Chapter Five
ENVIRONMENTAL OVERVIEW

A. INTRODUCTION

The objective of this Environmental Overview is to document all known environmentally sensitive areas governed by the *National Environmental Policy Act* of 1969 (NEPA) within the existing airport property boundaries and off-airport property associated with the proposed development alternatives as discussed in Chapter 4. The assessment of impacts is not a part of this report. This Overview follows applicable Federal Aviation Administration (FAA) guidelines using FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4A, *Airport Environmental Handbook* as references. NEPA has a significant impact on airport planning and development by requiring that environmental impacts of proposed airport development be considered early and throughout the entire planning process. Environmental feasibility is as critical as economic, engineering, or operational feasibility in determining an airport's future development. In accordance with FAA Order 1050.1E, a brief examination of each of the 18 impact categories listed below will be conducted.

- Air Quality
- Coastal Resources
- Compatible Land Use
- Construction Impacts
- Department of Transportation Act: Sec. 4(f)
- Farmlands
- Fish, Wildlife, and Plants
- Floodplains
- Hazardous Materials, Pollution Prevention, and Solid Waste
- Historical, Architectural, Archaeological, and Cultural Resources
- Light Emissions and Visual Impact
- Natural Resources and Energy Supply
- Noise
- Secondary (Induced) Impacts
- Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks
- Water Quality
- Wetlands
- Wild and Scenic Rivers

FAA Orders 5050.4A and 1050.1E address the types of impacts and the thresholds that determine if an impact is considered significant. Each of the impact categories is reviewed, in relation to Sussex County Airport, throughout the following sections. Again, it is critical to note that this review only reports existing conditions as they relate to FAA guidelines. Supplemental approval, permitting and coordination activities will be conducted with other Federal, State, and local environmental agencies to insure that the necessary approvals are obtained to implement specific recommended development items.

B. AIR QUALITY

All states must designate each area within their borders with the National Ambient Air Quality Standards (NAAQS) as a requirement of the Clean Air Act Amendments (CAAA) of 1990. The EPA defines ambient air in CFR 40, Part 50, as "that portion of the atmosphere, external to buildings, to which the general public has access." The NAAQS were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the EPA has issued NAAQS for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) and lead (Pb).

There are two types of standards: primary and secondary. Primary standards are designed to protect sensitive segments of the population from adverse health effects, with an adequate margin of safety, which may result from exposure to criteria pollutants. Secondary standards are designed to protect human health and welfare and therefore, in some cases, are more stringent than the primary standards. Human welfare is considered to include the natural environment (vegetation) and the manmade environment (physical structures). Regions that comply with the NAAQS are designated as "attainment" areas. However, areas that do not meet the NAAQS are designated from marginal to extreme "non-attainment" areas.

Under the Clean Air Act (CAA) and the CAAA, state and local air pollution agencies have the authority to adopt and enforce ambient air quality standards (AAQS) more stringent than the NAAQS. The State of Delaware has adopted the NAAQS, which are presented in **Table 5-1**.

Table 5-1
Sussex County Airport
National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Time	Primary Standard $\mu g/m^3$	Secondary Standard $\mu g/m^3$	ppm
Particulate Matter (PM-10)	24 Hour Maximum (b)	150	150	
	Annual Arithmetic Mean	50	50	
Sulfur Dioxide ($SO_{2)}$	24 Hour Maximum (a)	365	None	0.14
	3 Hour Maximum (a)	None	1300	0.5
	Annual Arithmetic Mean	80	None	0.03
Carbon Dioxide (CO)	8 Hour Maximum (a)	10 mg/m^3	None	9
	1 Hour Maximum (a)	40 mg/m^3	None	35
Nitrogen Dioxide ($NO_{2)}$	Annual Arithmetic Mean	100	100	0.053
Lead (Pb)	Quarterly Arithmetic Mean (a)	1.5	1.5	
Ozone ($O_{3)}$	1 Hour Maximum (b)	235	235	0.12

Notes:(a) Maximum concentration not to be exceeded more than once per year
(b) Not to be exceeded on more than an average of one (1) day per year for a three (3) year period.
Source: *Code of Federal Regulations Title 40, Part 50, July 1991*.

The Delaware Department of Natural Resources and Environmental Control (DNREC), Division of Air and Waste Management, currently operates two air monitoring stations in Sussex County. One station is located in the city of Lewes; the other station is located in the city of Seaford (approximately 15 and 17 miles from the airport, respectively). Ambient levels of O_3 and PM are measured at these stations.

Based on historical air monitoring data from these and other air monitoring stations, Sussex County is designated as a marginal non-attainment area for the 1-hour O_3 NAAQS and an attainment area for all other criteria air pollutants. Because of the non-attainment designation, the conformity requirements of the CAA are applicable to future development. The EPA is currently in the process of evaluating the areas that will be designated non-attainment for the proposed 8-hour O_3 and PM2.5 NAAQS. Notably, data collected by the DNREC since 1996, indicates that Sussex County will likely be designated non-attainment for the 8-hour NAAQS for O_3.

Airport-related sources of air pollutants include aircraft, ground support equipment (GSE), auxiliary power units, motor vehicle operations, construction activities, and onsite stationary sources.

Exhaust gases from aircraft engines predominantly are comprised of nitrogen, oxygen, and water vapor, which are compounds that normally are not considered air pollutants. To a lesser extent, aircraft emit CO, nitrous oxides ($NO_{x)}$, PM, volatile organic compounds (VOC), and sulfur oxides ($SO_{x)}$. The amount of pollutants emitted depends on many factors, such as engine type, aircraft type, and operational mode. The four operational modes of aircraft are taxi/idle, approach, climb-out, and take-off.

Airport-related motor vehicle emissions contribute to the total amount of CO, NO_x, PM, VOC, and SO_2 in an airport emissions inventory. The emissions are a function of traffic volume, roadway conditions, distance traveled, and motor vehicle fleet characteristics. On-site motor vehicle activity arises from passenger, employee, and cargo vehicles using airport roadways and parking lots. Off-site airport traffic is fundamentally indistinct from non-airport motor vehicle traffic, as it enters all parts of the regional roadway network.

GSE and support vehicles are much like motor vehicles as their emissions depend on fuel consumption and distance traveled. Thus, emissions from GSE depend on the airport layout and energy efficiency. This type of equipment includes tow tugs, tractors, belt loaders, and fuel service trucks.

There are various stationary and point sources also found at airports. Fuel storage and transfer facilities are potential sources of VOC emissions. Usually, these emissions are low because of containment vessels. Emissions from these sources vary with tank type, fuel type, fuel throughput volume, ambient temperature, and the presence or absence of a vapor recovery system. Indoor heating units and water reduction facilities are also point sources. Such facilities typically operate conforming to regulatory permits, which limit air emissions.

Dust and particulate emissions may occur temporarily at airports during construction and land clearing activities. Erosion control measures are typically taken to minimize these fugitive dust and particulate emissions. Construction equipment and vehicles also emit CO, NO_x, PM, VOC, and SO_x.

Table 5-2 provides a summary of the sources and types of air emissions associated with each source.

Table 5-2
Sussex County Airport
Airport-Related Sources of Air Emissions

Sources	Emissions	Characteristics
Aircraft	• CO • NO_x • PM • SO_x • VOC	Exhaust products of fuel combustion that vary greatly depending on aircraft engine type, power setting, and period of operation. Aircraft altitude precludes measurable offsite ground-level effects from aircraft at an altitude of 3,000 feet or more.
Motor vehicles	• CO • NO_x • PM • SO_x • VOC	Exhaust products of fuel combustion from patron traffic approaching, departing, and moving about the airport site. Emissions fluctuate with vehicle type, distance traveled, operating speed, and ambient conditions. Onsite emissions are confined to access/egress roadways and parking facilities. Offsite emissions are often indistinguishable from those of background traffic.
Ground support equipment and vehicles	• CO • NO_x • PM • SO_x • VOC	Exhaust products of fuel combustion from service trucks, tow tugs, belt loaders, and other portable equipment.
Fuel storage and transfer facilities	• VOC	Emissions formed from the evaporation and vapor displacement of fuel from storage tanks and fuel transfer facilities. Emissions vary with fuel use, storage tank type, refueling method, fuel type, vapor recovery, and meteorology.
Space spacing and incineration facilities	• CO • NO_x • PM • SO_x • VOC	Exhaust products of fossil fuel combustion from boilers dedicated to indoor heating requirements and emissions from incinerators used for waste reduction. These sources are often permitted through a regulatory agency.
Construction activities	• CO • NO_x • PM • SO_x • VOC	Exhaust products of fuel combustion from construction equipment and vehicles; dust (e.g., soil and concrete) generated during construction and land-clearing activities released into the air by wind and machinery.

Source: Environmental Science Associates, 2002.

C. COASTAL ZONE MANAGEMENT

To adhere to Section 307 of the Coastal Zone Management Act of 1972, as amended, it is mandatory that a determination be made that any direct federal activity, federally funded activity, or federally permitted activity is consistent with the goals and objectives of the State's Coastal Zone Management Program. Also, the Coastal Barriers Resources Act of 1982 (PL 97-348) prohibits projects receiving federal assistance from development within the Coastal Barrier Resource System.

Sussex County is situated within Delaware's coastal zone. **Exhibit 5-1** depicts the airport in relation to the regulated coastal zone in Delaware. Although it is not in the critical management area, the entire state is regulated for coastal zone management. Therefore, to adhere to Section 307 of the Coastal Zone Management Act of 1972, as amended, it is mandatory that a determination be made that any direct federal activity, federally funded activity or federally permitted activity is consistent with the goals and objectives of the State's Coastal Zone Management Program. The DNREC is responsible for making the Coastal Zone Management Consistency Determination. A Consistency Determination will be required for future development at the airport.

D. COMPATIBLE LAND USE

The FAA has established guidelines for land use compatibility around airports with respect to noise in FAA Order 1050.1E. These guidelines are presented in **Table 5-3**. Incompatible land uses generally include residential areas, and noise sensitive community facilities, such as schools and churches, located within the DNL 65 dB or greater noise contours. Conversely, agricultural, commercial, and industrial uses are commonly compatible with aircraft noise and activity.

The Sussex County Airport is located in Sussex County, Delaware, adjacent to the town of Georgetown. The airport is owned and operated by Sussex County in south-central Delaware.

Exhibit 5-1

Coastal Zone

Airport property is zoned Light Industrial (LI-2) as is the industrial park located on airport property. The industrial park is located northeast and adjacent to the airfield. It is 178 acres and is connected to the primary runway via taxiway. The majority of lands surrounding the airport and industrial park are undeveloped. According to the County's Land Use Plan, this surrounding land is zoned as agricultural or residential with the exception of the northwest corner, which is zoned as neighborhood/business. The residential area is scattered but predominantly to the south of the airport. **Exhibit 5-2** illustrate existing generalized land uses and zoning designations.

The land under the approach to both Runway 4 and Runway 22 is undeveloped. The Sussex County Airport Hazard Zoning Ordinance regulates the height of structures or trees within the vicinity of the airport in accordance with Federal Aviation Regulations (FAR) Part 77 surface height limitations.

With respect to future land use, Sussex County prepared a Comprehensive Plan Update in January 2003. The County Council and Planning Commission created the Plan Update as an official statement setting forth policies and goals relating to desirable future physical development. The Plan Update is only meant to be a general guide for public and private development decisions and is not legally binding. It is also the foundation for the preparation of specific legislation, such as zoning and subdivision regulations and other documents such as the capital improvements program, which implement the policies set forth in the plan.

Exhibit 5-2

Generalized Land Uses

Table 5-3
Sussex County Airport
FAR Sound Exposure/Land Use Compatibility Guidelines

Land Use	Yearly Day-Night Average Sound Level (DNL) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N[1]	N[1]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[1]	N[1]	N[1]	N	N
Public Use						
Schools	Y	N[1]	N[1]	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	Y[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail--building materials, hardware and farm equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail trade--general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y[2]	Y[3]	N	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock farming and breeding	Y	Y[6]	Y[7]	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y[5]	Y[5]	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables	Y	Y	25	30	N	N

Key to Table 5-3

SLUCM = Standard Land Use Coding Manual

Y(Yes) = Land Use and related structures compatible without restrictions.

N(No) = Land Use and related structures are not compatible and should be prohibited.

NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 = Land use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

Notes for Table 5-3

1 Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

2 Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.

3 Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.

4 Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas or where the normal level is low.

5 Land use compatible provided special sound reinforcement systems are installed.

6 Residential buildings require an NLR of 25.

7 Residential buildings require an NLR of 30.

8 Residential buildings not permitted.

Source: Federal Aviation Regulations 14 CFR Part 150, effective January 18, 1985.

E. CONSTRUCTION IMPACTS

Construction impacts are ordinarily temporary, resulting from actual construction activities. Potential construction-related impacts will include the temporary degradation of noise, air and water quality. When construction activities related to airport development do occur in the area of Sussex County Airport, specific areas of concern should include:

1. Noise from construction equipment and related activities of the site

Noise levels at the airport, generated primarily from construction equipment will temporarily increase during various stages of airport construction. They will be higher in the immediate vicinity of construction activity but will drop off significantly a short distance from the site.

2. Noise and dust from delivery of materials through residential area

Noise and dust from the delivery of materials to the site should pose only minor impacts to residential areas and to the traveling public. Overall, the impacts of noise and dust from delivery of equipment and materials will be for a short duration and negligible.

3. Water pollution from erosion, siltation, and other pollutants

Risk to water quality during construction will be from erosion and siltation created during clearing, grubbing, earthmoving, and excavating activities. The means of reducing the risk will involve both temporary and permanent control measures to ensure that erosion and siltation are kept to a minimum. These measures are outlined in FAA Advisory Circular 150/5370-10A, Item P-156, *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*.

4. Air pollution from burning debris

Air pollution as a result of the open burning of construction debris may be permitted provided there is strict adherence to all local and state laws, ordinances and regulations, including the one mentioned above.

5. The use and mitigation of borrow and waste areas

Airport development may require significant excavation of unsuitable material, placement of embankments, and the use of materials such as aggregates, and bituminous and Portland cement concrete. The stockpiling of the construction and excavation materials may be visually displeasing to some traveling in the area. This is, however, a temporary condition and should pose no permanent problems.

F. DEPARTMENT OF TRANSPORTATION, SECTION 4(F) LANDS

Section 4(f) of the Department of Transportation Act states that any project requiring the use of any publicly owned land from a public park, recreation area, or from a historic site of national, state or local significance shall not be approved unless there is no feasible and prudent alternative to the use of such land. There are no Section 4(f) lands within the Sussex County Airport boundaries; however, Layton Park is located west of the airport and is protected from any use other than the intended recreational uses. Coordination with the DNREC revealed that the future development plan will have no impact on the Park. Correspondence from DNREC is included in **Appendix E**. It is not anticipated that any other public lands will be impacted as a result of the airport's future development plan.

G. FARMLAND

According to Order 5050.4A, "The Farmland Protection Policy Act (FPPA) authorizes the Department of Agriculture (USDA) to develop criteria for identifying the effects of Federal programs on the conversion of farmland to non-agricultural uses." However, according to the provisions of the

FPPA, it does not apply if the following exists: 1) The land for development was purchased prior to August 6, 1984 and 2) the potential area for development is zoned for airport development or commercial/industrial uses.

Farmlands are protected under the Farmland Protection Policy Act (FPPA). The purpose of the FPPA is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of prime, unique, and statewide or locally important farmlands to nonagricultural uses. Guidelines established by the United States Department of Agriculture (USDA) under the FPPA for identifying the effects of federal programs on the conversion of farmland to nonagricultural uses became effective August 1, 1989. Land purchased prior to that date is exempt from the FPPA.

According to information received from the Natural Resource Conservations Service (NRCS) office in Dover, Delaware during the Airport's Five-year Development Environmental Assessment there are four prime agricultural farmland soils located within airport property. These soils are Pocomoke sandy loam (Pm), Kenansille loamy sand (KbA), Fallsington sandy loam (Fa) and Woodstown sandy loam (Wo). Two soils on the airport are of statewide importance - Rumford loamy sand (RuA) and Evesboro loamy sand (EvA and EvB).

Despite the location of these four soils within airport boundaries no further action will need to be taken during future development projects. The law excludes prime farmland soils and soils of statewide importance if they exist on previously developed land. The four soils identified at Sussex County Airport as prime agricultural farmland are located on previously developed airport property and are therefore not subject to the FPPA.

H. FISH, WILDLIFE, AND PLANTS

Biotic communities may be directly or indirectly affected by aviation development and aviation activities. Specifically, development that affects existing water courses or vegetation may in turn alter wildlife habitat in the area, resulting in potentially significant impacts to flora and fauna. The

FAA Order 5050.4A, *Airport Environmental Handbook* states, "If the proposal would impact only man dominated areas such as previously disturbed airport property, populated areas or farmland, it may be assured that there would be no significant impact on biotic communities."

Under Section 7 (c) of the Endangered Species Act of 1973 (16 USC 1531 *et seq*), Federal agencies are required to consult with the United States Fish & Wildlife Service (USFWS) regarding the presence of any species that are listed, or proposed to be listed, as threatened or endangered that may be affected by any proposed action.

In order to determine the presence of threatened or endangered species or critical habitat, Rettew Associates, Inc. conducted on-site field investigations to evaluate the present habitat conditions on and in the immediate vicinity of the airport site. A review of the list of threatened and endangered species in Delaware, maintained by the USFWS and listed by county, revealed that there are no known federally listed species occurring in Sussex County, Delaware. The investigation was completed concurrently with the wetlands delineation and is on file at the airport and with Delta Airport Consultants, Inc. for use in the upcoming Runway 4-22 Extension Environmental Assessment. An additional copy of the report can be found in **Appendix G** of this document.

The report indicated that no habitat types identified on the site appeared to provide specialized habitat for any other federally listed threatened or endangered species in the area. Correspondence with the Delaware Division of the US Fish and Wildlife Service is included in **Appendix E**.

I. FLOODPLAINS

Floodplains are a critical element to both the environment and the community. They perform vital natural functions including the following: temporary storage of floodwater, moderations of peak floodflows, maintain water quality, groundwater recharge, erosion and sediment control, and provision of habitat for wildlife. Also, they provide recreational grounds and establish an aesthetic quality to natural areas.

The Flood Insurance Rate Map (FIRM) for Sussex County and Incorporated Areas, Community Panel Numbers 300 and 325 of 660, Map Numbers 10005C0325F and 10005C0300F, effective date June 16, 1995, indicated the airport site is beyond the limits of the 100-year floodplain, as shown on **Exhibit 5-3**.

J. HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

Typically there are two general categories of solid waste that must be evaluated with a proposed project: 1) the increase in quantity of solid waste generation, and 2) capacity of the proposed solid waste disposal facility.

1. Solid Wastes

Solid waste impacts ordinarily are associated with terminal development, because the majority of solid waste is generated in the terminal area as a result of passenger activity and concession operations. The waste that is generated from daily airport activities consists of normal refuse associated with public facilities and does not require any extraordinary collection methods or disposal areas. Currently, water and sewer services are supplied by the Town of Georgetown.

2. Hazardous Materials

Analysis of this impact category involves the evaluation of three potential areas of impact. These are:

- The release of any existing undisturbed toxic substances
- The release of toxic substances from construction equipment maintenance and construction materials
- The release of toxic substances from any newly constructed facilities

Exhibit 5-3

FIRM

Hazardous substances are known to be found at the airport such as aircraft and ground equipment fuel.

a. Aviation Fuel

Sussex County Airport has a total of eight above ground storage tanks (AST) for fuel – Jet-A, 100LL AvGas, auto and diesel. Fuel is dispensed via trucks owned by the County, Georgetown Air Services, DeCrane, and the State Police.

Georgetown Air Services owns and operates four of the tanks and three fueling trucks. The fuel farm is located northeast of the FBO terminal building. American Aerospace owns and operates a single tank to supply/sell fuel to their customers. DeCrane owns and operates one AST, which holds Jet-A fuel for use in their customers' aircraft. DeCrane also owns one fueling truck. The Delaware State Police do not have any fuel tanks but own/maintain two fuel trucks. Their fuel is bought off-site and trucked onto the airport.

b. Ground Equipment Fuel

The automobile and ground support equipment fuel consists of two ASTs owned by Sussex County. One of the ASTs is auto gas (1,000 gallon) and the other diesel (550 gallon). Currently, there are no impacts resulting from fueling activity.

K. HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

The National Historic Preservation Act of 1966, as amended, and the Archeological and Historic Preservation Act of 1974 are the two laws that establish the requirements for determining historic, architectural, archaeological and cultural resource significance within the airport vicinity. Two basic provisions are applicable:

1. An initial review was made to determine if any properties in or eligible for, inclusion in the National Register of Historic Places are within the airport boundaries.

2. The second provision provides for the survey, recovery and the preservation of significant scientific, prehistorical, historical, archaeological or paleontological data when such data may be destroyed or irreparably lost due to a federally licensed or funded project.

The Delaware State Historic Preservation Office (SHPO) is responsible for historic preservation in Delaware.

A Phase Ia literature review of the airport property was previously prepared by Edward Otter (2001) and incorporated information on the history of the region and the cultural resources potential of the airport. This report detailed results of both architectural and archaeological surveys of the project area. Coastal Carolina Research, Inc. (CCR) conducted a cultural resources survey of the future development plan area of potential effect (APE) previously not surveyed. The APE for the recent survey consisted of a portion of airport property and properties to the southwest of the Runway 4 end. The purpose of the survey was to determine if cultural resources that are on or potentially eligible for, the National Register of Historic Places (NRHP), are located within the APE. See **Appendix F** for a complete copy of CCR's cultural resources survey.

The survey located four previously recorded houses within the APE as well as seven additional resources. All properties were considered according to the guidelines of the NRHP as set forth by the National Park Service. The report recommended all not eligible for the NRHP.

Seven archaeological sites, five historic artifact scatters, and seven isolated finds were also recorded during the survey. Four of seven archaeological sites recorded during the Phase I survey represent historic occupation of the area during the late eighteenth to early nineteenth centuries and are potentially eligible for the National Register of Historic Places. **Exhibit 5-4** illustrates the locations of the four sites. Coordination with the SHPO is ongoing and a Phase II survey will be completed during the Runway 4-22 Extension EA.

Exhibit 5-4

Cultural Resources

L. LIGHT EMISSIONS AND VISUAL IMPACT

FAA Order 5050.4A requires the operator to consider the extent to which any lighting associated with an airport action will create an annoyance among residents in the airport region. There have been no light emission complaints from nearby residences and no impacts are anticipated to occur with the future development plan.

M. NATURAL RESOURCES AND ENERGY SUPPLY

Energy and natural resource impacts of airport activity are related to the amount of energy required to operate aircraft; airport-related service vehicles; airport terminal lighting; and other uses such as heating/air-conditioning. Energy requirements for an airport, with the exception of airport lighting, are largely dependent upon the amount of activity occurring at the airport. Increased aviation activity levels translate into higher energy requirements for operation of aircraft, vehicles and airport facilities. Changes in energy or other natural resources consumption as a result of the future development are not anticipated to have an adverse impact on natural resources.

N. NOISE

Noise, defined as undesirable sound, is typically the most significant off-airport environmental impact associated with aircraft operation. Noise is measured in decibels (dB). Aircraft sound levels are quantified for single events using the A-weighted decibel scale (dBA), which was developed to measure sounds with more emphasis on frequencies that can be heard by the human ear. Existing noise contours were developed for Sussex County Airport utilizing the most current FAA Integrated Noise Model (INM).

The resulting noise contours (lines of cumulative noise exposure) are based on a typical day's traffic, which also reflects the statistical average of the conditions that exist throughout the entire year. Aircraft sound exposure is measured in DNL, (Day-Night Average Noise Levels), an FAA approved system for quantifying cumulative aircraft noise. Although other noise metrics exist, the DNL

measure was formulated as the standard single-number measurement of community noise exposure. The DNL metric identifies a single value of A-weighted sound for a duration of 24 hours that includes all of the time-varying sound energy for that period, with a 10-dB penalty applied to nighttime sounds. The penalty accounts for the increased perceived sensitivity to noise ensuing during sleeping hours.

Aircraft noise impacts on the areas surrounding the airport were assessed through use of the FAA's INM, a computer model used to simulate and average annual day aircraft noise impacts. The INM provides noise contours based on input of an airport's activity levels, fleet mix, flight tracks and runway utilization patterns. For this Environmental Overview, the year 2002 was used as the existing or base year.

1. Airport Activity Levels

Operational levels used in this analysis are presented in **Table 5-4**. Annual operational levels are listed for each category of activity. Because total daily activity is expected to vary throughout the year, noise analyses are based on average annual day activity. This methodology is consistent with that developed in FAA Advisory Circular 150/5020.1, *Noise Control and Compatibility Planning.* These operation levels represent an average annual day total of 129 operations in 2002.

Table 5-4
Sussex County Airport
Activity Levels (2002)

Aircraft Type	Annual Operations
General Aviation (Local)	27,302
General Aviation (Itinerant)	6,046
Rotor (Civilian)	3,298
Airline (Air Taxi)	5,478
Military	5,000
TOTAL:	**47,124**

Source: Delta Airport Consultants, Inc.

2. Fleet Mix Data

The airport fleet mix data used to develop the existing noise exposure contours is listed in **Table 5-5**. Fleet mix refers to the various categories of aircraft operating at an airport. The fleet mix was identified utilizing airport records and the forecast presented in Chapter Two.

Table 5-5
Sussex County Airport
Fleet Mix – Percent Use

Aircraft Type	Percent Use
General Aviation (Local)	
Single Engine	95%
Twin Engine	5%
General Aviation (Itinerant)	
Super King Air	44%
COMSEP	32%
Citation II/IV	7%
Gulfstream III/IV	5%
HS 125 – 700/800	5%
Lear 55/35	3%
Falcon 20	1%
BBJ 737-700	1%
Challenger 601	1%
Westwind 1124	1%
Rotor (Civilian)	
Bell 206	100%
Airline (Air Taxi)	
Beech Baron	100%
Military	
Sikorsky 76	50%
UH-1	50%

Source: Delta Airport Consultants, Inc.

3. Noise Contours

Aircraft activity levels and operational characteristics were programmed into the INM, which produced noise exposure contours of the areas exposed to aircraft noise levels of DNL 65 dB, 70 dB and 75 dB in 2002. **Exhibit 5-5** illustrates the existing noise contours. As shown on the exhibit the majority of noise contours are contained within the airport boundary.

Exhibit 5-5

Existing Noise Contours

As shown in **Table 5-6**, the DNL 65 dB or greater noise contour encompasses 0.278 square miles/178.1 acres. Currently, no impacts from noise exist.

Table 5-6
Sussex County Airport
Area within the Existing (2002) Noise Contours

Noise Contours	Area in Square Miles	Area in Acres
DNL 65 to 70 dB	0.278	178.1
DNL 70 to 75 dB	0.138	88.1
Greater than DNL 75 dB	0.073	47.0
Total		

Source: Delta Airport Consultants, Inc.

O. SECONDARY (INDUCED) IMPACTS

Induced or secondary impacts are alterations in regional growth and development patterns, such as shifts in residential development and related population distribution and growth, public service demands, and changes in business and economic activity brought about by the airport development.

Changes in business activity, to the extent influenced by the airport development can be expected. Alterations in regional growth and development patterns are not anticipated. The economic gains provided by the growth of the airport, include the short-term increase in construction jobs, as well as long-term direct and indirect economic benefits on a regional level from increased airport activity. It is not anticipated that any adverse socioeconomic impacts will result from proposed future development.

P. SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

According to the *Airport Environmental Handbook*, social effects to be considered in an EA are "those associated with relocation or other community disruption which may be caused by the proposal." The types of social impacts that are considered within airport master planning projects

are:

- Relocation of residences and or businesses
- Disruption of established communities
- Disruption of orderly, planned development
- Alterations of traffic patterns which may permanently or temporarily restrict traditional community access
- Appreciable changes in employment associated with the airport's development plans

If it is determined that none of the possible impacts listed above are affected, then it is deemed that there will be no significant social impact. Additionally, on February 11, 1994, President Clinton signed Executive Order (E.O.) No. 12898, *Federal Actions to Address Environmental Justice In Minority Population and Low-Income Populations.* The three general purposes of this order include:

1) Focusing attention by federal agencies on human health and environmental conditions in minority and low-income communities with a goal of achieving environmental justice.
2) Fostering non-discrimination in federal programs that substantially affect human health or the environment.
3) Giving minority and low-income communities greater opportunities for public participation in, and access to, public information on matters relating to human health and the environment.

Sussex County Airport operations do not currently disrupt established communities, disrupt orderly, planned development, alter traffic patterns which may permanently or temporarily restrict traditional community access, or result in appreciable changes in employment. Minority and low-income populations are not being affected by operations at Sussex County Airport.

However, the future development plan does involve the property interest acquisition of residential properties as shown on the Airport Layout Drawing. None of the properties proposed for property interest acquisition would impact minority or low-income populations. In order to complete the acquisition and relocation of properties involved under the future development plan, provisions of

the Uniform Relocation Assistance and Real Property Acquisition Policies Act (the Uniform Act) of 1970 must be met. As stated in FAA Advisory Circular 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*, "It is the sponsor's obligation under the Uniform Act to provide an adequate relocation assistance program that insures prompt and equitable relocation and reestablishment of persons displaced as a result of its federally assisted airport projects".

Q. WATER QUALITY

Along with air quality, the quality of water is one of the most sensitive areas of environmental concern. Protection and management of water resources at Sussex County Airport is mandated by a number of federal laws, regulations and guidelines. Water features are under the jurisdiction of the U.S. Army Corp of Engineers and the Delaware Department of Natural Resources and Environmental Control (DNREC).

Drainage from the airport flows down Peterkins Branch into Morris Millpond then continues down Cow Bridge Brook into Millsboro Pond emptying into the Indian River, which discharges into the Atlantic Ocean. Future development will result in slight increases in runoff as turfed areas are paved for aircraft and support operations. However, adjacent slopes to aircraft operational surfaces are quite flat and retention in surface drainage can be easily accomplished. Design of airport improvements throughout the study period will consider proposed and future capacity needs. Expansion of the existing drainage system with surface and underground facilities should not create any adverse impacts.

Generally, stormwater runoff consists of surface rainwater with trace elements of fuels, detergents and other pollutants. Typical sources of pollutants in stormwater runoff at airports are associated with aircraft and vehicle maintenance and cleaning, storage of fuels and other petroleum based products, and deicing/anti-icing of aircraft and runways. Nonpoint sources of water pollution are those which cannot be traced to a specific, identifiable discharge location and can cause sedimentation, eutrophication and biological contamination of surface waters.

Section 402(p) of the Clean Water Act (CWA) requires the EPA to develop permit requirements and to issue permits for stormwater discharges associated with industrial activity. In 1988, the EPA published a Notice of Proposed Rulemaking that further defined "industrial activity" to include airports which have "vehicle maintenance shops, material handling facilities, equipment cleaning operations or airport deicing operations." As a result of the CWA, airports must apply for a National Pollutant Discharge Elimination System (NPDES) permit in relation to the following activities: 1) stormwater discharges associated with industrial activity, 2) discharges from a municipal separate stormwater system serving a population of 250,000 or more and 3) discharges from a municipal separate storm sewer system serving populations of 100,000 to 250,000. In the State of Delaware, the Department of Natural Resources and Environmental Protection administers the program**.**

Storm water runoff can be expected to increase as a result of the creation of additional impervious surfaces, such as new buildings, parking lots and roadways. The greatest potential impact to surface water resources is from erosion and sedimentation during construction activities. Construction impacts may also include the alteration of natural drainage patterns, water contamination, runoff due to site preparation (land clearing, grubbing, grading and filling), fuel spillage of construction equipment and pavement of the parking lots and roadways. The day-to-day effects of additional impervious surface area will be the alteration of local drainage patterns, possible loss of ground water recharge, oil and grease drippage from automobiles and trucks, increased flow rates in localized areas, increased risk of contamination of runoff through accidental spills of chemicals, waste materials, detergents, fertilizers and petroleum products.

The future development plan at Sussex County Airport will increase impervious surfaces at the airport. The airport will obtain all necessary permits and use best management practices during construction which will result in no adverse impacts to water quality.

R. WETLANDS

Wetlands are defined in Executive Order (E.O.) No. 11990, as "those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats and natural ponds." Wetlands also include estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Furthermore, the wetlands ecosystem includes those areas which affect or are affected by the wetland itself, e.g., adjacent uplands or regions upstream and downstream. Areas covered with water for such a short time that there is no effect on moist soil vegetation are not included within the definition of wetlands nor are the permanent waters of streams, reservations and deep lakes.

Wetlands on Sussex County Airport and on adjacent properties were delineated during several routine wetland delineations and surveys as illustrated on **Exhibit 5-6**. The majority of wetlands delineated on airport property were completed by James C. McCulley Environmental Consultants, Inc. in March 1996 and June 1998 and by Hillis-Carnes Engineering, Inc. in late summer and fall 2000.

The most recent wetland delineation and survey was completed by Rettew Associates, Inc. in October 2002 and December 2004. Rettew identified six wetlands on airport property, including three small palustrine emergent wetlands and a long narrow palustrine emergent wetland within the tax ditch (man-made). One small emergent wetland was identified and two palustrine forested wetlands on adjacent parcels during the field investigation. The vegetation, soil characteristics, and wetlands hydrologic parameters were indicative of wetlands. The complete wetland delineation report is on file at the airport and included in **Appendix G** of this document. The delineation report will be utilized in the upcoming Runway 4-22 Extension EA and included as an appendix.

The future development plan includes projects that will impact wetland areas. Impacts to wetlands will be evaluated in the upcoming Runway 4-22 Extension Environmental Assessment.

EXHIBIT 5-6

WETLANDS

S. WILD AND SCENIC RIVERS

The Wild and Scenic River Act described those river areas eligible to be included in a system afforded protection under the act as free flowing and possessing "...outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values."

There are no federal or state designated wild and scenic rivers located in the vicinity of Sussex County Airport.

T. ENVIRONMENTAL CONSEQUENCES – OTHER CONSIDERATIONS

This section includes additional environmental consequences, as noted below, not covered in the specific impact categories phase previously discussed.

- Possible conflicts between the development plan and the objectives of federal, state, regional, and local land use plans, policies, and controls for the area concerned;
- Possible inconsistencies of the development plan with state or local plans and laws;
- Possible means to mitigate adverse environmental impacts;
- Degree of controversy on environmental grounds; and
- Possible cumulative impacts will be reviewed, including looking at the airport's development projects from the past three years and for the future five.

The future development plan has been coordinated with federal, state, and local agencies and does not conflict with any plans or objectives. Appropriate coordination will be maintained with governmental agencies, including the FAA, on issues such as the following:

1. Property Interest Acquisition (fee simple)
2. Obstruction Removal (DNREC)
3. Wetland Impacts (DNREC, ACOE, and EPA)

The future development plan will impact adjacent properties, wetlands, tree removal, and may require the relocation of four archaeological sites. The upcoming EA will determine whether the impacts to these resources are unavoidable and if significant impacts will occur. Efforts will be undertaken to minimize all impacts during the EA process. Possible mitigation for these impacts is listed below:

1. Fee Simple Acquisition Properties

Provisions set forth in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 will be followed.

2. Archaeological Site Coordination with SHPO

Four of seven archaeological sites recorded during the Phase I survey represent historic occupation of the area during the late eighteenth to early nineteenth centuries and are potentially eligible for the National Register of Historic Places. Coordination with the SHPO is ongoing and a Phase II survey will be completed during the Runway 4-22 Extension EA.

3. Tree Removal

The future development plan will require the clearing of forested land to meet FAA Part 77 regulations. Coordination with DNREC will be completed during the EA and prior to development.

4. Wetland Mitigation

The future development plan will require impact to delineated wetlands. Coordination with the FAA, DNREC, and ACOE will be necessary. A permit application detailing the impacts and mitigation proposal will be submitted to

DNREC and ACOE for their review and approval prior to development.

5. Preparation of Erosion and Sedimentation Control Plan

During the construction process, soil is the most vulnerable to erosion by wind and water. This eroded soil endangers water resources by reducing water quality, and causing the siltation of aquatic habitat for fish and other species. Eroded soil also necessitates repair of sewers and ditches, and the dredging of lakes and rivers. As a result, erosion and sediment control plans are required to prevent damage to the environment.

6. Application of Best Management Practices (BMPs)

The implementation of BMPs will minimize construction impacts associated with the future development plan. BMPs are defined as a practice, or combination of practices, that are determined to be the most effective means of reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals. The design of the airport will include practices to minimize the impact on the surrounding areas. The use of erosion and sedimentation controls will be required throughout the removal and construction period.

In accordance with FAA Order 5050.4A, *Airport Environmental Handbook*, any planned development project that is not included in the alternatives section of an EA should be described to show its relationship to the proposed action and to show that the sponsor's intentions regarding the National Environmental Policy Act (NEPA) documentation for the project are considered. Other past, present, and reasonably foreseeable projects, both on-and off-airport, that were considered for the potential to generate cumulative impacts are discussed in this section.

Airport construction projects anticipated during Phase I (2005-2009) of the GED capital improvement program include reconstruction of Runway 10-28, extension of Runway 4, realignment

of Park Avenue, expansion of aircraft parking apron, and terminal auto parking, as well as construction of T-hangars, conventional hangars and a Snow Removal Equipment (SRE) building.

Projects completed in the past three years at GED have included installation of perimeter fencing and Runway 4-22 PAPIs, construction of a corporate hangar apron, and expansion to existing T-hangars.

U. CONCLUSION

An environmental overview of the airport and adjacent properties was conducted to document existing environmental conditions. In accordance with FAA Orders 1050.1E and 5050.4A, a brief examination of each of the impact categories was conducted. An environmental assessment will be conducted to fully determine potential impacts prior to any construction at the Sussex County Airport.