GPS	514	0.75 mile (Categories A & B) 1 mile (Category C) 1.5 miles (Category D)
23	NDB	456	0.75 mile (Categories A, B, & C) 1.25 miles (Category D)

**Legend:**

DME = Distance Measuring Equipment  
 GPS = Global Positioning System  
 ILS = Instrument Landing System  
 LOC = Localizer  
 NDB = Non-Directional Radio Beacon  
 VOR = Very High Frequency Omnidirectional Range

RNAV = Area Navigation  
 Approach Category A: 0-90 Knots  
 Approach Category B: 91-120 Knots  
 Approach Category C: 121-140 Knots  
 Approach Category D: 141-165 Knots

*Source: U.S. Terminal Procedures, Northeast, Vol 2 of 3, 26 February 1998.*

**2.4 Pavement Management Study**

An update of the 1993 Pavement Management Study (PMS) prepared by Roy D. McQueen and Associates Ltd. has been included in the scope of this Master Plan Update. The PMS includes a methodology for the calculation of a Pavement Condition Index (PCI) value for each



pavement section based on the type, severity, and quantity of observed distress. The PCI ranges from 0 to 100, with 100 being an excellent pavement without distress and 0 being a failed pavement.

To update the Pavement Management System (PMS) established for BNIA in 1993, Roy D. McQueen & Associates, Ltd. conducted a visual condition survey and performed nondestructive testing on the airside pavements at BNIA in May of 1998. The PMS update includes a detailed review and evaluation of all airside pavements at BNIA. Based upon the visual condition survey results that were obtained in May, initial PCI computations show that the average PCI at BNIA is 62 (Good). A further breakdown of the pavements is illustrated in Table 2.3. It should be noted, that Runway 14-32 was under reconstruction during the summer of 1998 and is therefore assumed to be in excellent condition.

<b>Pavement Use</b>	<b>Number of Sections</b>	<b>Average PCI</b>
Apron	19	69 (Good)
Parking	1	55 (Fair)
Roadway	5	83 (Very Good)
Runway	5	64 (Good)
Taxiway	35	(Good)

**2.5 Airport Utilities**

**2.5.1 Electric**

Electric power is supplied to BNIA by New York State Electric and Gas (NYSEG) and Niagara-Mohawk Company. The service is supplied by underground powerlines entering the airport from Genesee Street. The power lines run to all areas of the airport including, the GA area, the air cargo facility, and the leased properties.

In the event of a power outage the airport is equipped with a number of generators. Two main generators are set up to supply the airport facilities, and several secondary generators are to be used for all other tenants.

**2.5.2 Water**

BNIA is supplied water by the Erie County Water Authority. The service is fed to all of the airport buildings and facilities. There are several fire hydrants on the airport that are fed from separate pipelines; also supplied by Erie County Water Authority. The terminal facility is equipped with a sprinkler system running off the same lines as the fire hydrants.



### 2.5.3 Telephone

The local phone service carrier at the airport is Bell Atlantic. The long distance telephone carrier at the airport varies from business to business. The different tenants are each responsible for their own phone service.

### 2.5.4 Natural Gas

Natural gas service is provided to the airport by Howard-Avista Fuel Supplies, a bulk transport fuel company. The gas is distributed via National Gas fuel lines once it is purchased from Howard-Avista. The main gas line distributes gas first to the terminal building and then to all other areas of the airport. The lines enter the airport from Genesee Street.

### 2.5.5 Drainage

BNIA maintains a storm drainage system which collects stormwater from all areas of airport property and transports it to one of seven discharge points. No sheet drainage emanates from the airport. The airport's major discharge point is from the three million gallon stormwater detention basin in the northwest corner of the airport property. Recent capital improvements involving this detention basin have resolved problems that formerly existed in handling runoff from exceptionally heavy rains. The seven discharge points require permits issued by the New York State Department of Environmental Conservation (DEC). A primary concern to DEC is the level of BOD (pollutants which decrease oxygen levels in waterways) in the airport's discharges. Current projects to capture glycol used in deicing operations, are part of an ongoing effort to identify and reduce these pollutants.

### 2.5.6 Sewer

The existing sanitary sewer system at BNIA provides service to all major areas of the airport including the terminal, general aviation and air cargo facilities. The airport's sanitary sewer system is connected to the Town of Cheektowaga municipal system, and ultimately to treatment facilities owned and operated by the Buffalo Sewer Authority (BSA). In addition to its primary purpose, BNIA utilizes the sanitary sewer system to dispose of the glycol which is separated from storm water. This type of disposal is accomplished through special arrangement with the BSA and is also subject to permitting regulation administered by the New York DEC.

## 2.6 Land Use and Zoning

### 2.6.1 Existing Land Use

BNIA is located in the northern section of the Town of Cheektowaga, a growing suburb to the northeast of the City of Buffalo. Land use surrounding the airport, as illustrated in Figure 2.7, includes densely populated residential areas to the north, south, and west. In addition to the residential areas, there are several commercial and light industrial areas surrounding the airport along Cayuga Road, Genessee Street, and in areas to the east and northeast.