Draft Environmental Assessment E-2/C-2 Field Carrier Landing Practice Operations at Emporia-Greensville Regional Airport, Greensville County, Virginia, and National Aeronautics and Space Administration Wallops Flight Facility, Accomack County, Virginia

September 2012

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U.S. DEPARTMENT OF THE NAVY

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Lead Agency:
United States Department of the Navy

Cooperating Agencies:
Federal Aviation Administration
National Aeronautics and Space Administration

In accordance with Chief of Naval Operations Instructions 5090.1C, Change 1

DRAFT ENVIRONMENTAL ASSESSMENT
E-2/C-2 FIELD CARRIER LANDING PRACTICE OPERATIONS AT
EMPORIA-GREENSVILLE REGIONAL AIRPORT,
GREENSVILLE COUNTY, VIRGINIA, AND
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WALLOPS FLIGHT FACILITY, ACCOMACK COUNTY, VIRGINIA
September 2012

Abstract

This environmental assessment (EA) evaluates the potential environmental consequences of the U.S. Department of the Navy's (Navy's) proposed action to conduct regular, scheduled E-2C Hawkeye, E-2D Advanced Hawkeye, and C-2A Greyhound (E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield (for the purposes of this document, local is defined as within 90 nautical miles of Naval Station (NS) Norfolk Chambers Field, in Norfolk, Virginia). The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport (Emporia-Greensville) or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility (WFF) until the Navy addresses local FCLP capacity shortfalls on a more permanent basis. The proposed action would support FCLP operations for E-2/C-2 squadrons operating from NS Norfolk Chambers Field. This EA analyzes the environmental consequences associated with both the proposed FCLP operations and minor modifications to airfield facilities to support the FCLP operations. The Navy is the lead agency for this proposed action, and the Federal Aviation Administration and NASA are serving as cooperating agencies.

This EA evaluates two action alternatives for conducting E-2/C-2 FCLP operations, as well as the No Action Alternative. The two action alternatives include up to 45,000 annual operations at Emporia-Greensville (Alternative 1) and up to 45,000 annual operations at WFF (Alternative 2). Under the No Action Alternative, the Navy would continue to utilize Naval Auxiliary Landing Field (NALF) Fentress as the primary local airfield for E-2/C-2 FCLP training requirements. Under the No Action Alternative, pilot proficiency would be maintained; however, the Navy would continue to need to conduct FCLP training into the late-night and early morning hours at NALF Fentress, would continue to need to conduct FCLP training at alternative airfields such as Naval Air Station (NAS) Oceana, and would continue to need to conduct E-2/C-2 FCLP training detachments outside the local area (e.g., Navy outlying landing field [OLF] Whitehouse, near NAS Jacksonville, Florida).

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Executive Summary

ES.1 Introduction

This environmental assessment (EA) evaluates the potential environmental consequences of the U.S. Department of the Navy's (the Navy's) proposed action to conduct regular, scheduled E-2C Hawkeye, E-2D Advanced Hawkeye, and C-2A Greyhound (E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield which meets the Navy's minimum airfield requirements. For the purposes of this document, local is defined as within 90 nautical miles of Naval Station (NS) Norfolk Chambers Field, in Norfolk, Virginia. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport (Emporia-Greensville) or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility (WFF) until the Navy addresses local FCLP capacity shortfalls on a more permanent basis. The proposed action would support FCLP operations for E-2/C-2 squadrons operating from NS Norfolk Chambers Field, in Norfolk, Virginia. This EA analyzes the environmental consequences associated with both the proposed FCLP operations and minor modifications to airfield facilities to support the FCLP operations. In accordance with 40 Code of Federal Regulation (CFR) 1501.6, the FAA and NASA are serving as cooperating agencies because their specific expertise is needed to ensure adequate evaluation of the potential environmental effects associated with Navy's proposed action within each agency's jurisdiction.

ES.2 Project Purpose and Need

The purpose of the proposed action is to provide additional local FCLP training capacity for E-2/C-2 squadrons operating from NS Norfolk Chambers Field. Naval Auxiliary Landing Field (NALF) Fentress, the single, local FCLP outlying landing field (OLF) supporting two major naval air installations, Naval Air Station (NAS) Oceana and NS Norfolk Chambers Field, provides the only dedicated local FCLP training environment specifically for meeting both fleet squadron and Fleet Replacement Squadron (FRS) FCLP requirements for three airframes (FA-18, E-2, and C-2). NALF Fentress lacks the capacity to support local E-2/C-2 FCLP training requirements under all operational conditions. As a result, FCLP training is routinely conducted at NALF Fentress during late-night and early morning hours (from 10:00 p.m. to 7:00 a.m.). Having only one OLF to support two major naval air installations can also result in periodic FCLP training capacity shortfalls, necessitating the use of alternative FCLP-equipped airfields, such as Naval Outlying Landing Field (NOLF) Whitehouse, Florida, and NAS Oceana.

ES.3 Proposed Action and Alternatives Considered

ES.3.1 Proposed Action

The proposed action is to acquire the use of an additional local airfield to support FCLP for E-2/C-2 squadrons operating from NS Norfolk Chambers Field. The proposed action also includes minor modifications to the airfield infrastructure to support FCLP operations.

Operations

During FCLP, pilots perform repetitive "touch-and-go" landings at airfields, which simulate landing on an aircraft carrier. FCLP is defined as that phase of required flight training that precedes carrier landing operations. It should simulate, as nearly as practicable, the conditions encountered during carrier landing operations (U.S. Department of Navy 2009). Pilots of E-2/C-2 aircraft need to be both current and proficient in carrier-landing qualification. The skills required to complete carrier landings must be routinely practiced by pilots of all experience levels to maintain the requisite level of proficiency. In order to do that, pilots conduct FCLP.

To meet FCLP requirements, the E-2/C-2 squadrons operating from NS Norfolk Chambers Field would need to conduct up to 45,000 annual operations. With each operation being a separate action, the 45,000 operations include 20,000 FCLP passes, where one FCLP pass consists of two operations: a landing or low approach followed by an immediate takeoff or climb-out. Arrivals and departures to and from the airfield, as well as holding patterns, account for the remaining 5,000 operations. Holding pattern operations support in-flight crew position changes and are conducted at an altitude of 2,000 feet above ground level.

E-2/C-2 squadrons typically conduct FCLP operations during a three-hour period and can conduct these periods up to twice per day (one day and one night period). Depending on scheduling and training requirements, operations can be conducted between 15 and 20 days in a given month, throughout the year. While the overall average annual requirement would remain the same, there could be periods of increased use followed by periods of little or no use.

FCLP training requires the installation of visual landing aids adjacent to the landing area. During FCLP training, the airfield's active runway would be closed to non-Navy aircraft, generally precluding concurrent operations, such as civilian aviation, crop dusting, skydiving, sport or glider flying, and similar airfield operations. However, the pattern would be opened to emergency aircraft, as necessary.

No aircraft or squadron personnel would be permanently stationed or homebased at the airfield. During FCLP periods, Norfolk-based Navy personnel would be present to observe and grade the pilots conducting the training operations.

Airfield Requirements

The airfield used must be within a maximum aircraft transit distance of 90 nautical miles from NS Norfolk Chambers Field. The minimum runway length must be equal to or greater than 5,000 feet, and the minimum runway width must be equal to or greater than 100 feet.

To facilitate E-2/C-2 FCLP operations, simulated carrier decks, concrete pads for Navy equipment, a storage area, and electrical power would need to be installed or available at the chosen airfield as part of the proposed action.

Project Schedule and Duration of the Action

Construction would be scheduled to be completed by July 2013 with initial operating capability shortly thereafter. The potential term for this action could be 10 years.

ES.3.2 Alternatives Considered

This EA evaluates two action alternatives for conducting E-2/C-2 FCLP operations, as well as the No Action Alternative.

Alternative 1: Emporia-Greensville Regional Airport

Emporia-Greensville is 65 nautical miles from NS Norfolk Chambers Field. The single runway at Emporia-Greensville, Runway 15/33, is 5,010 feet long and 100 feet wide. Emporia-Greensville is primarily located within Greensville County, Virginia, with the approach end of Runway 33 located in Southampton County. The entrance to Emporia-Greensville is 1.4 miles east of the city limits of the City of Emporia, Virginia.

Under Alternative 1, the Navy would conduct up to 45,000 E-2/C-2 FCLP operations annually at Emporia-Greensville. Of the total operations proposed under Alternative 1, approximately 90 percent would be performed during the hours of 7:00 a.m. to 10:00 p.m. and approximately 10 percent would be performed between the hours of 10:00 p.m. and 7:00 a.m.

Two operational scenarios are evaluated: Scenario 1 would include an FCLP pattern with three planes conducting a total of up to 45,000 operations, and Scenario 2 would include up to 30,000 operations conducted using a five-plane FCLP pattern and up to 15,000 operations conducted using a three-plane FCLP pattern. The Navy currently conducts FCLP training under Scenario 2—i.e., the three- and five-plane FCLP patterns, which would allow for greater training flexibility.

Alternative 2: Wallops Flight Facility Main Base

WFF Main Base is 70 nautical miles from NS Norfolk Chambers Field, located on the Eastern Shore of Virginia 5 miles west of Chincoteague, Virginia. The airfield has three runways, two of which meet the Navy's length requirement and could support E-2/C-2 FCLP operations. Runway 04/22 is 8,750 feet by 150 feet, and runway 10/28 is 8,000 feet by 200 feet. Runway 17/35, at 4,820 feet, does not meet the Navy's length requirement (5,000 feet) and is not being considered.

Under Alternative 2, the Navy would conduct up to 45,000 E-2/C-2 FCLP operations annually at WFF Main Base. Approximately 90 percent would be performed during the hours of 7:00 a.m. to 10:00 p.m., and approximately 10 percent would be performed between the hours of 10:00 p.m. and 7:00 a.m. Aircraft refueling and overnight detachments could occur at WFF Main Base if this alternative is chosen.

Two scenarios are analyzed in this EA for WFF Main Base. Scenario 1 would include use of Runway 04/22 for both day and night operations, while Scenario 2 would include use of Runway 10/28 for both day and night operations. FCLP could also be conducted on both runways during the daytime only. Two of the four runway ends at WFF would be utilized for E-2/C-2 FCLP operations if operations would be conducted during the day and at night (i.e., under either Scenario 1 or Scenario 2); however, daytime-only FCLP operations could be conducted on up to four runway ends. This option (conduct daytime operations on four runway ends) is covered under the analysis for Scenarios 1 and 2 for WFF.

For WFF Main Base, this EA evaluates a combination of three- and five-plane FCLP patterns, in which up to 30,000 operations would be conducted using a five-plane FCLP pattern and up to 15,000 operations would be conducted using a three-plane FCLP pattern, for a total of up to 45,000 operations annually.

ES.3.3 No Action Alternative

Under the No Action Alternative, the Navy would not use the airfield facilities at Emporia-Greensville or WFF Main Base for E-2/C-2 FCLP. E-2/C-2 squadrons operating from NS Norfolk Chambers Field would continue to utilize NALF Fentress as the primary local airfield for E-2/C-2 FCLP training requirements. Under the No Action Alternative, pilot proficiency would be maintained; however, the Navy would continue to need to conduct FCLP training into the late-night and early morning hours at NALF Fentress, occasionally conduct FCLP training at alternative airfields such as NAS Oceana, and conduct E-2/C-2 FCLP training detachments outside the local area (e.g., Navy OLF Whitehouse, near NAS Jacksonville, Florida).

ES.4 Environmental Consequences of the Proposed Action

The potential environmental impacts of Alternative 1 and Alternative 2 are summarized below. The No Action Alternative is summarized in Section ES.5 with a further description of the baseline in Section 2.2.3.

ES.4.1 Aircraft Operations and Airspace

Alternative 1: Emporia-Greensville Regional Airport

Current air traffic in the vicinity of Emporia-Greensville, a public airport, is associated with transient civilian and military over flights, victor airways, military training routes, and emergency patient transport to the Greensville Memorial Hospital heliport. Under this alternative, the runway would be closed to non-FCLP arrivals and departures, except in the case of an emergency. During the

FCLP period, there would be minor airspace impacts on civilian flights, as well as military rotary-wing and propeller aircraft training, because non-participating aircraft would not be able to utilize the runway; however, no permanent airspace designations would change as a result of the Navy's proposed action. Therefore, there would be no significant impact on aircraft operations and/or airspace at Emporia-Greensville.

Alternative 2: Wallops Flight Facility Main Base

Current air traffic in the vicinity of WFF Main Base, a federally owned airport that does not allow public access, is associated with NASA flights and military flights. Under this alternative, non-participating aircraft would be prohibited from using the WFF Main Base runway being used for Navy FCLP, except in the case of an emergency. The Navy would coordinate with WFF Main Base air traffic control to schedule FCLP and supply a tentative schedule in advance so that aircraft based at the airfield could schedule accordingly. No permanent airspace designations would change as a result of the Navy's proposed action. Therefore, there would be no significant impact on aircraft operations and/or airspace at WFF Main Base.

ES.4.2 Safety

Alternative 1: Emporia-Greensville Regional Airport

There would be no change to the runway protection zones and associated land use controls at Emporia-Greensville as a result of the Navy's proposed action. Standard air traffic management techniques would be employed during times of Navy FCLP. Emporia-Greensville airport staff would issue a Notice to Airmen announcing the closure of the airfield during FCLP operations. The airfield universal communications (UNICOM) frequency will be monitored continuously during FCLP operations. Any non-FCLP aircraft approaching the airfield will be informed of the airfield status and directed to remain clear. Given the measures put in place to minimize interaction with private aircraft during FCLP operations, the risks of an aviation mishap occurring during FCLP operations under Alternative 1 would be minimized.

An increase in the number of air operations at Emporia-Greensville could result in a minor increase in the probability of a Bird/Animal Aircraft Strike Hazard (BASH) incident. BASH management would be provided by the airfield or through a third-party services contract, as needed. An aircrew flying in and around Emporia-Greensville would adhere to flight operations standard operating procedures, using resources such as personnel on the ground to minimize BASH exposure during higher risk times of day or migration seasons. Additionally, many operations would be conducted at night, when birds are less active. As a result of standard flight operating procedures and implementation of airfield or third-party contractor BASH measures, as needed, BASH risk would be managed and would be expected to be low; therefore, there would be no significant impact related to BASH potential under Alternative 1. In conclusion, implementation of Alternative 1 would not have a significant impact on airfield safety zones or airfield safety.

Alternative 2: Wallops Flight Facility Main Base

The clear zones and potential accident zones for Runways 04/22, 10/28, and 17/35 at WFF Main Base were established by NASA and are published in NASA's master plan. There would be no change to the clear zones or potential accident zones or the land that lies beneath these zones as a result of the Navy's proposed action. Standard air traffic management techniques would be employed during times of Navy FCLP. WFF Main Base would issue a Notice to Airmen announcing the status of FCLP operations at the airfield. The airfield has an air traffic control tower, which will direct approaching non-FCLP aircraft as necessary. Given the measures put in place to minimize interaction with other aircraft during FCLP operations, the risks of an aviation mishap occurring during FCLP operations under Alternative 2 would be minimized.

WFF has a robust BASH management program that has established procedures that would assist in managing any potential increase in the risk of bird/animal-aircraft interactions. An aircrew flying in and around WFF Main Base would adhere to the facility's flight operations standard operating procedures, using resources such as communication with the control tower to minimize exposure during higher risk times of day or migration seasons. Additionally, many operations would be conducted at night, when birds are less active. Therefore, there would be no significant impact related to BASH potential under Alternative 2. In conclusion, implementation of Alternative 2 would not have a significant impact on airfield safety zones or airfield safety.

ES.4.3 Air Quality

Alternative 1: Emporia-Greensville Regional Airport
Alternative 2: Wallops Flight Facility Main Base

Both Emporia-Greensville and WFF Main Base are located in regions that are in attainment for the National Ambient Air Quality Standards, or unclassified for all criteria pollutants. Therefore, General Conformity Rule regulations and General Conformity Rule exemption thresholds would not apply to the proposed action. Both temporary construction emissions and annual operating emissions would be below 250 tons per year for all criteria emissions and therefore would have no significant impact on air quality in the region.

ES.4.4 Noise

Alternative 1: Emporia-Greensville Regional Airport

The increase in land area falling under the Day-Night Average Sound Level (DNL) due to the proposed Navy E-2/C-2 operations would equate to approximately 42 and 46 acres within the greater than 65 dB DNL noise zones for Scenarios 1 and 2, respectively. In both cases, this would impact approximately three individuals in Greensville County (i.e., approximately 0.02 percent of the total county population). As a supplemental noise metric, a Sound Exposure Level (SEL) analysis was also calculated, which evaluates the estimated noise experienced at the points of interest from single aircraft events. Slightly more than half of the points of interest would experience higher maximum modeled SEL values compared to existing conditions.

Although noise levels would increase at Emporia-Greensville under Alternative 1, under both scenarios, the overall change in the noise environment would be small both in the number of affected individuals and in exposure to single-event noise levels. In addition, the noise would be temporary and intermittent, and the aircraft operations generating the noise would be consistent with the existing purpose of the airport facility. Therefore, there would be no significant noise impact under Alternative 1 for either scenario.

Whereas NASA Wallops is not subject to Federal Aviation Administration (FAA) regulation, the Greensville-Emporia Regional Airport is subject to FAA approval of the proposed airport design changes. For this purpose, the FAA has been invited to participate in the analysis of Alternative 1 as a cooperating agency. For FAA-regulated airports, FAA policy designates the DNL 65 dB contour as the cumulative noise exposure level above which residential land uses are not compatible. Based on a current survey of the proposed action's 65 dB contour for the Greensville-Emporia Regional Airport, there appears to be one residence within the 65 dB contour.

Alternative 2: Wallops Flight Facility Main Base

The increase in land area within the noise contours due to the proposed Navy E-2/C-2 operations would be approximately 213 and 156 acres within the greater than 65 dB DNL noise zones for Scenarios 1 and 2, respectively. Under Alternative 2, Scenario 1, there would be an estimated seven more individuals within the greater than 65 dB DNL noise zones and 265 more individuals within the greater than 70 dB DNL noise zones compared with existing conditions. This represents approximately 0.02 percent of the total population in Accomack County. Under Alternative 2, Scenario 2, there would be an estimated 33 more individuals within the greater than 65 dB DNL noise zones and 14 more individuals within the greater than 70 dB DNL noise zones compared with existing conditions. This represents 0.1 percent of the total population in Accomack County. All of the identified points of interest currently experience higher maximum modeled SEL values than they would experience under either scenario for Alternative 2.

Noise impacts would not be significant because there would only be a slight increase in average noise levels expected at WFF Main Base under Alternative 2 for both Scenarios 1 and 2. In addition, the noise would be temporary and intermittent, and the aircraft operations generating the noise would be consistent with the existing purpose of the facility. If the option of conducting daytime operations on both runways were implemented, noise impacts would not be significant because the noise contours would fall within the modeled noise contours for Scenarios 1 and 2.

ES.4.5 Land Use

The Navy would not have to purchase any property, and existing land uses would be expected to continue under both Alternative 1 and Alternative 2; therefore, there would be no direct land use impacts. Indirect land use impacts would include noise associated with the Navy's FCLP operations on surrounding land uses. The Federal Aviation Regulation (FAR) Part 150 Noise Compatibility

Program, established under the Aviation Safety and Noise Abatement Act of 1979, is the primary federal regulation guiding planning for aviation noise compatibility on and around public-use airports.

Alternative 1: Emporia-Greensville Regional Airport

Under Alternative 1, there would be an increase of 0.8 acre, for Scenario 1 and Scenario 2, of incompatible residential land use immediately adjacent to the airport property. Residential land uses are not typically recommended within the 65 dB DNL noise contour. However, given the small size of the area and the existing noise environment at Emporia-Greensville, this would not be considered a significant impact.

Virginia Coastal Zone Management. The City of Emporia, Greensville County, and Southampton County are not located within the Commonwealth of Virginia's coastal zone, as defined by the Virginia Coastal Zone Management Program, and are therefore not subject to the programs and policies defined by the program. Therefore, coastal zone management is not analyzed for the Navy's proposed action at Emporia-Greensville.

Alternative 2: Wallops Flight Facility Main Base

Under Alternative 2, there would be an increase of 28 or 23 acres, for Scenario 1 and 2, respectively, of incompatible residential land use immediately adjacent to the WFF Main Base property. Residential land uses are not typically recommended within the 65 dB DNL noise contour. However, it would not be considered significant, given the limited increase in the size of the noise zones over baseline conditions at WFF Main Base.

Virginia Coastal Zone Management. WFF Main Base is located within Virginia's coastal zone. Therefore, federal agency development at WFF Main Base that could have reasonably foreseeable effects on Virginia's coastal resources must be consistent with the nine enforceable policies of the Virginia Coastal Zone Management Program. This alternative would be conducted in a manner that is either fully consistent or consistent to the maximum extent practicable with the enforceable policies of Virginia's Coastal Zone Management Program.

ES.4.6 Infrastructure and Utilities

Alternative 1: Emporia-Greensville Regional Airport
Alternative 2: Wallops Flight Facility Main Base

At either Emporia-Greensville Regional Airport or WFF Main Base, the new telephone and electric lines associated with the proposed airfield infrastructure improvements to support FCLP would attach into the grid at existing connections and would operate within existing capacity. Therefore, there would be no significant impact on telephone or electrical services. No water or wastewater infrastructure improvements would be necessary at either site to support FCLP.

ES.4.7 Visual Landscape: Light Emissions and Visual Impacts

Alternative 1: Emporia-Greensville Regional Airport
Alternative 2: Wallops Flight Facility Main Base
At either Emporia-Greensville Regional Airport or WFF Main Base, new infrastructure would be installed at the airfield under the proposed action, including painted simulated carrier decks with flush-deck lighting at the ends of each runway approach to be used; small concrete pads for placement of Navy equipment; and new electrical and phone connections for Navy equipment. A new fenced storage area would also be installed at Emporia-Greensville; adequate storage already exists at WFF Main Base. The communities surrounding both Emporia-Greensville and WFF Main Base are generally accustomed to seeing aircraft operating in the area, as both are active airfields.

These airfield-associated modifications and aircraft operations would be consistent with the visual setting for either Emporia-Greensville or WFF Main Base; therefore, there would be no significant impact to the visual landscape under either alternative.

ES.4.8 Geology, Topography, and Soils

Alternative 1: Emporia-Greensville Regional Airport
Alternative 2: Wallops Flight Facility Main Base
Under Alternative 1 and 2, proposed minor construction could expose soils to wind and stormwater erosion, compaction, and rutting. Standard soil erosion and sedimentation controls, best management practices, and appropriate revegetation would be carried out to mitigate the potential impacts. Therefore, there would be no significant impact on geology, topography, or soil resources under either alternative.

ES.4.9 Water Resources

Alternative 1: Emporia-Greensville Regional Airport
Under Alternative 1, there would be no direct impacts on surface waters from construction. No construction would occur within floodplains or wetlands under Alternative 1; therefore, there would be no direct impacts on these resources. During construction of the concrete pads, surface runoff carrying contaminants or sediment into nearby wetlands and waters would be minimized through the use of proper erosion and sediment control measures, including BMPs. Therefore, no indirect impacts to wetlands would occur under Alternative 1.

Alternative 1 would result in the construction of 0.43 acre of new impervious surface along Runway 15/33. The proposed construction would disturb less than 1 acre; therefore, a storm water construction permit and Stormwater Pollution Prevention Plan would not be required. However, an Erosion and Sediment Control Plan would be necessary because the land disturbance would exceed 10,000 square feet (0.23 acre). As a result of minor construction plus the implementation of erosion control measures, Alternative 1 would have no significant impacts on stormwater.

Alternative 2: Wallops Flight Facility Main Base

Under Alternative 2, there would be no direct impacts on surface waters from construction. No construction would occur within floodplains or wetlands; therefore, there would be no direct impacts on these resources. During construction of the concrete pads, surface runoff carrying contaminants or sediment into nearby wetlands and waters would be minimized through the use of proper erosion and sediment control measures, including BMPs. Therefore, no indirect impacts to wetlands would occur under Alternative 2.

Alternative 2 would result in construction of a maximum of 0.05 acre of new impervious surface along Runways 04/22 or 10/28. The Navy's proposed action and related construction would not significantly contribute to additional stormwater discharge to surface waters. In addition, WFF would not be required to update its Stormwater Pollution Prevention Plan because the proposed construction would disturb less than 1 acre. Also, an Erosion and Sediment Control Plan would not be necessary because the land disturbance would not exceed 10,000 square feet (0.23 acre). Therefore, Alternative 2 would have no significant impacts from stormwater discharge.

ES.4.10 Biological Resources

An increase in aircraft operations could have direct impacts on wildlife. It has been widely reported in scientific literature, however, that the intensities and durations of wildlife startle responses decrease with the number and frequency of exposures. Several studies indicate a strong tendency for species to acclimate or habituate to noise disturbances (Grubb and King 1991; Ellis et al. 1991; Black et al. 1984; Conomy et al. 1998). Most wildlife in the vicinity of Emporia-Greensville Regional Airport or WFF Main Base would likely already be acclimated to aircraft noise. The increase in size of the greater than 65 dB DNL noise zones under Alternative 1 or Alternative 2 compared to the baseline may impact individuals not yet habituated. It would be expected that most of these individuals would habituate to noise exposure after some potential short-term effects. Therefore, noise from aircraft operations under Alternative 1 or Alternative 2 would not have a significant impact on wildlife for the duration of the Navy's proposed action.

Alternative 1: Emporia-Greensville Regional Airport

Implementation of Alternative 1 would not have significant impacts on vegetation as only 0.02 acre of maintained grassland would be permanently removed for concrete pad construction. Construction of the fenced storage area (i.e., 0.41 acre) would not impact vegetation because it would be constructed on an old runway at the airport. Installation of buried utility lines would result in only temporary impacts on maintained grassland.

Construction under Alternative 1 would result in both direct and indirect minor impacts on individuals of species present. However, due to the small area impacted, the unlikelihood of maintained grassland supporting many wildlife species, and the temporary nature of the impact, construction would not have a significant impact on wildlife or avian resources.

Federally threatened or endangered species were identified as potentially occurring in the vicinity of Emporia-Greensville. However, no suitable habitat for these species occurs within the modeled 65 dB DNL noise zones; therefore, Alternative 1 would have no effect on federally listed species.

Alternative 2: Wallops Flight Facility Main Base

Implementation of Alternative 2 would have no significant impact on vegetation as only a maximum of 0.05 acre of maintained grassland would be permanently removed for concrete pad construction. Installation of buried utility lines would result in only temporary impacts on maintained grassland.

Construction would result in both direct and indirect minor impacts on individuals of wildlife/bird species present. However, due to the small area impacted, the unlikelihood of maintained grassland supporting many wildlife/bird species, and the temporary nature of the impact, construction under Alternative 2 would not have a significant impact on wildlife or birds. No construction would occur in or near Chincoteague Bay; therefore, no impacts to marine fish or mammals would occur.

Any marine fish that occur regularly in Chincoteague Bay are already habituated to noise from current and ongoing aircraft over flights, and the projected noise contours under Alternative 2 are only slightly larger than the existing noise contours at WFF Main Base. Therefore, there would be no significant impact to fish present in Chincoteague Bay from the increase in aircraft operations at WFF Main Base associated with Alternative 2.

Smaller delphinids, including the bottlenose dolphin, generally react to aircraft over flights either neutrally or with a startle response (Wursig et al. 1998). The Navy has determined that although short-term disturbance of the bottlenose dolphin from the increase in aircraft operations at WFF Main Base could be possible, Alternative 2 would not result in Level A or Level B harassment as defined under the Marine Mammal Protection Act, and there would be no significant impact to the bottlenose dolphin.

No federally listed threatened or endangered species under USFWS jurisdiction were identified as potentially occurring within the modeled 65 dB DNL noise zone at WFF Main Base. Several species under NMFS jurisdiction could occur in Chincoteague Bay, including the green, Kemp's ridley, and loggerhead sea turtles; the Atlantic and shortnose sturgeon; and the federal candidate species blueback herring and scalloped hammerhead shark. Considering the existing aircraft over flights and rocket launches from Wallops Island (located approximately 6 miles from the southern boundary of WFF Main Base), the increase in aircraft operations at WFF Main Base associated with Alternative 2 would not be expected to have a discernible impact on sea turtles or fish. Therefore, there would be no effect on the federally threatened loggerhead and green sea turtles, the federally endangered Kemp's ridley sea turtle, and the federally endangered Atlantic and shortnose sturgeons. Similarly, the proposed

action under Alternative 2 would not jeopardize the federal candidate blueback herring or scalloped hammerhead shark.

Two additional state-listed species, the bald eagle and gull-billed tern, were identified as potentially occurring within the area encompassing the modeled 65 dB DNL noise contour around WFF Main Base. Five bald eagle nests occur within approximately 5 miles of WFF Main Base; all five were listed as active/occupied in 2011. Given the current air operations at WFF Main Base, bald eagles nesting close to the facility are likely habituated to aircraft activity and noise. Therefore, an increase in air operations at WFF Main Base under Alternative 2 would not be expected to result in a take of bald eagles. Gull-billed terns do not occur on WFF Main Base and therefore would not be impacted by construction under Alternative 2. Additionally, no significant increase in aircraft noise would be expected on the barrier islands where gull-billed terns are likely to occur. Consequently, Alternative 2 would have no effect and therefore no significant impact on the state-threatened gull-billed tern.

ES.4.11 Cultural Resources

Alternative 1: Emporia-Greensville Regional Airport
Alternative 2: Wallops Flight Facility Main Base

The Navy consulted with the Virginia State Historic Preservation Office (SHPO) regarding the proposed action at Emporia-Greensville or WFF Main Base, pursuant to Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800. The Navy has completed the Section 106 process for the proposed action at Emporia-Greensville or WFF Main Base. It was determined that the proposed action would have no significant impact on cultural resources.

ES.4.12 Socioeconomics

Alternative 1: Emporia-Greensville Regional Airport

Emporia-Greensville is currently an operating airport facility, and the projected noise resulting from the proposed action would not extend significantly outside the airport property. Results of studies conducted on the effects of aircraft noise on property values have been inconclusive and suggest that numerous factors influence property values. Therefore, the potential increase in noise levels resulting from the proposed action would not be expected to have a significant impact on residential property values around Emporia-Greensville.

The expected increase in the number of operations at Emporia-Greensville slightly increases the potential for an emergency at the airfield. Given the safety record of the E-2/C-2 aircraft, potential incidents requiring the response of emergency services would be expected to be infrequent. Alternative 1 would therefore have no significant impact on community services.

Environmental Justice. The 65 dB DNL noise zone was used as the criteria for identifying potential minority and/or low-income populations surrounding Emporia-Greensville. U.S. Census data for the census blocks and block groups

within the noise contour were compared to that of the county. Under Alternative 1, a potential environmental justice community was identified within Census Tract 8801.01, Block Group 3, in Greensville County and Census Tract 2002, Block Group 1, in Southampton County. However, upon further examination at the block-level for Census Tract 8801.01 Block 3039 (where the one house within the 65 dB DNL noise zone is located), the percentage of the population that was minority is below that of Greensville County. In addition, no houses are located within the greater than 65 dB DNL noise zones in Southampton County. Therefore, the potential for disproportionately high and adverse human health and environmental effects would not be considered significant.

Protection of Children from Environmental Health Risks and Safety Risks. The 65 dB DNL noise contour at Emporia-Greensville under Alternative 1 extends over areas with a lower percentage of people under the age of 21 than that of Greensville County. Therefore, there would not be a disproportionately adverse impact on children, and the proposed action would have no significant impact on the protection of children from health and safety risks.

Alternative 2: Wallops Flight Facility Main Base

WFF Main Base is currently an operating airfield facility, and the projected noise resulting from the proposed action would not be substantially different from existing conditions. Results of studies conducted on the effect of aircraft noise on property values have been inconclusive and suggest that numerous factors influence property values. Therefore, the potential increase in noise levels resulting from the proposed action would not be expected to have a significant impact on residential property values around WFF Main Base.

The expected increase in the number of operations at WFF Main Base slightly increases the potential for an emergency at the airfield. Given the safe track record of the E-2/C-2 aircraft, potential incidents requiring the response of emergency services would be expected to be infrequent. Alternative 2 would therefore have no significant impact on community services.

In a detachment scenario, detachment personnel would be housed in Navy lodging at the installation. Any personnel that could not be accommodated in the Navy lodging on the installation would stay in local hotels/motels. These existing lodging establishments would be able to provide adequate capacity most of the year for the Navy personnel not accommodated in Navy lodging. In a non-detachment scenario, there would be no change in temporary population.

There could be increased calls for community emergency or police response if Navy personnel were to be temporarily housed on WFF Main Base or in the surrounding community during detachment periods. However, this would not be expected to require expenditures on new personnel or equipment because there would be no increase in the permanent local population. Therefore, implementation of Alternative 2 at WFF Main Base would have no significant impact on community services.

Environmental Justice. The 65 dB DNL noise zone was used as the criteria for identifying potential minority and/or low-income populations surrounding WFF Main Base. U.S. Census data for the census blocks and block groups within the noise contour were compared to Accomack County. Under Alternative 2, Scenario 2, a potential environmental justice community was identified within Census Tract 902, Block Group 3. However, upon further examination at the block-level for Census Tract 902, Block 3112, the percentage of the population that was minority is below that of Accomack County. Therefore, the potential for disproportionately high and adverse human health and environmental effects would not be considered significant.

Protection of Children from Environmental Health Risks and Safety Risks. Census Tract 9802, Block Group 1, has a higher percentage of people under the age of 21 than the rest of Accomack County. However, all of the people in this block group appear to be members of the same household, and this residence would not be within the modeled noise contours under any of the modeled scenarios under Alternative 2. Block Groups 2 and 3 in Census Tract 902 have lower percentages of people under the age of 21 than the rest of Accomack County; therefore, there would not be a disproportionately high and adverse effect on children, and the proposed action would have no significant impact on the protection of children from health and safety risks.

ES.4.13 Environmental Management

Alternative 1: Emporia-Greensville Regional Airport

Under the Navy's proposed action, no aircraft or personnel would be permanently stationed or homebased at Emporia-Greensville. Therefore, the Navy would not have a need to store any oil or hazardous materials at the airfield.

Alternative 2: Wallops Flight Facility Main Base

If detachments were to occur, there would be some temporary oil and hazardous materials associated with aircraft maintenance stored at the airfield. However, the Navy would follow established WFF procedures for the management of hazardous materials and hazardous waste. The Navy will also conform to the WFF Pollution Prevention Plan, so there would be no significant impact on pollution prevention at the airfield. The increase in solid waste would be negligible; therefore, there would be no addition of, or significant impact on, the level of solid waste produced.

ES.5 No Action Alternative

Under the No Action Alternative, the Navy would not use the airfield facilities at Emporia-Greensville or WFF Main Base for E-2/C-2 FCLP. E-2/C-2 squadrons, operating from NS Norfolk Chambers Field, would continue to utilize NALF Fentress as the primary local airfield for E-2/C-2 FCLP training requirements supplemented by occasional FCLP training at alternative airfields such as NAS Oceana and by conducting detachments outside the local area when NALF Fentress scheduling reaches maximum capacity. Since the number and type of aircraft operations at Emporia-Greensville or WFF Main Base would not change

under the No Action Alternative, there would be no change in the existing environment from the baseline conditions.

ES.6 Cumulative Impacts

Based on a review of past, present, and reasonably foreseeable actions at Emporia-Greensville, WFF Main Base, and their surrounding regions, several actions were considered when analyzing the potential cumulative impacts. Projects at Emporia-Greensville include the ongoing construction of Oak Grove Baptist Church, the ongoing development of the Mid-Atlantic Advanced Manufacturing Center, and the reasonably foreseeable runway shift at Emporia-Greensville Regional Airport to bring the airfield into compliance with FAA design standards. Projects at WFF include the ongoing build-out of Wallops Research Park, the ongoing expansion of NASA's WFF Launch Range, the ongoing NASA WFF alternative energy project (80 acres of solar panels), the ongoing construction of the Olde Mill Pointe residential development, and the reasonably foreseeable NASA Site-wide Programmatic Environmental Impact Statement at WFF. Based on the analysis in this EA, the proposed action would not have significant cumulative impacts on any resource area when considered with these other actions.

ES.7 Public Notification

The Navy issued a press release on June 17, 2011, announcing the intent to study the potential environmental impacts of conducting E-2/C-2 FCLP operations at Emporia-Greensville. In October 2011, the Navy announced its decision to include WFF Main Base as a potential site for the proposed action. Government agencies, special interest groups, and other interested people are invited to participate in informational open houses to be held in their communities regarding the proposed action and findings in the Draft EA. Participants in the information sessions will have the opportunity to submit written comments for consideration in the Final EA.

ES.8 Summary of Findings

The proposed action would not result in significant adverse direct, indirect, or cumulative environmental impacts at Emporia-Greensville or WFF Main Base.

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List of Abbreviations and Acronyms

BASH	Bird/Animal Aircraft Strike Hazard
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
CZ	Clear Zone
CZMA	Coastal Zone Management Act
dB	Decibel
DNL	Day-Night Average Sound Level
DOAV	Department of Aviation
DOD	Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FCLP	Field Carrier Landing Practice
FONSI	Finding of No Significant Impact
FRS	Fleet Replacement Squadron
GPS	Global Positioning System
IFLOLS	Improved Fresnel Lens Optical Landing System
LSO	Landing Signal Officer
MOVLAS	Manually Operated Visual Landing Aid System
NALF	Naval Auxiliary Landing Field
NAS	Naval Air Station

List of Abbreviations and Acronyms (cont.)

NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOLF	Naval Outlying Landing Field
NOTAM	Notice to Airmen
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NS	Naval Station
OLF	Outlying Landing Field
OSHA	Occupational Safety and Health Administration
PEIS	Programmatic Environmental Impact Statement
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposals
RPZ	Runway Protection Zone
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office
UAS	Unmanned Aerial Systems
UNICOM	Universal Communications
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VAC	Virginia Administrative Code
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VOC	Volatile Organic Compound
WFF	Wallops Flight Facility

1 Purpose of and Need for Action

1.1 Introduction

This environmental assessment (EA) evaluates the potential environmental consequences of the U.S. Department of the Navy's (the Navy's) proposed action to conduct regular, scheduled E-2C Hawkeye, E-2D Advanced Hawkeye, and C-2A Greyhound (E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield that meets the Navy's minimum airfield requirements (described in more detail in Section 1.2.3). For the purposes of this document, local is defined as within 90 nautical miles of Naval Station (NS) Norfolk Chambers Field, in Norfolk, Virginia. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport (Emporia-Greensville) or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility (WFF) until the Navy addresses local FCLP capacity shortfalls on a more permanent basis. The proposed action would support FCLP operations for E-2/C-2 squadrons operating from NS Norfolk Chambers Field, in Norfolk, Virginia. This EA analyzes the environmental consequences associated with both the proposed FCLP operations and minor modifications to airfield facilities to support the FCLP operations.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations on implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), Navy procedures for implementing NEPA (32 CFR 775), and Navy environmental instructions (OPNAVINST 5090.1C CH-1). The Navy is the lead agency for the proposed action.

In accordance with 40 CFR 1501.6, the FAA and NASA are serving as cooperating agencies since their specific expertise is needed to ensure adequate evaluation of the potential environmental effects from the Navy's proposed action within each agency's jurisdiction. Furthermore, in accordance with FAA Order 1050.1E (see Appendix E), all actions directly undertaken by the FAA or where the FAA has sufficient control and responsibility are subject to NEPA review, including all grants, loans, contracts, leases, construction, research activities, rulemaking and regulatory actions, certifications, licensing, permits, and plans submitted to the FAA by state and local agencies that require FAA approval, and legislation proposed by the FAA (USDOT 2006).

Emporia-Greensville is within FAA's National Plan of Integrated Airport Systems. According to the Federal Airport Act of 1946, airports within the National Plan of Integrated Airport Systems receive FAA funding in the form of grants for maintenance and infrastructure improvements. Airport sponsors receiving FAA funding must sign a grant agreement, which obligates the airport sponsors to maintain and operate the airport and resulting airport property in accordance with FAA conditions and standards (per Title 49, United States Code, section 4705(d)). Therefore, any proposed Navy modifications to the Emporia-Greensville property or operations must comply with FAA standards outlined in the most recent master grant agreement executed by the Emporia-Greensville Regional Airport Commission on March 7, 2006. Revenue generated as a result of a lease with the Navy is subject to grant assurance and compliance conditions that require this revenue to stay on the airport and be used for airport-related activity. As WFF is owned and managed by NASA, any proposed modifications to operations or infrastructure at the site must comply with NASA's NEPA procedures outlined in 14 CFR 1216.3.

1.2 Purpose of and Need for the Proposed Action

The purpose of the proposed action is to provide additional local FCLP training capacity for E-2/C-2 squadrons operating from NS Norfolk Chambers Field. Naval Auxiliary Landing Field (NALF) Fentress, the single, local FCLP outlying landing field (OLF) supporting two major naval air installations, Naval Air Station (NAS) Oceana and NS Norfolk Chambers Field, provides the only dedicated local FCLP training environment specifically for meeting both fleet squadron and Fleet Replacement Squadron (FRS) FCLP requirements for three airframes (FA-18, E-2, and C-2). NALF Fentress lacks the capacity to support local E-2/C-2 FCLP training requirements under all operational conditions. As a result, FCLP training is routinely conducted at NALF Fentress during late-night and early morning hours (from 10:00 p.m. to 7:00 a.m.). Having only one OLF to support two major naval air installations can also result in periodic FCLP training capacity shortfalls, necessitating the use of alternative FCLP-equipped airfields, such as Naval Outlying Landing Field (NOLF) Whitehouse, Florida, and NAS Oceana.

1.2.1 Field Carrier Landing Practice Requirements

During FCLP, pilots perform repetitive "touch-and-go" landings at airfields. FCLP is defined as that phase of required flight training that precedes carrier landing operations. It should simulate, as nearly as practicable, the conditions encountered during carrier landing operations (U.S. Department of Navy 2009). Pilots of E-2/C-2 aircraft need to be both current and proficient in carrier landing qualification. The skills required to complete carrier landings must be routinely practiced by pilots of all experience levels to maintain the requisite level of proficiency. In order to do that, pilots in both fleet (i.e., carrier air wing) and replacement squadrons (i.e., FRS) conduct FCLP. It is important that lighting, flight patterns, and altitudes flown during FCLP are as close as possible to what a pilot would encounter when landing on an actual aircraft carrier, both during day and nighttime conditions, so that pilots are fully prepared for operations at sea. FCLP operations for fleet E-2/C-2 squadrons and the FRS, operating from NS

Norfolk Chambers Field, are primarily conducted at NALF Fentress and through FCLP detachments (i.e., sending a portion of the E-2/C-2 FRS out of the local training area to NAS Jacksonville, Florida). These detachments remove aircraft from availability for other required training events.

Field Carrier Landing Practice at Naval Auxiliary Landing Field Fentress

NALF Fentress is located in the City of Chesapeake, Virginia, approximately 17 miles southwest of NS Norfolk Chambers Field (see Figure 1-1). NALF Fentress is the primary OLF used for FCLP training by all aircraft squadrons (FA-18, E-2, and C-2) stationed at and operating from NS Norfolk Chambers Field and NAS Oceana, located in the City of Virginia Beach, Virginia (see Figure 1-1).

From 2001 to 2010, approximately 75,600 to 96,600 operations were conducted annually at NALF Fentress by all carrier-based aircraft utilizing the airfield, with the most operations occurring in 2007. In 2010, 93,628 operations (of which 93,132 were FCLP operations, which equates to 46,566 FCLP passes) were performed. Additional information on how operations are counted can be found in Section 2.1.1.

NALF Fentress lacks the capacity to support local carrier-based aircraft FCLP requirements under all conditions. NALF Fentress is the single, local OLF for the 16 FA-18 squadrons and FA-18 FRS based at NAS Oceana, Virginia, as well as the five E-2 squadrons, one C-2 squadron, and the E-2/C-2 FRS based at NS Norfolk Chambers Field. No other Navy OLF supports such a demand, and, as a result, several times each year schedule conflicts occur when multiple users (more than one carrier air wing or one or more carrier air wings and the FRS[s]) require use of the OLF at the same time, resulting in FCLP training capacity shortfalls. These capacity shortfalls are exacerbated during summer months when hours of darkness are most limited, as the majority of FCLP training is conducted after sunset. These periodic FCLP capacity shortfalls at NALF Fentress are currently mitigated through the use of alternative FCLP-capable airfields such as NOLF Whitehouse, Florida, and NAS Oceana.

As a result of these periodic FCLP capacity shortfalls, the E-2/C-2 FRS conducts four to six 10-day FCLP detachments to NAS Jacksonville, Florida, annually, completing FCLP training at NOLF Whitehouse. Among other impacts, these detachments remove aircraft from availability for other required flight training during the period of the detachment. As NAS Oceana is a Master Jet Base, repetitive training operations, such as FCLP, are not routinely conducted at the airfield as it can interfere with the broader mission of the jet base.

The use of local airfield facilities at either Emporia-Greensville or NASA WFF for E-2/C-2 FCLP will serve as an interim bridge to manage FCLP capacity shortfalls at NALF Fentress until the Navy addresses local FCLP capacity shortfalls on a more permanent basis.

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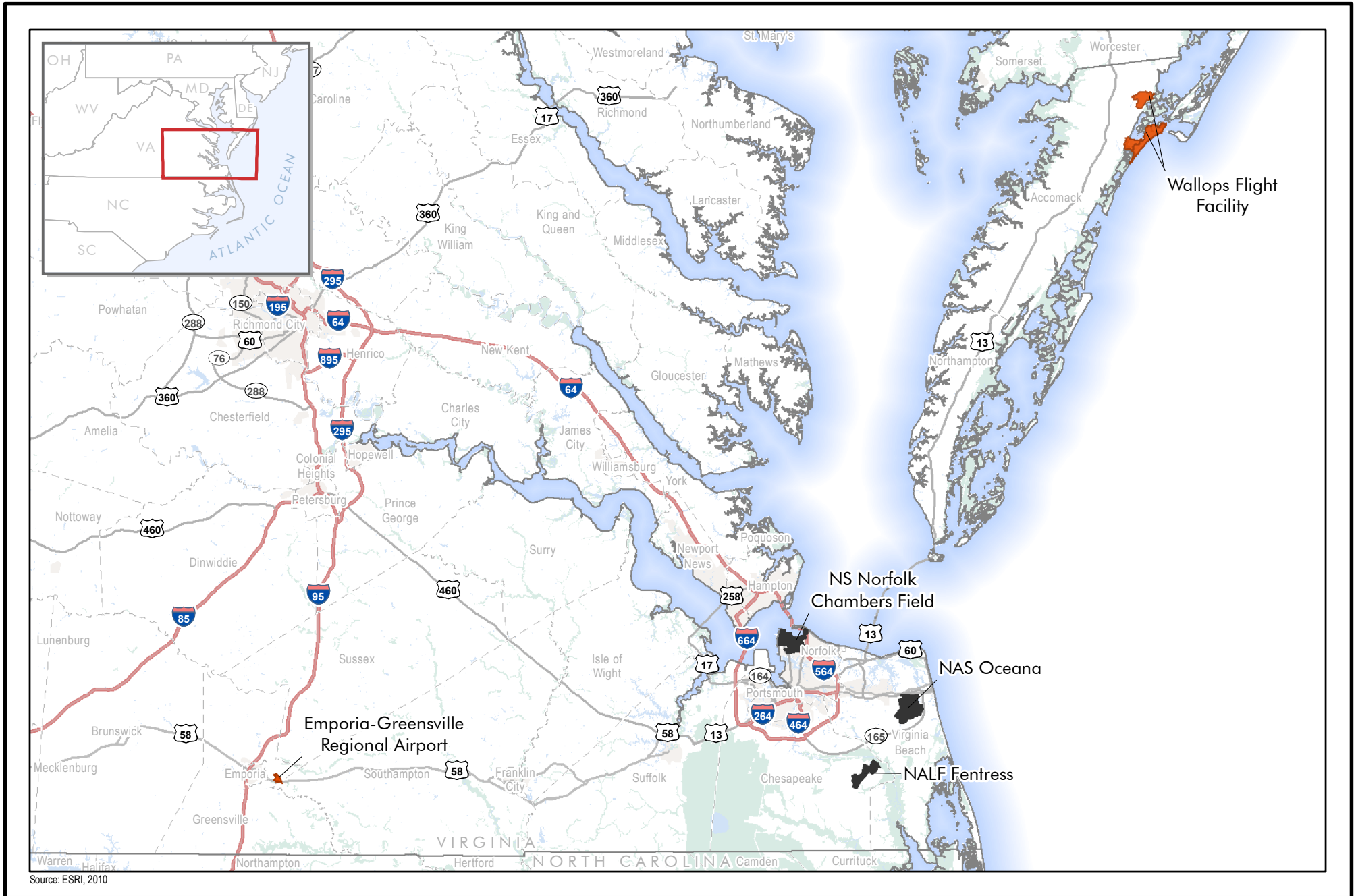

Source: ESRI, 2010

Figure 1-1
Regional Location Map

Field Carrier Landing Practice at Naval Air Station Oceana

NAS Oceana occupies 5,776 acres within the limits of the City of Virginia Beach, Virginia, approximately 3.5 miles inland from the Atlantic coast (see Figure 1-1). The station has two sets of dual runways, oriented roughly northeast-southwest (Runways 5R/23L and 5L/23R) and roughly northwest-southeast (Runways 14R/32L and 14L/32R).

The mission of NAS Oceana is to support the Navy's Atlantic and Pacific Fleet Force of strike fighter aircraft and joint/interagency operations. Strike fighter pilots out of NAS Oceana conduct air-to-air and air-to-ground training missions in designated military training ranges along the East Coast. These training requirements are accommodated through departures and arrivals at NAS Oceana. NAS Oceana is not used routinely for FCLP training because of scheduling conflicts with training evolutions conducted by both FA-18 fleet squadrons and the FA-18 FRS. NAS Oceana operations are also constrained by pattern, altitude, and flight path restrictions.

When FCLP training is conducted at NAS Oceana, the normal departures and arrivals at the air station can be disrupted. The parallel runway design at NAS Oceana is intended to accommodate high-tempo operations by allowing arrivals on one runway while simultaneous departures occur on the other. Conducting FCLP operations on one runway effectively closes that runway for any other use. Any squadron conducting FCLP operations at NAS Oceana leaves only one runway to support all other flight and training operations.

Field Carrier Landing Practice at Naval Station Norfolk Chambers Field

Chambers Field is the airfield located onboard NS Norfolk. Naval Station Norfolk is located in the southeastern corner of the Commonwealth of Virginia, in the Sewells Point area of the City of Norfolk, and is the largest naval complex in the world (see Figure 1-1). NS Norfolk has two primary components: 1) the pier facilities that berth ships, to include aircraft carriers and submarines, and 2) the airfield known as Chambers Field. The mission of NS Norfolk Chambers Field is to support the operational readiness of the U.S. Atlantic Fleet, primarily by providing facilities and services to support the missions of its tenant commands. Aircraft utilizing NS Norfolk Chambers Field include fixed-wing aircraft and rotary-wing aircraft (see Section 3.2.1.1.1 for a definition of “fixed-wing” and “rotary-wing”). Fixed-wing aircraft types, in addition to the E-2/C-2 squadrons discussed in Section 1.2.2, include the C-9, C-130, C-5, FA-18C/D Hornet, and FA-18E/F Super Hornet. Rotary-wing aircraft types that are currently utilizing, or are projected to utilize, NS Norfolk Chambers Field include the MH-60S, SH-60F/HH-60H, MH-53, and CH-46E. NS Norfolk also has numerous major non-Navy tenants, such as the United States Air Force Air Mobility Command Passenger and Air Cargo Terminal. Located on the south side of the airfield, the terminal supports the movement of approximately 10,000 passengers and 1,500 to 2,500 tons of cargo per month in support of military missions worldwide (U.S. Navy 2009).

The basic flight operations at NS Norfolk Chambers Field are departures, straight in/full-stop arrivals, overhead arrivals, touch-and-go operations, low approaches, low-work/hover areas, and ground control approaches. The 2009 NS Norfolk Chambers Field Air Installations Compatible Use Zones report projects approximately 43,845 fixed-wing and 96,466 helicopter operations, for a total of 140,311 annual operations. The total operational count includes transient aircraft that utilize NS Norfolk Chambers Field but are not permanently based at the installation (U.S. Navy 2009).

FCLP is not conducted at Chambers Field for a number of operational reasons. Chambers Field has only a single east-west runway (Runway 10/28) that supports flight operations for all aircraft operating from the airfield. Conducting FCLP operations at Chambers Field would effectively close this single runway to all other flight operations or would result in numerous interruptions to FCLP training as these aircraft would need to give way to inbound and outbound traffic. Additionally, the landing pattern altitude and direction do not support the regular FCLP pattern.

Outlying Landing Field Environmental Impact Statement

In recognition of the scheduling capacity shortfalls of NALF Fentress, the Navy was studying the potential environmental impacts and feasibility of constructing an additional OLF. The additional OLF would have supported FCLP training for carrier-based fixed-wing squadrons stationed at and operating from NAS Oceana (FA-18C Hornet and FA-18E/F Super Hornet squadrons and FRS) and NS Norfolk Chambers Field (E-2/C-2 squadrons and FRS). Under this effort five site alternatives were identified as potential OLF locations. The Navy began preparing an Environmental Impact Statement (EIS) to analyze the potential environmental impacts of construction and operation of the additional OLF. However, in January 2011, the Navy suspended release of and stopped work on the OLF Draft EIS until the Joint Strike Fighter basing and training requirements for the East Coast are better defined. Currently, the Navy is developing an EIS analyzing the potential environmental impacts of West Coast Joint Strike Fighter homebasing options. An EIS to evaluate Joint Strike Fighter homebasing on the East Coast will commence at a date to be determined, but no earlier than 2014. At that time, the Navy will re-evaluate the local OLF requirement and potential East Coast Joint Strike Fighter homebasing locations.

1.2.2 Naval Station Norfolk Chambers Field E-2/C-2 Squadrons

Currently, six fixed-wing carrier air wing squadrons (five E-2C Hawkeye squadrons and one C-2A Greyhound squadron) and the Navy's single E-2/C-2 FRS operate from NS Norfolk Chambers Field.

These six carrier air wing E-2/C-2 squadrons, or "fleet" squadrons, are assigned to the Atlantic Fleet and deploy aboard aircraft carriers as part of the larger attached carrier air wing. The FRS trains naval aviators and naval flight officers on the specific aircraft (E-2 or C-2) they have been assigned to fly. The FRS does not deploy. Students in the FRS are graduate-level aviators, aviators transitioning from one type aircraft to another, or aviators returning to the cockpit after assigned duty away from flying. After completing the required training syllabus,

to include FCLP training, FRS graduates are then assigned to a fleet squadron. The amount of FCLP training required for FRS pilots prior to carrier qualifications varies, but it is generally higher than that of fleet pilots.

E-2C/D Hawkeye/Advanced Hawkeye

The E-2C/D aircraft is the Navy's twin-engine, turboprop, all-weather, carrier-based, airborne early warning and control platform. It provides early warning and command and control functions for the carrier strike group to which it is attached. Additional missions include surface surveillance coordination, strike and interceptor control, search and rescue guidance, and communications relay.

The E-2C Hawkeye is gradually being replaced by the E-2D Advanced Hawkeye. The E-2D Advanced Hawkeye entered operational service in 2010 and began replacing the E-2C in 2011. E-2Cs will be fully replaced by E-2Ds by 2022. The differences between the E-2C and E-2D do not extend to the engine and propellers that drive the aircraft; therefore, the E-2C and E-2D are the same with respect to environmental considerations (specifically, noise). Currently, 28 E-2C and one E-2D aircraft are stationed at NS Norfolk Chambers Field, which includes 20 E-2C aircraft assigned to the fleet squadrons and eight E-2C and one E-2D aircraft assigned to the E-2/C-2 FRS. The Navy's only E-2/C-2 FRS is stationed at NS Norfolk Chambers Field.

C-2A Greyhound

The C-2A Greyhound is a twin-engine, turboprop cargo plane designed to land on aircraft carriers. The aircraft is capable of carrying 10,000 pounds of cargo and up to 26 passengers. Currently, 17 C-2A Greyhound aircraft are stationed at NS Norfolk Chambers Field, which includes 12 C-2A aircraft assigned to the single East Coast Fleet Logistics Support Squadron and five C-2A aircraft assigned to the E-2/C-2 FRS.

1.2.3 Airfield Requirements

In February 2011, the Navy began the search for an airfield beyond the Department of Defense's currently available Hampton Roads airfields for E-2/C-2 FCLP operations. The Navy prepared a detailed list of Navy FCLP requirements, including the required airfield specifications, planned infrastructure modifications, support services, airspace, flight tracks, operational availability, and security. The list includes, among other items, the following specific airfield requirements:

(1) The airfield used must be within a maximum aircraft transit distance of 90 nautical miles from NS Norfolk Chambers Field. This transit distance

represents the maximum distance an E-2/C-2 aircraft can transit to an airfield, conduct a three-hour FCLP training period, and return to homebase with required fuel reserve under Visual Flight Rules without refueling;

(2) The minimum runway length must be equal to, or greater than, 5,000 feet (rounded to the nearest 100 feet), which represents the minimum runway length for an E-2/C-2 to complete a takeoff or full-stop landing under normal procedures; and

(3) The minimum runway width must be equal to, or greater than, 100 feet.

Infrastructure Modification Requirements

In order to support E-2/C-2 FCLP operations, the following infrastructure modifications and equipment need to be installed at any prospective FCLP airfield:

(1) **Simulated Carrier Decks.** A painted, day/night simulated carrier deck with flush-deck lighting must be installed on each end of the runway designated for nighttime E-2/C-2 FCLP operations. Each simulated carrier deck must have centerline, edge, and—for those designated for nighttime use—threshold lights. A painted carrier deck, without lighting, must be installed on each end of the runway designated for daytime-only E-2/C-2 FCLP operations. The Landing Signal Officer (LSO) stationed at the runway must have the ability to turn the lighting on and off on demand.

(2) **Concrete Pads.** Concrete pads must be installed alongside each simulated carrier deck for the placement of the following Navy equipment:
   a) Improved Fresnel Lens Optical Landing System (IFLOLS);
   b) Manually Operated Visual Landing Aid System (MOVLAS); and
   c) LSO workstation.

(3) **Storage Area.** A fenced and secure storage area located outside the Runway Safety Area and Runway Object Free Area positioned so as not to penetrate Federal Aviation Regulation (FAR) Part 77 airspace criteria, and sufficient to store the equipment listed above when not in use by the Navy, is required per FAA regulations. The storage area requirement applies to Emporia-Greensville only.

(4) **Electrical Power**. Sufficient electricity must be available, or power lines must be installed, to power the simulated carrier decks' lighting and the equipment listed above. Electricity must also be available or installed to power the following equipment inside or near the LSO workstation:
   a) one ultra high frequency and one very high frequency radio;
   b) one telephone land line;
   c) overhead and desk lighting; and
   d) abeam position marker.

Support Services Requirements

In addition to the infrastructure modifications identified above, various services will be required to support E-2/C-2 FCLP operations. Services required to support the proposed action include fire and rescue, debris and snow removal, and relocation of Navy equipment, among others.

1.2.4 Description of Emporia-Greensville Regional Airport and Wallops Flight Facility

Emporia-Greensville meets the minimum airfield specification requirements for E-2/C-2 FCLP and is being examined as an alternative in this EA. Emporia-Greensville is 65 nautical miles from NS Norfolk Chambers Field (see Figure 1-2). The single runway at Emporia-Greensville, identified as 15/33, is 5,010 feet long and 100 feet wide. The runway is aligned with prevailing winds, has existing edge lights, and is in good condition.

Emporia-Greensville is primarily located within Greensville County, with the southeastern end of the runway located in Southampton County. The entrance to Emporia-Greensville is 1.4 miles east of the city limits of the City of Emporia, Virginia (see Figure 1-2). Approximately 2,320 general aviation aircraft operations occur annually and a total of four privately owned aircraft are based at the airport.

Emporia-Greensville is publically owned and is managed by an airport commission. An executive director manages the airport's finances and operations and reports to the airport commission. The airport commission contracts with a private company to operate the airport and provide aeronautical services such as fueling, hangaring, tie-down, and parking, as needed. Equal portions of the airport's operating and capital improvement funds come from the City of Emporia and Greensville County. The airport also receives funding from the FAA, the Virginia Department of Aviation (DOAV), and on-site aviation gasoline sales.

In addition to airport operations, a trucking school associated with Southside Virginia Community College uses the airport property. A fire training facility is located adjacent to but off airport property, just east of the runway; access to the facility is provided through airport property. The airport terminal is open daily from 9:00 a.m. to 5:00 p.m.

WFF meets the minimum requirements to support Navy E-2/C-2 FCLP (see Section 1.2.3) and is also being considered in this EA. Wallops is a federally-owned facility that was established by NASA's predecessor, the National Advisory Committee for Aeronautics, in 1945. Wallops was originally built to conduct aeronautical research using rocket-propelled vehicles and launched its first rocket on July 4, 1945. Today, WFF is NASA's principal facility for suborbital research program management and implementation. NASA seeks to enable education and build innovative partnerships at WFF, including provision of flight projects and technology development for the DOD and other government agencies through high-quality, low-cost, and responsive capabilities.

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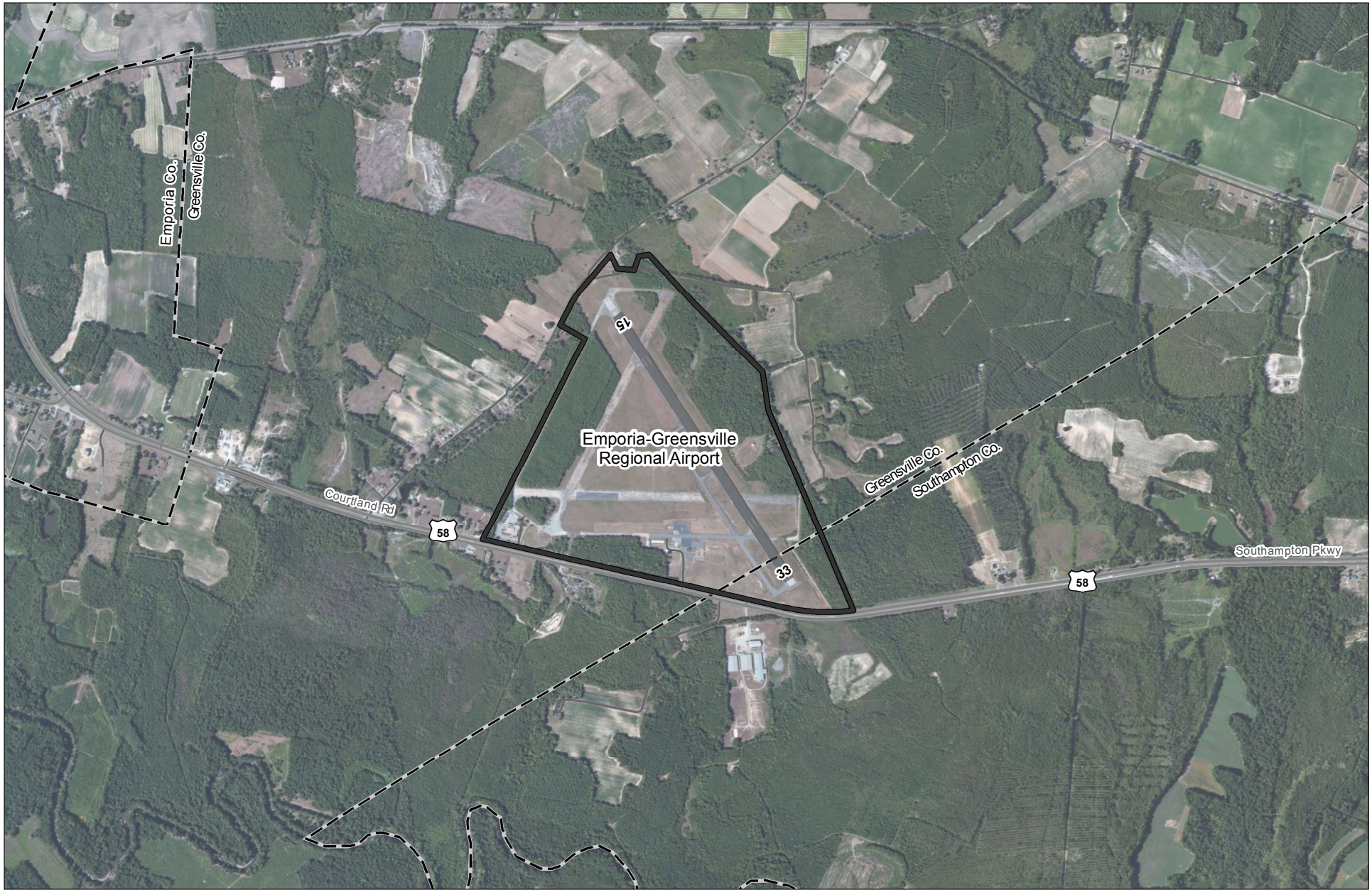

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Active Runway
Emporia-Greensville Regional Airport
County Boundary
Major Highway
Local Street

Figure 1-2
Emporia-Greensville Regional Airport

N
0 0.25 0.5
Miles

Located in Accomack County, WFF is approximately 70 nautical miles from NS Norfolk. It consists of three parcels: Main Base, Mainland, and the Wallops Island launch site (see Figure 1-3). The airfield is located on the Main Base (for the purposes of this EA, WFF Main Base will be used when referring specifically to this property), which is located on the Eastern Shore of Virginia, 5 miles west of Chincoteague, Virginia. WFF Main Base airfield has three runways, two of which meet the Navy's length requirement discussed in Section 1.2.3 and could support Navy E-2/C-2 FCLP operations. Runway 04/22 is 8,750 feet by 150 feet, and Runway 10/28 is 8,000 feet by 200 feet. Runway 17/35, at 4,820 feet, does not meet the Navy's length requirement (5,000 feet) and is not being examined for potential Navy use in this EA (see Figure 1-4). Navy facilities at WFF Main Base are limited to administrative buildings and barracks (NASA 2008).

The Navy's Surface Combat Systems Center provides facilities that replicate Navy fleet ships for purposes of training and technology validation. The Naval Air Warfare Center Aircraft Division, from Patuxent River, Maryland, also maintains facilities and personnel at WFF and regularly utilizes the range for missile launches and aircraft development testing (NASA 2008). The Mainland and the Wallops Island launch site are approximately 7 miles southeast of the Main Base.

WFF has a staff of over 1,000 civil servants and contractors. The facility currently operates Monday through Friday, 6:00 a.m. to 6:00 p.m., excluding federal holidays (NASA 2008, 2010a, 2010b).

1.3 Scope of the Environmental Assessment

This EA provides an assessment of the potential impact on the natural, physical, and human environment from the proposed Navy E-2/C-2 FCLP operations and associated minor modifications to airfield facilities at Emporia-Greensville or WFF Main Base. Because proposed construction activities described in this EA are minor, the primary areas of potential impact include resources associated with aircraft operations, i.e., airspace, noise, air quality, and land use.

This EA identifies reasonable alternatives for the action and evaluates direct and indirect impacts that may result from each alternative. Potential impacts are compared to the No Action Alternative, which is the current condition. The No Action Alternative is used as a benchmark for decision makers to compare the potential environmental effects of the proposed action and alternatives with existing baseline conditions. Where the potential for adverse impacts related to any of the alternatives described in this EA exists, measures to minimize or mitigate them and an evaluation of the impacts of these measures are provided. This EA also addresses cumulative impacts resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. The environmental resources potentially affected by the proposed action and evaluated in this EA are:

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Source: ESRI, 2010

Installation Area
Runway
Urban Area
Waterbody
Swamp/Marsh
State Boundary
County Boundaries
Interstate
Major Highway

Figure 1-3
Wallops Flight Facility
Regional Overview

N
0 2.5 5
Miles

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Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Active Runway
Wallops Flight Facility
County Boundary
Major Highway
Local Street

Figure 1-4
Wallops Flight Facility

N

0 0.25 0.5
Miles

- Aircraft operations and airspace
- Safety
- Air quality
- Noise
- Land use
- Infrastructure and utilities
- Visual landscape: light emissions and visual impacts
- Geology, topography, and soils
- Water resources
- Biological resources (including threatened and endangered species)
- Cultural resources
- Socioeconomics
- Environmental management

Information documented in this EA has been derived from meetings with local, state, and federal agency representatives and from review of the documents and contact reports listed in the reference section of this report (see Appendix A, Agency Consultation). Study areas are defined by resource in Section 3.

1.4 Public Notification

The Navy issued a press release on June 17, 2011, announcing the intent to study the potential environmental impacts of conducting E-2/C-2 FCLP operations at Emporia-Greensville. In October 2011, the Navy announced its decision to include WFF Main Base as a potential site for the proposed action. Government agencies, special interest groups, and other interested people are invited to participate in informational open houses held in their communities regarding the proposed action and findings in the Draft EA. Participants in the information sessions will have the opportunity to submit written comments for consideration in the Final EA.

1.5 Regulatory and Statutory Requirements

NEPA prescribes an interdisciplinary approach to environmental planning. Under NEPA, the level of significance of potential environmental impacts is determined in order to aid federal agency decision-making. In addition to analyzing the proposed action under the NEPA regulatory requirements, the Navy must also obtain required permits and authorizations before implementing the proposed action or alternatives. In addressing environmental consequences, the Navy is guided by relevant statutes (and their implementing regulations) and Executive Orders (EOs) that establish standards and provide guidance on environmental and natural resource management and planning. The permits and approvals covered by statutes and regulations that may be required for this project are discussed in Section 1.5.2 and summarized in Table 1-2.

1.5.1 NEPA and Determination of Significance

Under NEPA, a federal agency's proposed actions can either be "categorically excluded" from further analysis or evaluated in an EA or an EIS. An EA is an analysis of the potential environmental impacts of a proposed action. Action proponents must prepare an EA when they do not know beforehand whether or

not the proposed action will significantly affect the human environment or be controversial regarding environmental effects. An EA results in either a Finding of No Significant Impact (FONSI) or, if a significant impact is identified in the EA, a decision to prepare an EIS.

The analysis of potential impacts to resource areas covered in this document and the determination of whether or not any potential impacts may be significant was determined according to Section 1508.27 of the Environmental Quality Improvement Act of 1970, as amended [43 FR 56003, Nov. 29, 1978]. In determining significance, context and intensity, as described in Section 1508.27, were considered for each resource area.

1.5.2 Other Regulatory and Statutory Requirements

Air Quality

The Clean Air Act (CAA) is the primary federal statute governing air pollution. The CAA designates six pollutants as criteria pollutants, for which National Ambient Air Quality Standards have been established to protect public health and welfare (see Table 1-1). The National Ambient Air Quality Standards limit the number of times a pollutant can exceed a specific concentration in the air within a year, based on a specific averaging time. The Commonwealth of Virginia has adopted these federal standards, and, in accordance with 42 U.S.C. 7410, the Commonwealth of Virginia's plan (9 VAC 5-20-80) has been approved by the U.S. Environmental Protection Agency (EPA) at 40 C.F.R. 52.2420.

Areas that do not meet National Ambient Air Quality Standards are designated as being in "nonattainment" for that criteria pollutant. Nonattainment status is further defined by the extent to which the standard is exceeded. There are six classifications of ozone nonattainment status (transitional, marginal, moderate, serious, severe, and extreme) and two classifications of CO and PM_{10} nonattainment status (moderate and serious). The remaining criteria pollutants have designations of either attainment, nonattainment, or unclassifiable. Areas redesignated from nonattainment to attainment are commonly referred to as maintenance areas, indicating that the area is in attainment but subject to an EPA-approved maintenance plan for a specific pollutant.

The General Conformity Rule has been promulgated by the EPA to ensure that federal actions conform to the applicable State Implementation Plan. General Conformity Rule requirements are only applicable to federal actions within non-attainment or maintenance areas and therefore are not applicable to the proposed action being analyzed in this document.

Table 1-1 National Ambient Air Quality Standards

Pollutant [final rule cite]		National Ambient Air Quality Standards Standard Parameters			
		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3-month average	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution [71 FR 61144, Oct 17, 2006]	$PM_{2.5}$	primary and secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
			24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

U.S. EPA 2011

Notes:

(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(2) The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

(3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

(4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

Key:

µg/m^3 = Micrograms per cubic meter.
mg/m^3 = Milligrams per cubic meter.
PM_{10} = Particulate matter less than 10 microns in diameter.
$PM_{2.5}$ = Particulate matter less than 2.5 microns in diameter.
ppm = Parts per million.

Under the CAA, Prevention of Significant Deterioration applies to new, major stationary sources or major modifications at existing stationary sources for pollutants where the area in which the source is located is in attainment or unclassifiable with the National Ambient Air Quality Standards. Prevention of Significant Deterioration permits prevent the air quality in clean areas from deteriorating to the level set by the National Ambient Air Quality Standards. Although Prevention of Significant Deterioration thresholds do not apply to mobile and temporary emissions, they provide a method to put the increases in mobile emissions in context as related to the National Ambient Air Quality Standards.

Federal agencies are also required to address emissions of greenhouse gases with analysis and emissions planning. The EPA issued the Final *Mandatory Reporting of Greenhouse Gases Rule* on September 22, 2009. This was followed by EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, signed in October 25, 2009, which requires federal agencies to increase energy efficiency; measure, report, and reduce greenhouse gas emissions; protect waterways with stormwater management; control waste; and support sustainable technology and efficient building practices. In October 2010, the CEQ issued *Guidance on Federal Greenhouse Gas Accounting and Reporting* to establish federal requirements for greenhouse gas reporting in compliance with EO 13514.

Greenhouse gas emissions occur locally, but greenhouse gases are both global in scale and cumulative over time. Therefore, greenhouse gas emissions are discussed in Section 5.

Land Use

Virginia Coastal Zone Management. The Coastal Zone Management Act (CZMA) of 1972, as amended, was enacted to develop a national coastal management program that comprehensively manages competing uses of coastal resources. The National Coastal Zone Management Program, administered by the National Oceanic and Atmospheric Administration (NOAA), seeks to balance coastal resource use with environmental conservation. A federal agency may decide that the proposed action will have no effects upon a state's coastal uses or resources and may submit a negative determination supporting the agency's position. Or, an agency may determine that the proposed action is likely to affect the coastal zone and submit a consistency determination indicating that the proposed action will be undertaken in a manner that is consistent to the maximum extent practicable with the enforceable policies of a coastal state's federally approved management program.

The Virginia Coastal Zone Management Program, approved by NOAA in 1986, designates the Virginia Department of Environmental Quality (VDEQ) as the lead agency with authority to oversee activities in the coastal zone of the Commonwealth of Virginia. The Virginia Coastal Zone Management Program includes enforceable programs and policies that pertain to tidal and non-tidal wetlands, fisheries, subaqueous lands, dunes and beaches, point-source air

pollution, point-source water pollution, non-point-source water pollution, shoreline sanitation, and coastal lands management.

Water Resources

Wetlands. Under Section 404 of the Clean Water Act (CWA) (33 U.S.C. § 1251 et seq.), the U.S. Army Corps of Engineers (USACE) regulates wetlands and waterways meeting the definition of "waters of the United States" (33 CFR 328). The CWA defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. USACE permits are required for the discharge of dredged or fill material into wetlands and other waters of the United States. Wetlands are identified based on specific soil, hydrology, and vegetation criteria defined by the USACE (1987).

Under the authority of EO 11990, *Protection of Wetlands*, federal agencies are required to adopt a policy to avoid to the greatest extent possible the long- and short-term adverse impacts associated with the destruction and modification of wetlands. Federal agencies are also required to avoid the direct and indirect support of new construction in wetlands whenever there is a practicable alternative. In addition, mitigation requirements under Section 404 of the CWA and USACE guidelines emphasize a policy of wetland avoidance, minimization, and compensation (i.e., restoration, creation, or enhancement) when impacts are unavoidable.

Stormwater Management. The CWA established the basic framework for regulating discharges of pollutants into the waters of the United States. The Clean Water Act National Pollutant Discharge Elimination System (33 U.S.C. 1342) requires permits for stormwater discharges associated with industrial activities. The VDEQ is authorized to carry out National Pollutant Discharge Elimination System permitting under the Virginia Pollutant Discharge Elimination System (9 Virginia Administrative Code [VAC] 25-151).

The Virginia Stormwater Management Program Permit Regulations (4 VAC 50-60-10 et seq.), administered by the Virginia Department of Conservation and Recreation (VDCR), require that construction and land development activities incorporate measures to protect aquatic resources from the effects of increased volume, frequency, and peak rate of stormwater runoff and from increased non-point-source pollution carried by stormwater runoff. The Virginia Stormwater Management Program also requires that a Stormwater Pollution Prevention Plan be developed for land-disturbing activities of 1 acre or greater and that a permit be acquired from VDCR prior to construction.

Virginia's Erosion and Sediment Control Program (4 VAC 50-50-10 et seq.) requires preparation of an erosion control plan for construction activities when land disturbance is greater than 10,000 square feet (0.23 acre). The purpose of the program is to control soil erosion, sedimentation, and runoff from land-disturbing activities to prevent degradation of property and natural resources.

Biological Resources

Marine Mammals. Marine mammals are protected under the Marine Mammal Protection Act of 1972, amended in 1994, administered by the National Marine Fisheries Service (NMFS) and the USFWS. The Marine Mammal Protection Act prohibits the "take" of any marine mammal, which is defined by NMFS as to "harass, hunt, capture, collect, kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal." The National Defense Authorization Act of Fiscal Year 2004 (Public Law 108-136) amended the definition of harassment and adopted the definition of "military readiness activity" as set forth in the Fiscal Year 2003 National Defense Authorization Act (Public Law 107-314). The proposed action constitutes military readiness activities as defined in Public Law 107-314. For military readiness activities, the relevant definition of harassment is any act that (1) injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild ("Level A harassment") or (2) disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering to a point where such behavioral patterns are abandoned or significantly altered ("Level B harassment") [16 U.S.C. § 1362 (18)(B)(i) and (ii)].

Avian Resources. Most migratory and native-resident bird species are protected under the Migratory Bird Treaty Act, which prohibits the taking, killing, or possessing of migratory birds except under the terms of a valid permit issued pursuant to federal regulations. The armed forces are authorized to incidentally take migratory birds during military readiness activities, where "incidental take" refers to a take that results by the way of, but is not the purpose of, carrying out an otherwise lawful activity. However, if a military readiness activity may have a significant adverse effect on a population of migratory birds, the armed forces must confer and cooperate with the USFWS on the development and implementation of conservation measures to minimize or mitigate those adverse effects. Routine operation and maintenance of aircraft at an airfield or construction of support infrastructure are considered nonmilitary-readiness activities. The responsibility of federal agencies to protect migratory birds and how to incorporate conservation efforts into their routine operations and construction activities are addressed in a Memorandum of Understanding between DOD and the USFWS, "*Responsibilities of Federal Agencies to Protect Migratory Birds*." The FCLP operations proposed for Emporia-Greensville or WFF would constitute military readiness.

Congress has defined military readiness as all training and operations of the armed forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use.

Additionally, the bald eagle (*Haliaeetus leucocephalus*) is federally protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). The Bald and Golden Eagle Protection Act prohibits the taking of bald or golden eagles, including their parts, nests, or eggs. The Bald and Golden Eagle Protection Act

defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb."

Federally Threatened and Endangered Species. The Endangered Species Act (ESA) (16 USC 1531-1544) authorizes the determination and listing of species as "endangered" and "threatened" and provides regulatory protection for listed species. The USFWS and NOAA/NMFS share responsibility for conservation and recovery of threatened and endangered species and conservation of designated critical habitat required for the survival and recovery of listed species. Generally, USFWS manages land and freshwater species, while NMFS manages marine and anadromous species. Section 7(a)(2) of the ESA requires all federal agencies to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of any species listed as endangered or threatened, or result in the destruction or adverse modification of designated critical habitat of such species. If a proposed Navy action may affect a federally listed endangered or threatened species or designated critical habitat, the Navy must initiate consultation with the USFWS or the NMFS, as appropriate. Analysis of impacts to candidate species is not required under the ESA. However, the USFWS and NMFS encourage conservation efforts for candidate species because they may warrant future protection under the ESA.

Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations (36 CFR Part 800) require that federal agencies consider the effects of their undertakings on historic properties. Cultural resources may include archaeological resources (prehistoric and historic archaeological sites) and architectural resources (historic buildings and structures). Historic properties are those cultural resources that have been included in, or determined eligible for inclusion in, the National Register of Historic Places.

Socioeconomics

Environmental Justice. In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* (Environmental Justice), was issued to focus the attention of federal agencies' actions on human health and environmental conditions in minority and low-income populations. This EO was also established to ensure that, if there were disproportionately high and adverse human health or environmental effects of federal actions on these populations, those effects would be identified and addressed. Environmental justice is achieved if minority and low-income communities are not subjected to disproportionately high or adverse environmental effects.

The Council on Environmental Quality (CEQ 1997) has issued the following guidance to federal agencies on the terms used in EO 12898:

- **Low-income Population.** Low-income populations in an affected area should be identified using the annual statistical poverty thresholds from the U.S. Bureau of the Census.

- **Minority.** An individual who is a member of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; African American, not of Hispanic origin; or Hispanic.

- **Minority Population.** Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent, or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

- **Disproportionately High and Adverse Human Health Effects.** When determining whether human health effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:
  1. Whether the health effects, which may be measured in risks and rates, are significant (as employed by NEPA) or above generally accepted norms;
  2. Whether the risk or rate of hazard exposure to a minority population, low income population, or Indian tribe to an environmental hazard is significant (as employed by NEPA) and appreciably exceeds or is likely to appreciably exceed the risk or rate to the general population or other appropriate comparison group; and
  3. Whether health effects occur in a minority population, low-income population, or Indian tribe affected by cumulative or multiple adverse exposure to environmental hazards.

- **Disproportionately High and Adverse Environmental Effects.** When determining whether environmental effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:
  1. Whether there is or will be an impact on the natural or physical environment that significantly (as employed by NEPA) and adversely affects a minority population, low-income population, or Indian tribe. Such effects may include ecological, cultural, human health, economic, or social impacts on minority communities, low-income communities, or Indian tribes when those impacts are interrelated to impacts on the natural or physical environment;
  2. Whether environmental effects are significant (as employed by NEPA) and are or may be having an adverse impact on minority populations, low income populations, or Indian tribes that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group; and
  3. Whether the environmental effects occur or would occur in a minority population, low-income population, or Indian tribe affected by cumulative or multiple adverse exposures from environmental hazards.

Protection of Children from Environmental Health Risks and Safety Risks. Established in 1997, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandates that federal agencies identify and assess

environmental health and safety impacts that may disproportionately burden children as a result of the implementation of federal policies, programs, activities, and standards (62 *Federal Register* [FR]19883-19888). The EO does not specify an age range for children, but the U.S. EPA defines children as up to 21 years of age (U.S. EPA 2012b). The EO recognizes that disproportionate impacts on children may result because "children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves" (62 FR 19883-19888). Environmental health and safety risks are considered "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest," such as air, food, water, soil, and manufactured products (62 FR 19883-19888).

Environmental Management

The use, handling, storage, transportation, and disposal of hazardous materials, hazardous waste, and solid waste are regulated by federal and state agencies. The primary federal agencies that govern this are the U.S. EPA, the U.S. Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (DOT).

Hazardous and solid waste disposal is regulated under the Resource Conservation and Recovery Act (RCRA) and programs implemented by the state. Underground storage tanks and aboveground storage tanks are regulated in Virginia by the VDEQ and the State Water Control Board (VDEQ 2011a, VDEQ 2011b). The EPA's National Priorities List and Comprehensive Environmental Response, Compensation, and Liability Information System contain information on contaminated and potentially contaminated sites. The EPA legislates the creation of Spill Prevention, Control, and Countermeasure Plans for facilities holding an amount of fuel over a certain threshold and/or located near a navigable water of the U.S. (40 CFR Part 112).

Table 1-2 Applicable Regulations

Regulation	Agency or Agencies	Permit	Regulated Activity
Clean Air Act of 1970 (42 U.S.C. 7401 *et seq.)*	■ U.S. Environmental Protection Agency	Conformity determination	Federal actions in areas of nonattainment or maintenance consistent with the General Conformity Rule
Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 25, 2009)	■ President Obama	Requirement for the federal government to increase energy efficiency; measure, report, and reduce greenhouse gas emissions; protect waterways with stormwater management; control waste; and support sustainable technology and efficient building practices	Federal actions related to energy consumption.
Coastal Zone Management Act of 1972, as amended	■ Virginia Department of Environmental Quality	Coastal Consistency Determination that a federal action is consistent with the enforceable policies of the Virginia Coastal Zone Management Program to the maximum extent practicable.	Federal actions that have reasonably foreseeable impacts on Virginia's coastal resources.

Table 1-2 Applicable Regulations

Regulation	Agency or Agencies	Permit	Regulated Activity
Clean Water Act of 1977 (33 U.S.C. 1251 *et seq*.)	■ U.S. Environmental Protection Agency ■ U.S. Army Corps of Engineers ■ Virginia Department of Environmental Quality	■ National Pollutant Discharge Elimination System Permit (the Virginia Department of Environmental Quality is authorized to carry out this permitting under the Virginia Pollutant Discharge Elimination System (9 VAC 25-151 ■ Joint Permit Application, Section 404 and Section 401 Water Quality Certificate ■ Virginia Erosion and Sediment Control Program (4 VAC 30-50)	■ Construction or operation of facilities that may result in any discharge into navigable waters ■ Discharge or fill activities in wetlands or waters of the United States ■ Construction activities resulting in land disturbance of greater than 10,000 square feet (0.23 acre)
Executive Order 11990: *Protection of Wetlands* (May 1977)	■ President Carter	Requirement to avoid the long- and short-term adverse impacts associated with the destruction and modification of wetlands, to the greatest extent possible.	Requires federal agencies to adopt a policy to avoid, to the greatest extent possible, the long- and short-term adverse impacts associated with the destruction and modification of wetlands. Federal agencies are also required to avoid the direct and indirect support of new construction in wetlands whenever there is a practicable alternative.
Marine Mammals Protection Act of 1972, amended in 1994	■ U.S. Fish and Wildlife Service ■ National Marine Fisheries Service	Incidental take permit	Prohibits the "take" (defined as harassment, hunting, capturing, collecting, killing, or attempting to do any of these things) of any marine mammal.

Table 1-2 Applicable Regulations

Regulation	Agency or Agencies	Permit	Regulated Activity
Migratory Bird Treaty Act	■ U.S. Fish and Wildlife Service	Incidental take permit	Prohibits the taking, killing, or possessing of migratory birds (defined as both migratory and most native-resident bird species) except under the terms of a valid incidental take permit.
Bald and Golden Eagle Protection Act (16 U.S.C. 668)	■ U.S. Fish and Wildlife Service	Permit to remove or relocate an eagle nest, scientific collecting permit, or an exhibition permit	Prohibits the "take" of bald and golden eagles (*Haliaeetus leucocephalus* and *Aquila chrysaetos,* respectively), including their parts, nests, or eggs.
Federal Endangered Species Act (16 U.S.C. 1531 *et seq*.)	■ U.S. Fish and Wildlife Service ■ National Marine Fisheries Service	Agency consultation for presence of federally threatened and endangered species	Actions that "may affect" federally threatened or endangered species
National Historic Preservation Act of 1966 as amended (16 U.S.C. 470 *et seq*.) and its implementing regulations (36 CFR 800)	■ Advisory Council on Historic Preservation ■ Virginia Department of Historic Resources (e.g., State Historic Preservation Office)	Section 106 Review, agency consultation on cultural resources	Federal undertakings that affect properties on or determined to be eligible for listing on the National Register of Historic Places
Executive Order 12898: *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* (February 1994)	■ President Clinton	Requirement for environmental justice	Requires that if there are disproportionately high or adverse human health or environmental effects of federal actions on minority and/or low-income populations, those effects are identified and addressed.
Executive Order 13045: *Protection of Children from Environmental Health Risks and Safety Risks* (April 1997)	■ President Clinton	Requirement for protection of children	Requires that federal agencies identify and assess environmental health and safety impacts that may disproportionately burden children as a result of the implementation of federal policies, programs, activities, and standards.

Table 1-2 Applicable Regulations

Regulation	Agency or Agencies	Permit	Regulated Activity
Resource Conservation and Recovery Act	■ VDEQ and State Water Control Board ■ U.S. Environmental Protection Agency	Requirement for creation of Pollution Prevention and Spill Prevention, Control, and Countermeasure plans	Requirement for control of hazardous wastes, including its use, handling, storage, transportation, and disposal. Underground and aboveground storage tanks
Federal Aviation Regulations (14 CFR 77 and 14 CFR 157)	■ Federal Aviation Administration	Effects determination by FAA following aeronautical review at Emporia-Greensville Regional Airport	Construction, alteration, activation, and deactivation of airports

2 Proposed Action and Alternatives

This section describes the proposed action and alternatives for use of the airfield facilities at Emporia-Greensville or WFF Main Base, including the No Action Alternative. The section also discusses several alternatives that were considered but eliminated from further analysis.

2.1 Proposed Action

The proposed action is to acquire the use of an additional local airfield to support FCLP for E-2/C-2 squadrons operating from NS Norfolk Chambers Field. The proposed action also includes minor modifications to the airfield infrastructure to support FCLP operations.

2.1.1 Operations

To meet the FCLP training requirements for approximately 150 pilots assigned to the five fleet E-2 squadrons, one fleet C-2 squadron, and the E-2/C-2 FRS, approximately 20,000 FCLP passes are required annually. Since a pass is composed of two operations (a landing or low approach followed by an immediate takeoff or climb out), 20,000 passes equates to 40,000 operations. In addition, aircraft arrivals to, and departures from, the airfield, as well as holding patterns, account for an additional 5,000 annual operations. Holding pattern operations support in-flight crew position changes and are conducted at an altitude of 2,000 feet above the ground. Of the total operations proposed, approximately 90 percent would be performed during the hours of 7:00 a.m. to 10:00 p.m., while approximately 10 percent would be performed between the hours of 10:00 p.m. and 7:00 a.m.

The five fleet E-2 squadrons and one fleet C-2 squadron presently conduct the majority of their FCLP training at NALF Fentress. As a result of periodic FCLP capacity shortfalls at NALF Fentress, the E-2/C-2 FRS completes the majority of its FCLP training at NOLF Whitehouse by conducting four to six 10-day FCLP detachments to NAS Jacksonville, Florida, annually.

The use of local airfield facilities at either Emporia-Greensville or WFF Main Base for E-2/C-2 FCLP would serve as an interim bridge to manage FCLP capacity shortfalls at NALF Fentress until the Navy addresses local FCLP capacity shortfalls on a more permanent basis.

E-2/C-2 squadrons typically conduct FCLP operations during a three-hour period and can conduct these periods up to twice per day (one day and one night period).

Depending on scheduling and training requirements, operations can be conducted between 15 and 20 days in a given month, throughout the year. This can result in up to 835 operations (30 training hours) in a 5-day week, typically Monday through Friday, or up to 3,340 operations (120 training hours) each month. To accommodate missed or cancelled periods due to poor weather conditions, or to support surge operations, the Navy can require the use of the airfield at any time. While the overall average annual requirement would remain the same, there could be periods of increased use followed by periods of little or no use. The Navy will manage the FCLP schedule in coordination with the airfield.

Carrier landings at night are considerably more difficult than daytime landings due to the lack of visual cues. Because a significant portion of combat and combat support operations are conducted at night, FCLP training includes nighttime training to ensure proficiency. Night FCLP operations typically begin 30 minutes after sunset.

FCLP training requires the installation of visual landing aids adjacent to the landing area. During FCLP training, the airfield's active runway would be closed to non-FCLP arrivals and departures, generally precluding concurrent operations, such as civilian aviation, crop dusting, skydiving, sport or glider flying, and similar airfield operations. However, the pattern would be opened to emergency aircraft, as necessary.

2.1.1.1 Flight Routes and Flight Tracks

Aircraft would transit between NS Norfolk Chambers Field and Emporia-Greensville or WFF Main Base at altitudes between 4,000 and 8,000 feet above ground level following flight routes based on currently approved arrival and departure procedures out of NS Norfolk Chambers Field (see Figures 2-1, 2-2, and 2-3), then enter into the FCLP pattern at Emporia-Greensville or WFF Main Base. Factors that could affect aircraft cruising altitude include local and transiting traffic density and weather.

FCLP patterns and holding areas for the proposed operations are represented by flight tracks. Flight tracks are shown as single lines on maps or other graphics and are an approximate representation of the route of the aircraft over the ground. Actual individual aircraft flight tracks can vary due to aircraft performance, pilot technique, airport traffic conditions, and weather conditions, such that the actual flight track is better thought of as a band rather than a single line. Notional FCLP and holding pattern flight tracks for Emporia-Greensville are shown in Figures 2-4 and 2-5 and are shown in Figures 2-6, 2-7, 2-8, and 2-9 for WFF Main Base. These flight tracks are used to conduct the noise analysis, presented in Chapter 4.

When conducting a standard FCLP pattern (see Figure 2-10), a pilot flies in a left-hand, racetrack-shaped pattern aligned with the runway. The pilot descends to an initial altitude of 1,200 feet above ground level approximately 3 nautical miles from the runway threshold and then descends to an altitude of 800 feet above ground level for the overhead arrival into the FCLP pattern. The actual FCLP pattern is flown at 600 feet above ground level.

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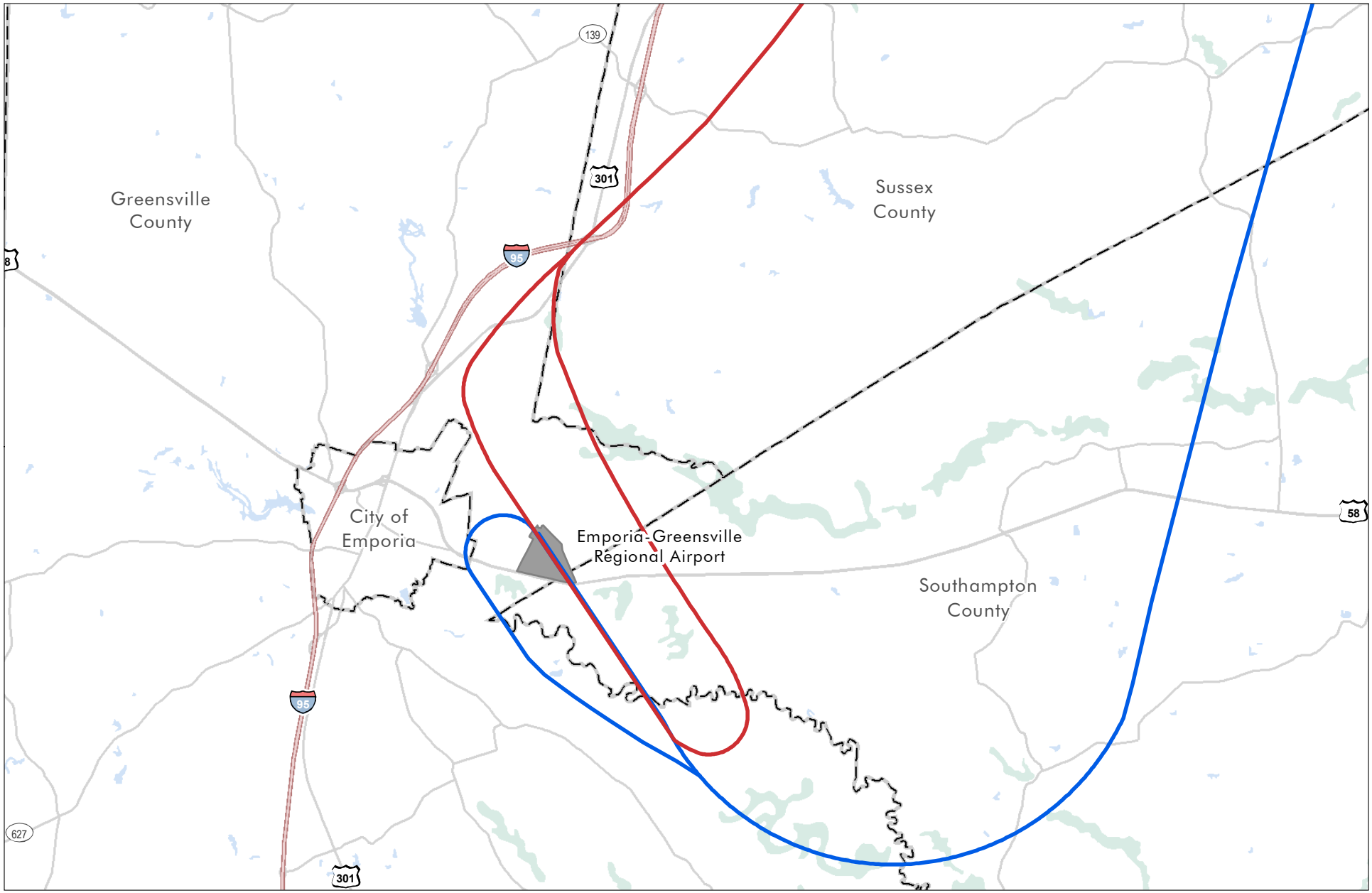

Source: ESRI 2010; NAIP 2010.

Figure 2-1

Arrival and Departure Flight Routes

Emporia-Greensville Regional Airport

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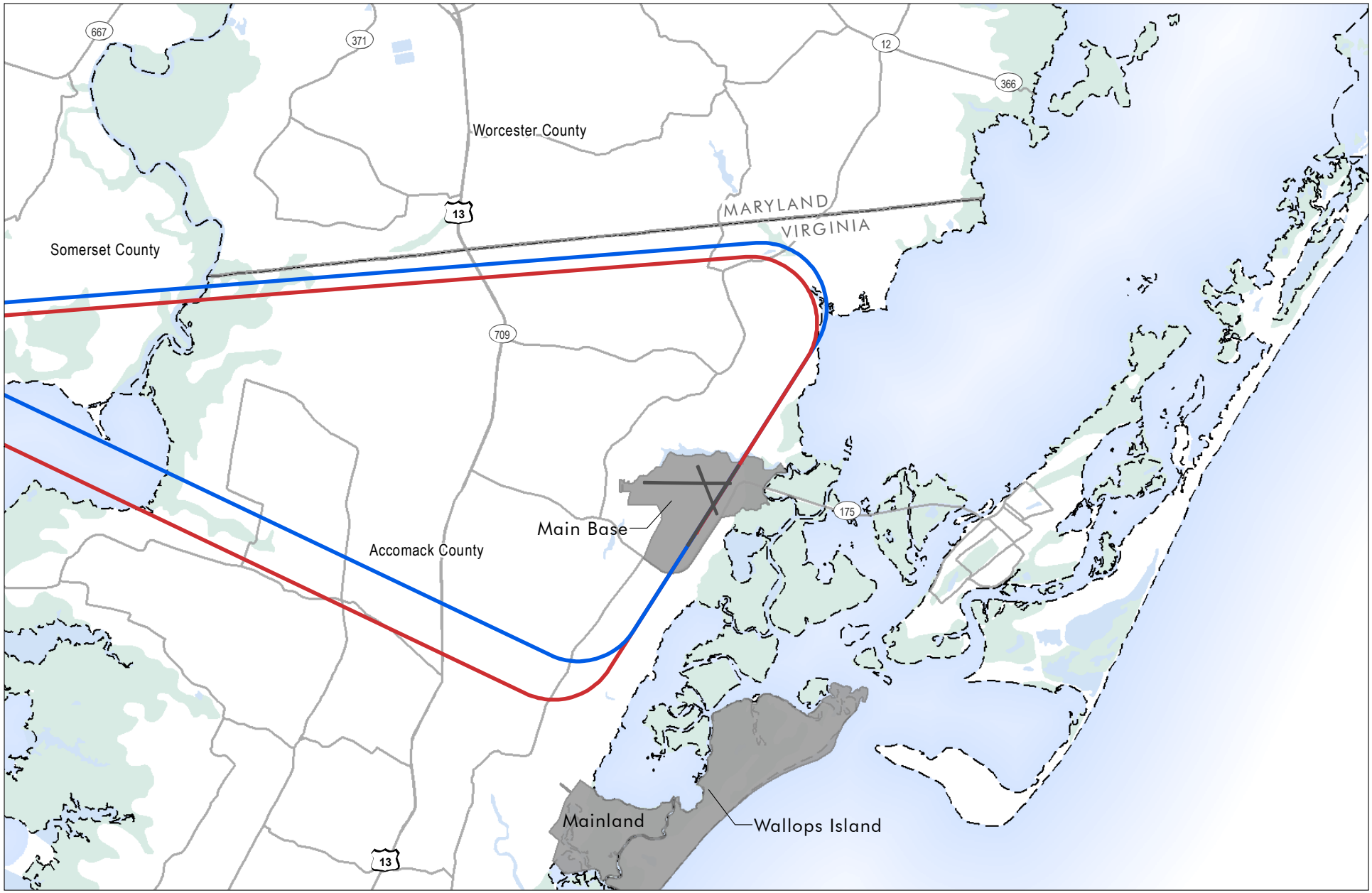


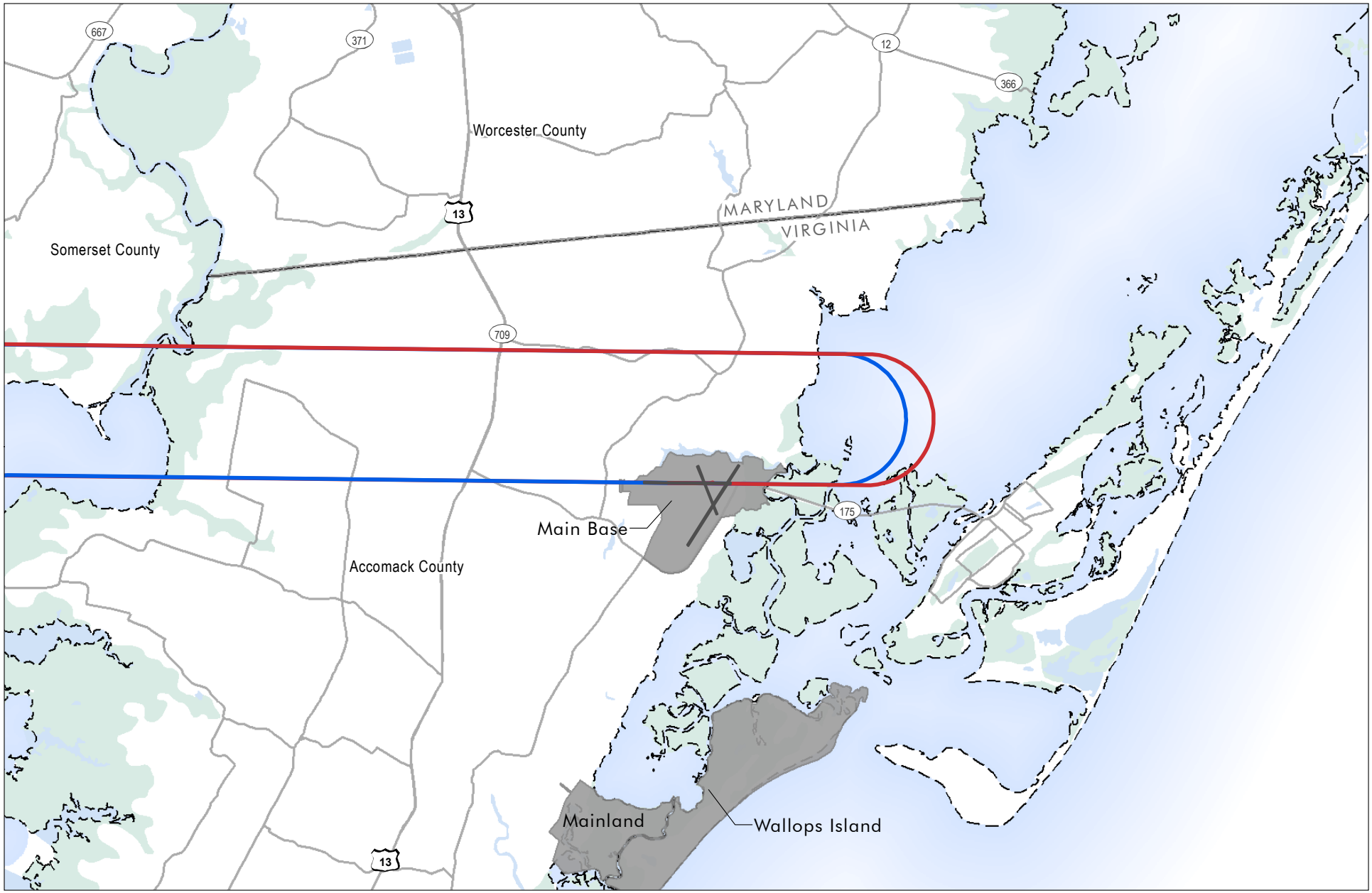
Source: ESRI 2010.

Arrival Flight Route
Departure Flight Route
Active Runway
Installation Area
Major Highway
County Boundary
Waterbody
Swamp/Marsh

Figure 2-2
Wallops Flight Facility Arrival and Departure Flight Routes
Runways 04 and 22
Wallops Flight Facility

N
0 1 2
Miles

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Arrival_Departure_Flight_Routes_Wallops Jan23_2012_RW10-28.mxd



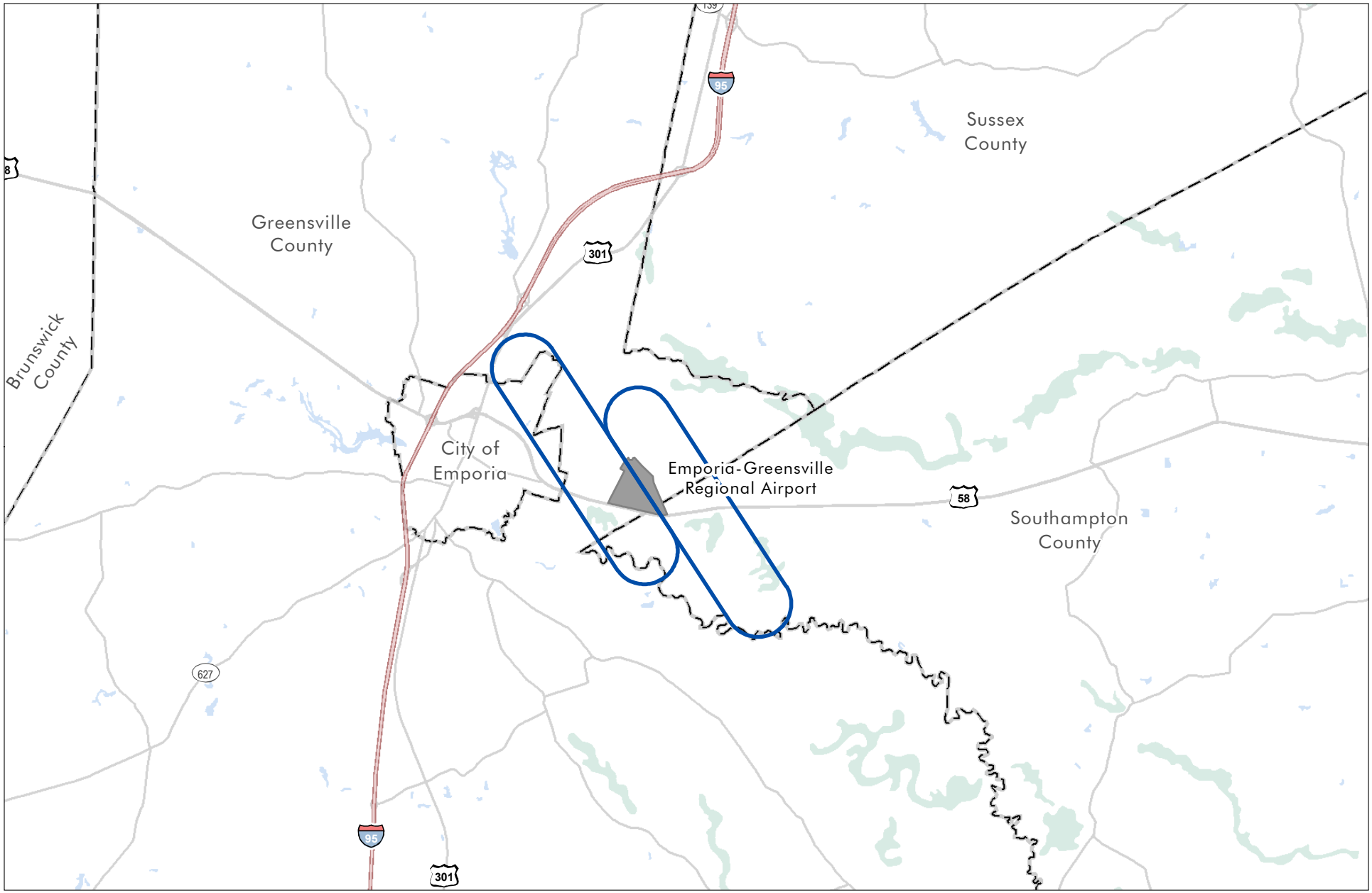
Source: ESRI 2010.

Arrival Flight Route
Departure Flight Route
Active Runway
Installation Area
Major Highway
County Boundary
Waterbody
Swamp/Marsh

Figure 2-3
Wallops Flight Facility Arrival and Departure Flight Routes
Runways 10 and 28
Wallops Flight Facility

N
0 1 2
Miles

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\FCLP_Flight_Tracks_Emporia.mxd



Source: ESRI 2010; NAIP 2010.

FCLP Flight Tracks
Emporia-Greensville Regional Airport
Interstate
Major Highway
County Boundary
Waterbody
Swamp/Marsh

Figure 2-4
Emporia FCLP Flight Tracks
Emporia-Greensville Regional Airport

N

0 1 2
Miles

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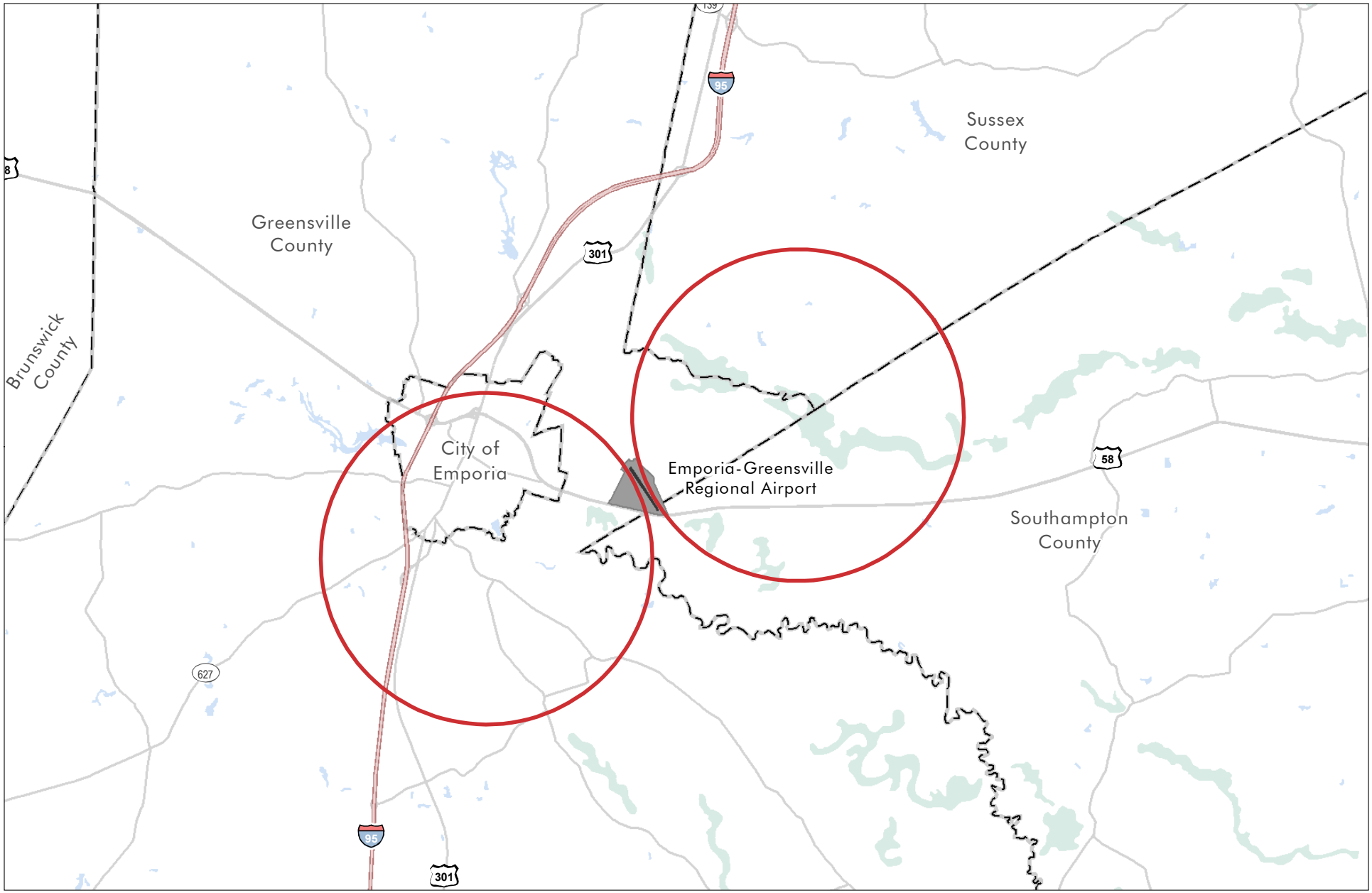

Source: ESRI 2010; NAIP 2010.

Holding Areas
Active Runway
Emporia-Greensville Regional Airport
Interstate
Major Highway
County Boundary
Waterbody
Swamp/Marsh

Figure 2-5
Emporia-Greensville Holding Areas
Emporia-Greensville Regional Airport

N
0 1 2
Miles

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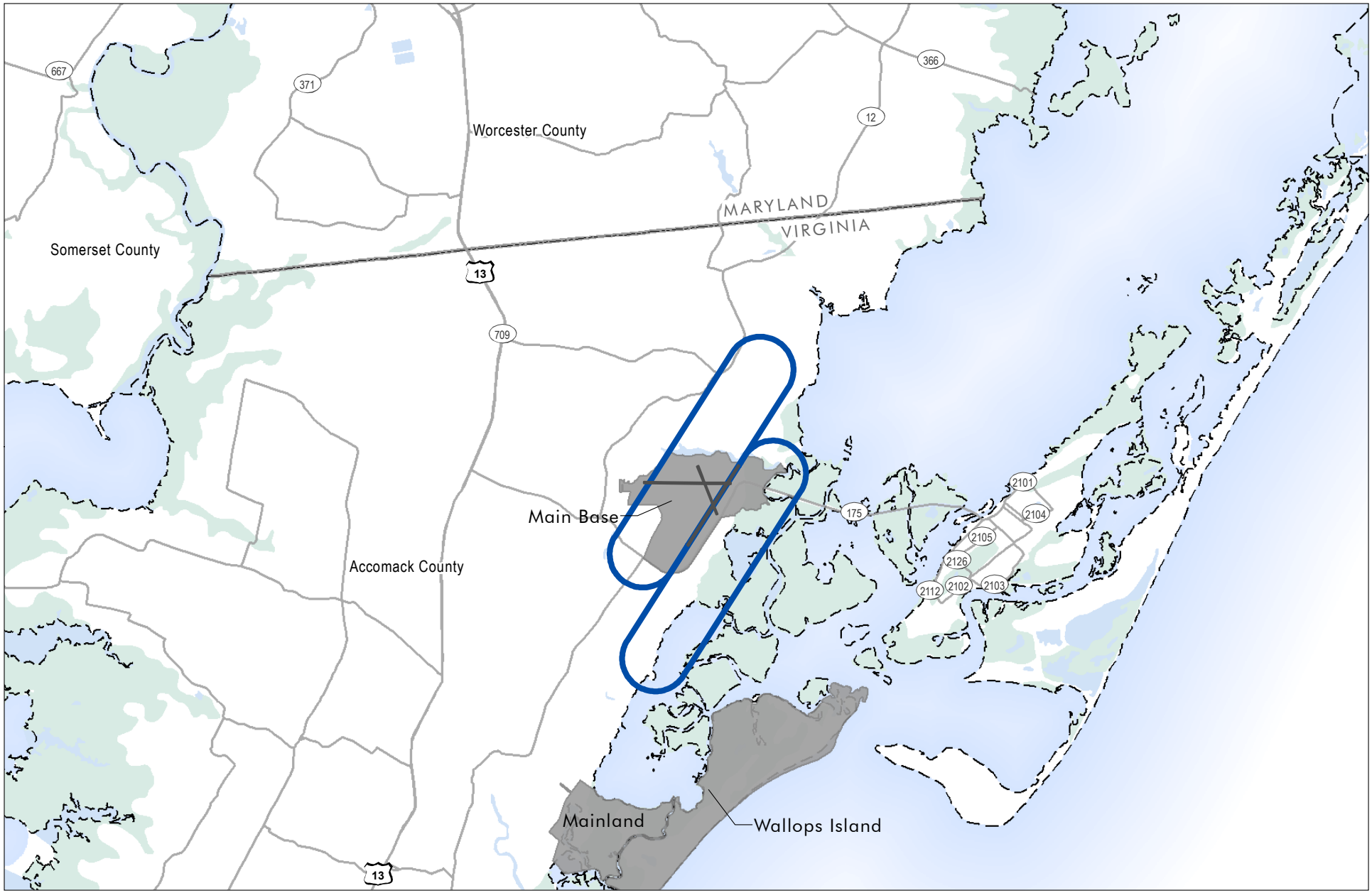

Source: ESRI 2010.

FCLP Flight Tracks
Active Runway
Installation Area
Major Highway
County Boundary
Waterbody
Swamp/Marsh

Figure 2-6
Wallops Flight Facility FCLP Flight Tracks
Runways 04 and 22
Wallops Flight Facility

N
0 1 2
Miles

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\FCLP_Flight_Routes_Wallops Jan23_2012_Runway_10-28.mxd

Source: ESRI 2010.

FCLP Flight Tracks
Active Runway
Installation Area
Major Highway
County Boundary
Waterbody
Swamp/Marsh

Figure 2-7
Wallops Flight Facility FCLP Flight Tracks
Runways 10 and 28
Wallops Flight Facility

N
0 1 2
Miles

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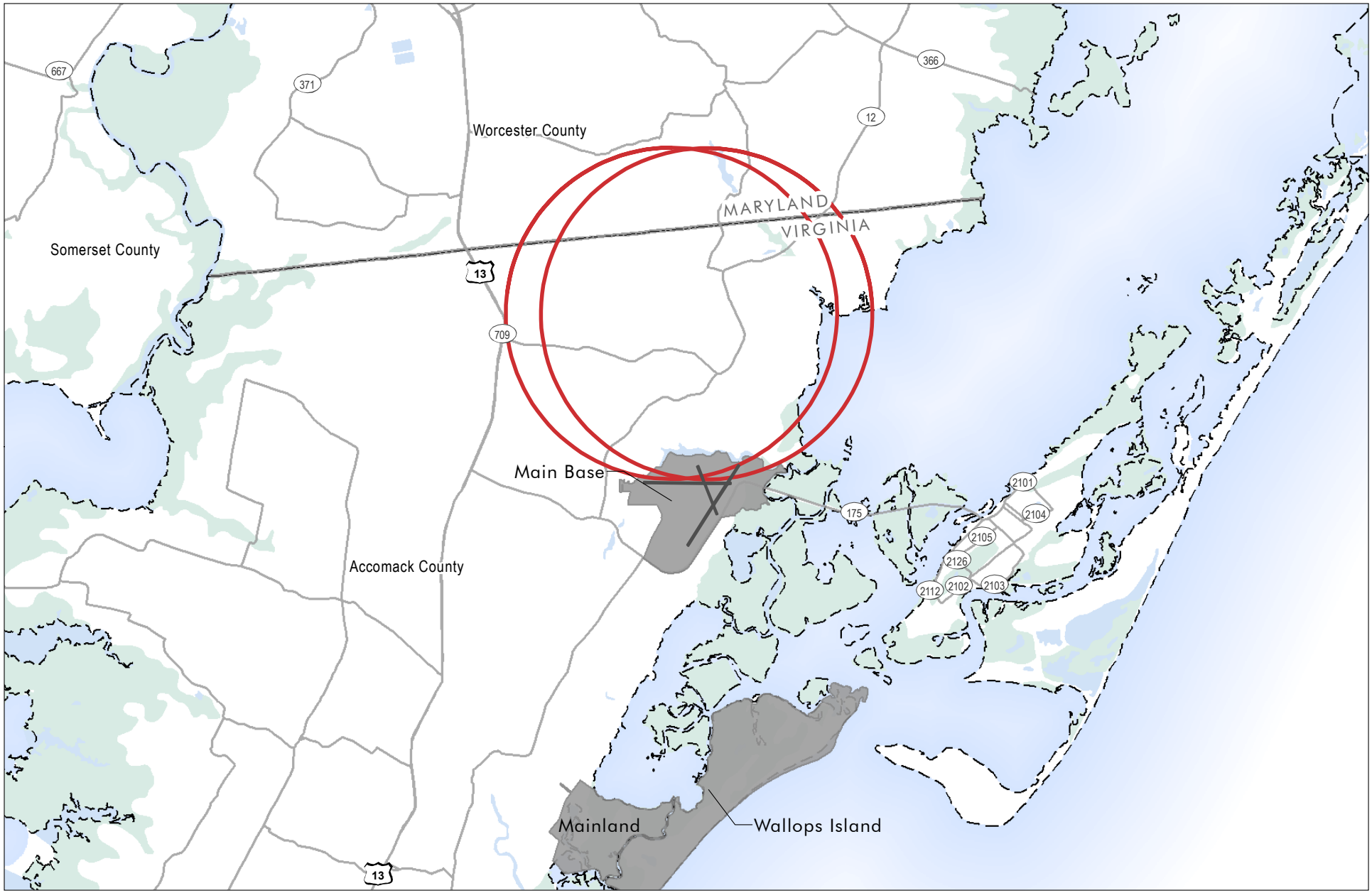
Source: ESRI 2010.

Holding Areas
Active Runway
Installation Area
Major Highway
County Boundary
Waterbody
Swamp/Marsh

Figure 2-8
Wallops Flight Facility Holding Areas
Runways 04 and 22
Wallops Flight Facility

N
0 1 2
Miles

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Crew_Swap_Holding_Pattern_Flight_Tracks_Wallops Jan23_2012 RW10-28.mxd



Source: ESRI 2010.

Holding Areas
Active Runway
Installation Area
Major Highway
County Boundary
Waterbody
Swamp/Marsh

Figure 2-9
Wallops Flight Facility Holding Areas
Runways 10 and 28
Wallops Flight Facility

N
0 1 2
Miles

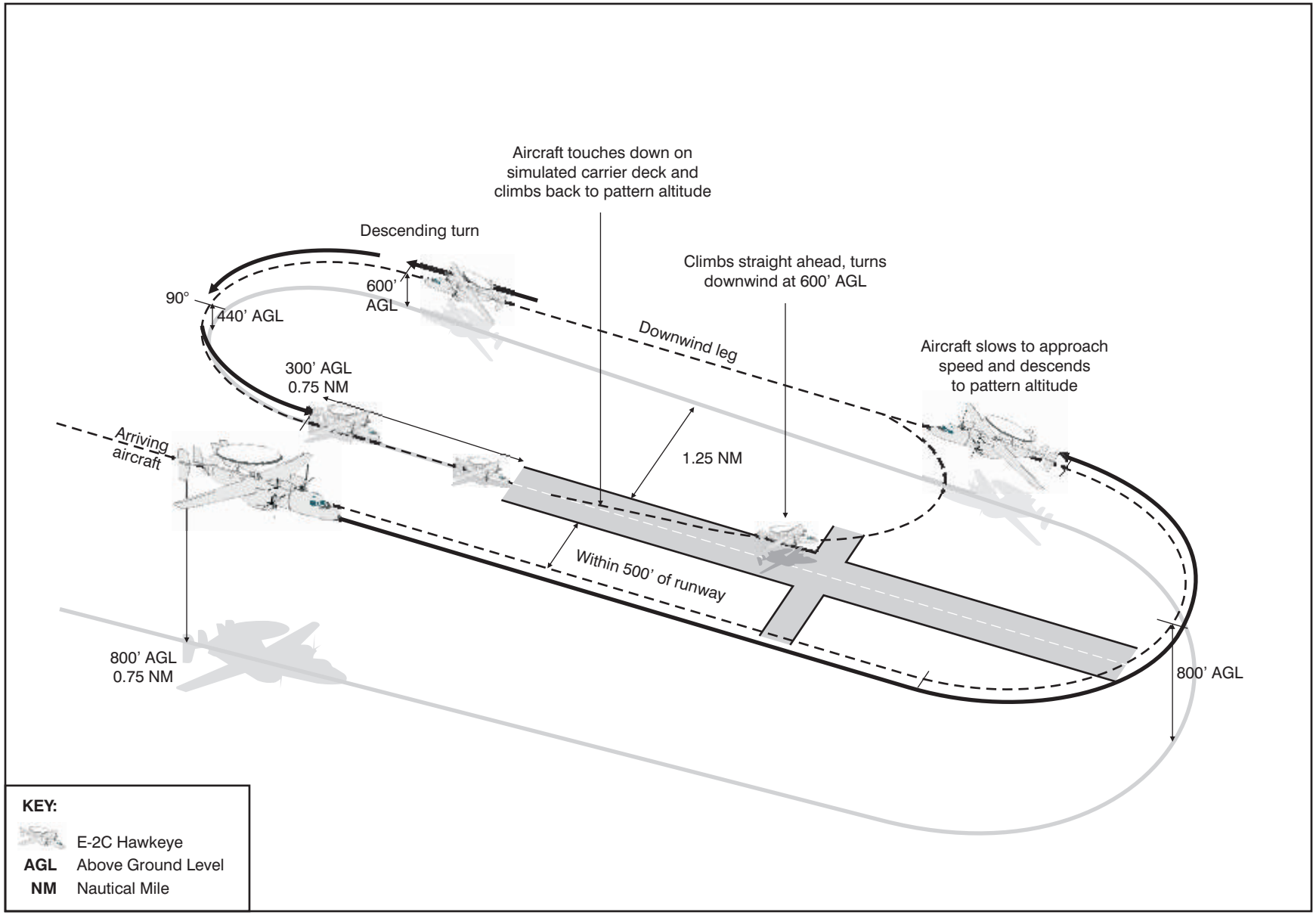


Figure 2-10 Standard Field Carrier Landing Practice (FCLP) Pattern

Figure 2-4 depicts the flight track for the proposed E-2/C-2 FCLP at Emporia-Greensville using Runway 15/33. If Emporia-Greensville is selected, both ends of the runway would be utilized for E-2/C-2 FCLP operations, with an approximate runway utilization of 47 percent of the operations occurring on Runway 15 and 53 percent of the operations occurring on Runway 33.

Figure 2-6 depicts the flight track for the proposed E-2/C-2 FCLP at WFF Main Base using Runway 04/22, while Figure 2-7 depicts the FCLP flight track at WFF Main Base using Runway 10/28. If WFF Main Base is selected, two of the four runway ends at WFF would be utilized for E-2/C-2 FCLP operations if operations would be conducted during the day and at night (i.e., under either Scenario 1 or Scenario 2); however, daytime-only FCLP operations could be conducted on up to four runway ends. This option (conduct daytime operations on four runway ends) is covered under the analysis for Scenarios 1 and 2 for WFF since noise contours and flight tracks for this option would fall within those modeled for these two scenarios (see Section 2.2 for more discussion of scenarios analyzed for both Emporia-Greensville and WFF Main Base).

During the FCLP flight period, the aircraft could periodically enter into a holding pattern around the airfield at approximately 2,000 feet. Figure 2-5 depicts the proposed flight tracks of the holding area at Emporia-Greensville. Figure 2-8 depicts the proposed flight tracks of the Runway 04/22 holding area at WFF Main Base, and Figure 2-9 represents the Runway 10/28 holding area at WFF Main Base. Due to airspace restrictions related to the launch facility on Wallops Island, the holding patterns for both runways are positioned outside of the launch facility's restricted airspace.

2.1.2 Project Schedule and Duration of the Action

Construction would be scheduled to be completed by July 2013, with initial operating capability (i.e., the point at which airfield modifications would be sufficiently completed to allow for FCLP operations by the E-2/C-2 squadrons) shortly thereafter.

If Emporia-Greensville, a publically owned airfield (see Figure 1-2), is chosen, the term of the Navy's proposed lease would be 1 year, with nine 1-year options, renewable at the sole option of the Navy. Thus, the potential total term for this action could be 10 years.

If NASA WFF, a federally owned airfield (see Figures 1-3 and 1-4), is chosen, the agencies would enter into an agreement for use of the airfield. The proposed term of the initial agreement would be for five years.

2.1.3 Airfield Modification Requirements

The airport modifications discussed in Section 1.2.3 are required to facilitate E-2/C-2 FCLP at Emporia-Greensville or WFF Main Base. Figures 2-11 and 2-12 show the locations of the proposed airfield modifications at Emporia-Greensville, and Figures 2-13, 2-14, 2-15, and 2-16 show the locations of proposed modifications at WFF Main Base. If WFF Main Base is selected, runway lighting would only be installed on two of the four runway ends, as only

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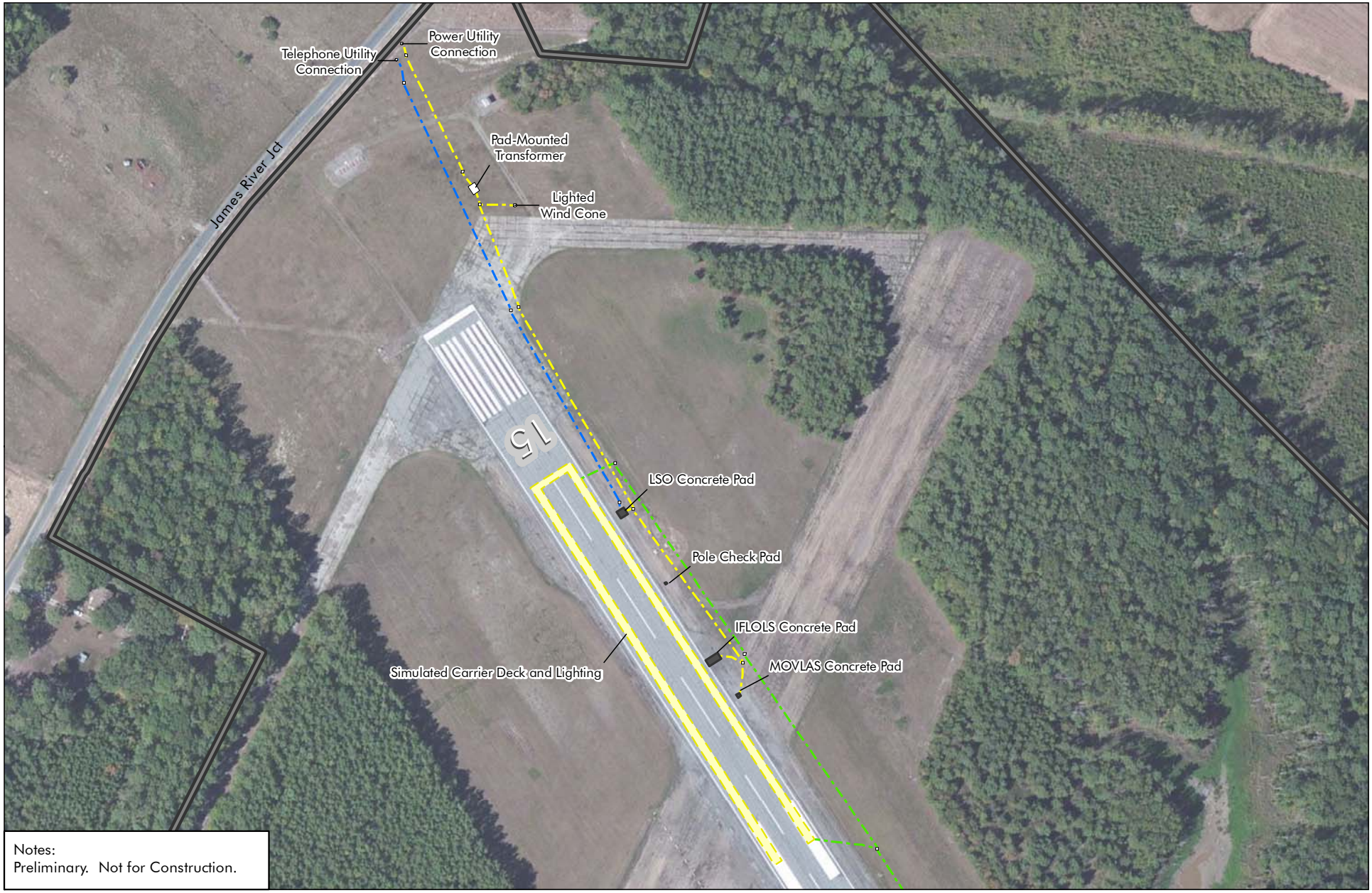

Notes:
Preliminary. Not for Construction.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

- Simulated Carrier Deck and Lighting
- Airfield Lighting Circuts
- Proposed Electrical Line
- Telephone Ductbank
- Concrete Pad
- Emporia Greensville Regional Airport Boundary

Figure 2-11
Runway 15: Proposed Modifications
Emporia-Greensville Regional Airport

N

0 100 200
Feet

1:2,800

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Notes:
Preliminary. Not for Construction.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Airfield Lighting Circuts
Proposed Electrical Line
Proposed Telephone Line
Concrete Pad
Simulated Carrier Deck and Lighting
Emporia Greensville Regional Airport Boundary

Figure 2-12
Runway 33: Proposed Modifications
Emporia-Greensville Regional Airport

N
0 100 200
Feet

1:2,800

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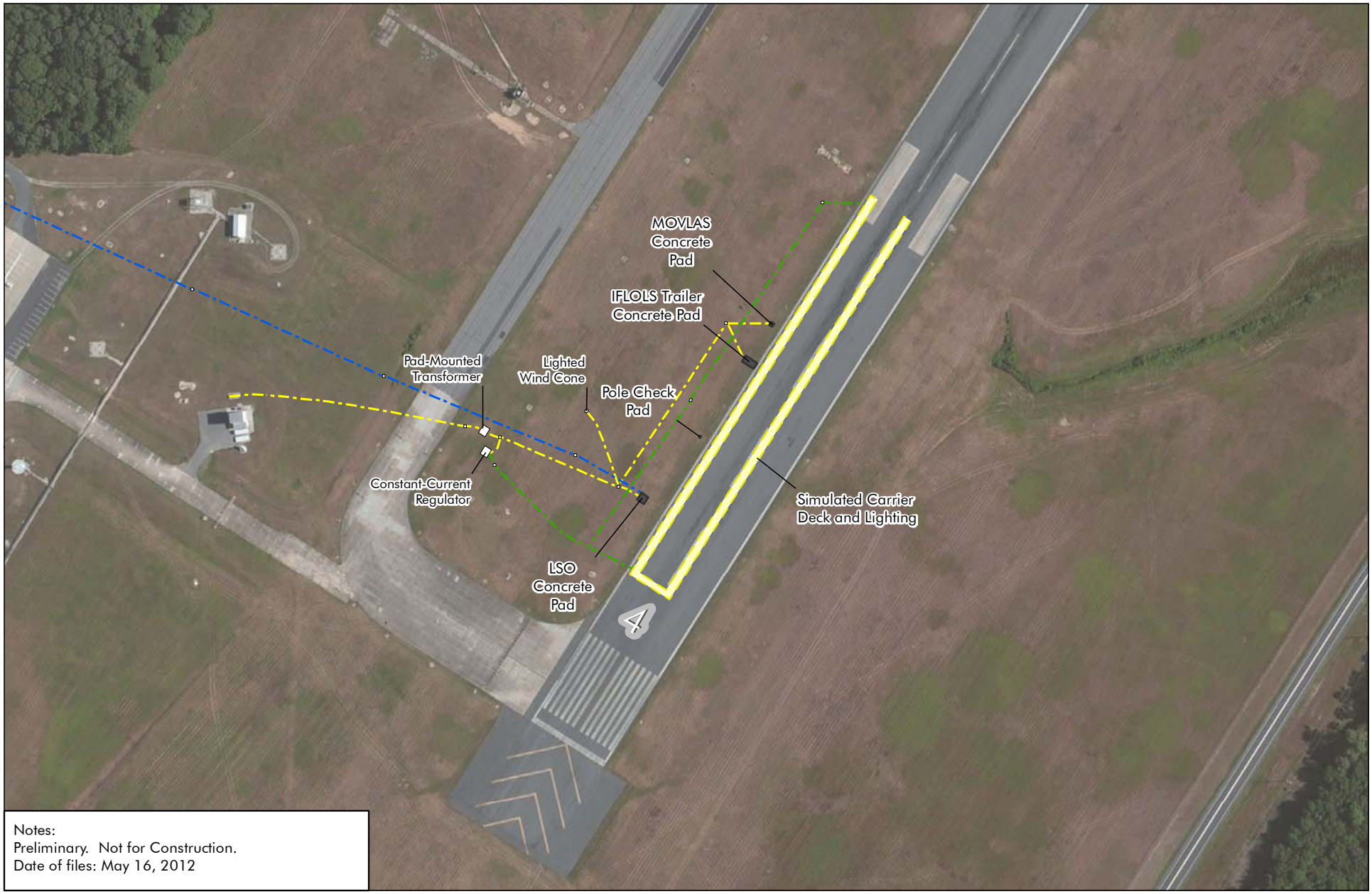

Notes:
Preliminary. Not for Construction.
Date of files: May 16, 2012

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

- Airfield Lighing Circuts
- Proposed Electrical Line
- Telephone Ductbank
- Concrete Pad
- Simulated Carrier Deck and Lighting

Figure 2-13
Runway 4: Proposed Modifications
Wallops Flight Facility

N

0 100 200
Feet

1:2,800

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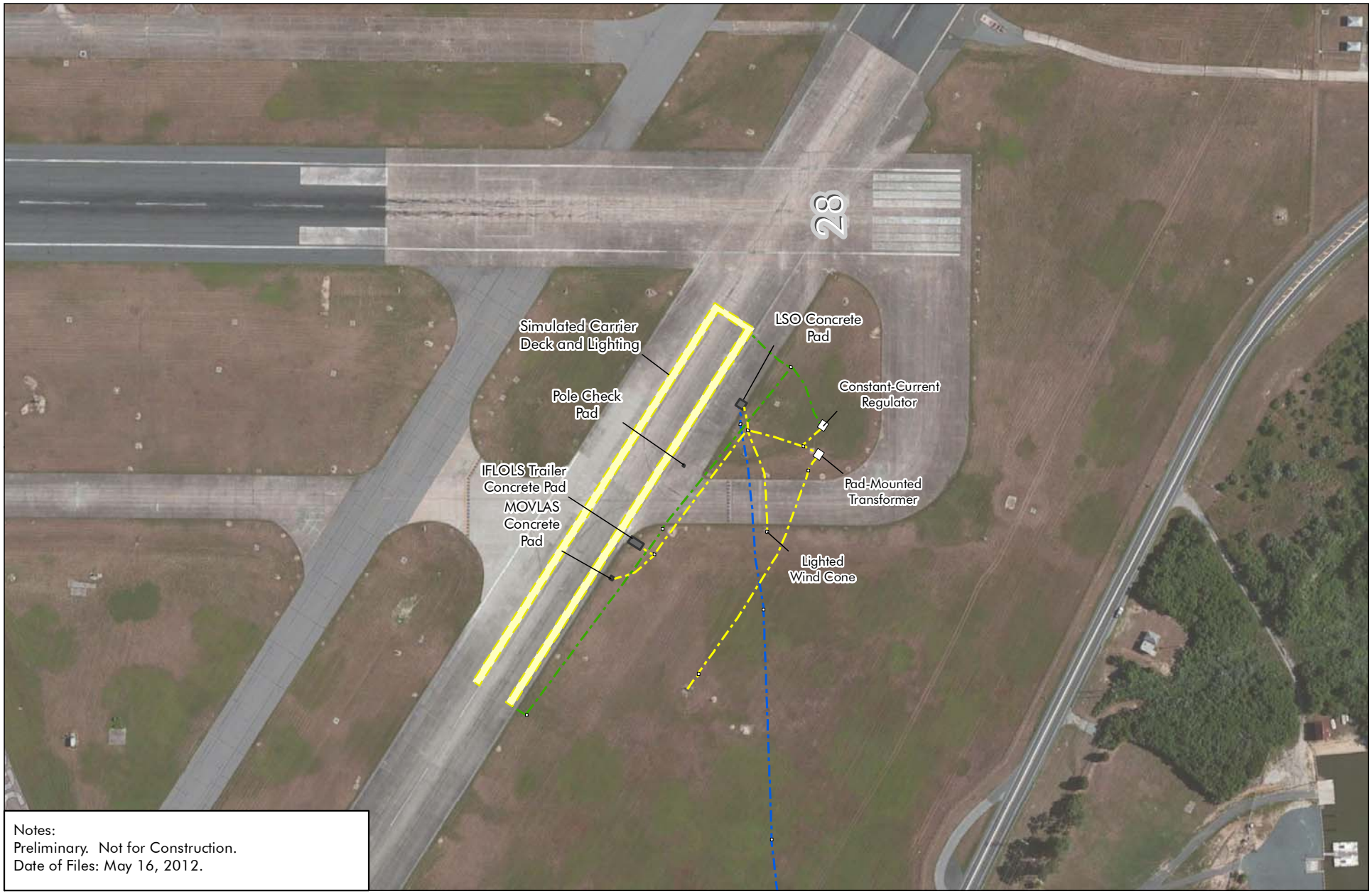

Notes:
Preliminary. Not for Construction.
Date of Files: May 16, 2012.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

- Airfield Lighing Circuts
- Proposed Electrical Line
- Telephone Ductbank
- Concrete Pad
- Simulated Carrier Deck and Lighting

Figure 2-14
Runway 22: Proposed Modifications
Wallops Flight Facility

N

0 100 200
Feet

1:2,800

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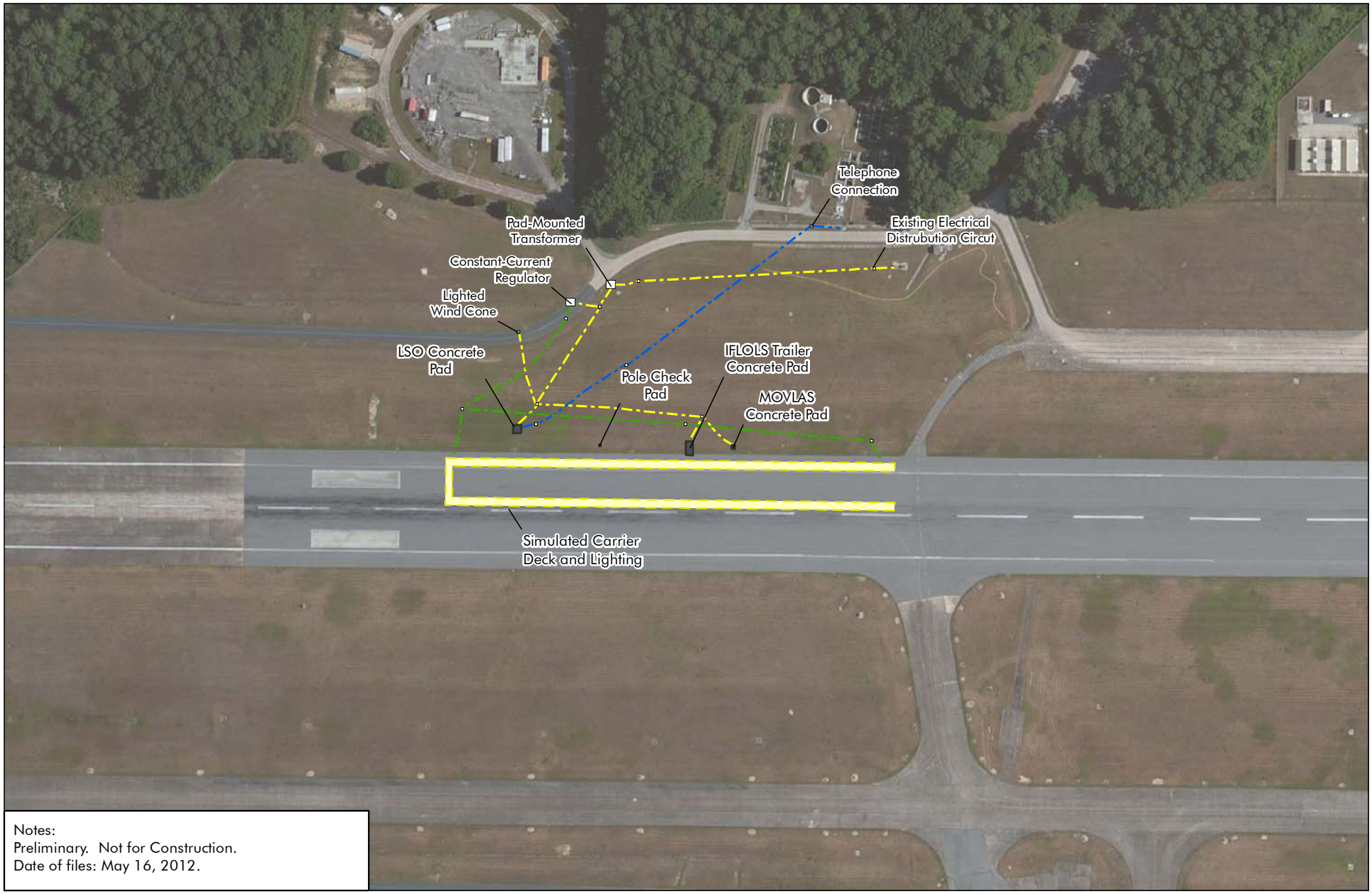

Notes:
Preliminary. Not for Construction.
Date of files: May 16, 2012.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

- Airfield Lighing Circuts
- Proposed Electrical Line
- Telephone Ductbank
- Concrete Pad
- Simulated Carrier Deck and Lighting

Figure 2-15
Runway 10: Proposed Modifications
Wallops Flight Facility

N

0 100 200
Feet

1:2,800

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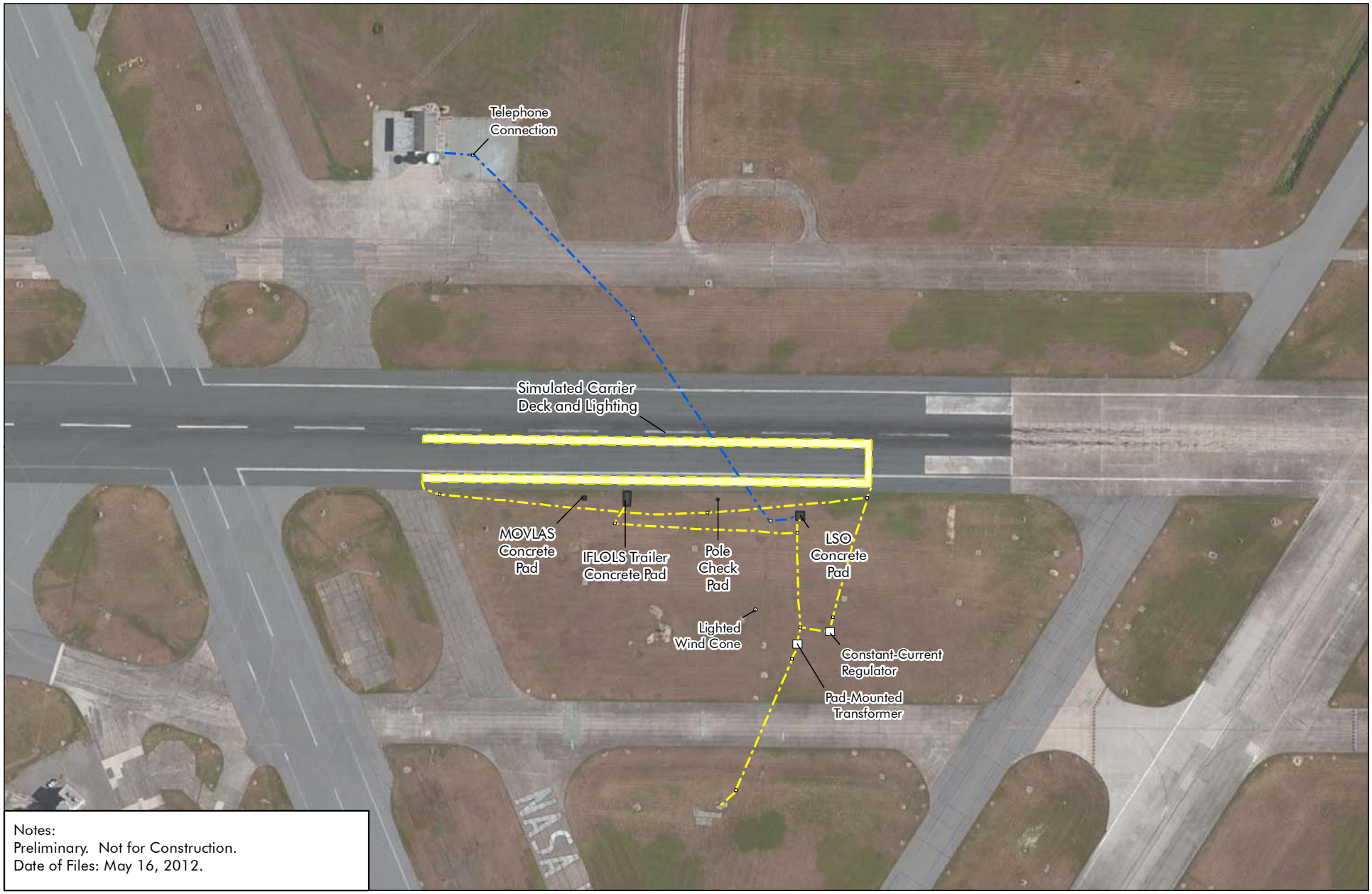

Notes:
Preliminary. Not for Construction.
Date of Files: May 16, 2012.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Concrete Pad
Simulated Carrier Deck and Lighting
Proposed Electrical Line
Telephone Ductbank

Figure 2-16
Runway 28: Proposed Modifications
Wallops Flight Facility

N

0 100 200
Feet

1:2,800

two runway ends would be utilized for nighttime E-2/C-2 FCLP operations. Proposed infrastructure locations are based upon the best information available and may be adjusted slightly as design plans are finalized; however, the overall level of impact would not be expected to change.

2.1.4 Facility Personnel

No aircraft or squadron personnel would be permanently stationed or homebased at Emporia-Greensville or WFF Main Base. WFF Main Base's base operations and airfield facilities provide the ability for the aircraft to conduct full stop landings, allowing for on-deck refueling, crew swaps, or for the aircraft to temporarily shut down and remain at the airfield between training periods. For FCLP detachment operations at WFF, Navy personnel, aircraft, and support equipment would remain at the airfield and in the local area during the length of the detachment.

During FCLP periods at either Emporia-Greensville or WFF Main Base, Norfolk-based Navy personnel would be at the airfield to observe and grade the pilots conducting the training operations.

2.2 Description of Alternatives

The EA evaluates two alternatives for conducting E-2/C-2 FCLP operations as well as the No Action Alternative. The two alternatives include up to 45,000 annual operations (which include fleet and FRS operations) at Emporia-Greensville Regional Airport (Alternative 1) and up to 45,000 annual operations (including fleet and FRS operations) at NASA Wallops Flight Facility (Alternative 2). These two alternatives meet the purpose and need of the proposed action, as described in Section 1.2. Under the No Action Alternative, E-2/C-2 FCLP activities would continue in the manner they are currently conducted. The No Action Alternative is used as a benchmark for decision makers to compare the potential environmental effects of the proposed action and alternatives with existing baseline conditions.

2.2.1 Alternative 1: Emporia-Greensville Regional Airport

Under Alternative 1, the Navy would conduct up to 45,000 E-2/C-2 FCLP operations annually at Emporia-Greensville. Given the transit distance from NS Norfolk Chambers Field, there would not be a need to refuel aircraft at Emporia-Greensville during routine FCLP training operations. In addition, pilots would neither detach to Emporia-Greensville, i.e., stay overnight, nor conduct full-stop landings at the airport under normal conditions.

This alternative evaluates the impacts of two operational scenarios for Emporia-Greensville. Scenario 1 is a pattern with up to three planes.[1] This scenario would

[1] The scenarios described in this EA are labeled differently in the Noise Analysis (BRRC 2012). For Emporia-Greensville, Scenario 1 in this EA corresponds with Alternative 1A in the Noise Analysis, and Scenario 2 in this EA corresponds with Alternative 1B in the Noise Analysis. For WFF, Scenario 1 in this EA corresponds with Alternative 2B in the Noise Analysis, and Scenario 2 in this EA corresponds with Alternative 2D in the Noise Analysis.

include up to 30,000 FRS E-2/C-2 operations and up to 15,000 fleet squadron operations, for a total of up to 45,000 operations. Scenario 2 would include up to 30,000 FCLP operations using a five-plane pattern and up to 15,000 FCLP operations using a three-plane pattern for a total of up to 45,000 FCLP operations. As provided in the Navy's Request for Proposals, the Navy would prefer to operate according to Scenario 2, i.e., the three- and five-plane patterns, which would allow for greater training flexibility. Final results of the Request for Proposals process will be determined following completion of this EA.

2.2.2 Alternative 2: Wallops Flight Facility

Under Alternative 2, the Navy would conduct up to 45,000 E-2/C-2 FCLP operations annually at NASA Wallops Flight Facility. Aircraft refueling and overnight detachments could occur at NASA WFF Main Base if this alternative is chosen.

This alternative evaluates a combination of three- and five-plane patterns, where up to 30,000 FCLP operations are conducted using a five-plane pattern and up to 15,000 FCLP operations are conducted using a three-plane pattern for a total of up to 45,000 FCLP operations. There are also two scenarios analyzed under this alternative: Scenario 1 would include use of Runway 04/22, while Scenario 2 would include use of Runway 10/28.

As noted in Section 2.1.1.1, two of the four runway ends at WFF would be utilized for E-2/C-2 FCLP operations if operations would be conducted during the day and at night (i.e., under either Scenario 1 or Scenario 2); however, daytime-only FCLP operations could be conducted on up to four runway ends. This option (conduct daytime operations on four runway ends) is covered under the analysis for Scenarios 1 and 2 for WFF since noise contours and flight tracks for this option would fall within those modeled for these two scenarios.

2.2.3 No Action Alternative

Pursuant to 40 CFR 1502.14(d), the No Action Alternative is evaluated in this EA. The No Action Alternative may serve as a benchmark for decision makers to compare the potential environmental effects of the proposed action and alternatives with existing baseline conditions.

Under the No Action Alternative, the Navy would not use the airfield facilities at Emporia-Greensville or WFF Main Base for E-2/C-2 FCLP. E-2/C-2 squadrons, operating from NS Norfolk Chambers Field, would continue to utilize NALF Fentress as the primary local airfield for E-2/C-2 FCLP training requirements supplemented by occasional FCLP training at alternative airfields such as NAS Oceana and by conducting detachments outside the local area when NALF Fentress scheduling reaches maximum capacity.

2.3 Alternatives Eliminated from Further Consideration

Because of the unique nature of FCLP and the specific airfield requirements necessary to conduct FCLP, only airfields meeting the proximity, technical requirements, and technical evaluation factors outlined in Section 1.2.3 were considered as alternatives in this EA. Eliminated from consideration were any airports expressing interest but not meeting the technical airfield requirements.

From April 2010 through August 2010, the Navy conducted a survey of local public and private civilian airfields potentially suitable to support near term, interim E-2/C-2 FCLP operations within 90 nautical miles (modified to 45 nautical miles during the market survey, as discussed in more detail below) of NS Norfolk Chambers Field. Results of that survey can be found in the August 2010 *Report on the Results of the Market Survey of Prospective Public Airfields to Determine Ability to Support Field Carrier Landing Practice (FCLP) Operations for E-2/C-2 Squadrons* (NAVFAC 2010). The market survey was initiated as a precursor to a planned procurement process, which would include development and release of a formal Request for Proposal (RFP) for an airfield use agreement.

Prior to initiating the market survey process, the Navy developed the following set of preliminary minimum mission requirements for an airfield to support E-2/C-2 FCLP training:

(1) Proposed airfield must be within a maximum aircraft transit distance of 90 nautical miles from NS Norfolk Chambers Field;
(2) The minimum runway length must be 5,000 feet (rounded to the nearest 100 feet), which represents the minimum runway length for an E-2/C-2 to complete a takeoff or full-stop landing under normal procedures; and
(3) The minimum runway width must be 100 feet, which is the minimum width necessary to support the C-2 aircraft wingspan of approximately 80 feet.

Reviewing available airfield data, the Navy identified 16 airfields within Virginia and North Carolina that met the three minimum operational requirements. Managers of each of the 16 airfields were sent a letter of inquiry to determine their interest in being considered during the competitive procurement process. The following seven airfields, all located in Virginia, expressed interest:

- Accomack County Airport
- Chesapeake Regional Airport
- Chesterfield County Airport
- Dinwiddie County Airport
- Emporia-Greensville Regional Airport
- Franklin Municipal Airport
- Suffolk Executive Airport

The Navy responded to each interested airfield manager with a questionnaire to collect more specific information while ensuring that the same information was collected on all seven airfields. A review of the completed questionnaires verified that each airfield met the minimum three original operational requirements for an

airfield to support E-2/C-2 FCLP training and could be considered a viable alternative.

In conjunction with the questionnaire, the Navy conducted site visits between June 24 and July 26, 2010 to the seven airfields that expressed interest. Based on data collected during the site visits, the Navy determined that several characteristics were preferable in an airfield that would support E-2/C-2 FCLP training: low annual flight operations; unrestricted airspace to conduct FCLP operations from either end of the runway based on prevailing wind conditions; a convenient aircraft transit route under visual flight rules from NS Norfolk Chambers Field; and surrounding land uses that are compatible with FCLP operations and have low population densities. Areas with higher population densities typically require modifications to the regular FCLP pattern and have extraneous lights and other visible reference points that could degrade the realism of nighttime training (NAVFAC 2010).

Additionally, through data collected during the market survey, the maximum aircraft transit distance requirement was modified from 90 nautical miles to 45 nautical miles. Ninety nautical miles represents the maximum distance an E-2/C-2 aircraft can transit to an airfield from NS Norfolk Chambers Field, conduct a three-hour FCLP period, and return with required fuel reserve under visual flight rules without refueling en route. This distance criterion was initially selected to provide for the largest geographical range in identifying potentially suitable airfields. However, a transit distance of 45 nautical miles or less is preferred because this distance provides for greater operational flexibility.

After completion of the market survey described above, the Navy initiated a RFP procurement process, "To Procure Use of a Non-DOD Airfield to Support Field Carrier Landing Practice (FCLP) by E-2/C-2 Squadrons Homebased at or Transient to Naval Station Norfolk Chambers Field." The RFP was posted on February 26, 2011, with proposals due on April 29, 2011. Per the RFP, proposals would be evaluated on price and two technical factors (distance from NS Norfolk Chambers Field and suitability for FCLP operations). After receipt of proposals, the appropriate boards met to review the proposals received. The Source Selection Authority established a competitive range and authorized discussions with all offerors in the competitive range. Oral discussions were held, and any revised proposals were received by the Navy. At this point, discussions are complete, and the Source Selection Authority has determined that no further discussions are necessary. Any other information regarding this procurement process is source selection-sensitive and cannot be released at this time, as the procurement is technically ongoing and no final award decision has been made.

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3 Existing Environment and Environmental Impacts

This chapter provides a description of the existing environment that could be affected by the proposed action at Emporia-Greensville Regional Airport or Wallops Flight Facility, and the potential environmental impacts of the proposed action. As directed by NEPA, CEQ regulations on implementing NEPA (40 CFR 1500-1508), Navy procedures for implementing NEPA (32 CFR 775), and Navy environmental instructions (OPNAVINST 5090.1C CH-1), the description of the affected environment focuses on those resource areas potentially subject to impacts. Therefore, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

As discussed in Section 3.1, certain resource areas have been eliminated from consideration in this EA because they are not expected to be impacted by the proposed action. The environmental resources potentially affected by the proposed action and evaluated in this EA are listed in Section 1.3 and are analyzed in Sections 3.2 through 3.14.

3.1 Resources Considered but Not Evaluated in Detail

The following resource areas are not expected to be impacted by the proposed action and therefore were not analyzed as part of this EA:

Transportation

Under the proposed action, the Navy would not permanently station or homebase any aircraft or personnel at either Emporia-Greensville or WFF Main Base. During times when the Navy would be conducting operations at either facility, minimal Navy personnel would arrive from NS Norfolk Chambers Field to observe and grade the pilots conducting training operations. Both facilities are located along well-maintained two-lane or four-lane roads, and the addition of two to three vehicles would not impact the local roadway level of service or traffic patterns.

In a detachment situation at WFF Main Base, personnel, aircraft, and support equipment may remain in the local area during the training period. This would represent up to 27 additional vehicles on local roads during the training periods. Given the low number of vehicles and the fact that their presence would be on an infrequent and temporary basis, this would not impact the local roadway level of

service or traffic patterns. Traffic and transportation analyses, therefore, are not included in this EA for either Emporia-Greensville or WFF Main Base.

Wild and Scenic Rivers

There are no federally designated wild or scenic rivers in Virginia (National Wild and Scenic River System 2011). The closest state-designated scenic river to Emporia-Greensville is the Meherrin River in Brunswick County, approximately 9 miles west of Emporia-Greensville (VDCR 2007). There are no state-designated scenic rivers within the immediate vicinity of WFF Main Base (VDCR 2007). As a result, wild and scenic rivers are not analyzed in this EA for either Emporia-Greensville or WFF Main Base.

Department of Transportation: Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 (recodified in 1983 to 49 U.S.C. 303) was implemented in an effort to preserve the natural beauty of the countryside and public and recreational lands, wildlife and waterfowl refuges, and historic sites. The FAA is a cooperating agency for this EA and one of several organizations within the DOT. As there are no public and recreational lands, wildlife and waterfowl refuges, and historic sites within the study area (i.e., within the noise contours) for Emporia-Greensville, an analysis of Section 4(f) is not required. As WFF is a federal facility, Section 4(f) does not apply; therefore, Section 4(f) will not be formally analyzed for WFF Main Base.

3.2 Aircraft Operations and Airspace

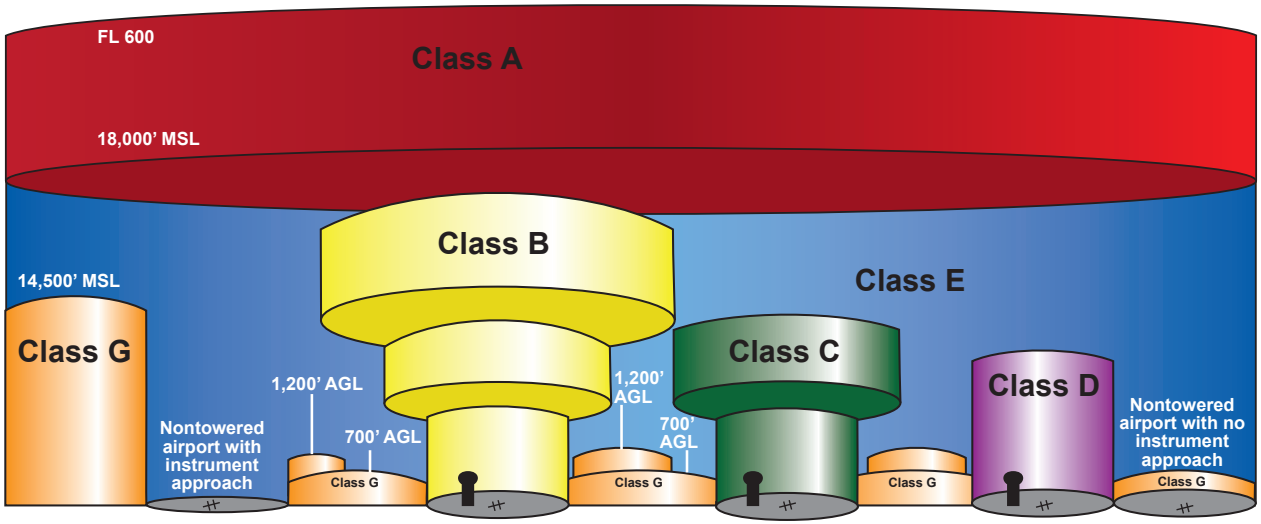
Airspace is the three-dimensional space above Earth's surface. This finite resource is managed by the FAA and other designated agencies, such as the DOD, for the benefit and use of all aviation sectors needing access to it, including commercial, general, and military (Interagency Aviation Management Council 2003). FAA-designated controlled airspace is divided into five classes, A through E, as shown and described in Figure 3-1. These classes identify airspace that supports airport operations and designated airways affording transit from place to place.

3.2.1 Existing Aircraft Operations and Airspace at Emporia-Greensville Regional Airport

The study area for this section is the airfield at Emporia-Greensville and the extent of the holding-pattern flight tracks (see Section 2.1 for a description and figure of the holding-area flight tracks).

3.2.1.1 Aircraft Operations

Emporia-Greensville is predominantly located in Greensville County, with a small portion of the southern end of the runway and airport property extending into Southampton County. It is located 1.4 miles east of the City of Emporia.



Terminology

Above Ground Level (AGL)
Altitude expressed in feet measured above the ground surface. Normally describes low altitude flight activities.

Mean Sea Level (MSL)
Altitude expressed in feet measured above average (mean) sea level. Normally describes high altitude flight activities.

Flight Level (FL)
Altitudes at 18,000 feet MSL and above are expressed in terms of FLs.

KEY:
- Airport
- Airport runway
- Air traffic control tower

Controlled Airspace

Class A	Class B	Class C	Class D	Class E
Class A airspace is from 18,000 ft MSL up to and including FL 600. All operations within Class A airspace are under the direct control of Federal Aviation Administration air traffic controllers and are conducted under Instrument Flight Rules.	**Class B** airspace is from the surface to 10,000 ft MSL or higher surrounding the nation's busiest commercial airports. Each one is individually tailored to its airport and consists of a surface area and two or more layers. Clearance by an air traffic controller is required for all aircraft to operate in the area, and all aircraft that are cleared receive separation services within the airspace.	**Class C** airspace in generally from the surface to 4,000 ft above the airport elevation surrounding those airports that have an operational control tower, are serviced by radar approach control, and have a large number of commercial flight operations. This class is also used for some military airports. The airspace usually consists of a surface area with a 5 nautical mile (nm) radius and an outer circle with a 10 nm radius that extends from 1,200 to 4,000 ft above the airport elevation. Aircraft must maintain communications with the air traffic controller.	**Class D** airspace is from the surface to 2,500 ft above the airport elevation surrounding civil and military airports with air traffic control towers but where the traffic volume is less than that of Class B or C airspace. The general shape of this airspace is a cylinder with a 5 nm radius. Aircraft must maintain communications with the air traffic controller.	**Class E** airspace is the portion of the controlled airspace that has not been designated as Class A, B, C, or D. The floor of Class E airspace is determined by such factors as surface features, approach routes, traffic patterns around uncontrolled airfields, and congested areas on the ground. The upper limit of Class E airspace is the floor of Class A airspace (18,000 ft MSL) or the floor of any other overlying controlled airspace. Class E airspace surrounds controlled, non-towered airports, and federal airways (Victor Airways) are Class E airspace.

Uncontrolled Airspace

Class G airspace is the portion of the airspace that has not been designated as Class A - E. It is therefore designated uncontrolled airspace and extends from the surface to the base of the overlying Class E airspace. Visual Flight Rule minimums apply.

Figure 3-1 Airspace Classes

Emporia-Greensville has a total of three Instrument Approach Procedures, which are designed to allow aircraft to safely land at the airfield when meteorological conditions do not allow for visual approaches. Runways 15 and 33 can support Global Positioning System (GPS) approaches, and Runway 33 has a localizer, which is an antennae array transmitting a signal that provides lateral guidance to aircraft approaching the runway.

A "flight operation" refers to any instance in which an aircraft crosses over the runway threshold at an airfield. Departures and arrivals each count as one operation. Based upon information received from Emporia-Greensville and the FAA, approximately 1,180 fixed-wing aircraft operations occur at the airport annually. This would equate to approximately three fixed-wing operations per day, the majority of which are conducted with civilian propeller-driven aircraft. In addition, approximately 1,140 military helicopter operations are estimated to occur annually (Table 3-1).

Instrument Flight Rules. Rules governing the procedures for flying by reference to instruments on the flight deck, with navigation accomplished by reference to electronic signals. Instrument flight rules require pilots to be trained and certified in navigational methodologies and to adhere to air traffic control clearances regarding specific flight route and altitude directions.

Visual Flight Rules. Rules governing the procedures for conducting flight with visual reference to the ground and by visually avoiding obstructions and other aircraft. Visual Flight Rules employ see and avoid procedures when weather conditions are clear.

Table 3-1 Summary of Existing Annual Aircraft Operations at Emporia-Greensville Regional Airport

	Civilian	Military	Total	Percent of Total
Civilian Propeller Aircraft				
Single-engine (Cessna 172)	972	-	**972**	**41.9**
Twin-engine (Beechcraft King Air 90)	92	-	**92**	**3.9**
Military Propeller Aircraft (CASA 212)	-	36	**36**	**1.6**
Jet Aircraft (Lear 35)	80	-	**80**	**3.4**
Helicopters (CH-47, MH-53)	-	1,140	**1,140**	**49.1**
Total	**1,144**	**1,176**	**2,320**	**100**

Source: BRRC 2012

Cessna 172


Beechcraft King Air


Lear Jet

CASA-212


CH-47 Chinook

MH-53E Sea Dragon

3.2.1.1.1 Types of Aircraft

Fixed-wing

A fixed-wing aircraft is an aircraft whose lift is generated by the forward motion of its wings through the air. Common types of civilian fixed-wing aircraft that typically use Emporia-Greensville include single-engine propeller aircraft such as the Cessna 172, twin-engine propeller aircraft such as the Beechcraft King Air 90, and business jets like the Lear 35 and the Cessna Citation. The military's CASA 212, a twin-engine propeller aircraft, also occasionally uses the airport for paratrooper training. When operating at Emporia-Greensville, these fixed-wing aircraft are performing arrivals, departures, and touch-and-go patterns.

Rotary-wing

A rotary-wing aircraft / helicopter is an aircraft that is partly or wholly sustained in the air by lifting surfaces (rotors) revolving around a vertical axis. The military occasionally performs rotary-wing operations at Emporia-Greensville and surrounding public airports using the Army's CH-47 Chinook and the Navy's MH-53E Sea Dragon helicopters. Neither aircraft is permanently based at Emporia-Greensville; however, both are used at the airport to conduct training. The Army uses the CH-47 to conduct paratrooper training, and the Navy trains in use of night-vision devices with the MH-53E.

3.2.1.2 Airspace

For the purposes of this EA, the airspace that would be utilized, and is evaluated as part of the Navy's proposed action, is the area immediately around Emporia-Greensville. Class E airspace surrounds Emporia-Greensville, and air traffic in proximity to Emporia-Greensville is mainly associated with transient instrument flight rule and visual flight rule over flights. To view the location of these airspace class designations in the vicinity of the airport, refer to Figure 3-2.

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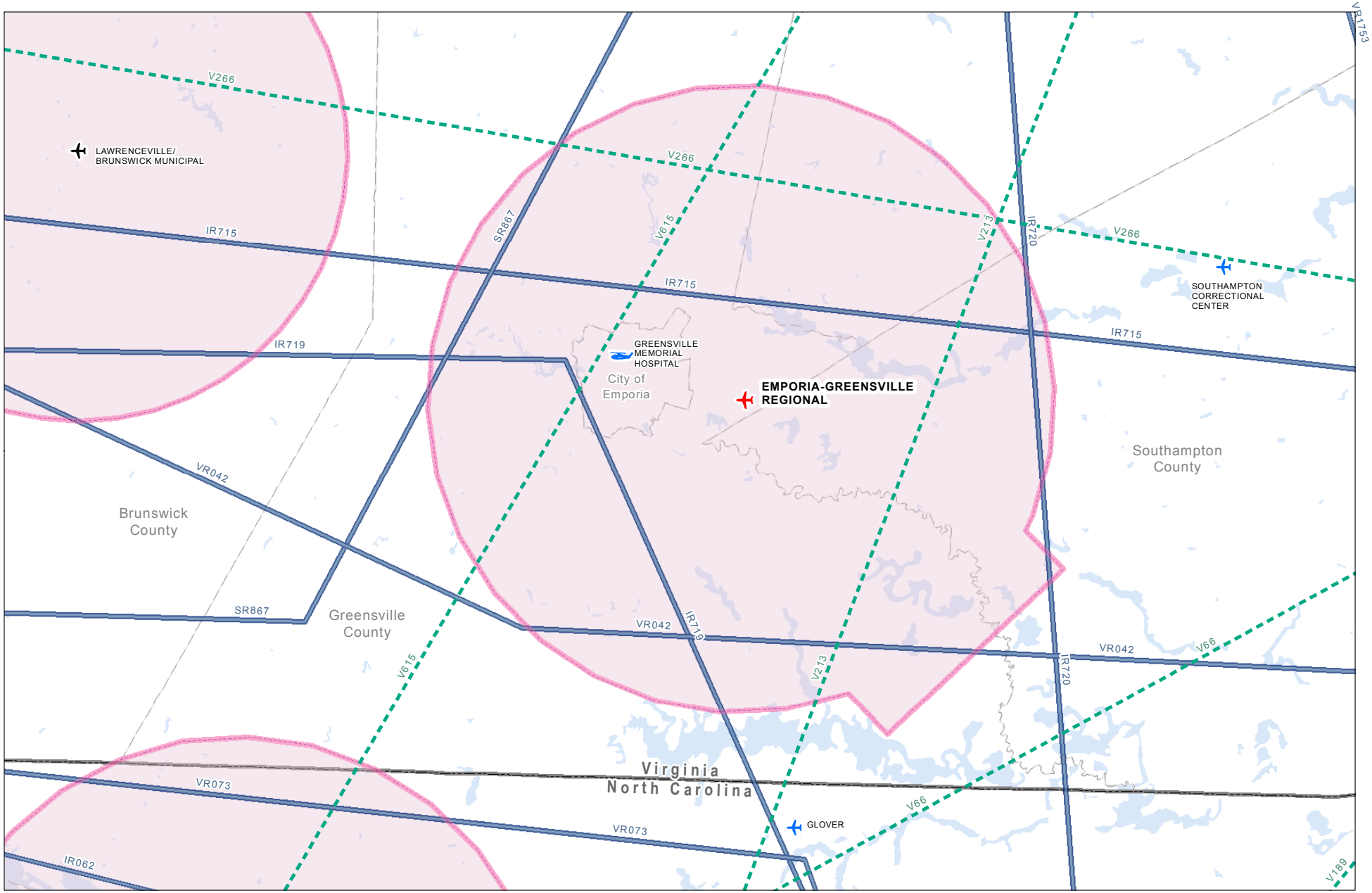

Source: ESRI 2010; Bureau of Transportation Statistics (BTS), 2008.

- Emporia-Greensville Regional Airport
- Private Airport
- Public Airport
- Private Heliport
- Victor Airway Centerline

Airspace Class
- Class E
- Military Training Routes
- County Boundary
- State Boundary

Figure 3-2

Airspace Surrounding Emporia-Greensville Regional Airport

Emporia-Greensville Regional Airport

N

0 2 4

Miles

3.2.2 Impacts on Aircraft Operations and Airspace at Emporia-Greensville Regional Airport

3.2.2.1 Impacts on Aircraft Operations at Emporia-Greensville Regional Airport

Under Alternative 1, Emporia-Greensville would be used to support FCLP training requirements for aircraft operating from NS Norfolk Chambers Field. For this analysis, these aircraft operations are divided between flight routes (the path by which the Navy E-2/C-2 aircraft transit between NS Norfolk Chambers Field and Emporia-Greensville) and flight tracks (the path flown at the airfield during FCLP). These are presented on Figure 3-3, and for a comprehensive discussion of these aircraft operations and the way in which FCLP would be schedule and conducted, refer to Section 2.1.1.

Under this alternative, the runway would be closed to non-FCLP arrivals and departures, except in the case of an emergency. The Navy's FCLP schedule would be communicated to the airfield prior to operations, and a "notice to airmen (NOTAM)" would be published, which is a standard practice. There would be temporary impacts on existing general aviation and military aviation operations at Emporia-Greensville, as aircraft associated with both would not be able to utilize the runway during Navy FCLP operations. Although the Navy would require 24-hour-per-day, seven-day-per-week capability, the airfield would not be used all day or every day. Training would generally be scheduled Monday through Friday in three-hour periods. Aircraft based at or intending to utilize Emporia-Greensville would need to adhere to the operations guidance/limitations provided in the NOTAM. FCLP operations would be suspended at Emporia-Greensville whenever necessary to allow for emergency landings at the airfield.

3.2.2.2 Impacts on Airspace at Emporia-Greensville Regional Airport

As discussed in Section 3.2.1.2, Class E airspace currently surrounds Emporia-Greensville, and it would remain Class E airspace under the proposed action. No airspace designations would change as a result of the Navy's proposed action. Overall, there would be no significant impact to airspace use on the Emporia-Greensville airfield under Alternative 1.

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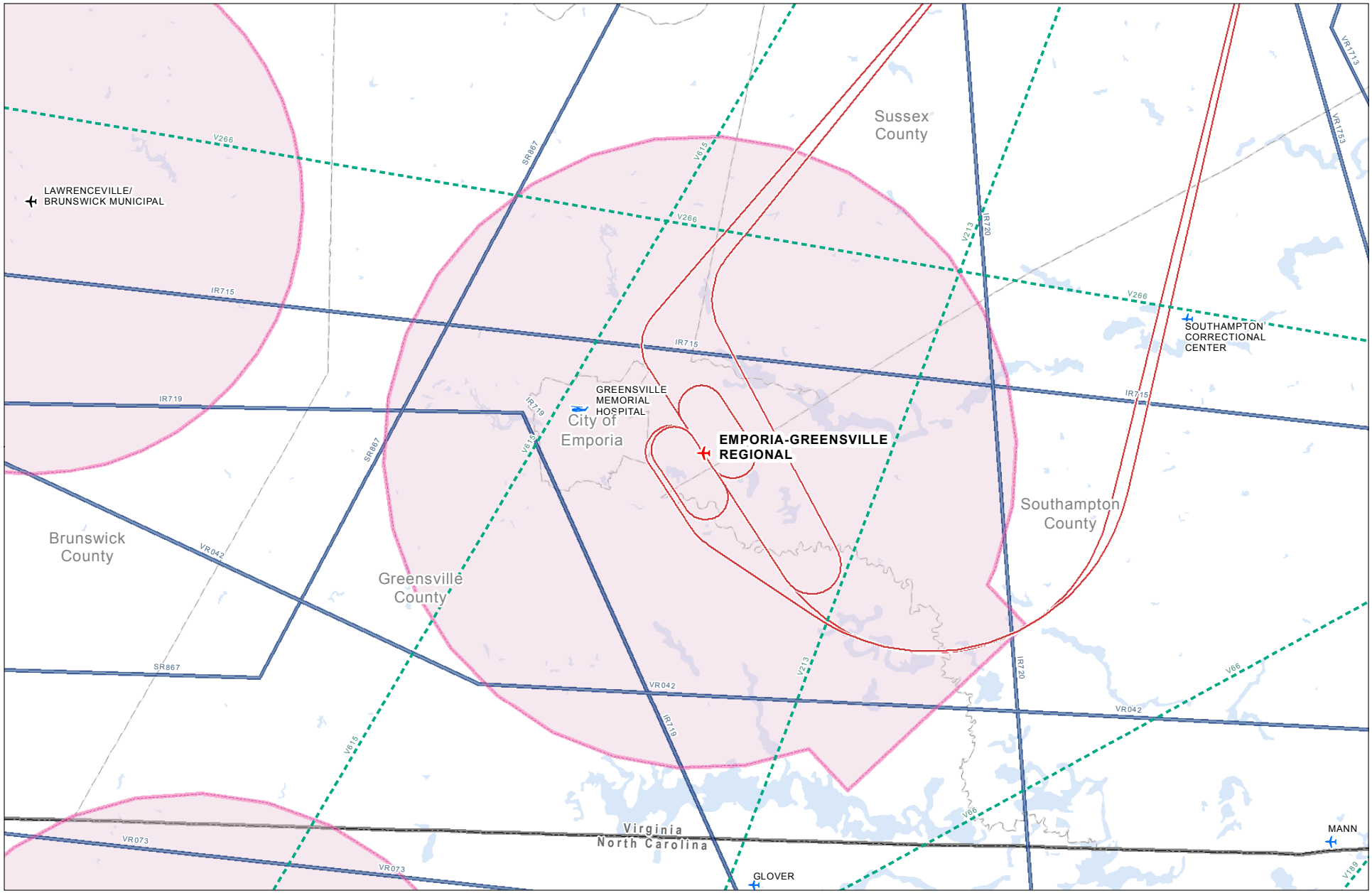

Source: ESRI 2010; Bureau of Transportation Statistics (BTS), 2008.

- Emporia-Greensville Regional Airport
- Private Airport
- Public Airport
- Private Heliport
- Victor Airway Centerline
- Interfacility Flight Track
- Military Training Routes

Airspace Class
- Class E
- County Boundary
- State Boundary

Figure 3-3
Airspace and Flight Tracks
Emporia-Greensville Regional Airport

N

0 2 4
Miles

3.2.3 Existing Aircraft Operations and Airspace at Wallops Flight Facility

The study area for aircraft operations and airspace at WFF Main Base is the extent of the holding-area flight tracks (see Section 2.1 for a description and figure of the holding-pattern flight tracks).

3.2.3.1 Aircraft Operations

WFF Main Base is owned and operated by NASA. The facility has three runways, identified as Runway 4/22, Runway 10/28, and Runway 17/35. Runway 4/22 is 8,750 feet long and 150 feet wide, Runway 10/28 is 8,000 feet long and 150 feet wide, and Runway 17/35 is 4,820 feet long and 110 feet wide (Note: since Runway 17/35 does not meet the Navy's length requirement of 5,000 feet, it is not being examined for potential Navy use in this EA). The airport has a control tower. It is a private-use airport and is not part of the FAA's National Plan of Integrated Airport Systems. A total of up to 11 aircraft are based at the airport: 10 fixed-wing aircraft (seven multi-engine aircraft, one single engine aircraft, and two jet aircraft) and one rotary-wing aircraft (NASA Wallops Flight Facility Aircraft Office 2012).

WFF Main Base has a total of five instrument approach procedures, which are designed to allow aircraft to safely land at the airfield when meteorological conditions do not allow for visual approaches. Runways 04, 10, 17, 22, and 28 can support GPS approaches for aircraft with global positioning systems.

Based upon information received from NASA, approximately 13,074 aircraft operations (both fixed-wing and rotary-wing) occurred at the airfield in 2011 (Table 3-2). This would equate to approximately 36 operations per day. Section 3.2.3.1.1 discusses the types of aircraft that regularly utilize WFF Main Base.

Table 3-2 Summary of Existing Annual Aircraft Operations at Wallops Flight Facility Main Base (2011)

	Civilian	Military	Total	Percent of Total
NASA (P-3, Super King Air)	313	-	**313**	**2.4**
U.S. Navy (FA-18, E-2/C-2)	-	11,050	**11,050**	**84.5**
Air National Guard (A-10 MD ANG)	-	772	**772**	**5.9**
U.S. Coast Guard (C-130, H-60)	-	32	**32**	**0.2**
U.S. Air Force (C-40)	-	670	**670**	**5.1**
U.S. Army (UH-60)	-	49	**49**	**0.4**
Misc.	188	-	**188**	**1.4**
Total	**501**	**12,573**	**13,074**	**100**

Source: BRRC 2012


P-3 Orion


Beechcraft Super King


FA-18F Super Hornet


C-40 Clipper


A-10 Thunderbolt II


C-130 Hercules


UH-60 Blackhawk

3.2.3.1.1 Types of Aircraft

Fixed-wing

Common types of fixed-wing aircraft that typically use WFF Main Base include the P-3 Orion and Beechcraft Super King Air (operated by NASA); the FA-18 jet aircraft, E-2/C-2 twin-engine, turboprop aircraft (operated by the Navy); the A-10 (operated by the Maryland Air National Guard); the C-130 (operated by the U.S. Coast Guard); and the C-40 (operated by the U.S. Air Force). When operating at WFF Main Base, these fixed-wing aircraft are performing arrivals, departures, and touch-and-go patterns.

Rotary-wing

Common types of rotary-wing aircraft at WFF Main Base include multiple variants of H-60 helicopters operated by the U.S. Coast Guard, Navy, and Army.

3.2.3.2 Airspace

Airspace surrounding WFF Main Base is shown in Figure 3-4. FAA-designated controlled airspace is divided into five classes, A through E, as shown and described in Figure 3-1. These classes identify airspace that supports airport operations and designated airways affording transit from place to place. WFF Main Base has both Class D and E designations surrounding the airfield. To view the location of these airspace class designations in the vicinity of the airport, refer to Figure 3-4.

3.2.4 Impacts on Aircraft Operations and Airspace at Wallops Flight Facility

Current air traffic in the vicinity of WFF Main Base is associated with NASA flights and military flights (primarily Navy from NAS Patuxent River and NS Norfolk). No victor airways or military training routes are within WFF Main Base's Class D or E airspace. One private airfield (Taylor) is located within the existing Class D airspace surrounding WFF Main Base and three private airfields (Boomers Field, Sawyer, and High Hopes) are located within the existing Class E airspace.

3.2.4.1 Impacts on Aircraft Operations

Under Alternative 2, WFF Main Base would be used to support FCLP training requirements for aircraft operating from NS Norfolk Chambers Field. For this analysis, these aircraft operations are divided between flight routes (the path by which the Navy E-2/C-2 aircraft transit between NS Norfolk Chambers Field and WFF Main Base) and flight tracks (the path flown at the airfield during FCLP). These are presented on Figure 3-5; for a comprehensive discussion of these aircraft operations and the way in which FCLP would be scheduled and conducted, refer to Section 2.1.1.

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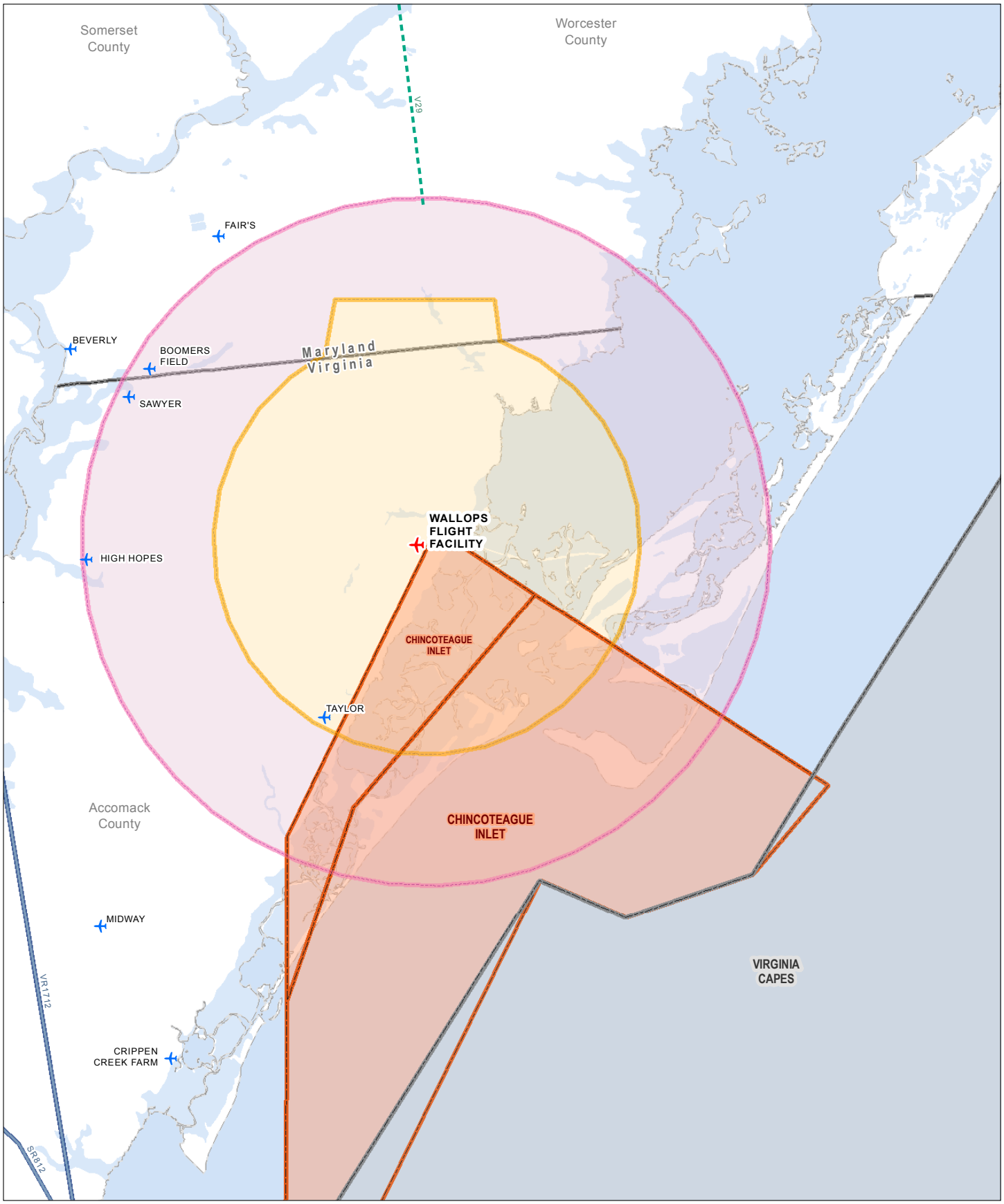

Source: ESRI 2010; Bureau of Transportation Statistics (BTS), 2008.

Wallops Flight Facility
Private Airport
Victor Airway Centerline
Military Training Routes

Airspace Class
Class D
Class E

Special Use Airspace
Warning Area
Restricted Airspace
County Boundary
State Boundary

Figure 3-4
Airspace Surrounding
Wallops Flight Facility
Wallops Flight Facility

N

0 2 4
Miles

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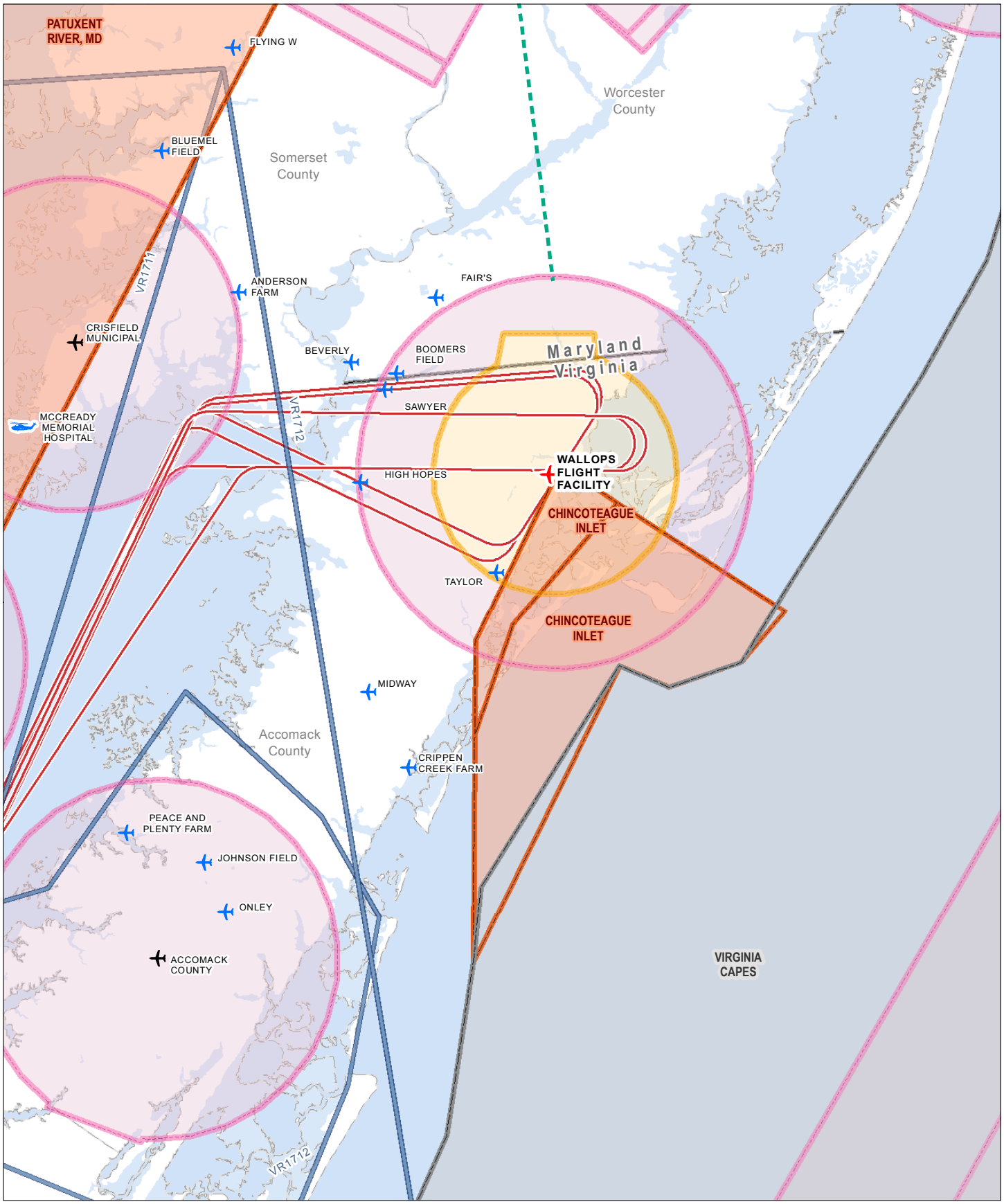


Source: ESRI 2010; Bureau of Transportation Statistics (BTS), 2008.

Wallops Flight Facility
Private Airport
Public Airport
Private Heliport

Interfacility Flight Track
Victor Airway Centerline
Military Training Routes
County Boundary
State Boundary

Airspace Class
Class D
Class E
Special Use Airspace
Warning Area
Restricted Airspace

Figure 3-5
Airspace and Flight Tracks
Wallops Flight Facility

N
0 2 4
Miles

Under this alternative, the FCLP runway would generally be closed to non-FCLP aircraft. Exceptions would be to facilitate the handling of emergency aircraft or, if necessary, to de-conflict with other airfield missions. The Navy will coordinate in advance with WFF Main Base on the FCLP schedule as provided in the Interagency Agreement. As such, there would be no significant impact on aircraft operations at WFF under Alternative 2.

If WFF Main Base is chosen, the Navy could conduct full-stop landings and could refuel and conduct detachments, as needed. Although the Navy would require 24-hour-per-day, seven-day-per-week capability, the airfield would not be used all day or every day. Training would generally be scheduled Monday through Friday in three-hour periods.

3.2.4.2 Impacts on Airspace

As discussed in Section 3.2.1.2, Class D and E airspace currently surrounds WFF Main Base. This would remain unchanged under the proposed action. Overall, there would be no significant airspace impact on WFF under Alternative 2.

3.3 Safety

Safety addresses flight safety (to specifically include bird/animal aircraft strike hazard [BASH]) and runway design.

3.3.1 Flight Safety

There is no universally recognized threshold that defines acceptable or unacceptable flight safety conditions. The objective is to manage and reduce flight risks through a number of measures, including, but not limited to, providing and disseminating pertinent and timely information to airspace users, requiring appropriate levels of training for airspace users, setting appropriate standards for equipment performance and maintenance, defining rules governing the use of airspace, and assigning appropriate and well-defined responsibilities to the users and managers of airspace. When these safety measures are implemented, risks are reduced.

To that end, the FAA is responsible for ensuring the safe and efficient use of U.S. airspace through the establishment of safety regulations, airfield design, airspace and airfield management guidelines, a common civil-military airspace system, and cooperative activities with the Department of Defense (DOD). These actions reduce the risks of aviation mishaps occurring as a result of aircrew or controller error, aircraft collisions with other aircraft or wildlife, equipment and/or mechanical failures, or inclement weather conditions.

The DOD defines aviation mishaps (i.e., accidents) as events that result in illness or injury to military or civilian personnel and/or damage to DOD, public, or private property (Bolkcom 2002). The DOD classifies aviation mishaps based on the extent of property damage and/or injury they cause. Mishap rates are calculated per 100,000 flying hours, excluding combat hours, and for the Navy, are further segregated as ashore or at sea. A Class A mishap is one that results in

loss of life or permanent disability, destruction of the aircraft, or property damage totaling $2 million or greater. For ashore operations, the E-2 has a historical (31 years) Class A mishap rate of 1.14 mishaps per 100,000 hours, and the C-2 has a historical (31 years) Class A mishap rate of 1.01 mishaps per 100,000 hours (Naval Safety Center 2012).

3.3.1.1 Bird/Animal Aircraft Strike Hazard

Because of the threat of injury or death to aircrews or local populations, or damage to the aircraft, an aircraft collision with birds or other wildlife, referred to as "bird/animal aircraft strike hazard," or BASH, is a critical safety concern for both civilian and military aviation. To reduce the potential for a BASH event, and as most reported bird strikes occur at less than 1,000 feet, plans are developed for individual airfields to mitigate the BASH risk. For the Alternative 1 and 2 airfields, information is presented in terms of the existing environment at each airfield, as well as the projected environment if conducting FCLP.

According to the Department of Defense, Partners in Flight organization, the U.S. Navy and Air Force annually report at least 3,000 bird strikes that cause over $75 million in damage (DOD Partners in Flight 2010).

From 1991 through 2011, a total of 1,445 bird and wildlife strikes were recorded throughout Virginia (FAA n.d.). Gulls, the mourning dove (*Zenaida macroura*), the Canada goose (*Branta canadensis*), sparrows, the European starling (*Sturnus vulgaris*), and the eastern meadowlark (*Sturnella magna*) are among the most commonly recorded bird species and bird species groups struck in Virginia. The white-tailed deer (*Odocoileus virginianus*) is the most commonly struck mammal, with 42 strikes reported in Virginia in the past 20 years. Other mammals for which aircraft strikes have been reported since 1991 include the groundhog (*Marmota monax*), striped skunk (*Mephitis mephitis*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), opossum (*Didelphis virginiana*), and bats and foxes (FAA n.d.). BASH, as it pertains to both sites, will be discussed individually in this section.

3.3.1.2 Runway Design

Runway design includes the runway safety area, obstacle free zone, obstacle free area, and runway protection zones. Of these, the function of the runway protection zone (RPZ) is to enhance the protection of people and property on the ground. As Emporia-Greensville is within the FAA's National Plan of Integrated Airport Systems, the FAA has established RPZs at each end of Runway 15/33.

Runway Nomenclature. Runways are named based upon the magnetic heading for each approach end of the runway. Thus, Runway 15/33 is a single, rectangular paved area, but it is considered two runways from an aircraft operations standpoint.

Similarly, Wallops Flight Facility has established clear zones (CZs) and potential accident zones for Runways 04/22, 17/35, and the departure end of Runway 28. A clear zone is DOD/NASA naming preference for RPZ. Under the Navy's proposed action, there would be no changes to RPZs or potential accident zones at either Emporia-Greensville or NASA Wallops.

3.3.2 Existing Safety at Emporia-Greensville Regional Airport

The study area for safety at Emporia-Greensville consists of the airfield property and the runway protection zones depicted in Figure 3-6.

3.3.2.1 Airfield Runway Protection Zones

A runway protection zone is a trapezoid-shaped zone centered about the extended runway centerline. The runway protection zones for Emporia-Greensville are depicted in Figure 3-6. In the area to the southeast of the runway, the runway protection zone extends over U.S. Route 58 and a parcel that includes a maintained forest/pine plantation. To the area northwest of the runway, the runway protection zone extends over James River Junction and into agricultural fields. Both of the runway protection zone areas include property that is outside of the Emporia-Greensville property boundary but do not include uses that are considered incompatible with aircraft operations.

3.3.2.2 Airfield Safety Record

According to airport personnel, no serious accidents have occurred at Emporia-Greensville. The most recent aircraft incident was a hard landing, with no associated serious injuries (Franklin 2011). In the case of emergencies, local emergency response services are in place to respond; these services are described in Section 3.13.1.2.

3.3.2.3 Bird/Animal Aircraft Strike Hazard

The only known instance of an animal and aircraft strike at Emporia-Greensville occurred, according to airport personnel, approximately 10 to 15 years ago and involved a deer (E & E 2011). White-tail deer tend to congregate in the northeastern portion of the airport property at dusk and occasionally cross the runway. With the exception of the small wetland area in the forest east of Runway 15/33, generally no areas of ponded water at the airport attract wildlife to the runway. Of the bird species commonly struck by aircraft in Virginia, the mourning dove, sparrows, the European starling, and the eastern meadowlark could occur at or in the immediate vicinity of Emporia-Greensville. Canada geese do not typically occur in large numbers at the airport; however, other large-bodied birds, which are likely to do more damage than smaller birds if struck, including vultures and crows, may occur (E & E 2011). Gulls are unlikely to occur at the airport. Section 3.11.1.4 provides more information on birds likely to occur at Emporia-Greensville.

Several agricultural fields and small ponds that could attract birds are present in the vicinity of the airport. No landfills, recycling centers, or other facilities that could attract large numbers of birds are known to occur within 6 miles of the airport, which is the minimum recommended distance for municipal solid waste landfills from a public airport, per the FAA (FAA 2006).

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Emporia-Greensville RPZs.mxd

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Active Runway
Runway Protection Zone
Emporia-Greensville Regional Airport
County Boundary
Major Highway
Local Street

Figure 3-6
Runway Protection Zones
Emporia-Greensville Regional Airport

N

0 0.25 0.5
Miles

3.3.3 Impacts on Safety at Emporia-Greensville Regional Airport

3.3.3.1 Impacts on Airfield Runway Protection Zones

The existing runway protection zones are sufficient, per FAA regulations, for the Navy's proposed action; therefore, the runway protection zones would not change in size or shape.

Standard air traffic management techniques would be employed during times of Navy FCLP. Emporia-Greensville would issue a Notice to Airmen announcing the closure of the airfield during FCLP operations. The airfield universal communications (UNICOM) frequency would be monitored continuously during FCLP operations. Any non-FCLP aircraft approaching the airfield would be informed that the airfield is closed. Given the measures put in place to minimize interaction with private aircraft during FCLP operations, the risk of an aviation mishap occurring during FCLP operations under Alternative 1 would be minimized.

3.3.3.2 Impacts on Bird/Animal Aircraft Strike Hazard Risk

No active BASH-management techniques are currently employed at Emporia-Greensville. Relatively high numbers of vultures and crows could occasionally occur in the vicinity of the airport, and deer occasionally congregate at the northern end of the runway at dusk, temporarily posing an increased BASH risk. An increase in air operations at the airport could result in a minor increase in the potential of a BASH incident. BASH management would be provided by the airfield or through a third-party services contract, as needed. An aircrew flying in and around Emporia-Greensville would adhere to flight operations standard operating procedures, using resources such as personnel on the ground to minimize BASH exposure during higher risk times of day or migration seasons. Additionally, many operations would be conducted at night, when birds are less active. As a result of standard flight operating procedures and implementation of airfield or third-party contractor BASH measures, as needed, BASH risk would be managed and would be expected to be low; therefore, there would be no significant impact related to BASH potential under Alternative 1.

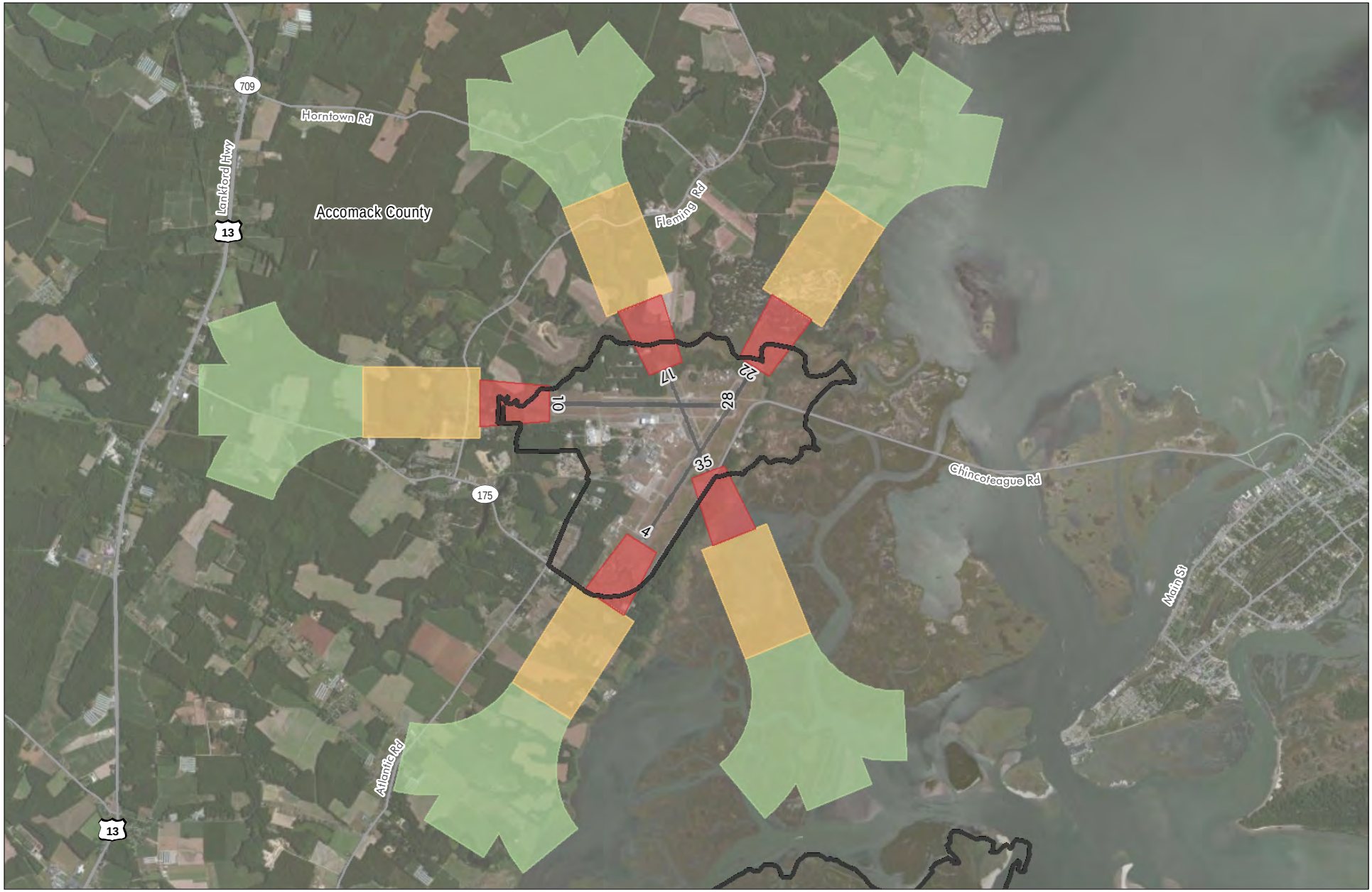
3.3.3.3 Safety Impact Conclusion

The existing runway protection zones are sufficient, per FAA regulations, for the Navy's proposed action and would not change in size or shape. The risk of an aviation mishap occurring during FCLP operations would be managed through measures put in place to minimize interaction with private aircraft during FCLP operation. BASH management would be provided by the airfield or through a third-party services contract. Given these considerations, there would be no significant impact to safety from the proposed action.

3.3.4 Existing Safety at Wallops Flight Facility

The study area for safety at WFF Main Base consists of the airfield property, the runway clear zones, and the runway potential accident zones depicted in Figure 3-7.

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Wallops APZs.mxd



Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Active Runway
Wallops Flight Facility
Major Highway
Local Street

Accident Potential Zone
Accident Potential Zone I
Accident Potential Zone II
Clear Zone

Figure 3-7
Potential Accident Zones
Wallops Flight Facility

N

0 0.5 1
Miles

3.3.4.1 Airfield Potential Accident Zones

WFF Main Base is publically owned and operated by NASA, and, as such, it has established runway clear zones and runway potential accident zones 1 and 2 in its 2008 Master Plan (NASA 2008). The runway clear zone is a trapezoidal area located immediately at the end of each runway. Within the clear zone, most land uses are incompatible with aircraft operations. For this reason, it is generally recommended that the property in a clear zone is either owned, or development rights are acquired, by the governing authority in order to ensure that incompatible development does not occur. Beyond the clear zone are the runway potential accident zones, which generally have less restrictive land use recommendations.

Runway potential accident zones are designed to minimize the potential harm if a mishap does occur by limiting development and/or activities that would result in concentrations of people in the designated runway potential accident zones. Certain land uses that concentrate large numbers of people, such as apartments, churches, and schools, are preferably avoided within these zones.

The runway clear zone and the runway potential accident zones for WFF Main Base are shown in Figure 3-7. Table 3-3 generally describes the land uses within each runway clear zone and runway potential accident zone for WFF Main Base. It should be noted that no runway clear zone or runway potential accident zones are associated with Runway 28 east of WFF Main Base, as this is over WFF property or marsh/water areas.

Table 3-3 General Description of Off-Base Land Uses within Runway Clear Zones and Runway Potential Accident Zones at WFF Main Base

Runway	Runway Clear Zone	Runway Potential Accident Zone 1	Runway Potential Accident Zone 2
Runway 4	Wallops Island National Wildlife Refuge	Agricultural and Watts Bay Estates residential community	Agricultural and scattered residential
Runway 10	Marsh, creek, undeveloped forest, and a mobile home community	Mobile home community, agricultural, and scattered residential	Agricultural and scattered residential
Runway 17	Marsh, water, scattered residential and agricultural	Agricultural and scattered residential	Residential community, agricultural and maintained forest/pine plantation
Runway 22	Marsh, and Trails End residential community	Trails End residential community, agricultural, marsh	Agricultural, marsh, water
Runway 28	Not applicable	Not applicable	Not applicable
Runway 35	Wallops Island National Wildlife Refuge and water	Marsh and water	Marsh and water

3.3.4.2 Airfield Safety Record

WFF Main Base has not experienced a Class A mishap in recent history.

3.3.4.3 Bird/Animal Aircraft Strike Hazard

According to WFF reports, 71 wildlife strike incidents were reported at WFF between August 1981 and September 2010 (Table 3-4) (USDA APHIS WS 2010). Gulls accounted for close to 50 percent of the reported strikes. Sixty-nine percent of the strikes occurred between the months of May and September, and 87 percent occurred during dawn and daylight hours. The dawn and daylight hours are the most active period for aircraft movements at WFF and the most active period for most bird species (USDA APHIS WS 2010).

Table 3-4 Documented Wildlife Strikes by Species Group at the Wallops Flight Facility from August 1981 through September 2010

Bird Group	Number of Reported Strikes
Gull	34
Unknown Bird	10
Meadowlarks	6
Starlings/Blackbirds	4
Swallows/Swifts	4
Raptors	3
Cervids	3
Wading Birds	2
Sparrows	2
Shorebirds	2
Columbids	1
Total	**71**

Source: USDA APHIS WS 2010

To address and minimize the potential for a BASH incident at WFF Main Base, NASA established the WFF BASH Program, with the overall goal of reducing wildlife/aircraft strike incidents through compliance with 14 CFR 139.337—Wildlife Hazard Management. BASH program objectives include reducing the attractiveness of WFF to birds and wildlife by minimizing food sources, nesting sites, and roosting habitat within the airfield clear zones. Since 1999, WFF has had a zero tolerance policy for deer within the Aircraft Operations Area. Efforts to reduce the number of deer on the airfield, including habitat management, fence construction and maintenance, and lethal removal, have been very effective (NASA 2011b). Efforts to reduce the number of birds on the airfield include habitat modification (tree/brush removal, grass maintenance, controlled burns, herbicide applications, and vegetation introductions), use of bird control measures (pyrotechnics and propane cannons), and removal (shooting and trapping) (NASA 2011b). Habitats that could attract birds occur in the vicinity of the WFF Main Base, including agricultural fields to the west and south and wetland and open water habitats to the north and east. The Accomack County North Landfill is approximately 3 miles southwest of WFF Main Base, but it does not currently cause any significant bird hazards.

Hazardous wildlife control at WFF is primarily managed through a contract with the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service, Wildlife Services in accordance with the facility's Wildlife Hazard Management Plan (NASA 2011b). The airport manager is responsible for the overall implementation of the Wildlife Hazard Management Plan and for ensuring coordination between all supporting organizations and individuals. Wildlife Services personnel are primarily responsible for conducting bird and mammal surveys at WFF, to monitor the wildlife populations at the facility, and to identify hazardous species as well as disperse wildlife that pose a threat to aviation safety. Wildlife Services personnel also, if deemed necessary, remove birds and/or mammals that pose a threat to aviation safety or human health and safety under appropriate permits and are responsible for completing the required application for renewing WFF's migratory bird depredation permits with the United States Fish and Wildlife Service (USFWS) as well as WFF's state permit from the Virginia Department of Game and Inland Fisheries (VDGIF). WFF control tower operators, fire department, and aviation safety officer also have responsibilities in BASH management as indicated in the Wildlife Hazard Management Plan.

3.3.5 Impacts on Safety at Wallops Flight Facility Main Base

3.3.5.1 Impacts on the Airfield Potential Accident Zones

Implementation of Alternative 2 would have no impact on the clear zones or Potential Accident Zones at WFF Main Base or the lands that fall beneath these zones.

Standard air traffic management techniques would be employed during times of Navy FCLP. WFF Main Base would issue a Notice to Airmen announcing the status of FCLP operations at the airfield. The airfield universal communications frequency would be monitored continuously during FCLP operations. In addition, during hours when the airfield is open, the air traffic control tower will monitor and direct non-FCLP participating aircraft, as necessary. Given the measures put in place to minimize interaction with other aircraft during FCLP operations, the risk of an aviation mishap occurring during FCLP operations under Alternative 2 would be minimized.

3.3.5.2 Impacts on Bird/Animal Aircraft Strike Hazard Risk

Alternative 2 would not result in the creation of attractants having the potential to increase the concentration of birds around the runway at WFF Main Base. However, the increase in annual air operations under Alternative 2 would result in a minor potential increase in exposure to BASH hazards.

As stated in Section 3.3.3.3, hazardous wildlife control at WFF Main Base is primarily managed through a contract with the USDA Animal and Plant Health Inspection Service, Wildlife Services, in accordance with the facility's Wildlife Hazard Management Plan. Overall, WFF has a robust program that is currently established and procedures outlined in the plan would assist in managing any potential increase in the risk of bird/animal-aircraft interactions. Aircrews flying

in and around WFF Main Base would adhere to the facilities' flight operations standard operating procedures, using all available resources, such as communication with the control tower, to minimize exposure during higher risk times of day and migration seasons. Additionally, many operations would be conducted at night when birds are less active.

3.3.5.3 Safety Impact Conclusion

Implementation of Alternative 2 would have no impact on the clear zones or Potential Accident Zones at WFF Main Base or the lands that fall beneath these zones. The risk of an aviation mishap occurring during FCLP operations would be managed through measures put in place to minimize interaction with private aircraft during FCLP operation. WFF Main Base has an active BASH management program. In addition, flight operations standard operating procedures will be followed. Given these considerations, there would be no significant impact to safety from the proposed action.

3.4 Air Quality

To evaluate air quality impacts associated with new Navy aircraft operations at Emporia-Greensville or WFF, annual emissions from direct and indirect sources associated with the new aircraft operations and airfield improvements were totaled to determine the impact to the region. Only new aircraft operations were considered, as existing operations are not expected to change as a result of the proposed action. Construction, such as the placement of concrete and asphalt pads and fencing, has been considered, as well as material and worker transportation.

Construction emissions would be temporary and assumed to occur for approximately 6 months leading up to the start of Navy FCLP operations. Construction activities considered in this evaluation include all operations of construction equipment and on-road and off-road vehicles, in addition to particulate emissions from site preparation and volatile organic compounds (VOCs) from paving operations.

Emission rates for construction operations were developed using EPA NONROAD equipment emission rates and other EPA guidelines (see Appendix C, Air Quality Calculations). Particulate emissions from site preparation and VOC emissions from paving were estimated separately.

Emissions from the proposed Navy aircraft operations were estimated using Navy Aircraft Environmental Support Office emission factors (see Appendix C, Air Quality Calculations), which are the most accurate factors for Navy aircraft. Total emissions were calculated for landing and takeoff operations (combined arrival and departure) and pattern operations using Aircraft Environmental Support Office pattern and mission operation emission factors.

Emporia-Greensville and WFF are located in a region that is in attainment of the National Ambient Air Quality Standards, or unclassified, for all criteria

pollutants. The General Conformity Rule regulations, therefore, do not apply to this action, and General Conformity Rule exemption thresholds do not apply.

As discussed in Section 1.5.2, mobile and temporary emissions are not subject to the Prevention of Significant Deterioration standards; however, the Prevention of Significant Deterioration thresholds provide a method to put the increases in mobile emissions in context as related to the National Ambient Air Quality Standards.

3.4.1 Existing Air Quality at Emporia-Greensville Regional Airport

The study area for air quality at Emporia-Greensville is Greensville County and Southampton County (the City of Emporia is tracked with Greensville County for air quality standards).

Due to the rural nature of the area, the air emissions in Greensville County are minimal; of the 3,190 permitted sources in Virginia, only 17 are located in Greensville County, and these sources emitted less than 1 percent of total emissions reported in the commonwealth in 2009 (VDEQ 2011). Transportation emissions are not tracked, monitored, or reported in the county but are assumed to be negligible due to the rural nature of the area and low density of population.

At Emporia-Greensville, there are no stationary sources subject to Title V permitting. The airport experiences approximately 2,320 civilian and military flight operations annually. However, air quality emissions associated with Emporia-Greensville activities have not been quantified because the county is in attainment and there are minimal operations in the existing environment.

3.4.2 Impacts on Air Quality at Emporia-Greensville Regional Airport

Estimated emissions of criteria pollutants from construction are summarized in Table 3-5. Detailed calculations are provided in Appendix C, Air Quality Calculations.

Table 3-5 Estimated Construction Emissions at Emporia-Greensville Regional Airport

Activity	Emissions (tons/yr)					
	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Construction Emissions						
Construction equipment use on site (exhaust emissions)	0.11	0.60	1.25	0.003	0.10	0.10
On-road transportation vehicle emissions from deliveries and worker commuting	0.25	2.32	0.18	0.002	0.52	0.06
VOCs from paving	0.06	-	-	-	-	-
PM_{10} from site preparation and grading	-	-	-	-	0.02	-
Total Construction Emissions	**0.42**	**2.92**	**1.43**	**0.01**	**0.64**	**0.16**

Key:
CO = carbon monoxide
NO_x = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Existing civilian and military aircraft operations at Emporia-Greensville are under 2,500 operations per year and are assumed to remain the same; therefore, emissions from these operations have not been quantified. Since the E-2/C-2 aircraft would not refuel or shut down at the airport, ground and building operations would remain unchanged and have not been included in this air quality assessment.

Estimated emissions of criteria pollutants from proposed Navy aircraft operations are summarized in Table 3-6. Detailed calculations are provided in Appendix C, Air Quality Calculations.

Table 3-6 Estimated Aircraft Operation Emissions at Emporia-Greensville Regional Airport

Aircraft Activity	Total Operations	Emissions (tons/yr)				
		VOC	NO_x	CO	SO_2	PM_{10}
E-2/C-2 Operations						
E-2/C-2 LTOs (each LTO counts as two operations)	1,406	0.05	1.26	0.23	0.06	0.55
E-2/C-2 Patterns	43,594	2.49	62.08	10.99	2.78	27.55
Total	**45,000**	**2.54**	**63.34**	**11.21**	**2.84**	**28.10**

Key:
CO = carbon monoxide
LTO = landing and takeoff operations
NO_x = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

As discussed in Section 1.5.2, mobile and temporary emissions are not subject to the Prevention of Significant Deterioration standards; however, the Prevention of Significant Deterioration thresholds provide a method to put the increases in mobile emissions in context as related to the National Ambient Air Quality Standards. As indicated in Tables 3-5 and 3-6, both temporary construction emissions and annual operating emissions are projected to be between 0.01 and 63.34 tons per year and therefore would have no significant impact on air quality in the region.

3.4.3 Existing Air Quality at Wallops Flight Facility

The study area for air quality at WFF is Accomack County. There are no ambient air quality monitors in Accomack County; the closest monitor is located at the Assateague Island National Seashore in Worchester, Maryland. Data from this station can be used to generally determine whether air quality in the region is meeting the standards. This monitoring station measures ozone, and the annual fourth-highest daily maximum 8-hour concentration, averaged over 2008, 2009, and 2010, is 0.070 ppm, which is below the 0.075 ppm standard (U.S. EPA 2011).

Compared to other areas of Virginia, air emissions in Accomack County are minimal; of the 3,190 permitted air emission sources in Virginia, only 21 are located in Accomack County. These sources emitted 0.2 percent of total

emissions reported in Virginia in 2009 (VDEQ 2011). The largest stationary source of emissions in Accomack County is Tyson Foods. Transportation emissions are not tracked, monitored, or reported in the county, but they are assumed to be negligible due to the rural nature of the area and low density of population.

WFF Main Base is a NASA facility, but it also supports various flight operations of other state and federal agencies. These operations include air emissions sources such as aircraft, ground transportation, fuel tanks, fuel-loading operations, and fugitive building systems emissions. Other operations and ground activities are not expected to change and therefore have not been quantified.

WFF Main Base is permitted through the Commonwealth of Virginia DEQ as a synthetic minor stationary air emissions source, which means it voluntarily controls its annual emissions not to exceed Title V permitting thresholds. Total point source emissions (which are a subset of all facility emissions and do include mobile emissions) are reported annually, and emissions reported in 2011 are listed in Table 3-7.

Table 3-7 Existing Stationary Emissions at Wallops Flight Facility (2011)

	Emissions (tons/yr)				
	CO	NO_x	VOCs	SO_2	PM_{10}
Reported Stationary Source Emissions, 2011	1.81	8.05	0.28	6.86	0.69

Source: VDEQ 2011

3.4.4 Impacts of Air Quality at Wallops Flight Facility

Estimated emissions of criteria pollutants from construction are summarized in Table 3-8. Detailed calculations are provided in Appendix C, Air Quality Calculations.

Table 3-8 Proposed Construction Emissions under Alternative 2 at Wallops Flight Facility

Activity	Emissions (tons/yr)					
	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Construction Emissions						
Construction equipment use on site (exhaust emissions)	0.11	0.60	1.25	0.003	0.10	0.10
On-road transportation vehicle emissions from deliveries and worker commuting	0.25	2.32	0.18	0.002	0.52	0.06
VOCs from paving	0.06	-	-	-	-	-
PM_{10} from site preparation and grading	-	-	-	-	0.02	-
Total Construction Emissions	**0.42**	**2.92**	**1.43**	**0.01**	**0.64**	**0.16**

Key:
CO = carbon monoxide
NO_x = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Emissions associated with Navy E-2/C-2 aircraft operations at WFF Main Base were evaluated for their impact on air quality. Existing civilian and military aircraft emission levels were assumed to remain the same; therefore, emissions from these operations have not been quantified. Since WFF Main Base has refueling capabilities, it was conservatively assumed that all proposed landing and takeoff operations (combined arrival and departure) include hot-refueling, but no other ground operational changes have been included in this air quality emissions assessment. All ground and building operations would remain unchanged, so they were not included in the air emission calculations.

If the Navy decides to send detachments to WFF Main Base instead of flying from NS Norfolk Chambers Field for each FCLP period, the total number of aircraft operations modeled does not change. However, there would be more takeoffs from a static position at WFF Main Base rather than arriving from NS Norfolk Chambers Field already airborne. This makes a slight difference from an aircraft emissions standpoint, as a static takeoff has a slightly higher emission factor. Estimated emissions of criteria pollutants from proposed Navy aircraft operations are summarized in Table 3-9 and represent the detachment scenario at WFF Main Base, which would be the worst-case scenario for aircraft emissions. Detailed calculations are provided in Appendix C, Air Quality Calculations.

Table 3-9 Estimated Aircraft Operation Emissions at Wallops Flight Facility

Aircraft	Total Operations	Emissions (tons/yr) VOC	NO_x	CO	SO_2	PM_{10}
E-2/C-2 Operations						
E-2/C-2 LTOs (each LTO counts as two operations)	1,406	1.32	1.93	2.17	0.11	1.05
E-2/C-2 Patterns	43,594	2.49	62.08	10.99	2.78	27.55
Total	**45,000**	**3.81**	**64.01**	**13.16**	**2.88**	**28.60**

Key:
CO = carbon monoxide
LTO = landing and takeoff operation
NOx = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

As discussed in Section 1.5.2, mobile and temporary emissions are not subject to the Prevention of Significant Deterioration standards; however, the Prevention of Significant Deterioration thresholds provide a method to put the increases in mobile emissions in context as related to the National Ambient Air Quality Standards. As indicated in Tables 3-8 and 3-9, both temporary construction emissions and annual operating emissions are projected to be between 0.01 and 64.01 tons per year and therefore would have no significant impact on air quality in the region.

3.5 Noise

Noise is unwanted sound. Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human

ear. Whether that sound is interpreted as pleasant (e.g., music) or unpleasant (e.g., jackhammers) depends largely on the listener's current activity, past experience, and attitude toward the source of that sound. The measurement and human perception of sound involves three basic physical characteristics: intensity, frequency, and duration.

The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times higher than those of sounds that can barely be detected. Because of this vast range, using a linear scale to represent the intensity of sound becomes very unwieldy. As a result, a logarithmic unit known as a decibel (abbreviated dB) is used to represent the intensity of a sound. Such a representation is called a sound level. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB; sound levels above 120 dB begin to be felt inside the human ear as discomfort. Sound levels between 130 and 140 dB are felt as pain (Berglund and Lindvall 1995).

Because of the logarithmic nature of the decibel unit, sound levels cannot be arithmetically added or subtracted and are somewhat cumbersome to handle mathematically. However, some simple rules are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Second, the total sound level produced by two sounds of different levels is usually only slightly more than the higher of the two [example: 60.0 dB + 70.0 dB = 70.4 dB].

The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. On average, a person perceives a change in sound level of about 10 dB as a doubling (or halving) of a sound's loudness, and this relation holds true for loud and quiet sounds. A decrease in sound level of 10 dB actually represents a 90 percent decrease in sound intensity but only a 50 percent decrease in perceived loudness because of the nonlinear response of the human ear.

Table 3-10 provides a comparison of some everyday sounds, their corresponding dB levels, and how they are perceived by a listener.

There are two main types of noise events: steady and transient. A steady noise event is one in which sound is emitted steadily from a point source; an example would be the hum of a fluorescent light bulb. A transient noise event is one in which a generated sound passes through an area such that the sound rises above the ambient level (i.e., the existing background noise) to some maximum level and then decreases back below the ambient level. Examples of sources of transient noise events are cars and aircraft; they generate noise that gradually increases as they approach the area and then decreases as they leave the area. Details of a specific transient noise event, such as duration, noise level, and distance between the noise source and receptor, are used to calculate certain noise metrics discussed in this section.

Table 3-10 Decibel Levels of Some Common Sounds

Sound Source (at a given distance)	Steady or Maximum Decibel Level (dB)
Gun Shot (at muzzle)	140-150
Jackhammer (50 feet)	120-125
Auto horn (3 feet)	115
Chain saw (operating)	105-115
Live rock concert (50 feet)	105-110
Circular saw (operating)	100-105
Shout (0.5 foot)	100
Squealing pigs (10 feet)	95-100
Combine (full throttle; 10 feet)	90-100
Subway station Heavy truck (50 feet)	90
Garbage disposal (3 feet)	80
Tractor (operating; enclosed cab)	75-80
Vacuum cleaner (3 feet)	70-80
Freeway traffic (50 feet)	70
Normal conversation (5 feet)	60-65
Air conditioning unit (20 feet)	60
Large electrical transformers (100 feet) Quiet suburb	45-55
Light auto traffic (50 feet)	50
Bird calls (distant) Library	35-45
Soft whisper (5 feet) Quiet rural area	25-35
Human breathing	10-20
Threshold of human hearing	0

Sources: New York State Department of Environmental Conservation 2001; AgriSafe 2009; Federal Interagency Committee on Noise (FICON) 1992; M.C. Branch et al., 1970.

Noise Metrics

Various metrics are used to describe the sound environment and to quantitatively measure the effect of noise on the environment. In this EA, the Day-Night Average Sound Level (DNL) and the Sound Exposure Level (SEL) are used to express the existing noise effects on the environment.

Day-Night Average Sound Level

Around a military or civilian airfield, the noise environment is normally described in terms of the average sound level generated over a period of time by aircraft operating at that facility. The approved federal noise measure used by the FAA, the U.S. EPA, and other federal agencies for assessing aircraft noise exposures in communities in the vicinity of airfields is the DNL metric, in units of dB. DNL has been found to provide the best measure of long-term community reaction to transportation noise, especially aircraft noise. For the purposes of this analysis, DNL is calculated to represent the average sound level generated by all aviation-related operations during an average 24-hour period, with sound levels of acoustic night noise events adjusted by adding a 10-dB penalty. The 10-dB penalty accounts for the generally lower ambient sound levels and greater community sensitivity to noise during late-night and early-morning hours. Acoustic day is

defined as the period of time from 7:00 a.m. to 10:00 p.m., and acoustic night is the period of time from 10:00 p.m. to 7:00 a.m. the following morning.

The DNL for the existing noise environment is depicted as a series of contours that connect the specific points of equal value, usually in 5-dB increments. The area between two noise contours is called a "noise zone." The noise zones used to evaluate noise exposure in the vicinity of Emporia-Greensville and WFF Main Base are as follows and are generally accepted ranges to evaluate the community's reaction to noise:

- 65 to 70 dB DNL,
- 70 to 75 dB DNL, and
- Greater than 75 dB DNL.

Community reaction to noise and land use planning recommendations generally begin at the 65 dB DNL noise contour because, for purposes of compliance with 14 CFR Part 150, all land uses are considered to be compatible with noise levels less than 65 dB DNL. Other DNL noise contours or ranges are used to assess potential impacts besides the community's reaction, such as for potential hearing loss.

Sound Exposure Level

In addition to presenting DNL values, which capture the average noise environment over a period of time for numerous events, SELs are used as a supplemental metric in this study to quantify the noise exposure related to a single event and help to describe the different aspects of examining noise. As such, SEL represents the best metric to compare the noise levels from different over flights; DNL remains the accepted metric for measuring the community's reaction to transportation noise. SEL represents both the intensity (loudness) of a sound and its duration. Individual time-varying noise events (e.g., aircraft over flights) have two main characteristics: a sound level that changes throughout the event, and a period of time during which the event is heard. SEL provides a measure of the net exposure of the entire acoustic event, but it does not directly represent the sound level heard at any given time. During an aircraft flyover, SEL would include both the maximum noise level and the lower noise levels produced during onset and recess periods of the over flight.

The SEL describes the noise associated with a single event at a specific location. Aircraft noise will vary from event to event according to aircraft type and model, aircraft configuration, engine power settings, aircraft speed, weather conditions, and distance between the observer and the aircraft. SEL represents the best metric to compare noise levels from different over flights.

Potential Hearing Loss

The 1982 U.S. EPA *Guidelines for Noise Impact Analysis* specifically address the criteria and procedures for assessing noise-induced hearing loss in terms of the Noise-Induced Permanent Threshold Shift, a quantity that defines the permanent change in hearing level, or threshold, caused by exposure to noise (U.S. EPA 1982). Numerically, the Noise-Induced Permanent Threshold Shift is the change

in threshold averaged over the frequencies 0.5, 1, 2, and 4 kilohertz that can be expected from daily exposure to noise over a normal working lifetime of 40 years, with the exposure beginning at an age of 20 years. A grand average of the Noise-Induced Permanent Threshold Shift over time (40 years) and hearing sensitivity (10th to 90th percentiles of the exposed population) is termed the Average Noise-Induced Permanent Threshold Shift.

With regard to military air installations, a 2009 DOD policy directive requires that hearing loss risk be estimated for the at-risk population, defined as the population exposed to a DNL greater than or equal to 80 dB (DOD 2009). Specifically, DOD components are directed to "use the 80 DNL noise contour to identify populations at the most risk of potential hearing loss." The average sound metric of DNL is specifically used for assessing long-term potential hearing loss, not SEL, which is from a single event.

3.5.1 Existing Noise at Emporia-Greensville Regional Airport

The study area for noise at Emporia-Greensville consists of the area within the modeled 65 decibel and greater noise contour.

Two noise modeling software packages, NOISEMAP and the Rotorcraft Noise Model, were used to calculate the existing noise contours from aircraft using Emporia-Greensville. Two models were utilized due to the mix of fixed-wing and rotary-wing aircraft. The NOISEMAP model, which is the DOD-approved noise analysis tool, is used to model fixed-wing aircraft as well as the Army's CH-47 Chinook helicopter, which does not have noise reference data within the Rotorcraft Noise Model. The Rotorcraft Noise Model, which is the DOD-recommended noise model for helicopter noise modeling, was used to model the Navy's MH-53E Sea Dragon helicopter.

Information on the number and type of aircraft operations, the acoustic day/night split, runway utilization, and flight tracks was used in the models to determine the existing noise environment at Emporia-Greensville. Emporia-Greensville is a public general aviation airport and hosts approximately 1,144 civilian fixed-wing, 36 military fixed-wing, and 1,140 military helicopter operations per year. A total of four aircraft are based at the airport, all of which are fixed-wing (three single-engine airplanes and one twin-engine airplane). The majority of aircraft that utilize Emporia-Greensville are transient, meaning they utilize the airport but are not permanently based there.

The annual operations at Emporia-Greensville used to develop the existing noise contours are presented in Table 3-11. Refer to Appendix B, Noise Analysis, for more information and details regarding the assumptions and modeling used to estimate the existing environment noise exposure.

For the fixed-wing aircraft, based upon the discussions with the airport manager, the noise analysis modeled 85 percent of the single- and twin-engine propeller aircraft operations occurring during acoustic daytime, 15 percent of the single- and twin-engine propeller aircraft operations occurring during acoustic nighttime, and 100 percent of corporate jet aircraft and military fixed-wing aircraft

operations occurring during acoustic daytime. The noise analysis also modeled 95 percent of the military rotary-wing aircraft operations occurring during acoustic daytime and 5 percent occurring during acoustic nighttime (BRRC 2012). Due to the instrumented approach on Runway 33 and discussions with the airport manager, the noise analysis modeled 75 percent of the operations on Runway 33 and 25 percent of the operations on Runway 15 (BRRC 2012).

Table 3-11 Existing Annual Operations, Emporia-Greensville Regional Airport

	Departures	Arrivals	Pattern	Total
Civilian Fixed-Wing Aircraft				
Single Engine (Cessna 172)	243	243	486	972
Twin Engine (Beechcraft King Air 90)	46	46	-	92
Business Jet (Lear 35 or Cessna Citation)	40	40	-	80
Subtotal Civilian Fixed-Wing Operations				**1,144**
Military Fixed-Wing Aircraft				
Twin Engine (CASA 212)	2	2	32	36
Subtotal Military Fixed-Wing Operations				**36**
Military Rotary-Wing Aircraft				
Twin Engine (CH-47)	220	220	580	1,020
Single Engine (MH-53)	30	30	60	120
Subtotal Military Rotary-Wing Operations				**1,140**
Total				**2,320**

Source: BRRC 2012

3.5.1.1 Day-Night Average Sound Level Analysis

The existing noise contours modeled for Emporia-Greensville fall over Greensville County and Southampton County, Virginia (Figure 3-8). The existing noise zones that are 65 dB DNL or greater do not extend outside of the airport boundary. The limited number of overall aircraft operations, along with the type of aircraft, result in very small 65 dB DNL noise contours along Runway 15/33. This is considered an annual average metric, and even though individuals residing around the airport may experience noise during times of aircraft operations, the overall existing environment would be categorized at a low noise level. Given Emporia-Greensville's location along U.S. Route 58, truck traffic would also be present in the vicinity of the airport; however, vehicle traffic was not modeled as part of this analysis.

3.5.1.2 Sound Exposure Level Analysis

As part of the noise analysis, the Navy modeled the SEL values at specific points of interest identified through coordination with City of Emporia and Greensville County and Southampton County representatives. These locations include residential areas, schools, religious facilities, and other locations where noise could be a concern. Twenty-seven points of interest were identified. The noise analysis presents the maximum modeled SEL value for each specific point of interest for aircraft operations currently at Emporia-Greensville. The points of interest identified by the city and county representatives, as well as the Navy, are shown on Figure 3-9. Table 3-12 presents a description of the aircraft, operation type, distance to the aircraft, and modeled SEL value for each point of interest.

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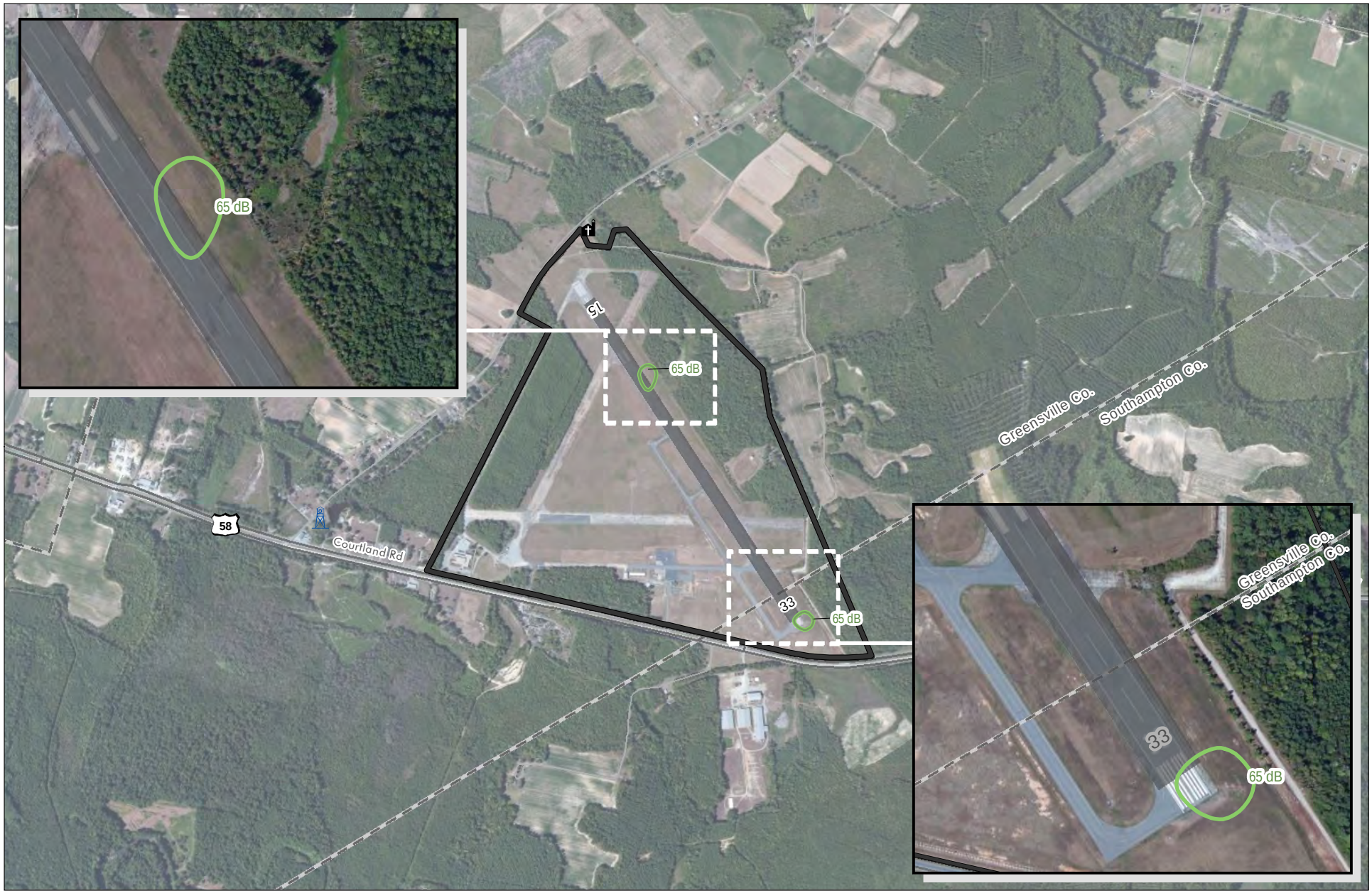

Source: ESRI 2010

School
Church
Tower
Hospital
Existing Noise Contour (dB)
Emporia-Greensville Regional Airport
Runway
County Boundary
Interstate
Major Highway
Local Street

Figure 3-8
Modeled Existing Noise Contours
Emporia-Greensville Regional Airport

N

0 0.125 0.25
Miles

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Emporia POI.mxd

Location ID	Description
City of Emporia, Virginia	
CoE-1	Emmanuel Worship Center
CoE-2	Industrial Park
CoE-3	Meherrin River Park Complex
CoE-4	Tall Oaks Residential Subdivision
CoE-5	Belfield-Emporia Historic District
CoE-6	Southern Virginia Regional Medical Center
CoE-7	City of Emporia Municipal Building
CoE-8	Hicksford-Emporia Historic District
CoE-9	Greensville High School
CoE-10	Interchange at Route 58/I-95

Location ID	Description
Greensville County, Virginia	
GC-1	Intersection of Low Ground Road and Goose Pond Road
GC-2	Elnora Jarrell Worship Center
GC-3	Bryants Corner
GC-4	Union Grove Church of Christ
GC-5	Edward W. Wyatt Middle School
GC-6	Greensville County Administration Offices
GC-7	Emporia Country Club
GC-8	Future Industrial Area #1
GC-9	Greensville Correctional Center
GC-10	Intersection of State Route 611 and James River Junction
GC-11	Oak Grove Baptist Church.

Location ID	Description
Southampton County, Virginia	
SC-1	Mid Atlantic Gin
SC-2	Intersection of Route 58 and State Route 711
SC-3	Valley Proteins Inc.
SC-4	Intersection of Adams Grove Road at Railroad
SC-5	Pleasant Grove Baptist Church
SC-6	Capron Community Church of God
SC-7	Deerfield Correctional Center

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Point of Interest
Active Runway
Emporia-Greensville Regional Airport
County Boundary
Interstate
Major Highway
Local Street

Figure 3-9
Points of Interest
Emporia-Greensville Regional Airport

N
0 0.5 1
Miles

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The Location ID presented in Table 3-12 corresponds to a point of interest depicted on Figure 3-9.

Table 3-12 Modeled Sound Exposure Level for Points of Interest under Existing Conditions at Emporia-Greensville Regional Airport

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]			
		Aircraft	Operation Type[b]	Distance from Aircraft[c] (miles)	SEL (dB)
	City of Emporia, Virginia				
CoE-1	Emmanuel Worship Center	MH-53	Box Pattern	0.43	90.3
CoE-2	Industrial Park	CH-47	Departure	0.48	85.4
CoE-3	Meherrin River Park Complex	MH-53	Box Pattern	0.50	85.0
CoE-4	Tall Oaks Residential Subdivision	MH-53	Box Pattern	0.68	83.6
CoE-5	Belfield-Emporia Historic District	MH-53	Box Pattern	0.93	81.4
CoE-6	Southern Virginia Regional Medical Center	MH-53	Box Pattern	1.31	79.0
CoE-7	City of Emporia Municipal Building	MH-53	Box Pattern	1.04	79.2
CoE-8	Hicksford-Emporia Historic District	MH-53	Box Pattern	1.05	79.4
CoE-9	Greensville High School	MH-53	Box Pattern	1.54	74.5
CoE-10	Interchange at Route 58/I-95	MH-53	Box Pattern	1.86	73.3
	Greensville County, Virginia				
GC-1	Intersection of Low Ground Road and Goose Pond Road	MH-53	Box Pattern	1.10	83.0
GC-2	Elnora Jarrell Worship Center	MH-53	Box Pattern	2.17	73.1
GC-3	Bryants Corner	MH-53	Box Pattern	0.84	84.1
GC-4	Union Grove Church of Christ	Business Jet	Departure	0.31	87.2
GC-5	Edward W. Wyatt Middle School	CH-47	Departure	1.19	77.9
GC-6	Greensville County Administration Offices	CH-47	Departure	0.55	85.4
GC-7	Emporia Country Club	Single Prop	Box Pattern	0.44	75.9
GC-8	Future Industrial Area No. 1	CH-47	Departure	1.60	76.2
GC-9	Greensville Correctional Center	CH-47	Arrival	4.20	64.8
GC-10	Intersection of State Route 611 and James River Junction	CH-47	Paratrooper Drops	0.29	87.7
GC-11	Oak Grove Baptist Church	Business Jet	Departure	0.13	110.0

Notes:
a. For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
b. The Operation Type includes the following; Box Pattern = a pattern designed for repeated instrument approaches to the airfield, Departure = an aircraft flight track departing from the airfield, Arrival = an aircraft flight track arriving at the airfield, and Paratrooper Drops = helicopter operations typically flown vertically at different altitudes to provide paratrooper training.
c. The Distance to Aircraft is the diagonal distance from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

Table 3-12 Modeled Sound Exposure Level for Points of Interest under Existing Conditions at Emporia-Greensville Regional Airport

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]			
		Aircraft	Operation Type[b]	Distance from Aircraft[c] (miles)	SEL (dB)
	Southampton County, Virginia				
SC-1	Mid Atlantic Gin	Business Jet	Departure	0.18	84.7
SC-2	Intersection of Route 58 and State Route 711	Single Prop	Box Pattern	0.48	75.4
SC-3	Valley Proteins, Inc.	MH-53	Departure	3.17	66.4
SC-4	Intersection of Adams Grove Road and Railroad	MH-53	Departure	2.95	68.0
SC-5	Pleasant Grove Baptist Church	MH-53	Departure	3.53	65.1
SC-6	Capron Community Church of God	MH-53	Departure	3.67	64.7
SC-7	Deerfield Correctional Center	CH-47	Paratrooper Drops	12.39	38.4

Source: BRRC 2012

Notes:
a. For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
b. The Operation Type includes the following; Box Pattern = a pattern designed for repeated instrument approaches to the airfield, Departure = an aircraft flight track departing from the airfield, Arrival = an aircraft flight track arriving at the airfield, and Paratrooper Drops = helicopter operations typically flown vertically at different altitudes to provide paratrooper training.
c. The Distance to Aircraft is the diagonal distance from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

The maximum modeled SEL values under existing conditions at Emporia-Greensville are dominated by MH-53 helicopters performing pattern operations. Other aircraft and operations that generate high SEL values for points of interest include CH-47 helicopter operations and business jet operations. The SEL values range from 90.3 dB SEL to 38.4 dB SEL. It should be noted that potential hearing loss is measured using the average noise metric, DNL, not SEL.

3.5.2 Noise Impacts at Emporia-Greensville Regional Airport

There are two potential operating scenarios under Alternative 1. The proposed aircraft operations are the same between both scenarios; therefore, it is presented as one subsection. However, the DNL and SEL analysis results in slightly different values if the E-2/C-2 aircraft are operating in a three-plane only or a three- and five-plane scheme.

3.5.2.1 Proposed Aircraft Operations

Under Alternative 1, the Navy would conduct up to 45,000 E-2/C-2 operations annually at Emporia-Greensville. The number of existing civilian and military aircraft operations at Emporia-Greensville is not expected to change and would continue to operate, as was outlined in Section 3.2.2.1. The existing aircraft operations are included in the projected noise contours. The projected annual operations under Alternative 1 are listed in Table 3-13. Because existing

operations are expected to remain the same, the table presents all existing aircraft operations (previously presented in Table 3-1) as well as the addition of the Navy's E-2/C-2 operations. These aircraft operations were modeled using NOISEMAP and Rotorcraft Noise Model to determine noise impacts at Emporia-Greensville.

Table 3-13 Modeled Annual Aircraft Operations under Alternative 1, Emporia-Greensville Regional Airport

	Departures	Arrivals	Pattern	Total
Civilian Fixed-Wing Aircraft				
Single Engine	243	243	486	972
Twin Engine	46	46	-	92
Business Jet	40	40	-	80
Subtotal Civilian Fixed-Wing Operations				**1,144**
Military Fixed-Wing Aircraft				
E-2/C-2	703	703	43,594	45,000
CASA 212	2	2	32	36
Subtotal Military Fixed-Wing Operations				**45,036**
Military Rotary-Wing Aircraft				
CH-47	220	220	580	1,020
MH-53	30	30	60	120
Subtotal Military Rotary-Wing Operations				**1,140**
Total				**47,320**

Source: BRRC 2012

Note: The aircraft in this table are described in Section 3.2.1.1.1.

The majority of the proposed Navy E-2/C-2 operations under both scenarios for Alternative 1 (approximately 90 percent) would be conducted during acoustic daytime (between 7:00 a.m. and 10:00 p.m.). The remaining 10 percent would be conducted during acoustic nighttime (between 10:00 p.m. and 7:00 a.m.). As described in Section 3.5, operations during the acoustic nighttime are "penalized" 10 dB (calculated as being 10 dB greater than their actual level) with regard to DNL analysis to account for the lower background sound levels and greater community sensitivity to noise during late-night and early morning hours.

3.5.2.2 Day-Night Average Sound Level Analysis

The Navy's E-2/C-2 aircraft could conduct FCLP with anywhere from one to five aircraft in the pattern, based upon the number of aircraft available and whether the aircraft belong to fleet squadrons or the FRS. Under Alternative 1, both Scenarios 1 and 2 have been modeled for this noise analysis.

3.5.2.2.1 Alternative 1, Scenario 1

The modeled Alternative 1, Scenario 1 (assuming a three-plane pattern) noise contours are shown on Figure 3-10 (the baseline noise contour is also included for comparison). The noise contours for Alternative 1, Scenario 1, extend into Greensville County to the north and Southampton County to the south. The noise contours do not extend into the City of Emporia. Table 3-14 shows the estimated number of acres within the modeled Alternative 1, Scenario 1, noise contours (excluding airfield property). Existing noise contours at Emporia-Greensville

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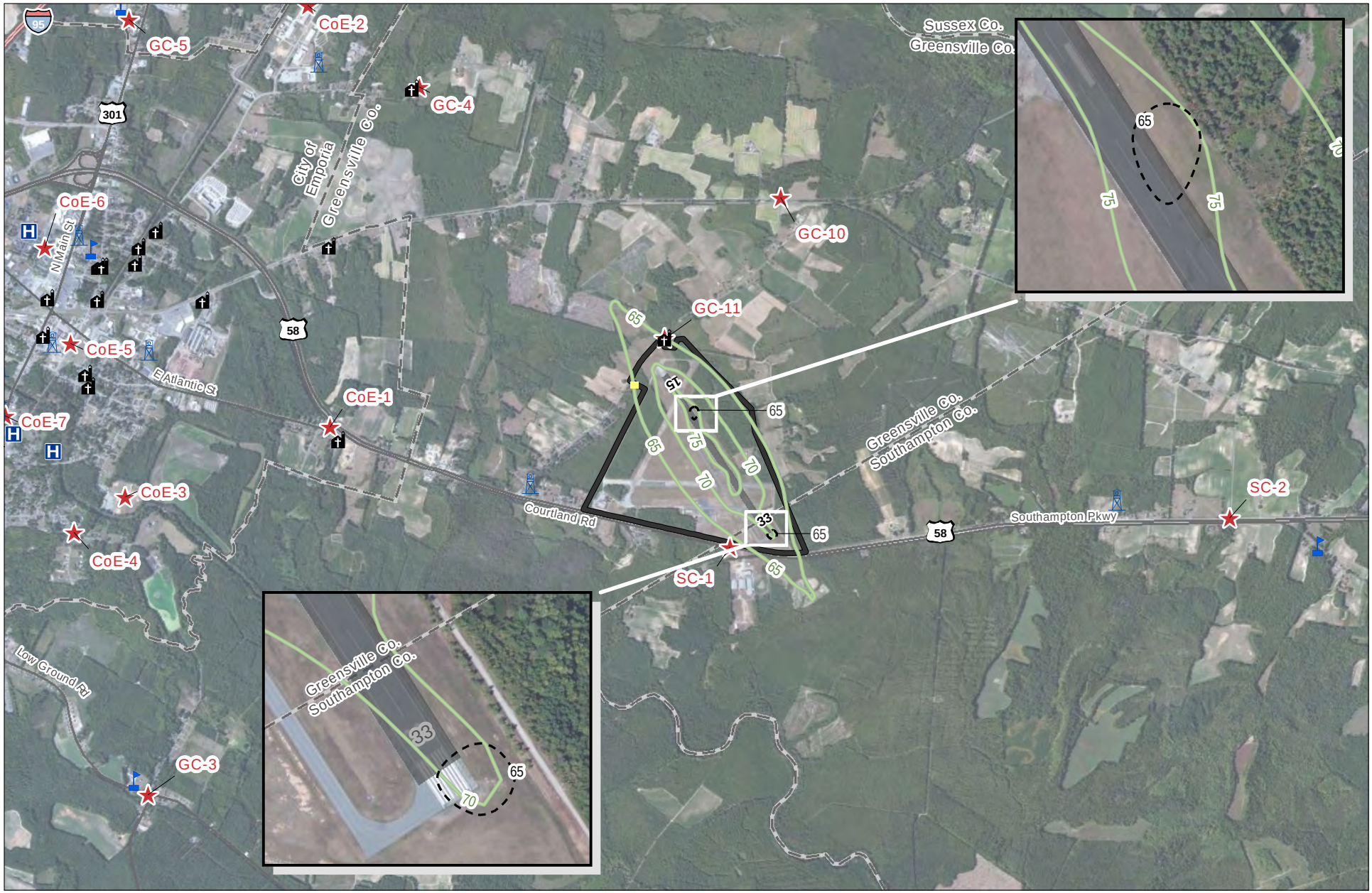

Source: ESRI 2010

Residences in Projected Contour
School
Church
Tower
Point of Interest
Hospital
Projected Noise Contour
Existing Noise Contour (dB)
Emporia-Greensville Regional Airport
Runway
County Boundary

Figure 3-10
Modeled Projected Noise Contours with Residences
Alternative 1 Scenario 1
Emporia-Greensville Regional Airport

N

0 0.25 0.5
Miles

were within the airport boundary, while the noise contours for Alternative 1, Scenario 1, cover 41.8 acres outside the airport boundary. The majority of the land area under the noise contours (67 percent) falls within Greensville County, with the balance extending into Southampton County.

Table 3-14 also presents the number of housing units and the estimated number of people within the modeled Alternative 1, Scenario 1, noise zones by municipality. The estimated population within the 65 to 70 dB DNL noise zone was calculated using the average household size for Greensville County recorded in the 2010 U.S. Census of 2.44 people (and rounding up). Existing noise contours are within the airport boundary; therefore, they do not encompass housing units or population.

The FAA is a cooperating agency in the evaluation of Alternative 1 and the proposed airport design changes to the Emporia-Greensville Regional Airport. FAA policy designates the DNL 65 dB contour as the cumulative noise exposure level above which residential land uses are not compatible (see Appendix D). Based on a current survey of the proposed action's 65 dB contour, there appears to be one residence within the 65 dB contour.

Table 3-14 Land Area, Housing Units, and Estimated Number of People within Projected Noise Zones under Alternative 1, Scenario 1, at Emporia-Greensville Regional Airport

	Existing Conditions			Projected Conditions[3]		
Noise Zone (dB DNL) [1]	Land Area (Acres)	Housing Units	Estimated Population[2]	Land Area (Acres)	Housing Units	Estimated Population[2]
Southampton County						
65 to 70	0	0	0	13.6 (+13.6)	0 (0)	0 (0)
70 to 75	0	0	0	0 (0)	0 (0)	0 (0)
Greater than 75	0	0	0	0 (0)	0 (0)	0 (0)
Sub-Total	**0**	**0**	**0**	**13.6 (+13.6)**	**0 (0)**	**0 (0)**
Greensville County						
65 to 70	0	0	0	28.2 (+28.2)	1 (+1)	3 (+3)
70 to 75	0	0	0	0 (0)	0 (0)	0 (0)
Greater than 75	0	0	0	0 (0)	0 (0)	0 (0)
Sub-total	**0**	**0**	**0**	**28.2 (+28.2)**	**1 (+1)**	**3 (+3)**
Grand Total	**0**	**0**	**0**	**41.8 (+41.8)**	**1 (+1)**	**3 (+3)**

Note:
[1] The modeled noise contours do not extend into the City of Emporia; thus, the City of Emporia was not included in the table.
[2] During land surveys conducted in July 2011, the Navy, with the aid of GIS features, recorded the locations of residential properties within the vicinity of the Emporia-Greensville Regional Airport. Population was then estimated based on an average of 2.44 people per household, which is the average number of people per household for Greensville County (where the housing units located), based on 2010 U.S. Census data.
[3] The changes in acres, housing units, and estimated population between the existing and projected conditions are noted in parentheses.

In addition, , one religious facility (Oak Grove Church in Greensville County) would be within the 65 dB DNL noise contour and is currently under reconstruction and not holding services. There are no schools, day care centers, hospitals, or cemeteries located within the 65 dB DNL or greater noise zones.

The 70 dB DNL noise contours would be wholly contained within the Emporia-Greensville airport property.

3.5.2.2.2 Alternative 1, Scenario 2

The modeled Alternative 1, Scenario 2 (assuming both a three- and five-plane pattern), noise contours are shown on Figure 3-11 (the baseline noise contour is also included for comparison). The noise contours for Alternative 1, Scenario 2, extend into Greensville County to the north and Southampton County to the south. The noise contours do not extend into the City of Emporia. Table 3-15 shows the estimated number of acres within the modeled Alternative 1, Scenario 2, noise contours (excluding airfield property). Existing noise contours at Emporia-Greensville were within the airport boundary, while the noise contours for Alternative 1, Scenario 2, would cover 45.6 acres outside the airport boundary. The majority of the land area under the noise contours (64 percent) falls within Greensville County, with the balance extending into Southampton County.

Table 3-15 Land Area, Housing Units, and Estimated Number of People within Projected Noise Zones under Alternative 1, Scenario 2, at Emporia-Greensville Regional Airport

Noise Zone (dB DNL) [1]	Existing Conditions			Projected Conditions [3]		
	Land Area (Acres)	Housing Units	Estimated Population [2]	Land Area (Acres)	Housing Units	Estimated Population [2]
Southampton County						
65 to 70	0	0	0	16.3 (+16.3)	0 (0)	0 (0)
70 to 75	0	0	0	0 (0)	0 (0)	0 (0)
Greater than 75	0	0	0	0 (0)	0 (0)	0 (0)
Sub-Total	**0**	**0**	**0**	**16.3 (+16.3)**	**0 (0)**	**0 (0)**
Greensville County						
65 to 70	0	0	0	29.3 (+29.3)	1 (+1)	3 (+5)
70 to 75	0	0	0	0 (0)	0 (0)	0 (0)
Greater than 75	0	0	0	0 (0)	0 (0)	0 (0)
Sub-total	**0**	**0**	**0**	**29.3 (+29.3)**	**1 (+1)**	**3 (+3)**
Grand Total	**0**	**0**	**0**	**45.6 (+45.6)**	**1 (+1)**	**3 (+3)**

Note:
[1] The modeled noise contours do not extend into the City of Emporia; thus, the City of Emporia was not included in the table.
[2] During land surveys conducted in July 2011, the Navy, with the aid of GIS features, recorded the locations of residential properties within the vicinity of the Emporia-Greensville Regional Airport. Population was then estimated based on an average of 2.44 people per household, which is the average number of people per household for Greensville County (where the housing unit is located), based on 2010 U.S. Census data.
[3] The changes in acres, housing units, and estimated population between the existing and projected conditions are noted in parentheses.

Table 3-15 also presents the number of housing units and the estimated number of people within the modeled Alternative 1, Scenario 2, noise zones, by municipality. The 65 dB DNL or greater noise contour for Scenario 2 impacts the same house and religious facility as in Scenario 1. There are no additional houses, schools, day care centers, hospitals, or cemeteries located within the 65 dB DNL or greater noise zones under Scenario 2.

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\3-11 3-5Plane Scheme with Baseline.mxd

Source: ESRI 2010

Residences in Projected Contour
School
Church
Tower
Point of Interest
Hospital
Projected Noise Contour
Existing Noise Contour (dB)
Emporia-Greensville Regional Airport
Runway
County Boundary

Figure 3-11
Modeled Projected Noise Contours with Residences
Alternative 1 Scenario 2
Emporia-Greensville Regional Airport

N

0 0.25 0.5
Miles

3.5.2.3 Sound Exposure Level and Points of Interest

The points of interest identified by the City of Emporia, Greensville County, Southampton County, and the Navy are shown on Figure 3-9. The SEL values would differ slightly from Alternative 1, Scenario 1, to Alternative 1, Scenario 2, due to the different flight tracks that would be flown and the different distance between the aircraft and the point of interest.

3.5.2.3.1 Alternative 1, Scenarios 1 and 2

Points of interest that fall within or near the Alternative 1, Scenarios 1 and 2, noise contours are also depicted on Figure 3-10 (see Section 3.5.2.2.1 for a description and figure showing all points of interest). Table 3-16 presents the maximum modeled SEL value for projected Navy E-2/C-2 operations at Emporia-Greensville under Alternative 1, Scenarios 1 and 2. The maximum modeled SEL values for the existing environment are also repeated in Table 3-16 for comparison to the projected environment.

The E-2/C-2 operation type and distance of the point of interest from the aircraft, along with the modeled SEL value for that point of interest for Alternative 1, Scenarios 1 and 2, are provided. Each Location ID presented in the table corresponds to a point of interest depicted on Figure 3-9 (and Figure 3-10, if applicable).

For the projected environment, the E-2/C-2 operations that generated the maximum modeled SEL values were primarily crew swap operations. This is due to the fact that the E-2/C-2 would fly closer to many of the points of interest that are farther from the airfield when conducting a crew swap. Departures, arrivals, and an FCLP operation also have the maximum modeled SEL value for select points of interest. SEL values for Alternative 1, Scenarios 1 and 2, ranged from a high of 98.6 dB SEL to a low of 66.8 dB SEL.

Examining the data provided in Table 3-16 shows that E-2/C-2 aircraft operating at Emporia-Greensville would result in a higher maximum modeled SEL value for about half of the points of interest. The difference in the SEL values from existing conditions to the projected environment varied based upon the distance between the point of interest and the aircraft type/operation.

3.5.2.4 Noise Impact Conclusion

Noise impact is a subjective analysis as individuals perceive noise impacts differently. The two metrics presented in this noise analysis section (DNL and SEL) provide two different approaches to quantifying noise impacts—based on average noise exposure and single-event noise exposures. DNL is the accepted metric for measuring community reaction to noise; however, SEL provides a supplemental metric for describing noise from a single event.

Table 3-16 Modeled Sound Exposure Level for Points of Interest under Alternative 1, Scenario 1 and Scenario 2, at Emporia-Greensville Regional Airport

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]				Alternative 1, Scenario 1 Three-Plane Scheme E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]			Alternative 1, Scenario 2 Three- and Five-Plane Scheme E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]		
		Aircraft	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)
City of Emporia, Virginia											
CoE-1	Emmanuel Worship Center	MH-53	Box Pattern	0.43	90.3	Departure	0.36	89.5	Departure	0.36	89.5
CoE-2	Industrial Park	CH-47	Departure	0.48	85.4	Crew Swap	0.32	91.0	Crew Swap	0.32	91.0
CoE-3	Meherrin River Park Complex	MH-53	Box Pattern	0.50	85.0	Departure	1.29	77.9	Departure	1.29	77.9
CoE-4	Tall Oaks Residential Subdivision	MH-53	Box Pattern	0.68	83.6	Crew Swap	1.68	76.5	Crew Swap	1.68	76.5
CoE-5	Belfield-Emporia Historic District	MH-53	Box Pattern	0.93	81.4	Crew Swap	1.13	79.6	Crew Swap	1.13	79.6
CoE-6	Southern Virginia Regional Medical Center	MH-53	Box Pattern	1.31	79.0	Crew Swap	0.64	82.2	Crew Swap	0.64	82.2
CoE-7	City of Emporia Municipal Building	MH-53	Box Pattern	1.04	79.2	Crew Swap	1.42	78.2	Crew Swap	1.42	78.2
CoE-8	Hicksford-Emporia Historic District	MH-53	Box Pattern	1.05	79.4	Crew Swap	1.51	77.7	Crew Swap	1.51	77.7
CoE-9	Greensville High School	MH-53	Box Pattern	1.54	74.5	Crew Swap	1.43	77.6	Crew Swap	1.43	77.6
CoE-10	Interchange at Route 58/I-95	MH-53	Box Pattern	1.86	73.3	Crew Swap	0.47	85.0	Crew Swap	0.47	85.0

Source: BRRC 2012

Notes:
[a] For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[b] For the projected environment, the E-2/C-2 operation with the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[c] The Operation Type includes the following; Box Pattern = a pattern designed for repeated instrument approaches to the airfield, Departure = an aircraft flight track departing from the airfield, Arrival = an aircraft flight track arriving at the airfield, and Paratrooper Drops = helicopter operations typically flown vertically at different altitudes to provide paratrooper training.
[d] The Distance to Aircraft is the diagonal distance from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

Table 3-16 Modeled Sound Exposure Level for Points of Interest under Alternative 1, Scenario 1 and Scenario 2, at Emporia-Greensville Regional Airport

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]				Alternative 1, Scenario 1 Three-Plane Scheme E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]			Alternative 1, Scenario 2 Three- and Five-Plane Scheme E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]		
		Aircraft	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)
Greensville County, Virginia											
GC-1	Intersection of Low Ground Road and Goose Pond Road	MH-53	Box Pattern	1.10	83.0	Departure	1.28	76.6	Departure	1.28	76.6
GC-2	Elnora Jarrell Worship Center	MH-53	Box Pattern	2.17	73.1	Crew Swap	1.40	77.1	Crew Swap	1.40	77.1
GC-3	Bryants Corner	MH-53	Box Pattern	0.84	84.1	Departure	1.77	75.1	Departure	1.77	75.1
GC-4	Union Grove Church of Christ	Business Jet	Departure	0.31	87.2	Crew Swap	0.29	92.3	Crew Swap	0.29	92.3
GC-5	Edward W. Wyatt Middle School	CH-47	Departure	1.19	77.9	Crew Swap	0.43	88.5	FCLP	0.15	91.0
GC-6	Greensville County Administration Offices	CH-47	Departure	0.55	85.4	Arrival	0.29	85.2	Arrival	0.29	85.2
GC-7	Emporia Country Club	Single Prop	Box Pattern	0.44	75.9	Arrival	0.16	89.8	Arrival	0.16	89.8
GC-8	Future Industrial Area No. 1	CH-47	Departure	1.60	76.2	Crew Swap	0.83	69.4	Crew Swap	0.83	69.4
GC-9	Greensville Correctional Center	CH-47	Arrival	4.20	64.8	Crew Swap	2.12	66.8	Crew Swap	2.12	66.8
GC-10	Intersection of State Route 611 and James River Junction	CH-47	Paratrooper Drops	0.29	87.7	FCLP	0.27	85.6	FCLP	0.27	85.6
GC-11	Oak Grove Baptist Church	Business Jet	Departure	0.13	110.0	Crew Swap	0.12	98.6	Crew Swap	0.12	98.6

Source: BRRC 2012

Notes:
[a] For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[b] For the projected environment, the E-2/C-2 operation with the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[c] The Operation Type includes the following; Box Pattern = a pattern designed for repeated instrument approaches to the airfield, Departure = an aircraft flight track departing from the airfield, Arrival = an aircraft flight track arriving at the airfield, and Paratrooper Drops = helicopter operations typically flown vertically at different altitudes to provide paratrooper training.
[d] The Distance to Aircraft is the diagonal distance from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

Table 3-16 Modeled Sound Exposure Level for Points of Interest under Alternative 1, Scenario 1 and Scenario 2, at Emporia-Greensville Regional Airport

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]				Alternative 1, Scenario 1 Three-Plane Scheme E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]			Alternative 1, Scenario 2 Three- and Five-Plane Scheme E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]		
		Aircraft	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)	Operation Type[c]	Dist. from Aircraft[d]	SEL (dB)
Southampton County, Virginia											
SC-1	Mid Atlantic Gin	Business Jet	Departure	0.18	84.7	Crew Swap	0.19	95.5	Crew Swap	0.19	95.5
SC-2	Intersection of Route 58 and State Route 711	Single Prop	Box Pattern	0.48	75.4	Crew Swap	1.12	80.0	FCLP	0.68	80.3
SC-3	Valley Proteins, Inc.	MH-53	Departure	3.17	66.4	Crew Swap	0.52	84.3	Crew Swap	0.52	84.3
SC-4	Intersection of Adams Grove Road and Railroad	MH-53	Departure	2.95	68.0	Crew Swap	0.12	87.2	Crew Swap	0.12	87.2
SC-5	Pleasant Grove Baptist Church	MH-53	Departure	3.53	65.1	Crew Swap	0.28	83.4	Crew Swap	0.28	83.4
SC-6	Capron Community Church of God	MH-53	Departure	3.67	64.7	Crew Swap	0.69	79.8	Crew Swap	0.69	79.8
SC-7	Deerfield Correctional Center	CH-47	Paratrooper Drops	12.39	38.4	Crew Swap	1.81	66.8	Departure	1.81	66.8

Source: BRRC 2012

Notes:
[a] For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[b] For the projected environment, the E-2/C-2 operation with the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[c] The Operation Type includes the following; Box Pattern = a pattern designed for repeated instrument approaches to the airfield, Departure = an aircraft flight track departing from the airfield, Arrival = an aircraft flight track arriving at the airfield, and Paratrooper Drops = helicopter operations typically flown vertically at different altitudes to provide paratrooper training.
[d] The Distance to Aircraft is the diagonal distance from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

For the DNL analysis examining average noise, the increase due to the proposed Navy E-2/C-2 operations would equate to approximately 42 and 46 acres within the greater than 65 dB DNL noise contour for Scenarios 1 and 2, respectively. In both cases, this would impact approximately three individuals who were previously not within the greater than 65 dB DNL noise contour, all of whom reside in Greensville County. Based upon the number of people in Greensville County in 2010 (12,243), this action would impact approximately 0.02 percent of the total population. In addition, as noted previously, given Emporia-Greensville's location along U.S. Route 58, truck traffic would also be present in the vicinity of the airport. Therefore, the average noise level experienced by those living in the vicinity of the airport may be a result of both aircraft activities at the airfield and vehicular traffic along these roadways.

With regard to potential hearing loss, the criterion is for a population to be exposed to DNL greater than or equal to 80 dB DNL (DOD 2009). The noise generated at Emporia-Greensville under either Scenario 1 or 2 does not reach 80 dB DNL, even within the airport property, so there would not be a significant risk for potential loss of hearing associated with the Navy's action. Despite some SEL values being higher than 80 dB, this is not in DNL, which is the accepted metric for assessing potential long-term hearing loss.

For the SEL analysis examining noise experienced at the points of interest from single aircraft events, there are some operations related to the Navy's proposed action that would result in a higher modeled SEL value at that point. These primarily related to crew swap operations, which represent a small portion of the overall E-2/C-2 operations under the Navy's proposed action (only 11 percent of the total operations). Crew swap operations resulted in higher modeled SEL values due to the fact that the crew swap flight track extends farther from the airfield (and extends closer to specific points of interest) than many of the current operations. Despite there being an increase in the modeled SEL for a given point, the majority of the points of interest are outside of the 65 dB DNL noise metric. This means individuals at these points may experience single-event noise that occassionally exceeds that present under existing conditions, but, overall, they would not experence a high level of average noise (measured in DNL). The majority of the aircraft operations would be FCLP, which are captured in the annual average noise contours.

Although noise levels would increase at Emporia-Greensville under Alternative 1, the overall change in the noise environment under Scenarios 1 and 2 would result in only three individuals within the new 65 dB DNL noise contour. In addition, although some of the maximum modeled SEL values at points of interest were higher than under existing conditions, the aircraft operations would be temporary and intermittent in nature. Therefore, there would be no significant impact from noise as a result of the Navy's implementation of Alternative 1 for either Scenario 1 or 2.

3.5.3 Existing Noise at Wallops Flight Facility

The study area for noise at WFF Main Base consists of the area within the modeled 65 dB DNL and greater noise contour.

The existing noise from aircraft using WFF Main Base was modeled using the NOISEMAP noise modeling software package. NOISEMAP is used to model noise from fixed-wing aircraft; in the case of WFF Main Base, it was used to model the P-3, the Beechcraft Super King Air, the FA-18E/F, the existing E-2 and C-2 operations, the A-10, and the C-40. These are the most frequent and/or loudest aircraft using WFF Main Base, and they determine the noise contours at the airfield. Because the number of rotary-wing aircraft operating at WFF Main Base is minimal and would not increase the size of existing noise contours, the Rotorcraft Noise Model was not used.

WFF Main Base is owned and operated by NASA and hosts approximately 13,000 annual operations, of which approximately 12,500 are military (primarily Navy) and 500 are civilian (primarily NASA). A total of up to 11 aircraft are based at the airport: 10 fixed-wing aircraft (seven multi-engine aircraft, one single engine aircraft, and two jet aircraft) and one rotary-wing aircraft (NASA Wallops Flight Facility Aircraft Office 2012).

The annual operations at WFF Main Base used to develop the existing noise contours are listed in Table 3-17. All existing operations were modeled as acoustic day operations, as normal operating hours for the airfield are from 7 a.m. to 5 p.m. The existing runway utilization modeled was 65 percent of the total operations on Runway 10/28 (with 40 percent of those on Runway 10 and 60 percent on Runway 28) and 35 percent Runway 04/22 (with 30 percent on Runway 04 and 70 percent on Runway 22). Therefore, using the percentages noted by individual runway, the composite runway utilization modeled for the four runways was 11 percent for Runway 04, 24 percent for Runway 22, 26 percent for Runway 10, and 39 percent for Runway 28 (BRRC 2012).

Table 3-17 Existing Annual Operations, Wallops Flight Facility Main Base

	Departures	Arrivals	Pattern	Total
Civilian Aircraft				
NASA (P-3, Super King Air)	157	156	-	313
Misc.	94	94	-	188
			Subtotal Civilian Operations	**501**
Military Aircraft				
U.S. Navy (FA-18, E-2/C-2)	789	789	9,471	11,049
Maryland Air National Guard (A-10)	55	55	662	772
U.S. Air Force (C-40)	48	48	574	670
Army and Coast Guard	41	41	-	82
			Subtotal Military Operations	**12,573**
			Total	**13,074**

Source: BRRC 2012

3.5.3.1 Day-Night Average Sound Level Analysis

The existing noise contours modeled for WFF Main Base are entirely located in Accomack County, Virginia (see Figure 3-12). The existing noise zones that are 65 dB DNL or greater cover approximately 600 acres outside of the WFF Main

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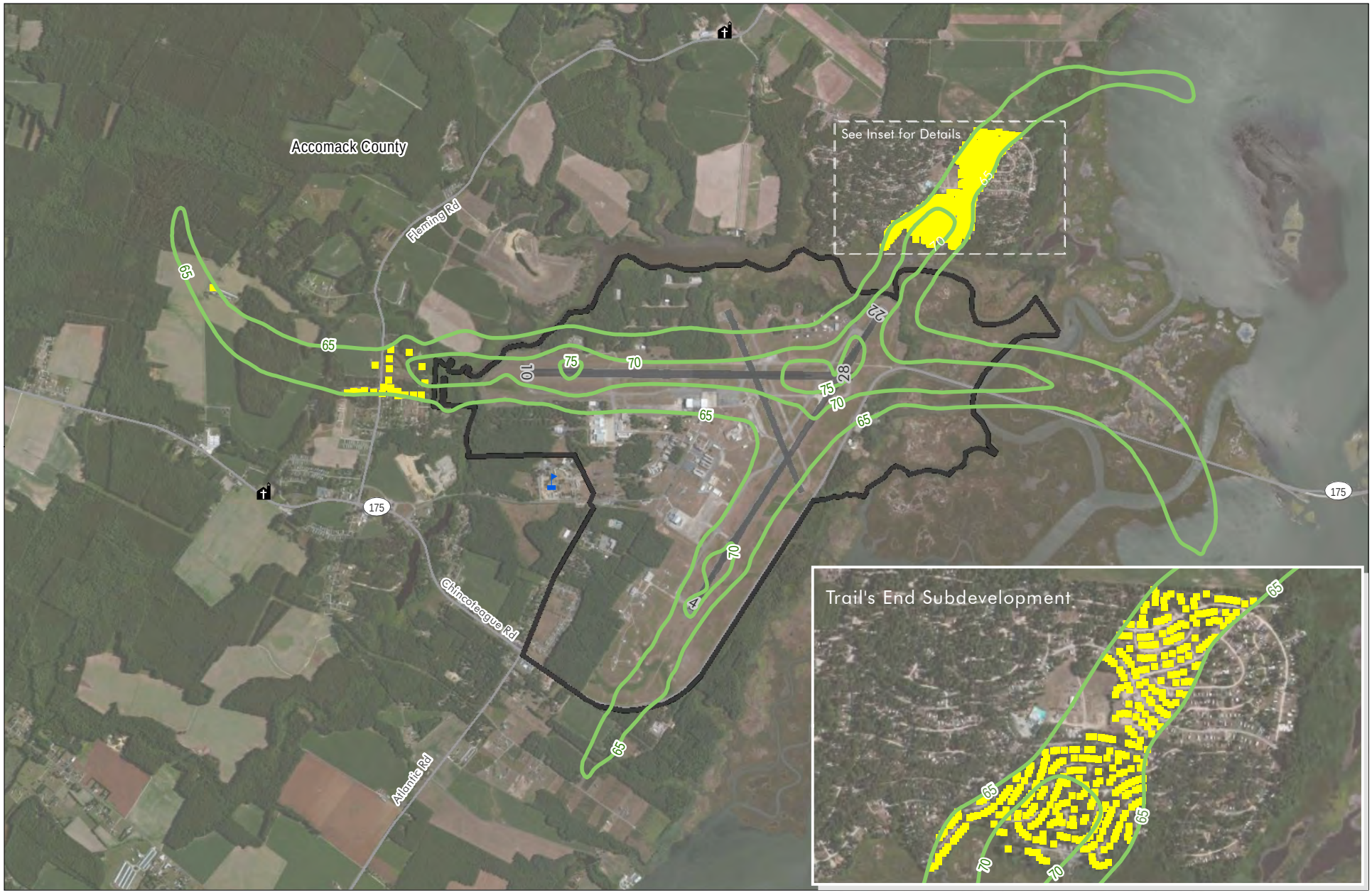

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Residences in Existing Contour
School
Church
Existing Noise Contour (dB)
Active Runway
Wallops Flight Facility
Major Highway
Local Street

Figure 3-12
Modeled Existing Noise Contours
Wallops Flight Facility

N

0 0.25 0.5
Miles

Base property boundary. Details on the land uses within these areas are presented in Section 3.6.3. The residences shown in Figure 3-12 are those that are within the existing noise contours and off of the WFF Main Base property.

Table 3-18 shows the estimated number of acres outside of WFF Main Base that contain the existing noise contours, as well as an estimate on the number of people and housing units within the existing noise contours.

Table 3-18 Total Acres, Population, and Housing Units within Modeled Existing Noise Zones at Wallops Flight Facility Main Base

Noise Zones (dB DNL)	Total (acres)[1]	Estimated Population[2]	Housing Units
65 to 70	536.2	834	352
70 to 75	63.5	185	78
Greater than 75	0	0	0
Total	**599.7**	**1,019**	**430**

Note:
[1] Does not include acreage on WFF Main Base.
[2] During land surveys conducted in Winter 2012 and through aerial imagery analysis, the Navy recorded the locations of residential properties within the noise contours at WFF Main Base. Population was then estimated based on an average of 2.37 people per household, which is the average number of people per household for Accomack County, based on the 2010 Census.

In total, an estimated 430 housing units and 1,019 residents are located within the existing noise zones. No residences are within a noise zone greater than 75 dB DNL as those noise contours do not extend outside of the WFF Main Base property boundary. Also, no schools/day care centers, religious facilities, cemeteries, or hospitals are located within the existing noise zones.

In addition to noise generated by aircraft operating at WFF Main Base, there are several other sources of noise in the communities surrounding the WFF properties. These sources include the launching of rockets from the Wallops Island property (launch facilities are located approximately 6 miles from the southern boundary of WFF Main Base), as well as car and truck traffic along U.S. Route 13 and Virginia Route 175. However, noise generated from rocket launches and vehicle traffic was not modeled as part of this analysis. Rocket launches do not occur on a frequent basis, and different metrics are used for measuring the noise from those events. In addition, vehicle traffic is sporadic and seasonal and was not incorporated even though it is part of the overall noise environment at WFF Main Base.

3.5.3.2 Sound Exposure Level Analysis

As part of the noise analysis, the Navy modeled the SEL at specific points of interest identified through coordination with Accomack County representatives, NASA, the USFWS, and the Navy. These locations include residential areas, schools, religious facilities, and other locations where noise could be a concern or general locations (i.e., intersections) that are geographically dispersed. Twenty-two points of interest were identified. This noise analysis presents the maximum modeled SEL value for each specific point of interest for aircraft operations currently at WFF Main Base.

The points of interest identified by Accomack County are shown on Figure 3-13 along with the modeled existing noise contours. Table 3-19 presents the description of the aircraft, operation type, distance to the aircraft, and the modeled SEL value for each point of interest. The Location ID presented in Table 3-19 corresponds to a point of interest depicted on Figure 3-13.

The maximum modeled SEL values under existing conditions at WFF Main Base are dominated by jet fighter operations (i.e., FA-18). The SEL values range from a high of 117.2 dB SEL to a low of 75.0 dB SEL. It should be noted that potential hearing loss is measured using the average noise metric, DNL, not SEL.

3.5.4 Noise Impacts at Wallops Flight Facility

3.5.4.1 Proposed Aircraft Operations

Under Alternative 2, the Navy would conduct up to 45,000 E-2/C-2 operations annually at WFF Main Base. The number of existing civilian and military operations at WFF Main Base is not expected to change and would continue to operate, as was outlined in Section 3.2.3.1. The existing aircraft operations are included in the projected noise contours. The projected annual operations under Alternative 2 are listed in Table 3-20. Because existing operations are expected to remain the same, the table is similar to Table 3-13 but with the addition of the Navy's E-2/C-2 operations. These aircraft operations were modeled using NOISEMAP to determine noise impacts at WFF Main Base.

The majority of the proposed Navy E-2/C-2 operations under Alternative 2 (approximately 90 percent) would be conducted during acoustic day (between 7:00 a.m. and 10:00 p.m.). The remaining 10 percent would be conducted during acoustic night (between 10:00 p.m. and 7:00 a.m.). As described in Section 3.5, operations during the acoustic night are "penalized" 10 dB (calculated as being 10 dB greater than their actual level) with regard to DNL analysis to account for the lower background sound levels and greater community sensitivity to noise during late-night or early morning hours.

3.5.4.2 Day-Night Average Sound Level Analysis

The Navy's E-2/C-2 aircraft could conduct FCLP on either Runway 04/22 or Runway 10/28. Under Alternative 2, these are defined as Scenario 1, where the Navy aircraft conducting FCLP would operate using Runway 04/22, and Scenario 2, where the Navy aircraft conducting FCLP would operate using Runway 10/28. Both of these scenarios have been modeled for this noise analysis.

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Location ID	Description
Accomack County, Virginia	
AC-1	Intersection of US 13 and SR 709
AC-2	T's Corner (east of intersection of US 13 and Chincoteague Road)
AC-3	Arcadia High School
AC-4	Temperanceville at Intersection of US 13 and SR 695
AC-5	Captain's Cove Community Pool
AC-6	Horntown at Intersection of SR 679 and SR 709
AC-7	Trail's End Community Pool
AC-8	Olde Mill Pointe Traffic Circle
AC-9	Wattsville at Intersection of SR 679 and Chincoteague Road
AC-10	Atlantic at Intersection of SR 679 and Nocks Landing Road
AC-11	Assawoman at Intersection of SR 670 and Wallops Island Road
AC-12	Marine Science Consortium
AC-13	NASA Visitor Center
AC-14	USFWS Maintenance Yard at Wallops Island NWR
AC-15	Ballast Narrows at Wallops Island
AC-16	Chincoteague High School
AC-17	Chincoteague Waterfront Park
AC-18	Chincoteague Chamber of Commerce on Piney Island
AC-19	Curtis Merritt Harbor, Chincoteague Island
AC-20	Tom's Cove Visitor Center
AC-21	Launch Control Center
AC-22	Withams at Intersection of SR 693 and SR 703

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Point of Interest
Active Runway
Wallops Flight Facility
Major Highway
Local Street

Figure 3-13
Points of Interest
Wallops Flight Facility

N
0 0.5 1
Miles

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Table 3-19 Modeled Sound Exposure Level for Points of Interest under Existing Conditions at Wallops Flight Facility Main Base

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]			
		Aircraft	Operation Type[b]	Distance from Aircraft[c]	SEL (dB)
AC-1	Intersection of US 13 and SR 709	Jet Fighter	Arrival	1.76	88.9
AC-2	T's Corner (east of intersection of US 13 and Chincoteague Road)	Jet Fighter	Departure	0.60	105.6
AC-3	Arcadia High School	Jet Fighter	Departure	1.40	95.3
AC-4	Temperanceville at Intersection of US 13 and SR 695	Jet Fighter	Departure	1.59	92.8
AC-5	Captain's Cove Community Pool	Jet Fighter	Departure	0.77	101.8
AC-6	Horntown at Intersection of SR 679 and SR 709	Jet Fighter	Touch and Go	0.40	106.2
AC-7	Trail's End Community Pool	Jet Fighter	Arrival	0.13	116.0
AC-8	Olde Mill Pointe Traffic Circle	Jet Fighter	Touch and Go	0.27	110.4
AC-9	Wattsville at Intersection of SR 679 and Chincoteague Road	Jet Fighter	Arrival	0.20	112.7
AC-10	Atlantic at Intersection of SR 679 and Nocks Landing Road	Jet Fighter	Departure	0.68	104.2
AC-11	Assawoman at Intersection of SR 670 and Wallops Island Road	Jet Fighter	Departure	1.87	89.4
AC-12	Marine Science Consortium	Jet Fighter	Departure	0.59	105.8
AC-13	NASA Visitor Center	Jet Fighter	Departure	0.24	117.2
AC-14	USFWS Maintenance Yard at Wallops Island National Wildlife Refuge	Jet Fighter	Arrival	0.17	113.7
AC-15	Wallops Island	Jet Fighter	Departure	2.04	89.4
AC-16	Chincoteague High School	Jet Fighter	Arrival	0.27	91.2
AC-17	Chincoteague Waterfront Park	Jet Fighter	Departure	1.97	89.9
AC-18	Chincoteague Chamber of Commerce on Piney Island	Jet Fighter	Departure	3.25	82.6
AC-19	Curtis Merritt Harbor, Chincoteague Island	Jet Fighter	Arrival	2.14	87.5
AC-20	Tom's Cove Visitor Center	Jet Fighter	Arrival	3.63	75.0
AC-21	Mid-Atlantic Regional Spaceport	Jet Fighter	Departure	3.67	83.1
AC-22	Withams at Intersection of SR 693 and SR 703	Jet Fighter	Departure	1.04	98.6

Source: BRRC 2012

Notes:

[a] For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.

[b] The Operation Type includes the following; Arrival = an aircraft flight track arriving at the airfield, Departure = an aircraft flight track departing from the airfield, and Touch and Go = a pattern flown by an aircraft where it approaches the airfield and touches down on the runway and then accelerates, performing a takeoff without coming to a full stop.

[c] The Distance to Aircraft is the diagonal distance, in miles, from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

Table 3-20 Modeled Annual Aircraft Operations under Alternative 2, Wallops Flight Facility Main Base

	Departures	Arrivals	Pattern	Total
Civilian Aircraft				
NASA	157	157	-	314
Misc.	94	94	-	188
Subtotal Civilian Operations				**502**
Military Aircraft				
U.S. Navy (existing)	789	789	9,471	11,049
U.S. Navy E-2/C-2 (new)	703	703	43,594	45,000
Maryland Air National Guard	55	55	662	772
U.S. Air Force	48	48	574	670
Army and Coast Guard	41	41	-	82
Subtotal Military Operations				57,573
Total				**58,075**

Source: BRRC 2012

Note: The types of aircraft operations in this table are described in Section 3.2.3.1.1.

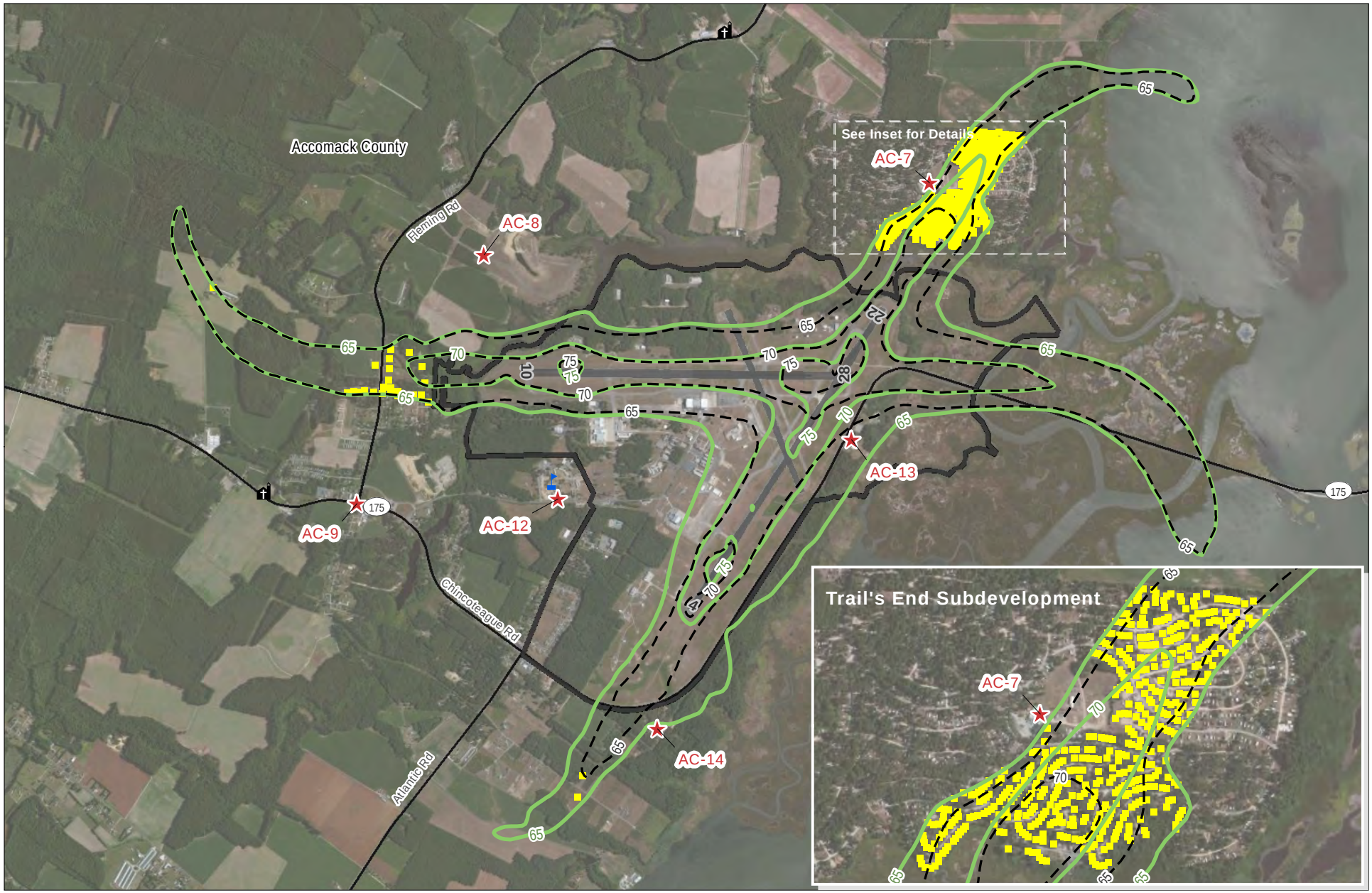
3.5.4.2.1 Alternative 2, Scenario 1

The modeled Alternative 2, Scenario 1, noise contours at WFF Main Base are shown on Figure 3-14 (the baseline noise contour is also included for comparison). All of the noise contours are contained within Accomack County, Virginia, and, compared to the existing noise contours at WFF Main Base, the contours for the proposed action are slightly elongated along Runway 04/22. Table 3-21 shows the estimated number of acres within the modeled Alternative 2, Scenario 1, noise contours (excluding airfield property and including land area only). Existing noise contours encompass approximately 600 acres, not including WFF Main Base property (see Section 3.5.3), while the projected noise contours for Alternative 2, Scenario 1, on Runway 04/22 encompass approximately 813 acres, an increase of 213 acres.

Table 3-21 also presents the number of housing units and the estimated number of people within the modeled Alternative 2, Scenario 1, noise zones. The estimated population within the 65 to 70 dB DNL and 70 to 75 dB DNL noise zones was calculated using the average household size for Accomack County, recorded in the 2010 U.S. Census, of 2.37 people (and rounding up). Existing noise contours extend off WFF Main Base property (as discussed in Section 3.5.3) and are also presented in Table 3-22 for comparison. Under implementation of Alternative 2, Scenario 1, there would be an estimated seven more individuals within the greater than 65 dB DNL noise contour and an estimated 265 more individuals within the greater than 70 dB DNL noise contour compared with existing conditions. The additional people within the noise contours in Accomack County represent approximately 0.02 percent of the total population.

There are no religious facilities, schools, day care centers, hospitals, or cemeteries within the greater than 65 dB DNL noise zones.

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\3-5 Plane Scheme on Runway04_22 with Baseline.mxd



Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Residence in Projected Contour
School
Church
Hospital
Point of Interest
Projected Noise Contour (dB)
Existing Noise Contour (dB)
Active Runway
Wallops Flight Facility
Major Highway
Local Street

Figure 3-14
Modeled Projected Noise Contours with Residences
Alternative 2 Scenario 1
Wallops Flight Facility

N
0 0.25 0.5
Miles

Table 3-21 Land Area, Housing Units, and Estimated Number of People within Projected Noise Zones under Alternative 2, Scenario 1, at Wallops Flight Facility Main Base

Noise Zone (dB DNL)	Existing Conditions			Projected Conditions[2]		
	Land Area (Acres)	Housing Units	Estimated Population[1]	Land Area (Acres)[3]	Housing Units[3]	Estimated Population[3]
Runway 04/22						
65 to 70	536.2	352	834	718.2 (+182)	243 (-109)	576 (-258)
70 to 75	63.5	78	185	94.5 (+31)	190 (+112)	450 (+265)
Greater than 75	0	0	0	0 (0)	0 (0)	0 (0)
Total	**599.7**	**430**	**1,019**	**812.7 (+213)**	**433 (+3)**	**1,026 (+7)**

Note:
[1] During land surveys conducted in February 2012, the Navy, with the aid of GIS features, recorded the locations of residential properties within the vicinity of Wallops Flight Facility Main Base. Residences within the Trail's End subdevelopment, which is a gated resort community, were identified using Accomack County GIS data depicting parcels with taxable structures. Population for all housing units was then estimated based on an average of 2.37 people per household, which is the average number of people per household for Accomack County, based on the 2010 U.S. Census.
[2] The changes in acres, housing units, and estimated population between the existing and projected conditions are noted in parentheses.
[3] Under Alternative 2, Scenario 1, there is a decrease in the number of housing units and population within the 65 to 70 dB DNL noise zone from existing conditions to the projected environment. This is due to a change in the size and shape of the 70 dB DNL noise contour and the fact that many of the houses formerly in the area designated as having noise levels between 65 and 70 dB DNL are now in a higher noise zone (70 to 75 dB DNL).

Table 3-22 Land Area, Housing Units, and Estimated Number of People within Projected Noise Zones under Alternative 2, Scenario 2, at Wallops Flight Facility Main Base

Noise Zone (dB DNL)	Existing Conditions			Projected Conditions		
	Land Area (Acres)	Housing Units	Estimated Population[1]	Land Area (Acres)[2]	Housing Units[2]	Estimated Population[2]
Runway 10/28						
65 to 70	536.2	352	834	638.5 (+102.3)	360 (+8)	853 (+19)
70 to 75	63.5	78	185	117.8 (+54.3)	84 (+6)	199 (+14)
Greater than 75	0	0	0	0 (0)	0 (0)	0 (0)
Total	**599.7**	**430**	**1,019**	**756.3 (+156.6)**	**444 (+14)**	**1,052 (+33)**

Note:
[1] During land surveys conducted in February 2012, the Navy, with the aid of GIS features, recorded the locations of residential properties within the vicinity of Wallops Flight Facility Main Base. Residences within the Trail's End subdevelopment, which is a gated resort community, were identified using Accomack County GIS data depicting parcels with taxable structures. Population for all housing units was then estimated based on an average of 2.37 people per household, which is the average number of people per household for Accomack County, based on the 2010 U.S. Census.
[2] The changes in acres, housing units, and estimated population between the existing and projected conditions are noted in parentheses.

3.5.4.2.2 Alternative 2, Scenario 2

The modeled Alternative 2, Scenario 2, noise contours at WFF Main Base are shown on Figure 3-15 (the baseline noise contour is also included for comparison). All of the noise contours are contained within Accomack County, Virginia, and, compared to the existing noise contours at WFF Main Base, the contours for the proposed action are slightly elongated along Runway 10/28. Table 3-22 shows the estimated number of acres within the modeled Alternative 2, Scenario 2, noise contours (excluding airfield property and including land area only). Existing noise contours encompass approximately 600 acres, not including WFF Main Base property or water (see Section 3.5.3), while the projected noise contours for Alternative 2, Scenario 2, on Runway 10/28 encompass approximately 756 acres, an increase of 156 acres.

Table 3-22 also presents the number of housing units and estimated number of people within the modeled Alternative 2, Scenario 2, noise zones. The estimated population within the 65 to 70 dB DNL and 70 to 75 dB DNL noise zones was calculated using the average household size for Accomack County, recorded in the 2010 U.S. Census, of 2.37 people (and rounding up). Existing noise contours extended off WFF Main Base property (as discussed in Section 3.2.3) and are also presented in Table 3-22 for comparison. Under implementation of Alternative 2, Scenario 2, there would be an estimated 33 more individuals within the greater than 65 dB DNL noise contour and an estimated 14 more individuals within the greater than 70 dB DNL noise contour compared with existing conditions. The additional people within the noise contours in Accomack County represent approximately 0.01 percent of the total population.
No religious facilities, schools, day care centers, hospitals, or cemeteries are within the noise contours for the proposed operations.

3.5.4.3 Sound Exposure Level and Points of Interest

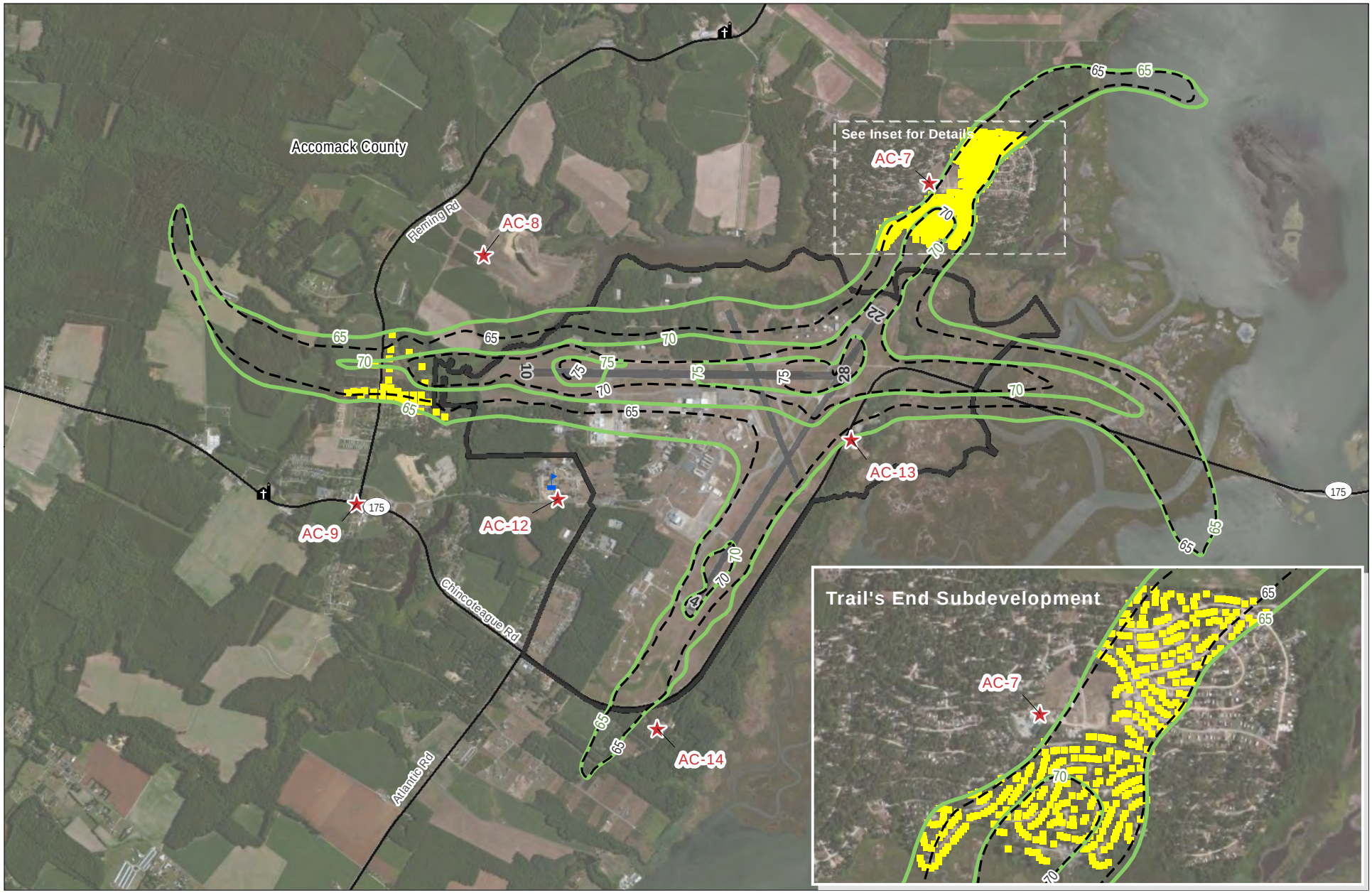
The points of interest identified by and with concurrence from Accomack County and the USFWS are shown on Figure 3-13. The SEL values would differ slightly between Alternative 2, Scenario 1, and Alternative 2, Scenario 2, due to the difference in the E-2/C-2 aircraft operating on Runway 04/22 and Runway 10/28. Therefore, the SEL values are presented separately within this section.

3.5.4.3.1 Alternative 2, Scenarios 1 and 2

Points of interest that fall within or near the Alternative 2, Scenarios 1 or 2, noise contours are also depicted on Figure 3-14 (see Section 3.5.3 for a description and figure showing all points of interest). Table 3-23 presents the maximum modeled SEL value for projected Navy E-2/C-2 operations at WFF Main Base under Alternative 2, Scenarios 1 and 2. The maximum modeled SEL values for the existing environment are also repeated in Table 3-23 for comparison to the projected environment.

The E-2/C-2 operation type and the distance of the point of interest from the aircraft, along with the modeled SEL value for that point of interest for Alternative 2, Scenarios 1 and 2, are provided. Each Location ID presented in the table corresponds to a point of interest depicted on Figures 3-12 (and Figure 3-14, if applicable).

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\3-5 Plane Scheme on Runway10_28 with Baseline.mxd



Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Residence in Projected Contour
School
Church
Hospital
Point of Interest
Projected Noise Contour (dB)
Existing Noise Contour (dB)
Active Runway
Wallops Flight Facility
Major Highway
Local Street

Figure 3-15
Modeled Projected Noise Contours with Residences
Alternative 2 Scenario 2
Wallops Flight Facility

N
0 0.25 0.5
Miles

Table 3-23 Modeled Sound Exposure Level for Points of Interest under Alternative 2, Scenario 1 and Scenario 2, at Wallops Flight Facility Main Base

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]				Alternative 2, Scenario 1 Runway 04/22 E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]			Alternative 2, Scenario 2 Runway 10/28 E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]		
		Aircraft	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)
AC-1	Intersection of US 13 and SR 709	Jet Fighter	Arrival	1.76	88.9	Crew Swap	0.90	80.0	Crew Swap	0.37	87.4
AC-2	T's Corner (east of intersection of US 13 and Chincoteague Road)	Jet Fighter	Departure	0.60	105.6	Crew Swap	0.94	79.4	Crew Swap	0.93	81.4
AC-3	Arcadia High School	Jet Fighter	Departure	1.40	95.3	Crew Swap	0.37	86.8	FCLP	1.16	74.3
AC-4	Temperanceville at Intersection of US 13 and SR 695	Jet Fighter	Departure	1.59	92.8	Crew Swap	0.44	75.9	FCLP	2.71	66.0
AC-5	Captain's Cove Community Pool	Jet Fighter	Departure	0.77	101.8	Crew Swap	0.41	74.4	Crew Swap	0.61	83.8
AC-6	Horntown at Intersection of SR 679 and SR 709	Jet Fighter	Touch and Go	0.40	106.2	FCLP	0.12	92.8	Crew Swap	0.72	80.1
AC-7	Trail's End Community Pool	Jet Fighter	Arrival	0.13	116.0	Crew Swap	0.23	94.1	FCLP	0.28	87.3
AC-8	Olde Mill Pointe Traffic Circle	Jet Fighter	Touch and Go	0.27	110.4	Crew Swap	0.55	82.0	Crew Swap	0.34	88.6

Source: BRRC 2012

Notes:
[a] For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[b] For the projected environment, the E-2/C-2 operation with the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[c] The Operation Type includes the following; Arrival = an aircraft flight track arriving at the airfield, Departure = an aircraft flight track departing from the airfield, and Touch and Go = a pattern flown by an aircraft where it approaches the airfield and touches down on the runway and then accelerates, performing a takeoff without coming to a full stop.
[d] The Distance to Aircraft is the diagonal distance from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

Table 3-23 Modeled Sound Exposure Level for Points of Interest under Alternative 2, Scenario 1 and Scenario 2, at Wallops Flight Facility Main Base

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]				Alternative 2, Scenario 1 Runway 04/22 E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]			Alternative 2, Scenario 2 Runway 10/28 E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]		
		Aircraft	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)
AC-9	Wattsville at Intersection of SR 679 and Chincoteague Road	Jet Fighter	Arrival	0.20	112.7	Crew Swap	0.43	81.2	Crew Swap	0.64	86.6
AC-10	Atlantic at Intersection of SR 679 and Nocks Landing Road	Jet Fighter	Departure	0.68	104.2	Crew Swap	0.38	88.4	FCLP	1.59	72.5
AC-11	Assawoman at Intersection of SR 670 and Wallops Island Road	Jet Fighter	Departure	1.87	89.4	Crew Swap	2.21	71.8	Crew Swap	4.21	62.2
AC-12	Marine Science Consortium	Jet Fighter	Departure	0.59	105.8	Crew Swap	0.37	85.8	Crew Swap	0.33	89.1
AC-13	NASA Visitor Center	Jet Fighter	Departure	0.24	117.2	Crew Swap	0.23	94.9	Crew Swap	0.31	93.2
AC-14	USFWS Maintenance Yard at Wallops Island National Wildlife Refuge	Jet Fighter	Arrival	0.17	113.7	Crew Swap	0.22	94.4	Crew Swap	0.50	82.1
AC-15	Wallops Island	Jet Fighter	Departure	2.04	89.4	FCLP	0.85	79.2	Crew Swap	2.61	69.6
AC-16	Chincoteague High School	Jet Fighter	Arrival	0.27	91.2	Crew Swap	4.61	66.8	Crew Swap	2.85	70.7

Source: BRRC 2012

Notes:
[a] For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[b] For the projected environment, the E-2/C-2 operation with the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[c] The Operation Type includes the following; Arrival = an aircraft flight track arriving at the airfield, Departure = an aircraft flight track departing from the airfield, and Touch and Go = a pattern flown by an aircraft where it approaches the airfield and touches down on the runway and then accelerates, performing a takeoff without coming to a full stop.
[d] The Distance to Aircraft is the diagonal distance from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

Table 3-23 Modeled Sound Exposure Level for Points of Interest under Alternative 2, Scenario 1 and Scenario 2, at Wallops Flight Facility Main Base

Location ID	Description	Existing Conditions Aircraft Type and Operation with the Maximum Modeled Sound Exposure Level[a]				Alternative 2, Scenario 1 Runway 04/22 E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]			Alternative 2, Scenario 2 Runway 10/28 E-2/C-2 Operation with Maximum Modeled Sound Exposure Level[b]		
		Aircraft	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)	Operation Type[c]	Distance from Aircraft[d]	SEL (dB)
AC-17	Chincoteague Waterfront Park	Jet Fighter	Departure	1.97	89.9	Crew Swap	4.16	68.3	Crew Swap	2.47	72.3
AC-18	Chincoteague Chamber of Commerce on Piney Island	Jet Fighter	Departure	3.25	82.6	Crew Swap	5.50	63.0	Crew Swap	3.79	67.0
AC-19	Curtis Merritt Harbor, Chincoteague Island	Jet Fighter	Arrival	2.14	87.5	Crew Swap	2.74	71.5	Crew Swap	3.18	70.1
AC-20	Tom's Cove Visitor Center	Jet Fighter	Arrival	3.63	75.0	Crew Swap	6.04	60.9	Crew Swap	4.75	61.1
AC-21	Mid-Atlantic Regional Spaceport	Jet Fighter	Departure	3.67	83.1	Crew Swap	4.06	68.4	Crew Swap	5.20	62.2
AC-22	Withams at Intersection of SR 693 and SR 703	Jet Fighter	Departure	1.04	98.6	Crew Swap	0.58	80.8	Crew Swap	2.80	70.0

Source: BRRC 2012

Notes:
[a] For the existing environment, the aircraft type and operation which had the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[b] For the projected environment, the E-2/C-2 operation with the highest modeled Sound Exposure Level for the specific point of interest was chosen for presentation in this table.
[c] The Operation Type includes the following; Arrival = an aircraft flight track arriving at the airfield, Departure = an aircraft flight track departing from the airfield, and Touch and Go = a pattern flown by an aircraft where it approaches the airfield and touches down on the runway and then accelerates, performing a takeoff without coming to a full stop.
[d] The Distance to Aircraft is the diagonal distance from the point of interest to the aircraft (accounting for both altitude and distance along the ground) at the closest point along the given flight track for that operation.

For the projected environment, the E-2/C-2 operations that generated the maximum modeled SEL values were primarily crew swap operations but also included FCLP. SEL values for Alternative 2, Scenarios 1 and 2, ranged from a high of 94.9 dB SEL to a low of 60.9 dB SEL.

Examining the data provided in Table 3-23 shows that E-2/C-2 aircraft operating at WFF Main Base have a lower modeled SEL value for all points of interest than the jet fighters (FA-18) that currently operate at the installation.

3.5.4.4 Noise Impact Conclusion

Noise impact is a subjective analysis because individuals perceive noise impacts differently. The two metrics presented in this noise analysis section (DNL and SEL) provide two different approaches to quantifying noise impacts—based on average noise exposure and single-event noise exposures. DNL is the accepted metric for measuring community reaction to noise; however, SEL provides a supplemental metric for describing noise from a single event.

For the DNL analysis examining average noise, the increase due to the proposed Navy E-2/C-2 operations would equate to approximately 213 and 156 acres within the greater than 65 dB DNL noise contour for Scenarios 1 and 2, respectively. For Alternative 2, Scenario 1, this would impact approximately seven individuals who were previously not within the greater than 65 dB DNL noise contour. Based upon the number of people in Accomack County in 2010 (33,164), this is approxmately 0.02 percent of the total county population. However, there would be more individuals (an increase of 265 people, or approximately 0.8 percent of the total county population) within the higher 70 dB DNL and greater noise contour than under existing conditions. For Alternative 2, Scenario 2, the increase in noise would impact approximately 33 individuals who were previously not within the greater than 65 dB DNL noise contour, which would equate to 0.1 percent of the total county population. There would also be more individuals (an increase of 14 people, or 0.04 percent of the total county population) within the higher 70 dB DNL and greater noise contour than under existing conditions.

With regard to potential hearing loss, the criterion is for a population to be exposed to a DNL greater than or equal to 80 dB (DOD 2009). The noise generated at WFF Main Base under either Scenario 1 or 2 does not reach 80 dB DNL, even on-base, so there would not be a significant risk for potential loss of hearing associated with the Navy's action. Despite some SEL values being higher than 80 dB, this is in DNL, which is the accepted metric for assessing potential long-term hearing loss.

As noted in the existing environment discussion, several activities conducted at WFF's three properties result in noise, including aircraft operations at WFF Main Base and rocket launches at the Wallops Island property (located approximately 6 miles from the southern boundary of WFF Main Base). These noise sources all combine to create the noise environment experienced by the local community. As a result of the Navy's proposed action, there would be a slight increase in average noise (DNL noise contours) expected at WFF Main Base for both Scenarios 1 and

2 under Alternative 2. Given the limited change in noise from the existing to the projected environment, there would be no significant impact from noise as a result of the Navy's implementation of Alternative 2 for either Scenario 1 or 2 at WFF Main Base. In addition, the proposed Navy E-2/C-2 FCLP operations would not result in a higher maximum modeled SEL value at any of the points of interest when compared to the existing conditions at and around WFF Main Base. There would also be no significant impact from noise if the option of conducting daytime operations on both Runways 04/22 and 10/28 is chosen, as the noise contours for this option would fall within the modeled noise contours for Scenarios 1 and 2.

3.6 Land Use

The FAR Part 150 Noise Compatibility Program was utilized for analyzing noise impacts on land areas surrounding the two airfield sites. Established under the Aviation Safety and Noise Abatement Act of 1979, it is the primary federal regulation guiding planning for aviation noise compatibility on and around public-use airports. This program allows airport operators to voluntarily submit noise exposure maps and noise compatibility programs to the FAA for review and approval. A noise exposure map includes the depiction of an airport, its noise contours (65, 70, and 75 dB), and its surrounding area. A noise compatibility program details measures both taken and proposed to reduce existing incompatible land uses and prevent additional incompatible land uses within the area covered by the noise exposure maps (FAA n.d.). Note that the recommendations outlined in FAR Part 150 are advisory and are not binding for the Navy's proposed action. They are used in this analysis to provide a frame of reference for discussion of compatible land uses in the Navy's projected noise zones.

The FAR Part 150 Program provides compatibility recommendations for Standard Land Use Coding Manual-classified land uses. Table 3-24 provides a summary of these recommendations, which are applied to the noise zones (i.e., the area between two noise contours) modeled for the projected environment under Alternatives 1 and 2.

3.6.1 Existing Land Use at Emporia-Greensville Regional Airport

The study area for this analysis at Emporia-Greensville includes the area within the modeled 65 dB DNL and greater noise contour. Greensville County, Southampton County, and the City of Emporia are described in this section.

The City of Emporia, Greensville County, and Southampton County are not located within the Commonwealth of Virginia's coastal zone, as defined by the Virginia Coastal Zone Management Program, and are therefore not subject to the programs and policies defined by the program (VDEQ 2012). Therefore, coastal zone management is not analyzed for the Navy's proposed action at Emporia-Greensville.

Table 3-24 Land Use Compatibility with Yearly Day-Night Average Sound Levels

Land Use	Yearly Day-Night Average Sound Level in Decibels					
	Below 65	65 to 70	70 to 75	75 to 80	80 to 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)	Y(4)	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

Notes:
Y (Yes) = Land Use and related structure 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.

(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 areas 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 areas 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 areas where the normal noise 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.

Table 3-24 Land Use Compatibility with Yearly Day-Night Average Sound Levels

Land Use	Yearly Day-Night Average Sound Level in Decibels					
	Below 65	65 to 70	70 to 75	75 to 80	80 to 85	Over 85
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, and water recreation	Y	Y	25	30	N	N

Source: 14 CFR Part 150, 2007

Notes:
Y (Yes) = Land Use and related structure 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.

(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 areas 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 areas 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 areas where the normal noise 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.

3.6.1.1 Land Use and Plans

Emporia-Greensville Regional Airport is located within Greensville and Southampton counties in the southeast region of the Commonwealth of Virginia. The airport is approximately 10 miles north of the Virginia-North Carolina state line and 1 mile east of the City of Emporia.

Regional development is concentrated in the City of Emporia, a small urban municipality. Residential development is the city's dominant land use and is predominantly single-family and clustered in older, denser neighborhoods near the downtown core. Three major highways cross the City of Emporia: Interstate 95, Route 301, and Route 58. There are many commercial establishments in the city, particularly adjacent to the Interstate 95 interchange. These are businesses that primarily cater to motorists, including fast food restaurants, hotels/motels, service stations, and convenience stores.

Greensville County is rural, sustained by undisturbed natural areas as well as agricultural land uses. Most of the agricultural uses are located in the southern

portion of the county; major crops include peanuts, tobacco, wheat, hay, corn, cotton, and soybeans (County of Greensville, Virginia, and K. W. Poore & Associates, Inc. 2008). Residential uses in Greensville County are predominantly low density, with some higher densities located near the population centers of the City of Emporia and the Town of Jarratt.

Southampton County also exhibits a rural character; the majority of the county is either undeveloped or devoted to agricultural use. Residential uses are predominantly low density and located near the City of Franklin and within smaller population centers such as the towns of Courtland and Ivor. Recent residential developments have been constructed along secondary roads in traditionally agricultural areas.

The City of Emporia and Greensville County are part of the Crater Planning District Commission's jurisdiction. The Crater Planning District Commission represents 11 local governments in south central Virginia (Crater PDC 2012). Southampton County is within the Hampton Roads Planning District Commission's jurisdiction. The Hampton Roads Planning District Commission represents 16 local governments in southeastern Virginia (Hampton Roads PDC 2012). Both planning district commissions publish or disseminate data on the demographic and economic characteristics of their member municipalities and regions as a whole.

The Crater PDC represents the local governments of the cities of Colonial Heights, Emporia, Hopewell, and Petersburg and the counties of Charles City, Chesterfield, Dinwiddie, Greensville, Prince George, Surry, and Sussex (Crater PDC 2012).

The HRPDC represents the local governments of the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg, and the counties of Gloucester, Isle of Wight, James City, Southampton, Surry, and York (HRPDC 2012).

Emporia-Greensville Regional Airport

Emporia-Greensville Regional Airport is owned and operated by the Emporia Greensville Airport Commission. The airport occupies approximately 355 acres, including 325 acres in Greensville County and 30 acres in Southampton County. It is bordered by Route 58 to the south, James River Junction (Route 623) to the northwest, and privately owned parcels to the northeast. The airfield is currently zoned M-1, Industrial District, and B-2, General Commercial Business (Greensville County 2008). The predominant land uses at the airport support air operations, including runways, taxiways, and parking aprons. Buildings include terminal buildings and hangars. No maintenance shops or flight schools currently operate out of the airfield. Land uses on airport property but not associated with air operations include a truck school and the Army National Guard. The truck school, associated with Southside Virginia Community College, is located in a single building at the southwestern portion of the airfield; however, there has been a reduction in the number of classes being held due to the downturn in the economy.

The Army National Guard Armory in Emporia, VA, which is a recruiting center, is located along Route 58 to the southwest of the airfield on property owned by the Emporia-Greensville Airport Commission. A fire training facility, which is utilized by several municipalities for emergency response training, is located

northeast of the airfield. Although this facility is not located on airport property, it is accessed by a road that runs through airport property.

Development immediately surrounding the airport includes residential, community services, commercial, and industrial uses. Single-family residential developments are located directly west of the airport boundary. Oak Grove Baptist Church is located north of the airfield along James River Junction; however, the building is being reconstructed, so services are not currently being held at the facility. It is not known whether the congregation will resume worship at this location. A commercial establishment, Fred's Auto Parts, is located south of the airport along Route 58. The Mid-Atlantic Cotton Gin, an industrial operation, is also located south of the airport along Route 58. Remaining lands surrounding the airfield are forested or used for agriculture.

The existing noise contours at Emporia-Greensville Regional Airport do not extend beyond the airport property; thus, there are no incompatible land uses currently surrounding the airfield (Note: For this reason, a land use-specific figure and table of acreages within the noise contours at Emporia-Greensville has not been included within this section, but a figure and table of acres is present in Section 3.5.2).

Comprehensive Plans

The Commonwealth of Virginia requires that every municipality adopt a comprehensive plan for "guiding and accomplishing a coordinated, adjusted, and harmonious development of the territory" (Commonwealth of Virginia 2007). The comprehensive plans for the municipalities surrounding Emporia-Greensville Regional Airport include the City of Emporia Comprehensive Plan (*Comprehensive Plan 2008-2028: City of Emporia, Virginia*) was last amended in 2008; it is a long-range plan that identifies issues and opportunities through 2028, Greensville County updated its comprehensive plan in May 2008 (*Comprehensive Plan 2008-2028: Greensville County, Virginia*), and Southampton County last updated its comprehensive plan in March 2007 (*Vision 2020: The Southampton County Comprehensive Plan*).

3.6.2 Impacts on Land Use at Emporia-Greensville Regional Airport

3.6.2.1 Impacts on Land Use and Plans

Potential land use impacts resulting from the proposed action are categorized as either direct or indirect. Direct land use impacts are those associated with the acquisition of property for site development and any subsequent permanent change in existing land use. Indirect land use impacts are related to the exposure of existing or potential future land uses to noise zones, using the FAR Part 150 Noise Compatibility Program as guidance for determining compatibility.

Implementation of Alternative 1 would not require purchase of property by the Navy. No property would be temporarily or permanently converted to military use in the City of Emporia, Greensville County, or Southampton County, thereby maintaining the existing land uses and consistency with the city's and counties'

comprehensive plans. Existing ground activities on Emporia-Greensville property are expected to continue to occur in their designated land use areas.

Indirect land use impacts would be related to the noise effects of the Navy's FCLP operations at Emporia-Greensville on surrounding land uses. The FAR Part 150 Program provides guidance on land use compatibility around public-use airports. For land use planning purposes, the contours are divided into noise zones. Less than 65 dB DNL is generally considered an area of low or no noise impact, where most or all land uses are considered to be compatible. From 65 to 75 dB DNL is an area of increased noise impact in which some land use controls are required. Finally, the 75 dB DNL and greater noise zone is the area most affected by noise and requires the greatest degree of land use control.

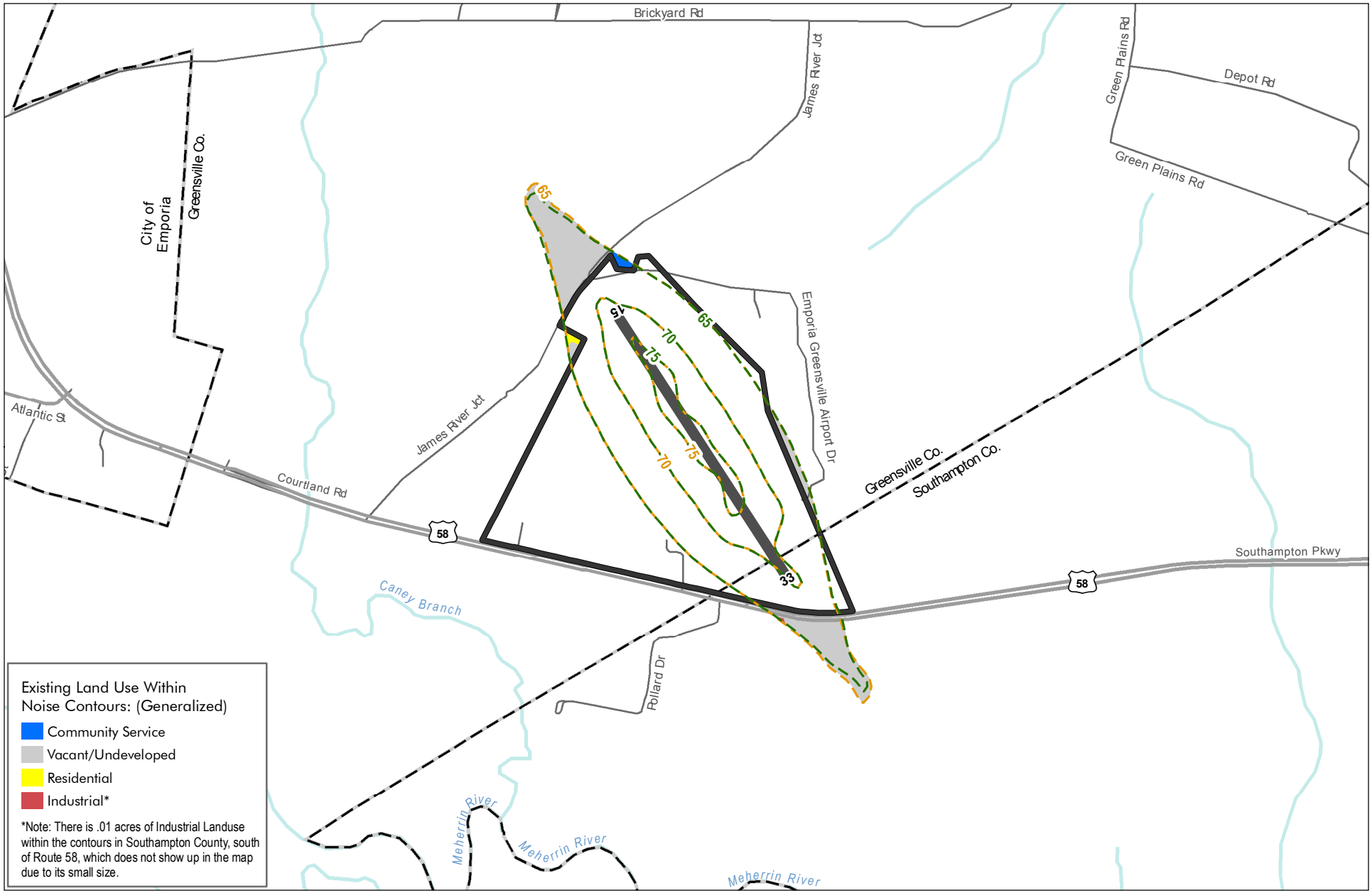
As noted previously, the existing noise contours at Emporia-Greensville do not extend beyond the airport boundary. The modeled 65 dB DNL and greater noise zone under Alternative 1, not including airport property, covers approximately 42 acres under Scenario 1 and 46 acres under Scenario 2 (see Figure 3-16). Approximately 41.0 acres (98.1 percent) of the land uses under Scenario 1 and 44.8 acres (98.2 percent) under Scenario 2 would be considered compatible with FAR Part 150 Program land use recommendations. These include large tracts of vacant or undeveloped lands, including agriculture and forestland/open space, a small tract of industrial land use, and a community church. The community church would be considered compatible with FAR Part 150 Program land use recommendations if sound attenuation is implemented; a noise level reduction of 25 dB would be needed to meet the FAR Part 150 recommendations.

If Alternative 1, Scenario 1, is chosen, approximately 0.8 acre of land (designated as residential land use) within the modeled noise zones would not be considered compatible under FAR Part 150 Program land use recommendations. This represents 1.9 percent of the total land within the modeled noise zones under Scenario 1. If Alternative 1, Scenario 2, is chosen, 0.8 acre of land would not be considered compatible. Incompatible areas would be composed of residential properties located north-northwest of Runway 15 in Greensville County (see Table 3-25).

3.6.2.2 Land Use Compatibility Impact Conclusion

Based upon the land use compatibility analysis and the compatibility with local land use controls, there would be no significant impact to land use as a result of implementation of Alternative 1, Scenario 1 or 2. Emporia-Greensville is an existing, active airfield. While the increase of 0.8 acre of incompatible residential land use (per compatibility recommendations) in the area immediately adjacent to the airport property would be considered a negative impact, it would not be considered significant given the small size of the area, the aircraft activity, and the general noise environment already present at Emporia-Greensville.

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Land Use Emporia-Greensville Regional Airport 3 and 3-5Plane Scheme.mxd



Source: ESRI 2010; Southampton County, 2012; Greensville County, 2008.

Noise Contour (dB) Alternative 1 Scenario 1 (3 Plane Pattern Only)
Noise Contour (dB) Alternative 1 Scenario 2 (3- and 5 Plane Patterns)
Active Runway
Emporia-Greensville Regional Airport
County Boundary
Major Highway
Local Street

Figure 3-16
Modeled Noise Exposure Contours with Existing Land Uses
Alternative 1 Scenarios 1 and 2
Emporia-Greensville Regional Airport

N
0 0.25 0.5
Miles

Table 3-25 Land Uses within Noise Zones under Alternative 1 at Emporia-Greensville Regional Airport (in Acres)

Generalized Land Use[1]	65 to 70 dB DNL	70 to 75 dB DNL	Greater than 75 dB DNL	Total
Scenario 1: Three-Plane Scheme				
Residential[2]	0.8	0.0	0.0	0.8
Public Assembly	1.1	0.0	0.0	1.1
Schools and Hospitals	0.0	0.0	0.0	0.0
Manufacturing	0.1	0.0	0.0	0.1
Parks	0.0	0.0	0.0	0.0
Business Services	0.0	0.0	0.0	0.0
Vacant/Undeveloped	39.8	0.0	0.0	39.8
Total	**41.8**	**0.0**	**0.0**	**41.8**
Scenario 2: Three- and Five-Plane Scheme				
Residential[2]	0.8	0.0	0.0	0.8
Public Assembly	1.2	0.0	0.0	1.2
Schools and Hospitals	0.0	0.0	0.0	0.0
Manufacturing	0.1	0.0	0.0	0.1
Parks	0.0	0.0	0.0	0.0
Business Services	0.0	0.0	0.0	0.0
Vacant/Undeveloped	43.5	0.0	0.0	43.5
Total	**45.6**	**0.0**	**0.0**	**45.6**

Source: City of Emporia 2008, Greensville County 2008, Southampton County 2012

Note:

1 Generalized land use classifications represent broad land use patterns and relationships between uses. As applied in this EA, generalized land use classifications concentrate land use subclasses or similar land use classifications. For example, 'Residential' includes land use subclasses such as single family, multi-family, and manufactured housing. Additionally, 'Vacant/Undeveloped' includes similar land use classifications of agricultural, vacant land, and forested and conservation lands.

2 Residential land uses are not considered compatible with FAR Part 150 Program land use recommendations in greater than 65 dB DNL noise zones.

3.6.3 Existing Land Use at Wallops Flight Facility

The study area for this analysis at WFF Main Base includes the area inside of the modeled 65 dB DNL and greater noise contour. To provide context, Accomack County is described in this section.

3.6.3.1 Land Use and Plans

WFF Main Base is located in the northeastern portion of Accomack County, which is on the Delmarva Peninsula and part of the Eastern Shore of Virginia. WFF Main Base lies less than 4 miles south of the Virginia-Maryland state line and approximately 5 miles west of the Town of Chincoteague, Virginia. The Mainland and the Wallops Island Launch Site are located approximately 7 miles south of WFF Main Base.

Accomack County and the Town of Chincoteague are part of the Accomack-Northampton Planning District Commission's jurisdiction, which represents the local governments of Accomack and Northampton counties and the Town of Chincoteague, the largest town in the planning district (A-NPDC n.d.). The

commission is a regional entity that supports local planning and development efforts and provides technical assistance on behalf of Virginia (A-NPDC n.d.).

Accomack County is composed of small towns and villages interspersed throughout a rural landscape. The county is predominantly undeveloped, with large concentrations of farms, forests, and wetlands. Agriculture is a dominant land use in the county and a major element of its economy.

Residential land uses in Accomack County are predominantly concentrated in and around population centers where public facilities and services are provided. In a recent trend, however, residential land uses have become more dispersed; the population has been settling on isolated lots rather than in compact villages and hamlets (Accomack County 2008). The largest population center in Accomack County is the Town of Chincoteague, located on Chincoteague Island. The Town of Chincoteague has a population of 2,941 people (U.S. Census Bureau, 2010 Census).Commercial and industrial land uses in Accomack County are primarily sited adjacent to Route 13, the Eastern Shore's primary route for local and through traffic.

Public park facilities and recreation centers are limited in Accomack County. Most of these sites are associated with educational institutions, and public use of them is limited. Accomack County has only two county-owned parks: Wayside Park, along Route 13 near the Town of Parksley, and Wallops Park, within the Wallops Research Park. In addition, the county has an agreement with the Town of Wachapreague for use of Town Park (Accomack County 2008). Other types of public recreation available in the county include beach access at Assateague National Seashore and the barrier islands, and public wildlife areas at the Chincoteague National Wildlife Refuge, Parkers Marsh Natural Area, and Saxis Wildlife Management Area.

WFF Main Base consists of 1,946 acres. Land uses at the facility include offices, laboratories, maintenance and service facilities, a NASA-owned airport, air traffic control facilities, hangars, runways, and aircraft maintenance and ground support buildings. In addition, WFF Main Base contains water and sewage treatment plants, rocket motor storage magazines, Navy administration and housing as well as USCG housing, and other miscellaneous structures. WFF Main Base is zoned for industrial use by Accomack County. Figure 3-17 illustrates existing generalized land uses surrounding WFF Main Base, which primarily include residential, commercial/business services, and vacant/undeveloped uses (including agricultural land, forested land, and conservation land). The acreages of each land use area within the existing noise zones are shown in Table 3-26.

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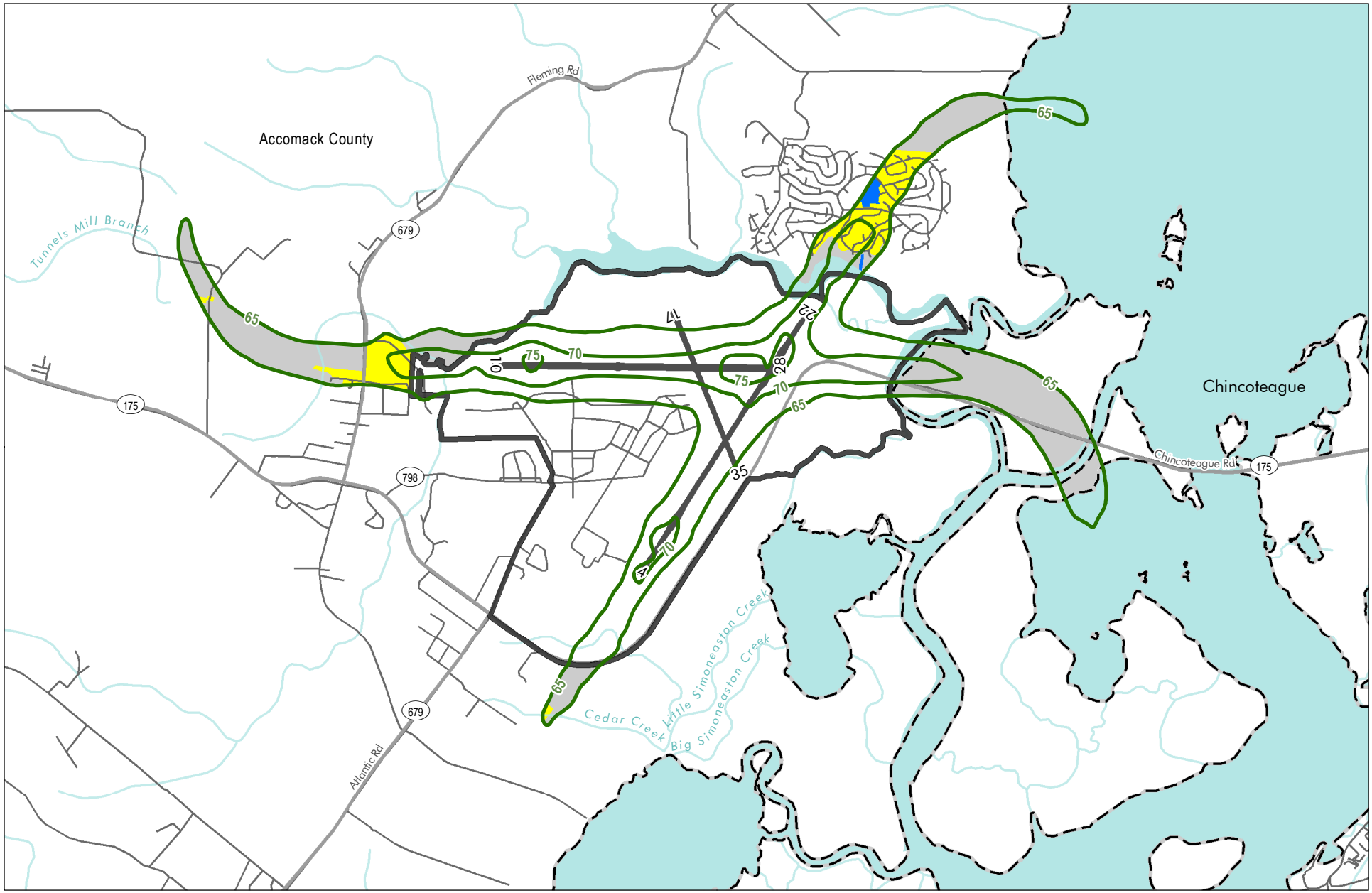

Source: ESRI 2010; USGS NLCD 2006.

- Existing Noise Contour (dB)
- Active Runway
- Wallops Flight Facility
- Major Highway
- Local Street
- Waterbody

Existing Land Uses Within Noise Contours (Generalized)

- Commercial
- Vacant/Undeveloped
- Residential

Figure 3-17

Land Uses in the Vicinity of

Wallops Flight Facility

N

0 0.25 0.5

Miles

Table 3-26 Land Uses within the Existing Noise Zones, Wallops Flight Facility Main Base (in Acres)

Generalized Land Use[1]	Noise Zones			Total
	65 to 70 dB DNL	70 to 75 dB DNL	Greater than 75 dB DNL	
Residential	102.7	23.0	0.0	125.7
Public Assembly	0.0	0.0	0.0	0.0
Schools and Hospitals	0.0	0.0	0.0	0.0
Manufacturing	0.0	0.0	0.0	0.0
Parks	0.0	0.0	0.0	0.0
Business Services	7.4	0.0	0.0	7.4
Vacant/Undeveloped	426.1	40.6	0.0	466.7
Total	**536.2**	**63.6**	**0.0**	**599.8**

Note:
[1] Generalized land use classifications represent broad land use patterns and relationships between uses. As applied in this EA, generalized land use classifications concentrate land use subclasses or similar land use classifications. For example, 'Residential' includes land use subclasses such as single family, multi-family, and manufactured housing. Additionally, 'Vacant/Undeveloped' includes similar land use classifications of agricultural, vacant land, and forested and conservation lands.

Applying the FAR Part 150 Program recommendations for land use compatibility, there would be 125.7 acres under existing conditions at WFF Main Base that would not be considered compatible given the current noise conditions. These include areas to the north in the Chincoteague Bay Trails End development and to the west along Virginia State Route 679.

Chincoteague Bay Trails End is located to the northeast of WFF Main Base. This development is zoned agricultural by Accomack County; however, it is actually a private campground and waterfront resort and is considered residential for the purposes of this analysis. The property is approximately 750 acres that includes over 2,500 deeded lots (Chincoteague Trails End Association 2012). Individual lots are privately owned; owners are allowed to construct permanent camper additions, room enclosures, and cottages (Chincoteague Trails End Association 2012). Communal facilities at Chincoteague Bay Trails End include recreational amenities, such as a marina, boat ramps, and boat slips.

The Wallops Research Park, a technology complex that is home to aerospace and aviation operations, is located southeast of WFF Main Base. Use of this industrial park is divided amongst NASA, Accomack County, and the Marine Science Consortium. The following land uses are present at this facility: research and development/industrial, aviation, gateway research and development/industrial, and an Accomack County recreational park. The Village of Wattsville is also located to the southwest of WFF Main Base. Associated with this village are rural residential and general commercial land uses. Businesses in this area include fuel stations, retail stores, markets, and restaurants.

Comprehensive Plans

The Commonwealth of Virginia requires that every municipality adopt a comprehensive plan for "guiding and accomplishing a coordinated, adjusted, and harmonious development of the territory" (Commonwealth of Virginia 2007).

The current version of the Accomack County Comprehensive Plan, *Respecting the Past, Creating the Future: Accomack County Comprehensive Plan,* was adopted in 2008. It is a long-range plan that looks approximately 20 to 30 years into the future. In general, it focuses on strategic growth in and around existing communities and away from the shoreline and preservation of farmland to conserve important agricultural and natural resources (Accomack County 2008). According to the comprehensive plan, future development around WFF Main Base is expected to remain predominantly agricultural and industrial. However, the plan designates a "Village Development Area" on lands west of WFF Main Base, adjacent to the Wallops Research Park. This "Village Development Area" represents an expansion of existing residential and general commercial developments within the Village of Wattsville. Future development is expected to take the form of coordinated, mixed-use projects that fit with the existing, traditional character of the county's historic settlements (Accomack County 2008).

3.6.3.2 National Wildlife Refuges

Positioned east of WFF Main Base, the Wallops Island National Wildlife Refuge consists of approximately 373 acres and is composed mainly of salt marsh and woodlands. Under the jurisdiction of USFWS and administered by the staff at Chincoteague National Wildlife Refuge, activities at Wallops Island National Wildlife Refuge include preserving and enhancing habitat for upland and wetland-dependent migratory bird species (USFWS n.d. [a]). The Wallops Island National Wildlife Refuge is generally not open for use by the general public; however, the Chincoteague National Wildlife Refuge offers preplanned or arranged educational and recreational opportunities for the general public. In addition, hunting of white-tailed deer (*Odocoileus virginianus*) is available to the public through a lottery system. The Chincoteague National Wildlife Refuge is located on the Virginia side of Assateague Island and east of Wallops Island National Wildlife Refuge, outside of the study area. This refuge consists of more than 14,000 acres of beaches, dunes, marshes, and maritime forest that provide habitat for migratory birds, and it is open to the general public year round (USFWS n.d. [b]).

3.6.3.3 Virginia Coastal Zone Management

This section discusses coastal zone management at WFF Main Base. The study area for coastal zone management at WFF Main Base is Accomack County. Accomack County is included in the Commonwealth of Virginia's coastal zone, as defined by the Virginia Coastal Zone Management Program (VDEQ 2012). Although federal lands are excluded from Virginia's coastal management area, activities on federal lands with any reasonably foreseeable effects on Virginia's coastal resources must be consistent with the enforceable policies of the Virginia Coastal Zone Management Program (see Appendix A, Agency Consultation).

The Navy submitted a Coastal Consistency Determination for this proposed project to the VDEQ for concurrence on July 6, 2012**.** A response from VDEQ was not received in time for inclusion in the Draft EA; however, VDEQ's response will be included in the Final EA.

3.6.4 Impacts on Land Use at Wallops Flight Facility

This section discusses potential impacts and an overview of compatibility with land uses surrounding the airfield under Alternative 2 for both Scenarios 1 and 2, as well as discusses the compatibility of the proposed action with land use controls, including comprehensive plans and recreation and conservation lands, and presents the land use impact conclusion.

3.6.4.1 Impacts on Land Use and Plans

Potential land use impacts resulting from the proposed action are categorized as either direct or indirect. Direct land use impacts are those associated with the acquisition of property for site development and any subsequent permanent change in existing land use. Indirect land use impacts are related to the exposure of existing or potential future land uses to noise zones, using the FAR Part 150 Noise Compatibility Program as guidance for determining compatibility.

Implementation of Alternative 2 would not require purchase of property by the Navy. No property would be permanently converted to military use in Accomack County, thereby maintaining the existing land uses and consistency with the county's comprehensive plan. Existing ground activities at WFF Main Base would be expected to continue to occur in their designated land use areas.

Indirect land use impacts would be related to the noise effects of the Navy's FCLP operations at WFF Main Base on surrounding land uses. The FAR Part 150 Program provides guidance on land use compatibility around public-use airports.

For land use planning purposes, noise contours are divided into noise zones. Less than 65 dB DNL is generally considered an area of low or no noise impact, where most or all land uses are considered to be compatible. From 65 to 75 dB DNL is an area of increased noise impact, in which some land use controls are required. Finally, the 75 dB DNL and greater noise zone is the area most affected by noise and requires the greatest degree of land use control.

The modeled 65 dB DNL and greater noise zones under existing conditions at WFF Main Base, not including WFF property, cover 599.8 acres. Under Alternative 2, the modeled 65 dB DNL and greater noise zones cover approximately 813 acres under Scenario 1 and 756 acres under Scenario 2 (see Figure 3-18 and Figure 3-19, respectively).

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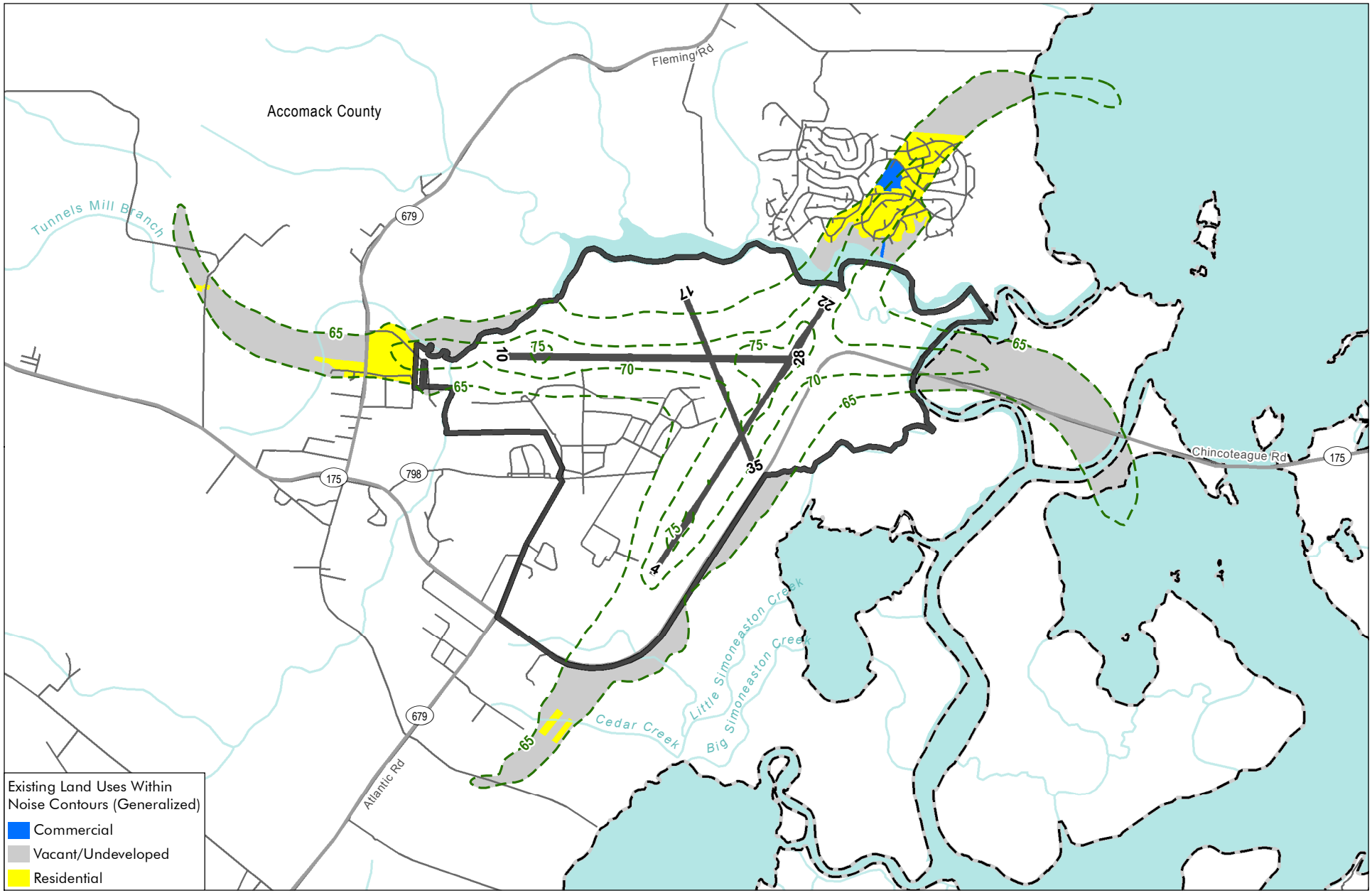

Source: ESRI 2010

Noise Contour (dB)
Active Runway
Wallops Flight Facility
Major Highway
Local Street

Figure 3-18
Modeled Noise Exposure Contours with Existing Land Uses
Alternative 2 Scenario 1
Wallops Flight Facility

N

0 0.25 0.5
Miles

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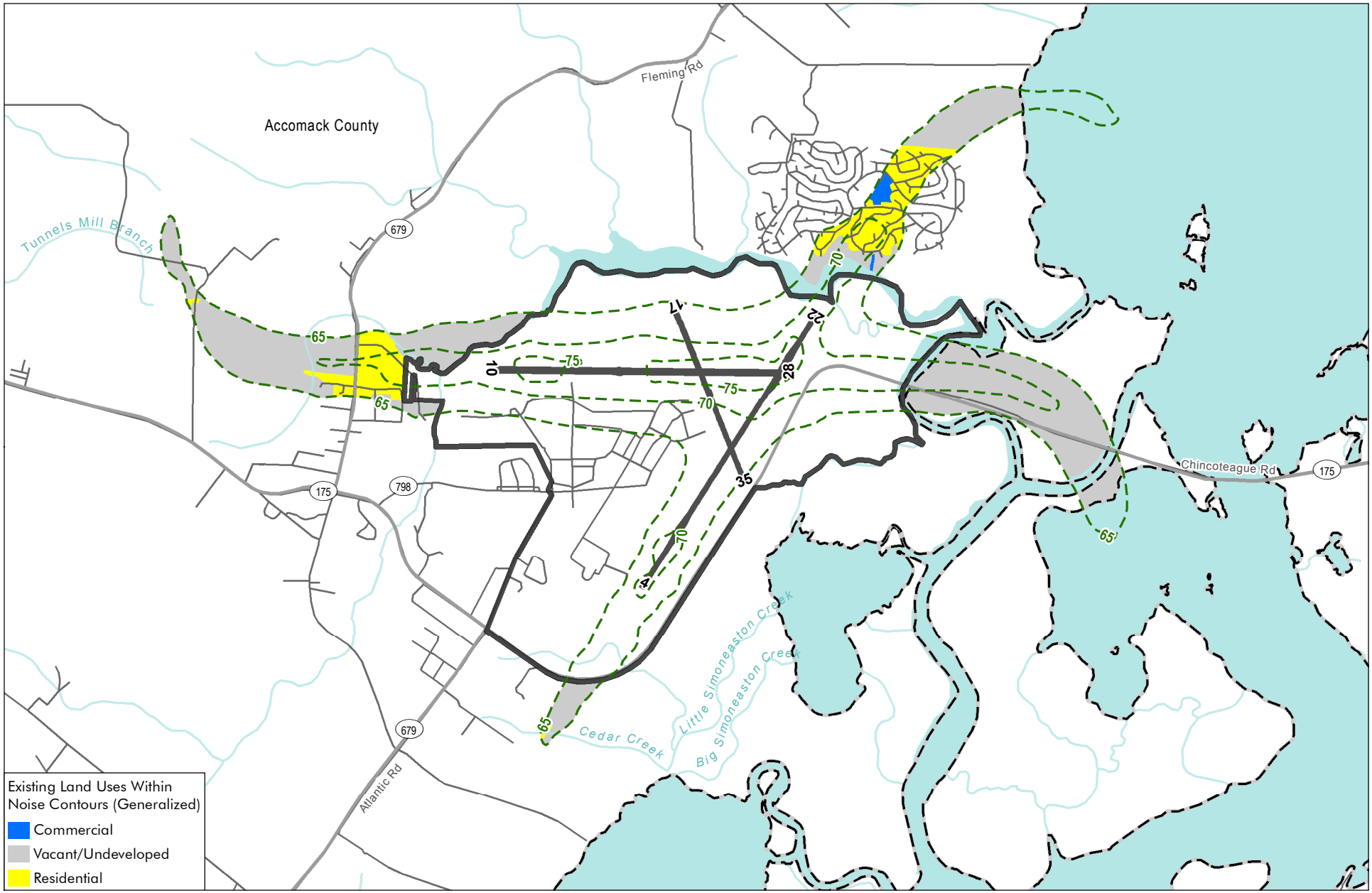

Source: ESRI 2010

Noise Contour (dB)
Active Runway
Wallops Flight Facility
Major Highway
Local Street

Figure 3-19

Modeled Noise Exposure Contours with Existing Land Uses
Alternative 2 Scenario 2
Wallops Flight Facility

N

0 0.25 0.5
Miles

Approximately 659 acres (81.1 percent) of land uses under Scenario 1 and 608 acres (80.4 percent) of land uses under Scenario 2 would be considered compatible with FAR Part 150 Program land use recommendations. These include large tracts of vacant or undeveloped lands, including agricultural and forestland/open space, industrial land uses, and business services.

If Alternative 2, Scenario 1, is chosen, approximately 154 acres (18.9 percent) of the land (designated as residential land use) within the modeled noise zones would not be considered compatible with FAR Part 150 Program land use recommendations. If Alternative 2, Scenario 2, is chosen, approximately 148 acres (19.6 percent) would not be considered compatible (see Table 3-27). Incompatible areas would primarily be composed of temporary and permanent residential properties; however, the majority of the acreage that could be considered incompatible would already be within the 65 dB DNL noise contour under existing conditions. As noted in Table 3-26, the existing conditions at WFF Main Base include 125.7 acres of lands considered residential that are not considered compatible with land use recommendations in the FAR Part 150 Program. Therefore, under Alternative 2 at WFF, there would be an additional 28 acres under Scenario 1 and 22.5 acres under Scenario 2 of incompatible residential lands (see Table 3-27).

3.6.4.2 National Wildlife Refuges

The Wallops Island National Wildlife Refuge is located southeast of WFF Main Base, and under Alternative 2, Scenario 1, the 65 dB DNL noise zone extends over a portion of the refuge. The Wallops Island National Wildlife Refuge is not utilized extensively by the public, with the primary use being limited hunting activities through a lottery system. Public usage of the refuge would not be significantly impacted by the proposed action.

3.6.4.3 Land Use Compatibility Impact Conclusion

Based upon the land use compatibility analysis and the compatibility with local land use controls, there would be no significant impact to land use as a result of implementation of Alternative 2, Scenario 1 or 2. WFF Main Base is an existing, active airfield that has 125.7 acres of residential lands within the 65 dB DNL or greater noise contour. The increase in the noise environment under Alternative 2 would result in an increase of 28 acres and 22.5 acres not considered compatible with land use recommendations. This would be located in areas immediately adjacent to the airport property and would be considered a negative impact; however, it would not be considered significant given the limited increase in the size of the noise contour over baseline conditions at WFF Main Base.

Table 3-27 Land Uses within Noise Zones under Alternative 2 at Wallops Flight Facility (in Acres)

Generalized Land Use[1]	Existing Environment 65 to 70 dB DNL	70 to 75 dB DNL	Greater than 75 dB DNL	Total	Projected Conditions 65 to 70 dB DNL	70 to 75 dB DNL	Greater than 75 dB DNL	Total
Scenario 1: Runway 04/22								
Residential[2]	102.7	23.0	0.0	125.7	109.0 (+6.3)	44.7 (+21.7)	0.0 (0.0)	153.7 (+28.0)
Public Assembly	0.0	0.0	0.0	0.0	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Schools and Hospitals	0.0	0.0	0.0	0.0	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Manufacturing	0.0	0.0	0.0	0.0	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Parks	0.0	0.0	0.0	0.0	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Business Services	7.4	0.0	0.0	7.4	7.1 (-0.3)	2.3 (+2.3)	0.0 (0.0)	9.4 (+2.0)
Vacant/Undeveloped	426.1	40.6	0.0	466.7	602.1 (+176.0)	47.5 (+6.9)	0.0 (0.0)	649.6 (+182.9)
Total	**536.2**	**63.6**	**0.0**	**599.8**	**718.2 (+182.0)**	**94.5 (+30.9)**	**0.0 (0.0)**	**812.7 (+212.9)**
Scenario 2: Runway 10/28								
Residential[2]	102.7	23.0	0.0	125.7	118.5 (+15.8)	29.7 (+6.7)	0.0 (0.0)	148.2 (+22.5)
Public Assembly	0.0	0.0	0.0	0.0	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Schools and Hospitals	0.0	0.0	0.0	0.0	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Manufacturing	0.0	0.0	0.0	0.0	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Parks	0.0	0.0	0.0	0.0	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Business Services	7.4	0.0	0.0	7.4	8.2 (+0.8)	0.0 (0.0)	0.0 (0.0)	8.2 (+0.8)
Vacant/Undeveloped	426.1	40.6	0.0	466.7	511.7 (+85.6)	88.1 (+47.5)	0.0 (0.0)	599.8 (+133.1)
Total	**536.2**	**63.6**	**0.0**	**599.8**	**638.4 (+102.2)**	**117.8 (+54.2)**	**0.0 (0.0)**	**756.2 (+156.4)**

Source: Accomack County 2011

Notes:
1 Generalized land use classifications represent broad land use patterns and relationships between uses. As applied in this EA, generalized land use classifications concentrate land use subclasses or similar land use classifications. For example, 'Residential' includes land use subclasses such as single family, multi-family, and manufactured housing. Additionally, 'Vacant/Undeveloped' includes similar land use classifications of agricultural, vacant land, and forested and conservation lands.
2 Residential land uses are not considered compatible with FAR Part 150 Program land use recommendations in greater than 65 dB DNL noise zones.

3.7 Infrastructure and Utilities

The airfield improvements discussed in this EA relate to utilities and concrete pads for equipment. There would be no need for upgrades to the water supply or wastewater treatment system associated with the proposed action; therefore, water supply and wastewater treatment utility infrastructure are not included in this analysis. The study area for this analysis includes the area within the airport property boundaries because this would be where infrastructure and utility upgrades would be needed.

3.7.1 Existing Infrastructure and Utilities at Emporia-Greensville Regional Airport and Wallops Flight Facility

Telephone service to Emporia-Greensville is provided by Verizon Communications, Inc., and can be accessed either at the existing airfield buildings or along James River Junction Road. Mecklenburg Electric Cooperative supplies the electricity to Emporia-Greensville. Austin Energy, a hired contractor, maintains the lighting at the airport, with the exception of minor maintenance that is completed by Vick's Aviation. Electrical service at Emporia-Greensville is available at each end of Runway 15/33.

Telephone service to WFF Main Base is provided by Verizon Communications, Inc. In addition, wireless telephone service is provided by Siemens wherever a landline is unavailable or impractical. A&N Electric Cooperative supplies electricity to WFF Main Base from the Wattsville substation through two aerial feeders. At the WFF Main Base main gate, the power lines transition underground into the facility's main switching station, from which electricity is distributed throughout the facility. The majority of the electrical cables are installed underground and are protected by concrete casing (NASA WFF 2008).

3.7.2 Impacts on Infrastructure and Utilities at Emporia-Greensville Regional Airport and Wallops Flight Facility

Under the proposed action, no aircraft or squadron personnel would be permanently stationed or homebased at Emporia-Greensville or WFF Main Base, and there would be no construction of personnel support facilities for Navy personnel under either alternative. In a detachment situation at WFF, personnel would be supported in existing Navy housing and in local motels and hotels with existing available utility capacity. For each alternative, telephone service would be needed for LSO workstations, and electricity would be needed for the LSO workstation, IFLOLS, MOVLAS, simulated carrier box lighting, lighted windsock/tetrahedron, and abeam position light. Lines would be entrenched from the point of connection to the existing grid to each piece of equipment. No trenching or infrastructure upgrades would occur outside of the airport property boundaries.

At Emporia-Greensville, telephone service would continue to be provided by Verizon Communications, Inc., and the electricity would continue to be supplied by Mecklenburg Electric Cooperative. For the LSO station on Runway 15, the telephone and electrical lines would be entrenched from an existing line along the James River Junction, the public road along the western side of the airfield

boundary (see Figure 2-11). For the LSO station on Runway 33, the telephone line would be entrenched from the airport hangar, and the electrical line would be entrenched from an existing electrical power vault near the airport's administration building (see Figure 2-12).

At WFF Main Base, telephone service would continue to be provided by Verizon Communications, Inc., or Siemens, as appropriate, and A&N Electric Cooperative would continue to supply the electricity. Phone lines would be entrenched from the point of their connection to each LSO workstation, and electrical lines would be entrenched from existing connections to the A&N Electric Cooperative feeder.

The new telephone and electrical lines at Emporia-Greensville or WFF Main Base would continue to operate within existing capacity; therefore, there would be no significant impact on telephone services.

3.8 Visual Landscape: Light Emissions and Visual Impacts

The study area for the visual landscape is the viewshed of the airport properties at Emporia-Greensville and WFF Main Base.

3.8.1 Existing Visual Landscape at Emporia-Greensville Regional Airport and Wallops Flight Facility

Emporia-Greensville is adjacent to a primary highway (U.S. Route 58) traversing a rural area of Virginia. The visual landscape is flat and dominated by farm fields and stands of woods. U.S. Route 58 does not have streetlights in this area. The airport is lit with aircraft navigational lights, including runway threshold and edge lights, runway end identifier lights at both ends of Runway 15/33, and several red obstruction lights at various points. Emporia-Greensville currently experiences an estimated 2,320 annual aircraft operations, including both propeller aircraft and military helicopter operations.

WFF Main Base is in a flat, rural area. The visual landscape is composed of farm fields, stands of woods, and clusters of residential developments. There are businesses along a few primary roads, larger commercial entities such as some chain grocery stores and restaurants along U.S. Route 13, and smaller businesses such as locally owned restaurants along Virginia State Route 175 (Chincoteague Road). WFF Main Base is lit with aircraft navigational lights and currently experiences an estimated 13,074 annual aircraft operations, primarily including propeller and jet aircraft.

3.8.2 Impacts on the Visual Landscape at Emporia-Greensville Regional Airport and Wallops Flight Facility

Some new infrastructure would be installed at Emporia-Greensville or WFF Main Base, including the installation of concrete pads with Navy equipment placed on them, the painting of a simulated carrier deck (with associated flush lighting installed along it) at the ends of the runways, and the placement of an LSO workstation at the end of each runway. These airfield-associated modifications would be consistent with the current visual setting of both airfields.

The communities surrounding both Emporia-Greensville and WFF Main Base are generally accustomed to seeing aircraft operating in the area, as both communities are near active airfields. At Emporia-Greensville, the community is generally accustomed to seeing both propeller aircraft and military helicopter operations. At WFF Main Base, E-2/C-2 aircraft currently operate at the airfield, and the Navy's proposed action would increase the number of operations. A portion of these operations would take place after sunset. Therefore, although there would be an increase in the total number of operations, the Navy conducting temporary, intermittent FCLP with E-2/C-2 aircraft would not be a significant impact.

3.9 Geology, Topography, and Soils

The study area for this analysis includes the area within the airport property boundaries, as all construction activities would occur within this area.

3.9.1 Existing Geology, Topography, and Soils at Emporia-Greensville Regional Airport and Wallops Flight Facility

Both Emporia-Greensville and WFF Main Base are located within subdivisions of the Virginia Coastal Plain Physiographic Province. Emporia-Greensville is located within the Southern Coastal Plain, and WFF Main Base is located within the Outer Coastal Plan (Wilson and Tuberville 2003). The entire Virginia Coastal Plain consists of a series of terraces sloping downward toward the coast and is generally characterized by low topographic relief, extensive marshes, and large, tidally influenced rivers. Elevation within the Virginia Coastal Plain ranges from sea level to approximately 250 feet mean sea level (Bailey 1999).

Although the overall geological features of Emporia-Greensville and WFF Main Base are similar, the topography and soil characteristics are slightly different and discussed separately.

Emporia-Greensville

Topography at Emporia-Greensville is flat to gently sloping, with elevations ranging from approximately 125 feet to 147 feet mean sea level (Browning and Chaffman 2011).

Emporia-Greensville is located within the Bacons Castle Formation, which consists of gray, yellowish-orange, and reddish-brown sand, gravel, silt, and clay (USGS 2012 n.d. [a]). Seventeen soil types occur at Emporia-Greensville (USDA NRCS n.d. [a], n.d. [b]). More than 50 percent of the soils, including most of the area surrounding the runway, is identified as Udorthents, smoothed, 0 percent to 25 percent slopes, a non-hydric soil. Four of the 17 soil types are classified as hydric soils. Hydric soils are identified within approximately 13 percent of the airport property (USDA NRCS n.d. [c]).

Wallops Flight Facility

The majority of WFF Main Base is located on a high terrace landform with elevations ranging from 25 to 40 feet mean sea level (NASA 2011c). The

northern and eastern portions are located on low terraces and tidal marshes; elevations in these areas range from 0 to 25 feet mean sea level.

WFF Main Base occurs within three geologic units: Omar Formation—Accomack Member, Marsh and Intertidal Mud Deposits, and Joynes Neck Sand (USGS 2012), which are all generally composed of sedimentary deposits of sand, gravel, silt, clay, and peat. Eleven soil types occur at WFF Main Base (USDA NRCS n.d. [d]). More than 89 percent of the soils at the facility are identified as three soil types: Bojac fine sandy loam, 0 percent to 2 percent slopes; Molena loamy sand, 6 percent to 35 percent slopes; and Chincoteague silt loam, 0 percent to 1 percent slopes, frequently flooded. The majority of the runway area occurs on Bojac fine sandy loam. Five of the 11 soil types are classified as hydric soils, which are identified in approximately 19 percent of the facility property (USDA NRCS n.d. [e]).

3.9.2 Impacts on Geology, Topography, and Soils at Emporia-Greensville Regional Airport and Wallops Flight Facility

At Emporia-Greensville or WFF Main Base, no deep excavations that would impact underlying geology would be required for construction of the concrete pads and asphalt storage area or for installation of underground utility lines. Therefore, there would be no significant impact on geology.

All construction at Emporia-Greensville or WFF Main Base would take place in areas with little to no topographic relief. Some minor excavations would be required for placement of underground utility lines; however, elevations in the area would remain generally unchanged. Therefore, there would be no significant impact on topography.

Minor construction at Emporia-Greensville or WFF Main Base could expose soils to wind and stormwater erosion, compaction, and rutting. These impacts would be minimized, or avoided altogether, by using standard soil erosion and sedimentation controls, best management practices, and appropriate revegetation techniques upon completion of construction. Therefore, there would be no significant impact on soil resources.

3.10 Water Resources

3.10.1 Existing Water Resources at Emporia-Greensville Regional Airport

The study area for surface waters, floodplains, wetlands, and stormwater management at Emporia-Greensville is the area contained within the airport property boundary. The proposed action would not have an impact on wild and scenic rivers; therefore, these resource areas are not included in this analysis.

3.10.1.1 Surface Waters

No surface waters exist within the boundary of Emporia-Greensville (County of Greensville, Virginia 2008). Drainage from the airport primarily occurs through

overland sheet flow and roadside drainage ditches (Mill Creek Environmental Consultants, Ltd., 2011). Water draining from the airport eventually flows into Caney Branch, approximately 0.3 mile to the southwest, and Three Creek, approximately 1.5 miles to the north.

3.10.1.2 Floodplains

The southern portion of Emporia-Greensville is located in a zone with a 1 percent annual chance of flooding—i.e., within the 100-year floodplain (Figure 3-20).

3.10.1.3 Wetlands

Wetlands at Emporia-Greensville were identified using the USFWS National Wetlands Inventory (USFWS 2011a).

Five wetlands, encompassing approximately 5.2 acres, have been identified by the National Wetlands Inventory at the airport (see Figure 3-20 and Table 3-28). Approximately 1 acre has been identified as freshwater emergent wetland. This wetland type is typically dominated by herbaceous (i.e., non-woody) vegetation and is usually dominated by perennial plants that are present for most of the growing season in most years (USFWS 2011c). Approximately 4.2 acres have been identified as freshwater forested wetland. This wetland type is characterized by woody vegetation that is at least 6 meters tall (USFWS 2011c). Most of the wetlands occur along the periphery of the airport, but two small wetland areas occur in the forested area east of the runway (Figure 3-20). The Navy conducted an initial site visit to Emporia-Greensville on December 30, 2011, followed by meeting with a USACE regulator on April 27, 2012, and August 29, 2012, to review the presence of potential wetlands in the vicinity of the proposed airfield modifications (Block 2012). During the visits, it was determined that no jurisdictional wetlands occur in the vicinity of the proposed airfield modifications.

Table 3-28 Emporia-Greensville Regional Airport National Wetlands Inventory Wetlands

Wetland Type	Acres
Freshwater Emergent Wetland	1.01
Freshwater Forested/Shrub Wetland	4.15
Total	**5.16**

Source: USFWS 2011a

3.10.1.4 Stormwater Management

Emporia-Greensville Regional Airport maintains a Stormwater Pollution Prevention Plan, last updated in October 2009, to ensure that its operations have minimal impact on stormwater quality (Emporia-Greensville Regional Airport 2009). This plan also contains best management practices for construction activities that do not exceed 1 acre. The airport has a Virginia Pollutant Discharge Elimination System permit that allows aircraft operations, storage, fueling, and maintenance.

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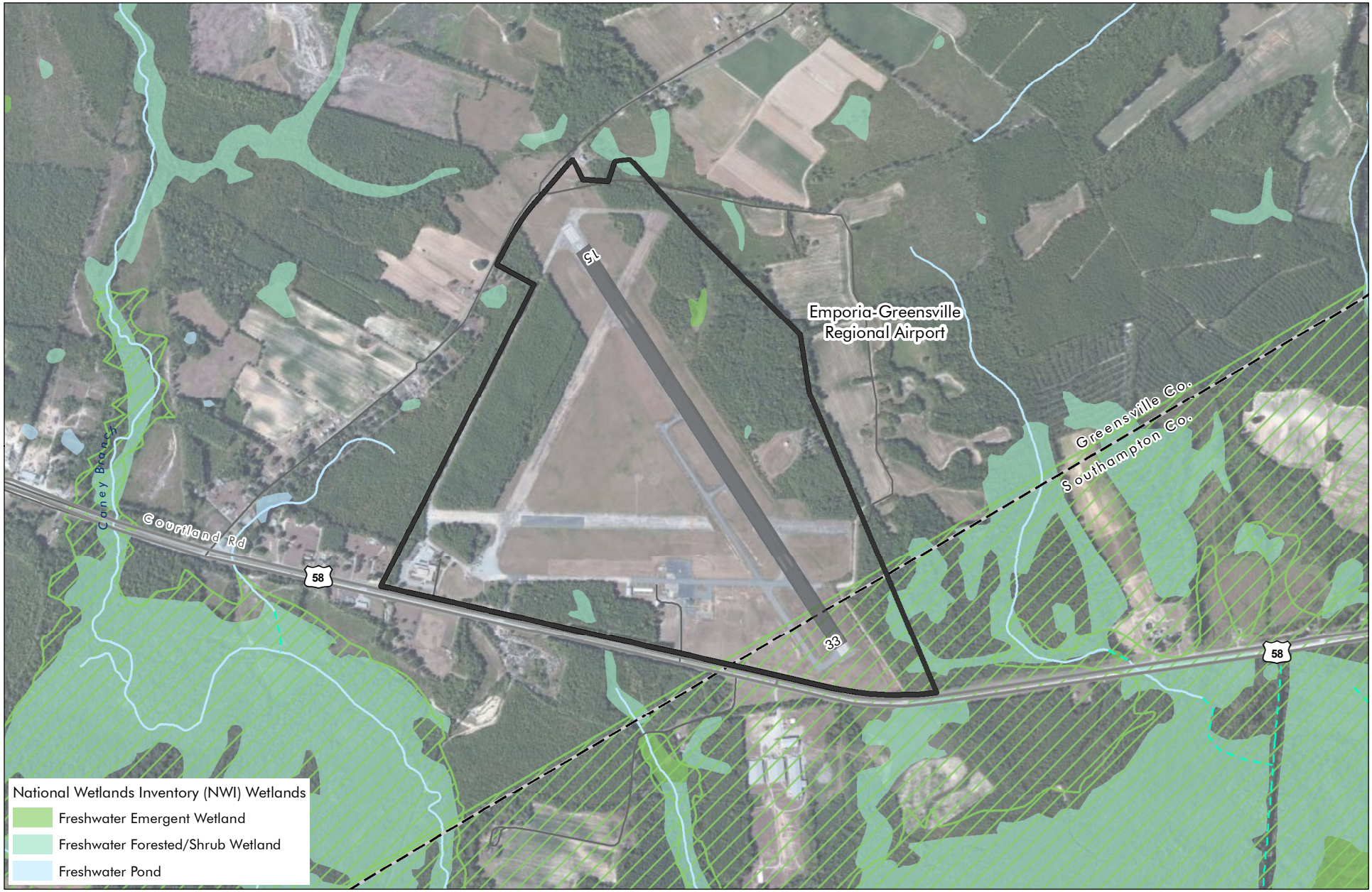

Source: ESRI 2010; Federal Emergency Management Agency 2011; National Hydrography Dataset; USFWS.

Active Runway
Emporia-Greensville Regional Airport
Local Street
Major Highway
Ditch
Stream/River
County Boundary

FEMA Flood Zone
Zone A:
Areas subject to inundation by the 1% annual-chance flood event generally determined using approximate methodologies.

Figure 3-20
Water Resources
Emporia-Greensville Regional Airport

N

0 0.25
Miles

The existing stormwater management system at Emporia-Greensville was installed by the USACE in 1942 (Emporia-Greensville Regional Airport 2004). The system includes a series of catch basins and open ditches that direct runoff away from paved areas to seven stormwater outfalls located along the airport property line (Emporia-Greensville Regional Airport 2009). The receiving waters for the airport include Three Creek to the north and Caney Branch to the west and southwest. Unpaved areas are grassed to prevent erosion.

3.10.2 Impacts on Water Resources at Emporia-Greensville Regional Airport

3.10.2.1 Surface Waters

As stated in Section 3.10.1.1, no surface waters exist within the boundary of Emporia-Greensville. Therefore, under Alternative 1 there would be no direct impacts on surface water from construction of concrete pads or installation of underground utility lines. In order to avoid or minimize potential impacts on water quality from sediment runoff during construction, an Erosion and Sediment Control Plan and best management practices would be incorporated into the construction design and implementation. Because of these minimization measures, no indirect impacts on surface waters would occur. There would be no significant impact on surface waters.

3.10.2.2 Floodplains

Although floodplains are present at Emporia-Greensville, no construction would occur within these floodplains under Alternative 1. Therefore, Alternative 1 would have no direct or indirect impacts on floodplains. There would be no significant impact to floodplains.

3.10.2.3 Wetlands

Under Alternative 1, no new construction is proposed within wetlands (see Figure 3-20). Therefore, there would be no direct impacts on wetlands under Alternative 1. Non-point-source water pollution will be minimized during construction through proper erosion and sediment control measures, including BMPs. Therefore, no indirect impacts on wetlands would occur under Alternative 1. There would be no significant impact to wetlands.

3.10.2.4 Stormwater Management

Under Alternative 1, new impervious surfaces (i.e., concrete pads and the fenced storage area) would be constructed (see Figure 2-11 and Figure 2-12). Construction of the pads and fenced storage area would create approximately 0.02 acre and 0.41 acre, respectively, of new, completely impervious surface, for a total of 0.43 acre of new impervious surface under Alternative 1.

The proposed construction would disturb less than 1 acre; therefore, a storm water construction permit and Stormwater Pollution Prevention Plan would not be required. However, an Erosion and Sediment Control Plan would be necessary because the land disturbance would exceed 10,000 square feet (0.23 acre). As a result, Alternative 1 would have no significant impacts on stormwater.

3.10.3 Existing Water Resources at Wallops Flight Facility

The study area for surface waters, floodplains, wetlands, and stormwater management at WFF Main Base is the area contained within the airport property boundary. The proposed action would not have an impact on wild and scenic rivers, so this resource area is not included in this analysis.

3.10.3.1 Surface Waters

There are approximately 37,840 linear feet of surface waters on WFF Main Base (Figure 3-21). Wattsville Branch traverses the facility west of Runway 10/28. Surface waters on the northern and western portions of the facility flow into Little Mosquito Creek and Wattsville Branch, respectively, while surface waters on the eastern and southern portions of the facility flow to Mosquito Creek, Jenneys Gut, and Simoneaston Bay east of the facility.

3.10.3.2 Floodplains

The northeastern, northern, and northwestern portions of WFF Main Base are located in a zone with a 1 percent annual chance of flooding—i.e., the 100-year floodplain (Figure 3-21).

3.10.3.3 Wetlands

Wetlands at WFF Main Base were identified using the USFWS National Wetlands Inventory (USFWS 2011a). This is consistent with NASA, which also utilizes the National Wetlands Inventory as a baseline reference tool for identifying wetlands. Approximately 376 acres of wetlands, classified into five different wetland types, have been identified by the National Wetlands Inventory at WFF Main Base (Figure 3-21, Table 3-29).

Table 3-29 Wallops Flight Facility Main Base National Wetlands Inventory Wetlands

Wetland Type	Acres
Estuarine and Marine Wetland	331.00
Estuarine and Marine Deepwater	23.16
Freshwater Forested/Shrub Wetland	13.37
Freshwater Emergent Wetland	7.62
Freshwater Pond	0.48
Total	**375.63**

Source: USFWS 2011a

Estuarine and marine wetlands, which typically occur adjacent to deepwater tidal habitats, primarily occur along Wattsville Branch, Little Mosquito Creek, and in the northeastern portion of the facility (USFWS 2011a). The estuarine and marine deepwater habitat is primarily associated with the larger drainages (e.g., Wattsville Branch and Little Mosquito Creek). Freshwater forested/shrub wetlands border some of the smaller drainages in the northern and eastern portions of the facility. Forested wetlands have woody vegetation that is at least 6 meters tall, while shrub wetlands have woody vegetation (e.g., shrubs and saplings) less than 6 meters tall (USFWS 2011a). Freshwater emergent wetlands border some of the smaller drainages in the eastern and southern portions of the

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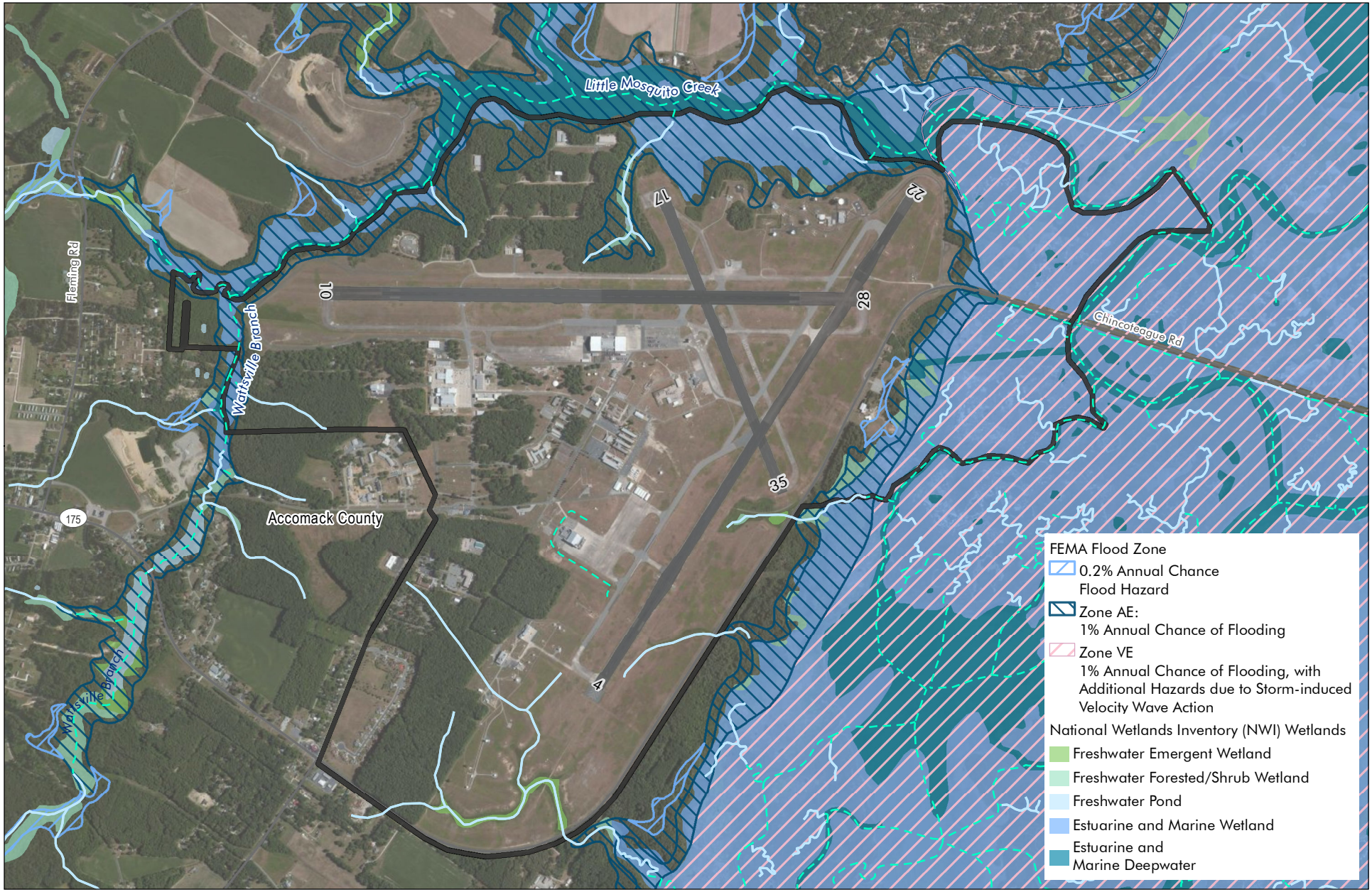

Source: ESRI 2010; Federal Emergency Management Agency 2011; National Hydrography Dataset; USFWS.

Active Runway
Wallops Flight Facility
Major Highway
Local Street
Ditch
Stream/River

Figure 3-21
Water Resources
Wallops Flight Facility

N

0 0.25 0.5
Miles

facility (USFWS 2011a). This wetland type is typically dominated by herbaceous (i.e., non-woody) vegetation and is usually dominated by perennial plants that are present for most of the growing season in most years (USFWS 2011c). Finally, a small (approximately 0.5 acre) freshwater pond has been identified in the extreme western portion of the facility.

At WFF Main Base, black willow (*Salix nigra*) and red maple dominate the forested wetlands, while wax myrtle (*Morella cerifera*), groundsel (*Baccharis halimifolia*), and black cherry (*Prunus serotina*) dominate the shrub wetlands (NASA 2011a, 2008). Emergent wetlands and open water occur along the property boundary in the northern portion of the facility (Fry et al. 2011). Plant species occurring in these wetlands include cattail (*Typha latifolia* and *T. angustifolia*), sedges (*Carex* spp.), rushes (*Juncus* spp.), and cordgrass (*Spartina alterniflora* and *S. patens*) (NASA 2008).

3.10.3.4 Stormwater Management

WFF maintains a Stormwater Pollution Prevention Plan, last updated in April 2009, to ensure that its operations have minimal impact on stormwater quality (NASA 2009). The airfield is covered by a Virginia Pollutant Discharge Elimination System permit that allows industrial activities at WFF that include airfield operations and space vehicle parts manufacturing. No aircraft de-icing is conducted at the facility (NASA 2009).

WFF Main Base has both natural drainage patterns and stormwater swales and drains to intercept and divert flow. The facility contains 12 industrial stormwater outfalls, four non-industrial stormwater outfalls, and one Federally Owned Treatment Works process outfall (NASA 2009). All stormwater from WFF Main Base eventually flows to the Atlantic Ocean. Stormwater drains to Little Mosquito Creek from the northern portion of the facility; Mosquito Creek, Jenneys Gut, and Simoneaston Bay from the eastern and southeastern portions of the facility; and Wattsville Branch on the western and southwestern portions of the facility. Stormwater inlets on WFF Main Base intercept runoff and divert the flow to numerous discharge locations. WFF Main Base outfalls are protected with rip-rap to reduce flow velocity and minimize damage to the receiving waterways. In addition to the stormwater management system, sediment and erosion control measures are implemented to control runoff from construction, demolition, restoration, and site maintenance projects. Current best management practices employed for stormwater management and erosion and sediment control include installing silt fences, utilizing stone construction vehicle entrances, maintaining vegetative buffer strips, and quickly reseeding bare soils.

3.10.4 Impacts on Water Resources at Wallops Flight Facility

3.10.4.1 Surface Waters

Under Alternative 2, there would be no direct impacts on surface waters from construction of concrete pads or installation of underground utility lines. In order to avoid or minimize potential impacts on water quality from sediment runoff during construction, an erosion and sediment control plan and best management practices would be incorporated into the construction design and implementation.

Because of these minimization measures, no indirect impacts on surface waters would occur. There would be no significant impact to surface waters.

3.10.4.2 Floodplains

Although floodplains are present at WFF Main Base, no construction would occur within floodplains under Alternative 2, resulting in no direct or indirect impacts on floodplains. There would be no significant impact to floodplains.

3.10.4.3 Wetlands

Under Alternative 2, no new construction is proposed within wetlands (see Figure 3-21). Therefore, there would be no direct impacts on wetlands under Alternative 2. Non-point-source water pollution, which could result from new surface runoff from the concrete pads carrying contaminants or sediment into nearby wetlands, will be minimized during construction through proper erosion and sediment control measures, including best management practices. Therefore, no indirect impacts on wetlands would occur under Alternative 2. There would be no significant impact to wetlands.

3.10.4.4 Stormwater Management

Under Alternative 2, the proposed airfield modification would include the construction of new impervious surfaces (i.e., concrete pads). Construction of new impervious surfaces under Alternative 2 would result in a maximum addition of 0.05 acre of impervious surface. This acreage may be reduced as a result of some of the pads being placed on existing impervious surface associated with the runway shoulders. The three main runways at WFF Main Base have approximately 79 acres of impervious surfaces, not including the numerous taxiways, aircraft parking aprons, and other concrete or asphalt surfaces associated with them. Therefore, the addition of a maximum of 0.05 acre of impervious surfaces associated with Alternative 2 would increase the overall impervious surface at WFF Main Base by about 0.06 percent.

Because of the small addition of new impervious surfaces, the Navy's proposed action and related construction would not significantly contribute to additional stormwater discharge to surface waters at and surrounding WFF. WFF would not be required to update its Stormwater Pollution Prevention Plan. Under Alternative 2, construction would disturb less than one acre; therefore, a Stormwater Pollution Prevention Plan would not be required. Additionally, where construction-related land disturbance would be less than 10,000 square feet (0.23 acre), the Navy would not be required to submit a formal erosion and sediment control plan. However, the Navy would still coordinate with NASA during design and construction to ensure that appropriate best management practices are implemented. Additionally, the Navy would follow all additional WFF permit requirements and standard operating procedures during construction and maintenance of proposed infrastructure to control/reduce stormwater runoff and minimize potential adverse effects. Therefore, Alternative 2 would have no significant impacts on stormwater.

3.11 Biological Resources

3.11.1 Existing Biological Resources at Emporia-Greensville Regional Airport

The study area for vegetation at Emporia-Greensville is the area contained within the airport property boundary, as this is the location of the proposed airfield modifications. The study area for all wildlife, including federal and state threatened and endangered species, includes the area within the modeled 65 dB DNL and greater noise contour, as potential impacts associated with aircraft noise can travel beyond the airport property.

3.11.1.1 Vegetation

Approximately 226 acres of the Emporia-Greensville property have been classified as developed, 91 acres as forested, and 39 acres as open habitats by the USGS 2006 National Land Cover Database (Fry et al. 2011). Additionally, wetlands have been classified on the airport property (see Section 3.10.1.3, Wetlands). The National Land Cover Database is a detailed land surface reference based on Landsat satellite images. With the exception of forested areas around the periphery of the airport property, the majority of the airport is either developed (i.e., paved) or grasslands maintained through regular mowing (Figure 3-22). The forested areas at the airport contain both pine and deciduous species, including red maple (*Acer rubrum*), American holly (*Ilex opaca*), sweetgum (*Liquidambar stryaciflua*), paper birch (*Betula papyrifera*), loblolly pine (*Pinus taeda*), sweetbay (*Magnolia virginiana L.*), and various species of oak (*Quercus spp.*) (Bland n.d.). Correspondence from the Virginia Department of Conservation, Division of Natural Heritage, indicates that no natural heritage resources occur in proximity to Emporia-Greensville (see Appendix A, Agency Consultation).

3.11.1.2 Marine Mammals, Birds, and Other Wildlife

Marine Mammals

Emporia-Greensville is located inland, and no marine environments exist around the airport; therefore, no marine mammals are or could be present.

Birds

Bird species occurring at Emporia-Greensville likely include those commonly found in forested, edge, and open habitats on the Coastal Plain of Virginia. Avian species richness would likely be higher in the areas surrounding the airport, particularly along Three Creek and the Meherrin River. A total of 46 bird species were documented during the 1985 to 1989 Breeding Bird Atlas across three survey blocks (50024, 51024, and 51025) in the vicinity of the airport (Breeding Bird Atlas Explorer 2012).

Waterfowl (e.g., ducks, geese, and swans) would be unlikely to occur at the airport due to a lack of suitable habitat. Waterbirds (e.g., herons and egrets) could occur on occasion in the emergent wetland area east of the runway. Colonial

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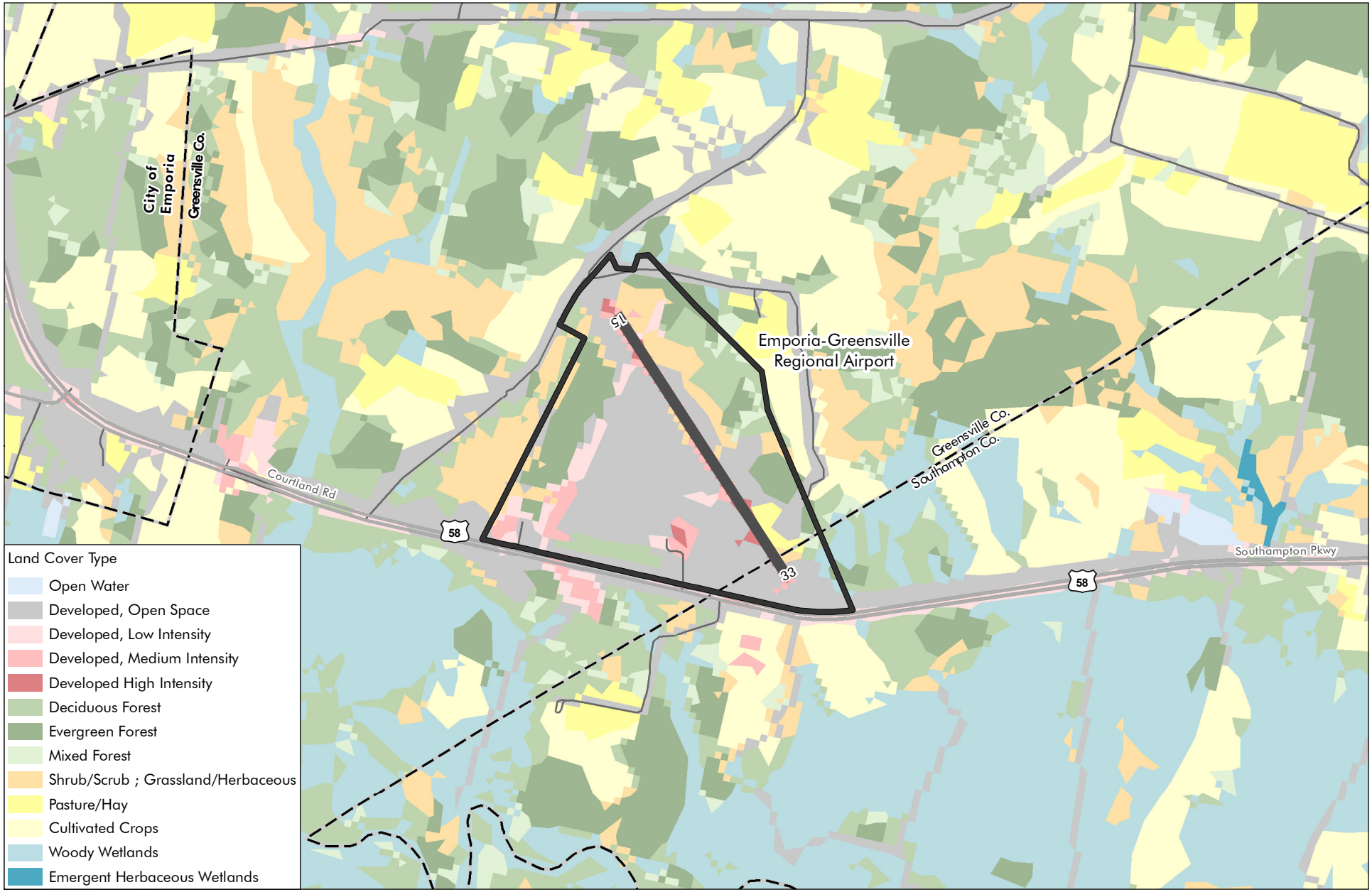

Source: ESRI 2010; USGS NLCD 2006.

Active Runway
Emporia-Greensville Regional Airport
County Boundary
Major Highway
Local Street

Figure 3-22
Land Cover Types in the Vicinity of
Emporia-Greensville Regional Airport

N
0 0.25 0.5
Miles

waterbird colonies supporting great blue herons (*Ardea herodias*) and great egrets (*Ardea alba*) historically occurred along Three Creek and the Meherrin River (VDGIF FWIS 2012b). One colony has been documented along Three Creek, and three colonies have been documented along the Meherrin River. The closest colony was approximately 2 miles from the airport boundary. None of these colonies has been documented since 2003, and their current status is not known.

Raptor species, including the black vulture (*Coragyps atratus*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), red shouldered-hawk (*Buteo lineatus*), and American kestrel (*Falco sparverius*) may occur throughout the year. Bald eagles would likely be limited to transient individuals; no bald eagle nests have been documented in the vicinity of the airport (Watts and Byrd 2011a).

The wild turkey (*Meleagris gallopavo*), northern bobwhite (*Colinus virginianus*), killdeer (*Charadrius vociferus*), rock pigeon (*Columba livia*), and mourning dove (*Zenaida macroura*) could occur on the airport property. Common woodpecker species such as the red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), and northern flicker (*Colaptes auratus*) are also likely present. Passerines (i.e., songbirds) would likely be the most diverse and abundant avian species group occurring at the airport. Common species would likely include the blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), Carolina chickadee (*Poecile carolinensis*), Carolina wren (*Thryothorus ludovicianus*), American robin (*Turdus migratorius*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), northern cardinal (*Cardinalis cardinalis*), eastern meadowlark (*Sturnella magna*), and red-winged blackbird (*Agelaius phoeniceus*). The white-throated sparrow would likely be a common winter resident, while the remaining observed species would likely be present throughout the year.

Other Wildlife

Emporia-Greensville is likely to support wildlife species commonly found in the region. Less-fragmented habitats north and south of the airport along Three Creek and the Meherrin River, respectively, likely support a larger diversity of wildlife species. Large mammals potentially occurring include the white-tailed deer, gray fox (*Urocyon cinereoargenteus*), and red fox (*Vulpes vulpes*) (VDGIF FWIS 2012a). Small mammals could include the gray squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), eastern cottontail (*Sylvilagus floridanus*), eastern chipmunk (*Tamias striatus*), marsh rice rat (*Oryzomys palustris*), Kirtland's short-tailed shrew (*Blarina brevicauda kirtlandi*), and southern short-tailed shrew (*Blarina carolinensis*), as well as other species of mice, moles, and shrews. Amphibians potentially occurring include the oak toad (*Anaxyrus quercicus*), pine woods treefrog (*Hyla femoralis*), squirrel treefrog (*Hyla squirella*), northern redback salamander (*Plethodon cinereus*), eastern coastal plain cricket frog (*Acris gryllus gryllus*), Cope's gray tree frog (*Hyla chrysoscelis*), northern spring peeper (*Pseudacris crucifer*), southern chorus frog (*Pseudacris nigrita*), American toad (*Bufo americanus*), Fowler's toad (*Anaxyrus fowleri*), and red-spotted newt (*Notophthalmus viridescens*). Cricket frogs (*Acris* spp.), the green frog

(*Lithobates clamitans*), and the bull frog (*Lithobates catesbeianus*) were documented at the airport during a site visit on July 19, 2011 (E & E 2011). Numerous species of lizards and snakes could also occur (VDGIF FWIS 2012a). A rough earth snake (*Virginia striatula*) was documented at the airport during a site visit on July 19, 2011 (E & E 2011).

3.11.1.3 Threatened and Endangered Species

The VDGIF's Wildlife Environmental Review Map Service and the USFWS's Information, Planning, and Conservation System databases were searched to identify federally threatened and endangered species under USFWS jurisdiction potentially occurring within or in the vicinity of Emporia-Greensville (VDGIF 2012, USFWS 2012a). The action area searched in the databases outlined the modeled 65 dB DNL noise contour. Results of the database search are presented in Table 3-30.

Table 3-30 Federally Threatened and Endangered Species Potentially Occurring at or in the Vicinity of Emporia-Greensville Regional Airport

Common Name	Scientific Name	Federal ESA Status
Birds		
Red-cockaded Woodpecker	*Picoides borealis*	Endangered
Fishes		
Roanoke Logperch	*Percina rex*	Endangered
Plants		
American Chaffseed	*Schwalbea americana*	Endangered
Michaux's Sumac	*Rhus michauxii*	Endangered

Source: USFWS 2012a.

The red-cockaded woodpecker (*Picoides borealis*) is listed as an endangered species both federally and by the Commonwealth of Virginia (VDGIF FWIS 2012b). No critical habitat has been designated for the red-cockaded woodpecker. Within Virginia, the red-cockaded woodpecker is known to occur at only one location, The Nature Conservancy's Piney Grove Preserve, in Sussex County, which is approximately 28 miles northeast of Emporia-Greensville (VDGIF 2005). The red-cockaded woodpecker is unlikely to occur in the vicinity of Emporia-Greensville because no suitable habitat, such as mature, live pine trees in open pine savannas/barrens, is present.

The Roanoke logperch (*Percina rex*) is listed as endangered both federally and by the Commonwealth of Virginia (VDGIF FWIS 2012b). No critical habitat has been designated for the Roanoke logperch. In Virginia, the species is found only in the Roanoke and Nottoway river systems (VDGIF 2005). There are no river reaches in the vicinity of Emporia-Greensville where the Roanoke logperch has been confirmed to occur; however, Three Creek, located 1.5 miles north of the airport, has been identified by VDGIF as a river reach where the species could potentially occur (VDGIF 2005).

The American chaffseed (*Schwalbea americana*), a perennial flowering herb, is listed as a federally endangered species (VDGIF FWIS 2012b). No critical habitat has been designated for the American chaffseed. American chaffseed typically requires fire for persistence and occurs in fire-maintained ecosystems, such as longleaf pine wiregrass ecosystems; open, moist pine flatwoods; and fire-maintained savannas (USFWS 1995). The USFWS indicates that American chaffseed is known or believed to occur in the City of Emporia and Greensville and Sussex counties (USFWS 2012b).

Michaux's sumac (*Rhus michauxii*), a shrub, is listed as an endangered species both federally and by the Commonwealth of Virginia (VDGIF FWIS 2012b). No critical habitat has been designated for Michaux's sumac. It typically grows on sandy soils in forest openings or thin woods and is dependent on disturbance to maintain the openness of its habitat. Only two populations of Michaux's sumac are known in Virginia; one is on the Fort Pickett Military Reservation in Nottoway and Dinwiddie counties, and the second is at a site adjacent to Fort Pickett (USACE Construction Engineering Research Laboratories 1998; Virginia Natural Heritage Program 2011). Fort Pickett is more than 30 miles from Emporia-Greensville.

A list of additional, non-federally listed species listed by Virginia as threatened or endangered potentially occurring within or in the vicinity of Emporia-Greensville was developed through database searches of VDGIF's Wildlife Environmental Review Map Service and written correspondence to the VDCR, Division of Natural Heritage (Baird 2012, VDGIF 2012). The database searches covered an area encompassing the modeled 65 dB DNL noise contour. The search indicated that there are no known occurrences of additional state-listed threatened or endangered species within the area encompassing the modeled 65 dB DNL noise contour around Emporia-Greensville.

3.11.2 Impacts on Biological Resources at Emporia-Greensville Regional Airport

3.11.2.1 Vegetation

Under Alternative 1, 0.02 acre of maintained grassland would be permanently removed to construct the concrete pads. No impacts to vegetation would occur from construction of the asphalt storage area (i.e., 0.41 acre) because it would be constructed in an area that is already paved. Temporary impacts on maintained grassland would occur from installation of buried utility lines. Following installation of the utility lines, the area would be restored to its original condition through grading and replanting of vegetation. Overall, implementation of Alternative 1 would have no significant impact on vegetation. Additionally, Alternative 1 would have no significant impact on natural heritage resources as no such resources occur in proximity to the airport (see Appendix A, Agency Consultation).

3.11.2.2 Marine Mammals, Birds, and Other Wildlife

Marine Mammals

Because Emporia-Greensville is located inland and no marine mammals are or could be present at the site, there would be no impact to marine mammals under Alternative 1.

Birds and Other Wildlife

Construction Impacts. Under Alternative 1, construction of concrete pads and installation of underground utility lines would occur in areas containing maintained grassland. The maintained grassland habitat is unlikely to support many species of wildlife/birds. However, construction of concrete pads and installation of utility lines would result in both direct and indirect minor impacts on individuals of species that are present. Direct impacts could include mortality of less-mobile species, such as small mammals, reptiles, and amphibians. Construction of concrete pads would permanently remove 0.02 acre of maintained grassland. Following installation of the utility lines, the area would be restored to its original condition, resulting in minor and temporary impacts on wildlife/bird habitat. The asphalt storage area would be constructed in an area of deteriorating pavement, resulting in no impacts on habitat. Temporary displacement of wildlife/birds could occur in peripheral areas during construction, when noise and human activity levels would increase. However, once construction has been completed, wildlife/birds should return. Overall, implementation of Alternative 1 would have no significant impact on wildlife/birds from temporary construction.

Noise Impacts. Several studies have been conducted by the scientific community on the impacts of aircraft noise on wildlife. Overall, the literature suggests that species differ in their response to aircraft noise (Manci et al. 1988). However, individuals of all species not previously exposed to aircraft noise seem to react with some form of a startle response. The level of response depends on a number of factors, including the life-history characteristics of the species, characteristics of the aircraft and flight activities, habitat type, and the species' previous exposure to aircraft (NPS 1994). The behavioral responses can cause injury and impose an energy response that may affect survival or growth over the long term (Ellis et al. 1991). Additionally, time spent on noise avoidance activity may cause birds to spend less time on necessary activities such as feeding, preening, or caring for young (NPS 1994).

It has been widely reported in the scientific literature that the intensities and durations of the startle response decrease with the number and frequency of exposures. Several studies indicate a strong tendency for species to acclimate or habituate to noise disturbances (Grubb and King 1991; Ellis et al. 1991; Black et al. 1984; Conomy et al. 1998). Other studies have reported physiological responses in birds, such as increased hormonal production and increased heart rates, particularly among nesting species. These physiological responses are almost always accompanied by a behavioral response that can range from a slight change in body position to engagement in escape or avoidance behavior, such as flushing from perches or nests (NPS 1994; Ellis et al. 1991). For mammals, some

studies have reported physiological responses, such as increased hormonal production, increased heart rates, and a reduction in milk production, in some species (Manci et al. 1988). The majority of studies, however, have reported short-term or no effects.

Given the current aircraft operations at Emporia-Greensville, most wildlife/birds present at or in the vicinity of the airport would likely be already acclimated to aircraft noise. However, the increase in the acreage of the noise zones greater than 65 dB DNL under Alternative 1 compared to the baseline would likely have minor impacts on wildlife/birds not currently acclimated to these noise levels. Based on the noise studies summarized above, some species may endure longer-term effects due to repeated physiological responses, but most species would be expected to acclimate or habituate to noise exposure after experiencing short-term effects (Grubb and King 1991; Ellis et al. 1991; Black et al. 1984; Conomy et al. 1998). Therefore, noise associated with aircraft operations under Alternative 1 would have no significant impact on wildlife/birds for the duration of the Navy's proposed action.

3.11.2.3 Threatened and Endangered Species

No suitable habitat for the red-cockaded woodpecker occurs at Emporia-Greensville. In addition, the only known population of the red-cockaded woodpecker in Virginia is located approximately 28 miles from the airport. Therefore, implementation of Alternative 1 would have no effect and no significant impact on the federally endangered red-cockaded woodpecker.

There are no river reaches in the vicinity of Emporia-Greensville where the federally endangered Roanoke logperch is known to occur; however, Three Creek, located approximately 1.5 miles north of the airport, has been identified as a river reach where the species could potentially occur (VDGIF 2005). No waterbodies would be directly affected by construction under Alternative 1. Additionally, any degradation in water quality from construction would be expected to be minor and highly localized based on implementation of on-site best management practices to reduce and control stormwater runoff. Consequently, implementation of Alternative 1 would have no effect and no significant impact on the federally endangered Roanoke logperch.

Construction under Alternative 1 would only affect maintained grassland and would not impact any habitats where American chaffseed or Michaux's sumac could occur. Therefore, implementation of Alternative 1 would have no effect and no significant impact on the federally endangered American chaffseed or Michaux's sumac.

3.11.3 Existing Biological Resources at Wallops Flight Facility

The study area for vegetation at WFF Main Base is the area contained within the airport property boundary, as this is the location of the proposed airfield modifications. The study area for all wildlife, including federal and state threatened and endangered species, includes the area within the modeled 65 dB DNL and greater noise contour, as potential impacts associated with aircraft noise can travel beyond the airport property.

An area of 1,140 acres of tidal marsh is located between Wallops Island and Wallops Mainland. A tidal marsh is an area of low-lying wetlands that is influenced by the tides. The marsh is interlaced with small streams known locally as "guts." The marsh itself can be divided into the low marsh and the high marsh—each a distinctive community. The low marsh, which is inundated at high tide, is dominated by saltmarsh cordgrass (*Spartina alterniflora*). The high marsh, which is flooded by approximately 50 percent of the high tides, is dominated by salt meadow cordgrass (*S. patens*). The marshes are of tremendous importance to marine life and to the terrestrial and avian species that depend on the marshes for their existence (NASA 2005). In addition, the marshes encompass a portion of the area within the proposed noise contours.

3.11.3.1 Vegetation

Approximately 1,217 acres at WFF Main Base has been classified as developed, 287 acres as forested/shrub-scrub, 54 acres as open habitats (i.e., grassland/herbaceous), and 14 acres as open water by the USGS 2006 National Land Cover Database (Fry et al. 2011). Additionally, wetlands have been classified at WFF Main Base (see Section 3.10.3.3, Wetlands). The National Land Cover Database is a detailed land surface reference based on Landsat satellite images. Approximately 63 percent of the facility is open space for runway clear zones or developed areas (Figure 3-23). The area around the runways is maintained as grassland through regular mowing. Forested areas occur in the southwestern and northwestern portions of the facility. Dominant species in upland forests at WFF Main Base include loblolly pine, oaks, hickories (*Carya* spp.), tulip-poplar (*Liriodendron tulipifera*), dogwood (*Cornus florida*), sweetgum, red maple, and sassafras (*Sassafras albidum*).

The Virginia Department of Conservation and Recreation, Division of Natural Heritage, has indicated the occurrence of two conservation sites on WFF Main Base, Little Mosquito Creek Conservation Site and Wallops Island Seeps Conservation Site (see Appendix A, Agency Consultation). The Little Mosquito Creek Conservation Site is designated due to the occurrence of a rare habitat type, Tidal Oligohaline Marsh, while the Wallops Island Seeps Conservation Site is designated due to the occurrence of a rare plant (low frostweed [*Crocanthemun propinquum*]) and a rare habitat type, Coastal Plain/Outer Piedmont Seepage Bog.

3.11.3.2 Marine Mammals, Birds, and Other Wildlife

Marine Mammals

The only marine mammal species expected to occur in the waters of Chincoteague Bay, located to the northeast of WFF Main Base between the mainland and Chincoteague Island, is the bottlenose dolphin (*Tursiops truncatus*). Bottlenose dolphins could occur in Chincoteague Bay in spring, summer, and fall (Waring et al. 2010). During the winter (January to March), bottlenose dolphins are not likely to be found north of the southern Virginia coastline and would therefore not occur within Chincoteague Bay (Waring et al. 2010).

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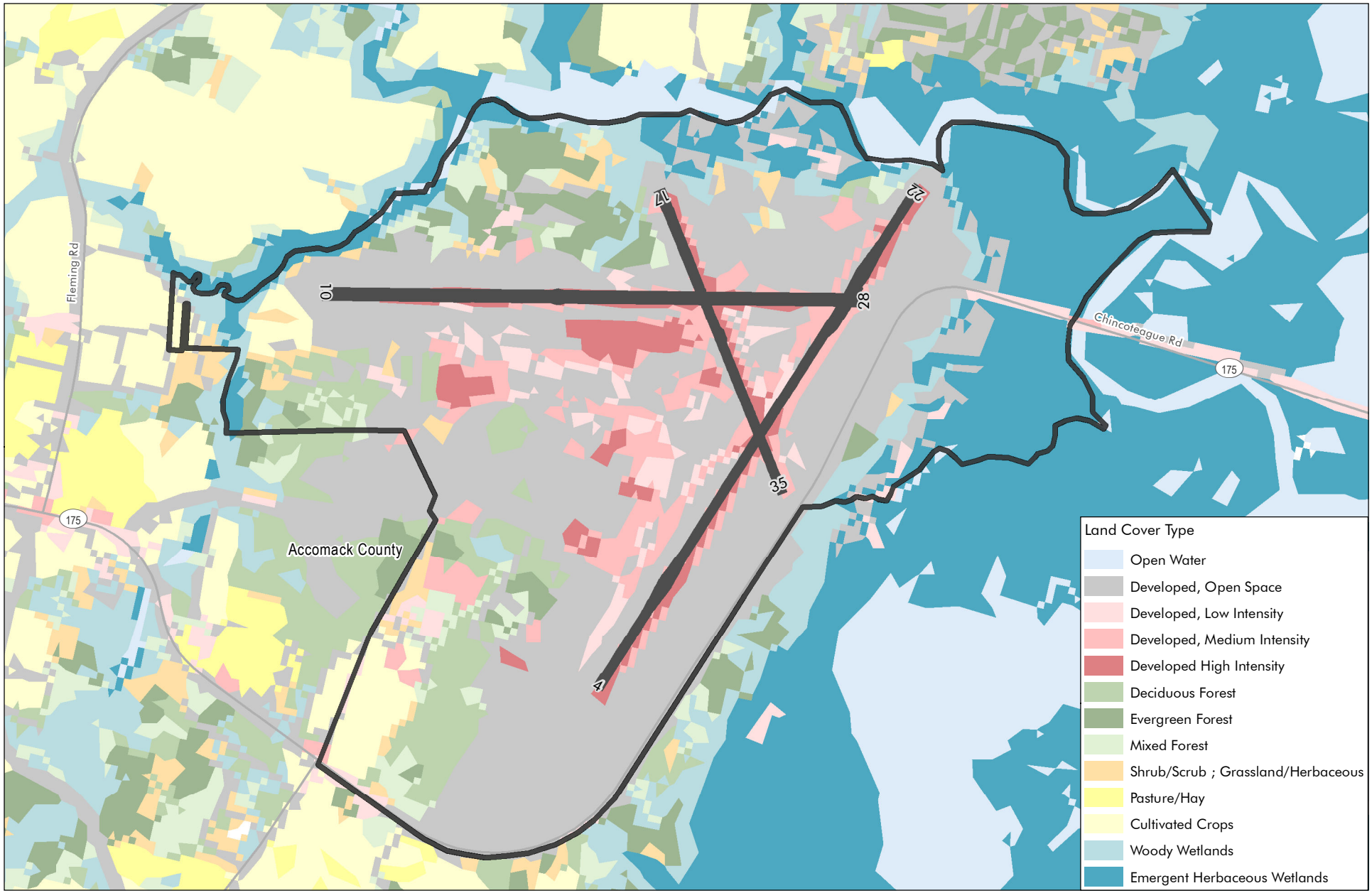

Source: ESRI 2010; USGS NLCD 2006.

Active Runway
Wallops Flight Facility
Major Highway
Local Street

Figure 3-23
Land Cover Types in the Vicinity of
Wallops Flight Facility

N

0 0.25 0.5
Miles

Birds

NASA has recognized that WFF is surrounded by wildlife areas and an important bird area. Consequently, NASA has developed a close relationship with the resource agencies and funds a dedicated BASH team to minimize aircraft hazards. Furthermore, since 2000, USDA Agriculture Animal and Plant Health Inspection Service, Wildlife Services, has conducted annual monitoring at WFF Main Base as part of the facility's Wildlife Hazard Assessment (USDA APHIS WS 2010). During surveys conducted from October 2009 through September 2010, a total of 55,919 birds from 87 species were counted, with an average of 777 birds observed per survey. The documented birds were grouped into guilds, or species groups, based on the threat they pose to aircraft and aviation safety at the facility (Table 3-31).

The eastern boundary of WFF Main Base is immediately adjacent to the Audubon Society's Barrier Island/Lagoon System Important Bird Area (see Figure 3-24) (Audubon n.d.). This Important Bird Area program was developed to identify a network of sites that provide critical habitat for birds and to conserve bird species and their habitat. The Barrier Island/Lagoon System Important Bird Area encompasses the seaward margin of the lower Delmarva Peninsula from the mouth of Chesapeake Bay to the Maryland-Virginia border and, in the vicinity of WFF Main Base, encompasses the Wallops Island National Wildlife Refuge and Chincoteague National Wildlife Refuge. Habitats contained within the Important Bird Area include barrier islands, maritime forests, salt marshes, inter-tidal mudflats, and open water. Numerous bird species utilize the habitats within the Important Bird Area, including several at-risk species.

The Wallops Island National Wildlife Refuge was created on July 10, 1975, when NASA transferred 373 acres of land to the USFWS (USFWS n.d. [a]). The National Wildlife Refuge is immediately adjacent to the eastern boundary of WFF Main Base and consists of saltwater marsh, woodland, grassland, and brush habitat. The goals of the refuge are to preserve, enhance, protect, and improve habitat for migratory bird species.

Other Wildlife

Large mammal species documented at WFF include the white-tailed deer and red fox. Small mammals include the gray squirrel, Virginia opossum, raccoon, white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pennsylvanicus*), marsh rice rat, and eastern cottontail. River otters have been observed on the marsh/upland interface. Amphibians include the Fowler's toad and green tree frog (*Hyla cinerea*). Reptiles include the eastern rat snake (*Pantherophis alleganiensis*), black racer (*Coluber constrictor constrictor*), hognose snake (*Heterodon platyrhinos*), snapping turtle (*Chelydra serpentina*), eastern box turtle (*Terrapene carolina carolina*), northern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), and diamondback terrapin (*Malaclemys terrapin*) (NASA 2008, 2011a).

Table 3-31 Species Guilds and Percent of Birds Counted during Surveys from October 2009 through September 2010 at Wallops Flight Facility Main Base

Guild	Percent of All Birds Documented	Representative Species
Blackbirds	73	Red-winged Blackbird (*Agelaius phoeniceus*), Common Grackle (*Quiscalus quiscula*), Brown-headed Cowbird (*Molothrus ater*), European Starling (*Sturnus vulgaris*), and Boat-tailed Grackle (*Quiscalus major*)
Waterfowl	10	Snow Goose (*Chen caerulescens*), American Black Duck (*Anas rubripes*), Canada Goose (*Branta canadensis*), and Hooded Merganser (*Lophodytes cucullatus*)
Gulls	7	Laughing Gull (*Leucophaeus atricilla*)
Meadowlark	2	Eastern Meadowlark (*Sturnella magna*)
Sparrow	2	Savannah Sparrow (*Passerculus sandwichensis*) and Grasshopper Sparrow (*Ammodramus savannarum*)
Other Passerines	1	American Robin (*Turdus migratorius*) and Bobolink (*Dolichonyx oryzivorus*)
Corvids	1	American Crow (*Corvus brachyrhynchos*) and Fish Crow (*Corvus ossifragus*)
Raptors	1	Turkey Vulture (*Cathartes aura*), Northern Harrier (*Circus cyaneus*), American Kestrel (*Falco sparverius*), Red-tailed Hawk (*Buteo jamaicensis*), and Bald Eagle (*Haliaeetus leucocephalus*)
Wading Birds	1	Great Egret (*Ardea alba*), Glossy Ibis (*Plegadis falcinellus*), and Great Blue Heron (*Ardea herodias*)
Swallows and Swifts	1	Barn Swallow (*Hirundo rustica*) and Tree Swallow (*Tachycineta bicolor*)
Shorebirds	<1	Killdeer (*Charadrius vociferous*), Sanderling (*Calidris alba*), and Willet (*Tringa semipalmata*)
Columbids	<1	Mourning Dove (*Zenaida macroura*) and Rock Pigeon (*Columba livia*)
Terns	<1	Common Tern (*Sterna hirundo*)
Other Non-passerines	<1	Double-crested Cormorant (*Phalacrocorax auritus*)
Gallinaceous Birds	<1	Wild Turkey (*Meleagris gallopavo*) and Northern Bobwhite (*Colinus virginianus*)
Loons	<1	Common Loon (*Gavia immer*)

Source: USDA APHIS WS 2010

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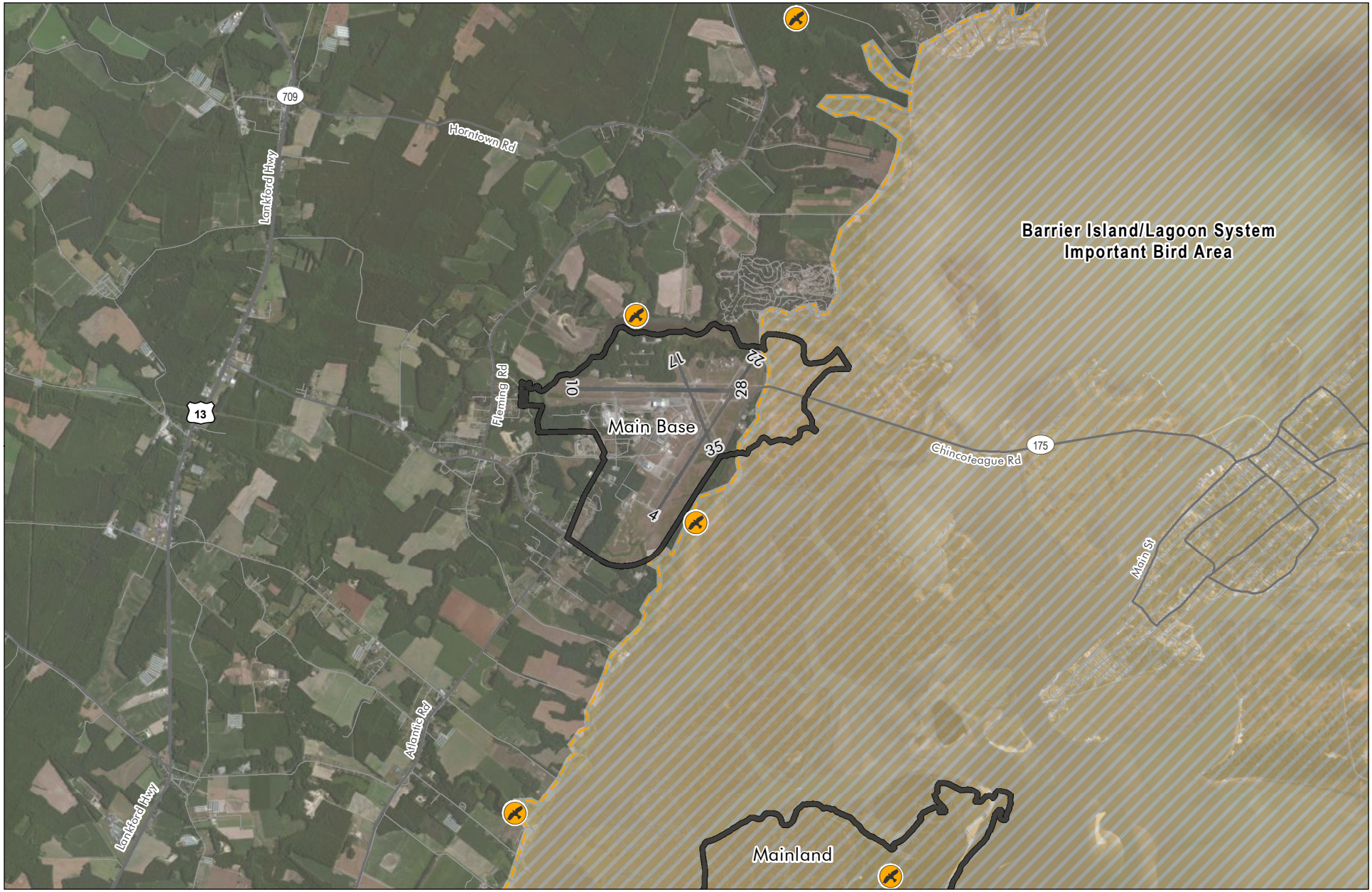

Source: Watts, B. D. and M. A. Byrd 2011. Virginia bald eagle nest and productivity survey: Year 2011 report; ESRI 2010.

Bald Eagle Nest
Important Bird Area
Wallops Flight Facility
Active Runway
Major Highway
Local Street

Figure 3-24
Bald Eagle Nest and Important Bird Area Locations
Wallops Flight Facility

N

0 0.5 1
Miles

A 1996 amendment to the Magnuson-Stevens Fishery Conservation and Management Act of 1976 instituted a new mandate to identify and provide protection to important marine and anadromous fisheries habitat, or essential fish habitat. The waters adjacent to WFF Main Base do have essential fish habitat present. However, no in-water activities are associated with the Navy's proposed action that would impact essential fish habitat; therefore, it is not included in this analysis. Fish species documented in Chincoteague Bay are most commonly estuarine-dependent species. These include game species such as summer flounder (*Paralichthys dentatus*), Atlantic croaker (*Micropogonia undulates*), striped bass (*Morone sasatilis*), black sea bass (*Centropristis striata*), weakfish (*Cynoscion regalis*), and spot (*Leiostomus xanthurus*). The bay is also habitat for forage fish species such as bay anchovy (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), and Atlantic silverside (*Menidia menidia*) (Maryland DNR 2005).

3.11.3.3 Threatened and Endangered Species

The VDGIF's Wildlife Environmental Review Map Service and the USFWS's Information, Planning, and Conservation System databases were searched to identify federally threatened and endangered species under USFWS jurisdiction potentially occurring within or in the vicinity of WFF Main Base (VDGIF 2012, USFWS 2012c). The action area searched in the databases outlined the modeled 65 dB DNL and greater noise contours. No federally threatened and endangered species under USFWS jurisdiction were identified. However, additional literature searches indicated that federally threatened and endangered species under NMFS jurisdiction could occur in Chincoteague Bay, located to the northeast of WFF Main Base between the mainland and Chincoteague Island. These species are listed in Table 3-32.

Table 3-32 Federally Threatened and Endangered Species Potentially Occurring at or in the Vicinity of the Wallops Flight Facility Main Base

Common Name	Scientific Name	Federal ESA Status
Reptiles		
Green Sea Turtle	*Chelonia mydas*	Threatened
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	Endangered
Loggerhead Sea Turtle	*Caretta caretta*	Threatened
Marine Fish		
Atlantic Sturgeon (Chesapeake Bay Distinct Population Segment)	*Acipenser oxyrinchus oxyrinchus*	Endangered
Shortnose Sturgeon	*Acipensar brevirostrum*	Endangered
Blueback Herring	*Alosa aestivalis* and *Alosa pseudoharengus*	Candidate
Scalloped Hammerhead Shark	*Sphyrna lewini*	Candidate

Source: NMFS 2012b

The green (*Chelonia mydas*), Kemp's ridley (*Lepidochelys kempii*), and loggerhead (*Caretta caretta*) sea turtles could occur in proximity to the action area within Chincoteague Bay (NMFS NERO n.d.). The Northwest Atlantic Distinct Population Segment of the loggerhead sea turtle and the green sea turtle are both federally and state listed as a threatened species, and the Kemp's ridley sea turtle is both federally and state listed as an endangered species (NMFS 2012a, VDGIF FWIS 2012d). No critical habitat has been designated for the loggerhead sea turtle. Critical habitat has been designated for the remaining sea turtle species; however, none occurs in the vicinity of the proposed action. Within Chincoteague Bay, individuals of these sea turtle species are likely to only feed and rest in the shallow estuarine waters. Nesting as far north as Virginia and nesting in small isolated bays are both very rare for sea turtles. Therefore, it is expected that any individuals of the sea turtle species potentially present would remain in the water and would not be nesting in the action area.

Two federally endangered fish species, the shortnose sturgeon (*Acipenser brevirostrum*) and the Chesapeake Bay Distinct Population Segment of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), could occur in the waters of Chincoteague Bay (NMFS 2012b). The shortnose sturgeon is also state listed as an endangered species. Neither sturgeon species has designated critical habitat. Both the shortnose and Atlantic sturgeon are anadromous fish that spawn in the freshwater of major rivers along the Atlantic Coast and spend their juvenile and adult life stages in coastal and estuarine waters (NMFS 2012c; NMFS 2012d). While there are no major freshwater rivers within the region of the action area, the possible presence of both the shortnose and Atlantic sturgeon could be due to their affinity for estuarine waters such as those around the action area and in Chincoteague Bay. Other fish species, including the blueback herring (*Alosa aestivalais*) and scalloped hammerhead shark (*Sphyrna lewini*), both listed as federal candidate species, could be found within the action area (NMFS 2012b). Candidate species are not required to have designated critical habitat.

A list of additional state-listed species potentially occurring within or in the vicinity of WFF Main Base was developed through a search of VDGIF's Wildlife Environmental Review Map Service database and written correspondence to the VDCR, Division of Natural Heritage (Baird 2012, VDGIF 2012). The database search outlined the modeled 65 dB DNL noise contour. The search indicated potential occurrences of two additional state-listed species within the area encompassing the modeled 65 dB DNL noise contour around WFF Main Base: the bald eagle and gull-billed tern (*Gelochelidon nilotica*).

The bald eagle is a state-listed threatened species in Virginia. It is also federally protected under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act (USFWS 2011b). Five bald eagle nests occur within approximately 5 miles of WFF Main Base; all five were listed as active/occupied in 2011 (Figure 3-24) (Watts and Byrd 2011b). The closest nest is adjacent to the eastern side of WFF Main Base, across Chincoteague Road (Route 175), while the second-closest nest is approximately 0.2 mile north of WFF Main Base. The remaining nests are more than 2 miles from WFF Main Base.

The gull-billed tern, a medium-sized tern, is listed as a threatened species by Virginia (VDGIF FWIS 2012d). It nests on sandy beaches in the spring and summer, and winters in salt marshes, estuaries, and lagoons. The gull-billed tern is not known to occur on WFF Main Base; however, it has been documented nesting on the beaches and mud flats on Wallops Island (NASA 2010a).

3.11.4 Impacts on Biological Resources at Wallops Flight Facility

3.11.4.1 Vegetation

Under Alternative 2, a maximum of 0.05 acre of maintained grassland would be permanently removed to construct the concrete pads. Temporary impacts on maintained grassland would also result from the installation of buried utility lines. Following installation of the utility lines, the area would be restored to its original condition through grading and replanting of vegetation. Overall, implementation of Alternative 2 would have no significant impact on vegetation. Additionally, implementation of Alternative 2 would have no significant impact on the Division of Natural Heritage conservation sites because no construction would occur in those sites, and the Navy will adhere to applicable state and local erosion and sediment control/stormwater management laws and regulations (see Section 3.10.4.4).

3.11.4.2 Marine Mammals, Birds, and Other Wildlife

Marine Mammals

Construction Impacts. As no construction activities would take place in Chincoteague Bay or impact the bay in any way, there would be no significant impacts to marine mammals from construction activities under Alternative 2.

Noise Impacts. Transmission of noise from aircraft into the water would be possible; however, animals would have to be at or near the surface at the time of an over flight to be exposed to elevated sound levels. Smaller delphinids, including the bottlenose dolphin, generally react to aircraft over flights either neutrally or with a startle response (Wursig et al. 1998). It has also been reported that dolphins generally show no reaction to the over flight of survey aircraft unless the aircraft's shadow passes directly over them (Richardson et al. 1995). Furthermore, exposure of a dolphin to aircraft presence and noise would last for only seconds as the aircraft quickly passes overhead. Considering the existing aircraft over flights in the study area, potential impacts would be expected to be minimal from the increase in aircraft operations at WFF Main Base associated with Alternative 2. Additionally, the Navy's proposed action under Alternative 2 would be temporary and intermittent in nature. Therefore, the Navy has determined that although short-term disturbance of the bottlenose dolphin from the increase in aircraft operations at WFF Main Base could be possible, Alternative 2 would not result in Level A or Level B harassment as defined under the Marine Mammal Protection Act, and there would be no significant impact to the bottlenose dolphin.

Birds and Other Wildlife

Construction Impacts. Under Alternative 2, construction of concrete pads and installation of underground utility lines would occur primarily in areas containing maintained grassland, although some of the underground utility lines may be horizontally drilled under existing paved areas. The maintained grassland habitat is unlikely to support many species of wildlife/birds. However, construction of concrete pads and installation of utility lines would result in both direct and indirect minor impacts on individuals of species that are present. Direct impacts could include mortality of less-mobile species, such as small mammals, reptiles, and amphibians. Construction of concrete pads would permanently remove a maximum of 0.05 acre of maintained grassland. Following installation of the utility lines, the area would be restored to its original condition, resulting in minor and temporary impacts on wildlife/bird habitat. Temporary displacement of wildlife/birds could occur in peripheral areas during construction, when noise and human activity levels would increase. However, once construction has been completed, wildlife/birds should return. In addition, as no construction activities would take place in Chincoteague Bay or impact the bay in any way, there would be no impacts to marine fish from construction activities under Alternative 2. Overall, implementation of Alternative 2 would have no significant impact on wildlife from temporary construction.

Noise Impacts. Studies of general noise impacts on wildlife are summarized in Section 3.11.2.2. It is expected that most wildlife/birds present at or in the vicinity of the airfield would likely be acclimated to aircraft noise due to current aircraft operations at WFF Main Base; however, the minor increase in the extent of the noise zones greater than 65dB DNL under Alternative 2 compared to the baseline has the potential to increase noise exposure on wildlife not currently acclimated to these noise levels. It is important to note that the Navy's proposed action under Alternative 2 would be temporary and intermittent in nature. Additionally, the existing conditions at WFF Main Base include several other sources of man-made noise (e.g., rocket launches from Wallops Island [located approximately 6 miles from the southern boundary of WFF Main Base] and aircraft operations from WFF Main Base). Based on noise studies (Grubb and King 1991; Ellis et al. 1991; Black et al. 1984; Conomy et al. 1998), some species may endure longer-term effects, due to repeated physiological responses, but most species would be expected to acclimate or habituate to noise exposure after short-term effects. Therefore, noise associated with aircraft operations under Alternative 2 would have no significant impact on wildlife/birds for the duration of the Navy's proposed action.

Under Alternative 2, aircraft would fly over the Wallops Island National Wildlife Refuge at approximately 600 feet above ground level. The Navy's proposed action under Alternative 2 would be temporary and intermittent in nature. Additionally, other sources of man-made noise occur at WFF (e.g., rocket launches from Wallops Island, located approximately 6 miles from the southern boundary of WFF Main Base). Given the current air operations at WFF Main Base and the likelihood that birds and wildlife at the refuge are already habituated

to aircraft noise, no significant impacts on the refuge would be expected from an increase in air operations at WFF Main Base.

Under Alternative 2, aircraft would fly over a small portion of the Barrier Island/Lagoon System Important Bird Area. The Navy's proposed action under Alternative 2 would be temporary and intermittent in nature. Additionally, other sources of human-made noise occur at WFF (e.g., rocket launches from Wallops Island, located approximately 6 miles from the southern boundary of WFF Main Base). Given the current air operations at WFF Main Base (13,074 annually) and the likelihood that birds and other wildlife near the facility are already habituated to aircraft noise, no significant impacts on the Important Bird Area would be expected from an increase in air operations.

Any marine fish that occur regularly in Chincoteague Bay are already habituated to noise from current and ongoing aircraft over flights, and the projected noise contours under Alternative 2 are only slightly larger than the existing noise contours at WFF Main Base. Therefore, there would be no significant impact to fish species present in Chincoteague Bay from the increase in aircraft operations at WFF Main Base associated with Alternative 2.

3.11.4.3 Threatened and Endangered Species

There is no suitable nesting habitat for sea turtles at WFF Main Base, either within the areas of proposed construction or within the 65 dB DNL or greater noise contour; therefore, there would be no effect from aircraft over flights on nesting sea turtles under Alternative 2. As no construction activities associated with Alternative 2 would occur in Chincoteague Bay or indirectly impact the bay, there would be no impacts to the loggerhead, Kemp's ridley, and green sea turtles and the Atlantic and shortnose sturgeon, blueback herring, or scalloped hammerhead shark from construction under Alternative 2.

Considering the existing aircraft over flights and rocket launches from Wallops Island (located approximately 6 miles from the southern boundary of WFF Main Base), the increase in aircraft operations at WFF Main Base associated with Alternative 2 would not be expected to have a discernible impact on sea turtles or fish. Therefore, there would be no effect on the federally threatened loggerhead and green sea turtles, the federally endangered Kemp's ridley sea turtle, and the federally endangered Atlantic and shortnose sturgeons. Similarly, the proposed action under Alternative 2 would not jeopardize the federal candidate blueback herring or scalloped hammerhead shark. Potential impacts to federally listed species are summarized in Table 3-33.

Table 3-33 Summary of Potential Impacts to Federally Threatened and Endangered Species Potentially Occurring at or in the Vicinity of the Wallops Flight Facility Main Base

Common Name	Federal ESA Status	Potential Impact
Reptiles		
Green Sea Turtle	Threatened	No Effect
Kemp's Ridley Sea Turtle	Endangered	No Effect
Loggerhead Sea Turtle	Threatened	No Effect
Marine Fish		
Atlantic Sturgeon (Chesapeake Bay Distinct Population Segment)	Endangered	No Effect
Shortnose Sturgeon	Endangered	No Effect
Blueback Herring	Candidate	No Effect
Scalloped Hammerhead Shark	Candidate	No Effect

Given the current air operations at WFF Main Base, bald eagles nesting close to the facility are likely habituated to aircraft activity and noise. Therefore, an increase in air operations at WFF Main Base under Alternative 2 would not be expected to result in a take of bald eagles. Because there would be no direct impacts to bald eagles under Alternative 2, a non-purposeful take permit (50 CFR 22.26) under the Bald and Golden Eagle Protection Act would not be required. Therefore, there would be no significant impact on the bald eagle.

Gull-billed terns do not occur on WFF Main Base and therefore would not be impacted by construction under Alternative 2. Additionally, no significant increase in aircraft noise would be expected on the barrier islands where gull-billed terns are likely to occur. Consequently, Alternative 2 would have no effect and therefore no significant impact on the state-threatened gull-billed tern.

3.12 Cultural Resources

Section 106 of the NHPA of 1966, as amended, and its implementing regulations (36 CFR Part 800) require that federal agencies consider the effects of their undertakings on historic properties. Cultural resources may include archaeological resources (prehistoric and historic archaeological sites) and architectural resources (historic buildings and structures). Historic properties are those cultural resources that have been included in, or determined eligible for inclusion in, the National Register of Historic Places.

3.12.1 Cultural Resources at Emporia-Greensville Regional Airport

The study area for this cultural resources analysis is shown in Figure 3-25. The Virginia State Historic Preservation Office (SHPO) concurred with the defined area of potential effects (see Appendix A, Agency Consultation).

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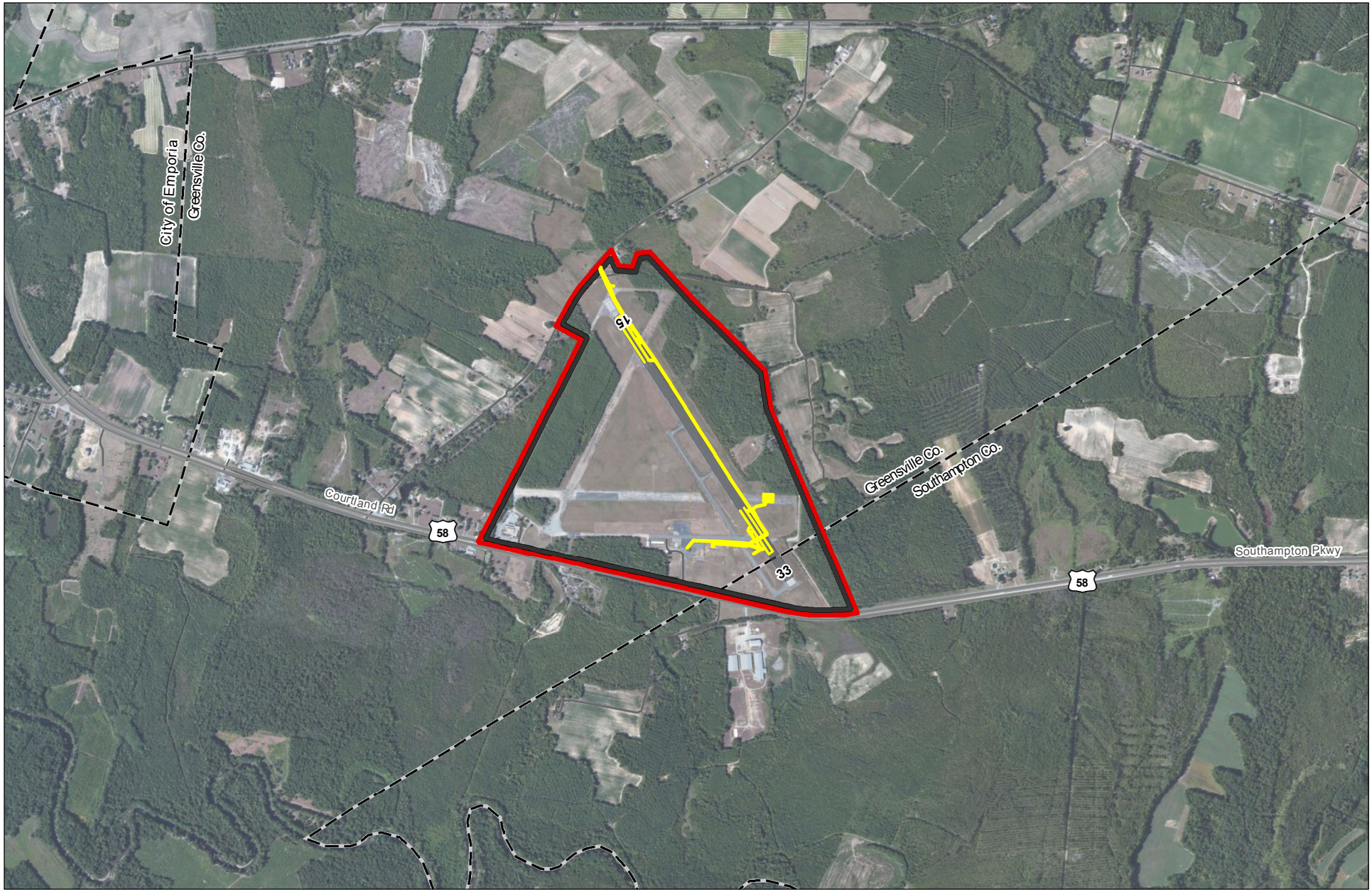

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Active Runway
Emporia-Greensville Regional Airport
County Boundary
Area of Potential Effects
Improvement_electrical_phone
Major Highway
Local Street

Figure 3-25
Area of Potential Effects
Emporia-Greensville Regional Airport

N
0 0.25 0.5
Miles

Previous cultural resources surveys, prior and unrelated to the Navy's action, have been conducted at Emporia-Greensville. This includes a 2011 study for a potential FAA action to shift Runway 33 to the north (Browning and Chaffman 2011), which indicated that there were both prehistoric and historic settlement and/or use of the area. Other cultural resources surveys conducted in the vicinity of the airport, prior and unrelated to the Navy's action, were conducted by vocational and professional researchers and focused on the margins of the Meherrin River, located approximately 1 mile southwest of the Emporia-Greensville property. While researchers have identified prehistoric archaeological sites and a Native American site in the vicinity of the property, all were located more than 1 mile from the airport property and not within the defined area of potential effects for this project (Browning and Chaffman 2011).

No previously identified National Register of Historic Places-listed or -eligible architectural resources, or architectural resources listed in the Virginia Landmarks Register, have been identified at Emporia-Greensville (NPS 2012a, 2012b; NRHP 2012; Virginia DHR 2011a, 2011b).

A July 2011 site visit by Navy cultural resources staff determined that the proposed action's construction areas, primarily located along Runway 15/33, show evidence of grading, filling, and other subsurface disturbance that likely occurred during clearing and construction of the runway beginning in the 1940s and during maintenance of the airfield since that time, as evidenced from the presence of existing paved areas, underground utilities, and lights (Lewis 2011). This supports the determination that the locations of the minor airfield modifications under the Navy's proposed action at Emporia-Greensville will not result in any new or direct impacts on archaeological resources.

Based on a review of existing cultural resources surveys, no architectural resources at Emporia-Greensville are either individually eligible for inclusion in the National Register of Historic Places or constitute an eligible historic district (Lewis 2011; Holma 2012a); therefore, the proposed action will have no effect on listed or eligible properties.

The Navy consulted with the Virginia SHPO on December 5, 2011, regarding the proposed action. Information submitted to the Virginia SHPO by the Navy included an archaeological assessment of the proposed construction areas within the Emporia-Greensville area of potential effects and an evaluation of the existing buildings and structures within the Emporia-Greensville area of potential effects (Lewis 2011).

The Virginia SHPO responded to this consultation on January 5, 2012, concurring with the Navy's determination that the proposed action at Emporia-Greensville would have no effect on National Register of Historic Places or eligible properties pursuant to 36 CFR Part 800 (Holma 2012a).

The Navy inquired with local governments regarding local cultural resources and determined that consultation with federally recognized tribes, the Virginia Council on Indians, and the Advisory Council on Historic Preservation does not

need to be conducted because cultural resources related to the proposed action would not likely be impacted. Refer to Appendix A, Agency Consultation for more details and the full Section 106 consultation package for Emporia-Greensville.

3.12.3 Existing Cultural Resources at Wallops Flight Facility

The study area for this cultural resources analysis is the area of potential effects for the proposed action at WFF Main Base, which was defined by the Navy as the boundary of the WFF Main Base property. The area of potential effects for WFF Main Base is also shown in Figure 3-26. The Virginia SHPO has concurred with this area of potential effects (see Appendix A, Agency Consultation).

NASA conducted two archaeological assessments of the WFF property, in 2003 and in 2006, to determine the presence of archaeological resources and archaeological sensitivity. Four historic archaeological sites have been identified at WFF Main Base (see Table 3-34), and a number of areas of prehistoric and historic archaeological sensitivity have been identified within the area of potential effects at WFF Main Base (URS Group, Inc. and EG&G Technical Services, Inc. 2003; URS 2006). None of these sites or archaeologically sensitive areas are located within areas proposed for modification as part of the proposed action.

Table 3-34 Known Archaeological Resources within the Wallops Flight Facility Main Base

Site Number	Description	NRHP-Eligibility Status
44AC103	Late 18th century domestic (historic) archaeological site and associated grave/cemetery associated with the location of the ca. 1788 Matthews House	Previously recommended not eligible
44AC405	Historic archaeological site (19th century artifact scatter)	Previously recommended not eligible
44AC437	Historic archaeological site (18th and 19th century artifact scatter)	Previously recommended not eligible
44AC556	Multi-component archaeological site (Late Woodland prehistoric artifact scatter and 19th century single grave)	Under evaluation

Source: URS Group, Inc. and EG&G Technical Services, Inc. 2003; URS 2006.

Key:
NRHP = National Register of Historic Places

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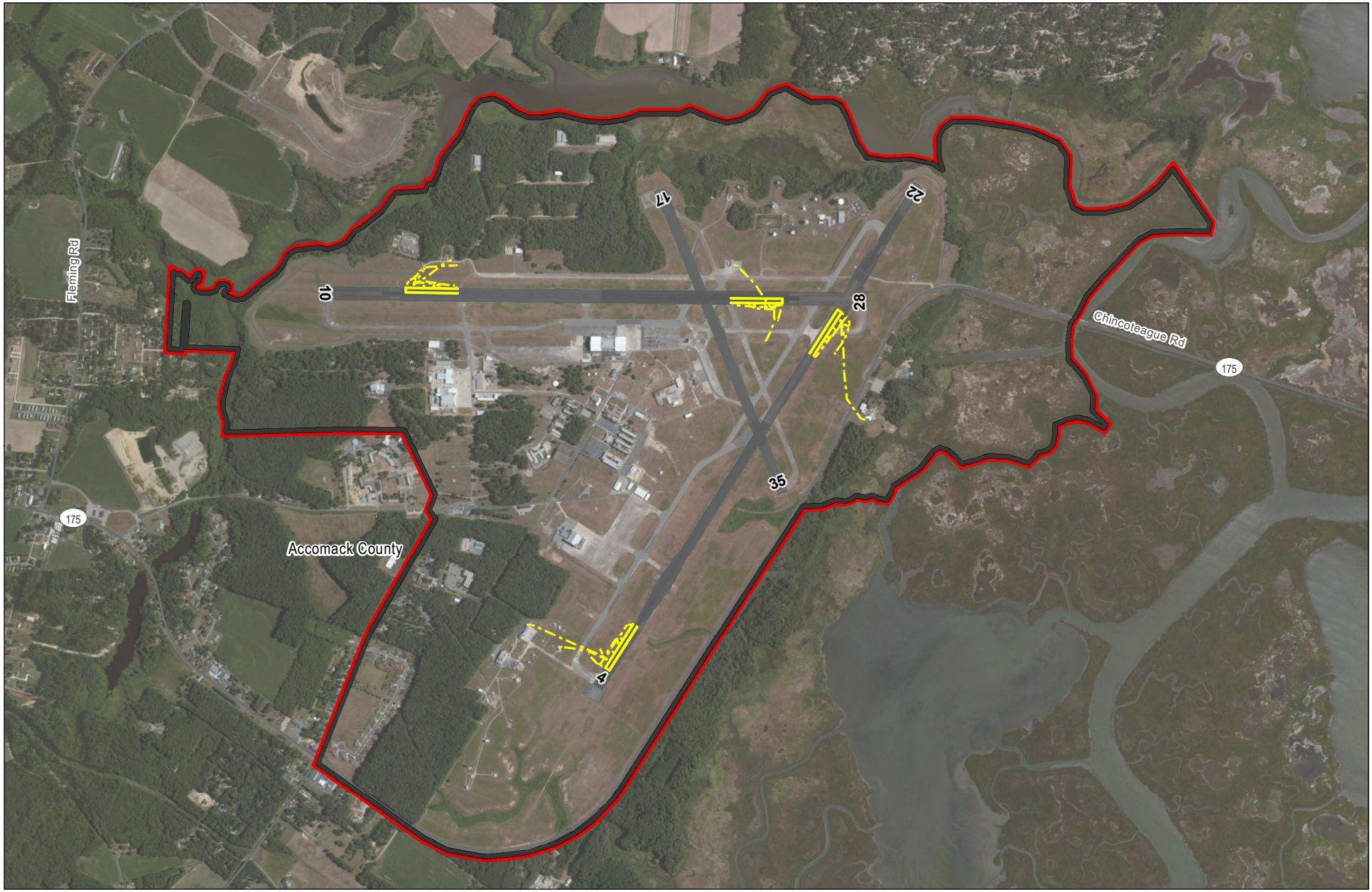

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Active Runway
Wallops Flight Facility
Area of Potential Effects
Proposed Construction Locations
Major Highway
Local Street

Figure 3-26
Area of Potential Effects
Wallops Flight Facility

N

0 0.25 0.5
Miles

No previously identified National Register of Historic Places-listed or -eligible architectural resources, or architectural resources listed in the Virginia Landmarks Register, have been identified at WFF Main Base (NPS 2012b, NRHP 2012; Virginia DHR 2011b). A historic resources eligibility survey of the WFF Main Base property was conducted by NASA in 2011 to determine the National Register of Historic Places-eligibility of buildings 50 years old or older. Based on the results of this survey, none of the architectural or built resources at the WFF Main Base were recommended or determined National Register of Historic Places-eligible (Thursby and Martin 2011). The Virginia SHPO concurred with the findings of the historic resources survey, indicating that none of the buildings evaluated were individually eligible for the National Register of Historic Places or National Register of Historic Places-eligible as a historic district (Lee 2011).

3.12.4 Impacts on Cultural Resources at Wallops Flight Facility

The Navy determined that the minor airfield modifications under the Navy's proposed action at WFF Main Base would not result in any new direct or indirect impacts on archaeological resources because these areas showed evidence of grading, filling, and other subsurface disturbance that likely occurred during clearing and construction of the runways during World War II, and/or maintenance of the airfield over that past 70-plus years (Lewis 2012). The Navy has determined that surficial changes to Runways 4/22 and 10/28 would be consistent with previous changes made to the runways over the past 70-plus years and would not result in new or different direct impacts on these architectural resources. No direct impacts would occur to any of the remaining architectural resources in the WFF Main Base area of potential effects. The Navy has determined that the introduction of additional aircraft and resulting noise from its proposed FCLP operations would be consistent with current and former uses and settings of the runways in the WFF Main Base area of potential effects and would not result in new or different indirect visual or auditory impacts on the architectural resources in the WFF Main Base area of potential effects.

The Navy consulted with the Virginia SHPO on January 17, 2012, regarding the proposed action pursuant to Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800 (see Appendix A, Agency Consultation). As part of this consultation, the Navy determined that the proposed action at WFF Main Base would have no effect on archaeological or architectural resources (Lewis 2012). The Virginia SHPO responded to this consultation on January 17, 2012, concurring with the Navy's determination that the proposed action at WFF Main Base would have no effect on National Register of Historic Places-eligible properties (Holma 2012b); therefore, the proposed action would have no significant impact on cultural resources.

The Navy inquired with local governments regarding local cultural resources and determined that additional consultation with federally recognized tribes, the Virginia Council on Indians, and the Advisory Council on Historic Preservation does not need to be conducted because cultural resources related to the proposed action would not likely be impacted. Refer to Appendix A, Agency Consultation, for more details and the full Section 106 consultation package for WFF Main Base.

3.13 Socioeconomics

This section examines four aspects of socioeconomics: housing values, community services, environmental justice, and protection of children from environmental health risks and safety risks. The proposed action would not result in a change to the size of the local population, and therefore this resource area is not included in this analysis. Furthermore, the economy, employment, and tax revenues are not discussed because they are also not relevant to the proposed action and would not be significantly impacted.

Housing Values

Several studies have been conducted to determine the effect of aircraft noise on property values, and the results were mixed. Some of the studies found a correlation between decreased property values and exposure of homes to airport noise, while other studies found that properties closer to an airport had higher property values. The lack of conclusive data linking proximity to an airport with property value suggests that there are numerous additional factors that influence these values.

Jud and Winkler (2006), Bell (2001), and Helmuth and Raytheon (1997) all found a negative correlation between property values and proximity to either a new airport or airport expansion. Bell (2001) found that property values were lower for homes within the projected 60 dB DNL noise contour of the airport than beyond the 60 dB DNL noise contour; Jud and Winkler (2006) found that property values within 4 miles of the airport were lower than those in the control area (i.e., the area of comparison).

Fidell (1996) studied the effect of aircraft noise on sale prices of residential properties in the vicinity of two military facilities and found that equations developed for one area to predict residential sale prices in areas unaffected by noise worked equally well when applied to predicting sale prices of homes in areas with aircraft noise in excess of 65 dB DNL. Therefore, the model worked equally well in predicting sale prices in areas with and without aircraft noise exposure. This indicates that aircraft noise had no meaningful effect on residential property values in some cases.

Fidell found that, similar to other researchers, differences in sale prices between homes with and without aircraft noise exposure were frequently due to factors other than noise itself.

3.13.1 Existing Socioeconomic Conditions at Emporia-Greensville Regional Airport

3.13.1.1 Housing

Existing houses in the vicinity of Emporia-Greensville are primarily located along sections of U.S. Route 58 and James River Junction. These sections of roads are both located within Greensville County, which is the Navy's study area for housing. According to the U.S. Census, the five-year (2006-2010) average median home value for Greensville County is $94,600 (U.S. Census Bureau,

2006-2010 American Community Survey [a]). There are a minimal number of housing units in the far western portion of Southampton County, where the airfield is located, and the City of Emporia, which is located 1.4 miles to the west (measured from the eastern city limits to the airport entrance). There are no houses in any of the three municipalities that are located within the existing 65 dB DNL noise zone at Emporia-Greensville.

3.13.1.2 Community Services

The study area for the community services analysis is Greensville County and the City of Emporia. Community services include publicly available benefits such as fire and emergency medical response and police protection.

The Emporia Volunteer Fire Department is the first responder to emergency calls from the City of Emporia and most of Greensville County. The department operates out of one fire station in the city and has 35 volunteer firefighters (County of Greensville, Virginia, and K.W. Poore & Associates, Inc. 2008; County of Greensville, Virginia 2012a). Greensville County is also served by the Jarratt Volunteer Fire Department, which operates out of a fire station located in the Town of Jarratt on the border between Greensville County and Sussex County. The Jarratt Volunteer Fire Department has 25 volunteer personnel, of which 10 are trained emergency medical technicians and four are trained cardiac technicians (County of Greensville, Virginia 2012b). In the event of a fire at the airport, either fire department could and most likely would respond (Franklin 2011); however, the Emporia Volunteer Fire Department is located closer to the airport (approximately 3 miles west). When the airport had an incident involving a hard landing, the fire department's response time was approximately 5 minutes (Franklin 2011).

Pre-hospital emergency care for emergency calls within Greensville County is provided by the Greensville Volunteer Rescue Squad, which has 41 volunteer members and would respond to the airport in an emergency situation. Each member is required to complete emergency medical technician basic training and be certified in emergency vehicle operations; additionally, each member is encouraged to complete advanced life support training. The volunteer rescue squad also provides emergency transport to Southern Virginia Regional Medical Center and Greensville Memorial Hospital, both located in the City of Emporia. Southern Virginia Regional Medical Center serves approximately 19,500 people and has 80 licensed beds (Southern Virginia Regional Medical Center 2012). Greensville Memorial Hospital serves approximately 31,000 people and has 179 licensed beds (County of Greensville 2012d).

The Greensville County Sheriff's Department employs 29 sworn officers. The Uniform Patrol Department of the Sheriff's Department provides first response to all reports and complaints in the county and at Emporia-Greensville Regional Airport. The Sheriff's Department also coordinates with the City of Emporia Police Department and Virginia State Police on joint drug enforcement operations and criminal investigations (County of Greensville, Virginia, and K.W. Poore & Associates, Inc. 2008). The Virginia State Police has a Bureau of Field Operations area office in the City of Emporia (Virginia State Police 2009).

3.13.1.3 Environmental Justice

Environmental justice is achieved if minority and low-income communities are not subjected to disproportionately high or adverse environmental effects. To evaluate the potential impact of the action, each resource area's potential effect on the human population was considered. The DNL noise contours for the Navy's proposed action were deemed most appropriate for identifying the geographic area to evaluate the presence of minority or low-income populations surrounding the airfield. Therefore, the study area for the environmental justice analysis at Emporia-Greensville includes the census block groups within greater than 65 dB DNL noise zones. Although larger than the study area, Greensville County, Southampton County, and the City of Emporia are described in this existing conditions section to provide context demographic data for Virginia.

The race, ethnicity, and poverty status characteristics of the populations in the City of Emporia and Greensville and Southampton counties are examined and compared with state and national data in Table 3-35. Figure 3-27 shows the census tracts and census block groups surrounding Emporia-Greensville.

Table 3-35 Demographic Data Related to Minority, Hispanic, and Low-Income Populations, City of Emporia, Greensville County, and Southampton County, 2010

Location	Total Population	Minority (Not Hispanic or Latino)[1]		Hispanic or Latino[2]		Total Minority		Total below Poverty Level	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Virginia	8,001,024	2,182,749	27.4	631,825	7.9	2,814,574	35.2	888,114	11.1
City of Emporia	5,927	3,817	64.4	262	4.4	4,079	68.8	1,541	26.0
Greensville County	12,243	7,442	60.8	173	1.4	7,615	62.2	2,057	16.8
Southampton County	18,570	7,229	38.9	203	1.1	7,432	40.0	2,934	15.8

Sources: U.S. Census Bureau, 2010 Census; U.S. Census Bureau, 2010 American Community Survey; U.S. Census Bureau, 2006-2010 American Community Survey (a,b).

Notes:
[1] Minority populations include individuals who identify themselves as American Indian or Alaskan Native; Asian or Pacific Islander; African American, not of Hispanic origin; or Hispanic. In order to not double-count individuals, those who according to the U.S. Census were both minority and Hispanic or Latino were only included under Hispanic or Latino.
[2] Percentages of minorities and Hispanic/Latino may not add up exactly to the total percentages of minorities due to rounding.

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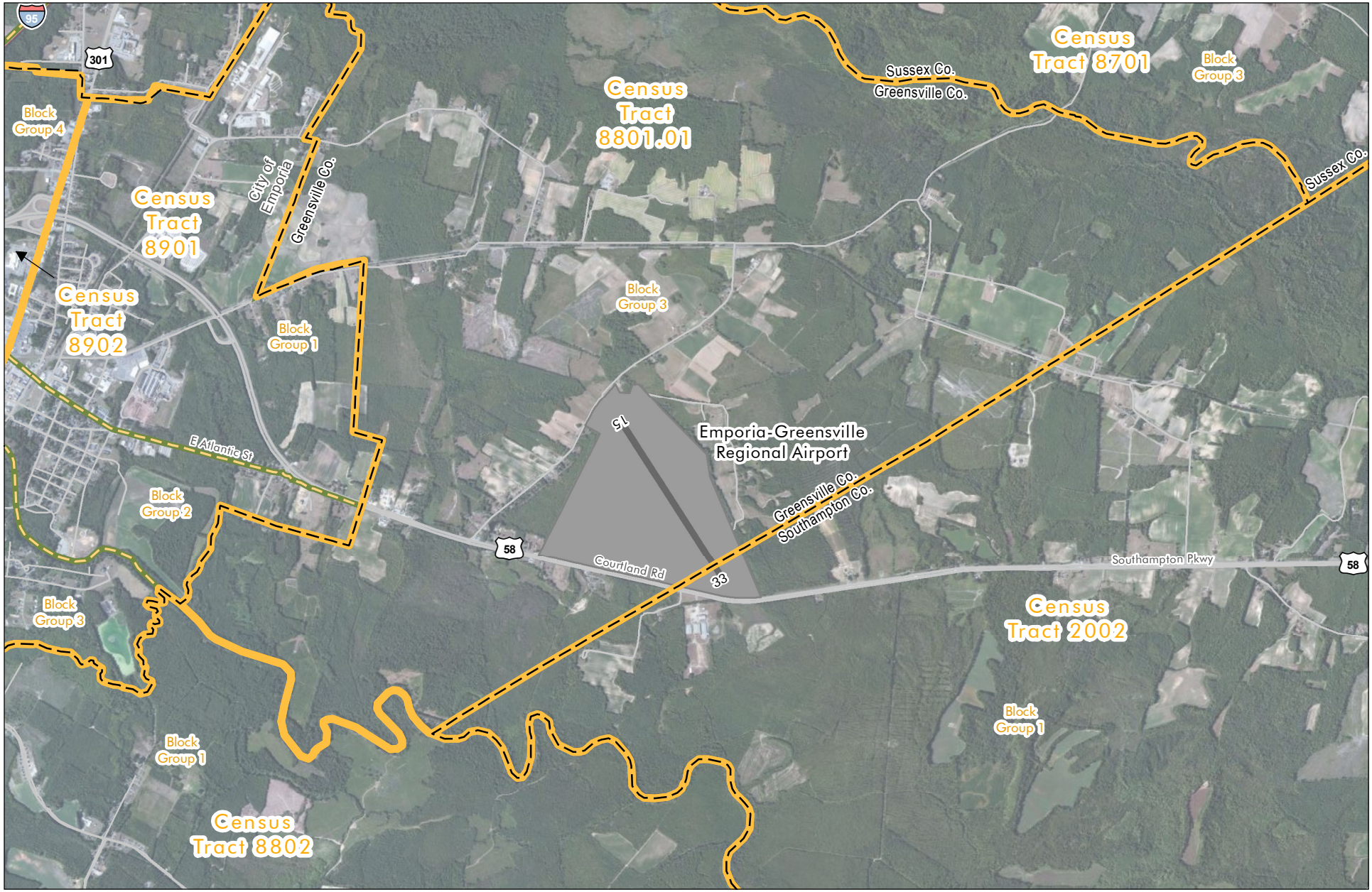


Source: US Census Bureau 2010; ESRI 2010; NAIP 2010.

Emporia-Greensville Regional Airport
Census Tracts
Block Groups
Major Highway
Local Street
County Boundary

Figure 3-27
Census Tracts and Block Groups
Emporia-Greensville Regional Airport

N

0 0.25 0.5
Miles

The minority population in the City of Emporia and Greensville County is over 60 percent of the total population. Southampton County also has a minority population when compared to the percentages in Virginia and the rest of the country. In each of these municipalities, African Americans represent the largest racial group, composing 62.2 percent of the population in the City of Emporia, 59.6 percent of the population in Greensville County, and 37.1 percent of the population in Southampton County. The percentage of the population in the municipalities that is of Hispanic or Latino origin is less than the percentage in Virginia, at 7.9 percent (U.S. Census Bureau, 2010 Census). Each of these municipalities has a greater percentage of individuals below the poverty level than the rest of Virginia.

The noise contours associated with existing aircraft operations at Emporia-Greensville are located entirely within airport property. Therefore, there are no existing disproportionately high and adverse environmental effects on minority and low-income communities in the surrounding municipalities or census block groups.

3.13.1.4 Protection of Children from Environmental Health Risks and Safety Risks

The study area for this analysis at Emporia-Greensville includes the census block groups within the greater than 65 dB DNL noise zones. Although larger than the study area, Greensville County, Southampton County, and the City of Emporia are described in this existing conditions section to provide context population and demographic data related to children for Virginia.

The age characteristics of the populations in the City of Emporia and Greensville and Southampton counties are examined and compared with data for Virginia in Table 3-36.

Table 3-36 Population and Demographic Data Related to Children, City of Emporia, Greensville County, and Southampton County, 2010

Location	Total Population	Population less than 21 Years Old [1]	Percent Less than 21 Years Old
Virginia	8,001,024	2,201,130	27.5
City of Emporia	5,927	1,772	29.9
Greensville County	12,243	2,399	19.6
Southampton County	18,570	4,537	24.4

Sources: U.S. Census Bureau, 2010 Census; U.S. Census Bureau, 2010 American Community Survey; U.S. Census Bureau, 2006-2010 American Community Survey (a,b).

Notes:
[1] EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, does not specify an age range for children. The U.S. EPA defines childhood as a series of lifestages, with the last lifestage ending at 21 years of age (U.S. EPA 2012b).

The City of Emporia has a larger proportion of children than that of Virginia. Although the actual number of children in the city—1,772 children—is small, they make up a slightly larger proportion of the population compared to Virginia as a whole.

The noise contours associated with existing aircraft operations at Emporia-Greensville are located entirely within airport property. Therefore, there are no existing disproportionately high and adverse environmental effects on children in the surrounding municipalities.

3.13.2 Impacts on Socioeconomic Conditions at Emporia-Greensville Regional Airport

3.13.2.1 Housing

Emporia-Greensville is currently an operating airport facility, and the projected noise resulting from the proposed action would not extend significantly outside the airport property. Results of studies conducted on the effects of aircraft noise on property values have been inconclusive and suggest that numerous factors influence property values. Therefore, the potential increase in noise levels resulting from the proposed action would not be expected to have a significant impact on residential property values around Emporia-Greensville.

3.13.2.2 Community Services

Local community services (i.e., the Emporia Volunteer Fire Department, the Jarratt Volunteer Fire Department, Greensville Volunteer Rescue Squad, Lifestar Ambulance Service, Inc., and the Greensville County Sheriff's Department) have the capacity to provide emergency response services if needed; however, currently there are no emergency response services available at the airfield. Implementation of Alternative 1 would not result in an increase in the population served by these emergency responders and would not require the need for the local community services to hire new personnel or purchase new equipment.

However, with the expected increase in the number of operations at Emporia-Greensville, the potential for an emergency at the airfield slightly increases. Given the historical safety record of the E-2/C-2 aircraft, potential incidents requiring the response of emergency services would be expected to be infrequent. Alternative 1 would therefore have no significant impact on community services.

3.13.2.3 Environmental Justice

The type and intensity of effects of the proposed action on minority or low-income populations would be the same as those affecting individuals of all other ethnicities or income levels. The noise contours for Alternative 1 extend into Greensville County and Southampton County. The 65 dB DNL noise contour extends into two census block groups; however, only one house (containing an estimated three people) is located within that contour. Table 3-37 presents data on the census block groups that are within the greater than 65 dB DNL noise zones under Alternative 1. As the noise contours do not extend into the City of Emporia, data related to the City of Emporia are not included in the table.

Table 3-37 Environmental Justice Statistics for Greensville County and Southampton County, 2010

Location	Total Population	Minority (Not Hispanic or Latino)[1]		Hispanic or Latino		Total Minority		Total Below Poverty Level[2]	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Virginia	**8,001,024**	**2,182,749**	**27.4**	**631,825**	**7.9**	**2,814,574**	**35.2**	**888,114**	**11.1**
Greensville County	**12,243**	**7,442**	**60.8**	**173**	**1.4**	**7,615**	**62.2**	**2,057**	**16.8[2]**
Census Tract 8801.01, Block Group 3	688	534	77.6	6	0.9	540	78.5	81	11.8
Southampton County	**18,570**	**7,229**	**38.9**	**203**	**1.1**	**7,432**	**40.0**	**2,934**	**15.8**
Census Tract 2002, Block Group 1	1,269	669	52.7	25	2.0	694	54.6	249	19.6[2]

Sources: U.S. Census Bureau, 2010 Census; U.S. Census Bureau, 2010 Census Summary File 1; U.S. Census Bureau, 2010 American Community Survey; U.S. Census Bureau, 2006-2010 American Community Survey (a,b); U.S. Census Bureau, 2005-2009 American Community Survey

Note:

[1] Percentages of minorities and Hispanic/Latino may not add up exactly to the total percentages of minorities due to rounding. In order to not double-count individuals, those who according to the U.S. Census were both minority and Hispanic or Latino were only included under Hispanic or Latino.

[2] Poverty data are not available at the block group level. Data are from the latest American Community Survey 5-Year Estimates for Greensville County (U.S. Census Bureau, 2005-2009 American Community Survey) and Southampton County (U.S. Census Bureau, 2006-2010 American Community Survey [a,b]). Data are for Census Tract 8801.01, which includes three block groups, and Census Tract 2002, which includes two block groups.

As shown in Table 3-37, Census Tract 8801.01, Block Group 3, has a higher percentage of minorities (not including individuals of Hispanic or Latino origin) than Greensville County. There is one house within this block group that is located within the 65 dB DNL noise contour. Since census block groups are composed of individual blocks, the specific block where these houses are located (Census Tract 8801.01, Block 3039) was identified. According to the U.S. Census, there are 50 individuals residing within that block, of whom 15 are minority. This would equate to 30 percent of the total population of the block. Based on this analysis, Census Tract 8801.01, Block 3039, which would be the affected geographic area, has a lower percentage of minorities than the census block group as a whole and Greensville County. Therefore, there would not be the potential for disproportionately high and adverse human health and environmental effects in Greensville County.

Census Tract 2002, Block Group 1, in Southampton County also has a higher percentage of minorities than the county. However, no houses are located within the greater than 65 dB DNL noise zones in Southampton County; therefore, there is also no potential for disproportionately high and adverse human health and environmental effects in Southampton County.

As noted in Section 1.4 of this document, interested people are invited to participate in informational open houses held in their communities regarding the proposed action and findings in the Draft EA. Participants in the information sessions will have the opportunity to submit written comments for consideration in the Final EA.

3.13.2.4 Protection of Children from Environmental Health Risks and Safety Risks

The noise contours for Alternative 1 extend into Greensville County and Southampton County. Table 3-38 presents data on the census block groups that are within the 65 dB DNL or greater noise zones.

Table 3-38 Protection of Children from Environmental Health Risks and Safety Risks: Statistics for Greensville County and Southampton County, 2010

Location	Total Population	Below 21 Years of Age	
		Population Less than 21 Years Old	Percent Less than 21 Years Old
Virginia	**8,001,024**	**2,201,130**	**27.5**
Greensville County	**12,243**	**2,399**	**19.6**
Census Tract 8801.01, Block Group 3	668	141	21.1
Southampton County	**18,570**	**4,537**	**24.4**
Census Tract 2002, Block Group 1	1,269	365	28.8

Sources: U.S. Census Bureau, 2010 Census; U.S. Census Bureau, 2010 Census Summary File 1; U.S. Census Bureau, 2010 American Community Survey; U.S. Census Bureau, 2006-2010 American Community Survey (a,b); U.S. Census Bureau, 2005-2009 American Community Survey.

Census Tract 8801.01, Block Group 3, has a higher percentage of the population that is less than 21 years old than Greensville County as a whole. Given the very small number of people located within the 65 dB DNL noise contour in the Greensville County census block group (one house, containing an estimated three people) and that the noise would be temporary, intermittent, and low-level, the proposed action would have no significant impact on the protection of children from health and safety risks.

Also, as shown in Table 3-38, Census Tract 2002, Block Group 1, has a higher percentage of the population under the age of 21 than Southampton County. However, the 65 dB DNL noise contour at Emporia-Greensville under Alternative 1 does not extend over any houses in Southampton County. Therefore, there would be no disproportionately adverse impact on children, and the proposed action would have no significant impact on the protection of children from health and safety risks.

3.13.3 Existing Socioeconomic Conditions at Wallops Flight Facility

3.13.3.1 Housing

Existing houses surrounding WFF Main Base are primarily located along sections of State Route 679 and Chincoteague Road (Route 175). In addition, the Chincoteague Bay Trails End development is a resort development located north of WFF Main Base with both cottages and mobile camper lots. These areas are all within Accomack County, which is the Navy's study area for housing. According to the U.S. Census, the five-year (2006-2010) average median home value for Accomack County is $149,800 (U.S. Census Bureau, 2006-2010 American Community Survey [a]). High value homes in the Town of Chincoteague and elsewhere along the coastal waters of Accomack County create

a median housing value that is most likely above the value of homes in the areas immediately surrounding WFF Main Base, where noise may be present.

This section also presents an overview of the temporary lodging inventory (i.e., hotel and motel rooms) because of the potential for the Navy to temporarily detach Navy personnel to WFF should Alternative 2 be selected. The Town of Chincoteague, located 5 miles east of WFF Main Base, has at least 18 hotels/motels, and Accomack County has at least another six that could accommodate individuals working at WFF Main Base on a temporary basis.

3.13.3.2 Community Services

The study area for the community services analysis is WFF and Accomack County. Community services include publicly available benefits such as fire and emergency medical response and police protection.

WFF has a 24-hour fire department housed in two buildings: one located on WFF Main Base and one located on WFF Wallops Island. The department maintains seven firefighting vehicles that can use water or aqueous film-forming foam, as well as a hazardous materials spill response trailer. Emergency 911 calls made on WFF property are routed to the WFF fire department (JD2 Environmental, Inc. 2011). In addition to fire response, the trained personnel can provide emergency medical services and respond to hazardous materials accidents (NASA 2008). They also have a mutual aid agreement with the Accomack-Northampton Fireman's Association. Accomack County has 21 fire stations; the nearest to WFF Main Base are in the communities of Atlantic (3 miles south), Chincoteague (4 miles east), and New Church (4 miles northwest) (URS January 2005).

WFF has a health unit that is staffed by a full-time nurse and physician to provide first aid and immediate assistance in emergency situations. The health unit is open during business hours. After hours, emergency medical care is provided by the 24-hour fire department.

The closest hospital to WFF Main Base is McCready Memorial Hospital, located near the Virginia-Maryland state line in Crisfield, Maryland (approximately 35 miles by road), which has approximately 20 in-patient beds (The McCready Foundation n.d.). The only hospital on Virginia's Eastern Shore is Riverside Shore Memorial Hospital, which is located in the Town of Nassawadox, Northampton County (approximately 42 miles by road). The hospital has 143 certified beds (Shore Health Services n.d.). Shore Health Services, the local affiliate of Riverside Health System that owns and operates the hospital, decided in 2010 to build a new hospital, in the area between Keller and Parksley in Accomack County, which would have an estimated 78 beds (Riverside Shore Memorial Hospital 2010). Construction could begin as soon as the fall of 2012 (Jeter 2011); when completed, the new hospital would be approximately 26 miles from WFF Main Base by road. There are also two medical centers within 5 miles of WFF Main Base: Chincoteague Medical Center on Chincoteague Island and Atlantic Medical Center in Oak Hall (NASA 2008).

The Accomack County Sheriff's Office's patrol deputies provide first response to all calls in the county, outside of incorporated towns that maintain their own police departments. The county sheriff's office has many other functions, including service of civil process, conducting criminal investigations, and providing courtroom security. The sheriff's office maintains a K-9 unit and two specialized teams, a tactical team (similar to a special weapons and tactics [SWAT] team) and a dive team (Accomack County Sheriff's Office 2011). Additionally, the Virginia State Police has a Bureau of Field Operations area office in the Town of Melfa, Accomack County. The Virginia State Police Bureau of Field Operations is primarily responsible for patrolling state roadways and interstate highways and providing criminal law enforcement as needed based on the availability of local law enforcement (Virginia State Police n.d.). The Town of Chincoteague has its own police department, which employs 11 officers to enforce criminal and traffic laws (Chincoteague, Virginia, 2010). WFF maintains a security force that provides 24-hour internal security for WFF. This includes security patrols, employee and visitor identification, and police services (NASA 2008).

3.13.3.3 Environmental Justice

Environmental justice is achieved if minority and low-income communities are not subjected to disproportionately high or adverse environmental effects. To evaluate the potential impact of the action, each resource area's potential effect on the human population was considered. The potential impact to the noise environment from the Navy's proposed action was determined to be most appropriate for identifying potential minority or low-income populations. Therefore, the study area for the environmental justice analysis at WFF includes the census block groups within the greater than 65 dB DNL noise zones. Although larger than the study area, Virginia and Accomack County are described in this existing conditions section to provide context demographic data.

The race, ethnicity, and poverty status characteristics of the population in Accomack County are examined and compared with state data in Table 3-39. Figure 3-28 shows the census tracts and census block groups surrounding WFF.

Accomack County has a greater percentage of minorities, at 38.9 percent, than Virginia, at 35.2 percent. The minority population in Accomack County is predominantly African American, with African American people composing 27.9 percent of the total population. The county also has a greater percentage of people below the poverty level, at 15.6 percent, than the rest of Virginia, at 11.1 percent.

The existing noise contours are located entirely within Accomack County and do not extend into the Town of Chincoteague. Census block groups currently within or partially within the noise contours include Block Group 2 and Block Group 3 in Census Tract 902 and Block Group 1 in Census Tract 9802. NASA has prepared an Environmental Justice Implementation Plan to guide its response to potential disproportionately high and adverse environmental effects on minority and low-income communities in the surrounding municipalities from NASA-proposed actions.

Table 3-39 Demographic Data Related to Minority, Hispanic, and Low-Income Populations, Accomack County (2010)

Location	Total Population	Minority (Not Hispanic or Latino)[1]		Hispanic or Latino[2]		Total Minority		Total Below Poverty Level[3]	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Virginia	**8,001,024**	**2,182,749**	**27.4**	**631,825**	**7.9**	**2,814,574**	**35.2**	**888,114**	**11.1**
Accomack County	**33,164**	**10,048**	**30.2**	**2,850**	**8.6**	**12,898**	**38.9**	**5,174**	**15.6**
Census Tract 902, Block Group 2	3,043	815	26.8	91	3.0	906	29.8	332[3]	10.9[3]
Census Tract 902, Block Group 3	2,246	867	38.6	83	3.7	950	42.3	245[3]	10.9[3]
Census Tract 9802, Block Group 1	5	0	0.0	0	0.0	0	0.0	N/A[3,4]	N/A[3,4]

Sources: U.S. Census Bureau, 2010 Census; U.S. Census Bureau, 2010 American Community Survey; U.S. Census Bureau, 2006-2010 American Community Survey (a,b).

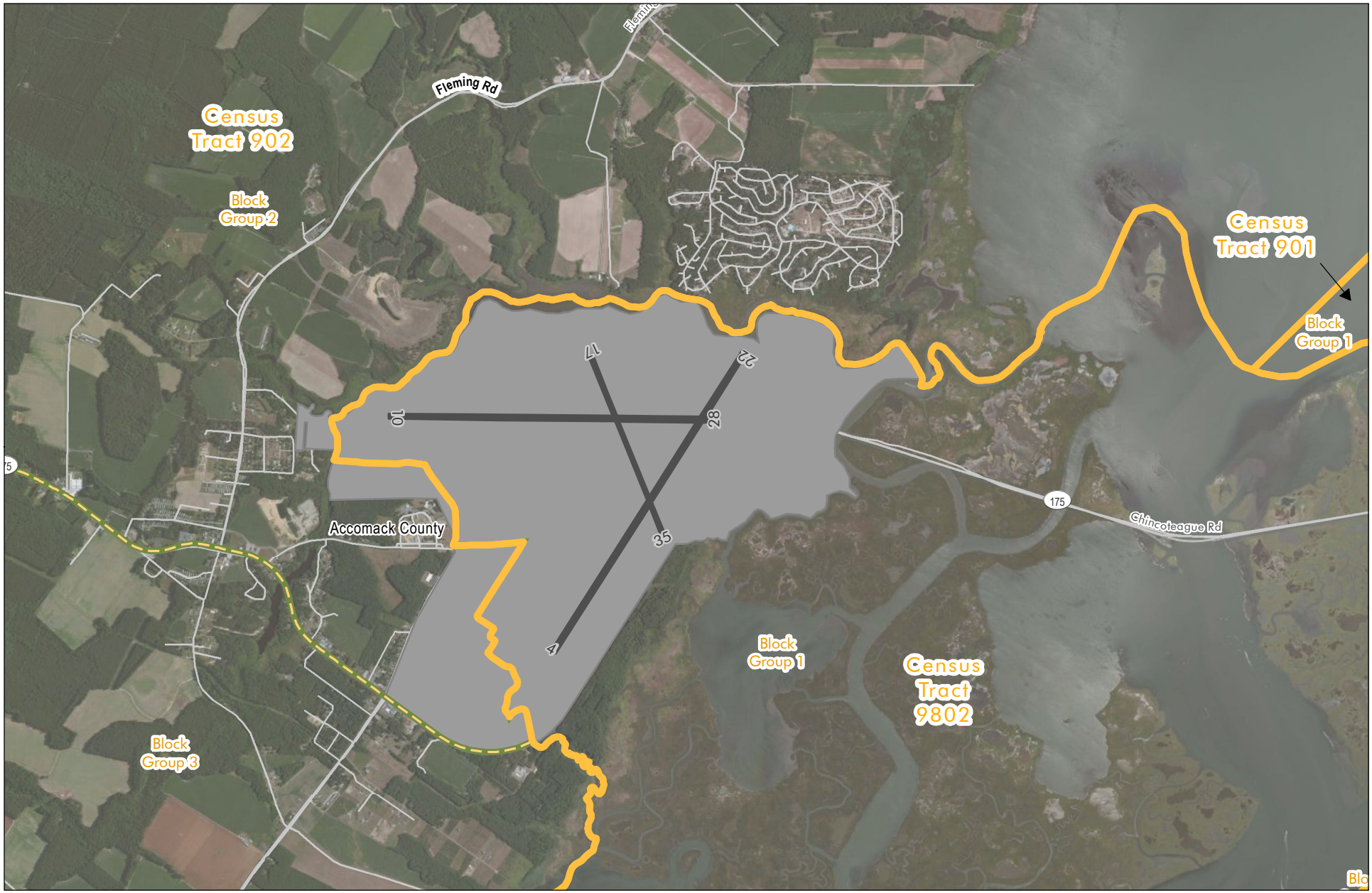
Notes:
[1] Minority populations include individuals who identify themselves as American Indian or Alaskan Native; Asian or Pacific Islander; African American, not of Hispanic origin; or Hispanic. In order to not double-count individuals, those who according to the U.S. Census were both minority and Hispanic or Latino were only included under Hispanic or Latino.
[2] Percentages of minorities and Hispanic/Latino may not add up exactly to the total percentages of minorities due to rounding.
[3] Poverty data are not available at the block group level. Data are from the 2006-2010 American Community Survey 5-Year Estimates for Census Tract 902, which includes one additional block group (Block Group 3) and Census Tract 9802, which includes only one block group.
[4] Datum is not applicable or not available.

3.13.3.4 Protection of Children from Environmental Health Risks and Safety Risks

The study area for this analysis at WFF Main Base includes the census block groups within the noise contours of 65 dB DNL and greater as defined by the noise analysis. Although larger than the study area, Virginia and Accomack County are described in this existing conditions section to provide context population and demographic data related to children. The age characteristics of the population of children in Accomack County are examined and compared to state data in Table 3-40.

Children make up 24.3 percent of the total population of Accomack County, which is a smaller percentage than that of children in Virginia, as shown in Table 3-40. The existing noise contours are located entirely within Accomack County and do not extend into the Town of Chincoteague. Census block groups currently within or partially within the noise contours include Block Group 2 and Block Group 3 in Census Tract 902 and Block Group 1 in Census Tract 9802.

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Wallops_Census_Block_Tracts.mxd



Source: US Census Bureau 2010; ESRI 2010.

Active Runway
Installation Area
Census Tracts
Block Groups
Major Highway
Local Street

Figure 3-28
Census Tracts and Block Groups
Wallops Flight Facility

N
0 0.25 0.5
Miles

Table 3-40 Population and Demographic Data Related to Children, Accomack County (2010)

Location	Total Population	Population Less than 21 Years Old	Percent Less than 21 Years Old
Virginia	**8,001,024**	**2,201,130**	**27.5**
Accomack County	**33,164**	**8,063**	**24.3**
Census Tract 902, Block Group 2	3,043	649	21.3
Census Tract 902, Block Group 3	2,246	539	24.0
Census Tract 9802, Block Group 1	5	2	40.0

Sources: U.S. Census Bureau, 2010 Census; U.S. Census Bureau, 2010 American Community Survey; U.S. Census Bureau, 2006-2010 American Community Survey (a,b).

Note:
[1] EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, does not specify an age range for children. The U.S. EPA defines childhood as a series of lifestages, with the last lifestage ending at 21 years of age (U.S. EPA 2012b).

3.13.4 Impacts on Socioeconomic Conditions at Wallops Flight Facility

3.13.4.1 Housing

Impacts to temporary housing availability at and in the vicinity of WFF Main Base are dependent on whether the Navy chooses to send detachments to WFF Main Base or conduct FCLP from NS Norfolk Chambers Field. In a non-detachment scenario, there would be no change in the permanent or transient population, so there would be no need for additional housing, either temporary or permanent. Potential noise impacts to housing values in the vicinity of WFF Main Base were analyzed for the non-detachment scenario.

WFF Main Base is currently an operating airfield facility, and the projected noise resulting from the proposed action would not be substantially different from existing conditions. Results of studies conducted on the effect of aircraft noise on property values have been inconclusive and suggest that numerous factors influence property values. Therefore, the potential increase in noise levels resulting from the proposed action would not be expected to have a significant impact on residential property values around WFF Main Base.

In a detachment scenario at WFF Main Base, a maximum of 130 personnel would be housed in Navy lodging at the installation. Any personnel that could not be accommodated in the Navy lodging on the installation would stay in local hotels/motels. The local lodging establishments would be able to provide adequate capacity for Navy personnel not accommodated in Navy lodging. One exception to this lodging availability would potentially be the week of the Chincoteague Pony Penning and Carnival in the last week of July, when there are oftentimes limited hotel or motel vacancies. Therefore, the detachment scenario would have no impact on local lodging outside the week of the event in Chincoteague, Virginia.

3.13.4.2 Community Services

The proposed Interagency Agreement between the Navy and NASA for use of WFF Main Base, which would include the terms for services provided to the Navy by NASA, would include a provision for fire and emergency response services from WFF's on-site fire department and health unit and provision of police protection by WFF's security force. Mutual aid for emergency response, if required, would be provided by local fire companies through NASA's existing mutual aid agreement with the Accomack-Northampton Fireman's Association (JD2 Environmental, Inc. 2011). In the event of an emergency, patients requiring further medical care would be transported to Riverside Shore Memorial Hospital. McCready Memorial Hospital could also be utilized because of its proximity.

If Navy personnel were to be temporarily housed on WFF Main Base or in the surrounding community during detachment periods, the potential increase in calls for fire, emergency medical, and police response would be about the same as the impact from sporadic tourists in the area. Therefore, local emergency response organizations would not be expected to expend money on new personnel or equipment because there would be no increase in permanent population. Therefore, implementation of Alternative 2 at WFF would have no significant impact on community services.

3.13.4.3 Environmental Justice

The type and intensity of effects of the proposed action on minority or low-income populations would be the same as those affecting individuals of all other ethnicities or income-levels. The noise contours for Alternative 2 at WFF Main Base for both Runways 04/22 and 10/28 extend into Accomack County. Table 3-41 presents data on the census block groups that are within the greater than 65 dB DNL noise zones under Alternative 2. Note that Census Tract 902, Block Group 3, would only be affected if Runway 04/22 is selected for E-2/C-2 FCLP.

When compared to Accomack County as a whole, Census Tract 902, Block Group 3, has a higher percentage of minorities (42.3 percent in the block group versus 38.9 percent in Accomack County). There is one house within this block group that is located within the 65 dB DNL noise contour for Alternative 2, Scenario 2. Since census block groups are composed of individual blocks, the specific block where these houses are located (Census Tract 902, Block 3112) was identified. According to the U.S. Census, there are 46 individuals residing within that block, of whom four are minority. This would equate to 8.7 percent of the total population of the block. Based on this analysis, Census Tract 902, Block 3112, which would be the affected geographic area, has a lower percentage of minorities than the census block group as a whole and Accomack County. Therefore, there would not be the potential for disproportionately high and adverse human health and environmental effects in Accomack County for Alternative 2.

Table 3-41 Environmental Justice Data for Accomack County, 2010

Location	Total Population	Minority (Not Hispanic or Latino)[1]		Hispanic or Latino		Total Minority		Total Below Poverty Level[2]	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Virginia	**8,001,024**	**2,182,749**	**27.4**	**631,825**	**7.9**	**2,814,574**	**35.2**	**888,114**	**11.1**
Accomack County	**33,164**	**10,048**	**30.2**	**2,859**	**8.6**	**12,898**	**38.9**	**5,174**	**15.6**
Tract 902, Block Group 2	3,043	815	26.8	91	3.0	906	29.8	332	10.9[2]
Tract 902, Block Group 3	2,246	867	38.6	83	3.7	950	42.3	245	10.9[2]
Tract 9802, Block Group 1	5	0	0.0	0	0.0	0	0.0	N/A	N/A[2,3]

Sources: U.S. Census Bureau, 2010 Census; U.S. Census Bureau, 2010 Census Summary File 1; U.S. Census Bureau, 2010 American Community Survey; U.S. Census Bureau, 2006-2010 American Community Survey (a,b).

Note:
[1] Percentages of minorities and Hispanic/Latino may not add up exactly to the total percentages of minorities due to rounding. In order to not double-count individuals, those who according to the U.S. Census were both minority and Hispanic or Latino were only included under Hispanic or Latino.
[2] Poverty data are not available at the block group level. Data are from the 2006-2010 American Community Survey 5-Year Estimates for Census Tract 902, which includes one additional block group (Block Group 3), and Census Tract 9802, which includes only one block group.
[3] Data are not applicable or not available

As noted in Section 1.4 of this document, interested people are invited to participate in informational open houses to be held in their communities regarding the proposed action and findings in the Draft EA. Participants in the information sessions will have the opportunity to submit written comments for consideration in the Final EA.

3.13.4.4 Protection of Children from Environmental Health Risks and Safety Risks

The noise contours for Alternative 2 at WFF Main Base for both the three-plane and three- and five-plane scenarios extend into Accomack County. Table 3-42 presents data on the census block groups that are within the 65 dB DNL or greater noise contour.

Table 3-42 Protection of Children from Environmental Health Risks and Safety Risks Statistics for Accomack County, 2010

Location	Total Population	Below 21 Years of Age	
		Population Less than 21 Years Old	Percent Less than 21 Years Old
Virginia	**8,001,024**	**2,201,130**	**27.5**
Accomack County	**33,164**	**8,063**	**24.3**
Tract 902, Block Group 2	3,043	649	21.3
Tract 902, Block Group 3	2,246	539	24.0
Tract 9802, Block Group 1	5	2	40.0

Sources: U.S. Census Bureau, 2010 Census; U.S. Census Bureau, 2010 Census Summary File 1; U.S. Census Bureau, 2010 American Community Survey; U.S. Census Bureau, 2006-2010 American Community Survey (a,b).

As shown in Table 3-42, Census Tract 9802, Block Group 1, has a higher percentage of children under the age of 21 than Accomack County. However, all of the people in this block group appear to be members of the same household, and this residence would not be within the modeled noise contours under any of the modeled scenarios. Block Groups 2 and 3 in Census Tract 902 have lower percentages of children under the age of 21 than the county; therefore, there would not be a disproportionately high and adverse effect on them, and the proposed action would have no significant impact on the protection of children from health and safety risks.

3.14 Environmental Management

This section outlines the regulatory provisions governing hazardous materials and hazardous waste. Under Alternative 1, the Navy would not station aircraft or personnel, and would not store any hazardous materials such as oil or hydraulic fluid at Emporia-Greensville. Therefore, environmental management (i.e., hazardous material and hazardous waste management) is not analyzed in this EA for Emporia-Greensville. Under Alternative 2, the Navy may temporarily station aircraft and personnel at WFF Main Base; therefore, the existing conditions for environmental management and potential impacts associated with Alternative 2 are discussed. The study area for hazardous materials, pollution prevention, and solid waste management is the boundary of the WFF Main Base property.

3.14.1 Existing Environmental Management at Wallops Flight Facility

WFF Main Base is classified as a large-quantity hazardous waste generator because it has the potential to generate more than 1,000 kilograms (approximately 2,200 pounds) of hazardous waste per month. In 2007, WFF Main Base generated approximately 34,800 kilograms (76,800 pounds) of hazardous waste (NASA WFF 2008).

WFF Main Base stores its hazardous waste in two separate temporary (less than 90-day) accumulation areas: one for used oil and one for all other hazardous waste. Hazardous waste may be stored for up to 90 days from the date of initial accumulation. Prior to reaching 90 days from the date of initial accumulation, the waste is picked up by a licensed hazardous waste transporter and taken to a licensed treatment, storage, and disposal facility (NASA WFF 2008).

WFF maintains a pollution prevention plan that is reviewed annually. Recycling is a large part of the plan (NASA WFF 2008). It also has an integrated contingency plan, which satisfies the requirements of a Spill Prevention, Control, and Countermeasure Plan; an oil discharge contingency plan; and a hazardous waste contingency plan (NASA WFF 2011). Due to the use of radiation-emitting materials and equipment for research and development, WFF also has a radiation protection safety program (NASA WFF 2008).

Solid waste is collected in receptacles throughout the installation and disposed of offsite by a contractor. The facilities management department routinely inspects solid waste receptacles to ensure that recyclables and hazardous wastes are not

being disposed of in them. Receptacles for recyclables are readily available throughout the installation (NASA WFF 2008). Satellite accumulation areas, for hazardous waste headed toward the 90-day accumulation areas, are located in specified work areas (NASA WFF 2008).

3.14.2 Impacts on Environmental Management at Wallops Flight Facility

Under Alternative 2, the Navy could temporarily station aircraft and personnel at WFF Main Base. This would require storage of hazardous materials associated with maintenance of the aircraft. These materials would be stored in a hazardous material storage locker within the airfield hangar utilized by the Navy during the detachment period. The locker would be expected to measure approximately 200 cubic feet in size.

For hazardous materials disposal, the Navy would have four 55-gallon hazardous materials waste disposal cans. Waste placed in these cans would enter the established WFF hazardous waste disposal program, described in Section 3.14.1. WFF's hazardous waste disposal program has capacity for the waste; therefore, there would be only a minor impact on hazardous materials management at the airfield. The Navy would follow WFF's established pollution prevention plan, so there would be no significant impact on pollution prevention at the airfield.

The temporary and periodic nature of the detachments would not be anticipated to significantly impact solid waste generated at WFF Main Base.

4 Comparison of Environmental Impacts

This chapter provides a summary and comparison of the environmental impacts that could result from the proposed action at Emporia-Greensville Regional Airport or Wallops Flight Facility and the No Action Alternative.

4.1 Alternative 1: Emporia-Greensville Regional Airport

The environmental impacts of the Navy's implementation of Alternative 1 at Emporia-Greensville are presented in detail in Section 3. This section provides an overall summary related to the construction impacts and aircraft operations impacts to the resource areas. No significant impacts to resources were identified at Emporia-Greensville associated with implementation of the Navy's proposed action.

Under Alternative 1, there are two potential operational scenarios. The analysis in Section 3 reaches the same conclusion of no significant impact under either Scenario 1 or 2.

4.1.1 Construction Impacts

Under Alternative 1, there would be airfield modifications at Emporia-Greensville to accommodate E-2/C-2 FCLP operations. This would include installation of concrete pads, runway markings, runway lighting, and utility trenching; thus, there would be minor short-term impacts to such resources as soils, air quality, and vegetation. In addition, there would be minor, long-term impacts to vegetation and stormwater management from the installation of concrete pads. However, the proposed airfield improvements would not result in any significant impacts to resources present at Emporia-Greensville due to the limited construction footprint associated with the airfield improvements (an estimated 0.43 acre), the avoidance of wetlands, and the fact that there is no habitat for any federally protected species at Emporia-Greensville.

4.1.2 Aircraft Operation Impacts

Under Alternative 1, the Navy would conduct up to 45,000 E-2/C-2 aircraft operations related to FCLP at Emporia-Greensville. The airfield would continue to be utilized by the existing fixed-wing and rotary-wing aircraft that operate at Emporia-Greensville, which includes an estimated 2,320 annual operations; thus, total annual operations would be approximately 47,320.

The proposed aircraft operations at Emporia-Greensville could result in minor, intermittent, direct impacts to aircraft operations and safety during times of Navy FCLP. There would also be minor direct impacts to noise and air quality for the duration of the action (up to 10 years). Specifically for noise, this includes an additional 42 acres and 46 acres of land under Scenario 1 and Scenario 2, respectively, that would be within the greater than 65 dB DNL noise zones, off of Emporia-Greensville property.

Potential indirect impacts to land use, socioeconomics, and biological resources could result from implementation of the Navy's proposed action. However, the impacts to these resources would be minimal and/or intermittent, as discussed in detail in Section 3, and would not be considered significant.

4.2 Alternative 2: Wallops Flight Facility

The environmental impacts of the Navy's implementation of Alternative 2 at WFF Main Base are presented in detail in Section 3. This section provides an overall summary related to the construction impacts and aircraft operations impacts to the resource areas. The analysis did not identify any significant impacts to resources at WFF Main Base associated with implementation of the Navy's proposed action.

Under Alternative 2, there are two potential operational scenarios. The analysis noted in Section 3 reaches the same conclusion of no significant impact for both Scenario 1 and 2.

In a detachment situation at WFF Main Base, personnel, aircraft, and support equipment may remain in the local area during the training period. The impacts associated with Alternative 2 are generally consistent whether the Navy chooses to detach to WFF Main Base or send aircraft from NS Norfolk Chambers Field. In a detachment situation at WFF Main Base, personnel would find accommodations in on-installation Navy housing or in the local community. The temporary and periodic nature of the detachments is not anticipated to significantly impact local hotel accommodations and may be considered a benefit to several local businesses.

4.2.1 Construction Impacts

Under Alternative 2, there would be airfield modifications at WFF Main Base to accommodate E-2/C-2 FCLP operations. This would include concrete pads, runway markings, runway lighting, and utility trenching; thus, there would be minor short-term impacts to such resources as soils, air quality, and vegetation. In addition, there would be minor, long-term impacts to vegetation and stormwater management from the installation of concrete pads. However, the proposed airfield improvements would not result in any significant impacts to resources present at WFF Main Base due to the limited construction footprint associated with the airfield improvements (up to an estimated 0.05 acre), the avoidance of wetlands, and a finding of no effect on federally protected species that may be present in the vicinity of WFF Main Base.

4.2.2 Aircraft Operation Impacts

Under Alternative 2, the Navy would conduct up to 45,000 E-2/C-2 aircraft operations related to FCLP at WFF Main Base. The airfield would continue to be utilized by the existing fixed-wing and rotary-wing aircraft that operate at WFF Main Base, which includes an estimated 13,074 annual operations; thus, total annual operations would be approximately 58,074. Navy aircraft operations constitute the majority of the current airfield activity at WFF Main Base. Additional operations associated with the Navy's proposed action would be similar to those currently being conducted and would also result in some operations being conducted after dark.

The proposed aircraft operations at WFF Main Base could result in minor, intermittent, direct impacts to aircraft operations and safety during times of Navy FCLP. There would also be minor direct impacts to noise and air quality for the duration of the action (up to 10 years). Specifically for noise, an additional 213 acres and 156 acres of land under Scenario 1 and Scenario 2, respectively, would be within the greater than 65 dB DNL noise zones, outside of WFF Main Base property. Potential indirect impacts to land use, socioeconomics, and biological resources could result from implementation of Alternative 2. However, the impacts to these resources would be minimal and/or intermittent, as discussed in detail in Section 3, and would not be considered significant.

4.3 No Action Alternative

As stated in Section 2.2.3, under the No Action Alternative, the Navy would not use the airfield facilities at Emporia-Greensville or WFF Main Base for E-2/C-2 FCLP. E-2/C-2 squadrons, operating from NS Norfolk Chambers Field, would continue to use NALF Fentress alongside other aircraft for FCLP operations. E-2/C-2 FCLP operations would also be conducted at NAS Oceana and/or through periodic out-of-area detachments to complete training requirements when scheduling or capacity issues arise at NALF Fentress. The airfield would continue to be used by the existing aircraft that currently operate at Emporia-Greensville or WFF Main Base under the No Action Alternative.

The No Action Alternative is required to be evaluated in this EA to serve as a benchmark for decision-makers to compare the potential environmental effects of the proposed action and alternatives.

4.4 Comparison of Alternatives

Table 4-1 presents a comparison of the environmental consequences of the alternatives being evaluated as part of this EA.

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Aircraft Operations and Airspace			
Airspace and Aircraft Operations	**No significant impact.** There would be a minor impact as the runway would be closed to non-FCLP arrivals and departures, except in the case of an emergency.	**No significant impact.** There would be a minor impact as the runway being used by the Navy for FCLP would be closed to non-FCLP participants, except in the case of an emergency.	**No change from existing conditions.**
Safety			
Airfield	**No significant impact.** There would be no change to the size or shape of the Runway Protection Zones at Emporia-Greensville or restrictions on lands that fall within the Runway Protection Zones.	**No significant impact.** There would be no change to the size or shape of the Potential Accident Zones or clear zones associated with WFF Main Base or restrictions on lands that fall within the Potential Accident Zones or clear zones.	**No change from existing conditions.**
Aircraft Mishap Potential and Emergency Response	**No significant impact.** It is unlikely, but possible that a mishap involving the E-2/C-2 aircraft resulting in loss of life, permanent total disability, destruction of the aircraft, or off-station property damage would occur at Emporia-Greensville during the proposed operations.	**No significant impact.** It is unlikely, but possible that a mishap involving the E-2/C-2 aircraft resulting in loss of life, permanent total disability, destruction of the aircraft, or off-station property damage would occur at WFF Main Base during the proposed operations.	**No change from existing conditions.**
Bird/Animal Aircraft Strike Hazard	**No significant impact.** There would be a minor increase in the probability of a BASH incident as a result of the increase in air operations at Emporia-Greensville.	**No significant impact.** There would be a minor increase in the probability of a BASH incident as a result of the increase in air operations at WFF Main Base.	**No change from existing conditions.**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Air Quality			
	No significant impact. The air emissions resulting from the short-term construction and annual aircraft operations are below thresholds for all criteria pollutants. Emporia-Greensville is located in a region that is in attainment of the National Ambient Air Quality Standards, therefore the General Conformity rule does not apply.	**No significant impact.** The air emissions resulting from the short-term construction and annual aircraft operations are below thresholds for all criteria pollutants. WFF Main Base is located in a region that is in attainment of the National Ambient Air Quality Standards, therefore the General Conformity Rule does not apply.	**No change from existing conditions.**
Noise			
	Alternative 1, Scenario 1 **No significant impact.** A minor impact would result due to an increase in the noise contours at Emporia-Greensville. There would be 42 additional acres and an estimated three people impacted over baseline conditions. *Alternative 1, Scenario 2* **No significant impact.** A minor impact would result due to an increase in the noise contours at Emporia-Greensville. There would be 46 additional acres and an estimated three people impacted over baseline conditions.	*Alternative 2, Scenario 1* **No significant impact.** A minor impact would result from the use of Runway 04/22 as there would be 213 additional acres and an estimated seven people impacted over baseline conditions at WFF Main Base. *Alternative 2, Scenario 2* **No significant impact.** A minor impact would result from the use of Runway 10/28 as there would be 156 additional acres and an estimated 33 people impacted over baseline conditions at WFF Main Base.	**No change from existing conditions.**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Land Use			
Existing Land Uses	*Alternative 1, Scenario 1 and Scenario 2* **No significant impact.** An estimated 41.0 acres (98.1 percent) and 44.8 acres (98.2 percent) of the land uses under Scenario 1 and 2, respectively, are currently considered compatible with Navy noise recommendations. *Comprehensive Plans* **No significant impact.** The proposed action is compatible and consistent with the comprehensive plans for the City of Emporia, Greensville County, and Southampton County. *Recreation and Conservation Areas* **No significant impact.** No lands would be purchased under Alternative 1, and any recreation or conservation areas that exist within 2 miles of Emporia-Greensville are located outside of the modeled 65 dB DNL noise contour.	*Alternative 2, Scenario 1 and Scenario 2* **No significant impact.** An estimated 659 acres (81.1 percent) and 608 acres (80.4 percent) of the land uses under Scenario 1 and 2, respectively, are currently considered compatible with Navy noise recommendations. *Comprehensive Plans* **No significant impact.** The proposed action is compatible and consistent with the comprehensive plan for Accomack County. *Recreation and Conservation Areas* **No significant impact.** There would be no direct land use impacts to recreation or conservation areas as the Navy would not be purchasing or leasing any of those existing areas.	**No change from existing conditions.**
Virginia Coastal Zone Management	**Not Applicable.**	**No significant impact.** The proposed action would either have no effect upon or would be fully consistent with the enforceable policies of the Commonwealth of Virginia's federally approved Coastal Zone Management Program.	**No change from existing conditions.**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Infrastructure and Utilities			
	No significant impact. Personnel-related infrastructure improvements would not be needed. Telephone service and electricity needed for FCLP would operate within existing capacity.	**No significant impact.** Telephone service and electricity needed for FCLP would operate within existing capacity. Under a non-detachment scenario, personnel-related infrastructure improvements would not be needed. Under a detachment scenario, up to 130 personnel would be staying in established lodging facilities that have adequate electric and telephone capacity.	**No change from existing conditions.**
Visual Landscape: Light Emissions and Visual Impacts			
	No significant impact. Airfield modifications would be consistent with the visual setting of the Emporia-Greensville airfield. The community is generally accustomed to seeing both propeller aircraft and military helicopter operations; thus, although there would be an increase in the total number of operations, the introduction of military propeller aircraft conducting temporary FCLP would not be a significant impact.	**No significant impact.** Airfield modifications would be consistent with the visual setting of WFF Main Base. From surrounding areas, E-2/C-2 aircraft would be visible in the skies while conducting FCLP. E-2/C-2 aircraft currently operate at the airfield and the Navy's proposed action would increase the number of operations and a portion of the operations would take place after sunset.	**No change from existing conditions.**
Geology, Topography, and Soils			
Geology	**No significant impact.** No deep excavations would be required to complete the proposed action.	**No significant impact.** No deep excavations would be required to complete the proposed action	**No change from existing conditions.**
Topography	**No significant impact.** These impacts are a result of minor excavations for the placement of underground utility lines.	**No significant impact.** These impacts are a result of minor excavations for the placement of underground utility lines.	**No change from existing conditions.**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Soils	**No significant impact.** These short-term impacts are a result of exposing soils to wind and stormwater erosion, compaction, and rutting and would be limited to the period of construction.	**No significant impact.** These short-term impacts are a result of exposing soils to wind and stormwater erosion, compaction, and rutting and would be limited to the period of construction.	**No change from existing conditions.**
Water Resources			
Floodplains	**No significant impact.** Construction would not occur in a floodplain.	**No significant impact.** Construction would not occur in a floodplain.	**No change from existing conditions.**
Wetlands	**No significant impact.** No new construction is proposed within wetlands.	**No significant impact.** No new construction is proposed within wetlands.	**No change from existing conditions.**
Stormwater	**No significant impact.** There would be the creation of 0.43 acre of new, completely impervious surface associated with the Navy's proposed action (This is the sum of both new impervious surface and the conversion of partially pervious surface to completely impervious surface). A Stormwater Pollution Prevention Plan would not be required, but an erosion control plan would be prepared to minimize stormwater runoff.	**No significant impact.** There would be an addition of up to 0.05 acre of impervious surface associated with the Navy's proposed action. Neither a Stormwater Pollution Prevention Plan nor an erosion control plan would be required.	**No change from existing conditions**
Biological Resources			
Vegetation	**No significant impact.** Temporary impacts on maintained grassland would result from the installation of buried utility lines.	**No significant impact.** Temporary impacts on maintained grassland would result from the installation of buried utility lines.	**No change from existing conditions**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Marine Mammals, Birds, and Other Wildlife	**No significant impact.** *Marine Mammals* No marine mammals exist at or in the vicinity of Emporia-Greensville. *Birds and Other Wildlife* Temporary displacement of birds and other wildlife may result during construction. Minor impacts to birds and other wildlife may result from noise associated with aircraft operations; however, Emporia-Greensville is an existing airport facility, and wildlife generally acclimate to noise.	**No significant impact.** *Marine Mammals (and Fish)* Any marine fish that occur regularly in Chincoteague Bay are already habituated to noise from current and ongoing aircraft over flights, and the projected noise contours are only slightly larger than the existing noise contours at WFF Main Base. Smaller delphinids, including the bottlenose dolphin, generally react to aircraft over flights either neutrally or with a startle response (Wursig et al. 1998). The Navy has determined that although short-term disturbance of the bottlenose dolphin from the increase in aircraft operations at WFF Main Base could be possible, they would not result in Level A or Level B harassment as defined under the Marine Mammal Protection Act. *Birds and Other Wildlife* Temporary displacement of birds and other wildlife may result during construction. Minor impacts to birds and other wildlife may result from noise associated with aircraft operations; however, WFF Main Base is an existing airport facility, and birds and other wildlife are likely habituated to aircraft noise.	**No change from existing conditions**
Threatened and Endangered Species	**No significant impact.** The proposed action at Emporia-Greensville would have no effect on any federally listed species. No further consultation is required under Section 7 of the ESA.	**No significant impact.** No federally listed threatened or endangered species under USFWS jurisdiction were identified as potentially occurring within the modeled 65 dB DNL noise zone. Several	**No effect**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
		species under NMFS jurisdiction could occur in Chincoteague Bay, including the green, Kemp's ridley, and loggerhead sea turtles; the Atlantic and shortnose sturgeon; and the federal candidate species blueback herring and scalloped hammerhead shark. Considering the existing aircraft over flights and rocket launches from Wallops, the increase in aircraft operations would not be expected to have a discernible impact on sea turtles or fish. Therefore, there would be no effect on the federally threatened loggerhead and green sea turtles, the federally endangered Kemp's ridley sea turtle, and the federally endangered Atlantic and shortnose sturgeons. Similarly, the proposed action would not jeopardize the federal candidate blueback herring or scalloped hammerhead shark.	
	No significant impact. No species listed by Virginia as threatened or endangered were identified as potentially occurring in the vicinity of Emporia-Greensville that were not already analyzed under federally threatened and endangered species.	**No significant impact.** Two additional state-listed species, the bald eagle and gull-billed tern, were identified as potentially occurring within the area encompassing the modeled 65 dB DNL noise contour around WFF Main Base. Five active bald eagle nests occur within approximately 5 miles of WFF Main Base in 2011. Given the current air operations, bald eagles nesting close to the facility are likely habituated to aircraft activity and noise. Therefore, an increase in air operations would not be expected to result in a take of bald eagles. Gull-billed terns do not occur on WFF Main	

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
		Base and therefore would not be impacted by construction. Additionally, no significant increase in aircraft noise would be expected on the barrier islands where gull-billed terns are likely to occur.	
Cultural Resources			
Archaeological and Architectural Resources	**No significant impact.** The proposed action would not result in any new archaeological impacts given the minor airfield modifications under the Navy's proposed action. **No significant impact.** No effect on any architectural resources at Emporia-Greensville Regional Airport either individually eligible for inclusion in the National Register of Historic Places or that constitute an eligible historic district. **No significant impact.** No new or different indirect visual or auditory impacts in the Emporia-Greensville area of potential effect.	**No significant impact.** The proposed action would not result in any new archaeological impacts given the minor airfield modifications under the Navy's proposed action. **No significant impact.** No effect on any architectural resources at WFF Main Base either individually eligible for inclusion in the National Register of Historic Places or that constitute an eligible historic district. **No significant impact.** No new or different indirect visual or auditory impacts in the WFF Main Base area of potential effect.	**No change from existing conditions.**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Socioeconomics			
Housing	**No significant impact.** A limited number of housing units would be located within the greater than 65 dB DNL noise contour and studies have not identified a conclusive relationship between noise and property values.	**No significant impact.** Studies have not identified a conclusive relationship between noise and property values, and the noise contours do not increase significantly over baseline conditions. If the Navy decides to send detachments to WFF Main Base, they will be primarily housed in on-installation Navy lodging and the local community would have adequate capacity to accommodate Navy personnel when there is not sufficient vacancy at the installation.	**No change from existing conditions.**
Community Services	**No significant impact.** An increase in aircraft operations at Emporia-Greensville would not be expected to require expenditures of new personnel or equipment.	**No significant impact.** An increase in aircraft operations at WFF Main Base would not be expected to require expenditures of new personnel or equipment.	**No change from existing conditions.**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Environmental Justice	**No significant impact.** To evaluate the potential of an impact to minority and low-income populations, the greater than 65 dB DNL noise contour was utilized. As demonstrated in the analysis of other resource areas, impacts related to Alternative 1 are negligible and therefore are not evaluated further in the context of impacts to potential environmental justice populations. An evaluation of census block group and block level data indicated that there is not a minority or low-income population in the greater than 65 dB DNL noise contour that exceeds that of the community of comparison (Greensville or Southampton county) on a percentage basis.	**No significant impact.** To evaluate the potential of an impact to minority and low-income populations, the greater than 65 dB DNL noise contour was utilized. As demonstrated in the analysis of other resource areas, impacts related to Alternative 2 are negligible and therefore are not evaluated further in the context of impacts to potential environmental justice populations. An evaluation of census block group and block level data indicated that there is not a minority or low-income population in the greater than 65 dB DNL noise contour that exceeds that of the community of comparison (Accomack County) on a percentage basis.	**No change from existing conditions.**
Protection of Children from Environmental Health and Safety Risks	**No significant impact.** A disproportionately high and adverse effect is not anticipated.	**No significant impact.** A disproportionately high and adverse effect is not anticipated.	**No change from existing conditions.**

Table 4-1 Comparison of Environmental Consequences

Resource Area	Alternative 1 Emporia-Greensville Regional Airport	Alternative 2 Wallops Flight Facility	No Action Alternative
Environmental Management			
Hazardous Materials, Pollution Prevention, and Solid Waste	**Not Applicable.**	*Hazardous Materials* **No significant impact.** There would be no impact on hazardous materials. *Pollution Prevention* **No significant impact.** WFF has an established Spill Prevention, Control and Countermeasure Plan that would be followed. *Solid Waste* **No significant impact.** Under a detachment scenario, an additional 130 personnel staying at WFF or in the vicinity of the installation would generate additional solid waste; however, they would be staying in established lodging facilities that have adequate capacity to dispose of solid waste.	**No change from existing conditions**

5 Cumulative Impacts

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). Reasonably foreseeable future actions include planned or proposed projects but do not include speculative, remote, hypothetical, or contingent projects, which need not be considered in a cumulative impact analysis. If the Navy's proposed action does not result in a direct or indirect impact on a resource area, then no further analysis of potential cumulative effects to that resource is necessary.

Cumulative impacts can result from individually minor but collectively significant actions by various agencies (federal, state, and local) or individuals that take place over time. Significance of the cumulative impacts of the proposed action and other actions is determined according to Section 1508.27 of the Environmental Quality Improvement Act of 1970, as amended [43 CFR 56003, Nov. 29, 1978], which, in part, notes that significance is determined based on whether the action is related to other actions with individually insignificant but cumulatively significant impacts (see Section 2.4 for more information on determining significance).

A cumulative impact analysis identifies and defines the scope of other actions and their interrelationship with the proposed action and alternatives. Cumulative impacts are most likely to occur when a proposed action is related to actions that could occur in the same or an overlapping geographic location and at the same or a similar time period, and they may be temporary or permanent. Actions overlapping with or in proximity to the proposed alternatives would be expected to have more potential for a relationship than those more geographically separated.

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the timeframe in which the impacts could be expected to occur. Cumulative impacts may be temporary or permanent. It is possible that analysis of cumulative impacts may go beyond the scope of the project-specific direct and indirect impacts to include expanded geographic and time boundaries and a focus on broad resource sustainability. This "big picture" approach is becoming increasingly important as growing evidence suggests that the most significant impacts result not from the direct impact of a particular action but from the combination of individual, often minor, impacts of multiple actions over time.

The underlying issue is whether or not a resource can adequately recover from the impact of an action before the environment is exposed to a subsequent action or actions.

Under the proposed action for this EA, the timeframe for construction-related cumulative impacts resulting from modifications to airfield facilities would start in the spring of 2013 and continue to July 2013. Construction-related cumulative impacts related to the proposed action could be both short term (e.g., air emissions from construction equipment) and long term (e.g., an increase in impervious surfaces). The timeframe for cumulative impacts resulting from E-2/C-2 operations would start in the summer of 2013 and continue for a period of up to 10 years to 2023 (the potential total term of the airfield lease or Interagency Agreement).

In general, the Navy analyzes the effects of individual actions that are similar or related to their proposed action. This analysis may be qualitative rather than quantitative when data on the environmental effects of past actions are insufficient. The combined effects of past actions were incorporated into the existing environment section within individual resource sections. Ongoing impacts of recently completed or initiated actions are analyzed to the extent that they may be additive to the impacts resulting from implementation of Alternative 1 or Alternative 2. Analysis of cumulative impacts primarily includes past, present, and reasonably foreseeable future actions that may have impacts similar to those identified under the alternatives analysis and that should be evaluated together in order to determine whether additive impact to a resource could be experienced.

Resource-specific geographic study areas for this cumulative impact analysis are defined for Emporia-Greensville and WFF Main Base in Sections 5.1.3 and 5.2.3, respectively.

5.1 Emporia-Greensville Regional Airport

5.1.1 Description of Other Projects

The Navy identified and evaluated past, ongoing, and reasonably foreseeable future actions that have or could have a potential cumulative impact with Alternative 1 at Emporia-Greensville. Other projects were identified by meetings and phone calls with county and airport commission representatives and review of local land use plans and project-specific environmental documents.

A limited number of general aviation aircraft operations occur at Emporia-Greensville annually; therefore, facility development and modification to the airfield are correspondingly limited. Furthermore, the airfield is located in a rural area with little recent or planned development in the immediate vicinity. The Navy has identified two ongoing projects and one planned project in the vicinity of the airfield that may have cumulative impacts with Alternative 1. Table 5-1 and Section 5.1.1.1 and 5.1.1.2 describe these projects and the specific resource

areas that may be cumulatively impacted by these projects and Alternative 1. Figure 5-1 shows the locations of the planned projects.

Table 5-1 Other Projects for Cumulative Impacts Analysis, Emporia-Greensville

Action Proponent (Agency/Individual)	Project Name	Location	Year Occurred / To Occur	Resources Potentially Cumulatively Impacted
Present/Ongoing				
Oak Grove Baptist Church	Construction	James River Junction (Rural Secondary Route 623)	Ongoing	Air Quality, Noise, Visual Landscape, Biological Resources (Vegetation, Wildlife, Avian)
Greensville County, City of Emporia, and Brunswick County	Mid-Atlantic Advanced Manufacturing Center	Off Interstate 95, approximately 5 miles north of Emporia-Greensville	Ongoing	Air Quality
Reasonably Foreseeable				
Emporia-Greensville	Runway Shift	Emporia-Greensville	2017-2027	Aircraft Operations and Airspace, Safety, Air Quality, Noise, Visual Landscape, Biological Resources (Vegetation, Wildlife, Avian)

5.1.1.1 Ongoing Projects

Oak Grove Baptist Church Construction

Reconstruction of Oak Grove Baptist Church is planned for the area north of Runway 15/33 on James River Junction (Rural Secondary Route 623) on the site of the former church building (see Figure 5-1). The previous church building has been razed, and a foundation has been laid for the new church building.

Mid-Atlantic Advanced Manufacturing Center

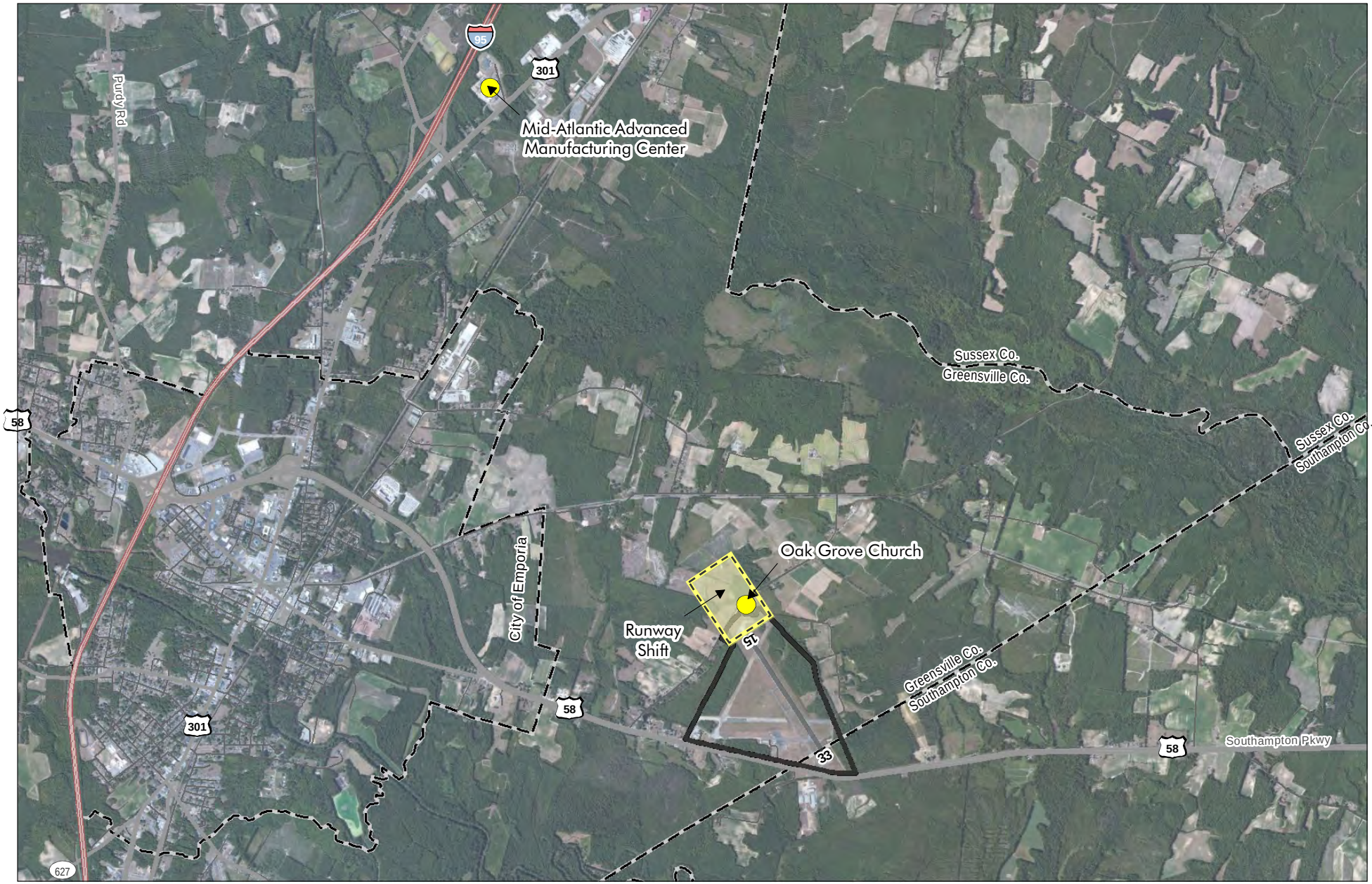
The Mid-Atlantic Advanced Manufacturing Center is an industrial park consisting of approximately 1,545 acres. This facility is located along Interstate 95 near Otterdam Road in Greensville County, approximately 5 miles north of Emporia-Greensville. The property has been designed for heavy industrial use, such as automotive assembly. This project is a regional economic development initiative of Greensville County, the City of Emporia, and Brunswick County. The county is currently marketing this site to industries (Bolling 2011).

5.1.1.2 Reasonably Foreseeable Projects

Emporia-Greensville Runway Shift

The airport commission is preparing an EA to evaluate the potential environmental impacts associated with extending the approach end of Runway 15 and reclaiming an equal length of runway to comply with FAA design standards.

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Cumulative Impact Analysis Area Rev01.mxd



Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Runway Projects
Active Runway
Emporia-Greensville Regional Airport
County Boundary
Interstate
Major Highway
Local Street

Figure 5-1
Other Projects On and Around
Emporia-Greensville Regional Airport

N

0 0.25 0.5
Miles

The purpose of the proposed runway shift would be to move Runway 15/33 to the northwest in order to create additional clearance between the active runway and U.S. Route 58 to the south. This would potentially allow for completion of perimeter fencing along the airport property boundary. The airport commission's EA evaluates three action alternatives and a "no build" alternative. The airport commission's preferred alternative is to displace the threshold for Runway 15 by 187 feet to the northwest (effectively extending the runway length by 187 feet). To bring the runway into compliance with FAA design standards, 187 feet of the approach end of Runway 33 will be marked as a displaced threshold (the southeastern end of the runway). The pavement marked as a displaced threshold would not be available for use during takeoff or landing operations. This pavement, if maintained, could be used as part of the taxiway system for aircraft entering or exiting the active runway.

This project would include acquisition of private property by the airport commission for the extended runway and relocation of the Runway Safety Area and Runway Object-Free Area. Tall vegetation within the Runway Safety Area and Runway Object-Free Area would be removed. As a result of the property acquisition and runway shift, James River Junction (Rural Secondary Route 623) would be realigned to the northwest (Bland n.d.).

5.1.2 Cumulative Impact Analysis by Resource

The resources that may have the potential for a cumulative impact from the Navy's proposed action and other past, ongoing, or reasonably foreseeable future actions include aircraft operations and airspace, safety, air quality, noise, land use, visual landscape, and biological resources. The following resources are discussed in this EA but are not discussed in Section 5 because the Navy's proposed action would have either no impact or a negligible impact, and therefore there is no combined cumulative impact: infrastructure and utilities; geology, topography, and soils; water resources; cultural resources; socioeconomic resources; and environmental management.

5.1.2.1 Aircraft Operations and Airspace

Alternative 1 would not change civilian access to the airspace surrounding Emporia-Greensville. No airspace designations would be permanently changed because the Navy's proposed action would be temporary, scheduled, and communicated to other operators in advance. Therefore, there would be no impacts to airspace and, thus, no cumulative impacts to airspace. The geographic study area evaluated for cumulative impacts to aircraft operations is the airfield at Emporia-Greensville. The Emporia-Greensville runway shift has the potential to cumulatively impact aircraft operations in connection with the proposed action.

Navy Proposed E-2/C-2 FCLP Operations

Alternative 1 would have minor impacts to existing operations because aircraft would not be able to utilize the runway at Emporia-Greensville during Navy FCLP operations.

Other Projects

The proposed runway shift would positively impact aircraft operations in the long term because it would bring the distance between the runway and U.S. Route 58 up to FAA design standards. In the short term, there would be periods of time during construction when the airfield at Emporia-Greensville would be unavailable for aircraft operations.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

Assuming that construction of the runway shift begins before the Navy's lease expires, the combined impact of the construction period for the runway shift project and the proposed Navy FCLP operations could increase the total amount of time the runway at Emporia-Greensville would be unavailable. Work on the runway would be temporary. While the Navy would require the capability to use Emporia-Greensville 24 hours per day and seven days per week, the Navy would not use the airport all day or every day. Training would generally be scheduled Monday through Friday in three-hour periods. Thus, the cumulative impact on aircraft operations would be temporary and not result in a significant cumulative impact on use of the runway.

5.1.2.2 Safety

The geographic study area evaluated for cumulative impacts to safety is the airfield property and runway protection zones at Emporia-Greensville. The past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact safety in connection with the proposed action are those that would increase the risk of an aviation mishap.

Navy Proposed E-2/C-2 FCLP Operations

The Navy would employ standard air traffic management techniques (i.e., issuing Notices to Airmen, monitoring the airfield UNICOM frequency, and notifying non-participating aircraft that the airfield is closed) during FCLP operations to minimize interaction with private aircraft. The increase in air operations at Emporia-Greensville would result in a minor increase in the potential for a BASH incident to occur; however, under Alternative 1, BASH management measures would be provided by the airfield or through a third-party services contract.

Other Projects

None of the other projects identified in Section 5.1.1 would increase the potential for a BASH incident to occur at Emporia-Greensville. The runway shift project would bring the runway at Emporia-Greensville into compliance with FAA design standards by creating additional clearance between the active runway and U.S. Route 58, which would improve safety conditions at the airfield. Relocation of the runway protection zones as part of this project would not impact safety. No other projects are proposed at Emporia-Greensville that would increase air operations.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

None of the other projects identified in Section 5.1.1 would, cumulatively with the proposed action, increase the risk of an aviation mishap. The BASH management measures that would be employed under Alternative 1 and the runway shift project together could have a beneficial impact on safety by reducing the risk of a BASH incident at the airfield and increasing the safety of the runway.

5.1.2.3 Air Quality

The geographic study area evaluated for cumulative impacts to air quality includes Greensville County and Southampton County because air quality standards are tracked at the county level. The past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact air quality in connection with the proposed action are those that would generate air emissions either during construction, operation, or both, including the Emporia-Greensville runway shift project, build-out of the Mid-Atlantic Advanced Manufacturing Center, and construction of Oak Grove Baptist Church. Existing emissions sources in the two counties include transportation sources, building use, and industrial sources. Based on available information regarding future development, emissions from mobile and stationary sources in the counties are expected to remain near their current levels. Greensville County and Southampton County are in attainment for all National Ambient Air Quality Standards. Both counties are rural with minimal existing air emissions compared to the total emissions in the Commonwealth of Virginia (see Section 3.4.1).

Navy Proposed E-2/C-2 FCLP Operations

As discussed in Section 1.5.2, mobile and temporary source emissions are not subject to the Prevention of Significant Deterioration standards; however, the Prevention of Significant Deterioration thresholds provide a method to put the increases in mobile emissions in context as related to the National Ambient Air Quality Standards. Under Alternative 1, both temporary construction emissions and annual operating emissions are projected to be between less than 1 ton per year and approximately 63 tons per year for all criteria pollutants and therefore would have no significant impact on air quality in the region.

Aircraft operations generate greenhouse gas emissions from the ground level and in transit from NS Norfolk Chambers Field.[2] Alternative 1 would generate temporary construction emissions and redistribute existing aircraft operations in transit. Ground level emissions from construction and vehicles would be minimal, and these temporary emissions would not have long-term climate impacts. The total greenhouse gas emissions generated by FCLP operations currently represent an insignificant fraction of global greenhouse gas emissions,

[2] Federal agencies are required to address emissions of greenhouse gases with analysis and emission reduction planning by EO 13514 (*Federal Register* 2009) and the Energy Policy Act of 2005, and CEQ guidance has recommended the analysis of direct and indirect emissions from proposed actions to provide meaningful information to the decision-makers and the public (CEQ 2010a). Energy (fuel) use also is considered, based on the recommendations of EO 13514.

and relocating these operations to Emporia-Greensville would not produce a significant change in global climate change.

Other Projects

As noted above, both counties are in attainment for all National Ambient Air Quality Standards. Due to the rural nature of the two counties, emissions from transportation (including vehicle and aircraft operations), building use, and industrial sources are minimal. The two counties are expected to remain largely rural into the foreseeable future, and air emissions from all sources are not expected to increase significantly above current levels.

The Emporia-Greensville runway shift project, build-out of the Mid-Atlantic Advanced Manufacturing Center, and construction of Oak Grove Baptist Church would all generate temporary construction emissions. These projects would be small scale and of temporary duration for construction.

Other existing civilian and military aircraft operations at Greensville-Emporia are expected to continue at the same levels in the foreseeable future. There are no other foreseeable actions that could result in cumulative impacts to air quality from aircraft operations. Current aircraft operations would not be expected to increase in the foreseeable future. There are no other airports located within Greensville County or Southampton County, so existing and on-going impacts to air quality resulting from aircraft operations in these two counties are assumed to be minimal.

One large, planned industrial park in Greensville County, the Mid-Atlantic Advanced Manufacturing Center, has the potential to increase mobile-source emissions from truck, privately-owned vehicle, and rail traffic in the region if it is fully developed. In addition, the potential for employment opportunities associated with this project could result in an increase in traffic and emissions associated with this traffic. The industrial park is located on Interstate 95, approximately 5 miles north of Emporia-Greensville, and could increase traffic and associated emissions on the interstate and U.S. Route 58.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

Under Alternative 1, both temporary construction emissions and annual operating emissions are projected to be between less than 1 ton per year and approximately 63 tons per year for all criteria pollutants and therefore would have no significant impact on air quality in the region.

Considered together, Alternative 1 and the other projects within the study area would not be expected to significantly increase air emissions in Greensville County and Southampton County during the operational period of the proposed action. While full build-out of the Mid-Atlantic Advanced Manufacturing Center would increase mobile-source emissions in Greensville County, the county is projected to remain rural, and the county's population is not expected to increase (Virginia Employment Commission 2012a). Alternative 1 and the other projects identified above would not significantly increase new emission sources subject to

evaluation under the Mandatory Greenhouse Gas Reporting Rule (see Section 3.4 for a description of this regulation). Therefore, cumulative emissions resulting from the other projects described above and Alternative 1 would not result in significant cumulative impacts to air quality.

Greenhouse gas emissions are by nature global and cumulative, as individual sources of greenhouse gas emissions are not large enough to have an appreciable effect on climate change. A significant impact on global climate change could only occur when the greenhouse gas emissions of a proposed action combine with greenhouse gas emissions from other man-made activities on a global scale. Even when considering the projects together, no global-scale changes to greenhouse gas emissions would occur.

5.1.2.4 Noise

The geographic study area evaluated for cumulative impacts to the noise environment is the area within the greater than 65 dB DNL noise contours associated with Navy FCLP operations (see Figures 3-10 and 3-11). The past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact noise along with the proposed action are those that would generate noise during construction or on-going operation, including the Emporia-Greensville runway shift and reconstruction of the Oak Grove Baptist Church. Additionally, Emporia-Greensville is located next to U.S. Route 58; traffic on the highway would continue to be part of the cumulative noise environment at the airfield into the foreseeable future.

Navy Proposed E-2/C-2 FCLP Operations

The increase in land area falling under the greater than 65 dB DNL noise contour at Emporia-Greensville due to the proposed Navy E-2/C-2 operations would equate to approximately 42 and 46 acres for Scenarios 1 and 2, respectively. In both cases, this would impact approximately three individuals in Greensville County (i.e., approximately 0.02 percent of the total county population). For the SEL analysis, the maximum modeled noise experienced from single aircraft events as heard from 27 different points of interest was quantified. Slightly more than half of the points of interest would experience higher maximum modeled SEL values under Alternative 1 than they currently experience.

Under both scenarios, the overall change in the noise conditions would be small both in the number of newly affected individuals within the DNL noise contours and in the noise exposure from single-event noise (i.e., maximum modeled SEL). The Navy's proposed FCLP operations would be temporary and intermittent in nature. They would be conducted primarily during daytime hours and include three-hour blocks of aircraft operations followed by periods of minimal or no aircraft activity. Therefore, there would be no significant impact from noise as a result of the Navy's implementation of Alternative 1 for either scenario.

Other Projects

The Emporia-Greensville runway shift and the reconstruction of Oak Grove Baptist Church would both result in a temporary increase in noise due to construction. Construction noise would be generated primarily from operation of

light and heavy construction equipment and project-related vehicle traffic. Both types of noise would occur near the proposed project location during daylight working hours and would typically be intermittent.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

The planned runway shift and reconstruction of the Oak Grove Baptist Church could occur during the period of the Navy's lease at Emporia-Greensville and could occur simultaneously with construction of the proposed airfield-associated modifications or Navy FCLP operations. Construction would occur only during daylight hours, so construction potentially would overlap with FCLP operations only during daytime training periods. Noise from construction would normally be intermittent because construction equipment would not be operating constantly. When construction and FCLP operations would be occurring simultaneously, noise levels would increase slightly at nearby residences, churches, and other noise receptors. Construction noise would add to noise generated by Navy FCLP operations, but the additive effect would be temporary and intermittent in nature. As noted previously, FCLP operations would be conducted primarily during daytime hours and in three-hour periods followed by periods of limited or no aircraft activity. Therefore, cumulative impacts to the noise environment associated with construction noise and aircraft noise from existing operations and FCLP operations would not be significant.

5.1.2.5 Land Use

The geographic study area evaluated for cumulative impacts to land use at Emporia-Greensville is the area within the modeled 65 dB DNL and greater noise contour. The past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact noise along with the proposed action are those that would increase the acreage of incompatible land uses within the study area.

Navy Proposed E-2/C-2 FCLP Operations

Alternative 1 would not have direct impacts to land use. Under either operational scenario, less than 1 acre of residential land would be in the modeled noise zones. This residential land would not be considered compatible under FAR Part 150 Program land use recommendations; however, the acreage of residential land in the modeled noise zones would be small compared to the entire study area (42 acres under Scenario 1 and 46 acres under Scenario 2).

Other Projects

None of the other projects identified in Section 5.1.1 would increase the acreage of incompatible land uses in the modeled noise zones.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

Because no other projects would increase the acreage of incompatible land uses in the modeled noise zones, there would be no cumulative impacts with the proposed action to land use.

5.1.2.6 Visual Landscape

The geographic study area evaluated for cumulative impacts to the visual landscape at Emporia-Greensville is anywhere within the viewshed of the airfield property. The reconstruction of Oak Grove Baptist Church and the Emporia-Greensville Airport Commission runway shift project have the potential to cumulatively impact the visual landscape in combination with the proposed action.

Navy Proposed E-2/C-2 FCLP Operations

Airfield-associated modifications under Alternative 1 would be consistent with the visual setting of the airfield. Although there would be an increase in the total number of aircraft operations at Emporia-Greensville under Alternative 1, the Navy conducting temporary, intermittent FCLP with E-2/C-2 aircraft would not be a significant impact.

Other Projects

The reconstruction of Oak Grove Baptist Church would be consistent with the visual landscape that existed in the area before the building was razed. The runway shift proposed by the airport commission would be consistent with the visual setting of the Emporia-Greensville airfield.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

The Navy's proposed action, the reconstruction of Oak Grove Baptist Church, and the Emporia-Greensville Airport Commission Runway Shift project would all be consistent with the visual landscape of the area. Emporia-Greensville is an active airfield used by propeller aircraft and military helicopters, so the communities surrounding the airfield generally are accustomed to seeing aircraft operations. Therefore, there would not be significant cumulative impacts to the visual landscape under Alternative 1.

5.1.2.7 Biological Resources

The geographic study area evaluated for cumulative impacts to biological resources, including wildlife, avian resources, federally threatened and endangered species, and state threatened and endangered species, is the area within Emporia-Greensville's modeled greater than 65 dB DNL noise contours under Alternative 1. Past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact biological resources in connection with the proposed action are the Oak Grove Baptist Church construction and the Emporia-Greensville runway shift project.

Navy Proposed E-2/C-2 FCLP Operations

Construction could directly impact individuals of less-mobile wildlife species that are present, such as small mammals, reptiles, and amphibians. Non-avian and avian wildlife would be impacted by loss of habitat from construction and noise from air operations. These impacts would not be expected to be significant. Given the current aircraft operations at Emporia-Greensville, most wildlife present at or in the vicinity of the airport likely would be already acclimated to aircraft noise. Wildlife not already acclimated to aircraft noise would be expected

to acclimate or habituate to noise exposure after experiencing short-term effects. Alternative 1 would have no effect on the federally listed red-cockaded woodpecker, Roanoke logperch, American chaffseed, and Michaux's sumac.

Other Projects

Both the Oak Grove Baptist Church construction and the Emporia-Greensville runway shift project would have impacts on non-avian and avian wildlife. Construction could directly impact individuals of less-mobile wildlife species that are present, such as small mammals, reptiles, and amphibians. Non-avian and avian wildlife would be impacted by loss of habitat and temporary noise impacts during construction. These impacts would be minor and would not be expected to occur simultaneously. Because both the Oak Grove Baptist Church construction and the Emporia-Greensville runway shift projects occur within Emporia-Greensville's modeled 65 dB DNL noise contours under Alternative 1 (i.e., the same area evaluated for the proposed action), impacts to threatened and endangered species from these projects would not be expected because no threatened and endangered species would be expected to occur in the area.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

The Navy's proposed action under Alternative 1 would have no effect on federally listed threatened and endangered species or impacts on state-listed threatened and endangered species; therefore, there would be no cumulative impacts associated with these resources. The Navy's proposed action, the Oak Grove Baptist Church construction, and the Emporia-Greensville runway shift each would affect a relatively small area. Similar habitats are abundant in the surrounding area, so the cumulative impacts are not expected to be significant. No other projects have been identified at or near Emporia-Greensville that would result in increased noise associated with air operations. Because wildlife likely are habituated to noise generated by existing civilian aircraft and helicopters and would be expected to habituate to noise generated by E-2/C-2 aircraft operations, cumulative impacts to non-avian and avian wildlife from aircraft noise would not be expected.

5.2 Wallops Flight Facility

5.2.1 Descriptions of Other Projects

The Navy identified and evaluated past, ongoing, and reasonably foreseeable future actions that have or could have a potential cumulative impact under Alternative 2 at WFF Main Base. Other projects were identified by meetings and phone calls with county and WFF representatives and review of local land use plans and project-specific environmental documents.

WFF is in the process of expanding and modifying its facilities to support new missions; at the same time, surrounding property in Accomack County is being developed for residential uses as well as institutional, industrial, and commercial uses related to the missions supported by WFF. The Navy has identified multiple

ongoing or planned projects that may have cumulative impacts with Alternative 2. These projects are described in Table 5-2 and Sections 5.2.1.1 and 5.2.1.2.

The table also lists resources that may be cumulatively impacted by each project and Alternative 2. Figure 5-2 shows the locations of identified projects on WFF and in the surrounding area of Accomack County. (Note: NASA's PEIS evaluating proposed infrastructure and facility changes in support of the growing mission base at WFF is scheduled for release to the public in early 2013. As a result, the locations of individual construction, modification, and demolition projects are not shown on Figure 5-2.).

5.2.1.1 On-Going Projects

NASA, the Marine Science Consortium, and Accomack County Build-out of Wallops Research Park

NASA prepared an EA in 2008 to analyze development of a research park adjacent to WFF on approximately 202 acres of land owned by NASA, the Marine Science Consortium, and Accomack County. The Wallops Research Park would be a multi-use development, including space for science research and development; industrial, aviation, and educational facilities; and recreational areas. Roads would be constructed and utilities installed to support this development. Full build-out of the Wallops Research Park is expected to take 20 years (NASA August 2008). Land within the Wallops Research Park owned by NASA primarily would be used by aerospace activities, including aircraft operation and maintenance. Operation of the Wallops Research Park would result in an additional 15 flights per year from WFF (NASA August 2008).

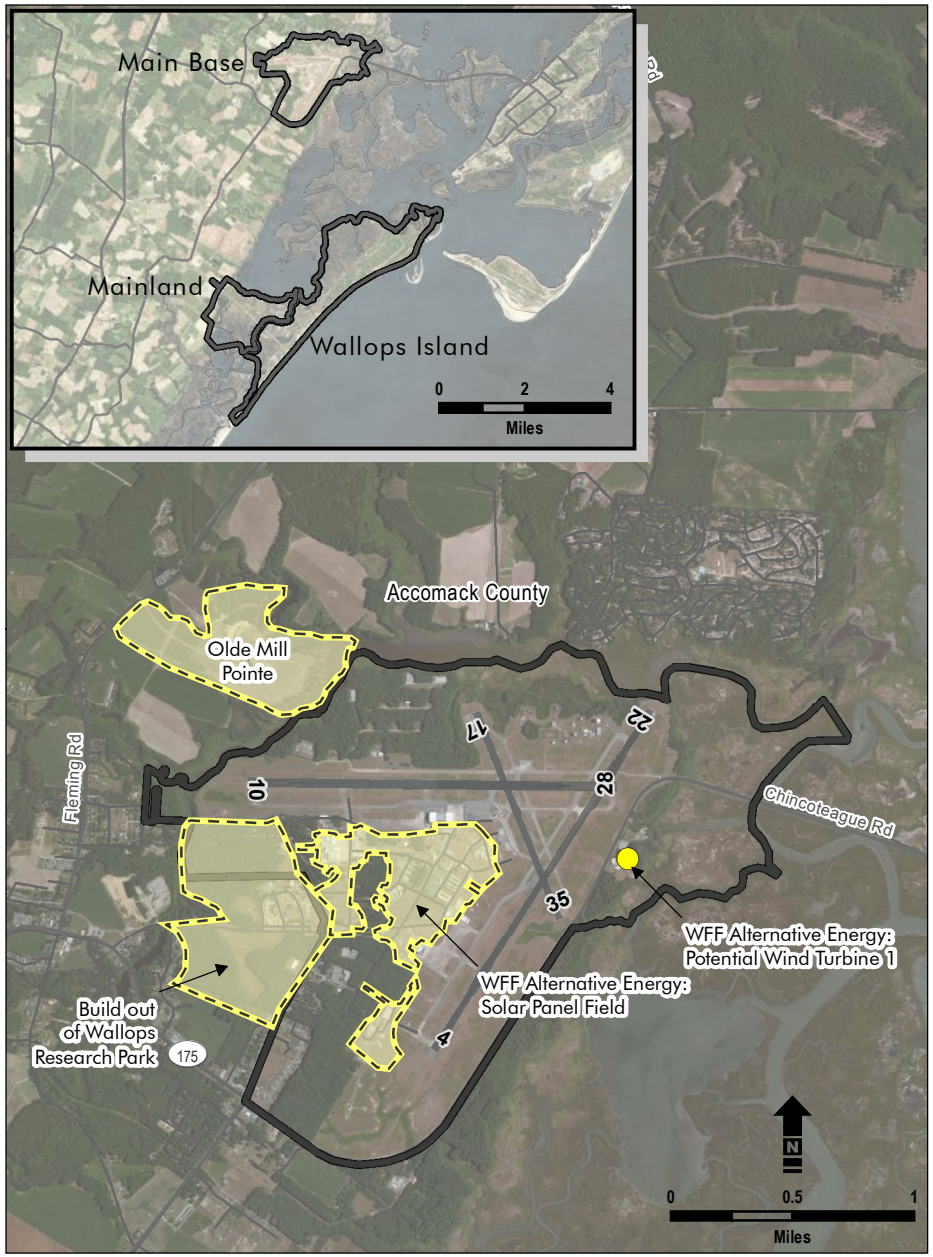
NASA and the Mid-Atlantic Regional Spaceport Expansion of the Wallops Flight Facility Launch Range

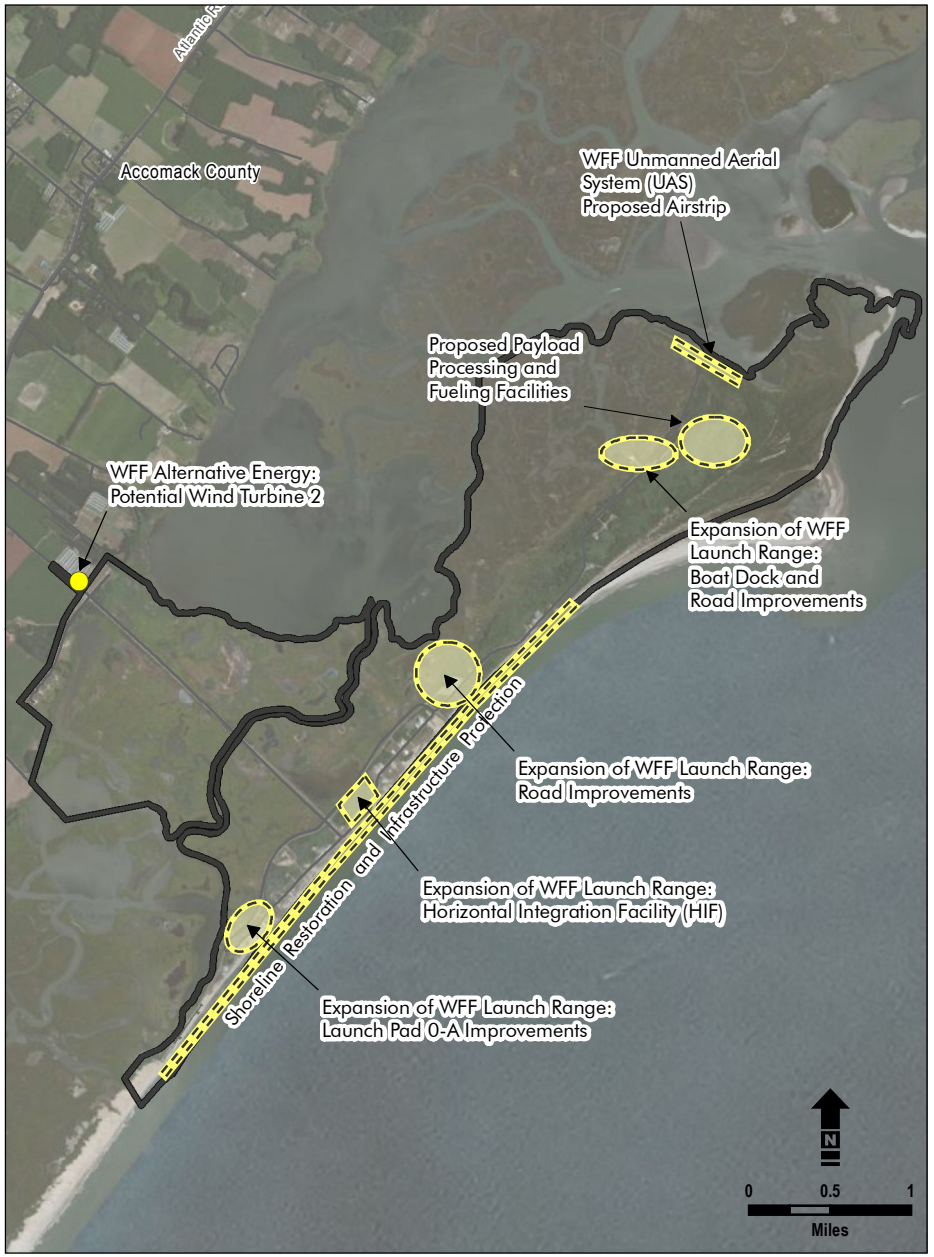
This project expanded the launch range at Wallops Island and upgraded NASA and Mid-Atlantic Regional Spaceport facilities to accommodate a wider variety of launch vehicles and payloads. Construction planned as part of the expansion included minor modifications to the north boat dock; construction of a payload processing facility, a payload fueling facility, a horizontal integration facility, and launch pad infrastructure; construction of new roads and minor upgrades to existing roads; and minor modifications to the interiors of existing facilities. To date, the horizontal integration facility, launch pad infrastructure, and modifications to the interiors of existing facilities have been completed. Mid-Atlantic Regional Spaceport constructed a new launch complex and liquid fueling facility in approximately the same location as Pad 0-A (see Figure 5-2). Operations that are supported by these improvements include testing, fueling, and processing operations; up to two static fire tests per year; and launching of up to six expendable launch vehicles and associated spacecraft per year (NASA 2009).

Table 5-2 Other Projects for Cumulative Impacts Analysis, Wallops Flight Facility

Action Proponent (Agency/Individual)	Project Name	Location	Year Occurred / To Occur	Resources Potentially Cumulatively Impacted
Present/Ongoing				
NASA, the Marine Science Consortium, and Accomack County	Build-out of Wallops Research Park	Wallops Research Park, west of and adjacent to WFF off of State Route 798	2008/ongoing	Aircraft Operations and Airspace, Safety, Air Quality, Noise, Land Use, Visual Landscape, Biological Resources (Vegetation, Wildlife, Avian)
NASA and the Mid-Atlantic Regional Spaceport	Expansion of the WFF Launch Range	WFF Wallops Island	2009/ongoing	Noise, Biological Resources (Wildlife, Avian, Sea Turtles)
NASA	WFF Alternative Energy Project	WFF Main Base	Ongoing	Visual Landscape, Biological Resources (Vegetation, Wildlife, Avian)
Grand Bay Properties and private individuals	Construction of residences at Olde Mill Pointe	Located northwest of and adjacent to WFF off of State Route 679	Ongoing	Air Quality, Noise, Visual Landscape, Biological Resources (Vegetation, Wildlife, Avian)
NASA	Unmanned Aerial Systems Airstrip	WFF Wallops Island	Ongoing	Aircraft Operations and Airspace, Noise
NASA	Shoreline Restoration and Infrastructure Protection Program	WFF Wallops Island	Initial construction and fill completed; other phases ongoing	None
Reasonably Foreseeable				
NASA	Site-wide Programmatic Environmental Impact Statement	WFF	Beginning in 2013 and continuing over a 20-year planning horizon (NASA August 3, 2011)	Aircraft Operations and Airspace, Safety, Air Quality, Noise, Visual Landscape, Biological Resources (Vegetation, Wildlife, Avian, Threatened and Endangered Species)

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Cumulative_Impacts_Analysis_Area_Wallops.mxd





Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Projects – Wind Turbine
Project Areas
Wallops Flight Facility
Active Runway
Major Highway
Local Street

Figure 5-2
Other Projects On and Around Wallops Flight Facility

NASA WFF Alternative Energy Project

NASA is planning to install a system of solar panels capable of generating 10 gigawatt-hours per year of electricity and two 2.4 kilowatt residential-scale wind turbines. If, in the future, NASA determines that solar energy is economically viable at WFF, the agency would install approximately 38,000, 15-square-foot panels on approximately 80 acres. The panels would be spaced to avoid shading and allow maintenance and would be installed in open, grassy areas or over parking lots. Power would be collected from the solar panels by underground transmission lines leading to a set of switchgear enclosed in a 320-square-foot pre-fabricated building. The installation period for the solar panels is expected to be approximately 2 months. One of the residential-scale wind turbines would be installed near the WFF Visitors Center, and the second would be installed near the security guard station at the entrance gate on the WFF Mainland parcel. No transformers or interconnection switchgear would be needed for the turbines (NASA March 2011).

Grand Bay Properties and Private Individuals' Construction of Residences at Olde Mill Pointe

The Residences at Olde Mill Pointe residential development consists of a total of 99 parcels, of which 55 are currently available for development. The parcels consist of 1- to 3-acre lots. Approximately half of the available lots have been sold, and the properties are being built out with single-family residences. These residences may be for year-round use or seasonal/occasional use. The residences will not be connected to public sewer or water service but will have their own private wells and septic systems (MLG Companies 2010).

North Wallops Island Unmanned Aerial Systems Airstrip Environmental Assessment

NASA is proposing to construct and operate an unmanned aerial systems (UAS) airstrip on the north end of Wallops Island. This airstrip would augment use of the existing UAS airstrip on Wallops Island, which has operational limitations. NASA is preparing an EA to analyze the environmental effects of the proposed action, which includes a 3,000-foot-long (of which 2,500 feet would be runway and 500 feet would be clear zone) and 75-foot-wide airstrip. Approximately 1,040 UAS operations (on average, four UAS sorties per day) would be conducted from the airstrip each year. UAS would continue to operate from the existing UAS airstrip (NASA June 2012).

NASA Shoreline Restoration and Infrastructure Protection Program

NASA prepared a Programmatic Environmental Impact Statement (PEIS) in 2010 to address a 50-year coastal storm damage reduction strategy at Wallops Island. The PEIS also covered construction of initial shoreline erosion protection measures on the island. These included extending Wallops Island's existing rock seawall 1,430 feet to the south and placing approximately 3.2 million cubic yards of fill on a 3.7-mile length of shoreline. Following initial fill of the beach, renourishment is planned to occur approximately every 5 years over the 50-year planning period. Each renourishment fill volume is expected to be approximately 616,000 cubic yards (NASA Wallops Flight Facility 2010). Because the impacts would be localized and focused at WFF Wallops Island and outside the area of

ground disturbance at WFF Main Base, there would be no cumulative impacts with the Navy's proposed action. As a result, there is no cumulative impacts analysis for the shoreline restoration and infrastructure protection program.

5.2.1.2 Reasonably Foreseeable Projects

NASA Site-wide Programmatic Environmental Impact Statement
NASA is preparing a Site-wide PEIS to evaluate its proposal to support its growing mission base by providing facilities and infrastructure that would directly support existing missions as well as modernized functionality to meet future operational mission requirements. The PEIS will evaluate the two action alternatives and a No Action Alternative, summarized below:

- Alternative 1 would include construction, demolition, and renovation of facilities; enlargement of restricted airspace (R-6604); addition of two rocket launchers on Wallops Island; replacement of the Wallops causeway bridge; maintenance dredging between the boat docks at the Main Base and Wallops Island; and introduction or expansion of NASA programs at WFF.

- Alternative 2 would include all the activities under Alternative 1 and additional construction projects and missions, including introduction of commercial manned space flight from WFF.

- The No Action Alternative would have NASA and its partners continue existing operations and programs at WFF (NASA 2011d).

5.2.2 Cumulative Impact Analysis by Resource

The resources that may have the potential for a cumulative impact from the Navy's proposed action and other past, ongoing, or reasonably foreseeable future actions include aircraft operations and airspace, safety, air quality, noise, land use, visual landscape, and biological resources. The following resources are discussed in this EA but are not discussed in Section 5 because the Navy's proposed action would have either no impact or a negligible impact and no or negligible potential for a cumulative impact: land use; infrastructure and utilities; geology, topography, and soils; water resources; cultural resources; socioeconomic resources; and environmental management.

5.2.2.1 Aircraft Operations and Airspace

Under Alternative 2, no airspace designations would be permanently changed because the Navy's proposed action would be temporary, scheduled, and communicated to other operators in advance. Therefore, there would be no impacts to airspace and, thus, no cumulative impacts to airspace. The geographic study area evaluated for cumulative impacts to WFF Main Base aircraft operations is the airfield itself. The build-out of Wallops Research Park and the Site-wide PEIS at WFF have the potential to cumulatively impact aircraft operations in combination with the proposed action. The expansion of the WFF launch range and the construction of the UAS airstrip are outside of the geographic study area.

Navy Proposed E-2/C-2 FCLP Operations

Under Alternative 2, there would be a minor impact to existing operations and use of the airfield as the runway would be closed to non-FCLP arrivals and departures, except in the case of an emergency. However, impacts would not be significant because the effect of the Navy's proposed action on existing operations would be temporary and would be communicated to operators in advance. The Navy would require 24-hour-per-day, seven-day-per-week, capability; however, the Navy would not use the airfield all day or every day. Training would generally be scheduled Monday through Friday in three-hour periods.

Other Projects

Build-out of the Wallops Research Park would result in an additional 15 air operations annually at the airfield. The Site-wide PEIS includes the introduction and expansion of NASA programs at WFF, which could result in additional air operations.

A maximum of 1,040 UAS operations would occur each year from the proposed UAS airstrip on northern Wallops Island. UAS operations from the airstrip would occur entirely within restricted airspace and the warning area over and offshore of Wallops Island (shown on Figure 3-4). There would be relatively few UAS operations per year compared to the proposed number of Navy FCLP operations. The airspace used for UAS operations would not overlap with the Navy's proposed holding-pattern flight track; therefore, the proposed UAS airstrip would not result in cumulative impacts when considered with the Navy's proposed action (NASA December 2011).

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

There are 13,074 existing aircraft operations at WFF, to which the Navy's proposed action would add up to 45,000 aircraft operations, and the build-out of Wallops Research Park would include an additional 15 annual air operations. Although the introduction and expansion of NASA programs at WFF under the Site-wide PEIS could result in additional air operations, these air operations are not reasonably foreseeable at this time. The multiple runways at WFF Main Base are more than adequate to accommodate this amount of aircraft activity. Therefore, the Navy's proposed action combined with other pertinent past, ongoing, and reasonably foreseeable future actions would not be expected to generate significant cumulative impacts to aircraft operations at WFF.

5.2.2.2 Safety

The geographic study area evaluated for cumulative impacts to safety is the airfield property, the runway clear zones, and the runway potential accident zones at WFF Main Base. The past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact safety in connection with the proposed action are those that would increase the risk of an aviation mishap.

Navy Proposed E-2/C-2 FCLP Operations

During hours when the airfield is open, the air traffic control tower will monitor and direct non-FCLP participating aircraft, as necessary. The increase in air operations at WFF Main Base would result in a minor increase in the potential for a BASH incident to occur; however, this risk would be mitigated through measures implemented under the WFF BASH Program and Wildlife Hazard Management Plan (see Section 3.3.4.3).

Other Projects

Build-out of the Wallops Research Park would result in an additional 15 air operations annually at WFF Main Base. The Site-wide PEIS includes the introduction and expansion of NASA programs at WFF, which could result in additional air operations. Increases in air operations under these two projects could increase the potential for aviation mishaps.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

BASH hazards at WFF Main Base would continue to be managed under the WFF BASH Program and Wildlife Hazard Management Plan. None of the projects identified in Section 5.2.1 that would occur at WFF Main Base would create new attractants for birds or wildlife. Continued implementation of standard air traffic management techniques at the airfield would minimize the risk of aviation mishaps. Therefore, the Navy's proposed action combined with other pertinent past, ongoing, and reasonably foreseeable future actions would not be expected to generate significant cumulative impacts to safety at WFF Main Base.

5.2.2.3 Air Quality

The geographic study area evaluated for cumulative impacts to air quality includes Accomack County because air quality standards are tracked at the county level. The past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact air quality in connection with the proposed action are those that would generate air emissions either during construction, operation, or both, including build-out of the Wallops Research Park, facilities and infrastructure as analyzed in the Site-wide PEIS, and construction of residences at Olde Mill Pointe. Existing emissions sources in the county include transportation sources (vehicles and civilian, military, and other government aircraft), building use, industrial sources, food production, and power generation. Based on available information regarding future development, emissions from mobile and stationary sources in the county are expected to remain near their current levels. Accomack County is in attainment for all National Ambient Air Quality Standards or unclassified for all criteria pollutants.

Navy Proposed E-2/C-2 FCLP Operations

Accomack County is in attainment for all National Ambient Air Quality Standards. The county is rural, with minimal existing air emissions compared to the total emissions in the Commonwealth of Virginia (see Section 3.4.3). As discussed in Section 1.5.2, mobile and temporary source emissions are not subject to the Prevention of Significant Deterioration standards; however, the Prevention of Significant Deterioration thresholds provide a method to put the increases in

mobile emissions in context as related to the National Ambient Air Quality Standards. Under Alternative 2, both temporary construction emissions and annual operating emissions are projected to be between less than 1 ton per year and approximately 64 tons per year for all criteria pollutants and therefore would have no significant impact on air quality in the region.

Aircraft operations generate greenhouse gas emissions at the ground level and in transit from NS Norfolk Chambers Field.[3] Alternative 2 would include temporary construction emissions and redistribution of existing aircraft operations. Ground-level emissions from construction and vehicles would be minimal, and these temporary emissions would not have long-term climate impacts. The total greenhouse gas emissions generated by FCLP operations currently represent an insignificant fraction of global greenhouse gas emissions, and relocating these operations to WFF Main Base would not produce a significant change in global climate change.

Other Projects

Accomack County is expected to stay largely rural over the operational period of the proposed action, and mobile and stationary-source emissions in the county are expected to remain minimal.

Existing activities at WFF that generate mobile-source air emissions include aircraft operations, rocket launches, construction, and vehicle operations; these activities are projected to continue over the operational period of Alternative 2. Proposed operational changes and construction projects on WFF Main Base as analyzed in NASA's PEIS, the WFF launch range, Wallops Research Park, and the Olde Mill Pointe residential development, could result in impacts to local air quality. Construction is expected to occur over multiple years. Projected mobile-source emissions data from construction equipment and privately owned vehicles are unavailable for these projects. However, construction-related emissions would be spread over the entire construction period.

Each of the identified construction projects would increase privately owned vehicle use in Accomack County. Over the projected 20-year build-out period, development of the Wallops Research Park is expected to result in an increase of 3 percent in Accomack County's population. This increase in population would generate an increase in emissions from privately owned vehicles in the county. The potential increase in population and, therefore, privately owned vehicle use resulting from expansion of activities at the WFF launch range and development of 99 residential parcels at Olde Mill Pointe would be substantially smaller. The operational changes on WFF Main Base that NASA is analyzing in its PEIS could have a larger impact on population and privately owned vehicle use in the county.

[3] Federal agencies are required to address emissions of greenhouse gases with analysis and emission reduction planning by EO 13514 (*Federal Register* 2009) and the Energy Policy Act of 2005, and CEQ guidance has recommended the analysis of direct and indirect emissions from proposed actions to provide meaningful information to the decision-makers and the public (CEQ 2010a). Energy (fuel) use also is considered, based on the recommendations of EO 13514.

These impacts are being captured in the PEIS, which is currently under development.

Build-out of the Wallops Research Park is expected to increase aircraft operations at WFF Main Base by 15 operations annually (NASA August 2008). These annual aircraft operations would generate minimal air emissions.

Multiple airfields are located in Accomack County. These airfields are private or small regional airfields and are not expected to have large numbers of aircraft operations that would contribute significant air emissions. One existing and partially developed industrial park, the Accomack Airport Industrial Park, is located at the Accomack County Airport, near Melfa. No large-scale industrial development that could significantly increase mobile-source emissions is currently planned or proposed for the industrial park.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

Under Alternative 2, both temporary construction emissions and annual operating emissions are projected to be between less than 1 ton per year and approximately 64 tons per year for all criteria pollutants and therefore would have no significant impact on air quality in the region.

Over the operational period of the proposed action, mobile-source air emissions would be generated by the increased air operations at WFF Main Base and increased privately owned vehicle use in Accomack County. Build-out of the Wallops Research Park and the construction and operational changes analyzed in NASA's PEIS are both large-scale projects and could have noticeable impacts on the county's population (and, indirectly, privately owned vehicle use). Therefore, Alternative 2 and the other projects in the study area could pose a moderate cumulative impact to air quality.

Alternative 2 and the other projects identified above would not significantly increase new emission sources subject to evaluation under the Mandatory Greenhouse Gas Reporting Rule (see Section 3.4 for a description of this regulation).

Greenhouse gas emissions are by nature global and cumulative, as individual sources of greenhouse gas emissions are not large enough to have an appreciable effect on climate change. A significant impact on global climate change could only occur when the greenhouse gas emissions of a proposed action combine with greenhouse gas emissions from other man-made activities on a global scale. Even when considering the projects together, no global-scale changes to greenhouse gas emissions would occur.

5.2.2.4 Noise

The geographic study area evaluated for cumulative impacts to the noise environment is the area within the greater than 65 dB DNL noise contours associated with Navy FCLP operations (see Figures 3-14 and 3-15). Multiple construction projects are planned at WFF Main Base and the Wallops Research

Park. Additionally, residential construction is expected to occur at Olde Mill Pointe, located northwest of the airfield.

Navy Proposed E-2/C-2 FCLP Operations

The increase in land area falling under the greater than 65 dB DNL noise contour at WFF Main Base due to the proposed Navy E-2/C-2 operations (up to 45,000 annual aircraft operations) would equate to approximately 213 and 156 acres for Scenarios 1 and 2, respectively. Under Alternative 2, Scenario 1, there would be an estimated seven more individuals within the greater than 65 dB DNL noise contour and 265 more individuals within the greater than 70 dB DNL noise contour compared to existing conditions. This represents approximately 0.02 percent of the total population in Accomack County. Under Alternative 2, Scenario 2, there would be an estimated 33 more individuals within the greater than 65 dB DNL noise contour and 14 more individuals within the greater than 70 dB DNL noise contour compared to existing conditions. This would represent 0.1 percent of the total population in Accomack County All of the identified points of interest currently experience higher maximum modeled SEL values than they would experience if Alternative 2 were implemented at WFF Main Base. Noise impact would not be significant because there would only be a slight increase in average noise expected at WFF Main Base under the Navy's proposed action. Furthermore, the Navy's proposed FCLP operations would be temporary and intermittent in nature. They would be conducted primarily during daytime hours and include three-hour blocks of aircraft operations, followed by periods of minimal or no aircraft activity.

Other Projects

Construction projects at WFF Main Base, the Wallops Research Park, and Olde Mill Pointe would result in a temporary increase in noise, generated primarily from operation of light and heavy construction equipment and project-related vehicle traffic. Both types of noise would occur near the proposed project location during daylight working hours and would typically be intermittent. Additionally, build-out of the Wallops Research Park would result in an additional 15 aircraft operations per year from the airfield at WFF Main Base. Compared to the existing 13,074 aircraft operations and the Navy's proposed 45,000 aircraft operations at WFF Main Base, the addition of 15 aircraft operations would be negligible. Therefore, this relatively small number of projected aircraft operations would not be expected to increase the size of the noise contours associated with the airfield or contribute significantly to noise impacts from air operations at WFF Main Base.

Current launch operations and projected Antares launch operations at Launch Complex 0 on Wallops Island also would have cumulative impacts to the noise environment with Alternative 2. NASA's current NEPA documentation covers up to 12 orbital-class rocket launches, 60 sounding rockets, and 30 Navy missile and drone launches per year. Since 2001, NASA has launched an average of six sounding rockets and one orbital launch vehicle from the launch complex each year. Although the noise generated by launching an orbital launch vehicle (the largest vehicles launched) may be audible from areas around the Main Base, NASA's 2009 EA for the expansion of the WFF launch range states that "noise

levels from rocket launches attenuate rapidly, are low frequency, and occur infrequently" (NASA 2009). Sounding rockets are relatively small, and their launches generate less noise, which tends to dissipate within one minute (NASA 2000).

Antares operations at WFF are projected to occur no more than eight times per year and consist of approximately six launches and two static fire tests (during which the Antares would not be launched). During an Antares launch or static fire test, noise levels of up to 107 dB may be experienced on the southern part of the WFF Main Base property and surrounding areas of Accomack County to the south that are within 6.6 miles of the launch pad. These noise levels "would be maintained for only 30 to 60 seconds during launches and for up to 52 seconds during static fire testing and would attenuate after 1 to 2 seconds" (NASA 2009). Therefore, noise generated by launches or static fire tests would be infrequent and of short duration. A water deluge system would be used at the launch pad to reduce engine noise during launches and would mitigate in part the noise levels experienced in areas surrounding Wallops Island (NASA 2009).

Construction of the UAS airstrip on Wallops Island also would result in a temporary increase in noise near the proposed project location. In the EA, NASA determined that the maximum DNL for the UAS flight track near the airstrip would be 43 dB DNL on an average day, with a total of eight UAS flight operations (NASA December 2011). NASA did not model noise contours for operations at the proposed UAS airstrip because the small number of operations would not significantly increase noise levels over existing conditions. UAS operations flown from the airstrip would operate in the restricted airspace and warning area over and offshore of Wallops Island. Because of the distance between Wallops Island and the Main Base, construction of the UAS airstrip and UAS operations would not be expected to generate cumulative impacts to noise with the Navy's proposed action.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

Construction projects at WFF Main Base, the Wallops Research Park, and Olde Mill Pointe would occur during the construction phase of infrastructure needed to support the Navy's proposed FCLP at WFF Main Base as well as during the operational phase. Because of the number of construction projects planned on and around WFF Main Base, construction noise is likely to be present in the area for multiple years. Because construction would occur only during daylight hours, construction would overlap with FCLP operations only during daytime training periods. Noise from construction typically would be intermittent because construction equipment would not be operating constantly and may not be noticeable over ambient background noise levels from normal industrial operations at WFF Main Base. Construction-related noise on Wallops Island would be expected to attenuate within a relatively short distance from the construction site. When construction and FCLP operations would be occurring simultaneously, FCLP operations would likely mask any noise generated by construction projects.

Of the operational changes noted above, existing and proposed launches and static fire tests would be the most likely to generate cumulative impacts with the Navy's proposed action. Both existing and proposed launches and static fire tests are unlikely to occur simultaneously with FCLP operations; however, when and if a launch or static fire test does occur simultaneously with FCLP operations, the noise generated by these events would be of short duration. Based on the above, cumulative impacts to noise over the term of the proposed action would result from construction occurring on WFF and Wallops Research Park and existing and planned launch operations, but these cumulative impacts would not be significant.

5.2.2.5 Land Use

The geographic study area evaluated for cumulative impacts to land use at WFF Main Base is the area within the modeled 65 dB DNL and greater noise contour. The past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact noise along with the proposed action are those that would increase the acreage of incompatible land uses within the study area.

Navy Proposed E-2/C-2 FCLP Operations

Alternative 2 would not have direct impacts to land use. The increase in the acreage of incompatible residential land uses in the modeled noise zones under Alternative 2 would be 28 acres under Scenario 1 and 22.5 acres under Scenario 2. Under existing conditions, the modeled 65 dB DNL and greater noise zones cover 600 acres, of which 126 acres are considered incompatible. Therefore, Alternative 2 would increase the acreage of incompatible land uses in the noise zones by 5.2 percent under Scenario 1 and 3 percent under Scenario 2. Incompatible land uses would make up a total of 18.9 percent (Scenario 1) and 19.6 percent (Scenario 2) of the area within the noise zones.

Other Projects

None of the other projects identified in Section 5.2.1 would increase the acreage of incompatible land uses in the modeled noise zones. Build-out of the Wallops Research Park would result in an additional 15 aircraft operations per year from the airfield at WFF Main Base, which would be negligible. This number of projected aircraft operations would not be expected to increase the size of the noise contours associated with the airfield and, therefore, would not increase the acreage of incompatible land uses in the modeled noise zones.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

Because no other projects would increase the acreage of incompatible land uses in the modeled noise zones, there would be no cumulative impacts with the proposed action to land use.

5.2.2.6 Visual Landscape

The geographic study area evaluated for cumulative impacts to the visual landscape at WFF Main Base is anywhere within the viewshed of the airfield property. The build-out of Wallops Research Park, WFF Alternative Energy Project, construction of residences at Olde Mill Pointe, and the Site-wide PEIS for the Provision of Facilities and Infrastructure at WFF have the potential to

cumulatively impact the visual landscape in combination with the proposed action.

Navy Proposed E-2/C-2 FCLP Operations

Airfield-associated modifications under Alternative 2 would be consistent with the visual setting of WFF Main Base. Although there would be an increase in the total number of aircraft operations at WFF Main Base under Alternative 2, the Navy conducting temporary, intermittent FCLP with E-2/C-2 aircraft would not be a significant impact.

Other Projects

The build-out of Wallops Research Park, the WFF Alternative Energy Project, and the Site-wide PEIS for the Provision of Facilities and Infrastructure at WFF would all be consistent with the visual setting of WFF Main Base as a NASA research facility and airfield. The construction of single-family residences at Olde Mill Pointe would be consistent with the rural residential setting of the surrounding area.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

The Navy's action, the build-out of Wallops Research Park, the WFF Alternative Energy Project, the construction of residences at Olde Mill Pointe, and the Site-wide PEIS for the Provision of Facilities and Infrastructure at WFF would all be consistent with the visual landscape of WFF Main Base and the surrounding area. WFF Main Base is an active airfield used by E-2/C-2 aircraft and other military and commercial aircraft, so the communities surrounding the airfield generally are accustomed to seeing aircraft operations. Therefore, there would be no significant cumulative impacts to the visual landscape under Alternative 2.

5.2.2.7 Biological Resources

The geographic study area evaluated for cumulative impacts to biological resources, including wildlife, marine mammals, avian resources, federally threatened and endangered species, and state threatened and endangered species, is the area within WFF Main Base's modeled 65 dB DNL noise contours under Alternative 2. Past, present, or reasonably foreseeable actions in the study area that have the potential to cumulatively impact biological resources along with the proposed action are the build-out of the Wallops Research Park, the expansion of the WFF launch range, the Residences at Olde Mill Pointe, the Alternative Energy Project, and facilities and infrastructure as analyzed in the Site-wide PEIS.

Navy Proposed E-2/C-2 FCLP Operations

Construction could directly impact individuals of less-mobile wildlife species that are present, such as small mammals, reptiles, and amphibians. Non-avian and avian wildlife would be impacted by loss of habitat resulting from construction and noise resulting from air operations. These impacts would not be expected to be significant. As no construction activities would take place in Chincoteague Bay or impact the bay in any way, there would be no significant impacts to marine mammals from construction activities under Alternative 2. Transmission of noise from aircraft into the water would be possible; however, animals would

have to be at or near the surface at the time of an over flight to be exposed to elevated sound levels. Considering the existing aircraft over flights in the study area, potential impacts would be expected to be minimal from the increase in aircraft operations at WFF Main Base associated with Alternative 2. Additionally, the Navy's proposed action under Alternative 2 would be temporary and intermittent in nature. Therefore, the Navy has determined that although short-term disturbance of the bottlenose dolphin from the increase in aircraft operations at WFF Main Base could be possible, Alternative 2 would not result in Level A or Level B harassment as defined under the Marine Mammal Protection Act, and there would be no significant impact to the bottlenose dolphin.

Any marine fish that occur regularly in Chincoteague Bay are already habituated to noise from current and ongoing aircraft over flights, and the projected noise contours under Alternative 2 are only slightly larger than the existing noise contours at WFF Main Base. Therefore, there would be no significant impact to fish species present in Chincoteague Bay from the increase in aircraft operations at WFF Main Base associated with Alternative 2.

There is no suitable nesting habitat for sea turtles at WFF Main Base, either within the areas of proposed construction or within the 65 dB DNL or greater noise contour; therefore, there would be no effect from aircraft over flights on nesting sea turtles under Alternative 2. As no construction activities associated with Alternative 2 would occur in Chincoteague Bay or indirectly impact the bay, there would be no impacts to the loggerhead, Kemp's ridley, and green sea turtles and the Atlantic and shortnose sturgeon, blueback herring, or scalloped hammerhead shark from construction under Alternative 2.

Given the current air operations at WFF Main Base, bald eagles nesting close to the facility are likely habituated to aircraft activity and noise. Therefore, an increase in air operations at WFF Main Base under Alternative 2 would not be expected to result in a take of bald eagles. Because there would be no direct impacts to bald eagles under Alternative 2, a non-purposeful take permit (50 CFR 22.26) under the Bald and Golden Eagle Protection Act would not be required. Therefore, there would be no significant impact on the bald eagle.

Gull-billed terns do not occur on WFF Main Base and therefore would not be impacted by construction under Alternative 2. Additionally, no significant increase in aircraft noise would be expected on the barrier islands where gull-billed terns are likely to occur. Consequently, Alternative 2 would have no effect and therefore no significant impact on the state-threatened gull-billed tern.

Other Projects

Build-out of Wallops Research Park, expansion of the launch range, the facilities and infrastructure analyzed in the Site-wide PEIS, the WFF Alternative Energy project, and construction of residences at Olde Mill Pointe would have impacts on non-avian and avian wildlife. Construction could directly impact individuals of less-mobile wildlife species that are present, such as small mammals, reptiles and amphibians. Non-avian and avian wildlife would be impacted by loss of habitat and temporary noise impacts during construction. These impacts would be minor.

The same projects, excluding the WFF Alternative Energy project and construction of residences at Olde Mill Pointe, may potentially create long-term, minor impacts as a result of increased noise. Construction impacts would be temporary and minor in nature. WFF has been operational since the 1940s, and projected operations under the identified projects would be similar to operations currently conducted. Wildlife species would be expected to habituate to increased noise levels at WFF Main Base and Wallops Island after short-term effects. Impacts to marine mammals and fish would not be expected to be significant.

Combined Impacts from Past, Present, and Reasonably Foreseeable Actions

The Navy's proposed action, the build-out of the Wallops Research Park, the expansion of the WFF launch range, the Residences at Olde Mill Pointe, the Alternative Energy Project, and the facilities and infrastructure as analyzed in the Site-wide PEIS would result in a cumulative impact on non-avian and avian wildlife from construction; however, the impact would not be expected to be significant because similar habitats are abundant in the surrounding area. The Navy's proposed action, the build-out of the Wallops Research Park, the expansion of the WFF launch range, and the facilities and infrastructure as analyzed in the Site-wide PEIS could result in a cumulative impact on non-avian wildlife, including fish, avian wildlife, and marine mammals from increased noise; however, the impact would not be expected to be significant as most wildlife occurring in the area are already likely habituated to noise levels from current operations. Individuals not currently habituated to increased noise would likely habituate following short-term effects. The Navy's proposed action under Alternative 2 would have no effect on federally listed threatened and endangered species or impacts on state-listed threatened and endangered species; therefore, there would be no cumulative impacts associated with these resources.

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A Agency Consultation

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APPENDIX A: AGENCY CORRESPONDENCE

Item Number	Type of Correspondence	From	To	Date Sent/ Received	Corresponding Entities
November 2011					
A-1	Cooperating Agency Request Letter	Navy	FAA	15 Nov 11	Letter from Navy (Mr. J.W. Murphy) to the FAA (Mr. Terry Page).
A-2	Cooperating Agency Request Letter	Navy	NASA	18 Nov 11	Letter from Navy (Mr. J.W. Murphy) to NASA (Ms. Caroline Massey).
A-3	Cooperating Agency Response Letter	FAA	Navy	29 Nov 11	Letter from the FAA (Mr. Terry Page) to the Navy (Mr. J.W. Murphy).
December 2011					
A-4	Cooperating Agency Response Letter	NASA	Navy	2 Dec 11	Letter from NASA (Ms. Caroline Massey) to the Navy (Mr. J.W. Murphy).
A-5	Section 106 letter – Emporia-Greensville	Navy	VDHR	5 Dec 11	Letter from Navy (Mr. W.D. Lewis) to VDHR (Mr. Marc Holma).
		VDHR	Navy	5 Jan 12	The last page of the Navy's letter has been substituted with the signed response from Mr. Marc Holma, dated 5 January 2012, completing Section 106 consultation for Emporia-Greensville.
January 2012					
A-6	Section 106 letter - WFF	Navy	VDHR	17 Jan 12	Letter from Navy (Mr. W.D. Lewis) to VDHR (Mr. Marc Holma).
		VDHR	Navy	5 Mar 12	The last page of the Navy's letter has been substituted with the signed response from Mr. Marc Holma, dated 5 March 2012, completing Section 106 consultation for WFF.

Item Number	Type of Correspondence	From	To	Date Sent/ Received	Corresponding Entities
February 2012					
N/A	N/A	N/A	N/A	N/A	N/A
March 2012					
A-7	Initial Notification Letter	Navy	USACE	8 Mar 12	Letter from Navy (Mr. W.D. Lewis) to USACE (Mr. John Evans).
A-8	Initial Notification Letter	Navy	VDGIF	8 Mar 12	Letter from Navy (Mr. W.D. Lewis) to VDGIF (Mr. Andy Zadnick).
A-9	Initial Notification Letter	Navy	VDOAV	8 Mar 12	Letter from Navy (Mr. W.D. Lewis) to VDOAV (Mr. P. Clifford Burnette, Jr.).
A-10	Initial Notification Letter	Navy	USEPA	8 Mar 12	Letter from Navy (Mr. W.D. Lewis) to USEPA (Ms. Karen DelGrosso).
A-11	Initial Notification Letter	Navy	V-DEQ	8 Mar 12	Letter from Navy (Mr. W.D. Lewis) to V-DEQ (Ms. Ellie Irons).
A-12	Initial Notification Letter	Navy	V-DCR	8 Mar 12	Letter from Navy (Mr. W.D. Lewis) to V-DCR (Ms. Rene Hypes).
A-13	Initial Notification Letter	Navy	USFWS	8 Mar 12	Letter from Navy (Mr. W.D. Lewis) to USFWS (Mr. Tylan Dean).
A-14	Response Letter	VADOAV	Navy	13 Mar 12	Letter from VADOAV (Mr. R. N. Harrington) to Navy (Mr. W.D. Lewis).
A-15	Response Letter	V-DEQ	Navy	19 Mar 12	Letter from V-DEQ (Ms. Ellie Irons) to Navy (Mr. W.D. Lewis).
A-16	Response Letter	USEPA	Navy	21 Mar 12	Letter from USEPA (Ms. Barbara Rudnick) to Navy (Ms. Sara Upchurch).
A-17	Response Letter / Scoping Comments	V-DEQ	Navy	28 Mar 12	Letter from V-DEQ (Mr. G. Stephen “Steve” Coe) to Navy (Ms. Sara Upchurch).

Item Number	Type of Correspondence	From	To	Date Sent/ Received	Corresponding Entities
April 2012					
A-18	Response Letter	V-DCR	Navy	6 Apr 12	Letter from V-DCR (Ms. Alli Baird) to Navy (Ms. Sara Upchurch).
May 2012					
N/A	N/A	N/A	N/A	N/A	N/A
June 2012					
N/A	N/A	N/A	N/A	N/A	N/A
July 2012					
A-19	Coastal Consistency Determination	Navy	V-DEQ	3 July 12	Letter from Navy (Mr. W.D. Lewis) to V-DEQ (Ms. Ellie Irons).
August 2012					
A-20	Email	USACE	Navy	30 August 12	Email from USACE (Mr. John D. Evans) to Navy (Mr. Paul Block)

DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVE, SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N46/035
November 15, 2011

Mr. Terry Page
Manager, Washington-Dulles
Airports District Office
23723 Air Freight Lane, Suite 210
Dulles, VA 20166

Dear Mr. Page:

With the October 20, 2011 media release concerning the addition of the National Aeronautics and Space Administration (NASA) Wallops Flight Facility to the Emporia-Greensville Regional Airport Environmental Assessment (EA), the Department of the Navy (Navy) is updating our cooperating agency request to the Federal Aviation Administration (FAA). In accordance with the National Environmental Policy Act (NEPA), the Navy is preparing the EA to study the environmental effects of using the Emporia-Greensville Regional Airport, and or the NASA Wallops Flight Facility to conduct E-2/C-2 turbo prop aircraft Field Carrier Landing Practice operations.

The special expertise of the FAA will ensure adequate evaluation of the potential environmental effects within your jurisdiction. Therefore, in accordance with 40 Code of Federal Regulations Part 1501.6 and the Council on Environmental Quality Cooperating Agency guidance issued on January 30, 2002, the Navy requests the FAA serve as a cooperating agency for this project.

It is the Navy's goal to complete the environmental analysis for the proposed action by February 2013 which will support a summer 2013 initial operating schedule while employing the best scientific information available. As the lead agency, the Navy will be responsible for overseeing preparation of the EA that includes, but is not limited to, the following:

a. Gathering all necessary background information and preparing the EA.

b. Determining the scope of the EA, including the alternatives evaluated.

c. Working with appropriate district FAA personnel to evaluate potential impacts of the airfield use-agreement.

d. Circulating the appropriate NEPA documentation to the general public and any other interested parties.

5090
Ser N46/035
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e. Scheduling and supervising public informational meetings held in support of the NEPA process.

f. Maintaining an administrative record and responding to any Freedom of Information Act (FOIA) requests relating to the EA.

As the cooperating agency, the Navy requests FAA support in the following manner:

a. Providing expertise in the area of airfield use.

b. Providing timely comments on working drafts of the EA documents. Timelines are to be determined by the Navy, with the first milestone requirement to review the Description of the Proposed Action and Alternatives scheduled for January 2012.

c. Responding to Navy requests for information. FAA input will be critical to ensure a successful NEPA process.

d. Participating as appropriate in meetings hosted by the Navy for discussion of EA related issues, and for receipt of public comments on the NEPA document and environmental analysis.

e. Scheduling meetings requested by the Navy in a timely manner.

f. Adhering to the overall schedule as set forth by the Navy.

g. Forwarding to the Navy any FOIC requests received for Navy-originated documents within the scope of this project.

h. Providing a formal, written response to this request.

FAA assistance as a cooperating agency is vitally important to the Navy, and will help ensure that the EA contains the environmental information necessary to make informed and timely decisions. Commander, U.S. Fleet Forces Command point of contact for this issue is Ms. Patsy Kerr, (757) 836-6336 or e-mail: patricia.kerr@navy.mil.

Sincerely,

J. W. MURPHY
Deputy Chief of Staff for
Shore and Environmental Readiness

Copy to: Commander, Naval Facilities Engineering Command, Atlantic

DEPARTMENT OF THE NAVY
COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVE, SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N46/040
November 18, 2011

Ms. Caroline Massey
Assistant Director
Management Operations Directorate
NASA Wallops Flight Facility
Wallops Island, VA 23337

Dear Ms. Massey:

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy (Navy) is preparing an environmental assessment (EA) to study the environmental effects of using the Emporia-Greensville Regional Airport and/or the National Aeronautics and Space Administration (NASA) Wallops Flight Facility to conduct E-2/C-2 turbo prop aircraft Field Carrier Landing Practice (FCLP) operations. NASA personnel have special expertise that can ensure that we evaluate all of the potential environmental effects on your installation and under your jurisdiction. Therefore, in accordance with 40 Code of Federal Regulation Part 1501.6 and the Council on Environmental Quality Cooperating Agency guidance issued on January 30, 2002, the Navy requests that NASA serve as a cooperating agency for this project.

It is the Navy's goal to complete the environmental analysis for the proposed action by February 2013, which will support a Summer 2013 initial operating schedule.

As the lead agency, the Navy will be responsible for overseeing preparation of the EA that includes, but is not limited to;

a. Gathering all necessary background information and preparing the EA.

b. Determining the scope of the EA, including the alternatives evaluated.

c. Working with appropriate NASA personnel to identify potential impacts of the airfield use-agreement.

d. Circulating the appropriate NEPA documentation to the public and any interested parties.

e. Providing NASA with all necessary data for public informational meetings held in support of the NEPA process.

f. Maintaining an administrative record and responding to any Freedom of Information Act requests relating to the EA.

As the cooperating agency, the Navy requests NASA support with the following:

a. Providing expertise in the area of airfield use.

b. Providing timely comments on working drafts of the EA documents. To that end, the Navy will develop the timelines. The first milestone, reviewing the Description of the Proposed Action Alternatives (DOPAA), is scheduled for January 2012.

c. Timely response to Navy requests for NASA's input.

d. Participating, as appropriate, in meetings hosted by the Navy for discussion of EA related issues, and for receipt of public comments on the NEPA document and environmental analysis.

e. Scheduling meetings the Navy requests in a timely manner.

f. Adhering to the maximum extent practicable with the Navy's schedule.

g. Forwarding to the Navy any FOIA requests received for Navy originated documents within the scope of this project.

h. Providing a formal, written response to this request.

5090
Ser N46/040
November 17, 2011

NASA assistance as a cooperating agency is vitally important to the Navy and will help ensure that the EA contains the environmental information necessary to make informed and timely decisions. My point of contact for this issue is Ms. Patsy Kerr, (757) 836-6336 or E-Mail: patricia.kerr@navy.mil.

Sincerely,

J. W. MURPHY
Deputy Chief of Staff
for Shore and Environmental
Readiness

Copy to: NAVFAC LANT

U. S. Department
of Transportation

**Federal Aviation
Administration**

WASHINGTON AIRPORTS DISTRICT OFFICE
23723 Air Freight Lane, Suite 210
Dulles, Virginia 20166
Telephone: 703/661-1354
Fax: 703/661-1370

November 29, 2011

Mr. J. W. Murphy
Deputy Chief of Staff
U.S. Department of the Navy
U.S. Fleet Forces Command, Fleet Readiness and Training
1562 Mitscher Avenue, Suite 250
Norfolk, Virginia 23551

Re: Department of Navy – Airfield Use Agreement – FAA Cooperating Agency Request

Dear Mr. Murphy:

This is in response to your letter dated November 15, 2011, requesting the Federal Aviation Administration participation as a cooperating Federal Agency, with the Department of the Navy, in the preparation of an Environmental Assessment (EA) to study the environmental effects of using the Emporia-Greensville Regional Airport to conduct E-2 / C-2 turbo-prop aircraft Field Carrier Landing Practice Operations. The EA has also included the National Aeronautics and Space Administration (NASA) Wallops Flight Facility as a potential practice facility.

The FAA will be pleased to participate as a cooperating agency in accordance with 40 CFR Part 1501 and the Council on Environmental Quality Cooperating Agency Guidance issued in January 2002.

The FAA agrees to the support the areas identified in your letter. However the FAA requests an additional role in the proposal for the Emporia-Greensville Regional Airport. The Emporia-Greensville Regional Airport is a public-use airport, which is federally obligated and bound by FAA Grant Assurances. As such, all proposed development projects must have a FAA environmental finding before implementation begins. Therefore FAA must participate in developing information and analyses for inclusion in the EA, beyond review and comment of draft and final documentation for the development being proposed. It is our intent to assist the Navy with the development of the assessment by providing guidance for project components occurring on or adjacent to airport property in order to meet FAA airfield design standards and National Environmental Policy Act (NEPA) requirements. The FAA does not have a land-use or federal obligation role in the Wallops Flight Facility, however we will provide FAA airspace and flight procedures review and internal FAA coordination. We believe the described expanded role will enhance the coordination of the environmental study.

We look forward to working with the Navy on the environmental and planning process for the use of a public or private airfield. Should you have any questions please contact me at (703) 661-1354 or Jeff Breeden at (703) 661-1363.

Sincerely,

Terry J. Page, Manager
Washington Airports District Office

cc: Ms. Patsy Kerr, Navy Fleet Forces ✓
Mr. P. Clifford Burnette, Virginia Department of Aviation
Mr. Jeffrey Breeden, FAA WADO

National Aeronautics and
Space Administration

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, VA 23337

December 2, 2011

Reply to Attn of: 250.W

Mr. J. W. Murphy
Deputy Chief of Staff, Shore and Environmental Readiness
U.S. Fleet Forces Command
1562 Mitscher Avenue, Suite 250
Norfolk, VA 23551-2487

Dear Mr. Murphy:

Thank you for your invitation to participate as a Cooperating Agency in developing the US. Fleet Forces Command's Environmental Assessment to conduct E-2/C-2 turbo prop aircraft Field Carrier Landing Practice (FCLP) operations at the Emporia-Greensville Regional Airport and/or the National Aeronautics and Space Administration (NASA) Wallops Flight Facility (WFF). On behalf of WFF, I am happy to accept your invitation.

WFF shares your desire of planning for future actions and the FCLP mission, and supports your effort to comply with National Environmental Protection Act (NEPA) responsibilities. We understand and accept our role to provide support to your effort in the form of technical expertise, document reviews, and active participation throughout the NEP A process.

During the process, the WFF representatives will be Ms. Carolyn Turner, who can be reached at (757) 824-1720 or Carolyn.Turner-1@nasa.gov and Ms. Shari Silbert who can be reached at (757) 824-2327 or Shari.A.Silbert@nasa.gov. Please contact them directly to coordinate times and availability.

Caroline Massey
Assistant Director, Management Operations Directorate

cc:
250/Mr. E. Connell
250/Ms. C. Turner

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV21SU/482
December 5, 2011

Mr. Marc Holma
Virginia Department of Historic Resources
Office of Review and Compliance
2801 Kensington Avenue
Richmond, Virginia 23221

Dear Mr. Holma:

In accordance with the National Environmental Policy Act (NEPA) of 1969; the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508); and Navy procedures for implementing NEPA (32 CFR 775), the Navy is preparing an Environmental Assessment (EA) to analyze the potential impacts of using the Emporia-Greensville Regional Airport and/or National Aeronautics and Space Administration (NASA) Wallops Flight Facility as a near-term, interim measure to support Field Carrier Landing Practice (FCLP), the required flight training that immediately precedes aircraft carrier qualification, for the E-2C Hawkeye (transitioning to the E-2D Advanced Hawkeye) and C-2A Greyhound aircraft squadrons, hereinafter referred to as the E-2/C-2 aircraft, home-based at Naval Station (NS) Norfolk Chambers Field in Norfolk, Virginia.

This letter initiates Section 106 consultation on the Navy's proposed action specific to the Emporia-Greensville Regional Airport. Information on NASA Wallops Flight Facility will be sent for your consideration via a separate package in the next couple of months.

The Navy has determined that the area of potential effect (APE) for the undertaking at Emporia is the Emporia-Greensville Regional Airport property (Enclosure (1)). Aerial views and photographs of Emporia-Greensville Regional Airport included with this package show existing runways, buildings, and other facilities at the airport (Enclosures (2) and (3)). In accordance with Section 106 of the National Historic Preservation Act (NHPA), as amended, and as part of NEPA coordination, we are submitting for your information and review the enclosed documentation for Emporia-Greensville Regional Airport, including: a project location map (Enclosure (1)); aerial maps (Enclosure (2)); photographs of the existing conditions (Enclosure (3)); and figures of proposed construction locations (Enclosure (4)).

Emporia-Greensville Regional Airport is publicly owned by the Emporia-Greensville Airport Commission and is located almost wholly within Greensville County, with a small area of the southeast portion of the property located in Southampton County (see project location map in Enclosure (1)). The airport lies several miles east of Emporia, adjacent to the north side of US Route 58 and east of

Interstate 95. It has one active runway (Runway 15/33) and two closed runways (Runway 09/27 and Runway 03/21). Recent airport data show approximately 2,500 annual aircraft operations occur at the airport. Most aircraft using Emporia-Greensville Regional Airport are general aviation (private) aircraft.

Construction to support use of the airport facilities by the Navy for FCLP operations would include the following minor modifications:

- Installation of simulated carrier deck markings and lighting;
- Installation of concrete pads for the placement of the following: Improved Fresnel Lens Optical Landing System (IFLOLS), Manually Operated Visual Landing Aid System (MOVLAS), and Landing Signal Officer (LSO) workstation;
- Fencing around storage areas; and
- Utility and infrastructure modifications to provide the electrical power requirements for IFLOLS, MOVLAS, and LSO workstations; lighted windsock/tetrahedron; abeam position light; and additional miscellaneous improvements which have yet to be determined. Equipment inside or near the LSO workstation for which electrical modifications are needed include: one UHF and one VHF radio, one telephone land line, and overhead and desk lighting.

Edge and crosswise deck lights would form a 70-foot by 775-foot rectangle depicting a simulated carrier deck, as seen from the landing aircraft. Runway lights would be semi-flush with the runway pavement, uni-directional, white, and hook-resistant. White and yellow high-visibility markings would be non-reflective. Black markings would be matte-finished. General locations of these proposed modifications at the airport are shown in Enclosure (4). None of the existing buildings or structures at the airport terminal would be impacted by proposed construction activities to support FCLP operations.

The present site of Emporia-Greensville Regional Airport was built during World War II as an Outlying Landing Field (OLF) for Marine Corps Air Station (MCAS) Edenton, North Carolina. MCAS Edenton is currently a civilian airport, known today as Northeastern Regional Airport. The OLF became a civilian airport in the 1960s. There are no previously recorded cultural resources or historic properties within the current confines of the airport. However, a recent cultural resources survey for an unrelated runway extension, beyond the northeast portion of the airfield, identified six archaeological sites, none of which were recommended as eligible for inclusion in the National Register of Historic Places (National Register) (Browning, DHR File #2011-0821). Based on a July 2011 site visit by Navy cultural resources staff, the proposed construction areas, primarily located along Runway 15/33, show evidence of grading, filling and other subsurface disturbance that likely occurred during clearing and construction of the runway beginning in the 1940s, and/or during

maintenance of the airfield, as evidenced from the presence of existing paved areas, underground utilities, and lights.

No buildings dating to the 1940s, when the airport was originally developed, appear to be extant within the APE. However, the footprint of at least one building, located between the former and current terminal buildings, may have dated from the airport's early period (see Enclosure (3), Image 5). The original triangle runway configuration is evidenced in the remains of closed runways 09/27 and 03/21 (see Enclosure (2), Figure 1) and the edges of active runway 15/33 (see Enclosure (3), Image 12). The pavement of the abandoned runways is in unusable condition and some areas have been altered or cut through by the current configuration of active Runway 15/33 (see Enclosure (2) and Enclosure (3), Image 15). The earliest extant building on the property appears to be the corporate hangar, and this building may date to the 1950s or 1960s (see Enclosure (3), Image 8). The former terminal building may date to the 1960s (see Enclosure (3), Image 6). All other buildings and structures appear to post-date the 1960s. The main terminal building was constructed in 1999 (see Enclosure (3), Image 2). A truck driving school utilizes the western corner of the airport and has recently erected a simple gabled building parallel to US Route 58 (see Enclosure (3), Image 10). The Virginia Army National Guard (VAARNG) leases a small area at the southwest corner of the airfield, and its Emporia Armory dates to 1992 (see Enclosure (3), Image 11, background). The VAARNG currently considers this property as not eligible for listing in the National Register. Additional buildings or structures at the airport, which do not front on the airfield, include several utility sheds, fuel tanks, an antenna, airport localizers, a fire training area on the northeast side of the airfield, and other small structures and objects used in airport operations (see Enclosure (3)).

The Navy is submitting the enclosed documentation pursuant to Section 106 of the NHPA, as amended, to initiate consultation with your agency and to facilitate effective planning in conjunction with the NEPA process. Based on the information enumerated above, specific to the Emporia-Greensville Regional Airport, the Navy has determined: 1) that the resources within the APE are not individually eligible for inclusion in the National Register, nor do they constitute an eligible historic district; and 2) the proposed undertaking will have no effect on historic archaeological or architectural resources.

In accordance with Section 106 of the NHPA, the Navy invites you to concur with these findings by completing the attached signature block and returning the original signature and any additional comments to: D. Lewis, NAVFAC Atlantic Business Line Manager, at NAVFAC Atlantic, 6506 Hampton Boulevard, Norfolk, Virginia, 23508-1278, within 30 days of receipt of this letter.

5090
Ser EV21SU/482
December 5, 2011

Please contact Darrell E. Cook, NAVFAC Atlantic Cultural Resources Specialist, at (757) 322-4282, or by email at darrell.e.cook@navy.mil, if you have questions about this project.

Sincerely,

W. D. Lewis

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosures: (4)

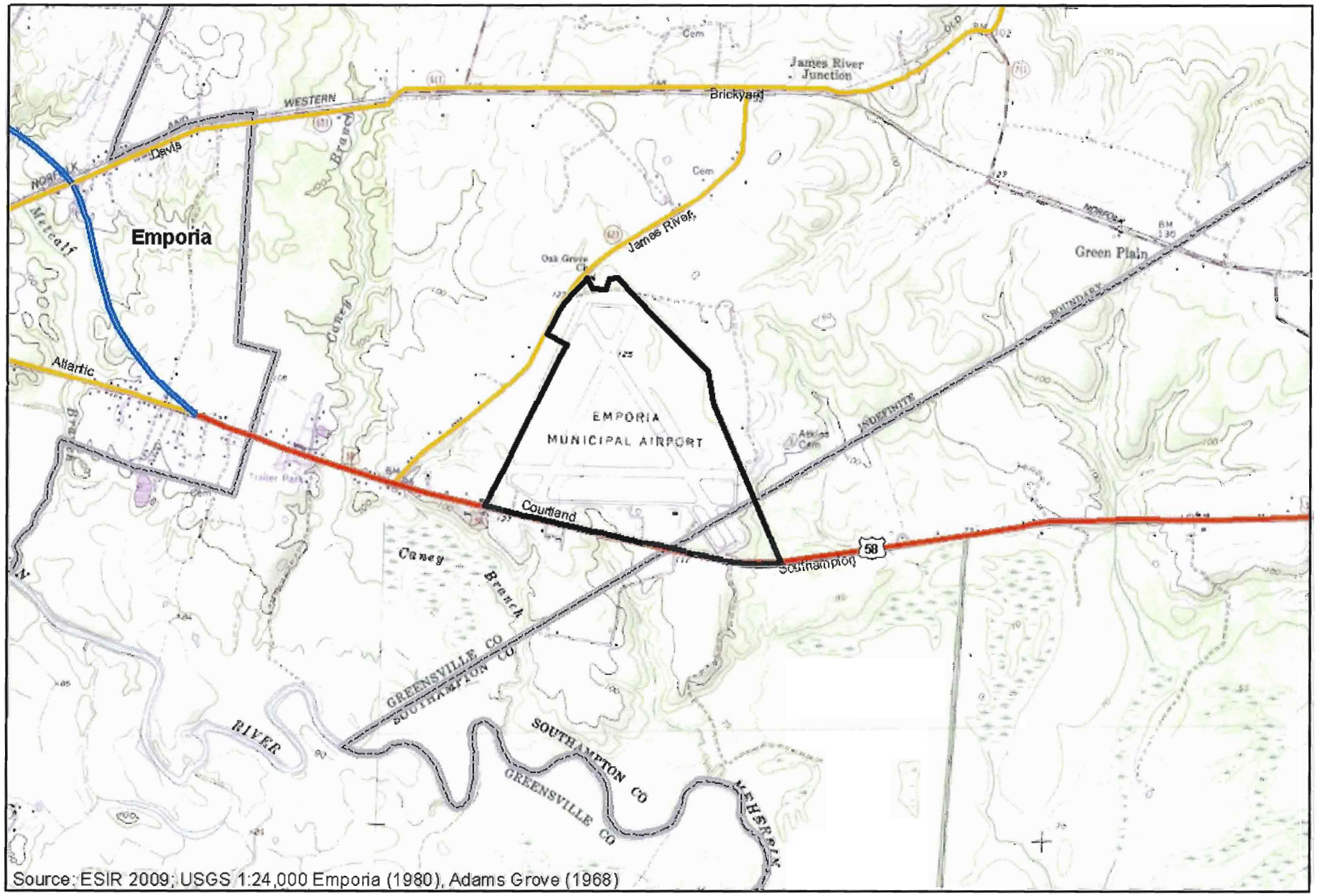
The Virginia Department of Historic Resources concurs with the Navy that the proposed undertaking (upgrades to and use of the airfield facilities at Emporia-Greensville Regional Airport to support Field Carrier Landing Practice operations for E-2/C-2 aircraft squadrons) will have no effect on National Register-eligible properties.

Marc Holma

Marc Holma, Architectural Historian
Office of Review and Compliance
Virginia Department of Historic Resources

5 JAN 12
Date

DHR# 2011-2033



Legend

- Emporia-Greensville Regional Airport
- County Boundary
- Interstate
- Highway
- Major Road

Attachment 1
Regional Topographic Map

N

0 0.25 0.5
Miles

Enclosure 1: Figure showing location of proposed action at Emporia-Greensville Regional Airport

Enclosure 2: Emporia–Greensville Regional Airport Aerial Maps
(Arrows with image numbers indicate photograph direction in Enclosure 3)

1: Emporia-Greensville Regional Airport. (Google)

Enclosure 2: Emporia–Greensville Regional Airport Aerial Maps
(Arrows with image numbers indicate photograph direction in Enclosure 3)

2: Emporia-Greensville Regional Airport Administration/Terminal Area. (Google)

Enclosure 2: Emporia–Greensville Regional Airport Aerial Maps
(Arrows with image numbers indicate photograph direction in Enclosure 3)

3: Close-up of Administration/Terminal Area. (Google)

Enclosure 2: Emporia–Greensville Regional Airport Aerial Maps
(Arrows with image numbers indicate photograph direction in Enclosure 3)

4: Emporia-Greensville Regional Airport. (Google)

Enclosure 3: Emporia-Greensville Regional Airport Photographs

1. Airport Sign (c.1990), Looking Southeast
July 19, 2011.

Enclosure 3: Emporia-Greensville Regional Airport Photographs

2. Terminal Building (1999), Looking Northwest
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

3. Utility Shed Near Terminal Area (c.1970), Looking East
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

4. Fuel Tanks and Tower (post-1970), Looking Northwest
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

5. Building Ruins, Looking West
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

6. Former Terminal (c.1365), Looking Southeast
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

7. Maintenance Building (c.1990), Looking Southwest
July 19, 2011.

Enclosure 3: Emporia-Greensville Regional Airport Photographs

8. Hangar (c.1960), Looking Southwest
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

9. Hangar (c.2008), Looking Southwest
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

10. Truck Driving School (c.2008), Looking Southeast
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

11. Utility Shed with Tank in Foreground (c.1965) and National Guard Armory in Background (1992), Looking Southwest
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

12. Active Runway 15/33, Looking North
July 19, 2011

Enclosure 3: Emporia-Greensville Regional Airport Photographs

13. Utility Shed at Northwest Corner of Airport (post-1970) , Looking North
July 19, 2011

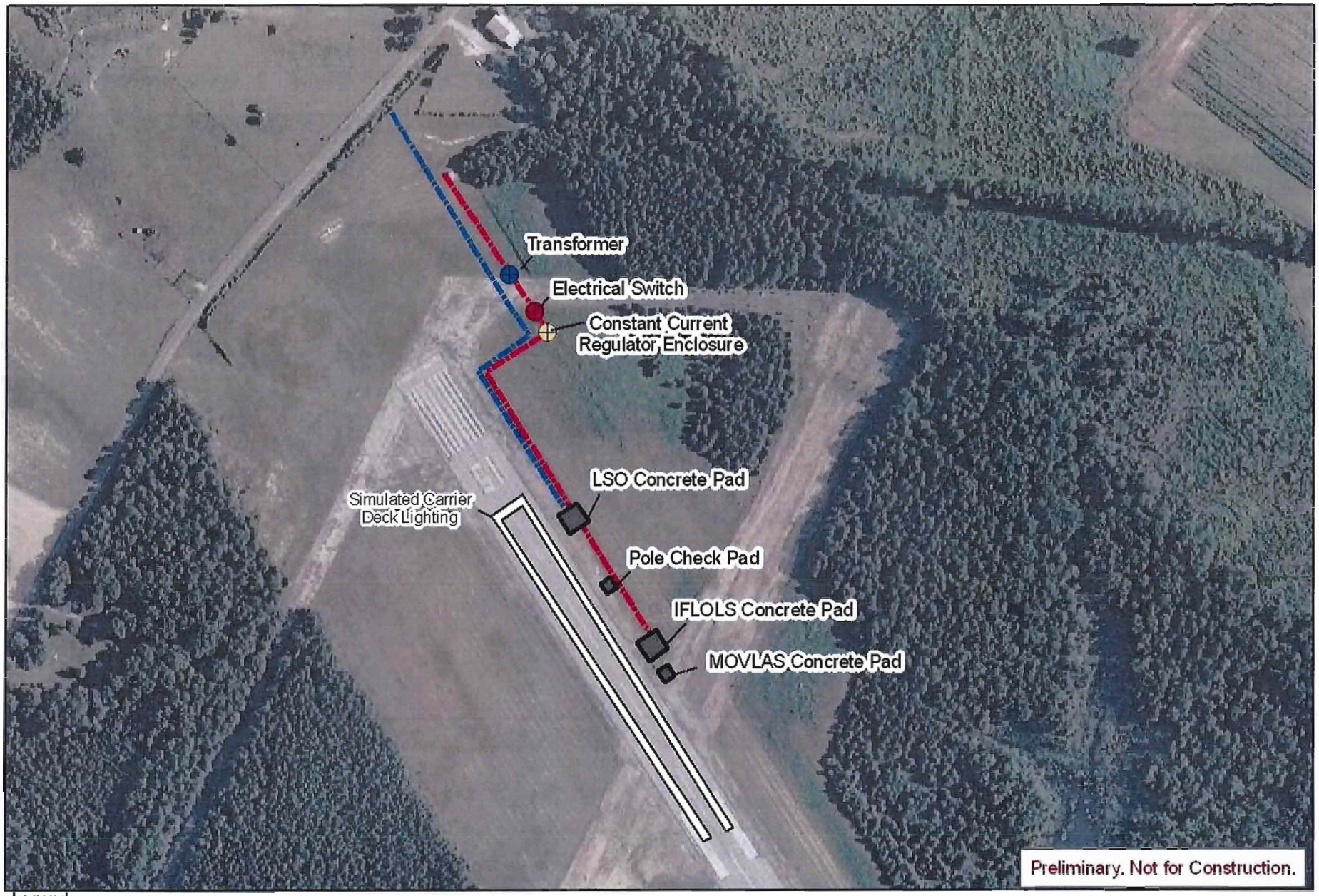
Enclosure 3: Emporia-Greensville Regional Airport Photographs

14. Localizers (post-1990), Looking Northwest
July 19, 2011

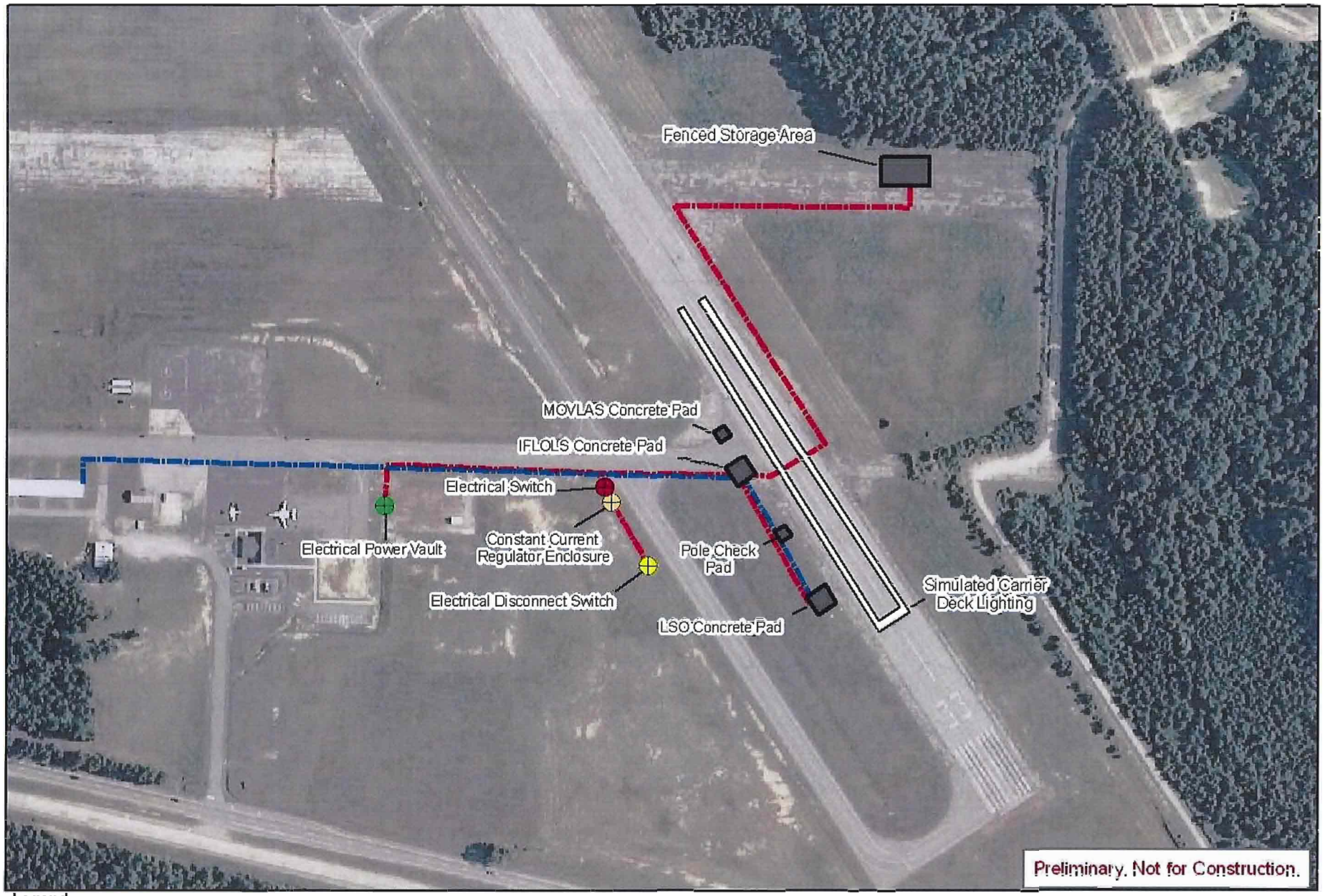
Enclosure 3: Emporia-Greensville Regional Airport Photographs

15. Inactive Runway, Looking West
July 19, 2011

Enclosure 4: Figures of Proposed Construction Locations



Enclosure 4: Figures of Proposed Construction Locations



Legend

- Simulated Carrier Deck Lighting
- Concrete Pad
- Electrical Ductbank
- Telephone Ductbank
- Constant Current Regulator Enclosure
- Electrical Disconnect Switch
- Electrical Power Vault - Existing
- Electrical Switch
- Transformer

Runway 33
Proposed Modifications

N

0 75 150 300 450 600
Feet

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:

5090
Ser EV21SU/017
January 17, 2012

Mr. Marc Holma
Virginia Department of Historic Resources
Office of Review and Compliance
2801 Kensington Avenue
Richmond, Virginia 23221

Dear Mr. Holma:

This letter continues Section 106 consultation on the Navy's proposed use of Emporia-Greensville Regional Airport (Emporia), Virginia or National Aeronautics and Space Administration (NASA) Wallops Flight Facility (WFF), Wallops Island, Virginia as an interim measure to support Field Carrier Landing Practice (FCLP) training for the E-2C Hawkeye (transitioning to the E-2D Advanced Hawkeye) and C-2A Greyhound aircraft squadrons, hereinafter referred to as the E-2/C-2 aircraft. Discussion in this letter is specific to the proposed undertaking at Wallops; a letter dated December 5, 2011 detailed the proposed undertaking at Emporia.

In accordance with the National Environmental Policy Act (NEPA) of 1969; the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508); and Navy procedures for implementing NEPA (32 CFR 775), the Navy is preparing an Environmental Assessment (EA) to analyze the potential impacts of modifying and using Emporia or WFF for FCLP training. In accordance with Section 106 of the National Historic Preservation Act (NHPA), as amended, and as part of NEPA coordination, the Navy, as the lead federal agency, is submitting for your information and review the enclosed documentation for WFF, including a project location map (Enclosure (1)) and an archaeological probability area map, which also shows proposed construction locations (Enclosure (2)). The Navy has determined that the area of potential effect (APE) for the undertaking at WFF is the WFF Main Base area of the installation (Enclosure (1)). As the actions may occur at NASA's WFF, NASA is a Cooperating Agency for the EA process and will be participating in the Navy's Section 106 consultation. Please include NASA in all future correspondence regarding this project.

WFF is located in Accomack County, part of Virginia's Eastern Shore on the Delmarva Peninsula. WFF is divided into three distinct areas, WFF Main Base (1,800 acres), WFF Mainland (100 acres), and Wallops Island (4,600 acres). During World War II, the Main Base (subject of the proposed undertaking) was constructed as the Chincoteague Naval Auxiliary Air Station. The property became a NASA facility in 1959. As part of NASA's Goddard Space Flight Facility, WFF has been the subject of intense cultural resources inventory and evaluation efforts, including the most recent 2011 *Historic Resources Eligibility Survey, Wallops Flight Facility, Accomack County, Virginia* (DHR File No. 2010-2274). Within the APE (the Main Base), no architectural resources were found eligible for the National Register of Historic Places (NRHP).

WFF Main Base contains offices, laboratories, maintenance and service facilities, a NASA-owned airport, air traffic control facilities, hangars, runways, aircraft maintenance and ground support buildings, water and sewer treatment plants, and rocket motor storage magazines. The National Oceanic and Atmospheric Administration (NOAA), Navy, and Coast Guard also have housing, administration, and/or other miscellaneous resources at WFF Main Base. The airfield currently features three active runways (04/22, 10/28, and 17/35), with approximately 10,000 annual operations, including existing Navy E-2/C-2 operations of aircraft based at Naval Station Norfolk.

Construction to support use of the airport facilities by the Navy for FCLP operations would include the following minor modifications:

- Installation of simulated carrier deck markings and lighting;
- Installation of concrete pads for the placement of the following: Improved Fresnel Lens Optical Landing System (IFLOLS), Manually Operated Visual Landing Aid System (MOVLAS), and Landing Signal Officer (LSO) workstation;
- Fencing around storage areas; and
- Utility and infrastructure modifications to provide the electrical power requirements for IFLOLS, MOVLAS, and LSO workstations; lighted windsock/tetrahedron; abeam position light; and additional miscellaneous improvements which have yet to be determined. Equipment inside or near the LSO workstation for which electrical modifications are needed include: one UHF and one VHF radio, one telephone land line, and overhead and desk lighting.

Edge and crosswise deck lights would form a 70-foot by 775-foot rectangle depicting a simulated carrier deck, as seen from the landing aircraft. Runway lights would be semi-flush with the runway pavement, uni-directional, white, and hook-resistant. White and yellow high-visibility markings would be non-reflective. Black marking would be matte-finished. General locations of these proposed modifications at the airport are shown in Enclosure (2). None of the existing buildings or structures at the airport terminal would be impacted by proposed construction activities to support FCLP operations.

Based on a December 2011 site visit by Navy cultural resources staff, consultation with the WFF Federal Preservation Officer and environmental staff, and comparison of archaeological predictive models of the airfield (Enclosure (2)), the proposed construction areas have a low probability of intact cultural remains. The proposed construction areas show evidence of grading, filling and other subsurface disturbance that likely occurred during clearing and construction of the runway beginning in the 1940s, and/or during maintenance of the airfield, as evidenced from the presence of existing paved areas, underground utilities, and lights.

The Navy is submitting the enclosed documentation pursuant to Section 106 of the NHPA, as amended, to continue consultation with your agency and to facilitate effective planning in conjunction with the NEPA process. Based on the information enumerated above, specific to WFF, the Navy has determined that the proposed undertaking will have no effect on historic archaeological or architectural resources.

5090
Ser EV21SU/017
January 17, 2012

In accordance with Section 106 of the NHPA, the Navy invites you to concur with these findings by completing the attached signature block and returning the original signature and any additional comments to: D. Lewis, NAVFAC Atlantic Business Line Manager, at NAVFAC Atlantic, 6506 Hampton Boulevard, Norfolk, Virginia, 23508-1278, within 30 days of receipt of this letter. Please contact Darrell E. Cook, NAVFAC Atlantic Cultural Resources Specialist, at (757) 322-4282, or by email at darrell.e.cook@navy.mil, if you have questions about this project.

Sincerely,

W. D. Lewis

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosures: (1) NASA WFF Project Location Map/APE
(2) Archaeological Probability Area map, including Proposed Construction Locations

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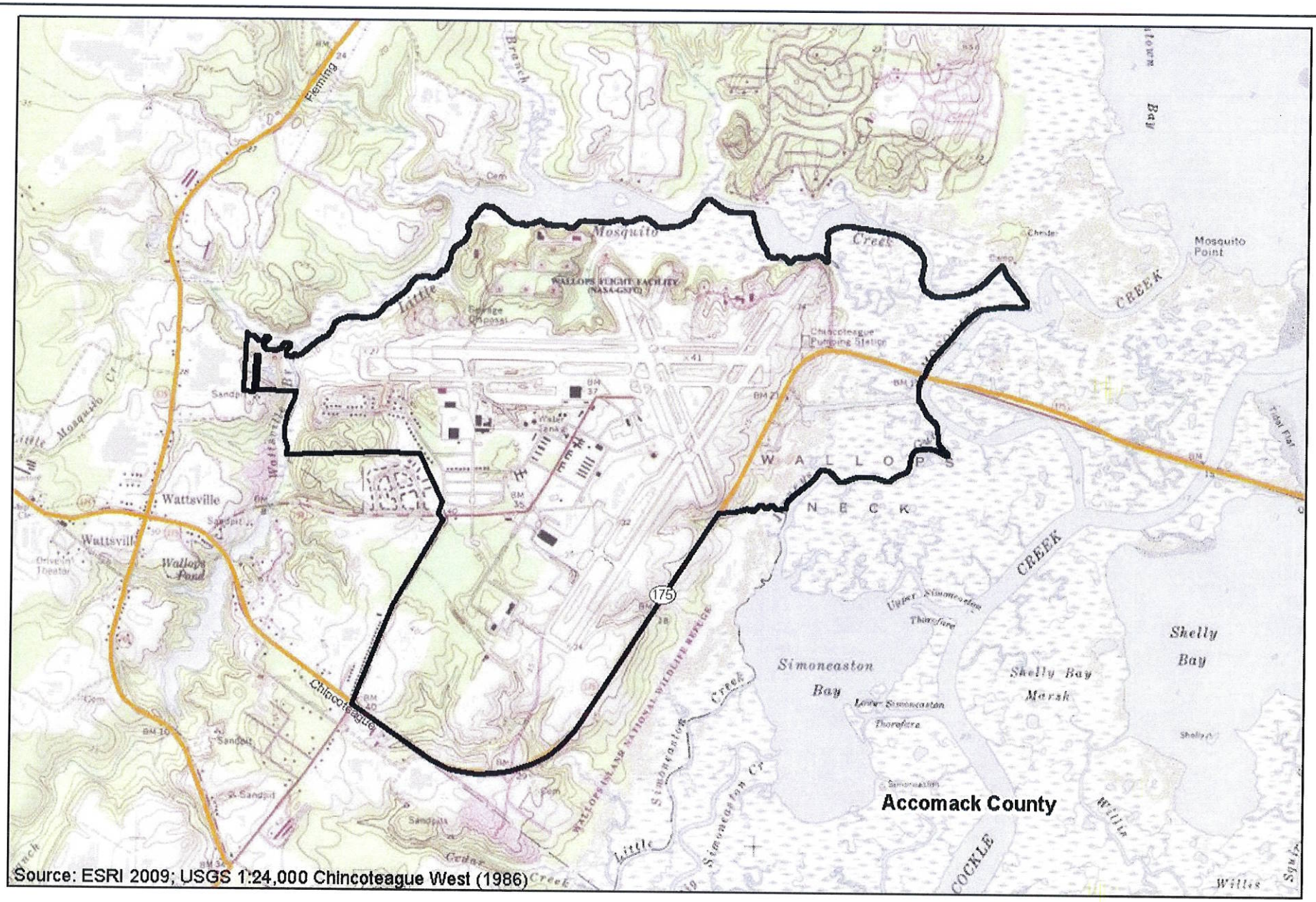
The Virginia Department of Historic Resources concurs with the Navy that the proposed undertaking (upgrades to and use of the airfield at NASA Wallops Flight Facility to support Field Carrier Landing Practice operations for E-2/C-2 aircraft squadrons) will have no effect on National Register-eligible properties.

Marc Holma, Architectural Historian
Office of Review and Compliance
Virginia Department of Historic Resources

5 MARCH 12
Date

DHR# 2011-2033



Legend

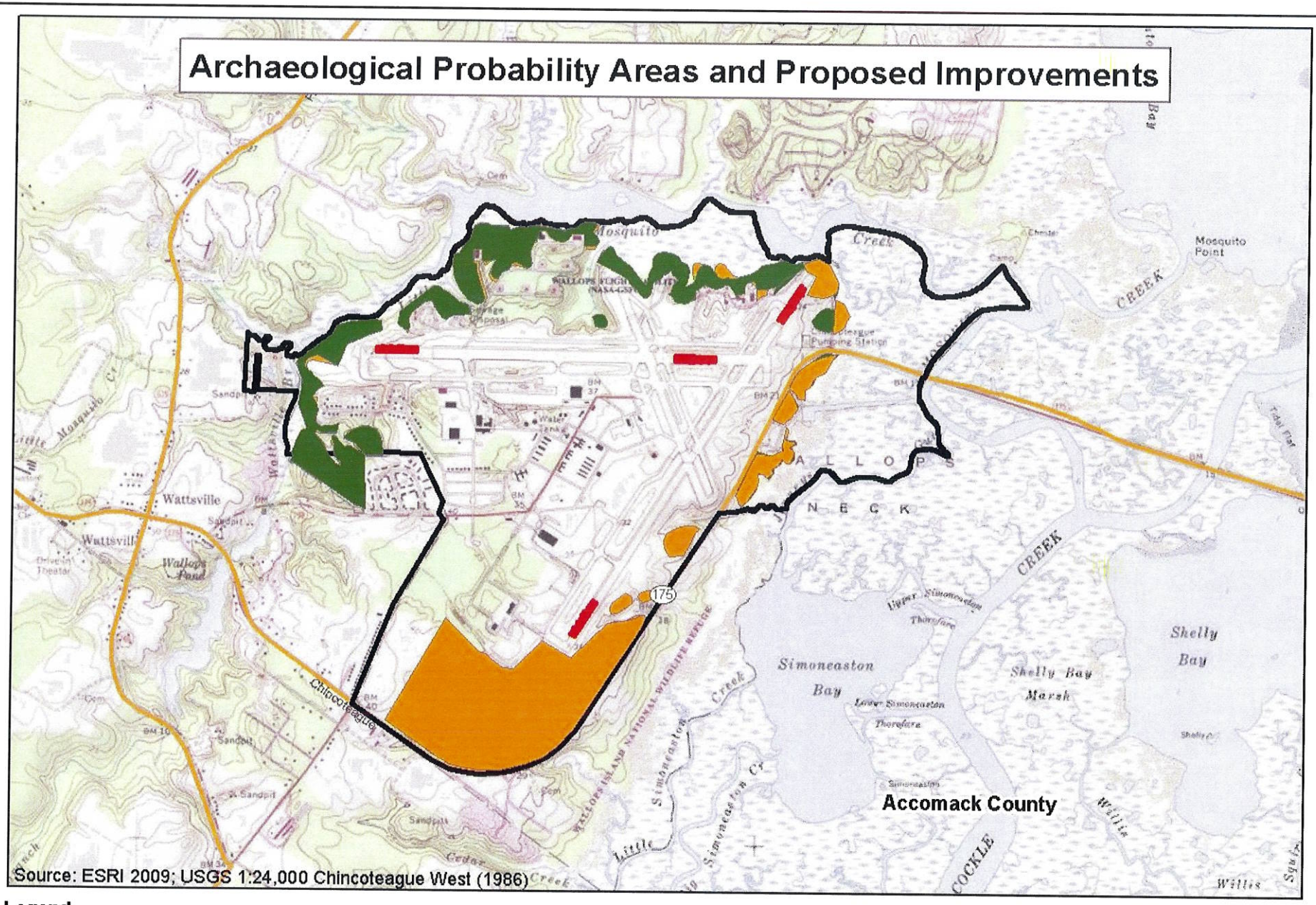
- installation_area
- County Boundary
- Interstate
- Highway
- Major Road

Enclosure 1
Regional Topographic Map

N

0 0.25 0.5
Miles

Archaeological Probability Areas and Proposed Improvements



Source: ESRI 2009; USGS 1:24,000 Chincoteague West (1986)

Legend

Cultural Restricted Area

Archaeological Probability

- High
- Medium

- Airfield Improvements
- Installation Area
- Interstate
- Highway
- Major Road

Enclosure 2
Cultural Restricted Areas

N

0 0.25 0.5
Miles

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV21SHU/00094
8 MAR 2012

From: Commander, Naval Facilities Engineering Command, Atlantic
To: District Engineer, U.S. Army Corps of Engineers, Norfolk District (John Evans)

Subj: NATIONAL ENVIRONMENTAL POLICY ACT ENVIRONMENTAL ASSESSMENT (EA) FOR E-2/C-2 FIELD CARRIER LANDING PRACTICE (FCLP) AT EMPORIA-GREENSVILLE REGIONAL AIRPORT AND WALLOPS FLIGHT FACILITY

Encl: (1) Regional Maps

1. The Navy is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq., and its implementing regulations for the above-referenced project. A previous letter was sent to your office in January 2011 addressing the same proposed action at a different airport, an effort which was suspended in February 2011. The intent of this letter is to inform your office of the scope of the proposed project and of the kickoff of the new EA.

2. The EA will evaluate the potential environmental consequences of the U.S. Department of the Navy's (the Navy's) proposed action to conduct regular, scheduled E-2 Hawkeye and C-2 Greyhound (hereinafter referred to as the E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield which meets the Navy's minimum airfield requirements. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport ("Emporia") or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility ("WFF"), as an interim bridge until the Navy increases local FCLP capacity at a permanent facility.

3. The proposed action would support up to 45,000 annual FCLP operations for E-2/C-2 squadrons operating from Naval Station (NS) Norfolk Chambers Field, in Norfolk, Virginia. The E-2 aircraft is a turboprop, twin-engine surveillance/command and control aircraft, while the C-2 aircraft is a turboprop, twin-engine cargo aircraft. This EA analyzes the environmental consequences associated with both the proposed FCLP operations and minor modifications to airfield facilities to support the E-2/C-2 FCLP operations.

4. Emporia-Greensville Regional Airport is publically owned and managed by an Airport Commission. The Airport is primarily located within Greensville County, with the approach end of Runway 33 located in Southampton County. It is approximately 2.6 miles east of the City of Emporia, Virginia and approximately 65 nautical miles from NS Norfolk Chambers Field in Norfolk, Virginia (see Attachment 1,

Regional Map). The Navy is currently analyzing runway 15/33 for potential E-2/C-2 FCLP use.

5. NASA Wallops Flight Facility is a federally-owned airfield on the Eastern Shore of Virginia, approximately 5 miles west of Chincoteague, Virginia, and approximately 70 nautical miles from NS Norfolk (see Attachment 1, Regional Map). WFF consists of three parcels: Main Base, Mainland, and the Wallops Island launch site; the airfield is located on the Main Base. The Navy is currently analyzing two of three runways for potential E-2/C-2 FCLP use (runways 04/22 and 10/28).

6. E-2/C-2 squadrons currently train at Naval Auxiliary Landing Field (NALF) Fentress. NALF Fentress is the primary Outlying Landing Field (OLF) used for FCLP training requirements by squadrons stationed at and transient to NAS Oceana and NS Norfolk Chambers Field. NALF Fentress lacks the capacity to support all carrier-based aircraft FCLP requirements under all conditions. Capacity and scheduling issues frequently push FCLP operations at NALF Fentress into the late-night and early-morning hours (from 10:00 p.m. to 7:00 a.m.), to NAS Oceana, or to overnight detachments outside the local area, resulting in increased training costs. The purpose of the proposed action to be analyzed in the EA is to provide additional FCLP training capacity for E-2/C-2 squadrons operating from NS Norfolk Chambers Field as an interim bridge until the Navy increases local FCLP capacity at a permanent facility. The proposed action is needed to support required E-2/C-2 FCLP training and to reduce or eliminate both the need for out-of-area FCLP detachments by the E-2/C-2 Fleet Replacement Squadron and periodic FCLP capacity shortfalls at NALF Fentress.

7. This EA will analyze the environmental consequences, at both Emporia and WFF, associated with both the proposed E-2/C-2 FCLP operations and modifications to airfield facilities to support the FCLP operations. Significant impacts to natural resources such as wetlands or threatened and endangered species are not expected as a result of flight operations or associated construction, which would include the following minor modifications:

a. Installation of simulated carrier deck markings and lighting;

b. Installation of concrete/asphalt pads for equipment to include Improved Fresnel Lens Optical Landing System (IFLOLS); Manually Operated Visual Landing Aid System (MOVLAS); and Landing Signal Officer (LSO) workstation;

c. If not already available, a secure storage area located outside the Runway Safety Area (RSA) sufficient to store the equipment

listed above when not in use by the Navy (required per FAA regulations);

d. Minor utility and infrastructure enhancements.

8. All construction activity would occur within the Emporia or Wallops property boundary. The target initial operating capability (IOC) for the proposed action is summer 2013. No aircraft squadrons or squadron personnel would be permanently stationed or homebased at Emporia or WFF.

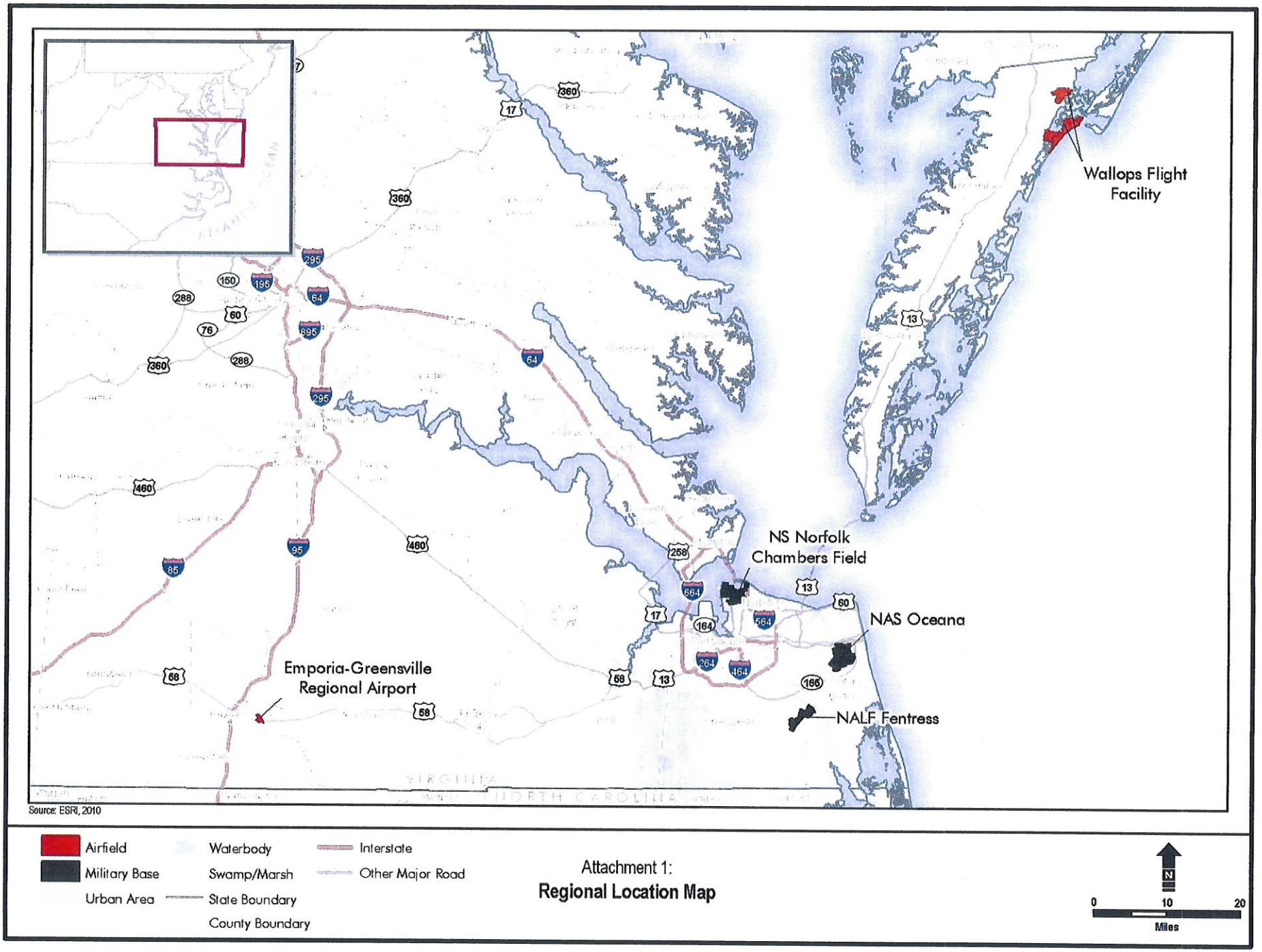
9. It is the Navy's intent that its environmental review process will also fulfill the requirements incumbent upon its partner Federal agencies, including NASA and the FAA. As Federal agencies, both have requirements under NEPA and other relevant statutes and Executive Orders (EOs) related to the Navy's proposed action. As such, both agencies will serve as Cooperating Agencies in the preparation of the EA. The Navy plans to release the Draft EA for public review in September 2012. We will notify you once a draft has been released.

10. Mr. Paul Block, EV will be contacting you soon to discuss the proposed project and schedule site visits, if needed. If you would like to provide us with any feedback, or if you have questions regarding the proposed action or scope of the EA, please contact Sara Upchurch at (757) 322-4332 or sara.upchurch@navy.mil.

W. D. Lewis

W. D. LEWIS
By direction

Copy to:
COMUSFLTFORCOM



Attachment 1:
Regional Location Map

Do Not Forward To Persons Without A Demonstrated Official Need

February 2012

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:

5090
Ser EV21SHU/00087
8 MAR 2012

Mr. Andy Zadnick
Virginia Department of Game and Inland Fisheries
Environmental Services Section
P.O. Box 11104
Richmond, VA 23230

Dear Mr. Zadnick:

Subject: NATIONAL ENVIRONMENTAL POLICY ACT ENVIRONMENTAL ASSESSMENT (EA) FOR E-2/C-2 FIELD CARRIER LANDING PRACTICE (FCLP) AT EMPORIA-GREENSVILLE REGIONAL AIRPORT AND WALLOPS FLIGHT FACILITY.

The Navy is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq., and its implementing regulations for the above-referenced project. A previous letter was sent to your office in January 2011 addressing the same proposed action at a different airport, an effort which was suspended in February 2011. The intent of this letter is to inform your office of the scope of the proposed project and of the kickoff of the new EA. We plan to obtain data on federally-listed threatened and endangered species and critical habitats from the U.S. Fish and Wildlife Service to include in our analysis.

The EA will evaluate the potential environmental consequences of the U.S. Department of the Navy's (the Navy's) proposed action to conduct regular, scheduled E-2 Hawkeye, and C-2 Greyhound (hereinafter referred to as the E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield which meets the Navy's minimum airfield requirements. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport ("Emporia") or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility ("WFF"), as an interim bridge until the Navy increases local FCLP capacity at a permanent facility.

The proposed action would support up to 45,000 annual FCLP operations for E-2/C-2 squadrons operating from Naval Station (NS) Norfolk Chambers Field, in Norfolk, Virginia. The E-2 aircraft is a turboprop, twin-engine surveillance/command and control aircraft, while the C-2 aircraft is a turboprop, twin-engine cargo aircraft. This EA analyzes the environmental consequences associated with both the proposed FCLP operations and minor modifications to airfield facilities to support the E-2/C-2 FCLP operations.

Emporia-Greensville Regional Airport is publically owned and managed by an Airport Commission. The Airport is primarily located within Greensville County, with the approach end of Runway 33 located in Southampton County. It is approximately 2.6 miles east of the City of Emporia, Virginia and approximately 65 nautical miles from NS Norfolk Chambers Field in Norfolk, Virginia (see Attachment 1, Regional Location Map). The Navy is currently analyzing runway 15/33 for potential E-2/C-2 FCLP use.

NASA Wallops Flight Facility is a federally-owned airfield on the Eastern Shore of Virginia, approximately 5 miles west of Chincoteague, Virginia, and approximately 70 nautical miles from NS Norfolk (see Attachment 1, Regional Location Map). WFF consists of three parcels: Main Base, Mainland, and the Wallops Island launch site; the airfield is located on the Main Base. The Navy is currently analyzing two of three runways for potential E-2/C-2 FCLP use (runways 04/22 and 10/28).

E-2/C-2 squadrons currently train at Naval Auxiliary Landing Field (NALF) Fentress. NALF Fentress is the primary Outlying Landing Field (OLF) used for FCLP training requirements by squadrons stationed at and transient to NAS Oceana and NS Norfolk Chambers Field. NALF Fentress lacks the capacity to support all carrier-based aircraft FCLP requirements under all conditions. Capacity and scheduling issues frequently push FCLP operations at NALF Fentress into the late-night and early-morning hours (from 10:00 p.m. to 7:00 a.m.), to NAS Oceana, or to overnight detachments outside the local area, resulting in increased training costs. The purpose of the proposed action to be analyzed in the EA is to provide additional FCLP training capacity for E-2/C-2 squadrons operating from NS Norfolk Chambers Field as an interim bridge until the Navy increases local FCLP capacity at a permanent facility. The proposed action is needed to support required E-2/C-2 FCLP training and to reduce or eliminate both the need for out-of-area FCLP detachments by the E-2/C-2 Fleet Replacement Squadron and periodic FCLP capacity shortfalls at NALF Fentress.

This EA will analyze the environmental consequences, at both Emporia and WFF, associated with both the proposed E-2/C-2 FCLP operations and modifications to airfield facilities to support the FCLP operations. Significant impacts to natural resources such as wetlands or threatened and endangered species are not expected as a result of flight operations or associated construction, which would include the following minor modifications:

a. Installation of simulated carrier deck markings and lighting;
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c. If not already available, a secure storage area located outside the Runway Safety Area (RSA) sufficient to store the equipment listed above when not in use by the Navy (required per FAA regulations);
d. Minor utility and infrastructure enhancements.

All construction activity would occur within the Emporia or WFF property boundary. The target initial operating capability (IOC) for the proposed action is summer 2013. No aircraft squadrons or squadron personnel would be permanently stationed or homebased at Emporia or WFF.

It is the Navy's intent that its environmental review process will also fulfill the requirements incumbent upon its partner Federal agencies, including NASA and the FAA. As Federal agencies, both have requirements under NEPA and other relevant statutes and Executive Orders (EOs) related to the Navy's proposed action. As such, both agencies will serve as Cooperating Agencies in the preparation of the EA. The Navy plans to release the Draft EA for public review in September 2012. We will notify you once a draft has been released.

If you would like to provide us with any feedback, or if you have questions regarding the proposed action or scope of the EA, you may contact Sara Upchurch at 757-322-4332 or sara.upchurch@navy.mil.

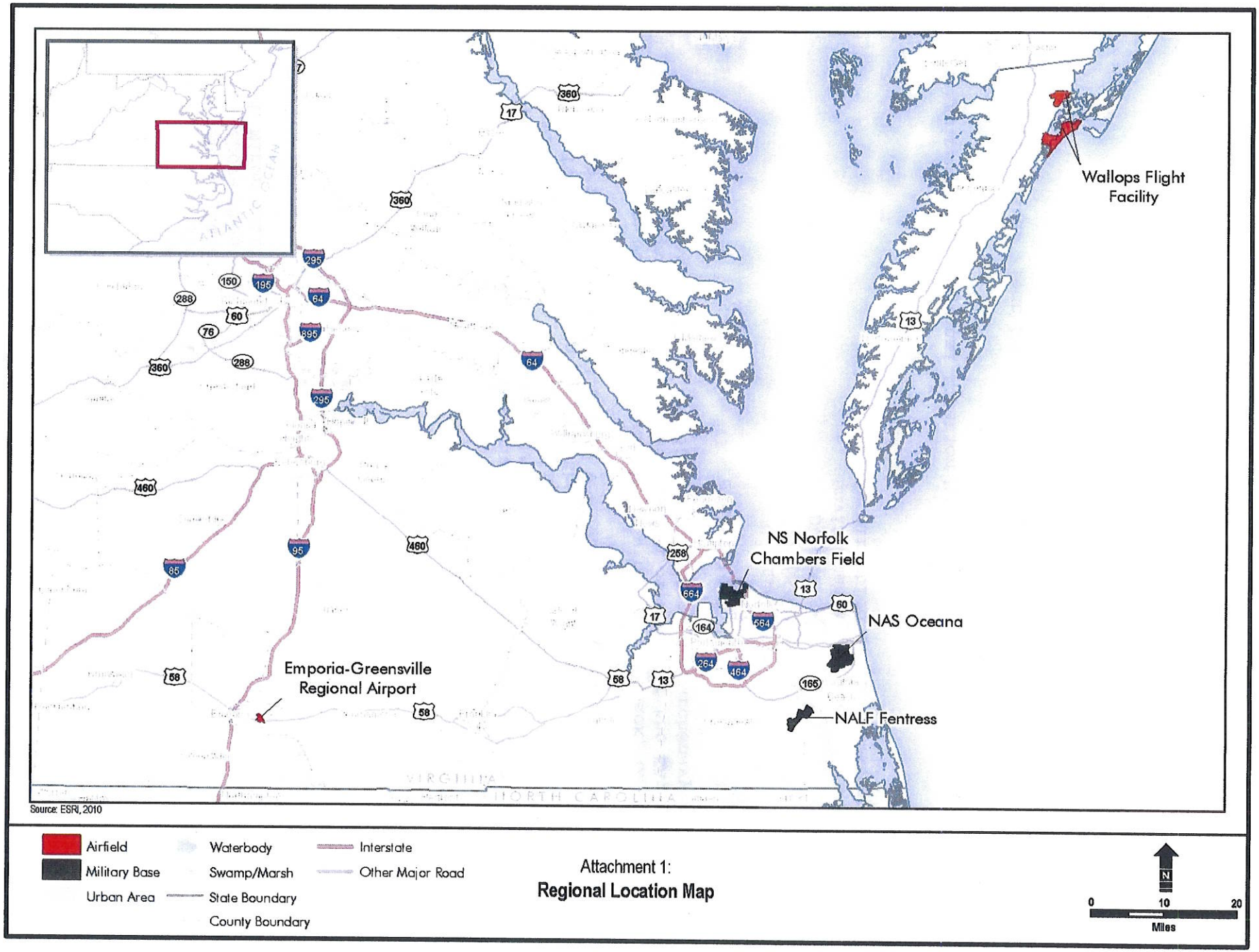
Sincerely,

W. D. Lewis

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosure: (1) Regional Location Map

Copy To:
United States Fleet Forces Command



Attachment 1:
Regional Location Map

Do Not Forward To Persons Without A Demonstrated Official Need

February 2012

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV21SHU/00091
8 MAR 2012

Mr. P. Clifford Burnette, Jr.
Virginia Department of Aviation
Director, Airport Services Division
5702 Gulfstream Road
Richmond, Virginia 23250-2422

Dear Mr. Burdette:

Subject: NATIONAL ENVIRONMENTAL POLICY ACT ENVIRONMENTAL ASSESSMENT (EA) FOR E-2/C-2 FIELD CARRIER LANDING PRACTICE (FCLP) AT EMPORIA-GREENSVILLE REGIONAL AIRPORT AND WALLOPS FLIGHT FACILITY.

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5090
Ser EV21SHU/00091
8 MAR 2012

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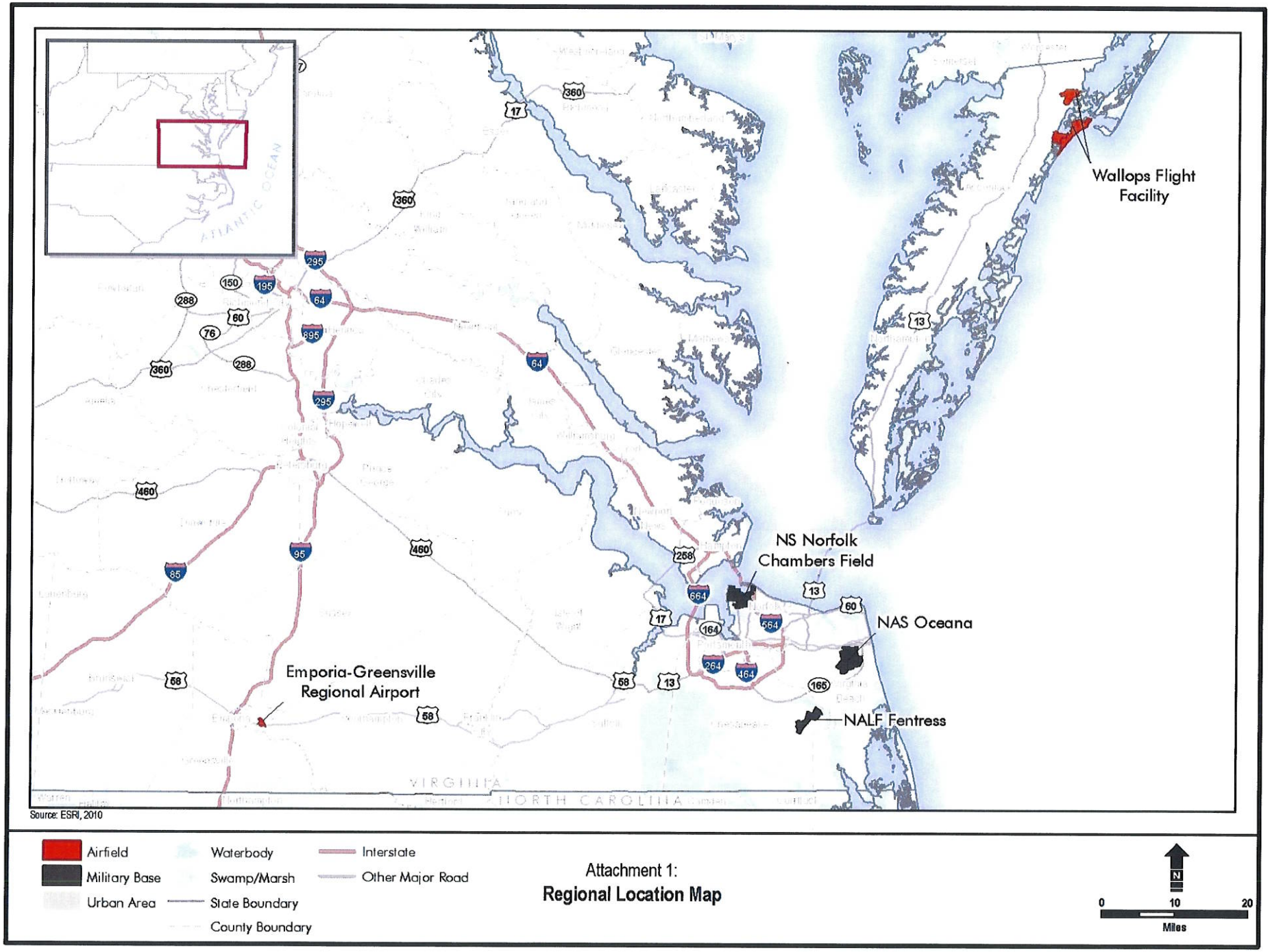
Sincerely,

W. D. Lewis

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosure: (1) Regional Location Map

Copy To:
United States Fleet Forces Command



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Regional Location Map

Do Not Forward To Persons Without A Demonstrated Official Need

February 2012

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV21SHU/00090
8 MAR 2012

Ms. Karen DelGrosso, NEPA Team Member
Office of Environmental Programs (3EA30)
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Subject: NATIONAL ENVIRONMENTAL POLICY ACT ENVIRONMENTAL ASSESSMENT (EA) FOR E-2/C-2 FIELD CARRIER LANDING PRACTICE (FCLP) AT EMPORIA-GREENSVILLE REGIONAL AIRPORT AND WALLOPS FLIGHT FACILITY.

Dear Ms. DelGrosso:

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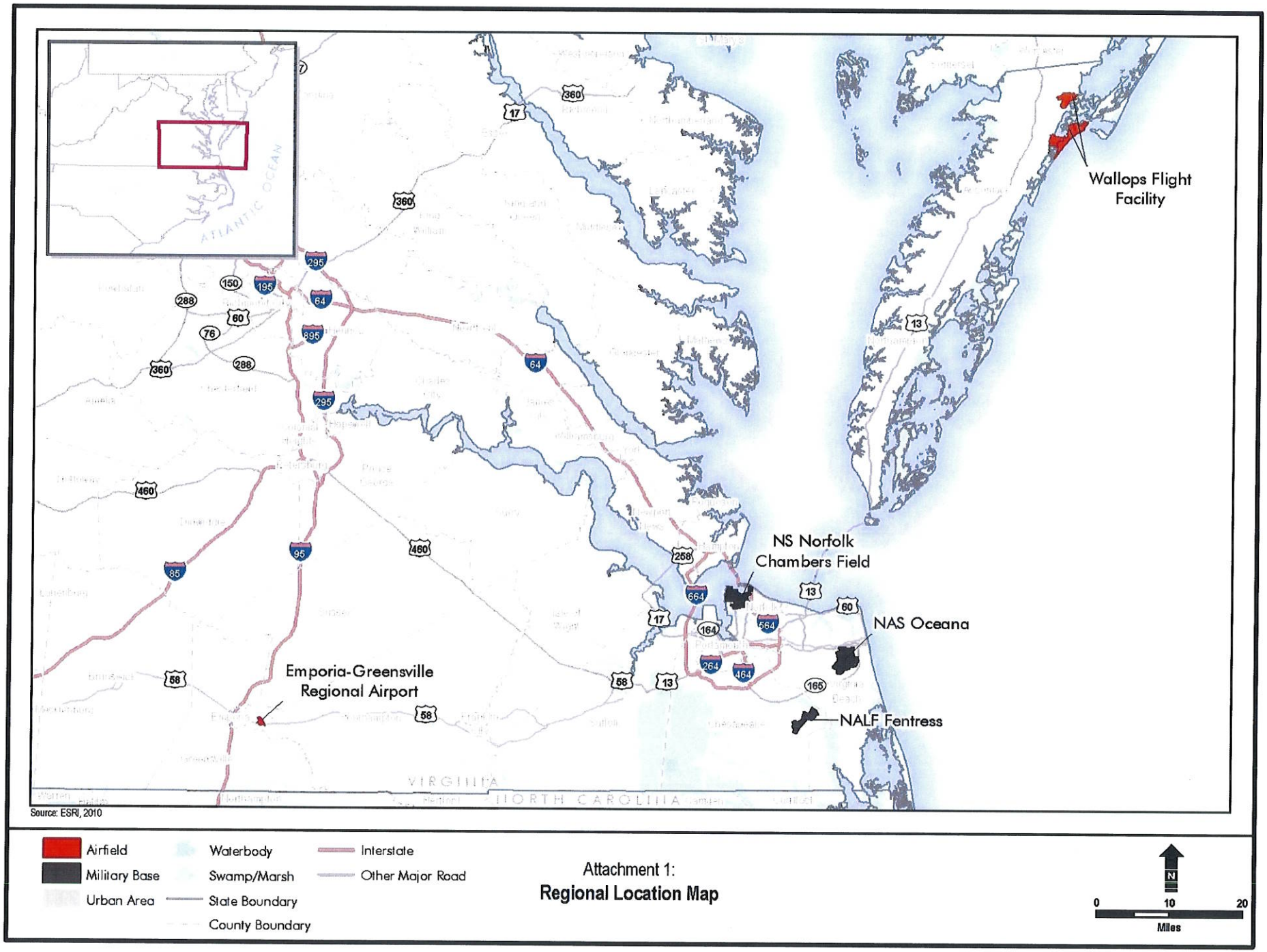
Sincerely,

W. D. Lewis

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosure: (1) Regional Location Map

Copy To:
United States Fleet Forces Command



Do Not Forward To Persons Without A Demonstrated Official Need

February 2012

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV21SHU/00093
8 MAR 2012

Ms. Ellie Irons, OEIR Manager
Department of Environmental Quality
Office of Environmental Impact Review
P.O. Box 1105
Richmond, Virginia 23218

Dear Ms. Irons:

Subject: NATIONAL ENVIRONMENTAL POLICY ACT ENVIRONMENTAL ASSESSMENT (EA) FOR E-2/C-2 FIELD CARRIER LANDING PRACTICE (FCLP) AT EMPORIA-GREENSVILLE REGIONAL AIRPORT AND WALLOPS FLIGHT FACILITY

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The EA will evaluate the potential environmental consequences of the U.S. Department of the Navy's (the Navy's) proposed action to conduct regular, scheduled E-2 Hawkeye and C-2 Greyhound (hereinafter referred to as the E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield which meets the Navy's minimum airfield requirements. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport ("Emporia") or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility ("WFF"), as an interim bridge until the Navy increases local FCLP capacity at a permanent facility.

The proposed action would support up to 45,000 annual FCLP operations for E-2/C-2 squadrons operating from Naval Station (NS) Norfolk Chambers Field, in Norfolk, Virginia. The E-2 aircraft is a turboprop, twin-engine surveillance/command and control aircraft, while the C-2 aircraft is a turboprop, twin-engine cargo aircraft. This EA analyzes the environmental consequences associated with both the proposed FCLP operations and minor modifications to airfield facilities to support the E-2/C-2 FCLP operations.

Emporia-Greensville Regional Airport is publically owned and managed by an Airport Commission. The Airport is primarily

located within Greensville County, with the approach end of Runway 33 located in Southampton County. It is approximately 2.6 miles east of the City of Emporia, Virginia and approximately 65 nautical miles from NS Norfolk Chambers Field in Norfolk, Virginia (see Attachment 1, Regional Map). The Navy is currently analyzing runway 15/33 for potential E-2/C-2 FCLP use.

NASA Wallops Flight Facility is a federally-owned airfield on the Eastern Shore of Virginia, approximately 5 miles west of Chincoteague, Virginia, and approximately 70 nautical miles from NS Norfolk (see Attachment 1, Regional Map). WFF consists of three parcels: Main Base, Mainland, and the Wallops Island launch site; the airfield is located on the Main Base. The Navy is currently analyzing two of three runways for potential E-2/C-2 FCLP use (runways 04/22 and 10/28).

E-2/C-2 squadrons currently train at Naval Auxiliary Landing Field (NALF) Fentress. NALF Fentress is the primary Outlying Landing Field (OLF) used for FCLP training requirements by squadrons stationed at and transient to NAS Oceana and NS Norfolk Chambers Field. NALF Fentress lacks the capacity to support all carrier-based aircraft FCLP requirements under all conditions. Capacity and scheduling issues frequently push FCLP operations at NALF Fentress into the late-night and early-morning hours (from 10:00 p.m. to 7:00 a.m.), to NAS Oceana, or to overnight detachments outside the local area, resulting in increased training costs. The purpose of the proposed action to be analyzed in the EA is to provide additional FCLP training capacity for E-2/C-2 squadrons operating from NS Norfolk Chambers Field as an interim bridge until the Navy increases local FCLP capacity at a permanent facility. The proposed action is needed to support required E-2/C-2 FCLP training and to reduce or eliminate both the need for out-of-area FCLP detachments by the E-2/C-2 Fleet Replacement Squadron and periodic FCLP capacity shortfalls at NALF Fentress.

This EA will analyze the environmental consequences, at both Emporia and WFF, associated with both the proposed E-2/C-2 FCLP operations and modifications to airfield facilities to support the FCLP operations. Significant impacts to natural resources such as wetlands or threatened and endangered species are not expected as a result of flight operations or associated construction, which would include the following minor modifications:

a. Installation of simulated carrier deck markings and lighting;

b. Installation of concrete/asphalt pads for equipment to include Improved Fresnel Lens Optical Landing System (IFLOLS);

c. Manually Operated Visual Landing Aid System (MOVLAS); and Landing Signal Officer (LSO) workstation;

d. If not already available, a secure storage area located outside the Runway Safety Area (RSA) sufficient to store the equipment listed above when not in use by the Navy (required per FAA regulations);

e. Minor utility and infrastructure enhancements.

All construction activity would occur within the Emporia or WFF property boundary. The target initial operating capability (IOC) for the proposed action is summer 2013. No aircraft squadrons or squadron personnel would be permanently stationed or homebased at Emporia or WFF.

It is the Navy's intent that its environmental review process will also fulfill the requirements incumbent upon its partner Federal agencies, including NASA and the FAA. As Federal agencies, both have requirements under NEPA and other relevant statutes and Executive Orders (EOs) related to the Navy's proposed action. As such, both agencies will serve as a Cooperating Agencies in the preparation of the EA. The Navy plans to release the draft EA for public review in September 2012. We will notify you once a draft has been released.

If you would like to provide us with any feedback, or if you have questions regarding the proposed action or scope of the EA, please contact Ms. Sara Upchurch at (757) 322-4332 or e-mail: sara.upchurch@navy.mil.

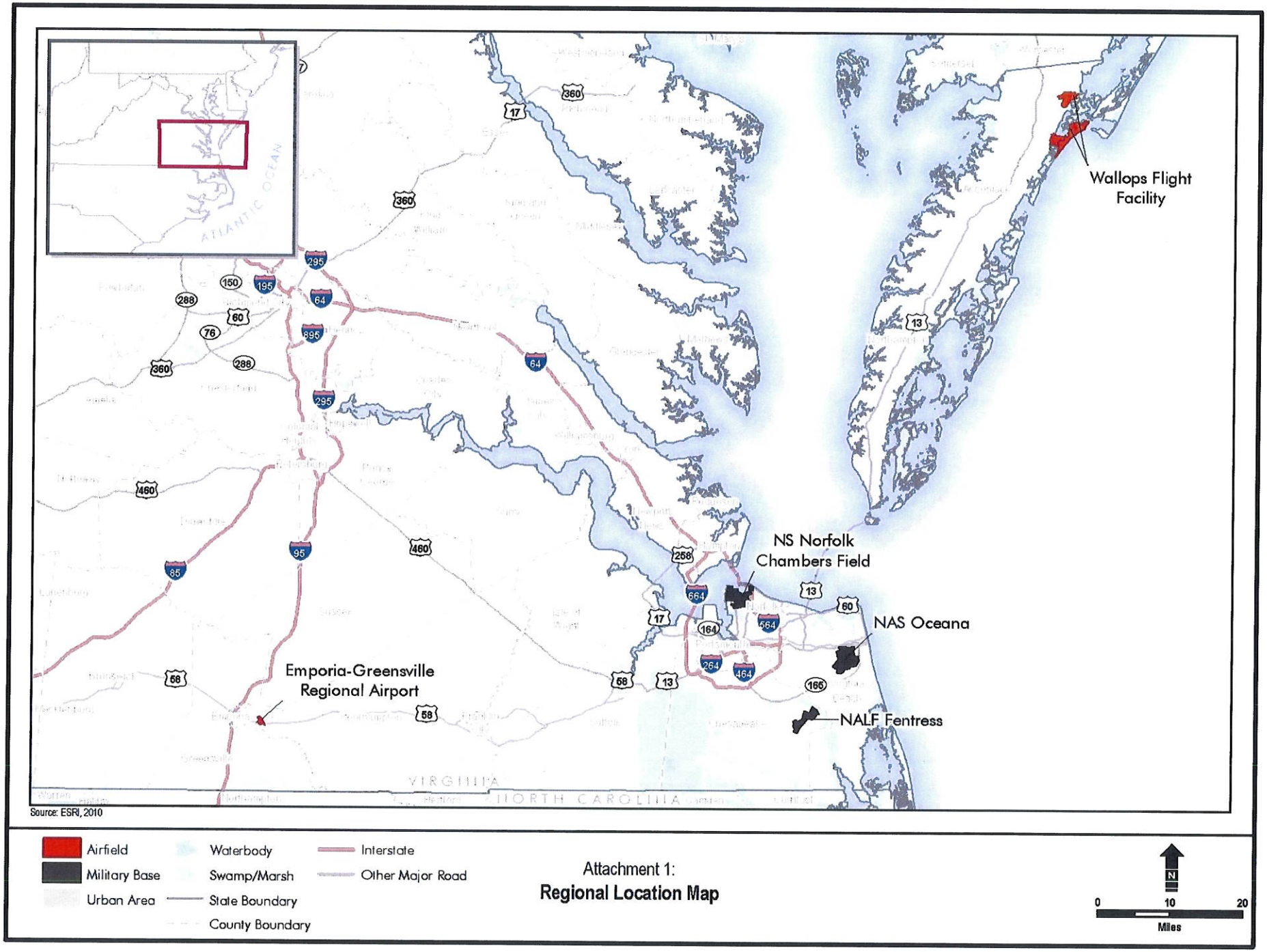
Sincerely,

W. D. Lewis

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosure: Regional Map

Copy To:
United States Fleet Forces Command



Attachment 1:
Regional Location Map

Do Not Forward To Persons Without A Demonstrated Official Need

February 2012

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV21SHU/00088
8 MAR 2012

Ms. René Hypes
Environmental Review Coordinator
Virginia Department of Conservation and Recreation
Division of Natural Heritage
217 Governor St., 2nd Floor
Richmond, VA 23219

Dear Ms. Hypes:

Subject: NATIONAL ENVIRONMENTAL POLICY ACT ENVIRONMENTAL ASSESSMENT (EA) FOR E-2/C-2 FIELD CARRIER LANDING PRACTICE (FCLP) AT EMPORIA-GREENSVILLE REGIONAL AIRPORT AND WALLOPS FLIGHT FACILITY.

The Navy is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq., and its implementing regulations for the above-referenced project. A previous letter was sent to your office in January 2011 addressing the same proposed action at a different airport, an effort which was suspended in February 2011. The intent of this letter is to inform your office of the scope of the proposed project and of the kickoff of the new EA. We plan to obtain data on federally-listed threatened and endangered species and critical habitats from the U.S. Fish and Wildlife Service to include in our analysis.

The EA will evaluate the potential environmental consequences of the U.S. Department of the Navy's (the Navy's) proposed action to conduct regular, scheduled E-2 Hawkeye and C-2 Greyhound (hereinafter referred to as the E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield which meets the Navy's minimum airfield requirements. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport ("Emporia") or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility ("WFF"), as an interim bridge until the Navy increases local FCLP capacity at a permanent facility.

The proposed action would support up to 45,000 annual FCLP operations for E-2/C-2 squadrons operating from Naval Station (NS) Norfolk Chambers Field, in Norfolk, Virginia. The E-2 aircraft is a turboprop, twin-engine surveillance/command and control aircraft, while the C-2 aircraft is a turboprop, twin-engine cargo aircraft. This EA analyzes the environmental consequences associated with both the proposed FCLP operations and minor modifications to airfield facilities to support the E-2/C-2 FCLP operations.

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This EA will analyze the environmental consequences, at both Emporia and WFF, associated with both the proposed E-2/C-2 FCLP operations and modifications to airfield facilities to support the FCLP operations. Significant impacts to natural resources such as wetlands or threatened and endangered species are not expected as a result of flight operations or associated construction, which would include the following minor modifications:

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d. Minor utility and infrastructure enhancements.

All construction activity would occur within the Emporia or WFF property boundary. The target initial operating capability (IOC) for the proposed action is summer 2013. No aircraft squadrons or squadron personnel would be permanently stationed or homebased at Emporia or WFF.

It is the Navy's intent that its environmental review process will also fulfill the requirements incumbent upon its partner Federal agencies, including NASA and the FAA. As Federal agencies, both have requirements under NEPA and other relevant statutes and Executive Orders (EOs) related to the Navy's proposed action. As such, both agencies will serve as Cooperating Agencies in the preparation of the EA. The Navy plans to release the Draft EA for public review in September 2012. We will notify you once a draft has been released.

If you would like to provide us with any feedback, or if you have questions regarding the proposed action or scope of the EA, you may contact Sara Upchurch at 757-322-4332 or sara.upchurch@navy.mil.

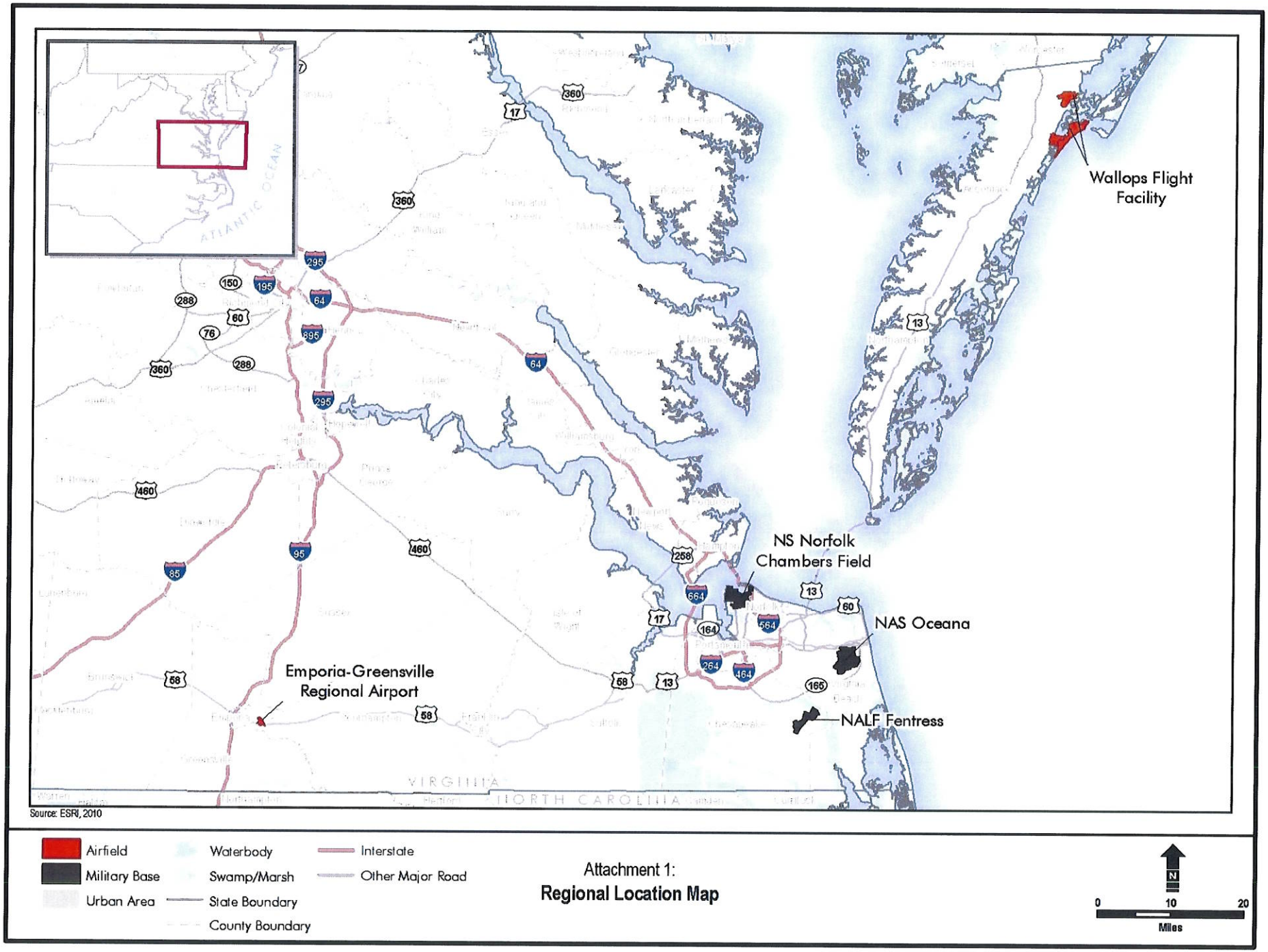
Sincerely,

W. D. Lewis

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosure: (1) Regional Location Map

Copy To:
United States Fleet Forces Command



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Regional Location Map

Do Not Forward To Persons Without A Demonstrated Official Need

February 2012

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK, VA 23508-1278

IN REPLY REFER TO:
5090
Ser EV21SHU/00085
8 MAR 2012

Mr. Tylan Dean
U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Dear Mr. Dean:

Subject: NATIONAL ENVIRONMENTAL POLICY ACT ENVIRONMENTAL ASSESSMENT (EA) FOR E-2/C-2 FIELD CARRIER LANDING PRACTICE (FCLP) AT EMPORIA-GREENSVILLE REGIONAL AIRPORT AND WALLOPS FLIGHT FACILITY.

The Navy is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq., and its implementing regulations for the above-referenced project. A previous letter was sent to your office in January 2011 addressing the same proposed action at a different airport, an effort which was suspended in February 2011. The intent of this letter is to inform your office of the scope of the proposed project and of the kickoff of the new EA. We will follow the new Project Review Process, as outlined on the USFWS Virginia Field Office web site, in order to certify that we have completed required coordination with the U.S. Fish and Wildlife Service under the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended, and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 54 Stat. 250), as amended. We will also be sending notification letters to the Virginia Department of Game and Inland Fisheries and the Virginia Department of Conservation and Recreation.

The EA will evaluate the potential environmental consequences of the U.S. Department of the Navy's (the Navy's) proposed action to conduct regular, scheduled E-2 Hawkeye and C-2 Greyhound (hereinafter referred to as the E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield which meets the Navy's minimum airfield requirements. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport ("Emporia") or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility ("WFF"), as an interim bridge until the Navy increases local FCLP capacity at a permanent facility.

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If you would like to provide us with any feedback, or if you have questions regarding the proposed action or scope of the EA, you may contact Sara Upchurch at 757-322-4332 or sara.upchurch@navy.mil.

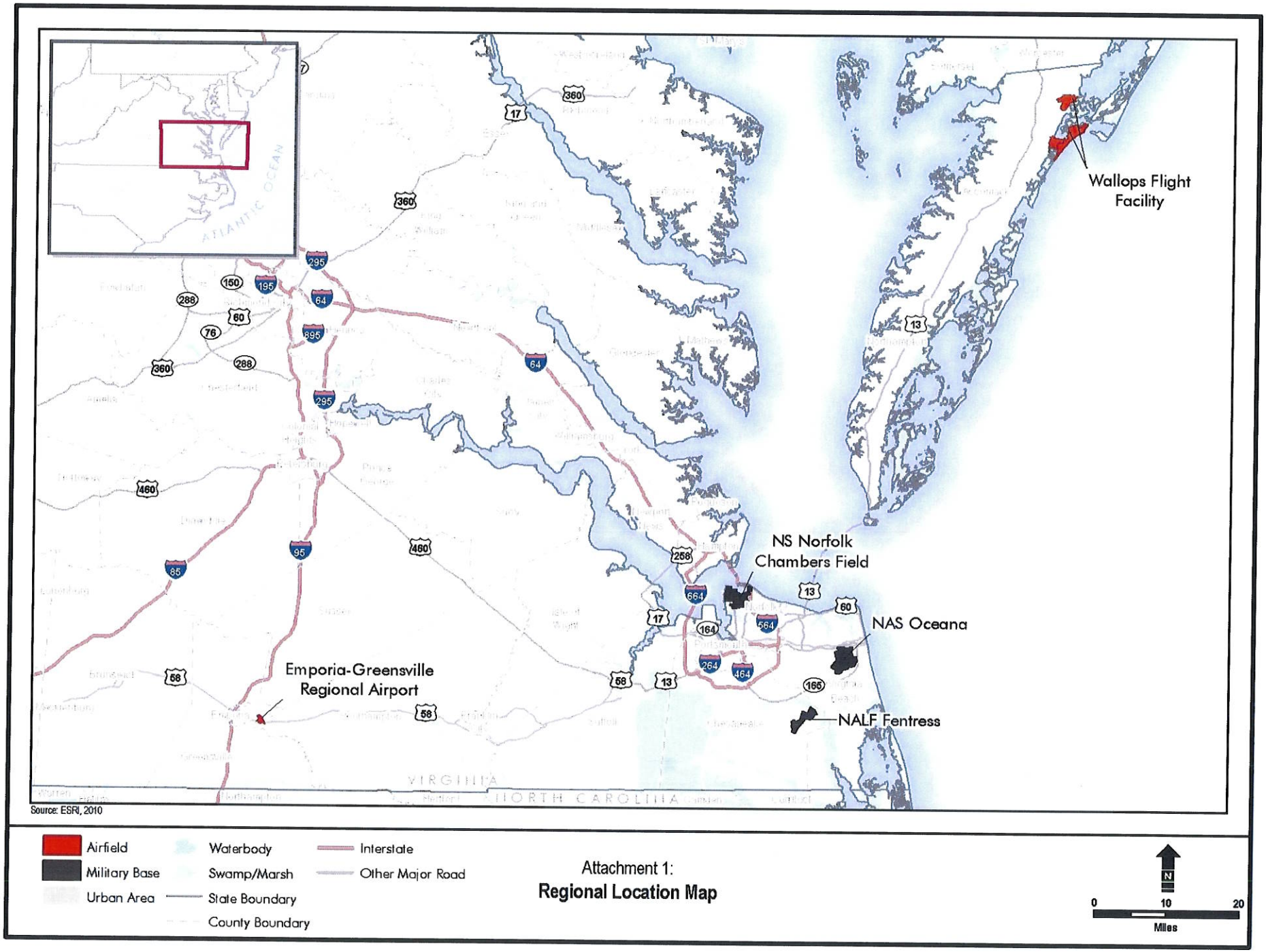
Sincerely,

W. D. Lewis

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosure: (1) Regional Location Map

Copy to:
United States Fleet Forces Command



Do Not Forward To Persons Without A Demonstrated Official Need

February 2012

COMMONWEALTH of VIRGINIA

Randall P Burdette
Director

Department of Aviation
5702 Gulfstream Road
Richmond, Virginia 23250-2422

V/TDD • (804) 236-3624
FAX • (804) 236-3635

March 13, 2012

Mr. W. D. Lewis
Department of the Navy
Naval Facilities Engineering Command, Atlantic
6506 Hampton Boulevard
Norfolk, Virginia 23508-1278

Re: National Environmental Policy Act Environmental Assessment (EA) for E-2/C-2 Field Carrier Landing Practice (FCLP) at Emporia-Greensville Regional Airport And Wallops Flight Facility

Dear Mr. Lewis:

Thank you for circulating the notice concerning the upcoming National Environmental Policy Act EA for E-2/C-2 Field Carrier Landing Practice at Emporia-Greensville Regional Airport (EMV) and Wallops Flight Facility (WFF).

At this time, as the proposed action is undergoing analysis with respect to the social, economic and environmental impacts, the Virginia Department of Aviation would like to offer our perspective. The Department has been engaged on several different occasions to develop a workable solution to meet the needs of the Navy to provide an adequate training facility to support their mission.

The Department concurs with the purpose of the proposed action and believes that by pursuing this plan many issues that the Navy faces will be resolved as they seek an interim solution to the capacity limitations that exist at Naval Auxiliary Landing Field (NALF) Fentress. This proposed action may reduce or eliminate the need for out-of-area FCLP detachments and offer a reasonable means to mitigate capacity and scheduling issues at NALF Fentress.

In closing, we offer our assistance to you where appropriate in this matter. Should you have any further need to contact me regarding this project, I many be reached at (804) 236-3632, ext. 106

Sincerely,

R. N. (Rusty) Harrington
Manager, Planning and Environmental Section
Airport Services Division

100 DOAVAS 20120313 E-2_C-2 NEPA Response .doc

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
TDD (804) 698-4021
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

March 19, 2012

Mr. W. D. Lewis
Environmental Business Line Manager
Naval Facilities Engineering Command, Atlantic
6506 Hampton Boulevard
Norfolk, Virginia 23508-1278

RE: National Environmental Policy Act, Environmental Assessment for E-2/C-2 Field Carrier Landing Practice at Emporia-Greensville Regional Airport and Wallops Flight Facility (Ref. 5090, Ser EV21SHU/00093)

Dear Mr. Lewis:

Thank you for your March 8, 2012 letter (received March 12) concerning the scope of the above-referenced project and soliciting comments on the project and the Environmental Assessment (EA) that is being prepared for it.

PROJECT DESCRIPTION

As described in your letter, the Navy proposes to use the facilities at either Emporia-Greensville Regional Airport ("Emporia") or at the Wallops Flight Facility located at the National Air and Space Administration's Goddard Space Flight Center ("WFF") as an interim facility for field carrier landing practice ("FCLP") until the Navy increases local FCLP capacity at a permanent facility. The proposed action would support as many as 45,000 annual FCLP operations for E-2/C-2 squadrons operating from Chambers Field, Naval Station Norfolk. You indicate that the E-2 is a turbo-prop, twin-engine surveillance/command and control aircraft, while the C-2 is a turbo-prop, twin-engine cargo aircraft.

The EA is to analyze environmental consequences of the FCLP operations and minor modifications to airfield facilities to support the operations.

ENVIRONMENTAL REVIEW UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT

The roles of the Virginia Department of Environmental Quality (DEQ) in relation to the project are as follows. First, DEQ's Office of Environmental Impact Review (OEIR) will coordinate Virginia's review of the NEPA document and comment to the Navy on behalf of the Commonwealth. A similar review process will pertain to the Federal Consistency Determination (FCD) (next heading). If the FCD is provided as part of the environmental document, there can be a single review.

As you know, the National Environmental Policy Act (PL 91-190, 1969) (NEPA) and its implementing regulations (Title 40, *Code of Federal Regulations*, Parts 1500-1508) require draft and final Environmental Impact Statements (EISs) for federal or federally-licensed or -funded undertakings which will or may give rise to significant impacts upon the human environment. EISs carry more stringent public participation requirements than EAs and provide more time and detail for comments and public decision-making. The possibility that an EIS may be required for the operations and facilities contemplated in the proposed action should not be overlooked in your planning for it. Accordingly, we refer to "NEPA document" in the rest of this letter.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities affecting Virginia's coastal resources or coastal uses must, to the maximum extent possible, be consistent with the Virginia Coastal Zone Management Program (VCP) (see section 307(c)(1) of the Act and the *Federal Consistency Regulations*, 15 CFR Part 930, subpart C, sections 930.30 *et seq.*). The Navy must provide a consistency determination which includes an analysis of the proposed activities in light of the enforceable policies of the VCP (first enclosure) and a commitment to comply with the enforceable policies. In addition, we invite your attention to the advisory policies of the VCP (second enclosure). As indicated, the FCD may be provided as part of the NEPA document or independently, depending on the Navy's preference. We recommend, in the interests of an effective review, that the FCD be provided with the NEPA document and that 60 days be allowed for review, in keeping with the *Federal Consistency Regulations* (see section 930.41(a)). Section 930.39 of these *Regulations*, and Virginia's *Federal Consistency Information Package* (available at http://www.deq.virginia.gov/eir/federal.html) give content requirements for the FCD.

PROJECT SCOPING AND AGENCY INVOLVEMENT

While this Office does not participate in scoping efforts beyond the advice given herein, other agencies are free to provide scoping comments concerning the preparation of the NEPA document. Accordingly, we are sharing our response to the letter with selected state and local Virginia agencies which have responsibilities bearing

on the proposed action. These are likely to include the following (note: starred (*) agencies administer one or more of the enforceable policies of the VCP):

Department of Environmental Quality:
- Office of Environmental Impact Review
- Piedmont Regional Office*
- Tidewater Regional Office*
- Air Division*
- Division of Land Protection and Revitalization (formerly Waste Division)

Department of Conservation and Recreation:
- Division of Stormwater Management*
- DSM –Local Implementation*
- Division of Planning and Recreation Resources

Department of Health (Division of Water Programs)*
Department of Game and Inland Fisheries*
Marine Resources Commission*
Department of Historic Resources
Crater Planning District Commission
Accomack-Northampton Planning District Commission
Greensville County
Accomack County
Town of Emporia.

In order to ensure an effective coordinated review of the environmental document and FCD, we will require 19 copies of the EA and FCD when they are published. This submission may include 4 printed copies and 15 CDs, or 4 printed copies and an electronic copy available for download at a web site or ftp site. The document should include a U.S. Geological Survey topographic map as part of its information. We recommend, as well, that project details unfamiliar to people outside the Navy be adequately described.

If you have questions about the environmental review process or the federal consistency review process, please feel free to call me at (804) 698-4325 or John Fisher at (804) 698-4339.

I hope this information is helpful to you.

Sincerely,

Ellie Irons

Ellie L. Irons, Program Manager
Environmental Impact Review

Attachments

ec: Kelley West, DEQ-PRO
Cindy Keltner, DEQ-TRO
Kotur S. Narasimhan, DEQ-Air
G. Stephen Coe, DEQ-DLPR
Roberta Rhur, DCR
Amy M. Ewing, DGIF
Tony Watkinson, VMRC
Barry Mathews, VDH
Roger W. Kirchen, DHR
Dennis Morris, Crater PDC
Brian S. Thrower, City of Emporia
K. David Whittington, Greensville County
Elaine K. Meil, Accomack-Northampton PDC
Steven B. Miner, Accomack County

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

Attachment 1

Enforceable Regulatory Programs comprising Virginia's Coastal Zone Management Program (VCP)

a. Fisheries Management - The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC); Virginia Code 28.2-200 to 28.2-713 and the Department of Game and Inland Fisheries (DGIF); Virginia Code 29.1-100 to 29.1-570.

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, DGIF, and Virginia Department of Agriculture Consumer Services (VDACS) share enforcement responsibilities; Virginia Code 3.1-249.59 to 3.1-249.62.

b. Subaqueous Lands Management - The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, tidal wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (DEQ). The program is administered by the Marine Resources Commission; Virginia Code 28.2-1200 to 28.2-1213.

c. Wetlands Management - The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.

(1) The tidal wetlands program is administered by the Marine Resources Commission; Virginia Code 28.2-1301 through 28.2-1320.

(2) The Virginia Water Protection Permit program administered by DEQ includes protection of wetlands --both tidal and non-tidal; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

d. Dunes Management - Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission; Virginia Code 28.2-1400 through 28.2-1420.

e. Non-point Source Pollution Control – (1) Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation; Virginia Code 10.1-560 et.seq.).

(2) Coastal Lands Management is a state-local cooperative program administered by the DCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater (see i) Virginia; Virginia Code §10.1-2100 –10.1-2114 and 9 VAC10-20 et seq.

f. Point Source Pollution Control - The point source program is administered by the State Water Control Board (DEQ) pursuant to Virginia Code 62.1-44.15. Point source pollution control is accomplished through the implementation of:

(1) the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.

(2) The Virginia Water Protection Permit (VWPP) program administered by DEQ; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

g. Shoreline Sanitation - The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code 32.1-164 through 32.1-165).

h. Air Pollution Control - The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code 10-1.1300 through §10.1-1320).

(i) Coastal Lands Management is a state-local cooperative program administered by the DCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act; Virginia Code §10.1-2100 –10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; Virginia Administrative Code 9 VAC10-20 et seq.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
TDD (804) 698-4021
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

Attachment 2

Advisory Policies for Geographic Areas of Particular Concern

a. Coastal Natural Resource Areas - These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:

a) Wetlands
b) Aquatic Spawning, Nursery, and Feeding Grounds
c) Coastal Primary Sand Dunes
d) Barrier Islands
e) Significant Wildlife Habitat Areas
f) Public Recreation Areas
g) Sand and Gravel Resources
h) Underwater Historic Sites.

b. Coastal Natural Hazard Areas - This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:

i) Highly Erodible Areas
ii) Coastal High Hazard Areas, including flood plains.

c. Waterfront Development Areas - These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:

i) Commercial Ports
ii) Commercial Fishing Piers
iii) Community Waterfronts

Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCRMP is encouraged.

Designation will allow the use of federal CZMA funds to be used to assist planning for such areas and the implementation of such plans. The VCRMP recognizes two broad classes of priority uses for waterfront development APC:

i) water access dependent activities;
ii) activities significantly enhanced by the waterfront location and complementary to other existing and/or planned activities in a given waterfront area.

Advisory Policies for Shorefront Access Planning and Protection

a. Virginia Public Beaches - Approximately 25 miles of public beaches are located in the cities, counties, and towns of Virginia exclusive of public beaches on state and federal land. These public shoreline areas will be maintained to allow public access to recreational resources.

b. Virginia Outdoors Plan - Planning for coastal access is provided by the Department of Conservation and Recreation in cooperation with other state and local government agencies. The Virginia Outdoors Plan (VOP), which is published by the Department, identifies recreational facilities in the Commonwealth that provide recreational access. The VOP also serves to identify future needs of the Commonwealth in relation to the provision of recreational opportunities and shoreline access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP.

c. Parks, Natural Areas, and Wildlife Management Areas - Parks, Wildlife Management Areas, and Natural Areas are provided for the recreational pleasure of the citizens of the Commonwealth and the nation by local, state, and federal agencies. The recreational values of these areas should be protected and maintained.

d. Waterfront Recreational Land Acquisition - It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth.

e. Waterfront Recreational Facilities - This policy applies to the provision of boat ramps, public landings, and bridges which provide water access to the citizens of the Commonwealth. These facilities shall be designed, constructed, and maintained to provide points of water access when and where practicable.

f. Waterfront Historic Properties - The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Department of Historic Resources. Buildings, structures, and sites of historical, architectural, and/or archaeological interest are significant resources for the citizens of the Commonwealth. It is the policy of the Commonwealth and the VCRMP to enhance the protection of buildings, structures, and sites of historical, architectural, and archaeological significance from damage or destruction when practicable.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

March 21, 2012

Sara Upchurch
Department of the Navy
Naval Facilities Engineering Command, Atlantic
6506 Hampton Blvd
Norfolk, Virginia 23508-1278

RE: E-2/C-2 Field Carrier Landing Practice (FCLP) at Emporia-Greensville Regional Airport and Wallops Flight Facility, Virginia

Dear Ms. Upchurch:

EPA has received and reviewed your March 8, 2012 letter regarding the E-2/C-2 Field Carrier Landing Practice (FCLP) at Emporia-Greensville Regional Airport and Wallops Flight Facility, Virginia Environmental Assessment (EA) that is currently being prepared. The proposed action would conduct regular, scheduled E-2 Hawkeye and C-2 Greyhound (E-2/C-2) FCLP operations at a local airfield which meets the U.S. Department of the Navy's minimum airfield requirements as an interim bridge until the Navy increases local FCLP capacity at a permanent facility. Facilities at either Emporia-Greensville Regional Airport or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility (WFF) are being considered for use in the EA. Based on the limited information provided in your letter, we are unable to provide a comprehensive set of comments at this time.

Information regarding the purpose and need, alternatives analyzed, avoidance and minimization of resources, and cumulative effects for the proposed project should be included in the EA. The purpose and need statement is important because it helps explain why the proposed action is being undertaken and what objectives the project intends to achieve. The purpose of the proposed action is typically the specific objective of the activity. The need should explain the underlying problem for why the project is necessary. Information about the amount, duration and timing of FCLP flights needed should be included and discussed. Alternatives analysis should include the suite of other sites or facilities that were considered and the rationale for not carrying these alternatives forward for detailed study. The EA should include a discussion of upgrades that will be needed at each facility in order to accommodate the proposed action and effects on other ongoing operations and activities at these facilities.

The EA should describe potential impacts to the natural and human environment, if operations are moved and facility/operations modifications are needed. Existing resources should be identified and EPA encourages that adverse impacts to natural resources, especially wetlands and other aquatic resources, be avoided and minimized wherever possible. The EA should describe the total size or length of wetland or stream, and impact amount by each

proposed alternative. Stormwater ponds and best management practices (BMPs) should not be located in wetlands and streams. EPA is aware that portions of WFF are located on a barrier island and large amounts of WFF holdings are wetlands. Though EPA is less familiar with the Emporia, Virginia site, an assessment of resources and potential impacts should be presented. EPA suggests coordinating with other appropriate federal, state and local resource agencies on possible impacts to wetlands, streams, historic and/or rare, threatened and endangered species.

An evaluation of community impacts, including noise, light and possible traffic impacts, should be included in the EA. Discussion of impacts from temporarily stationed aircraft or squadron personnel should be included. Environmental justice (EJ) should also be evaluated, including the identification of potential communities of concern, and meaningful and timely community involvement, public outreach, and access to information. Consideration should also be given to all potential impacts to at-risk populations, as well as consideration to sensitive subpopulations, possibly including elderly, children and others.

EPA strongly encourages a thorough cumulative impact analysis for past, present and reasonably foreseeable projects occurring in the project areas. EPA is aware of several other past, present, and reasonably foreseeable projects occurring in some of the proposed project areas, including several projects located at NASA's WFF. The EA should address potential indirect and cumulative effects in the project areas.

Thank you for coordinating with EPA on this project. We look forward to working with you on this project as more information becomes available. If you have any questions and would like to discuss our comments, the staff contact for this project is Ms. Alaina DeGeorgio; she can be reached at 215-814-2741 or degeorgio.alaina@epa.gov.

Sincerely,

Barbara Rudnick
NEPA Team Leader
Office of Environmental Programs

cc. Carolyn Turner, NASA WFF

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

MEMORANDUM

TO: Ms. Sara Upchurch, U.S. Navy Environmental Programs
sara.upchurch@navy.mil

FROM: *G. Stephen "Steve" Coe*
Steve Coe, DLPR Review Coordinator

DATE: March 28, 2012

COPIES: EIR File

SUBJECT: Scoping Request – E-2/C-2 Field Carrier Landing Practice at Emporia-Greensville Regional Airport and Wallops Flight Facility – Review Comments

The staff of the Division of Land Protection and Revitalization (DLPR) has completed a scoping review for the above project dated March 8, 2012. .

The proposed project consists of the potential use of two local airports to conduct Field Carrier Landing Practice (FCLP) as an interim bridge until such time as the Navy can increase local FCLP capacity at a permanent facility.

We have provided the below our recommendations/comments concerning the waste related issues associated with the project:

The proximity of identified waste sites to the operational sites and/or potential impact to the project should be evaluated as well as the environmental impacts created by the FCLP activities. Waste reviews should include a search of EPA and Virginia databases for RCRA/Hazardous Waste Facilities, Solid Waste (SW) Facilities, CERCLA Sites, VRP Sites, and Petroleum Release Sites.

The following websites may prove helpful in locating this information for these sites:
http://www.epa.gov/superfund/sites/cursites/index.htm,
http://www.epa.gov/enviro/html/rcris/rcris_query_java.html, and
http://www.deq.virginia.gov/ConnectWithDEQ/VEGIS.aspx.

GENERAL COMMENTS

Soil, Sediment, and Waste Management

Any soil that is suspected of contamination or wastes that are generated must be tested and disposed of in accordance with applicable Federal, State, and local laws and regulations. Some of the applicable state laws and regulations are: Virginia Waste Management Act, Code of Virginia Section 10.1-1400 *et seq.*;

Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC 20-60); Virginia Solid Waste Management Regulations (VSWMR) (9VAC 20-81); Virginia Regulations for the Transportation of Hazardous Materials (9VAC 20-110). Some of the applicable Federal laws and regulations are: the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations; and the U.S. Department of Transportation Rules for Transportation of Hazardous Materials, 49 CFR Part 107.

Also, all structures being demolished/renovated/ removed should be checked for asbestos-containing materials (ACM) and lead-based paint (LBP) prior to demolition. If ACM or LBP are found, in addition to the federal waste-related regulations mentioned above, State regulations 9VAC 20-80-640 for ACM and 9VAC 20-60-261 for LBP must be followed.

Pollution Prevention – Reuse - Recycling

Please note that DEQ encourages all construction projects and facilities to implement pollution prevention principles, including the reduction, reuse, and recycling of all solid wastes generated. All generation of hazardous wastes should be minimized and handled appropriately.

If you have any questions or need further information, please contact Steve Coe at (804) 698-4029.

Douglas W. Domenech
Secretary of Natural Resources

David A. Johnson
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Division of Natural Heritage
217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7951

April 6, 2012

Sara Upchurch
Department of the Navy
Naval Facilities Engineering Command, Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278

Re: Field Carrier Landing at Emporia – Greensville Airport and Wallops Island

Dear Ms. Upchurch:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Emporia Site

Biotics documents the presence of natural heritage resources in the project vicinity. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

Wallops Main Base

According to the information currently in our files, the Little Mosquito Creek Conservation Site is located within the project site. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Little Mosquito Creek Conservation Site has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resource of concern at this site is:

Tidal Oligohaline Marsh (G3/SNR/NL/NL)

The Tidal Oligohaline Marsh (Beaked Spikerush – Saltmeadow Cordgrass Estuarine Fringe Type) association is an irregularly flooded oligohaline marsh ranging discontinuously along the coast from Massachusetts to the Eastern Shore of Virginia. It is quite rare in Virginia, where it is apparently restricted to narrow bands at the upper extent of tidal influence and adjacent to upland edges, where groundwater seepage dilutes tidal waters, producing oligohaline conditions. The vegetation is heavily dominated by beaked spikerush (*Eleocharis rostellata*), growing in association with saltmeadow cordgrass (*Spartina patens*), which is usually second in abundance. Narrow-leaved loosestrife (Lythrum lineare) and small shrubs of marsh-elder (Iva frutescens) are constant minor associates.

In addition, the Wallops Island Seeps Conservation Site is also located within the project area. Wallops Island Seeps Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern at this site are:

Crocanthemun propinquum	Low frostweed	G4/S1/NL/NL
=*f*ormerly *Helianthemum propinquum*		
	Coastal Plain / Outer Piedmont Seepage Bog	G2/S1/SOC/NL

Low frostweed is a perennial rhizomatous herb in the rock-rose family (Cistaceae). A plant of sandy, dry soil found from New England south through western North Carolina into Tennessee, in Virginia low frostweed has been documented, mostly historically, from a few locations in open, disturbed habitat scattered from the Outer Coastal Plain, Northern Piedmont, and Ridge and Valley regions. Clusters of 2-6 yellow, 5-petaled flowers arise from June-July on the scattered, alternate-leaved stems (Gleason and Cronquist 1991); self-pollinating flowers lacking petals arise later from July-September (Weakley, A. In prep.). Surveys should be conducted during the June-July blooming period of the earlier flowers as later season plants can be difficult to identify (Virginia Botanical Associates 2011). Threats include habitat destruction, herbicides, and succession to shadier habitat.

The Coastal Plain / Outer Piedmont Seepage Bog is currently known from the inner Coastal Plain from central and southern Maryland to southeastern Virginia. (NatureServe, 2011)The saturated shrub and herbaceous vegetation of this group occupies oligotrophic spring-heads, seepage slopes, and less frequently small, headwater stream bottoms. Sites are scattered throughout the Coastal Plain (except the maritime zone) and outer Piedmont, typically on lower or toe slopes, where groundwater is forced to the surface by impermeable clay layers. Surficial soils are usually peaty or sandy, very acidic, infertile, and covered by dense mats of *Sphagnum* mosses. Natural examples of these communities have nearly been extirpated by decades of fire exclusion, hydrologic alterations (ditching, draining, and impoundments), or outright destruction. The elimination of fire as an ecological process has allowed many former bogs to become overgrown with shrubs and trees. (Fleming, et al., 2012)The most "natural" occurrences of this vegetation are now restricted to military base impact areas and dedicated natural areas that are burned frequently. Compositionally identical vegetation is more common where artificially maintained powerline rights-of-way intersect small streams and swales. (NatureServe, 2011) The vegetation of seepage bogs is usually a mosaic of scattered trees, shrub patches, and graminoid-dominated herbaceous patches. Typical woody species include sweetbay (*Magnolia virginiana*), poison sumac (*Toxicodendron vernix*), highbush blueberries (*Vaccinium corymbosum*, *Vaccinium fuscatum*, and *Vaccinium formosum*), possum-haw (*Viburnum nudum*), and smooth alder (*Alnus serrulata*). Among the most abundant herbaceous species, are twisted spikerush (*Eleocharis tortilis*), beakrushes (*Rhynchospora*spp.), narrow-leaved bluestem (*Andropogon perangustatus*), panic grasses (*Dichanthelium dichotomum* var. *dichotomum* and var. *ensifolium*), hairy umbrella-sedge (*Fuirena squarrosa*), meadow-beauties (*Rhexia mariana* var. *mariana*, *Rhexia nashii*, and *Rhexia petiolata*), clubmosses (*Lycopodiella alopecuroides* and *Lycopodiella appressa*), sundews (*Drosera brevifolia*, (*Drosera capillaris*), and *Drosera rotundifolia* var. *rotundifolia*), tawny cotton-grass (*Eriophorum virginicum*), bushy bluestem

(*Andropogon glomeratus* var. *glomeratus*), Nuttall's reed-grass (*Calamagrostis coarctata*), yellow-eyed-grasses (*Xyris* spp.), yellow milkwort (*Polygala lutea*), and vervain thoroughwort (*Eupatorium pilosum*). Widely scattered, but nevertheless diagnostic, species of these bogs include red milkweed (*Asclepias rubra*), Rafinesque's seedbox (*Ludwigia hirtella*), large white fringed orchid (*Platanthera blephariglottis* var. *conspicua*), crossleaf milkwort (*Polygala cruciata*), purple pitcher-plant (*Sarracenia purpurea* ssp. *venosa* and ssp. *purpurea*), and large-flowered camas (*Zigadenus glaberrimus*). A large number of state-rare plants and several state-rare odonates (dragonflies and damselflies) are associated with seepage bogs. (Fleming, et al., 2012)

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. To minimize impacts to documented natural heritage resources, DCR also recommends avoidance of any hard surface impacts or runoff to the area indicated on the enclosed map.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Shirl Dressler at (804) 367-6913. According to the information currently in our files,the Bald eagle (*Haliaeetus leucocephalus*), Peregrine falcon(*Falco peregrines*), Gull-billed tern (*Gelochelidon* [=*Sterna*] *nilotica*), Wilson's Plover (*Charadrius wilsonia)*, Piping Plover (*Charadrius melodus*) and Loggerhead sea turtle (*Caretta caretta*) have all been documented in the project vicinity. Due to the legal status of the Bald eagle, Piping plover, Peregrine falcon, Gull-billed tern and Wilson's Plover, DCR recommends coordination with Virginia's regulatory authority for the management and protection of these species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570). In addition due to the legal status of the, Piping plover and the Loggerhead sea turtle, DCR recommends coordination with the U.S. Fish and Wildlife Service (USFWS) .

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,

Alli Baird

Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Cc: Amy Ewing, VDGIF

Kim Smith, USFWS

Literature Cited:

Fleming, G.P., K.D. Patterson, K. Taverna, and P.P. Coulling. 2012. The natural communities of Virginia: classification of ecological community groups. Second approximation. Version 2.5. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA.

Gleason, H.A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. Second Edition. The New York Botanical Garden. Bronx, NY. 910 pp.

NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: April 2, 2012)

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Virginia Botanical Associates. 2011. Digital Atlas of the Virginia Flora (http://www.biol.vt.edu/digital_atlas/). c/o Massey Herbarium, Department of Biological Sciences, Virginia Tech, Blacksburg.

Weakley, A. In prep. Flora of the southern and mid-Atlantic states. Working draft of 15 May 2011. University of North Carolina Herbarium, North Carolina Botanical Garden, University of North Carolina at Chapel Hill, NC.

E-2 / C-2 Field Carrier Landing Practice Operations - Wallops Flight Facility
Recommended Area of Avoidance

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES
Virginia Natural Heritage Program

0.2 0.1 0 0.2 0.4 0.6 Miles

N

Map created April 4, 2012, Imagery Source: VBMP 2009

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK VA 23508-1278

5090 IN REPLY REFER TO:
SER EV21SU/278
JULY 3, 2012

Ms. Ellie Irons, Program Manager
Department of Environmental Quality
Office of Environmental Impact Review
P.O. Box 1105
Richmond, Virginia 23218

Dear Ms. Irons:

SUBJECT: Federal Coastal Consistency Determination

Thank you for your March 19, 2012 response to our March 8, 2012 letter. As noted in our original letter, the Navy is proposing to conduct regular, scheduled E-2C Hawkeye, E-2D Advanced Hawkeye, and C-2A Greyhound Field Carrier Landing Practice (FCLP) operations at a local airfield. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's Wallops Flight Facility (WFF) until the Navy addresses local FCLP capacity shortfalls on a more permanent basis.

As the project sponsor, the Navy is the lead agency for both the Environmental Assessment (EA) and Coastal Consistency Determination (CCD) for the proposed action. The Federal Aviation Administration (FAA) and NASA are cooperating agencies on the EA. The FAA has jurisdiction over Emporia-Greensville Regional Airport under the FAA's National Plan of Integrated Airport Systems. NASA is a cooperating agency because they own and manage WFF.

The Navy submits the enclosed CCD in accordance with Section 307 (c) (1) of the Federal Coastal Zone Management Act of 1972, as amended, for the proposed action. In cooperation with NASA WFF, the Navy has determined that the proposed federal agency action would be fully consistent with the enforceable policies of the Virginia Coastal Zone Management Program (VCP). Because Emporia is outside of Virginia's coastal zone, the scope of this CCD package is limited to WFF, Main Base (see Enclosure 3).

The Navy plans to release a Draft EA for public review by fall of 2012. We are sending this CCD package prior to releasing the draft to ensure there is time to address any comments you may have. The Navy respectfully requests that you review the enclosed CCD and provide a response within 60 days of receiving this letter.

5090
SER EV21SU/278
JULY 3, 2012

Our point of contact for this project is Ms. Valerie Carpenter-Ho, who may be reached by phone at: (757) 322- 8346, or e-mail: valerie.carpenter-ho@navy.mil.

Sincerely,

W. D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Enclosures:
(1) Coastal Consistency Determination (CCD)
(2) Regional Location Map
(3) Wallops Flight Facility Regional Overview
(4) U.S. Geological Survey topographic map ("Topography") of Wallops Flight Facility
(5) Wallops Flight Facility Proposed Limits of Construction
(6) Runway 4: Proposed Limits of Construction
(7) Runway 10: Proposed Limits of Construction
(8) Runway 22 & 28: Proposed Limits of Construction

Copy To:
United States Fleet Forces Command

Coastal Zone Management Act of 1972
COASTAL CONSISTENCY DETERMINATION

Proposed E-2/C-2 Field Carrier Landing Practice Operations at Wallops Flight Facility, Virginia

Proposed Federal Agency Action

The Navy is proposing to conduct regular, scheduled E-2C Hawkeye, E-2D Advanced Hawkeye, and C-2A Greyhound (hereinafter referred to as the E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield that meets the Navy's minimum airfield requirements. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport (Emporia) in Greensville and Southampton Counties, Virginia, or at the NASA Goddard Space Flight Center's Wallops Flight Facility (WFF) in Accomack County, Virginia, until the Navy addresses local FCLP capacity shortfalls on a more permanent basis.

The Navy is preparing an Environmental Assessment (EA) to evaluate the potential environmental consequences of the proposed action. Of the two airfields under consideration, only WFF is located within the Commonwealth of Virginia's coastal zone; therefore, only WFF is addressed in this determination. The proposed action would support FCLP operations for E-2/C-2 squadrons operating from Naval Station (NS) Norfolk Chambers Field in Norfolk, Virginia (see Enclosure 2). Currently, six fixed-wing carrier air wing squadrons are operating from NS Norfolk Chambers Field.

FCLP is required flight training, which immediately precedes aircraft carrier qualification. During FCLP, pilots perform repetitive "touch-and-go" field landings at airfields to simulate landing on an aircraft carrier. Pilots of all experience levels and squadrons must routinely practice this skill to maintain the required level of proficiency. During FCLP training, the surrounding airfield lighting, airfield pattern, and airfield pattern altitude must replicate as closely as possible the conditions that a pilot will encounter when landing on an actual aircraft carrier during both daylight and darkness.

Naval Auxiliary Landing Field (NALF) Fentress, a Navy-owned outlying landing field (OLF) located in Chesapeake, Virginia, is the primary FCLP airfield for fixed-wing, carrier air wing squadrons operating from NS Norfolk Chambers Field and Naval Air Station (NAS) Oceana (see Enclosure 2). As a single OLF supporting two major air installations, NALF Fentress can experience periodic FCLP capacity shortfalls and is unable to support FCLP under all training conditions. The result is that FCLP operations must occasionally be conducted at less equipped Navy-owned airfields, or in the case of the E-2/C-2 FRS, through FCLP detachments to Navy-owned facilities outside of the area. These training alternatives can result in increased costs, increased community impacts, and decreased proficiency of training. Therefore, the Navy requires additional local capacity to meet FCLP training requirements.

Located in Accomack County, Virginia, WFF is approximately 70 nautical miles from NS Norfolk. WFF consists of three parcels: the Main Base, Mainland, and the Wallops Island launch site. The WFF airfield, the site of the proposed action, is on the Main Base, which is located off Virginia Route 175, approximately 10 miles east of U.S. Route 13 (see Enclosures 3 and 4). WFF Main Base has three runways, two of which meet the Navy's length requirements to support Navy E-2/C-2 FCLP operations. Runway 04/22 is 8,750 feet long by 150 feet wide, and Runway 10/28 is 8,000 feet long by 200 feet wide. Runway 17/35, at 4,820 feet, does not meet the Navy's length requirement of 5,000 feet; therefore, it is not an alternative. The Navy is only considering Runways 4/22 and 10/28.

In addition to FCLP operations, the proposed action would require minor airfield infrastructure improvements. These include: 1) painted simulated carrier boxes on existing impervious runway surfaces with flush-deck lighting to simulate a day/night carrier deck; 2) five new concrete pads to be placed beside each runway approach end that is outfitted for FCLP (including one 12 x 24 foot rectangular pad; 14 x 14 foot, 6 x 6 foot, and 3 x 3 foot square pads; and one circular pad that is approximately 3-feet in diameter), to simulate carrier decks and for placement of necessary equipment; and 3) underground utilities to supply electricity and telephone lines to the deck lighting, an Improved Fresnel Lens Optical Landing System (IFLOLS), and the Landing Signal Officer (LSO) workstation. The exact locations of the electrical and phone lines are currently being determined; however, the level of impact would not change. This package includes figures showing the proposed limits of construction, within which all electrical and phone lines would be contained (see Enclosures 5-8). All construction would occur on federal property at WFF and the Navy would follow all of NASA's permit requirements, standard operating procedures, and other agreements during construction and maintenance of this infrastructure.

Analysis of Relevant Enforceable Polices

The Commonwealth of Virginia has developed and implemented a federally approved Coastal Zone Management Program. The nine enforceable policy areas of the Virginia Coastal Zone Management Program (VCP) are: (1) fisheries management; (2) subaqueous lands management; (3) wetlands management; (4) dunes management; (5) non-point source water pollution control; (6) point source water pollution control; (7) shoreline sanitation; (8) air pollution control; and (9) coastal lands management.

Of these policy areas, the following are not relevant to the Navy's proposed action, as all proposed construction and on-the-ground impacts are minimal and contained within a small footprint on NASA Wallops property: (1) fisheries management; (2) subaqueous lands management; (3) dunes management; (4) point source water pollution

Therefore, these policy areas are not analyzed further in this CCD. An analysis of the relevant enforceable policy areas of the VCP follows:

1. Wetlands Management
The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.

(1) The tidal wetlands program is administered by the Marine Resources Commission; Virginia Code §28.2-1301 through §28.2-1320.

(2) The Virginia Water Protection program administered by DEQ includes protection of wetlands - both tidal and non-tidal; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act of 1972.

Consistent? Yes

Analysis - Under the proposed action, no new construction is proposed within tidal or non-tidal wetland areas either within or outside of the WFF Main Base federal property boundary. Although no new construction is proposed within tidal or non-tidal wetlands, there could be the potential to indirectly impact them through non-point source water pollution from the new surface runoff from the concrete pads. However, potential indirect impact from runoff would be negligible and would be mitigated through proper erosion and sediment control measures (see analysis under Non-Point Source Water Pollution Control, below). Since the proposed aircraft operations would not directly or indirectly impact tidal or non-tidal wetlands, the proposed action would be fully consistent with Virginia's approved and enforceable wetlands management policies.

2. Non-point Source Water Pollution Control
Virginia addresses non-point source water pollution control through its Erosion and Sediment Control Law (Code of Virginia § 10.1-560 et.seq.), which requires soil-disturbing projects to be designed to reduce soil erosion and to minimize inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Virginia Department of Conservation and Recreation (DCR) (Virginia Code §10.1-560 *et.seq.*).

Consistent? Yes

Analysis - Up to approximately 2,123 square feet, or 0.05 acres, of new impervious surface could be created at WFF due to the installation of multiple concrete pads next to each of up to four possible approach ends of existing runways 04/22 and/or 10/28. The concrete pads are necessary for the placement of Navy equipment integral to the training

operations. Under the Virginia Stormwater Management Program (VSMP) Permit Regulations, construction operations that disturb less than one acre are exempt from the permitting process.

WFF maintains a Storm Water Pollution Prevention Plan (SWPPP) for the facility to ensure that its operations have minimal impact to stormwater quality. Last revised in April 2012, the WFF SWPPP describes current stormwater management systems and associated outfalls, potential pollutant sources, and Best Management Practices (BMPs), all of which would be implemented in conjunction with the proposed project. Since the Navy's proposed action and related construction would not significantly contribute to additional discharge of pollutants to surface waters of the state, WFF would not be required to update its SWPPP if the Navy's proposed action is implemented. Additionally, where construction related land disturbance would be less than 10,000 square feet, the Navy would not be required to submit a formal erosion and sediment control plan to NASA. However, the Navy would still coordinate with NASA during design and construction to ensure that appropriate BMPs are implemented as specified in the Virginia Erosion and Sediment Control Handbook. Additionally, the Navy would follow all additional WFF permit requirements and standard operating procedures during construction and maintenance of proposed infrastructure to control/reduce stormwater runoff and minimize potential adverse effect. Therefore, the proposed action would be fully consistent with Virginia's approved and enforceable non-point source water pollution control policies.

3. Air Pollution Control

Under this policy, Virginia DEQ implements the federal Clean Air Act (CAA) for the attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). This program is administered by the State Air Pollution Control Board (Virginia Code § 10.1-1300 through 10.1-1320).

Consistent? Yes

Analysis - Minimal impacts to air quality would occur during proposed activities. The estimated construction emissions, which would be temporary and assumed to occur for approximately 6 months immediately prior to Navy aircraft operations, include the operation of construction equipment and on-road and off-road vehicles, and site preparation (for particulate emissions) and paving operations (for volatile organic compound emissions). Construction emissions are estimated to be: 0.39 TPY of VOCs, 2.92 TPY of CO, 1.43 TPY of NO_x, 0.01 TPY of SO_2, 0.63 TPY of PM_{10}, and 0.16 TPY of $PM_{2.5}$. These temporary construction emissions would not cause the air quality region to exceed the applicable standards. Moreover, required control measures to minimize windblown and vehicular-borne fugitive dust emissions during construction would be implemented.

To evaluate air quality impacts associated with the proposed Navy aircraft operations at WFF, proposed annual mobile source emissions from the operation of Navy aircraft for FCLP were estimated. Only new aircraft operations were considered, as existing operations are not expected to change as a result of the proposed action. The modeled results were: 13.16 tons per year (TPY) of carbon monoxide (CO), 64.01 TPY of mono-nitrogen oxides (NO_x), 3.81 TPY of volatile organic compounds (VOCs), 2.88 TPY of sulfur dioxide (SO_2), and 28.59 TPY of particulate matter (PM_{10}). Accomack County is in attainment for all National Ambient Air Quality Standards (NAAQS), and these emissions would also not cause the air quality region to exceed the applicable standards.

Because WFF is located in a county which is in attainment of the NAAQS or unclassified for all criteria pollutants, the General Conformity Rule regulations do not apply to the Navy's proposed action, and General Conformity Rule exemption thresholds do not apply. Therefore, the proposed action would be fully consistent with Virginia's approved and enforceable air pollution control policies.

Advisory Policies

In addition to analyzing the relevant enforceable policies of the VCP, the Navy also considered the advisory policies of the VCP, including those for Geographic Areas of Particular Concern (i.e. Coastal Natural Resource Areas, Coastal Natural Hazard Areas, and Waterfront Development Areas), and those for Shorefront Access Planning and Protection (i.e. Virginia Public Beaches; Virginia Outdoors Plan; Parks, Natural Areas and Wildlife Management Areas; Waterfront Recreational Land Acquisition; Waterfront Recreational Facilities; and Waterfront Historic Properties). The Navy found that the proposed action is not in conflict with any of these advisory polices.

Conclusion

After careful consideration, the Navy has determined that the proposed federal action is fully consistent with the approved and enforceable policies of Virginia and not in conflict with any of the advisory polices.

5 Jul 12

W.D. LEWIS
Environmental Business Line Manager
By direction of the Commander

Date

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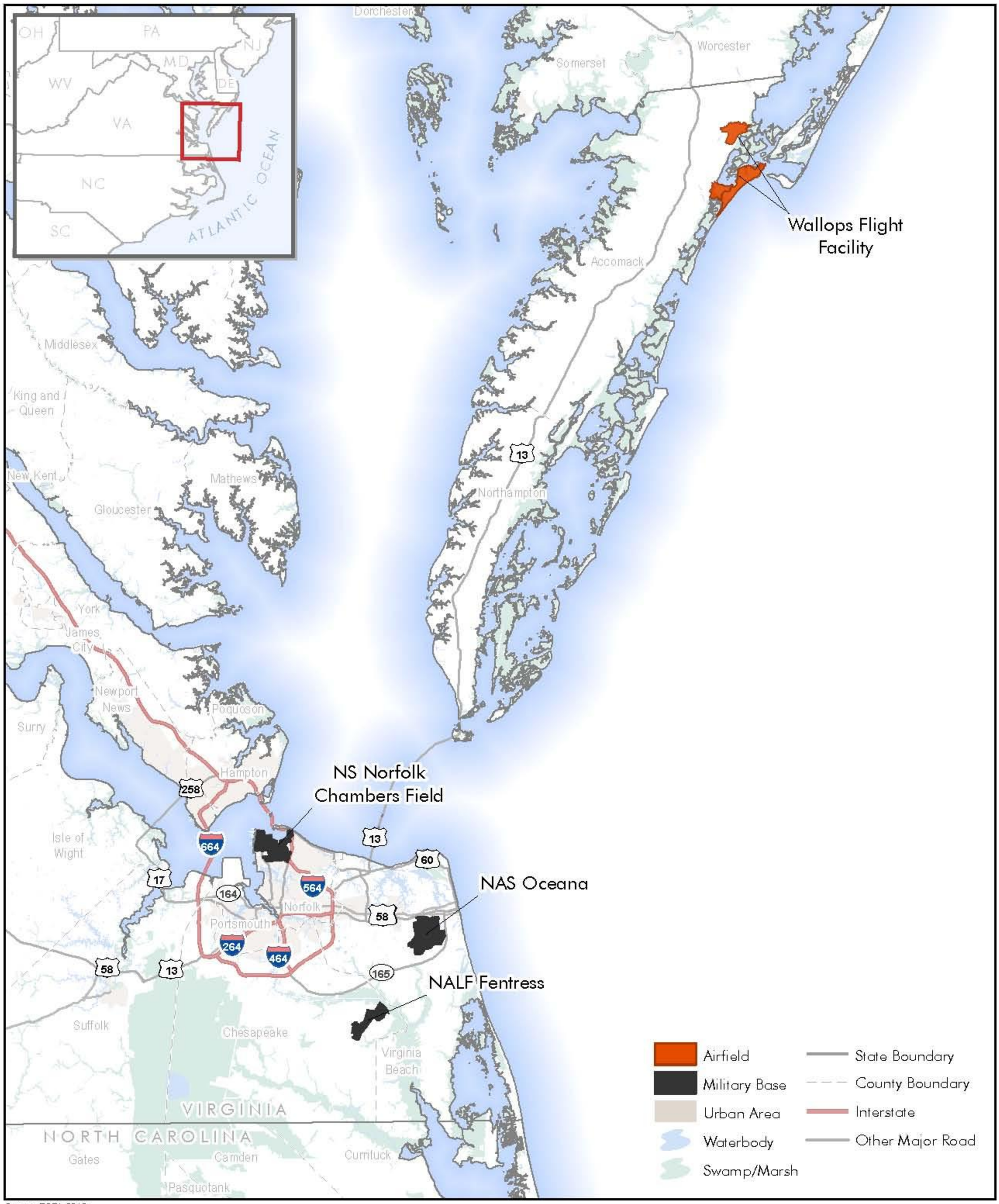


Source: ESRI, 2010

Enclosure 2

Regional Location Map

N

0 10 20

Miles

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\Wallops_Island\CCD_Report\Wallops Regional Overview.mxd

Source: ESRI, 2010

Installation Area
Runway
Urban Area
Waterbody
Swamp/Marsh
State Boundary
County Boundaries
Interstate
Major Highway

Enclosure 3

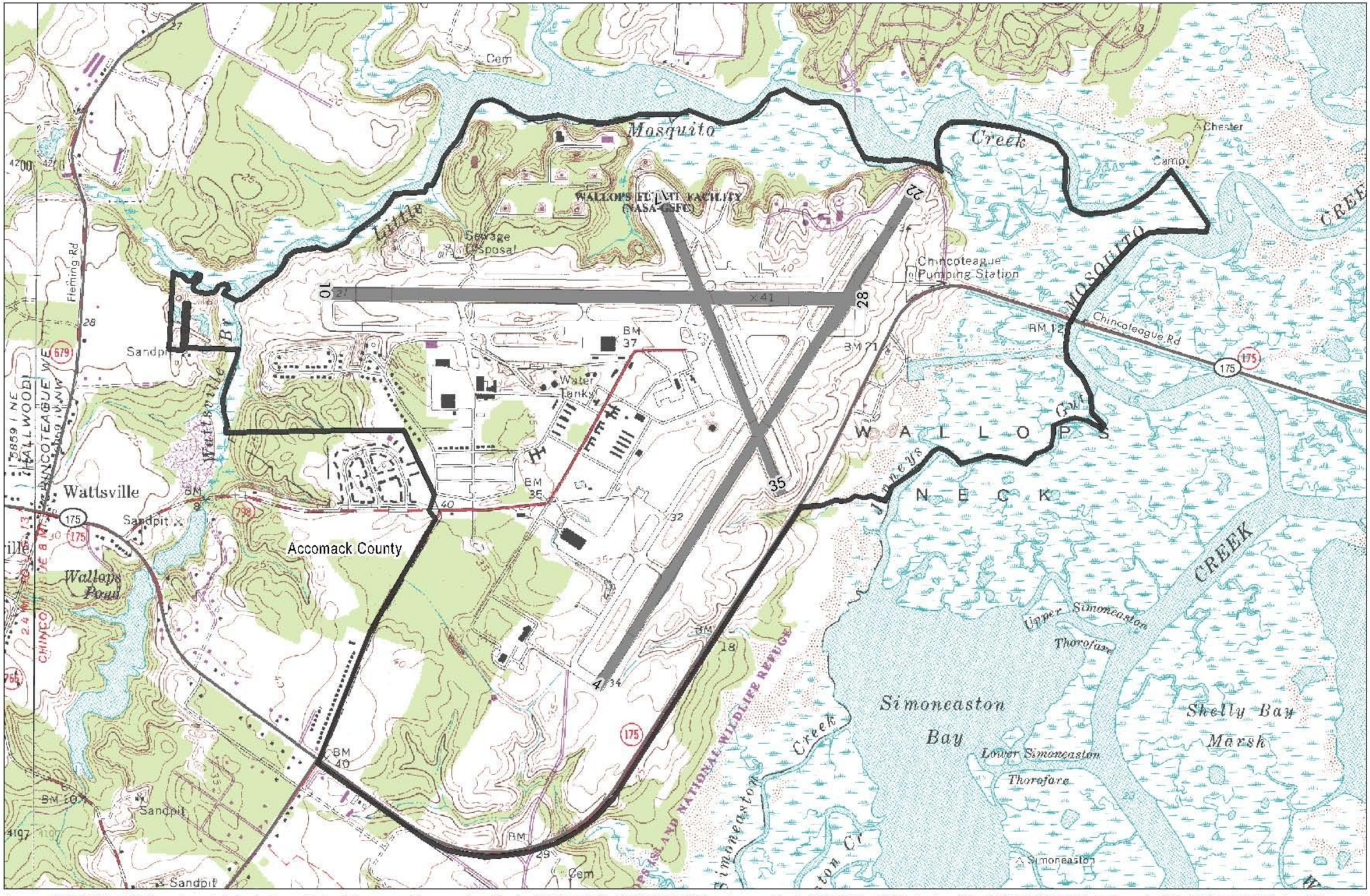
Wallops Flight Facility Regional Overview

N

0 2.5 5

Miles

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\AUA_EA_Figures_All\June26_2012\Topo Wallops Flight Facility.mxd



Source: ESRI 2010; U.S. Department of Agriculture, Natural Resources Conservation Service 2008; USGS, 19961219, Chincoteague West - 24k DRG: USGS, Reston, VA; USGS, 19961219, Hallwood - 24k DRG: USGS, Reston, VA.

Active Runway
Wallops Flight Facility
Major Highway
Local Street

Enclosure 4

Topography

Wallops Flight Facility

N

0 0.25 0.5

Miles

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\Emporia_Greenville_Airport\USFWS_Consult\June01_2012\Wallops Full Extent_ver02.mxd

Notes:
Preliminary. Not for Construction.
Electrical improvements to be added at a later date.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Concrete Pad
Limits of Construction
Simulated Carrier Deck and Lighting

Enclosure 5

Proposed Limits of Construction

Wallops Flight Facility

N

0 500 1,000

Feet

1:12,928

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\Emporia_Greenville_Airport\USFWS_Consult\June01_2012\Wallops Runway 4 Proposed Mods.mxd

Notes:
Preliminary. Not for Construction.
Electrical improvements to be added at a later date.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Concrete Pad
Limits of Construction
Simulated Carrier Deck and Lighting

Enclosure 6

Runway 4: Proposed Limits of Construction

Wallops Flight Facility

N

0 100 200

Feet

1:2,800

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\Emporia_Greenville_Airport\USFWS_Consult\June01_2012\Wallops Runway 10 Proposed Mods.mxd

Notes:
Preliminary. Not for Construction.
Electrical improvements to be added at a later date.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Concrete Pad
Limits of Construction
Simulated Carrier Deck and Lighting

Enclosure 7

Runway 10: Proposed Limits of Construction

Wallops Flight Facility

N

0 100 200
Feet

1:2,800

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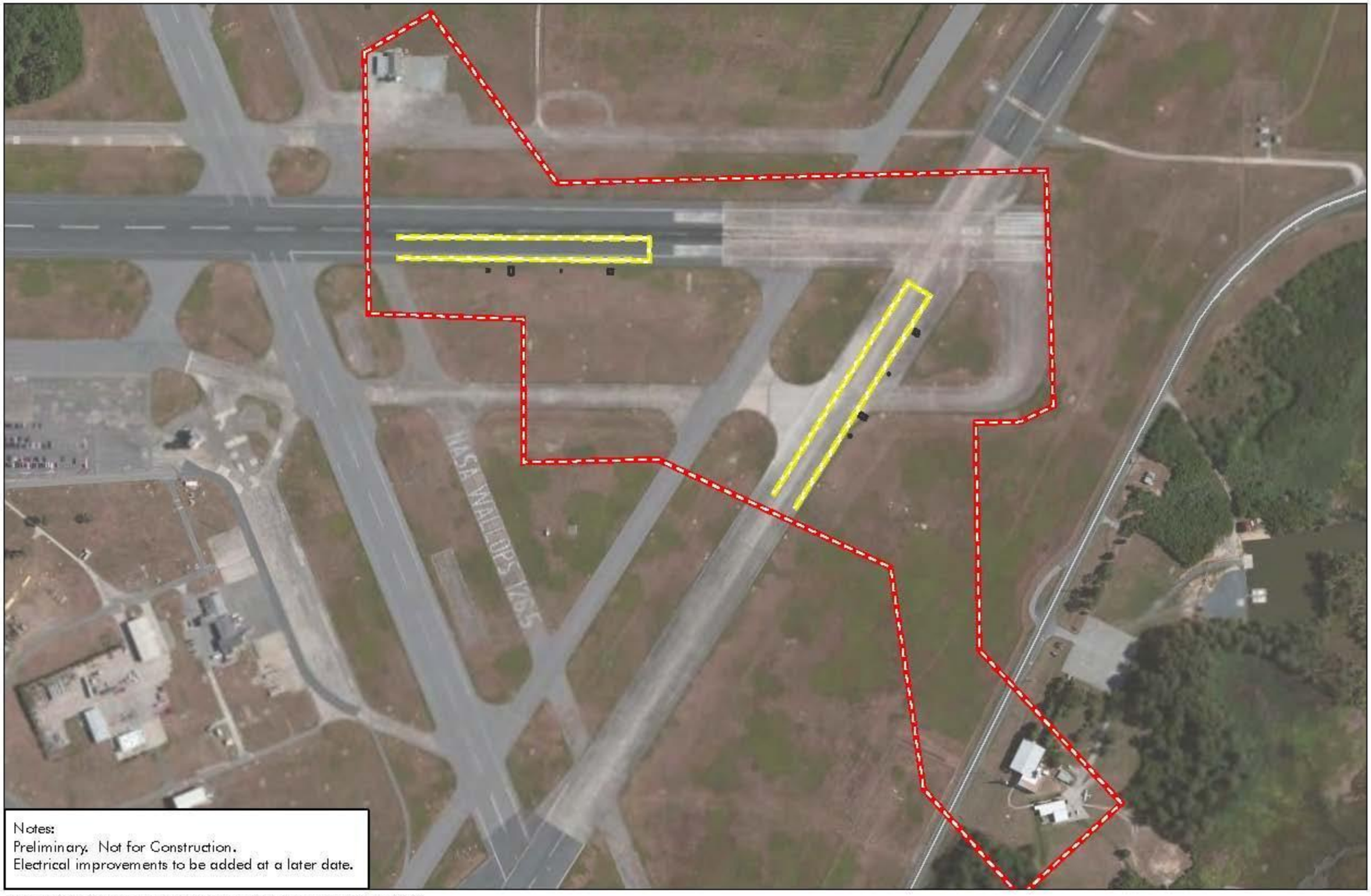


Notes:
Preliminary. Not for Construction.
Electrical improvements to be added at a later date.

Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Concrete Pad
Limits of Construction
Simulated Carrier Deck and Lighting

Enclosure 8

Runways 22 & 28: Proposed Limits of Construction

Wallops Flight Facility

N

0 200 400
Feet

1:5,000

From:	Block, Paul A CIV NAVFAC LANT, EV
To:	Carpenter-Ho, Valerie L CIV NAVFAC LANT, EV
Cc:	Upchurch, Sara H CIV NAVFAC LANT, EV
Subject:	FW: Emporia Limit of Construction map (UNCLASSIFIED)
Date:	Thursday, August 30, 2012 10:41:13 AM
Attachments:	Emporia-Greensville LOC 7-2-2012.pdf

Val/Sarah,

See below.

Paul

-----Original Message-----
From: Evans, John D NAO [mailto:John.D.Evans@usace.army.mil]
Sent: Thursday, August 30, 2012 9:53
To: Block, Paul A CIV NAVFAC LANT, EV
Subject: RE: Emporia Limit of Construction map (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Paul:

This is to confirm, that after the field inspection with you on 29 AUG 2012, that the Corps military memo dated 24 MAY 2012 for the Emporia Airport Field Carrier Landing Practice applies to all areas identified as "Limits of Construction" on the attached PDF received by the Corps on 02 JULY 2012 and digitally signed 2012.08.30 after yesterday's site visit.

Please let me know if we can be of any further assistance for this activity.

Sincerely,

John

==========
The Norfolk District is committed to providing the highest level of support to the public. In order for us to better serve you, we would appreciate you completing our Customer Satisfaction Survey located at http://per2.nwp.usace.army.mil/survey.html. We value your comments and appreciate your taking the time to complete the survey.

-----Original Message-----
From: Block, Paul A CIV NAVFAC LANT, EV [mailto:paul.block@navy.mil]
Sent: Monday, July 02, 2012 2:15 PM
To: Evans, John D NAO
Subject: Emporia Limit of Construction map

Hi John,

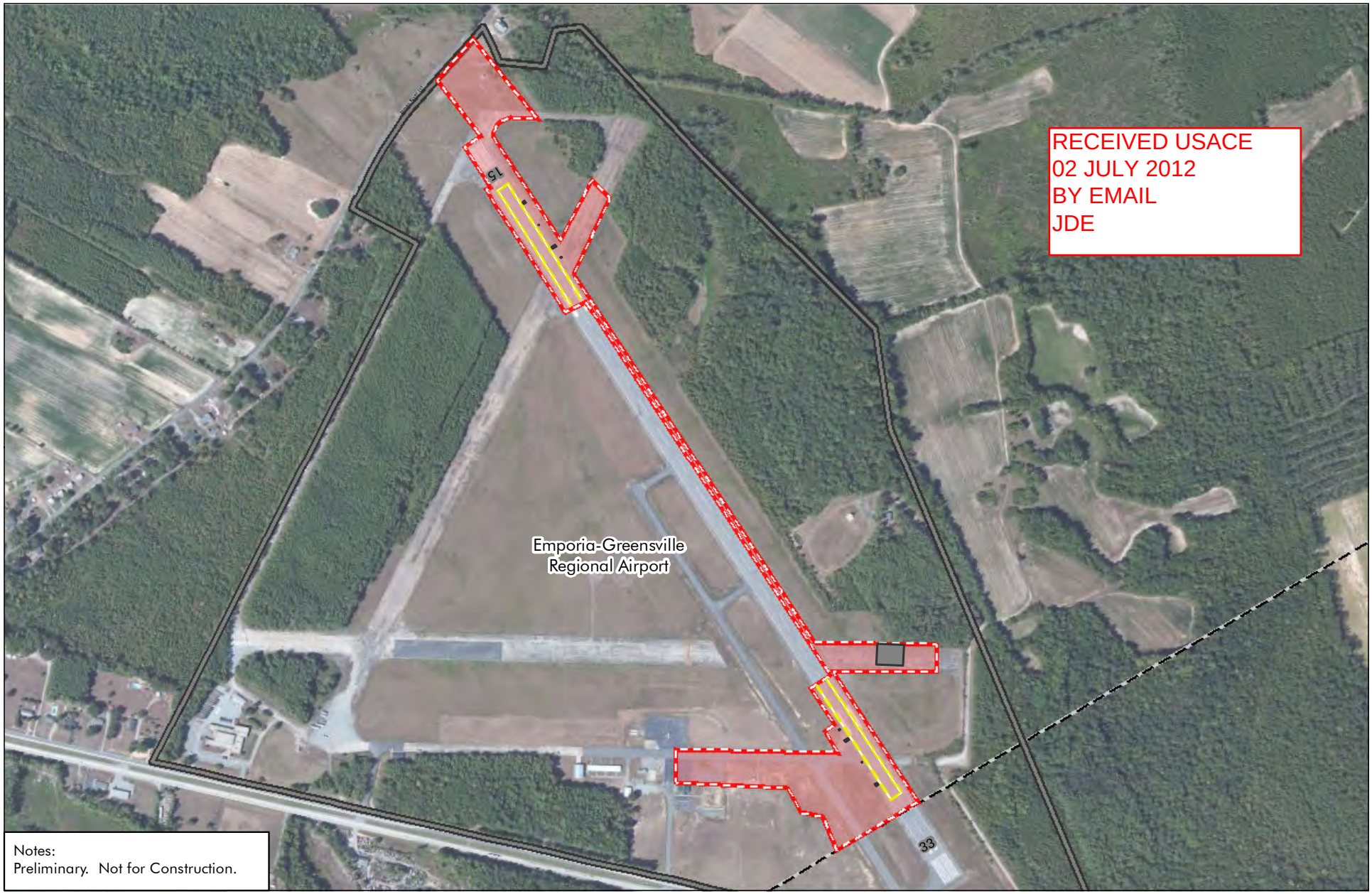
Attached is a Limits of Construction map sent by our engineering group. Can you take a look and let me know if you will need an additional site visit.
There is very subtle changes to the original plans we discussed. I do not see any areas of concern besides the two we have previously discussed. If no site visit is required and you feel comfortable with no additional consultation requirements can you send an updated letter to be used in the EA as a reference and addendum? Or does the original letter still apply?
Please call if you have any questions.

Thanks,
Paul

Paul Block
Ecologist
NAVFAC Atlantic
6506 Hampton Blvd.
Norfolk, VA 23508
757-322-8499
"When one tugs at a single thing in nature, he finds it attached to the rest of the world."
John Muir

Classification: UNCLASSIFIED
Caveats: NONE

Path: L:\Buffalo\OLF_Alternative_Airfield\Maps\MXD\Emporia_Greenville_Airport\USFWS_Consult\June01_2012\Emporia-Greensville Full Extent.mxd



Source: ESRI 2010; Microsoft Virtual Earth Online Mapping System 2009.

Simulated Carrier Deck and Lighting
Limits of Construction
Concrete Pad
Emporia Greensville Regional Airport Boundary

Limits of Construction
Emporia-Greensville Regional Airport

N

0 500 1,000
Feet

1:9,300

B Noise Analysis

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Blue Ridge Research and Consulting, LLC

Technical Report

Noise Analysis for the Environmental Assessment for E-2/C-2 Field Carrier Landing Practice Operations at Emporia-Greensville Regional Airport and National Aeronautics and Space Administration Wallops Flight Facility

July 2012

Prepared for:
Ecology & Environment, Inc.
348 Southport Circle, Suite 101
Virginia Beach, Virginia 23452

Prepared by:
Micah Downing, Ph.D.

Supplemental Agreement Number:
002860.VH03.03-A

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RESEARCH AND CONSULTING

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1 Introduction

1.1 Purpose

This noise analysis supports the Environmental Assessment (EA) of the U.S. Department of the Navy's (the Navy's) proposed action to conduct regular, scheduled E-2C Hawkeye, E-2D Advanced Hawkeye, and C-2A Greyhound (hereinafter referred to as the E-2/C-2) Field Carrier Landing Practice (FCLP) operations at a local airfield.[1] The E-2D Advanced Hawkeye entered operational service in 2010 and began replacing the E-2C in 2011. The E-2Cs will be fully replaced by E-2Ds by 2022. The Navy proposes to use the facilities at either Emporia-Greensville Regional Airport (Emporia) or at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center's (GSFC) Wallops Flight Facility (WFF), as an interim bridge until the Navy increases local FCLP capacity at a permanent facility.

To meet their FCLP requirements, five E-2 fleet squadrons, one C-2 fleet squadron, and the E-2/C-2 FRS need to conduct up to approximately 45,000 annual operations. This number equates to roughly 20,000 annual FCLP passes, with arrivals to the airfield, departures, and holding patterns accounting for the remaining 5,000 operations. FCLP passes are typically made up of two operations: a landing or low approach, followed by an immediate takeoff or climb out. Arrivals, departures, and holding patterns all count as one operation each. Holding pattern operations, supporting the switching of pilots at the controls between FCLP passes, are conducted at 2,000 feet above the airfield.

For the projected operations, two basic scenarios are considered: a 3-plane FCLP pattern and a combination of 3-plane and 5-plane FCLP patterns. For WFF, these basic scenarios are further divided into two groups based on which runway pair would be utilized for the FCLP operations. Thus, the numbers of modeled scenarios, including the current conditions, are three for Emporia and five for WFF.

This noise study describes the environmental noise associated with the proposed FCLP. The primary purpose of this report is to present the aircraft noise exposure for baseline aircraft operations at the above-mentioned airfields and compare them with the aircraft noise exposures for the proposed operational scenarios for E-2/C-2 FCLP training operations.

This study was conducted in accordance with the National Environmental Policy Act (NEPA) of 1969; the Council on Environmental Quality (CEQ) regulations on implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508); and Navy procedures for implementing NEPA (32 CFR 775). The Federal Interagency Committee on Urban Noise (FICUN), formed in 1979, established Day-Night Average Sound Level (DNL) as the most appropriate descriptor for all noise sources.[2] In 1982, EPA published "Guidelines for Noise Impact Analysis" to provide all types of decision-makers with analytic procedures to uniformly express and quantify noise impacts.[3] The American National Standards Institute (ANSI) endorsed DNL in 1990 as the "acoustical measure to be used in assessing compatibility between various land uses and outdoor noise environment."[4] In 1992, the Federal Interagency Committee on Noise (FICON) reaffirmed the use of DNL as the principal aircraft noise descriptor in the document entitled "Federal Agency Review of Selected Airport Noise Analysis Issues."[5]

Section 1.2 summarizes the noise metrics discussed throughout this report, and Section 1.3 briefly describes the computer noise analysis models used to calculate the noise exposure. Section 2 provides a description of the airfields of interest as well as descriptions of the E-2C, E-2D, and C-2 aircraft. Section 3 deals with baseline aircraft operations and noise exposure. Section 4 describes the aircraft operations and noise exposure associated with the proposed scenarios.

1.2 Noise Metrics

Noise represents one of the most contentious environmental issues associated with aircraft operations. Although many other sources of noise are present in today's communities, aircraft noise is readily identifiable based on its uniqueness. An assessment of aircraft noise requires a general understanding of how sound affects people and the natural environment, and how it is measured.

Around a military or civilian airfield, the noise environment is normally described in terms of the time-average sound level generated by aircraft operating at that facility. In this study, these operations consist of the flight activities conducted during an average annual day including fixed-wing and rotary-wing flight operations. This includes arrivals and departures at the airfield and flight patterns in the general vicinity of the airfield.

1.2.1 Day/Night Average Sound Level

The federally accepted noise metric used for assessing long-term aircraft noise exposures in communities in the vicinity of airfields is the DNL, (which is sometimes denoted by L_{dn}), expressed as decibels (dB). DNL is an average sound level generated by all aviation-related operations during an average 24-hour period with sound levels of nighttime noise events adjusted by adding a 10 dB penalty. Daytime is defined as the period from 0700 to 2200 hours, and nighttime is the period from 2200 to 0700 hours the following morning. The 10 dB penalty accounts for the generally lower background sound levels and greater community sensitivity to noise during nighttime hours. DNL has been found to provide the best measure of long-term community reaction to transportation noises, especially aircraft noise.[5]

DNL employs A-weighted sound levels. “A-weighted” denotes the adjustment of the frequency content of a noise event to represent the way in which a human with average hearing senses the noise.

1.2.2 Sound Exposure Level

To supplement the DNL analysis, Sound Exposure Levels (SEL) are provided at representative points around the airfields. SEL is a noise metric that represents both the intensity of a sound and its duration. Individual time-varying noise events (e.g. aircraft overflights) have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. SEL provides a measure of the net exposure of the entire acoustic event, but it does not directly represent the sound level heard at any given time. During an aircraft flyover, SEL would include both the maximum sound level and the lower sound levels produced during onset and recess periods of the overflight.

SEL is a logarithmic measure of the total acoustic energy transmitted to the listener during the event. Mathematically, it represents the sound level of a constant sound that, in one second, would generate

the same acoustic energy as the actual time-varying noise event. SEL provides the best measure to compare noise levels from different aircraft and/or operations.

1.3 Computerized Noise Exposure Models

Analyses of aircraft noise exposure around military airfield facilities are normally accomplished by using NOISEMAP[6] and Rotorcraft Noise Model (RNM).[7] The FAA concurs with the use of NOISEMAP program in lieu of the FAA Integrated Noise Model (INM) since the primary noise generating aircraft are military at both airfields. NOISEMAP is a suite of computer programs that were developed by the U.S. Air Force, which serves as the lead Department of Defense (DoD) agency for fixed-wing aircraft noise modeling. RNM is a suite of computer programs developed by NASA for both single event and cumulative rotary-wing aircraft noise analysis. Per Defense Noise Working Group, RNM is the DoD recommended noise model for rotary-wing aircraft noise modeling. NOISEMAP and RNM together allow noise predictions without the actual implementation of the operations and noise monitoring of those actions.

The latest NOISEMAP package of computer programs consists of BASEOPS Version 7, OMEGA10, OMEGA11, NOISEMAP Version 7.2, NMPLOT Version 4.6, and the latest issue of NOISEFILE. NOISEFILE is the DoD noise database originating from noise measurements of controlled flyovers at prescribed power, speed, and drag configurations for many models of aircraft. RNM is also incorporated into this suite of programs through the integration of the data input module BASEOPS. With BASEOPS, the user enters the runway coordinates, airfield information, flight tracks, and flight profiles along each track by each aircraft, numbers of flight operations, run-up coordinates, run-up profiles, and run-up operations. After the operational parameters are defined, both NOISEMAP and RNM calculate DNL values on a grid of ground locations on and around the facility. The NMPLOT program draws contours of equal DNL for overlay onto land-use maps. For noise studies, as a minimum, DNL contours of 65, 70, 75, and 80 dBA are developed. Results of these computer programs and noise impact guidelines provide a relative measure of noise effects around air facilities.

2 Description of Airfields and Primary Aircraft

2.1 Region of Study

The E-2/C-2 aircraft are based at Naval Station (NS) Norfolk, which is located in the southeastern corner of the Commonwealth of Virginia, in the Sewells Point area of the City of Norfolk. Emporia is to the west of NS Norfolk, and WFF is to the northeast of NS Norfolk.

NS Norfolk has two primary components: 1) the pier facilities that berth ships, submarines, and aircraft carriers, and 2) the airfield known as Chambers Field. Currently, the six east coast based fleet E-2/C-2 squadrons and the Navy's single sited E-2/C-2 Fleet Replacement Squadron (FRS) operate from NS Norfolk Chambers Field.

2.2 Emporia-Greensville Regional Airport

Emporia is 65 nm from NS Norfolk Chambers Field. Runway 15/33 is 5,010 feet long, 100 feet wide, aligned with prevailing winds, has existing edge lights, and is in good condition. Emporia was originally built during World War II as an OLF for Marine Corps Air Station (MCAS) Edenton, North Carolina and became a civilian airport in the 1960s. It is primarily located within Greensville County, with the approach end of Runway 33 located in Southampton County. It is 2.6 miles east of the City of Emporia, Virginia (see Figure 2-1). Approximately 2,000 general aviation aircraft operations occur annually and four privately owned aircraft are based at the airport.

2.3 Wallops Flight Facility

WFF is NASA's principal facility for suborbital research programs management and implementation. WFF is located in the northeastern portion of Accomack County, Virginia, on the Delmarva Peninsula, approximately 70 nm from NS Norfolk. It is comprised of three parcels: Main Base, Mainland, and Wallops Island. The airfield is on the Main Base, which is located off Virginia Route 175, approximately 2 miles (3.2 kilometers) east of U.S. Route 13. It is bordered on the east by extensive marshland and creeks which lead into Chincoteague Bay and Chincoteague Inlet; on the north and west by Little Mosquito Creek, an estuarine area; and on the south and southeast by State Routes 175 and 798, respectively. WFF has three runways, two of which could support Navy E-2/C-2 FCLP operations (see Figure 2-2). Runway 04/22 is 8,748 feet by 150 feet, and Runway 10/28 is 8,005 feet by 200 feet. The third runway, Runway 17/35, does not meet the Navy's length requirement. Thus, it is not being examined for potential Navy use in this study.

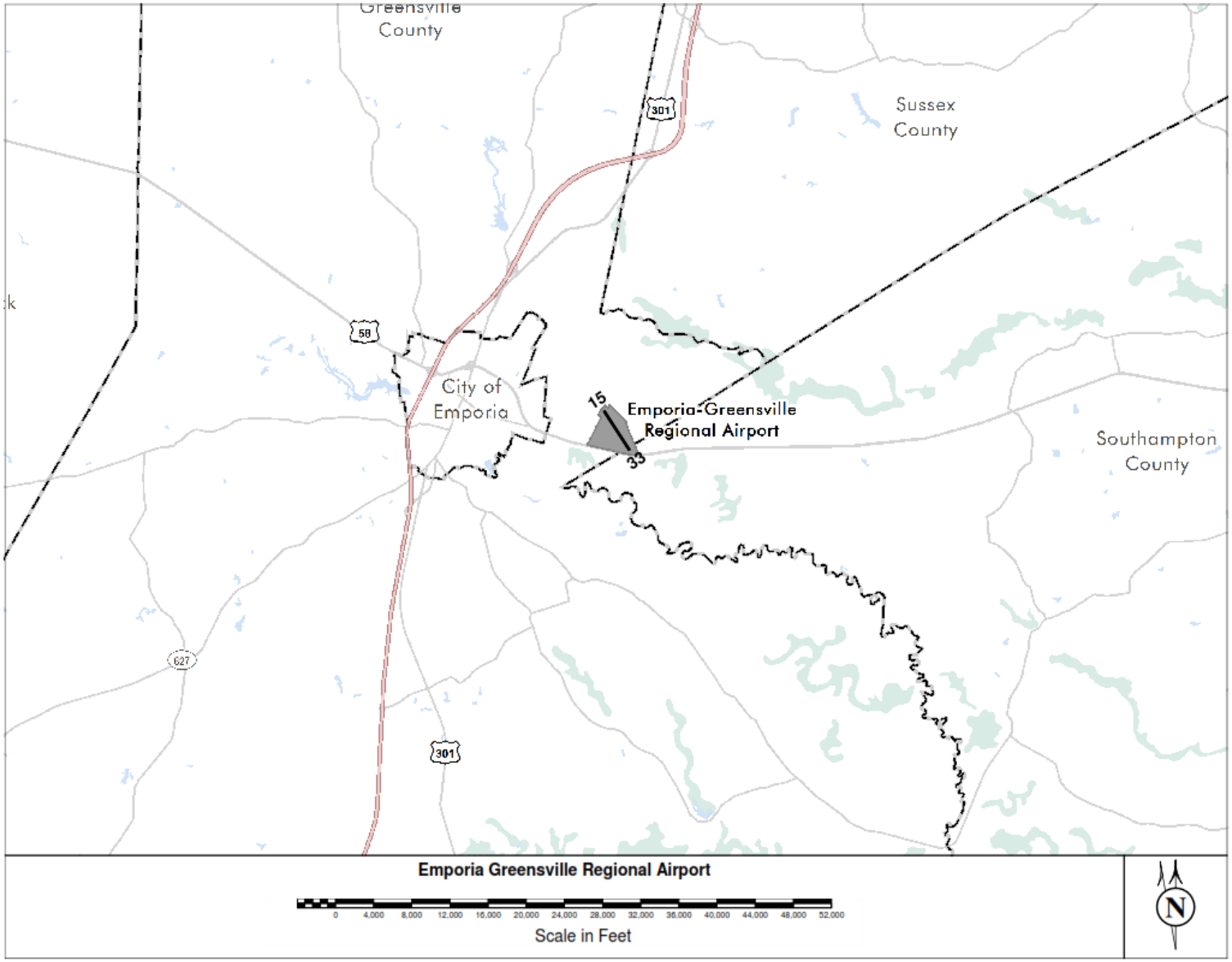


Figure 2-1. Emporia Greensville Regional Airport

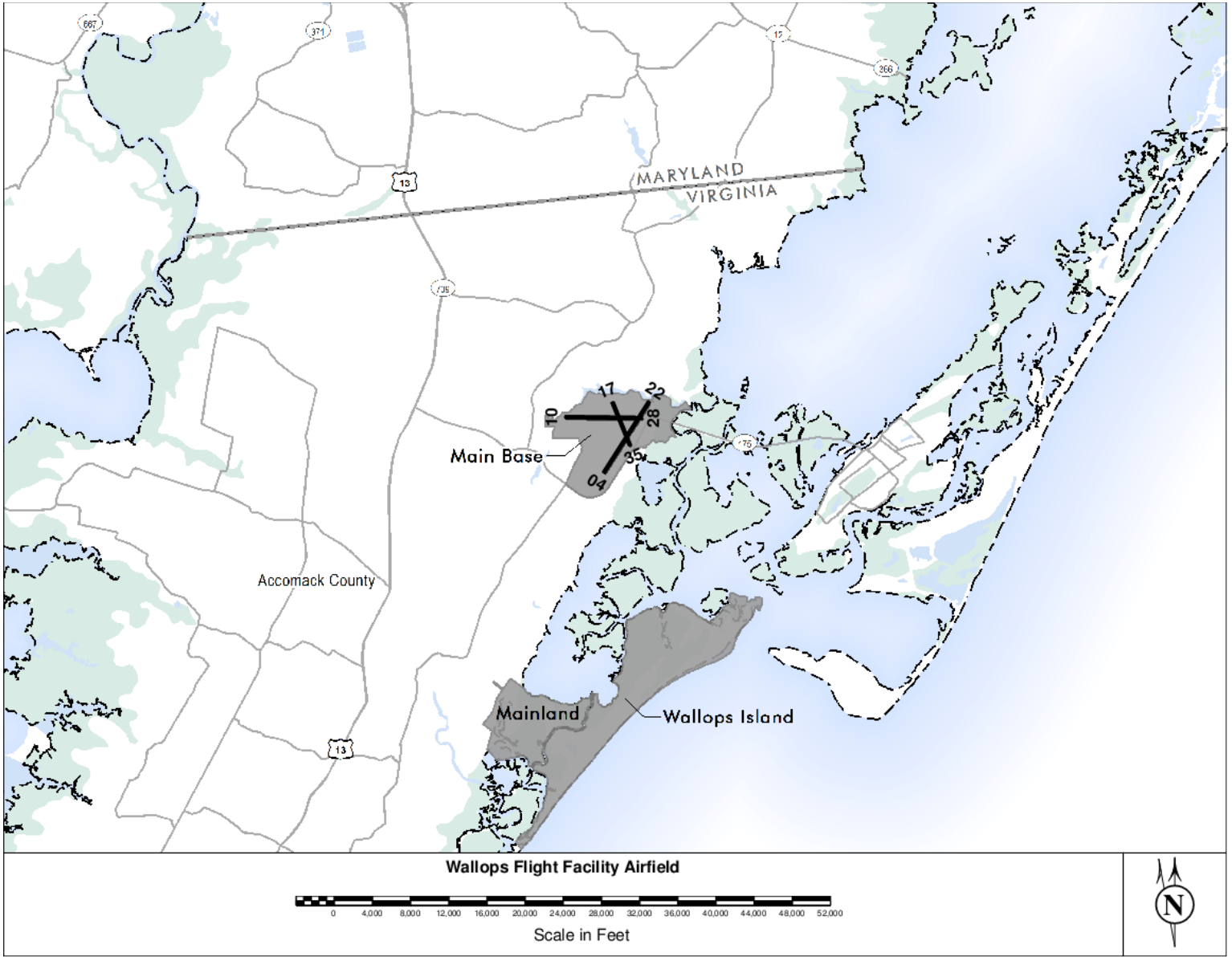


Figure 2-2. Wallops Flight Facility

2.4 Description of Aircraft

Six carrier air wing E-2/C-2 squadrons, or "fleet" squadrons, are assigned to the Atlantic Fleet and deploy aboard aircraft carriers as part of the larger attached carrier air wing. The FRS trains naval aviators and naval flight officers on the specific aircraft (E-2 or C-2) they have been assigned to fly. The FRS does not deploy. Students in the FRS are new aviators, aviators transitioning from one aircraft type to another, or aviators returning to the cockpit after assigned duty away from flying. After completing the required training regimen, FRS graduates are then assigned to a fleet squadron. The amount of FCLP training required for FRS pilots prior to carrier qualifications varies, but is considerably higher than that of a fleet pilot.

2.4.1 E-2C/D Hawkeye/Advanced Hawkeye

The Navy E-2C/D is a twin-engine turboprop, all-weather, carrier-based airborne early warning command and control aircraft (see Figure 2-3). It provides early warning and command and control functions for the carrier strike group to which it is attached. Additional missions include surface surveillance coordination, strike and interceptor control, search and rescue guidance, and communications relay.

The E-2C Hawkeye is gradually being replaced by the E-2D Advanced Hawkeye. The differences between the E-2C and E-2D do not extend to the engine and propellers that drive the aircraft; therefore, the E-2C and E-2D are the same with respect to environmental considerations (specifically noise). Currently, 28 E-2C and one E-2D aircraft are stationed at NS Norfolk Chambers Field, which includes 20 E-2C aircraft assigned to the fleet squadrons and eight E-2C and one E-2D aircraft assigned to the E-2/C-2 FRS. The Navy's only E-2/C-2 FRS is stationed at NS Norfolk Chambers Field.

2.4.2 C-2A Greyhound

The C-2A Greyhound is a twin-engine, turboprop, cargo plane designed to land on aircraft carriers (see Figure 2-4). The aircraft is capable of carrying 10,000 pounds of cargo and up to 26 passengers. Currently, 17 C-2A Greyhound aircraft are stationed at NS Norfolk Chambers Field, which includes 12 C-2A aircraft assigned to the lone East Coast Fleet Logistics Support Squadron and five C-2A aircraft assigned to the E-2/C-2 FRS.

Figure 2-3. E-2D Advanced Hawkeye

Figure 2-4. C-2 Greyhound

3 Baseline Aircraft Operations and Noise Exposures

Assessment of noise at an airfield requires a range of data from many sources. These sources provided descriptions of the types, frequency, and location of noise generating operations occurring at and around the airfield. For this study, the data sources include airfield managers, air traffic controllers, base planners, aircrews, and previous noise studies. The data from these sources are compiled and integrated into a description of the noise generating activities occurring at each airfield. The operational description includes the frequency of flight operations, airfield layout, runway utilization, flight tracks, and flight profiles. The operational descriptions were contained in the E-2/C-2 Modeling Parameters Report for Proposed FCLP Training Operations at Emporia-Greensville Regional Airport and Wallops Flight Facility[8] and verified by US Fleet Forces (USFF). The noise analysis for this study compares the projected noise from the proposed E-2/C-2 FCLP training operations at both Emporia and WFF against current baseline noise conditions for Calendar Year (CY) 2011 aircraft operations at each facility. This section describes the modeled aircraft operations.

3.1 Emporia Baseline Conditions

Both fixed-wing and rotary-wing aircraft currently utilize Emporia's airfield, and both aircraft perform a sufficient percentage of the total baseline operations to warrant modeling for this study. The majority of

the data on current operations was collected during a site visit to the airport[9] and follow-on discussions specifically regarding military helicopter operations at Emporia.[10]

3.1.1 Annual Flight Operations

The current fixed-wing aircraft operations are primarily composed of single-engine propeller aircraft such as the Cessna 172 and 182. Other aircraft types include twin-engine propeller aircraft (such as the Super King Air) and small business jet (such as the Lear 3 and Gulfstream G-5). Based on the airport's logbook, the percentage of operations by these three types of aircraft are 85%, 8%, and 7%, respectively. The estimated number of annual operations for these aircraft is 1,144 (or 22 operations per week).[11] Of these operations, the single-engine aircraft perform approximately 40% visual touch--and-go patterns, 10% instrument patterns and, the remaining 50% arrival-departures pairs. The twin-engine and business jets do not perform any pattern work at the airfield.

The runway utilization for these aircraft operations are about 75% for Runway 33 and 25% for Runway 15. This runway distribution is influenced by the fact that an instrument approach is only provided for Runway 33, which skews the runway utilization from prevailing winds. Based upon information provided by airport personnel, the percentage split for acoustic day (0700-2200)/acoustic night (2200-0700) is 85%/15% for single- and twin-engine propeller planes, and it is 100%/0% for business jets that utilize the airfield.

Military helicopters utilize Emporia for two primary reasons: (1) Paratroopers (average once per month), and (2) periodic arrival/departure work (average of 20 times per month). Rotary-wing aircraft operating at Emporia primarily include Army CH-47s and Navy CH-53Es. The paratrooper exercises involve about eight (8) jump patterns per training period always conducted during daylight hours. The US Army also uses the CASA 212 fixed-wing aircraft to support the paratrooper exercises at a low rate of two times per year in place of the CH-47D.

The other operations involve instrument arrival training for the CH-47D and CH-53E. These operations are conducted on Runway 33, and they normally involve one arrival followed by a radar pattern, and then a departure. For the split of these helicopter operations, it is assumed that CH-47Ds conduct 87.5%, and CH-53Es conduct 12.5% of the operations. Moreover, the acoustic day/night split for these helicopter operations is 95%/5%. Using these operational parameters, the annual operations for current conditions at Emporia were computed and are provided in Table 3-1.

Table 3-1. Annual Airfield Operations at Emporia for CY 2011

Civilian	Departures	Arrivals	Pattern	Total
Single Engine	243	243	486	972
Twin Engine	46	46	0	92
Business Jet	40	40	0	80
			Total	1,144
Military				
CH-47D	10	10	160	180
CASA 212	2	2	32	36
CH-47D	210	210	420	840
CH-53	30	30	60	120
			Total	1,176
			Grand Total	2,320

3.1.2 Flight Tracks

The flight tracks for Emporia are standard with the primary traffic flow being either northern or southern. The modeled flight tracks for current conditions at Emporia are provided in Figure 3-1 through Figure 3-4.

3.1.3 Average Daily Operational Distributions

The next step is to distribute the operations among the flight tracks based on the operational type frequencies and runway utilizations. Combining these factors together, the average annual tempo of daily flight operations was developed and is provided in Table 3-2.

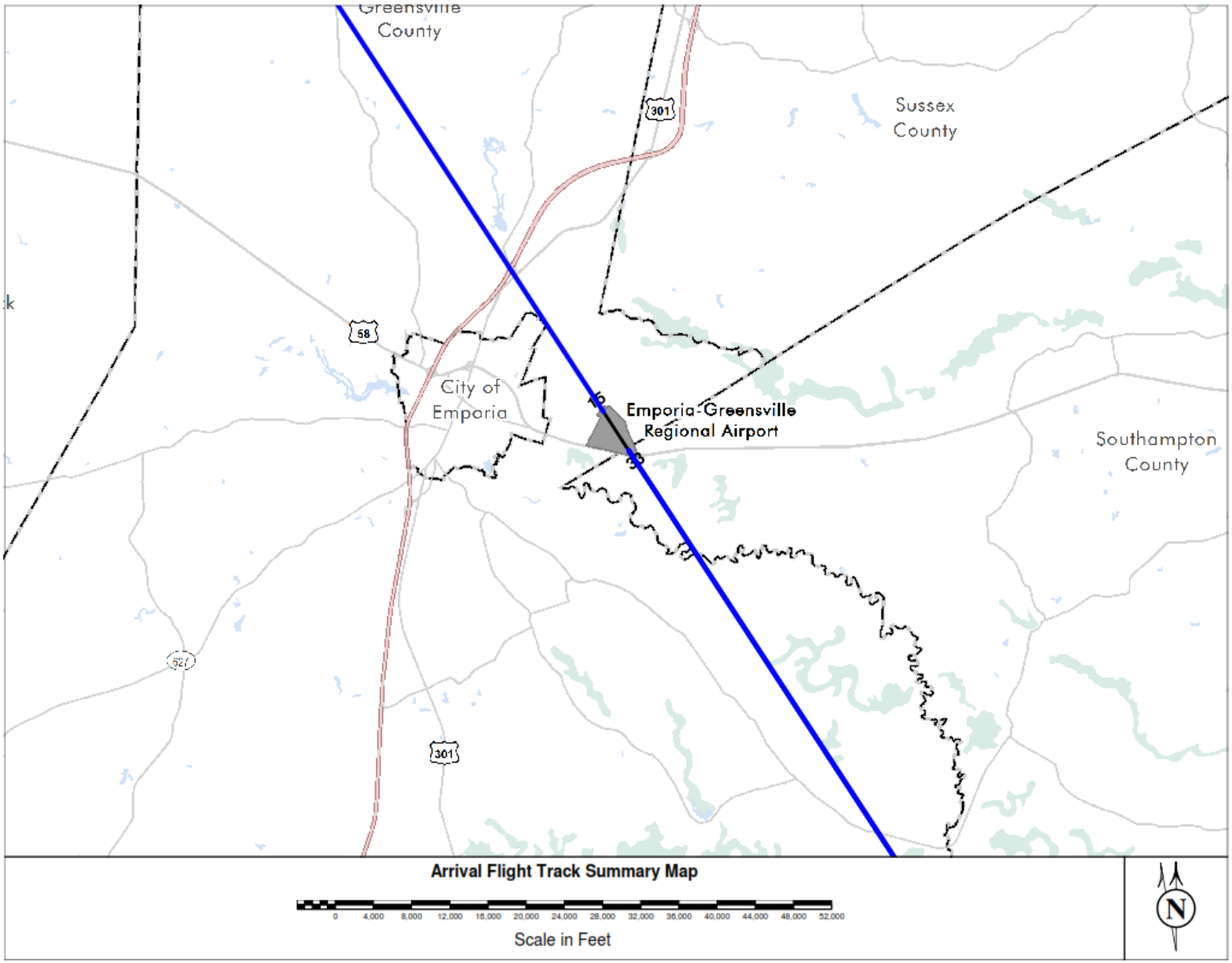


Figure 3-1. Modeled Arrival Flight Tracks for Current Operations at Emporia

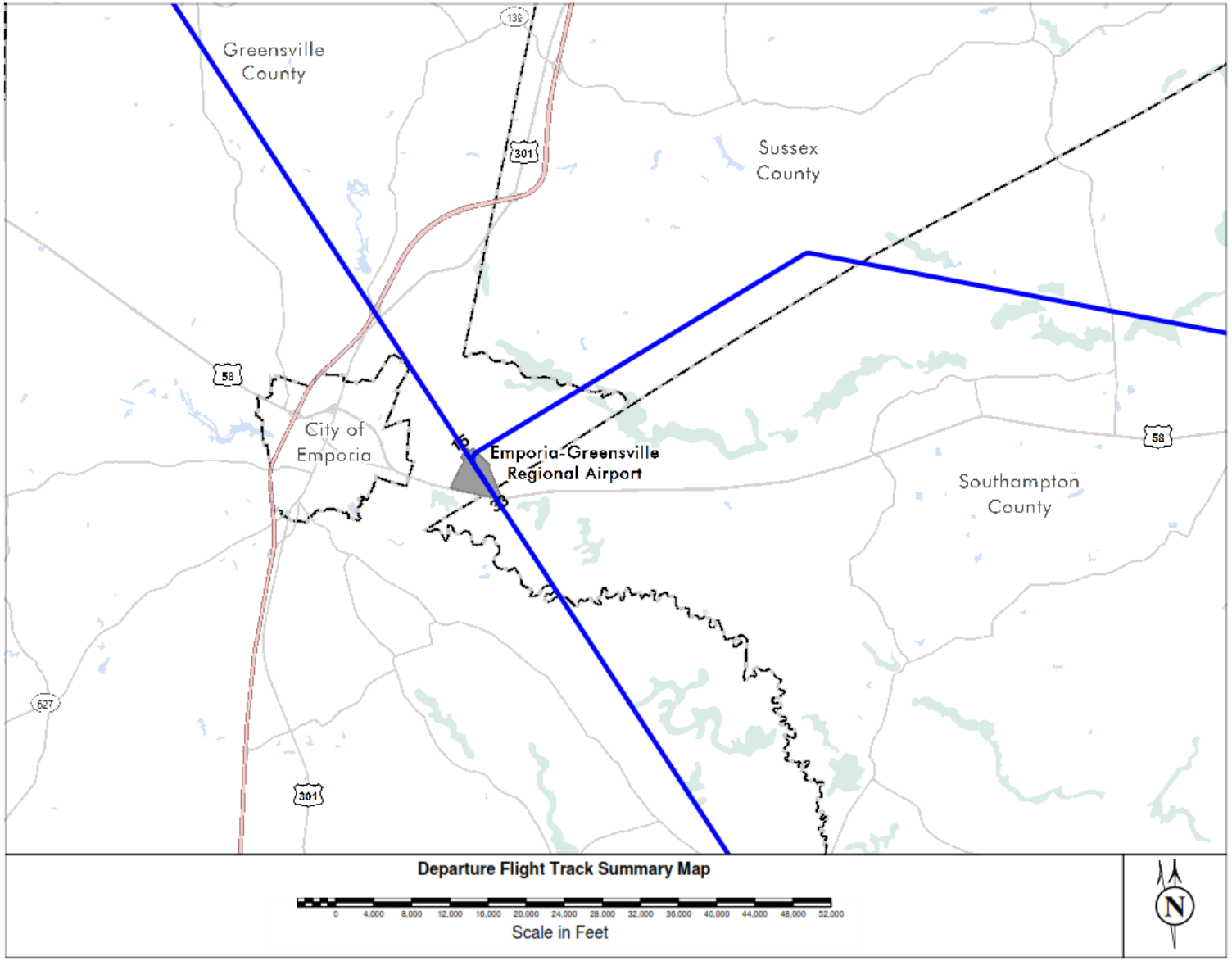


Figure 3-2. Modeled Departure Flight Tracks for Current Operations at Emporia

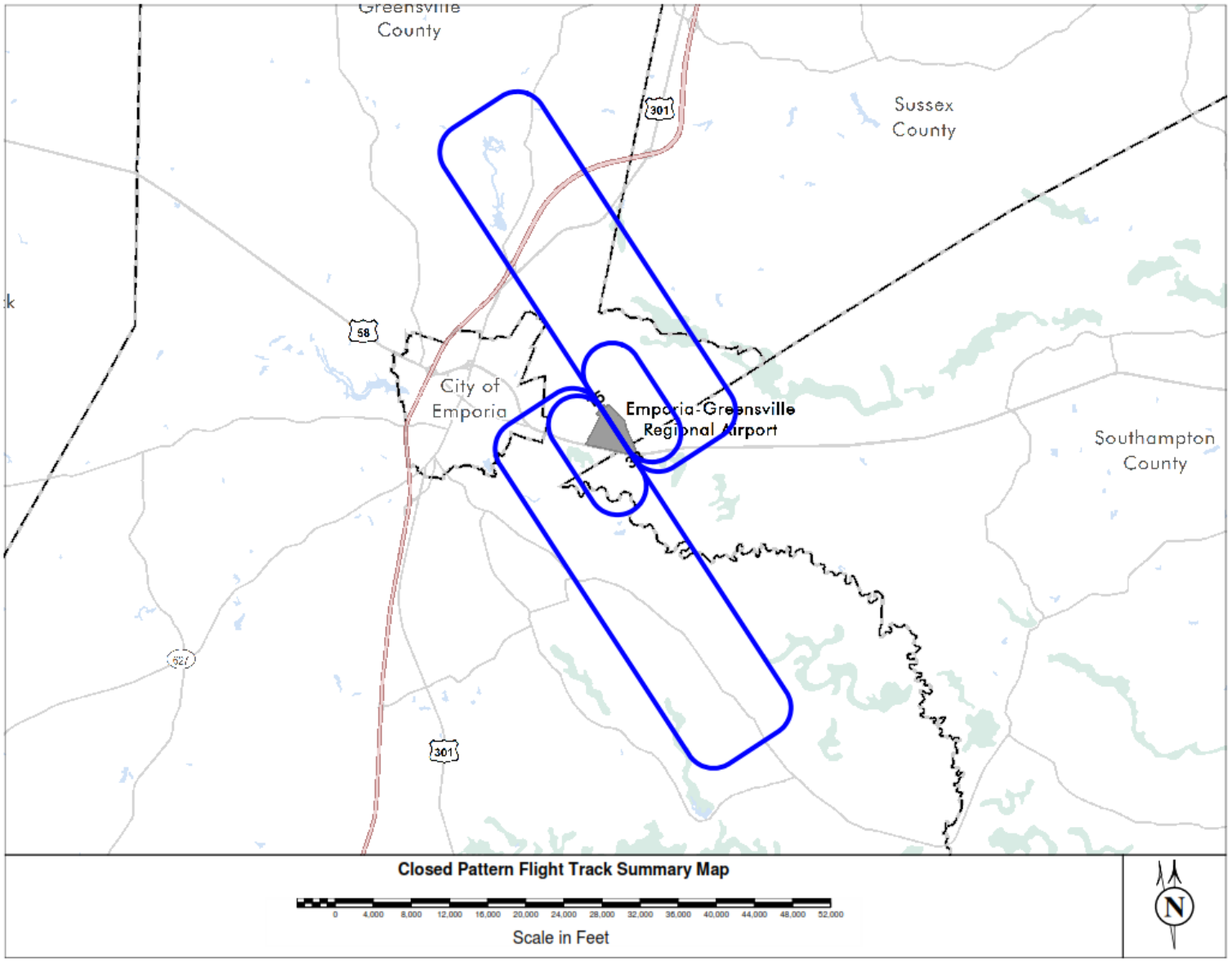


Figure 3-3. Modeled Closed Pattern Tracks for Current Operations at Emporia

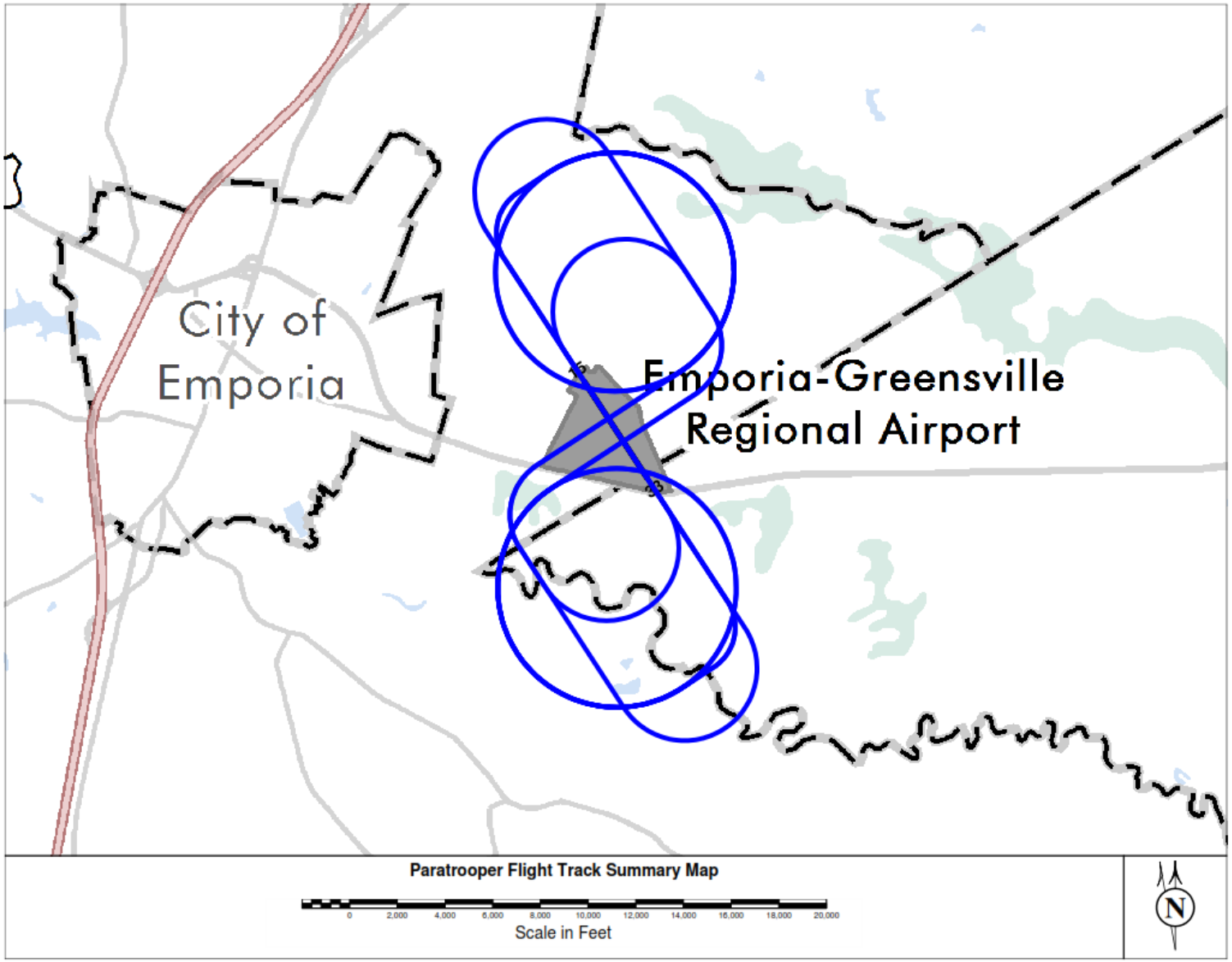


Figure 3-4. Modeled Paratrooper Drop Tracks for Current Operations at Emporia

Table 3-2. Average Annual Daily Events for Emporia

Aircraft	Track Type	Runway		Track	Profile			Average Annual Day Events		
								Acoustic Day	Acoustic Night	Total
		ID	Utilization		ID	% Day	% Night	(0700 to 2200)	(2200 to 0700)	
Civilian Operations										
Single Engine Propeller Aircraft	Arrival	15	25%	rwy15A	S_15A	85%	15%	0.142	0.025	0.167
		33	75%	rwy33A	S_33A			0.425	0.075	0.500
	Closed Pattern	15	5%	15GCA	S_15GCA			0.057	0.010	0.067
		15	20%	15F3	S_15T			0.226	0.040	0.266
		33	15%	33GCA	S_33GCA			0.170	0.030	0.200
		33	60%	33F3	S_33T			0.679	0.120	0.799
	Departure	15	25%	rwy15D	S_15D			0.142	0.025	0.167
		33	75%	rwy33D	S_33D			0.425	0.075	0.500
									Subtotal	2.664
Twin Engine Propeller Aircraft	Arrival	15	25%	rwy15A	Twin_15A	85%	15%	0.027	0.005	0.031
		33	75%	rwy33A	Twin_33A			0.080	0.014	0.094
	Departure	15	25%	rwy15D	Twin_15D			0.027	0.005	0.031
		33	75%	rwy33D	Twin_33D			0.080	0.014	0.094
									Subtotal	0.251
Business Jet	Arrival	15	25%	rwy15A	BIZ15A	100%	0%	0.027	0.000	0.027
		33	75%	rwy33A	BIZ33A			0.082	0.000	0.082
	Departure	15	25%	rwy15D	BIZ15D			0.027	0.000	0.027
		33	75%	rwy33D	BIZ33D			0.082	0.000	0.082
									Subtotal	0.219
									Civilian Subtotal	**3.134**
Military Operations										
CH-47D	Arrival	33	100%	33VOR	47_33A2	95%	5%	0.547	0.029	0.575
	Closed Pattern		100%	33GCA	47_33GCA			0.547	0.029	0.575
	Departure		100%	rwy33D	47_33D2			0.547	0.029	0.575
CH-53E	Arrival	33	100%	33VORH	53_33A			0.078	0.004	0.082
	Closed Pattern		100%	33GCA	53_33GCA			0.078	0.004	0.082
	Departure		100%	33D3	53_33D			0.078	0.004	0.082
									Subtotal	1.973
CH-47D Paratrooper Training	Arrival	15	47%	rwy15A	47_15A	100%	0%	0.013	0.000	0.013
		33	53%	rwy33A	47_33A1			0.015	0.000	0.015
	Closed Pattern	15	47%	15para	47_15PD5k			0.052	0.000	0.052
				15para	47_15PD150			0.052	0.000	0.052
		33	53%	33para	47_33PD5k			0.058	0.000	0.058
				33para	47_33PD150			0.058	0.000	0.058
	Departure	15	47%	rwy15D	47_15D			0.013	0.000	0.013
		33	53%	rwy33D	47_33D1			0.015	0.000	0.015
									Subtotal	0.274
CASA 212 Paratrooper Training	Arrival	15	47%	rwy15A	C_15A	100%	0%	0.003	0.000	0.003
		33	53%	rwy33A	C_33A			0.003	0.000	0.003
	Closed Pattern	15F	47%	15para_2	C_15PD5k			0.010	0.000	0.010
		15F		15para_2	C_15PD1500			0.010	0.000	0.010
		33F	53%	33para_2	C_33PD5k			0.012	0.000	0.012
		33F		33para_2	C_33PD1500			0.012	0.000	0.012
	Departure	15	47%	rwy15D	C_15D			0.003	0.000	0.003
		33	53%	rwy33D	C_33D			0.003	0.000	0.003
									Subtotal	0.052
									Military Subtotal	**2.298**
									Grand Total	**5.433**

3.1.4 Flight Profiles

Flight profile descriptions vary between fixed-wing and rotary-wing aircraft. For fixed-wing aircraft, a flight profile consists of changes in aircraft power settings, altitudes above mean sea level, and airspeeds at defined points along a given flight track. For rotary-wing aircraft, a flight profile consists of changes in altitudes, airspeeds, and roll, pitch, and yaw angles along a given flight track. For this analysis, CH-47D

operations were modeled using NOISEMAP, and CH-53E operations were modeled using RNM. This is because of the limited source noise data for the CH-47D available within RNM.

For this study, the following NOISEMAP sources were used for the various aircraft groups listed in Table 3-2:

Aircraft Group	NOISEMAP Source
Single Engine	GASEPV VAR PTCH
Twin Engine	T-44
Business Jet	C-21A
CH-47D	CH47D
CASA 212	C-23

These aircraft are acoustically representative of the various types of aircraft that operate at Emporia. The modeled flight profiles for these representative aircraft are based on similar profiles from previous NOISEMAP and RNM analyses.

3.1.5 Noise Exposure

Using the data described in Sections 3.1.1 through 3.1.4, NOISEMAP 7 and RNM were used to calculate the DNL contours for the average daily operations for baseline conditions. Figure 3-5 provides a plot of the 65 dBA DNL contours for the baseline conditions. The noise exposure of baseline condition at Emporia is small because of the low number of flight operations and the types of aircraft that operate at the facility. The calculated DNL values on the grid barely register above 65 dBA at only two points along the runway.

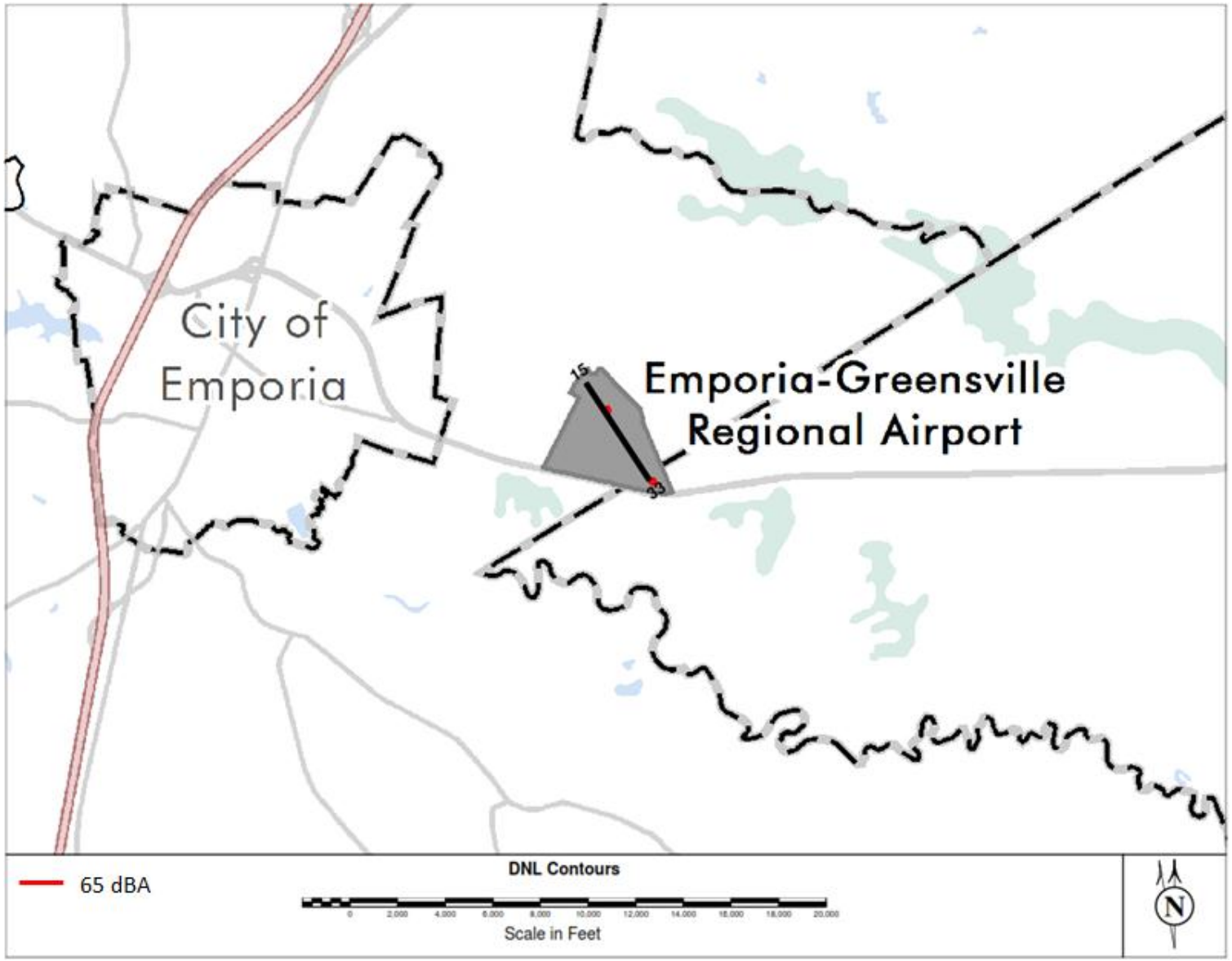


Figure 3-5. Baseline DNL Contours for CY2011 Operations at Emporia

3.2 Wallops Flight Facility Baseline Conditions

Fixed-wing aircraft are the primary type of aircraft utilizing WFF. Rotary-wing aircraft do operate at the facility but at significantly lower operational rates. Most of the information on current operations was collected during a site visit to the airfield and through follow up emails.[12]

3.2.1 Annual Flight Operations

The current fixed-wing aircraft operations are composed of a mix of based and transient aircraft. NASA has two primary based aircraft: Super King Air and P-3C, whereas other NASA aircraft operate at the field as transients. These transients are generally transports such as a B-737 aircraft. Various military groups utilized the airfield for pattern training. These aircraft include E-2s, C-2s, P-3Cs, A-10As, F-15s, C-40s, and F-18s. Of all of the different aircraft groups, the existing E-2/C-2 aircraft perform the largest number of operations at the airfield. Table 3-3 provides the annual airfield operations for CY 2011 at WFF based on their control tower air traffic count report for 2011.[13]

Table 3-3. Annual Airfield Operations at Wallops Flight Facility for CY 2011

	Departures	Arrivals	Pattern	Total
Civilian Aircraft				
NASA	157	157	-	313
Misc.	94	94	-	188
			Subtotal Civilian Operations	**501**
Military Aircraft				
U.S. Navy	789	789	9,471	11,050
Maryland Air National Guard	55	55	662	772
U.S. Air Force	48	48	574	670
Army & Coast Guard	41	41	-	81
			Subtotal Military Operations	12,573
			Total	**13,074**

3.2.2 Flight Tracks

The current flight tracks for WFF follow some basic rules because of the restricted airspace east of the airfield. All departures are turned to the west as shown in Figure 3-6. In addition, most of the arrival tracks flow out of the west upon initial arrival to the airfield as shown in Figure 3-7. The closed pattern tracks are touch-and-go patterns and are shown in Figure 3-9.

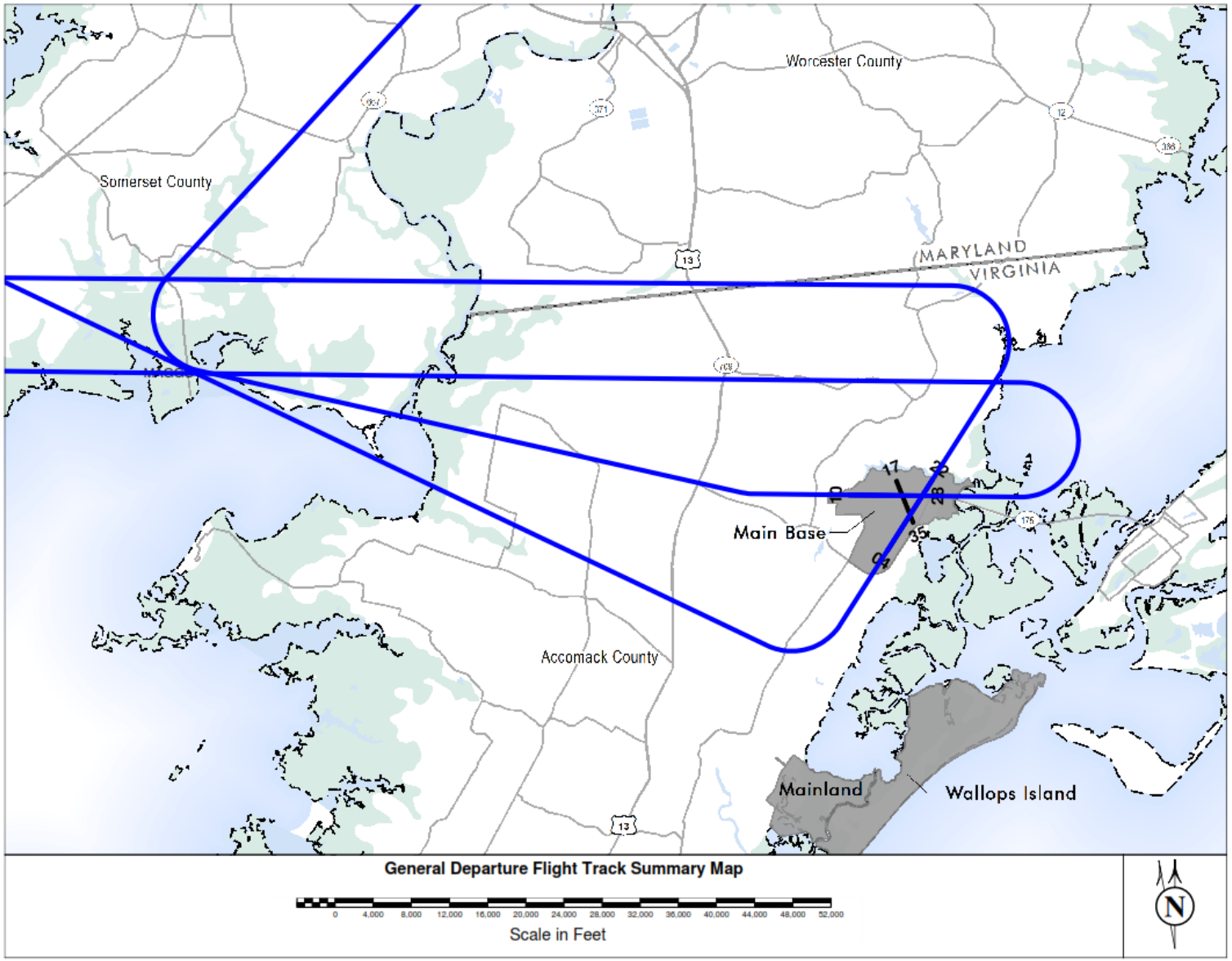


Figure 3-6. Modeled Departure Flight Tracks for Current Operations at Wallops Flight Facility

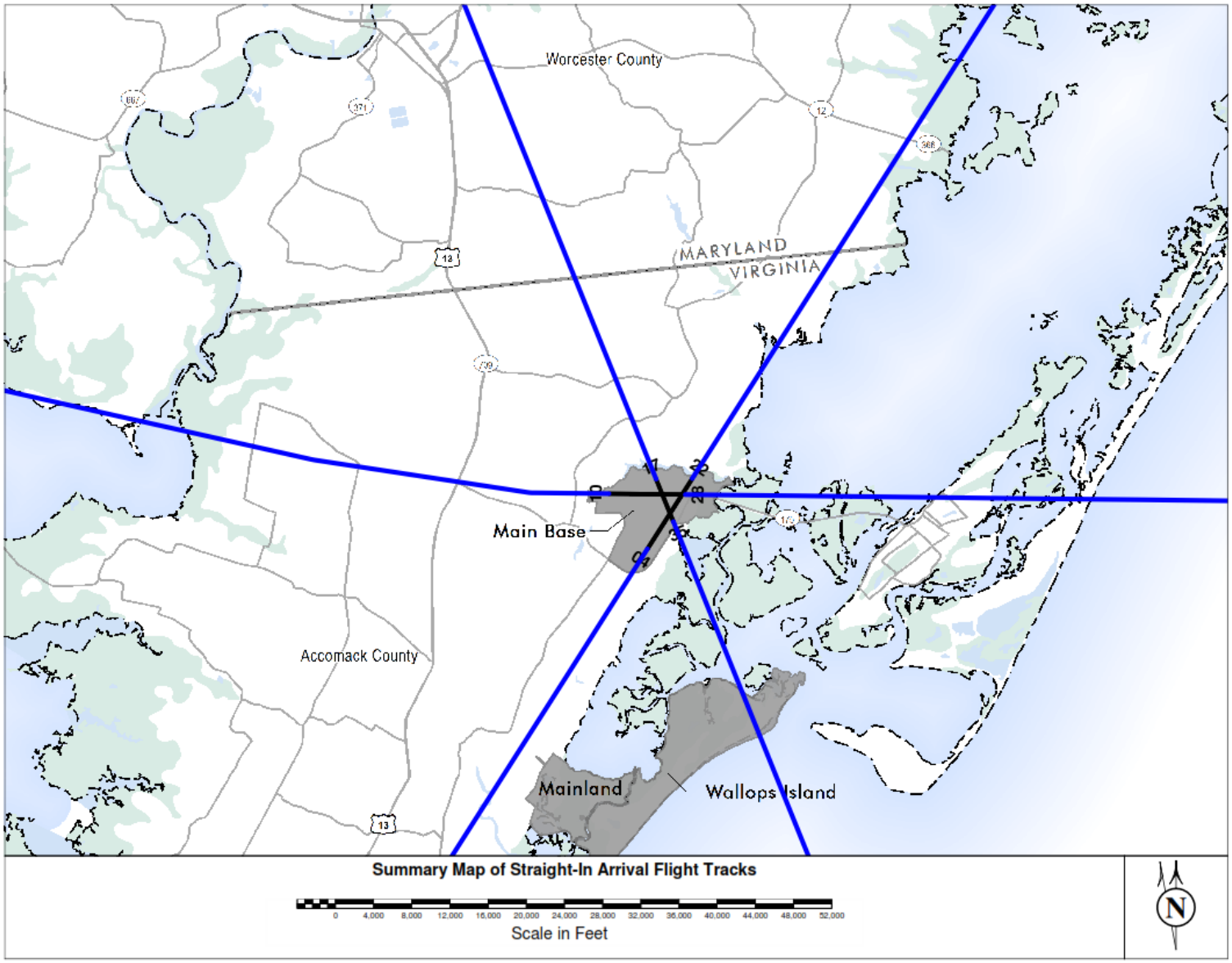


Figure 3-7. Modeled Straight-In Arrival Flight Tracks for Current Operations at Wallops Flight Facility

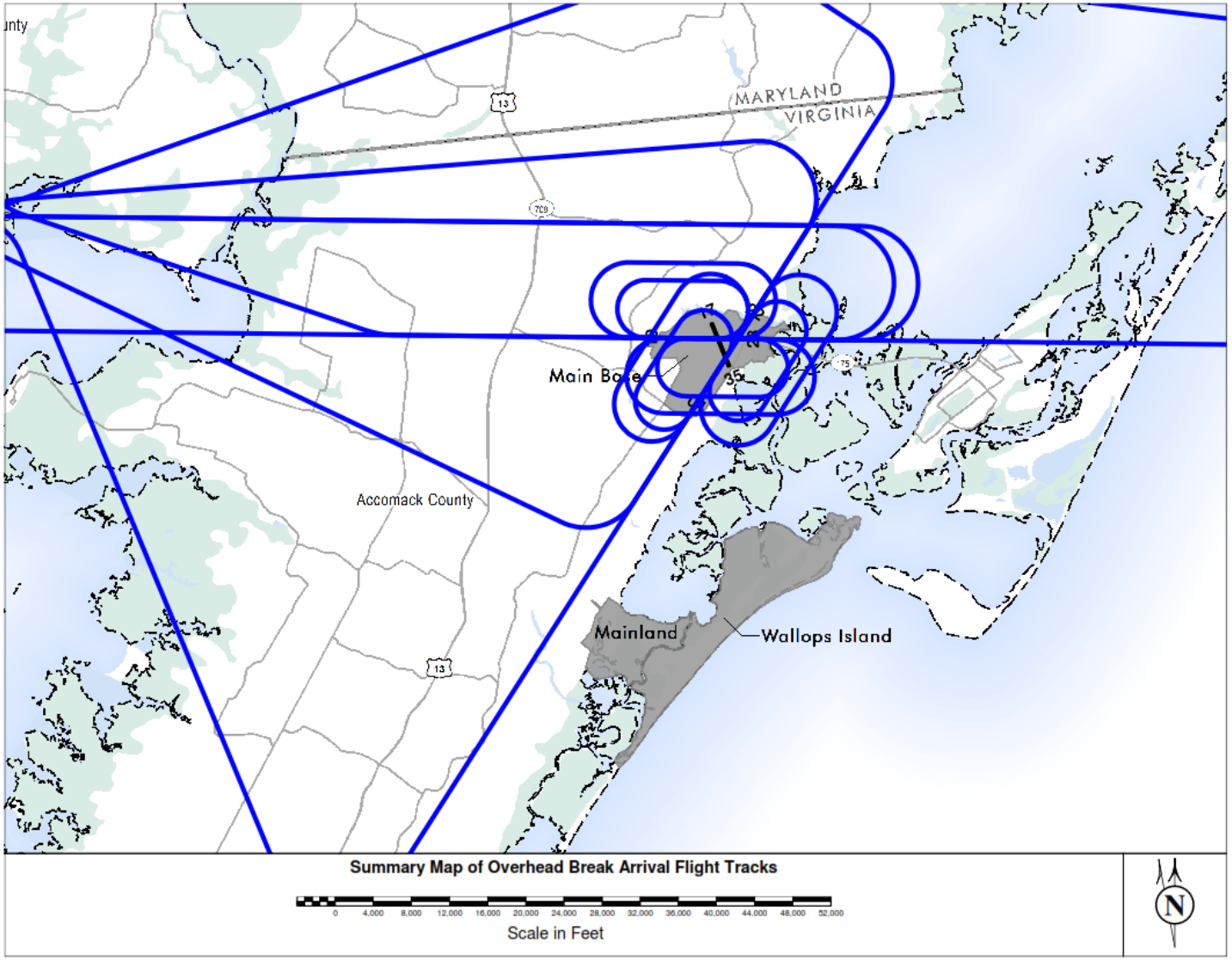


Figure 3-8. Modeled Overhead Arrival Flight Tracks for Current Operations at Wallops Flight Facility

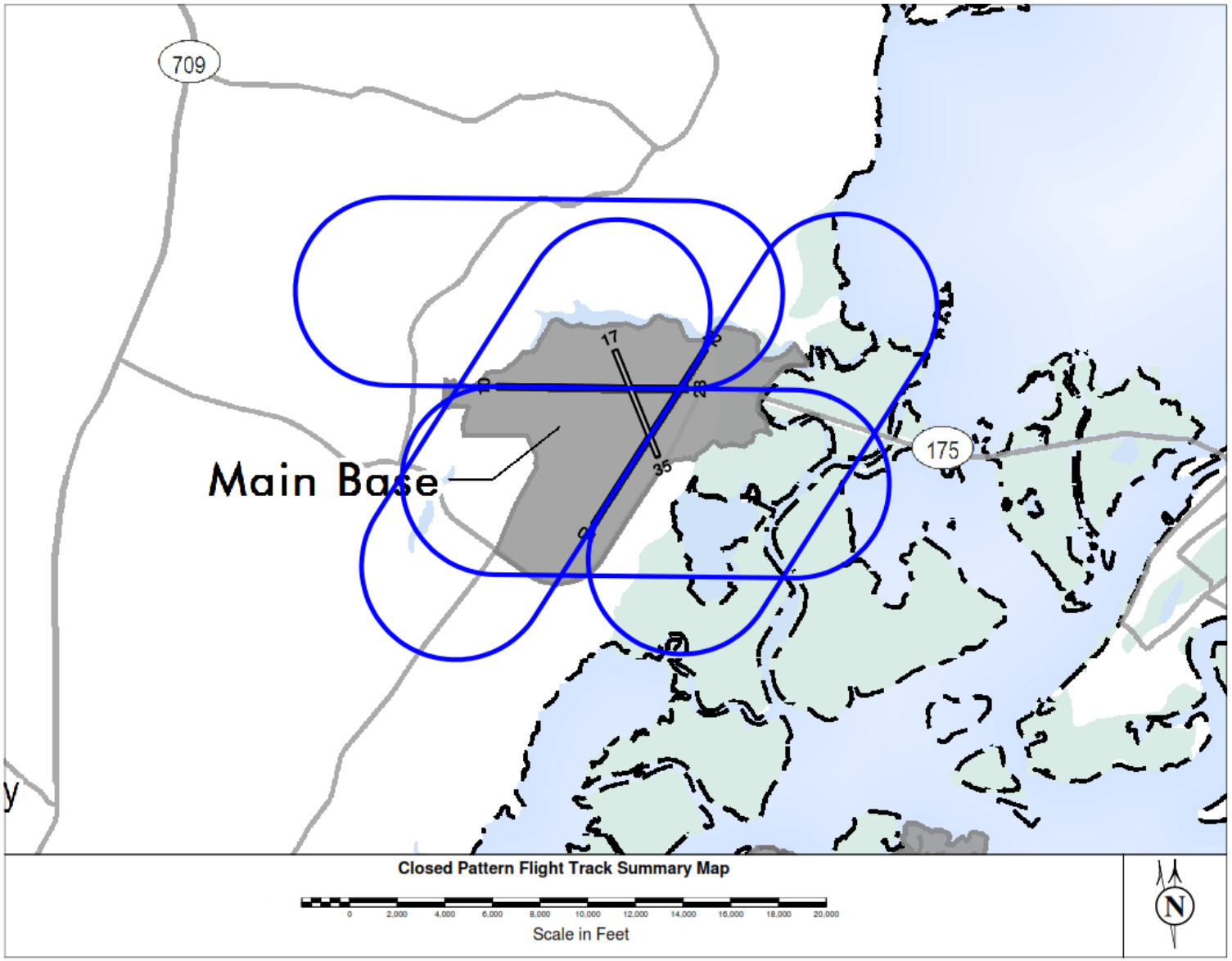


Figure 3-9. Modeled Closed Pattern Flight Tracks for Current Operations at Wallops Flight Facility

3.2.3 Average Daily Operational Distributions

The next step is to distribute the operations among the flight tracks based on the operational type frequencies and runway utilizations. For the military training operations, the aircraft are primarily E-2/C-2s, A-10As, F/A-18C/Ds, and F/A-18E/Fs, and they average six patterns for each sortie. Using these operational parameters, the annual operations for current conditions at WFF were computed and are provided in Table 3-3.

The runway utilization for these aircraft operations are 11% for Runway 04, 26% for Runway 10, 24% for Runway 22, and 39% for Runway 28.[14] Current operations at WFF are only conducted during daylight hours. Thus, the split for acoustic day (0700-2200)/acoustic night (2200-0700) is 100%/0%. Combining these factors together, the average annual tempo of daily flight operations were computed and are provided in Table 3-4.

3.2.4 Flight Profiles

For WFF, the following NOISEMAP sources are used for the various aircraft groups listed in Table 3-4:

Aircraft Group	NOISEMAP Source
A-10A	A-10A
Super King Air	C-12
Transport	C-40 (737-700C)
E-2/C-2	E-2C
Jet Fighter	F/A-18E
P-3C	P-3C

These aircraft are acoustically representative of the various types of aircraft that operate at WFF. The modeled flight profiles for these representative aircraft are based on similar profiles from previous NOISEMAP analyses.

Table 3-4. Average Annual Daily Events for Wallops Flight Facility

Aircraft	Track Type	Runway		Track ID	Profile			Average Annual Day Events		
		ID	Utilization		ID	% Day	% Night	Acoustic Day (0700 to 2200)	Acoustic Night (2200 to 0700)	Total
A-10A	Arrival	04	11%	04A1	A10_A04	100%	0%	0.008	0.000	0.008
		10	26%	10A1	A10_A10	100%	0%	0.019	0.000	0.019
		22	24%	22A1	A10_A22	100%	0%	0.018	0.000	0.018
		28	39%	28A1	A10_A28	100%	0%	0.028	0.000	0.028
	Closed Pattern	04	10%	04T1	A10_T04	100%	0%	0.046	0.000	0.046
		10	26%	10T1	A10_T10	100%	0%	0.114	0.000	0.114
		22	24%	22T1	A10_T22	100%	0%	0.107	0.000	0.107
		28	39%	28T1	A10_T28	100%	0%	0.170	0.000	0.170
	Departure	04	11%	04D3	A10_D04	100%	0%	0.008	0.000	0.008
		10	26%	10D3	A10_D10	100%	0%	0.019	0.000	0.019
		22	24%	22D3	A10_D22	100%	0%	0.018	0.000	0.018
		28	39%	28D3	A10_D28	100%	0%	0.028	0.000	0.028
									Subtotal	0.582
Super King Air	Arrival	04	11%	04A1	C12_A04	100%	0%	0.061	0.000	0.061
		10	26%	10A1	C12_A10	100%	0%	0.144	0.000	0.144
		22	24%	22A1	C12_A22	100%	0%	0.132	0.000	0.132
		28	39%	28A1	C12_A28	100%	0%	0.215	0.000	0.215
	Departure	04	11%	04D3	C12_D04	100%	0%	0.061	0.000	0.061
		10	26%	10D3	C12_D10	100%	0%	0.144	0.000	0.144
		22	24%	22D3	C12_D22	100%	0%	0.132	0.000	0.132
		28	39%	28D3	C12_D28	100%	0%	0.215	0.000	0.215
									Subtotal	1.104
Transport	Arrival	04	11%	04A1	C40_A04	100%	0%	0.118	0.000	0.118
		10	26%	10A1	C40_A10	100%	0%	0.279	0.000	0.279
		22	24%	22A1	C40_A22	100%	0%	0.258	0.000	0.258
		28	39%	28A1	C40_A28	100%	0%	0.419	0.000	0.419
	Departure	04	11%	04D3	C40_D04	100%	0%	0.118	0.000	0.118
		10	26%	10D3	C40_D10	100%	0%	0.279	0.000	0.279
		22	24%	22D3	C40_D22	100%	0%	0.258	0.000	0.258
		28	39%	28D3	C40_D28	100%	0%	0.419	0.000	0.419
									Subtotal	2.148
E-2/C-2	Arrival	04	11%	N04O1	E2_A04_BL	100%	0%	0.147	0.000	0.147
		10	26%	N10O1	E2_A10_BL	100%	0%	0.348	0.000	0.348
		22	24%	N22O1	E2_A22_BL	100%	0%	0.322	0.000	0.322
		28	39%	N28O1	E2_A28_BL	100%	0%	0.523	0.000	0.523
	Closed Pattern	04	11%	04T1	E2_T04a_BL	60%	0%	0.531	0.000	0.531
				04T1	E2_T04b_BL	40%	0%	0.354	0.000	0.354
		10	26%	10T1	E2_T10a_BL	60%	0%	1.254	0.000	1.254
				10T1	E2_T10b_BL	40%	0%	0.836	0.000	0.836
		22	24%	22T1	E2_T22a_BL	60%	0%	1.158	0.000	1.158
				22T1	E2_T22b_BL	40%	0%	0.772	0.000	0.772
		28	39%	28T1	E2_T28a_BL	60%	0%	1.882	0.000	1.882
				28T1	E2_T28b_BL	40%	0%	1.254	0.000	1.254
	Departure	04	11%	N04D2	E2_D04_BL	100%	0%	0.147	0.000	0.147
		10	26%	N10D2	E2_D10_BL	100%	0%	0.348	0.000	0.348
		22	24%	N22D2	E2_D22_BL	100%	0%	0.322	0.000	0.322
		28	39%	N28D2	E2_D28_BL	100%	0%	0.523	0.000	0.523
									Subtotal	10.721
Jet Fighter	Arrival	04	11%	P04O1	F18_O04	100%	0%	0.020	0.000	0.020
		10	26%	P10O1	F18_O10	100%	0%	0.046	0.000	0.046
		22	24%	P22O1	F18_O22	100%	0%	0.043	0.000	0.043
		28	39%	P28O1	F18_O28	100%	0%	0.069	0.000	0.069
	Closed Pattern	04	11%	04T1	F18_T04	100%	0%	0.117	0.000	0.117
		10	26%	10T1	F18_T10	100%	0%	0.277	0.000	0.277
		22	24%	22T1	F18_T22	100%	0%	0.255	0.000	0.255
		28	39%	28T1	F18_T28	100%	0%	0.415	0.000	0.415
	Departure	04	11%	P04D2	F18_D04	100%	0%	0.020	0.000	0.020
		10	26%	P10D2	F18_D10	100%	0%	0.046	0.000	0.046
		22	24%	P22D2	F18_D22	100%	0%	0.043	0.000	0.043
		28	39%	P28D2	F18_D28	100%	0%	0.069	0.000	0.069
									Subtotal	1.418
P-3C	Arrival	04	11%	04A1	P3_A04	100%	0%	0.439	0.000	0.439
		10	26%	10A1	P3_A10	100%	0%	1.038	0.000	1.038
		22	24%	22A1	P3_A22	100%	0%	0.958	0.000	0.958
		28	39%	28A1	P3_A28	100%	0%	1.557	0.000	1.557
	Departure	04	11%	04D3	P3_D04	100%	0%	0.439	0.000	0.439
		10	26%	10D3	P3_D10	100%	0%	1.038	0.000	1.038
		22	24%	22D3	P3_D22	100%	0%	0.958	0.000	0.958
		28	39%	28D3	P3_D28	100%	0%	1.557	0.000	1.557
									Subtotal	7.984
									Grand Total	23.957

3.2.5 Noise Exposure

Using the data described in Sections 3.2.1 through 3.2.4, NOISEMAP 7 was used to calculate the DNL contours for the average daily operations for baseline conditions. Figure 3-10 provides a plot of the 65, 70, and 75 dBA DNL contours for the baseline conditions. The 65 dBA contour follows the runways and the touch-and-go patterns. The modeled F/A-18E operations are the primary driver of the contour. It should be noted that contours are a way of showing discrete points of data over a large area. In the process of creating these smooth contours some unexpected artifacts can appear such as small notches or spots. These artifacts are smoothed so that they better represent the actual expected noise levels.

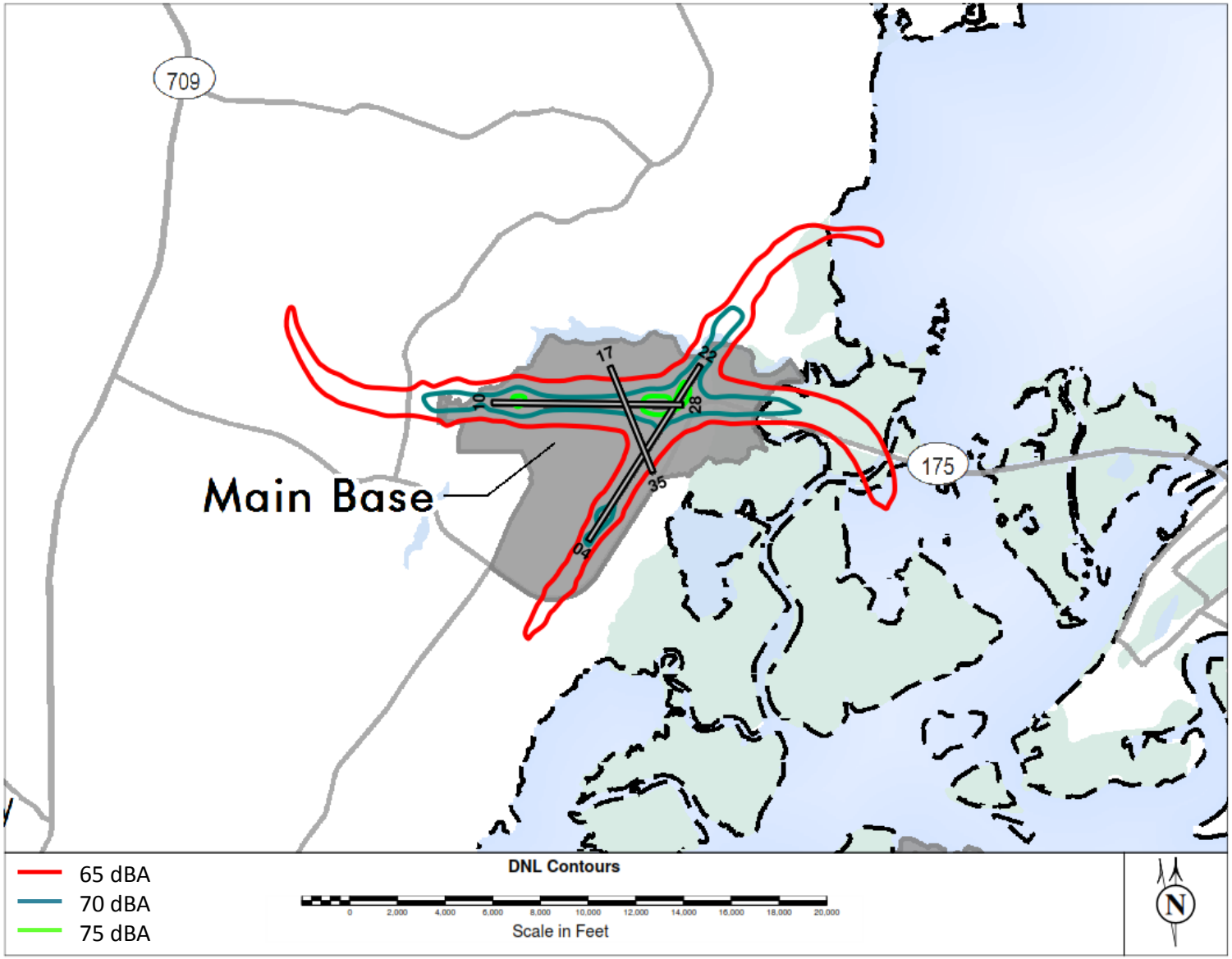


Figure 3-10. Baseline DNL Contours for CY2011 Operations at Wallops Flight Facility

4 Proposed Aircraft Operations and Noise Exposure

The purpose of this section is to describe the two proposed operational alternatives and the associated noise exposure at the two airfields. The first alternative involves all of the E-2/C-2 FCLP training operations occurring at Emporia, and the second is for all of the E-2/C-2 FCLP training operations at WFF. For each alternative, multiple scenarios are analyzed. The basic scenarios involve 3-plane only and 3-and 5-plane mixed FCLP patterns. For Emporia, this split leads to two scenarios. For WFF, the scenarios are also split by the runway pairs. The following is a list of modeled scenarios for this analysis:

Alternative	Scenario	ID
Emporia	All 3-plane FCLP patterns	Alt 1A
	Mix of 3- and 5-plane FCLP patterns	Alt 1B
WFF	All 3-plane FCLP Patterns on Runways 04/22	Alt 2A
	Mix of 3- and 5-plane FCLP patterns on Runways 04/22	Alt 2B
	All 3-plane FCLP Patterns on Runways 10/28	Alt 2C
	Mix of 3- and 5-plane FCLP patterns on Runways 10/28	Alt 2D

The details of the proposed E-2/C-2 flight tracks and flight profiles at Emporia and WFF were developed as a result of discussions with USFF and documented in a modeling parameters report[8] that is provided in Appendix A.

4.1 Alternative 1: Emporia

For this alternative, the operational numbers for the proposed E-2/C-2 operations are provided in Table 4-1 for the 3-plane scenario (Alt 1A) and in Table 4-2 for the mix of 3- and 5-plane scenario (Alt 1B). The day/night split provided in these tables is based on acoustic day (0700 to 2200) and acoustic night (2200 to 0700). For Alt 1B, the mix of 3- and 5-plane FCLP patterns is 33.3% 3-plane and 66.7% 5-plane. For both of these scenarios the overall number of annual operations is up to 45,000. The proposed operations include runway utilizations based on historical wind data for the airfield, which are different from the utilizations currently in use. For the proposed operations, the runway utilization is 47% on Runway 15 and 53% on Runway 33 based on historical wind data. No full stop landings or departures were modeled for the E-2/C-2 operations at Emporia. For both of these scenarios, all other aircraft operations are assumed constant between the baseline and proposed scenarios.

Figure 4-1 shows the proposed E-2/C-2 arrival flight tracks to Emporia. Figure 4-2 shows the departure tracks for E-2/C-2 operations from Emporia. The 3-plane and 5-plane FCLP flight tracks are provided in Figure 4-3 and Figure 4-4. For the Crew Swap Pattern (see Figure 4-5 for an example), the model includes both the hold pattern and the initial FCLP for the new pilot.

Table 4-1. Average Annual Daily Operations for proposed E-2/C-2 at Emporia for Alt 1A

Aircraft	Track Type	Runway		Track ID	Profile			Average Annual Day Events		
								Acoustic Day	Acoustic Night	Total
		ID	Utilization		ID	% Day	% Night	(0700 to 2200)	(2200 to 0700)	
E-2/C-2	Arrival	15	47%	15O1	E2_15O	89.55%	10.45%	0.649	0.076	0.724
		33	53%	33O1	E2_33O	89.55%	10.45%	0.731	0.085	0.817
	FCLP	15	47%	15SW	E2_15CS	89.55%	10.45%	2.594	0.303	2.897
		15	47%	15F3	E2_15F3	89.55%	10.45%	22.702	2.649	25.351
		33	53%	33SW	E2_33CS	89.55%	10.45%	2.926	0.341	3.267
		33	53%	33F3	E2_33F3	89.55%	10.45%	25.600	2.987	28.587
	Departure	15	47%	15D2	E2_15D2	89.55%	10.45%	0.649	0.076	0.724
		33	53%	33D2	E2_33D2	89.55%	10.45%	0.731	0.085	0.817
									Subtotal	63.185

Table 4-2. Average Annual Daily Operations for proposed E-2/C-2 at Emporia for Alt 1B

Aircraft	Track Type	Runway		Track ID	Profile			Average Annual Day Events		
								Acoustic Day	Acoustic Night	Total
		ID	Utilization		ID	% Day	% Night	(0700 to 2200)	(2200 to 0700)	
E-2/C-2	Arrival	15	47%	15O1	E2_15O	89.55%	10.45%	0.757	0.088	0.845
		33	53%	33O1	E2_33O	89.55%	10.45%	0.854	0.100	0.953
	FCLP	15	3%	15SW	E2_15CS	89.55%	10.45%	2.486	0.290	2.776
		15	22%	15F3	E2_15F3	89.55%	10.45%	7.560	0.882	8.442
		15	22%	15F5	E2_15F5	89.55%	10.45%	15.142	1.767	16.909
		33	3%	33SW	E2_33CS	89.55%	10.45%	2.803	0.327	3.130
		33	25%	33F3	E2_33F3	89.55%	10.45%	8.525	0.995	9.520
		33	25%	33F5	E2_33F5	89.55%	10.45%	17.075	1.993	19.068
	Departure	15	47%	15D2	E2_15D2	89.55%	10.45%	0.757	0.088	0.845
		33	53%	33D2	E2_33D2	89.55%	10.45%	0.854	0.100	0.953
									Subtotal	63.441

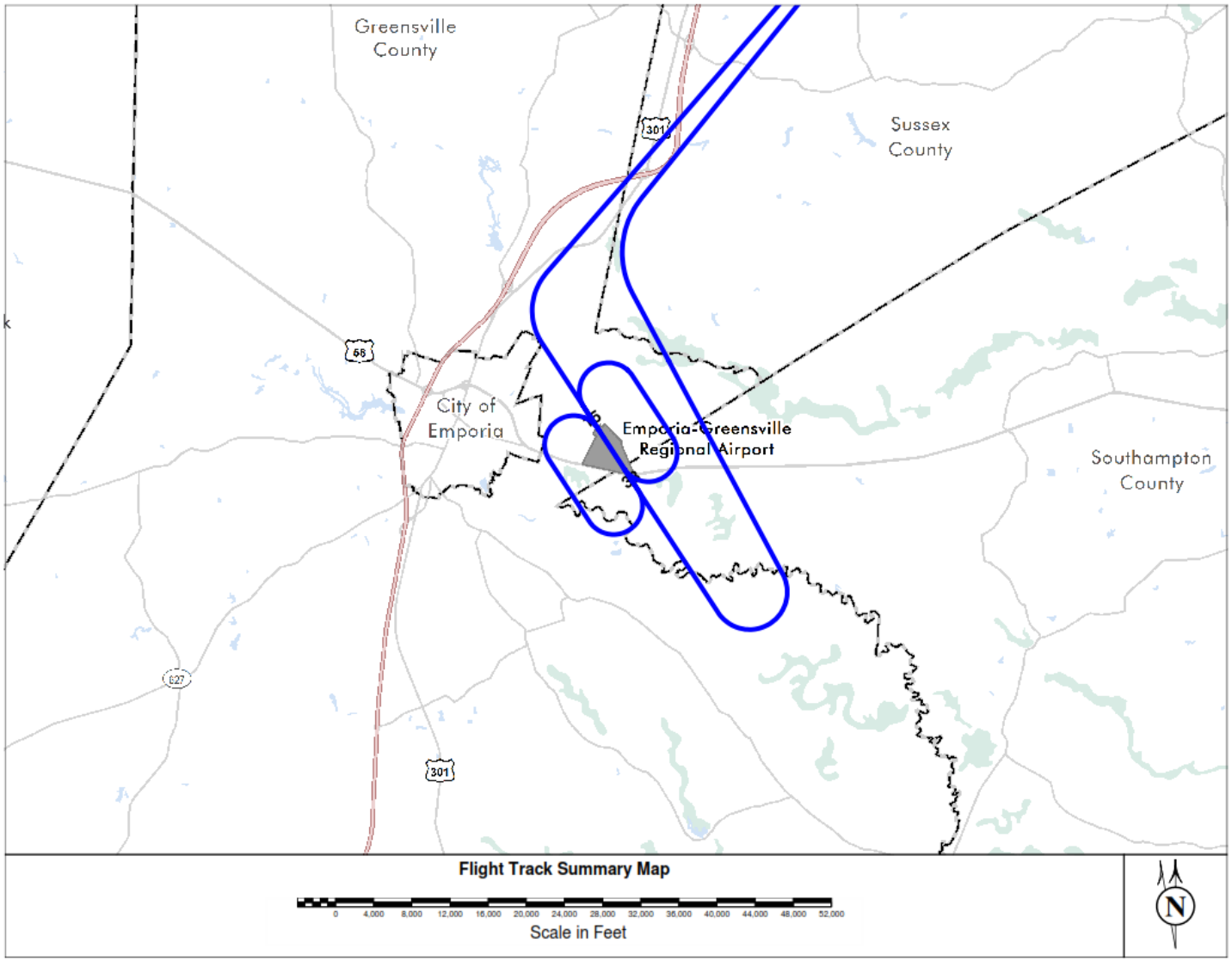


Figure 4-1. Modeled Proposed Arrival Flight Tracks for E-2/C-2 Operations at Emporia

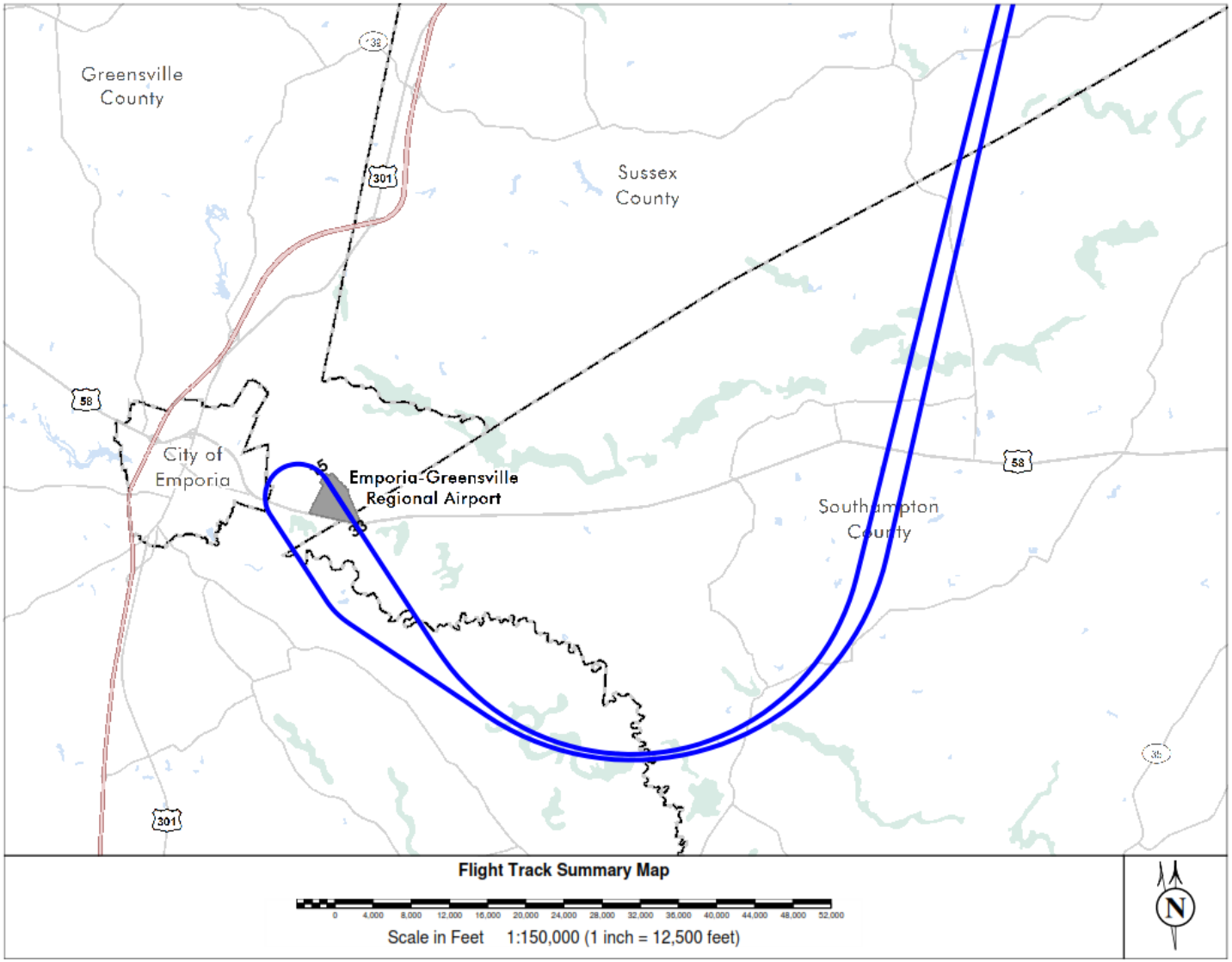


Figure 4-2. . Modeled Proposed Departure Flight Tracks for E-2/C-2 Operations at Emporia

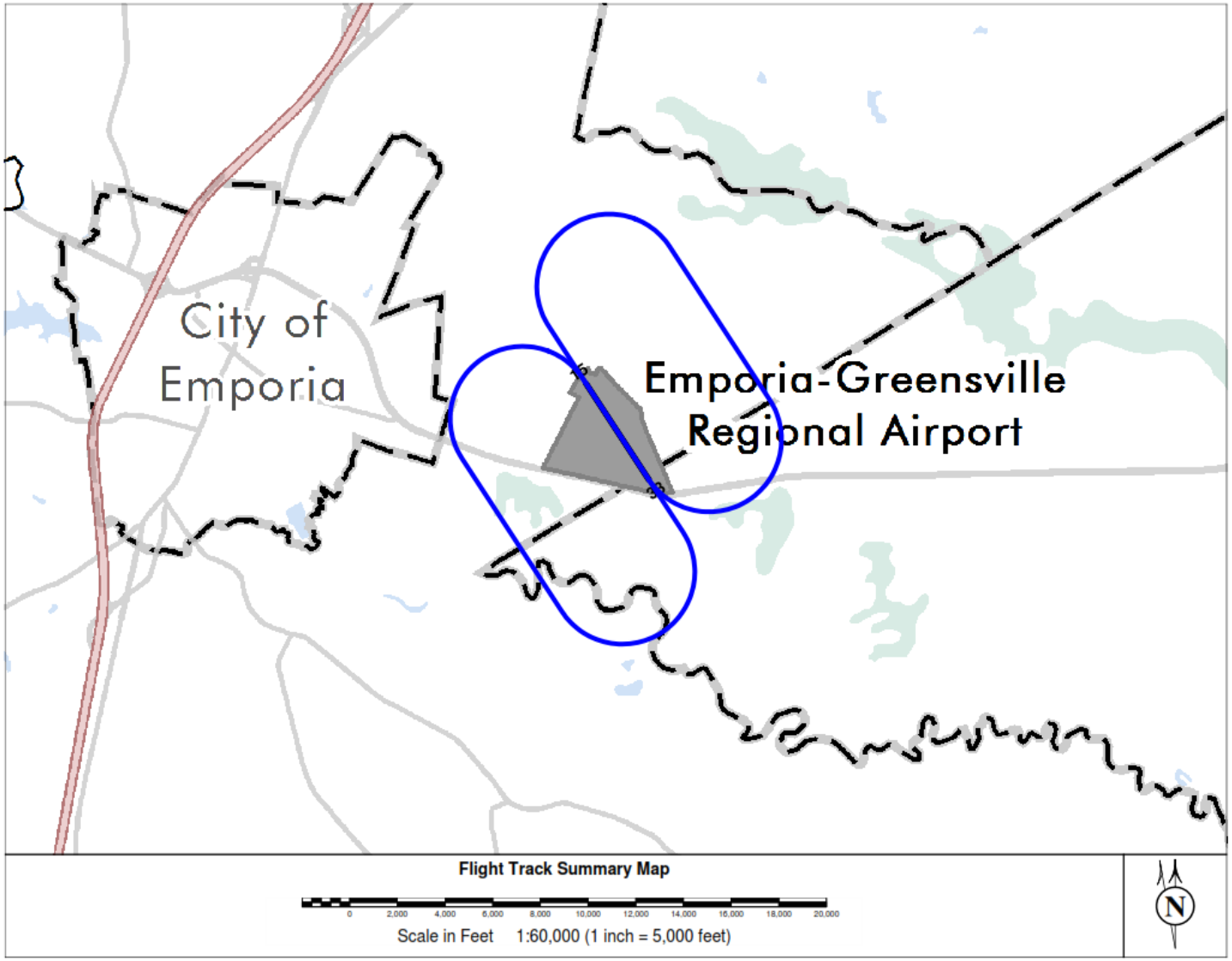


Figure 4-3. Modeled Proposed 3-Plane FCLP Flight Tracks for E-2/C-2 Operations at Emporia

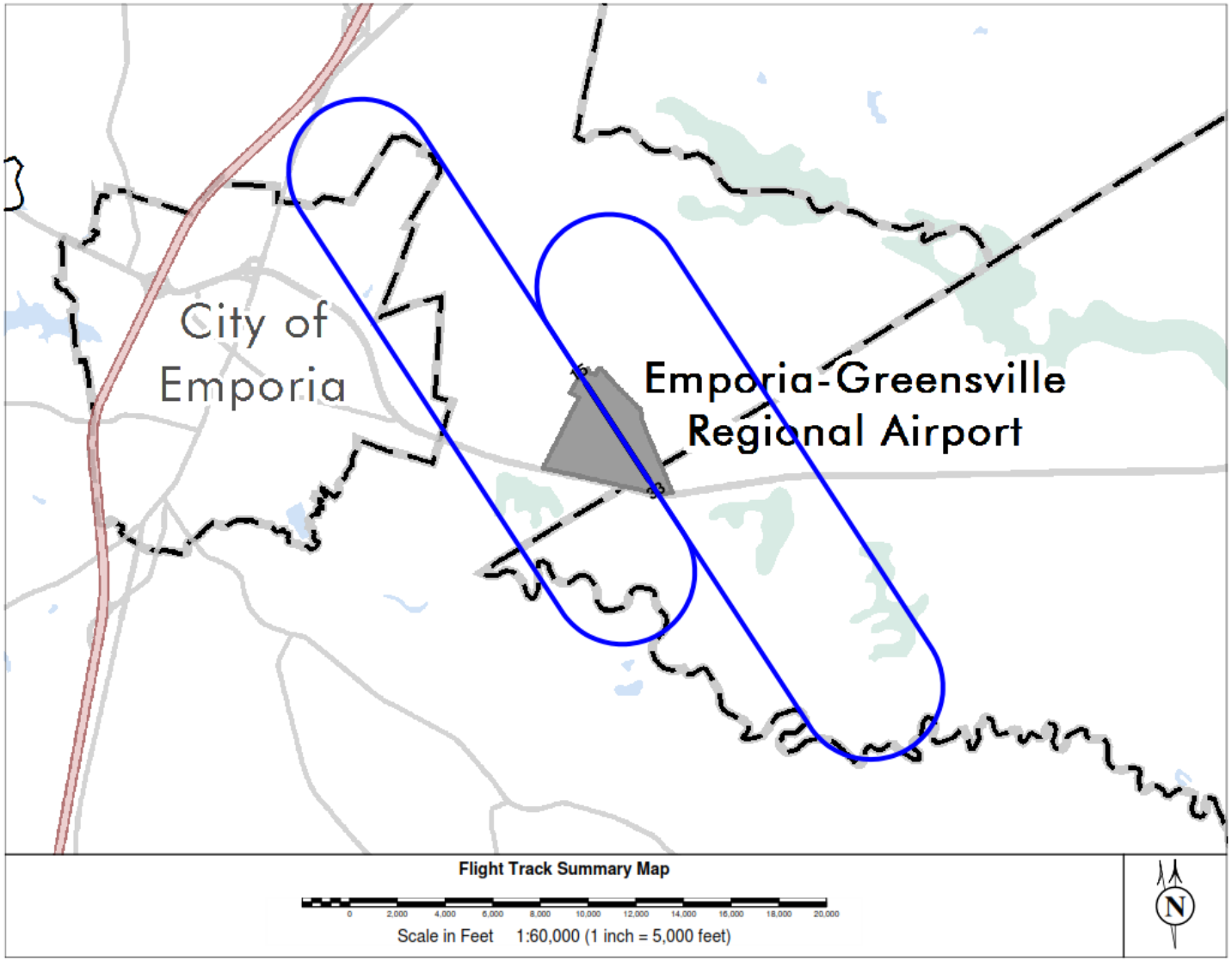


Figure 4-4. . Modeled Proposed 5-Plane FCLP Flight Tracks for E-2/C-2 Operations at Emporia

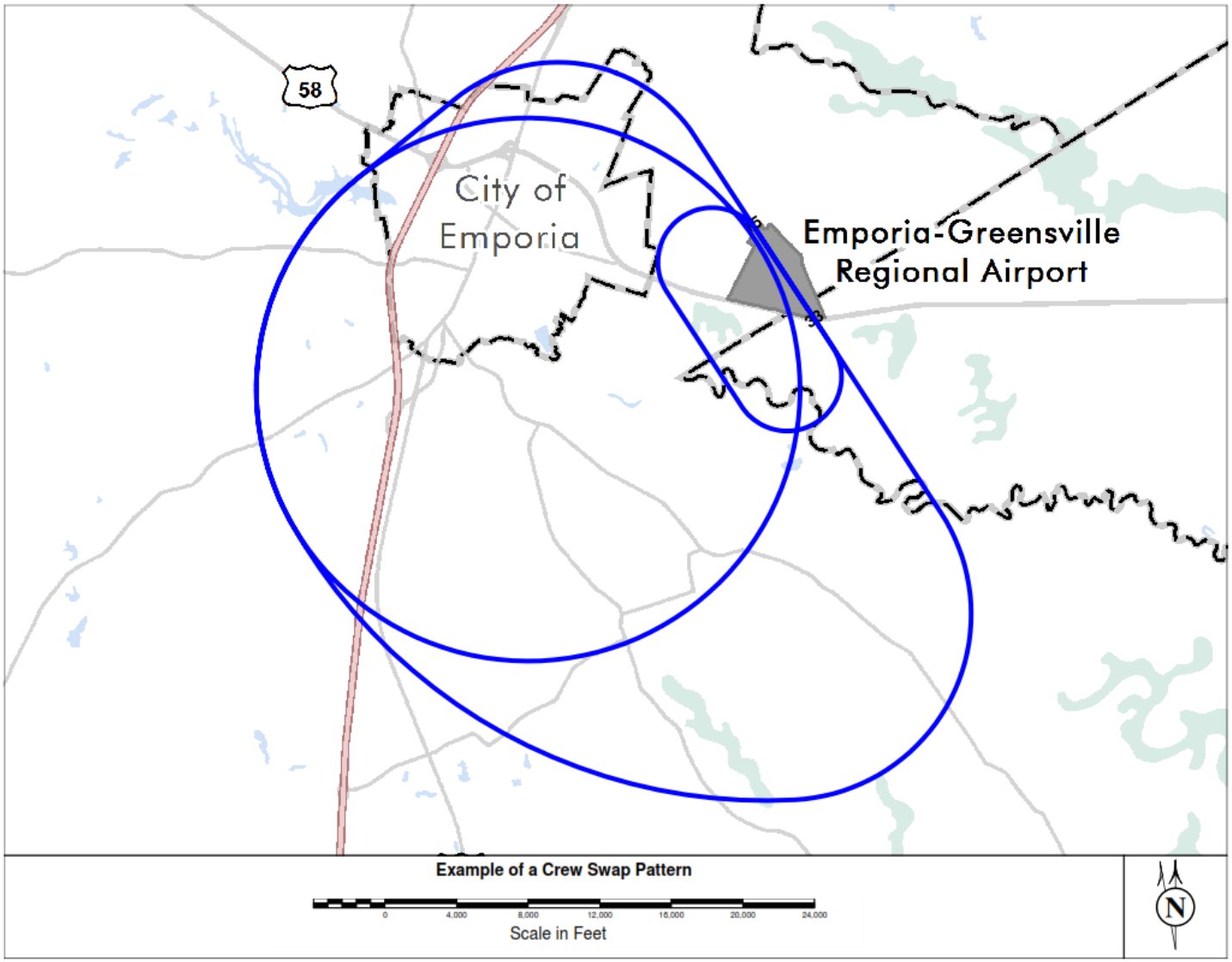


Figure 4-5. Example of Modeled Crew Swap Pattern for E-2/C-2 Operations at Emporia

4.1.1 DNL Noise Contours for Emporia

Adding these proposed E-2/C-2 operations to the baseline case, NOISEMAP 7 was used to calculate the projected DNL contours for the average daily operations for proposed Alt 1A and Alt 1B. Figure 4-6 provides plots of the 65 dB, 70 dB, and 75 dB DNL contours for Alt 1A, and Figure 4-7 provides the same contours for Alt 1B. For both alternatives the 70 dBA DNL and above remain on airport property, and the 65 dBA DNL contour has extended lobes along the runway heading. These lobes are controlled by the upwind and downwind segments of the FCLP pattern. For Alterative 1B, the lobes extend slightly further away from the runways because of the extended upwind segment of the FCLP for the 5-plane pattern. Figure 4-8 provides a comparison of the 65 dBA DNL for these two alternatives, and shows the lobe extension for Alternative 1B. This comparison also shows that the width of the two contours is the same.

4.1.2 Points of Interest for Emporia

In addition to the DNL noise contours, specific noise predictions were calculated at a series of points shown in Figure 4-9. The calculated DNL values at these points are provided in Table 4-3 along with a description and location of each point. The two alternatives do result in increased noise levels for the points close to the airfield. The largest difference between the alternatives is observed at GC-5 (Edward W. Wyatt Middle School) where the difference in DNL is 10 dBA. This results from the point being near the initial downwind leg of the 5-plane FCLP pattern off of Runway 33, but some distance from the 3-plane FCLP pattern.

The top contributors to the DNL at each of these points are provided in Appendix B. These tables identify an individual operation's SEL for that point as well as its contribution to the overall DNL values. Additional details about the operation such as type and distance of the closet point of approach are also listed in the tables. These tables provide a detailed description of the current and projected aircraft noise environment surrounding the airfield.

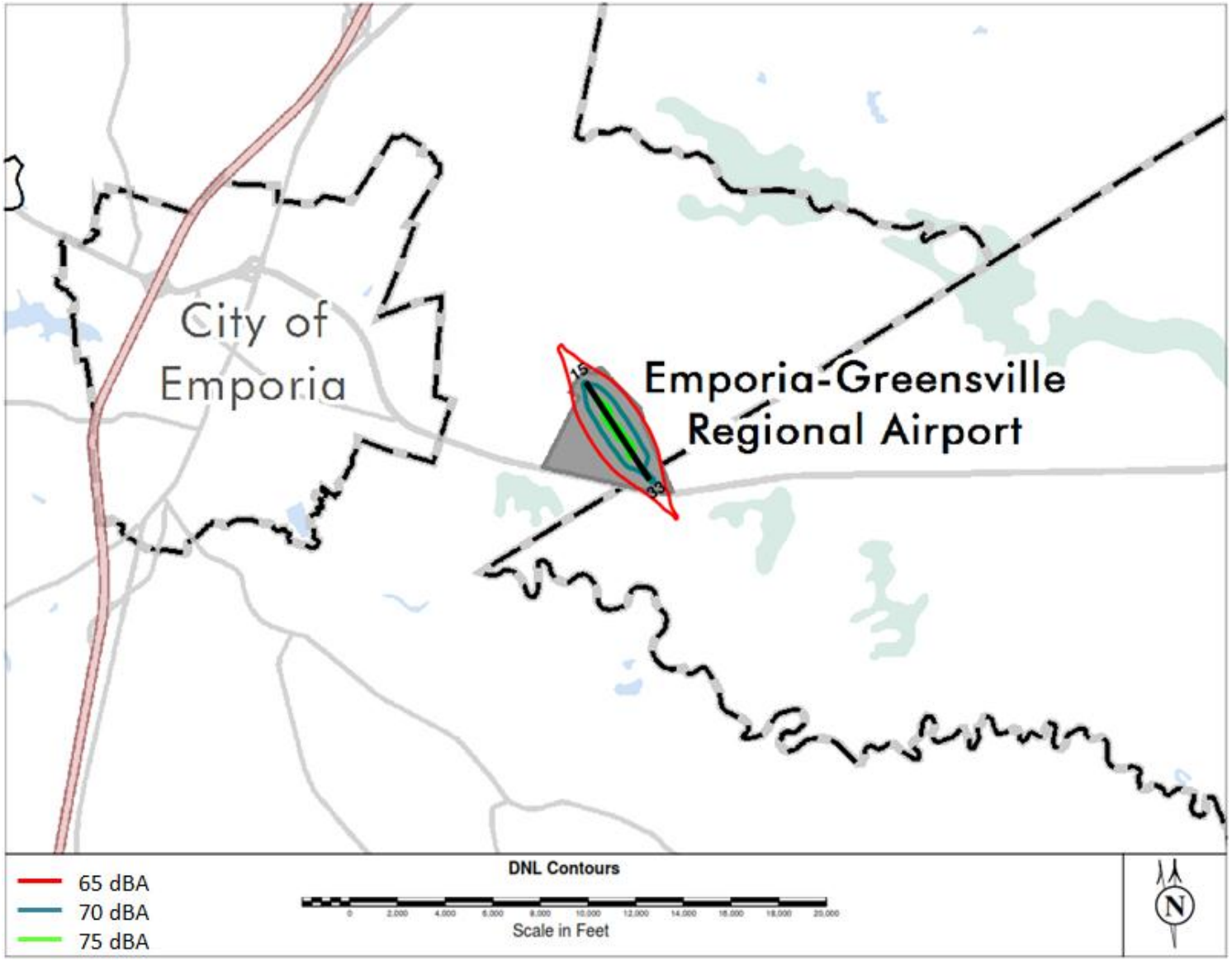


Figure 4-6. DNL Contours for Alternative 1A at Emporia

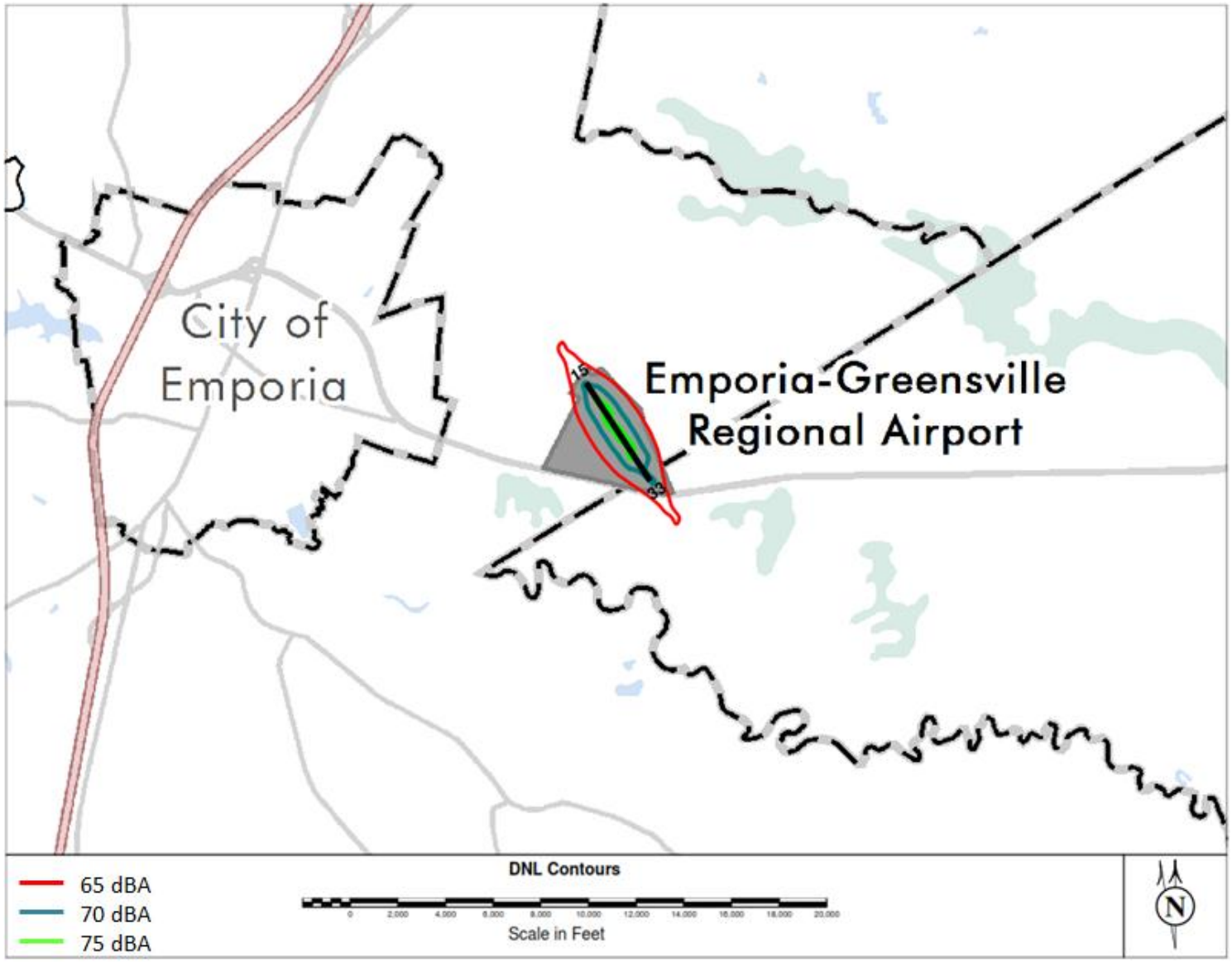


Figure 4-7. DNL Contours for Alternative 1B at Emporia

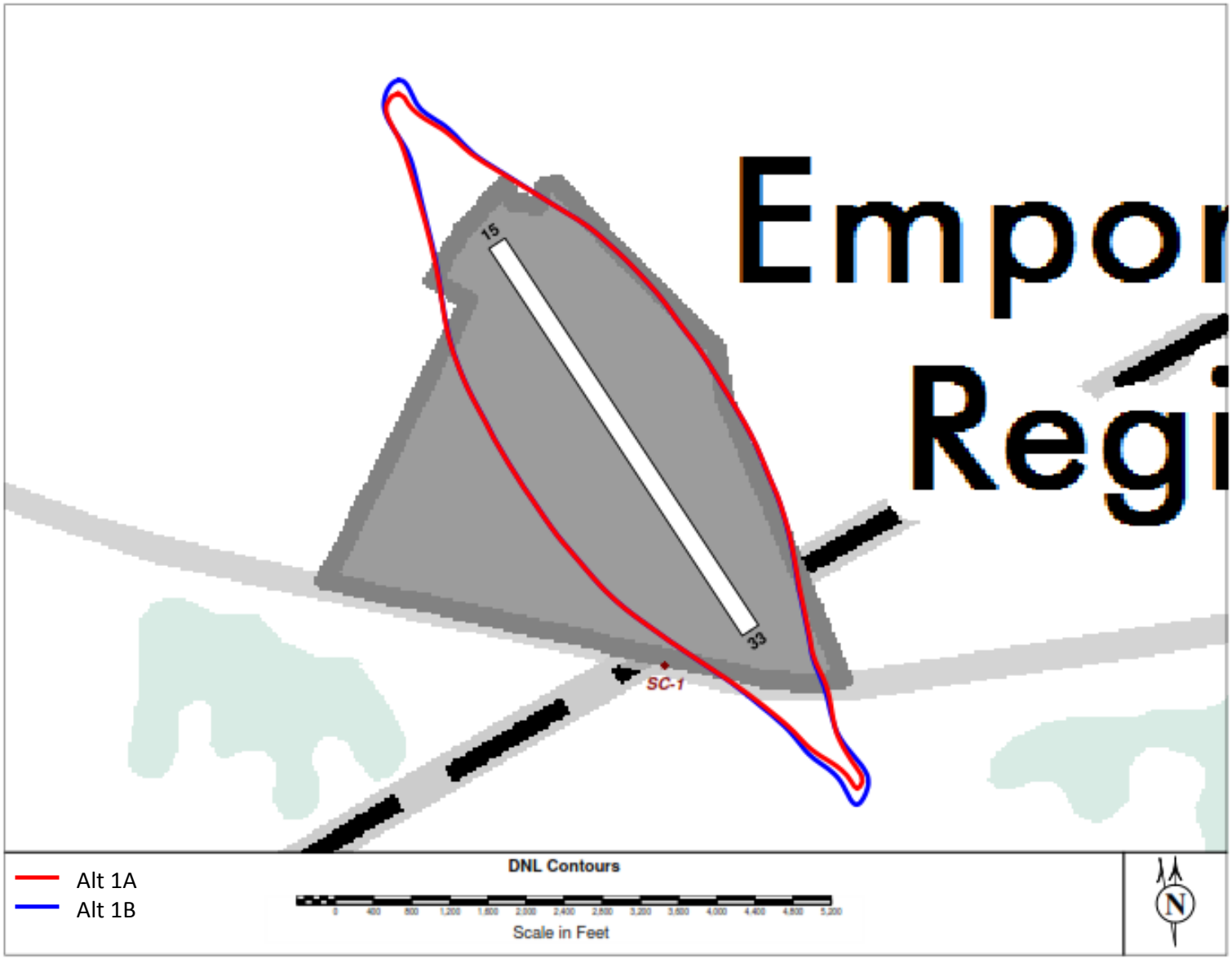


Figure 4-8. Comparison of 65 dBA DNL contours between Alternatives 1A and 1B

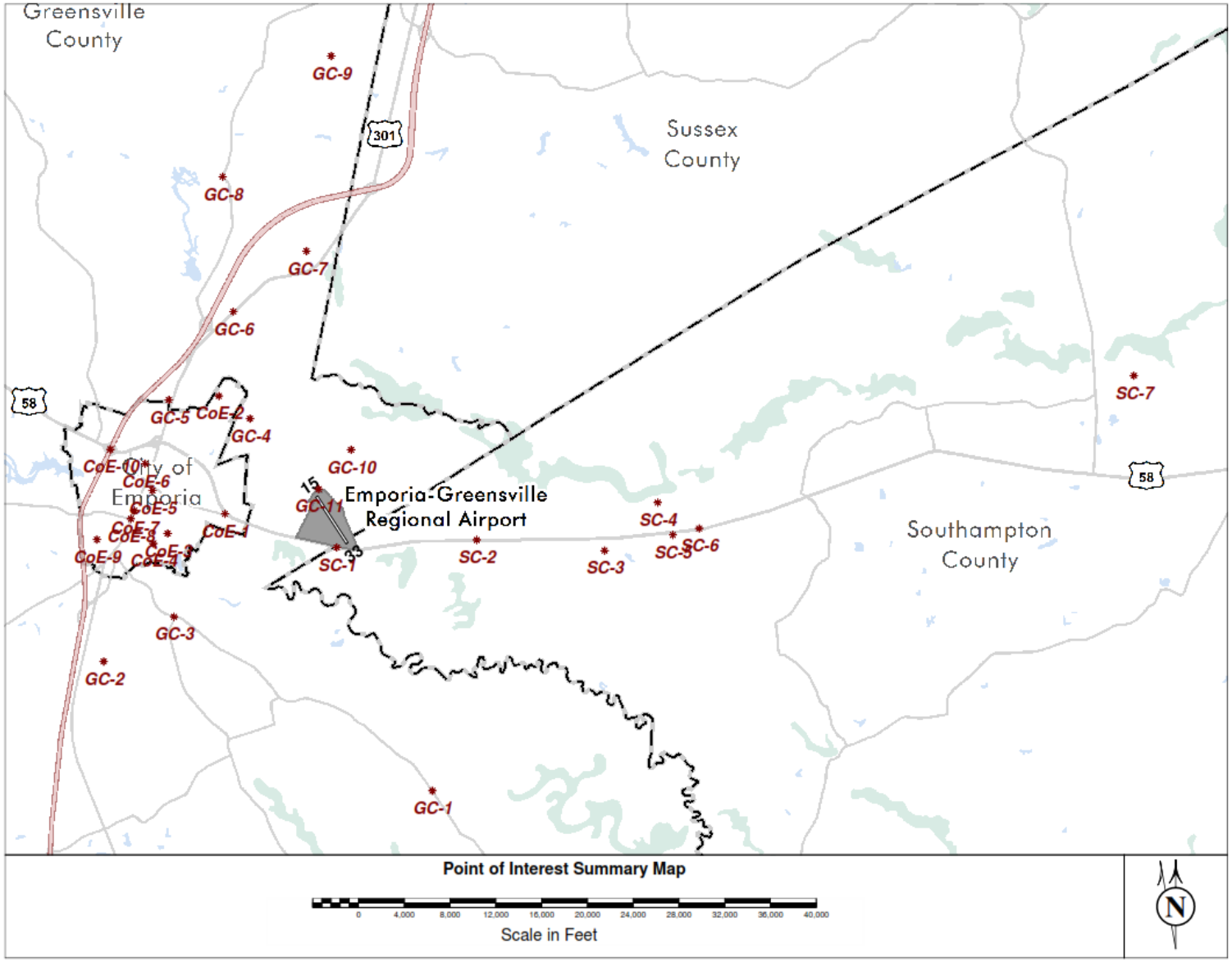


Figure 4-9. Points of Interest for supplemental noise analysis around Emporia

Table 4-3. DNL values for Point for Interest around Emporia

Location ID	Description	Latitude	Longitude	Total DNL (dB)		
				Baseline	Alt 1A	Alt 1B
City of Emporia, Virginia						
CoE-1	Emmanuel Worship Center	36.687824	-77.514771	<45	51.8	54.3
CoE-2	Industrial Park	36.716045	-77.517539	<45	50.4	53.8
CoE-3	Meherrin River Park Complex	36.682772	-77.531704	<45	<45	<45
CoE-4	Tall Oaks Residential Subdivision	36.680288	-77.535863	<45	<45	<45
CoE-5	Belfield-Emporia Historic District	36.692984	-77.536558	<45	<45	<45
CoE-6	Southern Virginia Regional Medical Center	36.699362	-77.538916	<45	<45	45.9
CoE-7	City of Emporia Municipal Building	36.688002	-77.541840	<45	<45	<45
CoE-8	Hicksford-Emporia Historic District	36.686039	-77.542791	<45	<45	<45
CoE-9	Greensville High School	36.680843	-77.552709	<45	<45	<45
CoE-10	Interchange at Route 58/I-95	36.702553	-77.549382	<45	<45	45.3
Greensville County, Virginia						
GC-1	Intersection of Low Ground Road and Goose Pond Road	36.622709	-77.450927	<45	<45	<45
GC-2	Elnora Jarrell Worship Center	36.651628	-77.549726	<45	<45	<45
GC-3	Bryants Corner	36.662827	-77.529116	<45	<45	<45
GC-4	Union Grove Church of Christ	36.710794	-77.508063	<45	52.3	56.2
GC-5	Edward W. Wyatt Middle School	36.714811	-77.532409	<45	47.6	57.7
GC-6	Greensville County Administration Offices	36.736358	-77.513853	<45	<45	45.7
GC-7	Emporia Country Club	36.751344	-77.492538	<45	<45	<45
GC-8	Future Industrial Area #1	36.768650	-77.518131	<45	<45	<45
GC-9	Greensville Correctional Center	36.798275	-77.486699	<45	<45	<45
GC-10	Intersection of State Route 611 and James River Junction	36.704000	-77.477727	<45	54.8	54.9
GC-11	Oak Grove Baptist Church	36.694369	-77.487108	50	64.9	64.9
Southampton County, Virginia						
SC-1	Mid Atlantic Gin	36.680454	-77.481219	47.3	63.3	63.3
SC-2	Intersection of Route 58 and State Route 711	36.683124	-77.439622	<45	<45	47.6
SC-3	Valley Proteins Inc.	36.681352	-77.401437	<45	<45	<45
SC-4	Intersection of Adams Grove Road at Railroad	36.693175	-77.386009	<45	45.3	45.2
SC-5	Pleasant Grove Baptist Church	36.685513	-77.381253	<45	<45	<45
SC-6	Capron Community Church of God	36.687227	-77.373468	<45	<45	<45
SC-7	Deerfield Correctional Center	36.726363	-77.245067	<45	<45	<45

4.2 Alternative 2: Wallops Flight Facility

For this alternative, the operational numbers for the proposed E-2/C-2 operations are provided in Table 4-4 for the 3-plane scenario on Runway 04/22 (Alt 2A), in Table 4-5 for the mix of 3- and 5-plane scenario on Runways 04/22 (Alt 2B), Table 4-6 for the 3-plane scenario on Runway 10/28 (Alt 2C), and in Table 4-7 for the mix of 3- and 5-plane scenario on Runways 10/28 (Alt 2D) . The day/night split provided in these tables is based on acoustic day (0700 to 2200) and acoustic night (2200 to 0700). For Alt 2B and Alt 2D, the mix of 3- and 5-plane FCLP patterns is 33.3% 3-plane and 66.7% 5-plane. For these scenarios, the overall number of annual operations is 45,000. Also, for the proposed operations, the runway utilization is based on historical wind data for the airfield and is different from the utilization currently used. For scenarios Alt 2A and 2B, the runway utilization is 44% for Runway 04 and 56% for Runway 22. For scenarios Alt 2C and 2D, the runway utilization is 38% for Runway 10 and 62% for Runway 28. No full stop landings or departures were modeled for the E-2/C-2 operations at WFF. For these scenarios, all other aircraft operations are assumed constant between the baseline and proposed scenarios.

Table 4-4. Average Annual Daily Operations for Proposed E-2/C-2 at Wallops Flight Facility for Alt 2A

Aircraft	Track Type	Runway		Track ID	Profile			Average Annual Day Events		
								Acoustic Day	Acoustic Night	Total
		ID	Utilization		ID	% Day	% Night	(0700 to 2200)	(2200 to 0700)	
E-2/C-2	Arrival	04	44%	N04O1	E2_O04	89.55%	10.45%	0.714	0.083	0.798
		22	56%	N22O1	E2_O22	89.55%	10.45%	0.909	0.106	1.015
	FCLP	04	44%	04SW	E2_CS04	89.55%	10.45%	2.858	0.333	3.191
				04F1	E2_F3_04	89.55%	10.45%	20.717	2.418	23.135
		22	56%	22SW	E2_CS22	89.55%	10.45%	3.637	0.424	4.061
				22F1	E2_F3_22	89.55%	10.45%	26.367	3.077	29.444
	Departure	04	44%	N04D2	E2_D04	89.55%	10.45%	0.714	0.083	0.798
		22	56%	N22D2	E2_D22	89.55%	10.45%	0.909	0.106	1.015
									Total	63.457

Table 4-5. Average Annual Daily Operations for Proposed E-2/C-2 at Wallops Flight Facility for Alt 2B

Aircraft	Track Type	Runway		Track ID	Profile			Average Annual Day Events		
								Acoustic Day	Acoustic Night	Total
		ID	Utilization		ID	% Day	% Night	(0700 to 2200)	(2200 to 0700)	
E-2/C-2	Arrival	04	44%	N04O1	E2_O04	89.55%	10.45%	0.833	0.097	0.931
		22	56%	N22O1	E2_O22	89.55%	10.45%	1.061	0.124	1.185
	FCLP	04	44%	04SW	E2_CS04	89.55%	10.45%	2.738	0.320	3.058
				04F1	E2_F3_04	89.55%	10.45%	6.906	0.806	7.712
				04F2	E2_F5_04	89.55%	10.45%	13.811	1.612	15.423
		22	56%	22SW	E2_CS22	89.55%	10.45%	3.485	0.407	3.892
				22F1	E2_F3_22	89.55%	10.45%	8.789	1.026	9.815
				22F2	E2_F5_22	89.55%	10.45%	17.578	2.051	19.629
	Departure	04	44%	N04D2	E2_D04	89.55%	10.45%	0.833	0.097	0.931
		22	56%	N22D2	E2_D22	89.55%	10.45%	1.061	0.124	1.185
									Total	63.759

Table 4-6. Average Annual Daily Operations for Proposed E-2/C-2 at Wallops Flight Facility for Alt 2C

Aircraft	Track Type	Runway		Track ID	Profile			Average Annual Day Events		
								Acoustic Day	Acoustic Night	Total
		ID	Utilization		ID	% Day	% Night	(0700 to 2200)	(2200 to 0700)	
E-2/C-2	Arrival	10	38%	N10O1	E2_O10	89.55%	10.45%	0.617	0.072	0.689
		28	62%	N28O1	E2_O28	89.55%	10.45%	1.007	0.117	1.124
	FCLP	10	38%	10SW	E2_CS10	89.55%	10.45%	2.468	0.288	2.756
				10F1	E2_F3_10	89.55%	10.45%	17.892	2.088	19.980
		28	62%	28SW	E2_CS28	89.55%	10.45%	4.027	0.470	4.496
				28F1	E2_F3_28	89.55%	10.45%	29.192	3.407	32.599
	Departure	10	38%	N10D2	E2_D10	89.55%	10.45%	0.617	0.072	0.689
		28	62%	N28D2	E2_D28	89.55%	10.45%	1.007	0.117	1.124
									Total	63.457

Table 4-7. Average Annual Daily Operations for Proposed E-2/C-2 at Wallops Flight Facility for Alt 2D

Aircraft	Track Type	Runway		Track ID	Profile			Average Annual Day Events		
								Acoustic Day	Acoustic Night	Total
		ID	Utilization		ID	% Day	% Night	(0700 to 2200)	(2200 to 0700)	
E-2/C-2	Arrival	10	38%	N10O1	E2_O10	89.55%	10.45%	0.720	0.084	0.804
		28	62%	N28O1	E2_O28	89.55%	10.45%	1.174	0.137	1.311
	FCLP	10	38%	10SW	E2_CS10	89.55%	10.45%	2.365	0.276	2.641
				10F1	E2_F3_10	89.55%	10.45%	5.964	0.696	6.660
				10F2	E2_F5_10	89.55%	10.45%	11.928	1.392	13.320
		28	62%	28SW	E2_CS28	89.55%	10.45%	3.859	0.450	4.309
				28F1	E2_F3_28	89.55%	10.45%	9.731	1.136	10.866
				28F2	E2_F5_28	89.55%	10.45%	19.461	2.271	21.732
	Departure	10	38%	N10D2	E2_D10	89.55%	10.45%	0.720	0.084	0.804
		28	62%	N28D2	E2_D28	89.55%	10.45%	1.174	0.137	1.311
									Total	63.759

Figure 4-10 shows the proposed E-2/C-2 arrival flight tracks to WFF. Figure 4-11 shows the departure tracks for E-2/C-2 operations from WFF. The 3-plane and 5-plane FCLP flight tracks are provided in Figure 4-12 and Figure 4-13. The Crew Swap pattern is the same as modeled at Emporia (Figure 4-5). The only modification is the hold portion of the pattern is a right hand turn for operations on Runways 22 and 28 at WFF.

4.2.1 DNL Noise Contours for Wallops Flight Facility

Adding these proposed E-2/C-2 operations to the baseline case, NOISEMAP 7 was used to calculate the DNL contours for the average daily operations for proposed Alternatives 2A, 2B, 2C, and 2D. It should be noted that these contours have been smoothed to remove gridding artifacts.

4.2.1.1 Alternative 2A

Figure 4-14 provides plots of the 65 dB, 70 dB, and 75 dB DNL contours for Alternative 2A, and Figure 4-15 provides a comparison of the 65 dBA DNL contours between Alternative 2A and Baseline. The 65 dBA contour follows the pattern tracks modeled for the airfield. The comparison with baseline shows the largest increase results from the turn to downwind for the 3-plane FCLP pattern off Runway 22. The other portions of the DNL contours are similar to the baseline contours.

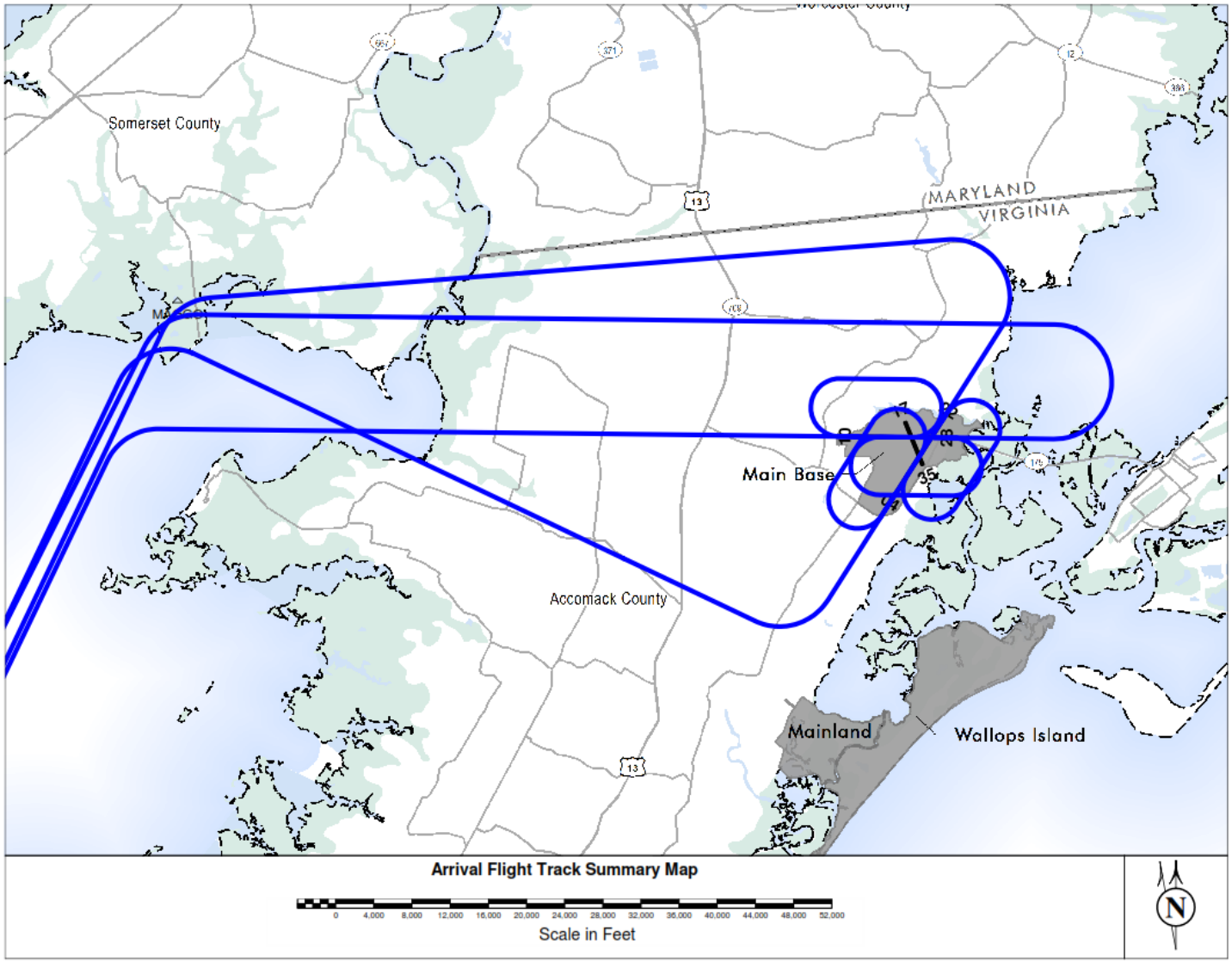


Figure 4-10. Modeled Proposed Arrival Flight Tracks for E-2/C-2 FCLP Training Operations at Wallops Flight Facility

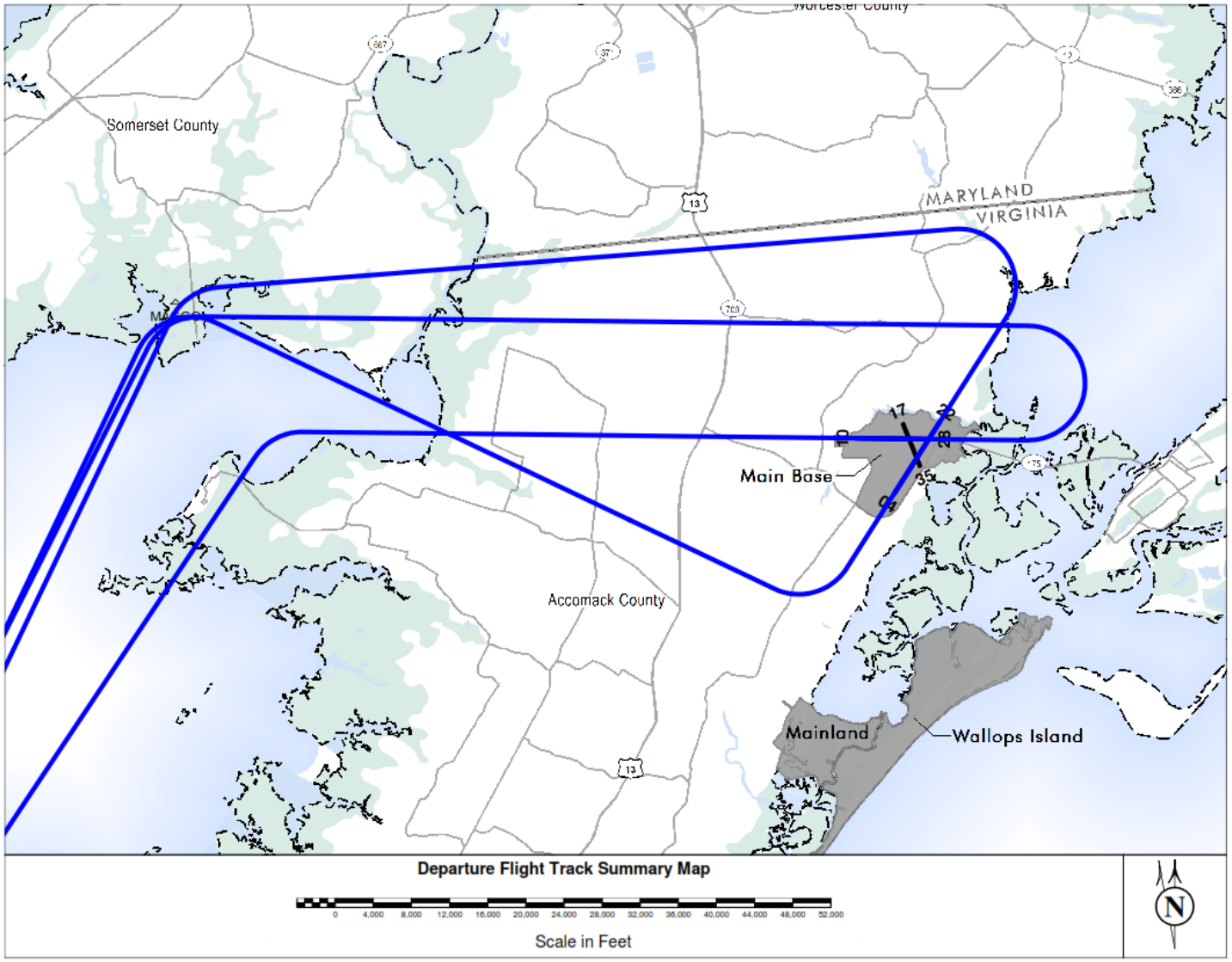


Figure 4-11. Modeled Proposed Departure Flight Tracks for E-2/C-2 FCLP Training Operations at Wallops Flight Facility

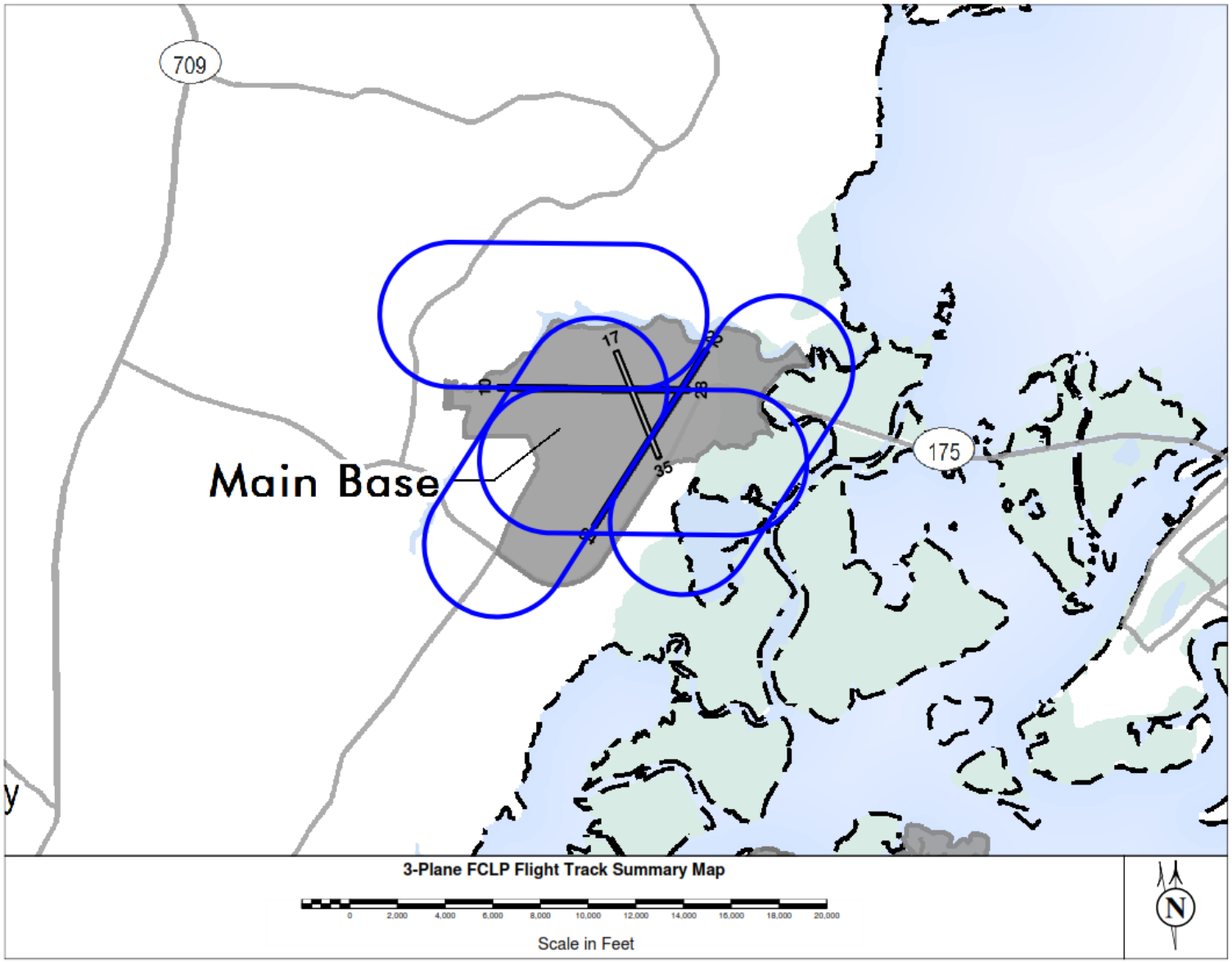


Figure 4-12. Modeled Proposed 3-Plane FCLP Flight Tracks for E-2/C-2 FCLP Training Operations at Wallops Flight Facility

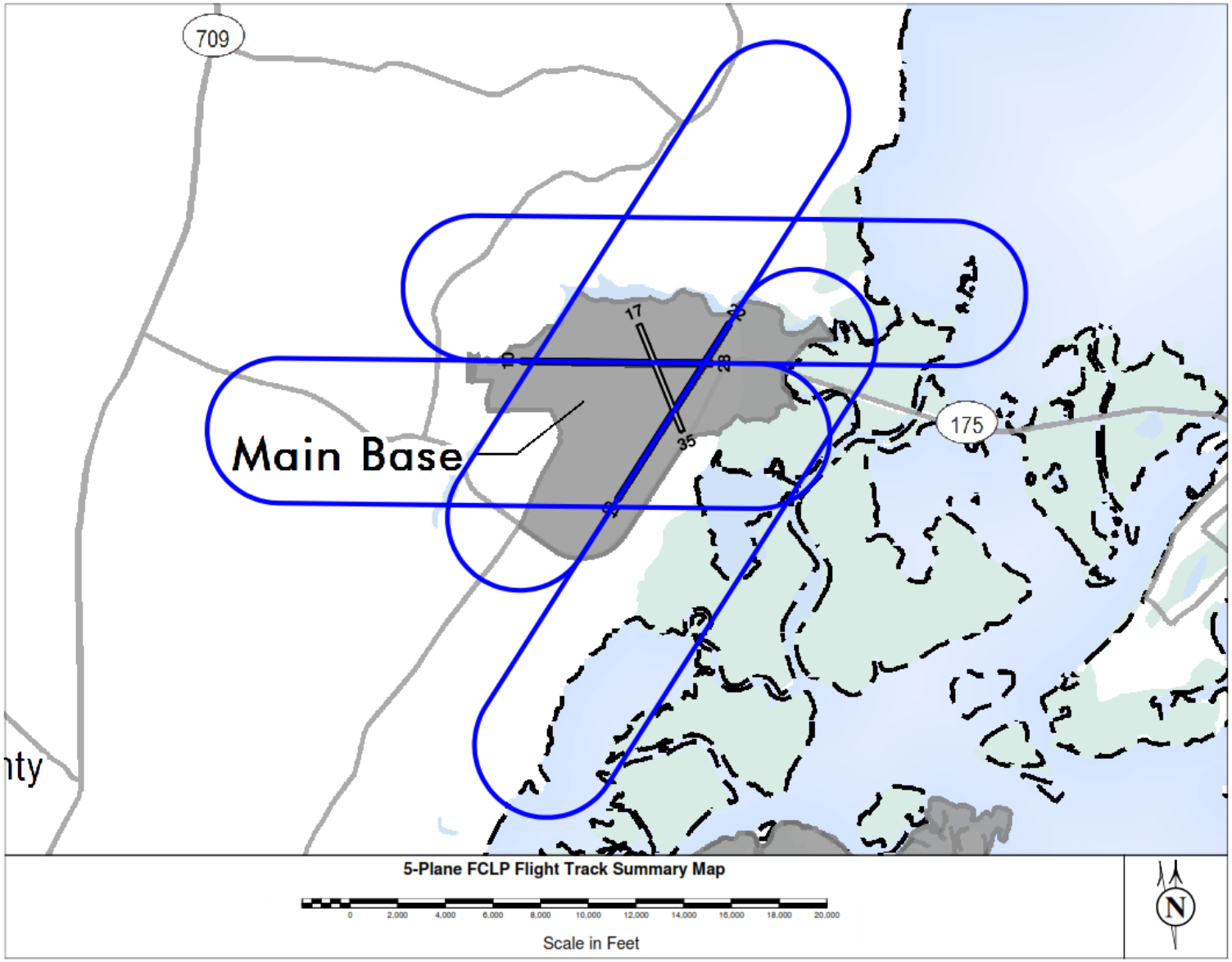


Figure 4-13. Modeled Proposed 5-Plane FCLP Flight Tracks for E-2/C-2 FCLP Training Operations at Wallops Flight Facility

4.2.1.2 Alternative 2B

Figure 4-16 provides plots of the 65 dB, 70 dB, and 75 dB DNL contours for Alternative 2B, and Figure 4-17 provides a comparison of the 65 dBA DNL contours between Alternative 2B and Baseline. The 65 dBA contour follows the pattern tracks modeled for the airfield. The comparison with baseline shows the largest increase is south of Runway 22 and results from the extended upwind leg from the 5-plane FCLP pattern off of Runway 22. The other portions of the DNL contours are similar to the baseline contours.

4.2.1.3 Alternative 2C

Figure 4-18 provides plots of the 65 dB, 70 dB, and 75 dB DNL contours for Alternative 2C, and Figure 4-19 provides a comparison of the 65 dBA DNL contours between Alternative 2C and Baseline. The 65 dBA contour follows the pattern tracks modeled for the airfield. The comparison with baseline shows an increase is along Runway 28. The 3-plane FCLP pattern off Runway 28 does not generate as large of an increase compared to Alternative 2A because the flight tracks are over land, which attenuates the propagation of noise more than the water covered surface to the east of the airfield. The other portions of the DNL contours are similar to the baseline contours.

4.2.1.4 Alternative 2D

Figure 4-20 provides plots of the 65 dB, 70 dB, and 75 dB DNL contours for Alternative 2D, and Figure 4-21 provides a comparison of the 65 dBA DNL contours between Alternative 2D and Baseline. The 65 dBA contour follows the pattern tracks modeled for the airfield. The comparison with baseline shows an increase is along Runways 10/28.

4.2.1.5 Alternative Comparison

Figure 4-22 provides a comparison of the 65 dBA DNL contours among the four alternatives and Baseline. The largest observed difference is for Alternative 2A for the 3-plane FCLP pattern off Runway 22. This difference results from the turn to downwind portion of the flight occurring over a mostly water-covered surface.

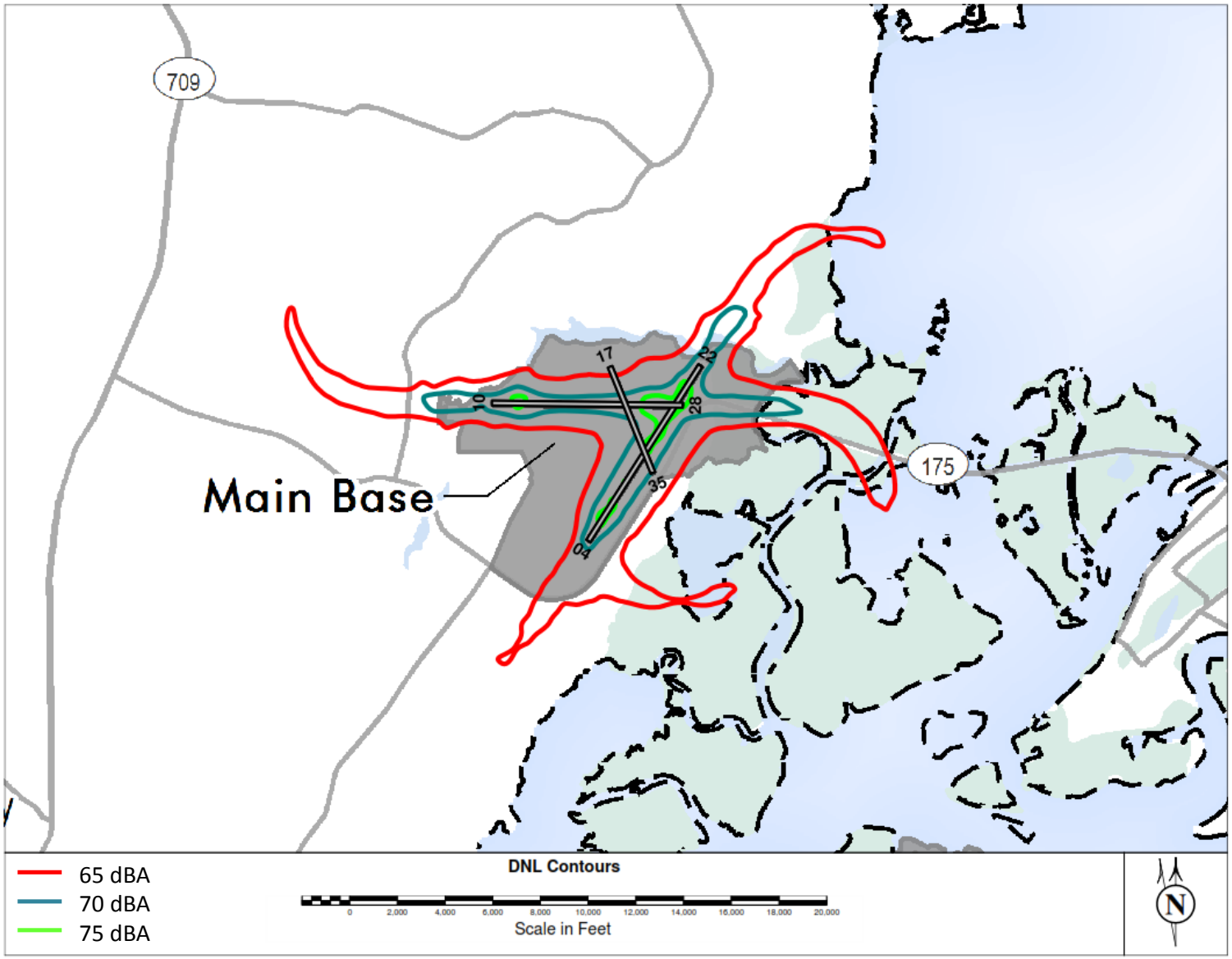


Figure 4-14. DNL Contours for Alternative 2A at Wallops Flight Facility

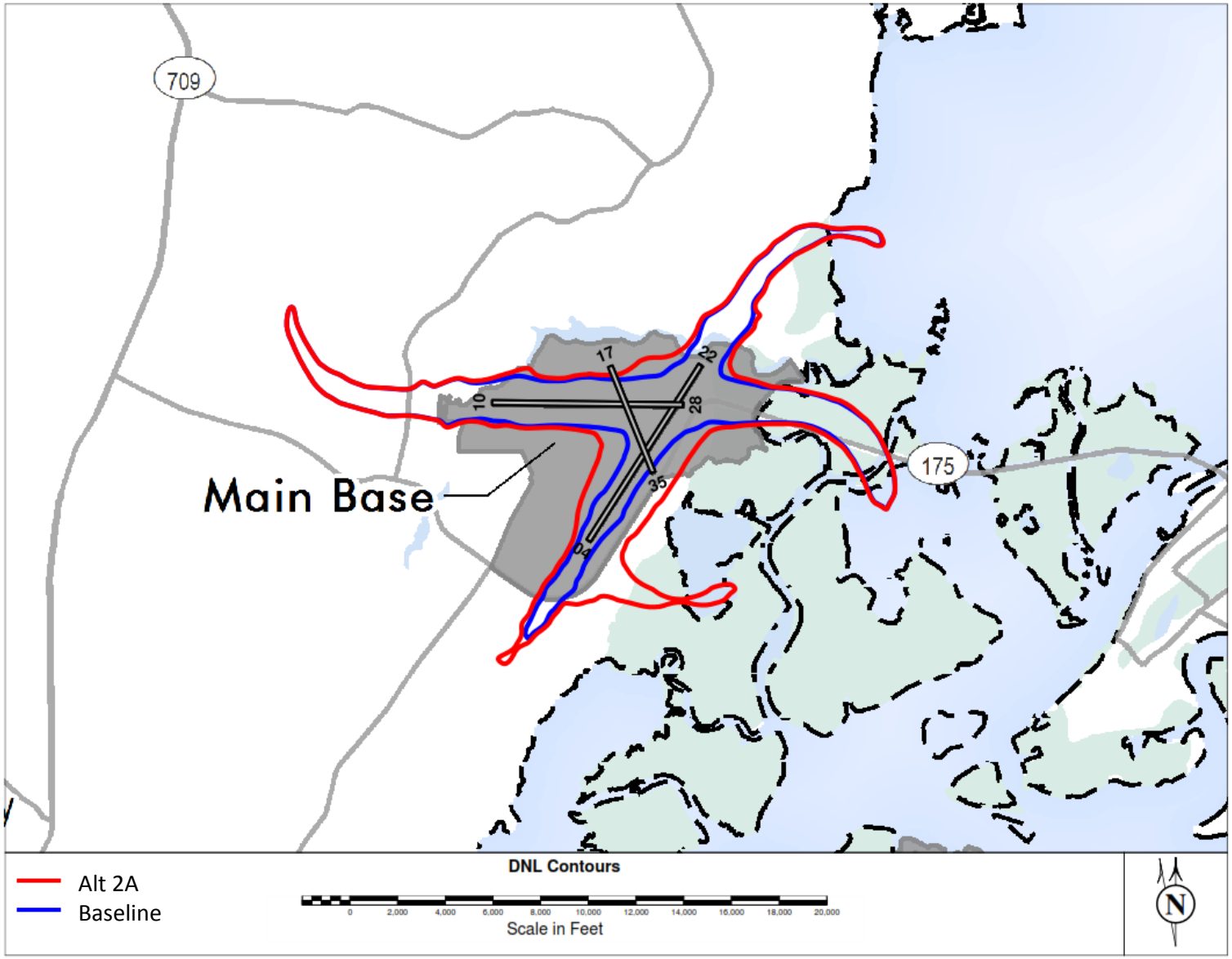


Figure 4-15. Comparison of 65 dBA DNL contours between Alternative 2A and Baseline at Wallops Flight Facility

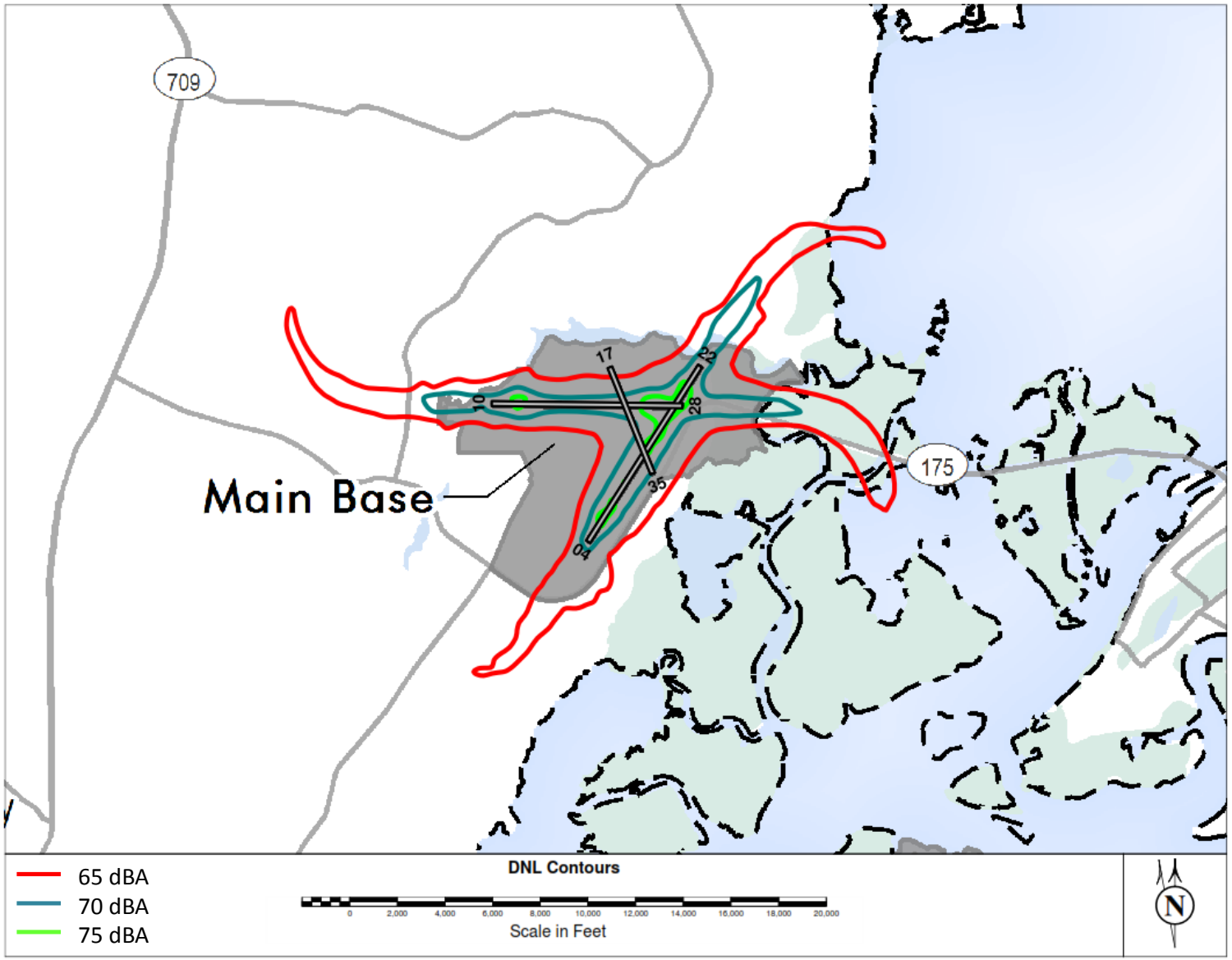


Figure 4-16. DNL Contours for Alternative 2B at Wallops Flight Facility

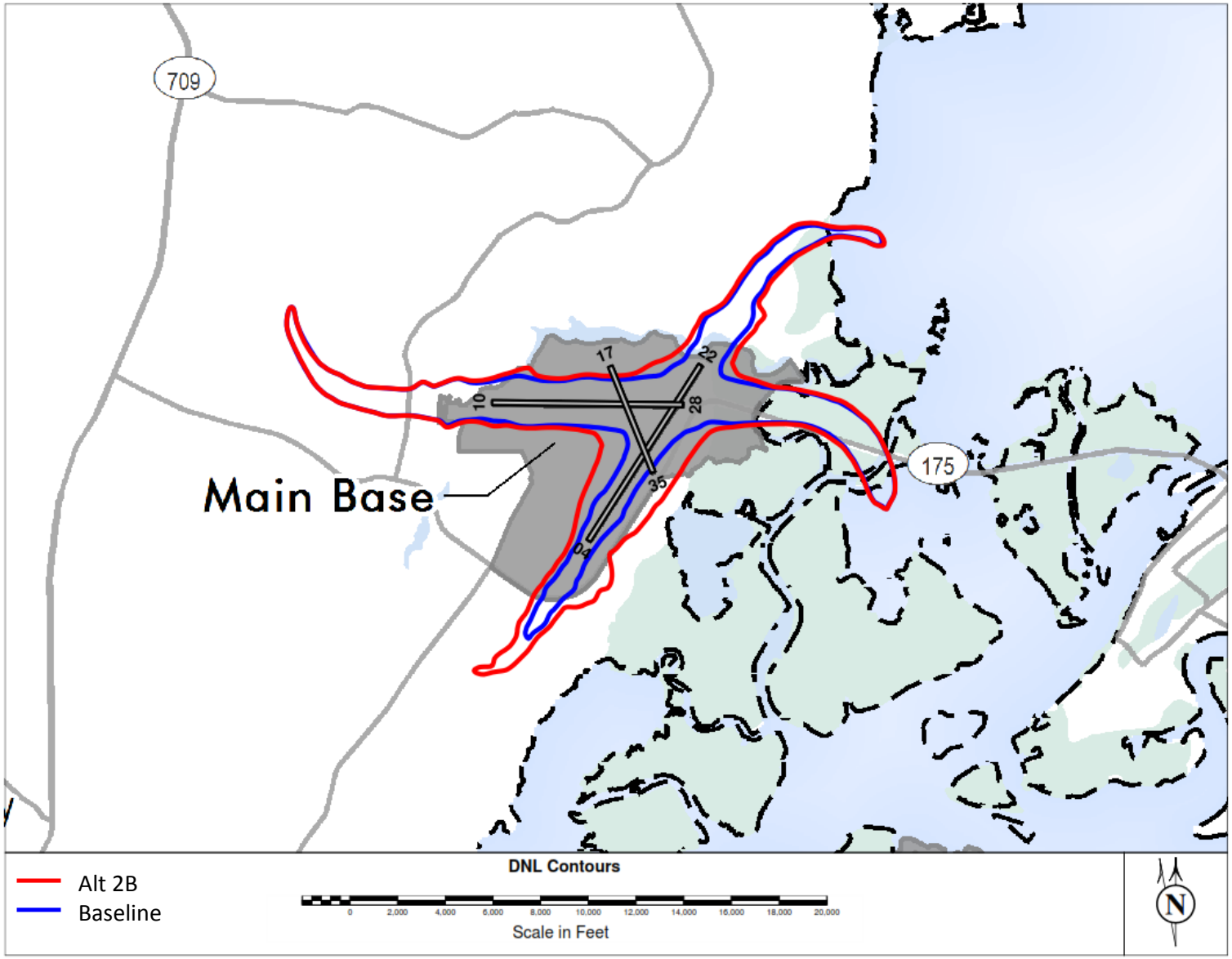


Figure 4-17. Comparison of 65 dBA DNL contours between Alternative 2B and Baseline at Wallops Flight Facility

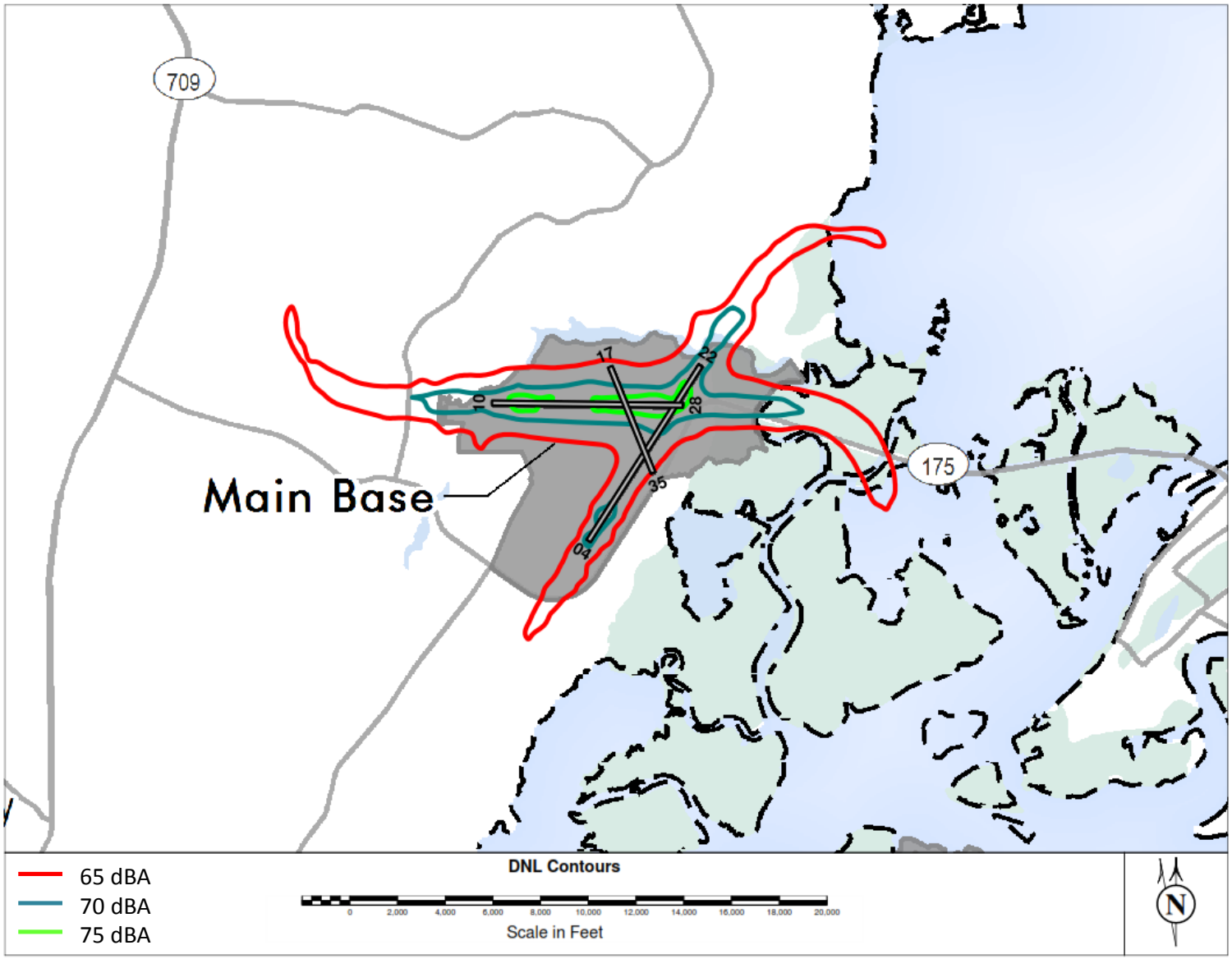


Figure 4-18. DNL Contours for Alternative 2C at Wallops Flight Facility

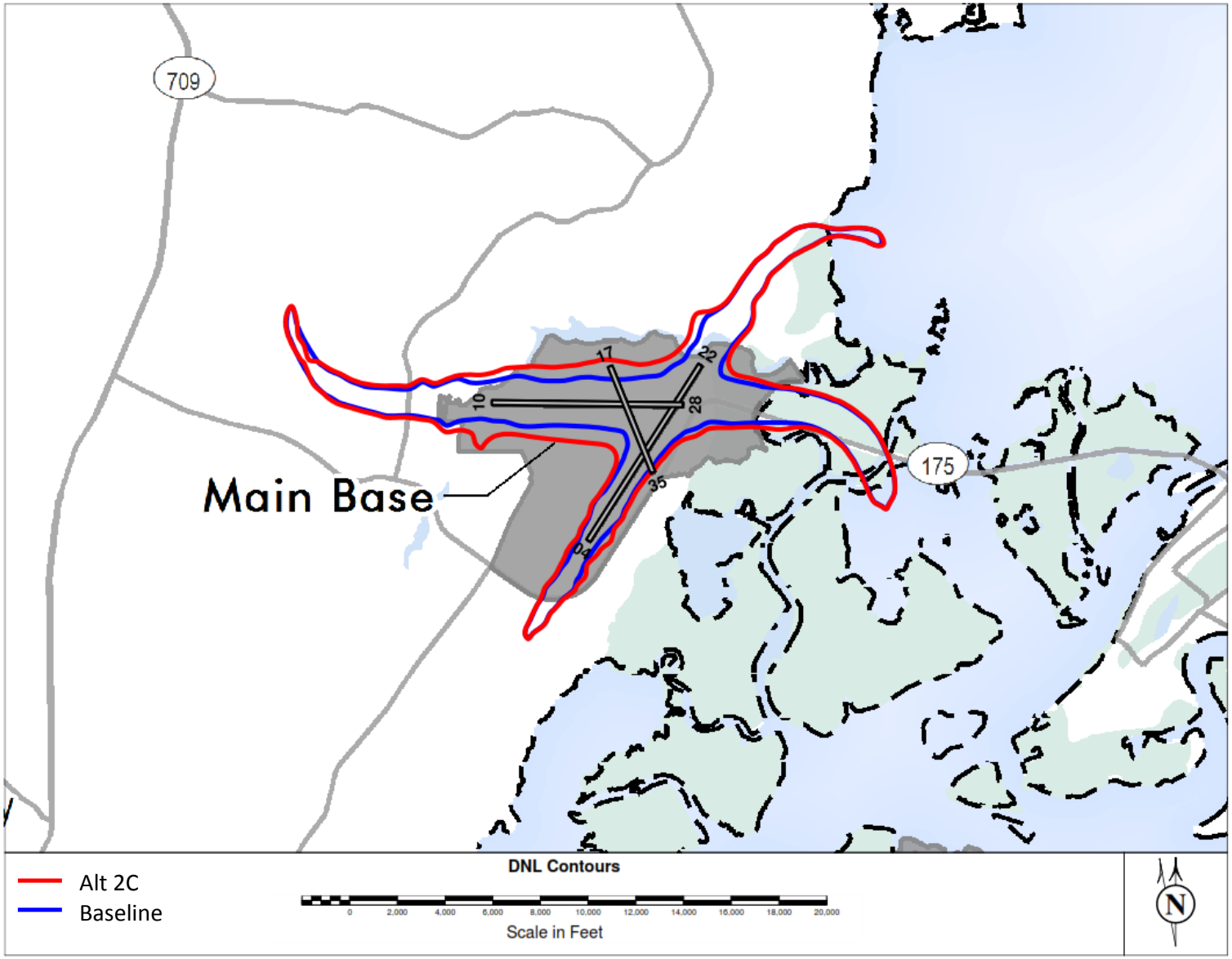


Figure 4-19. Comparison of 65 dBA DNL contours between Alternative 2C and Baseline at Wallops Flight Facility

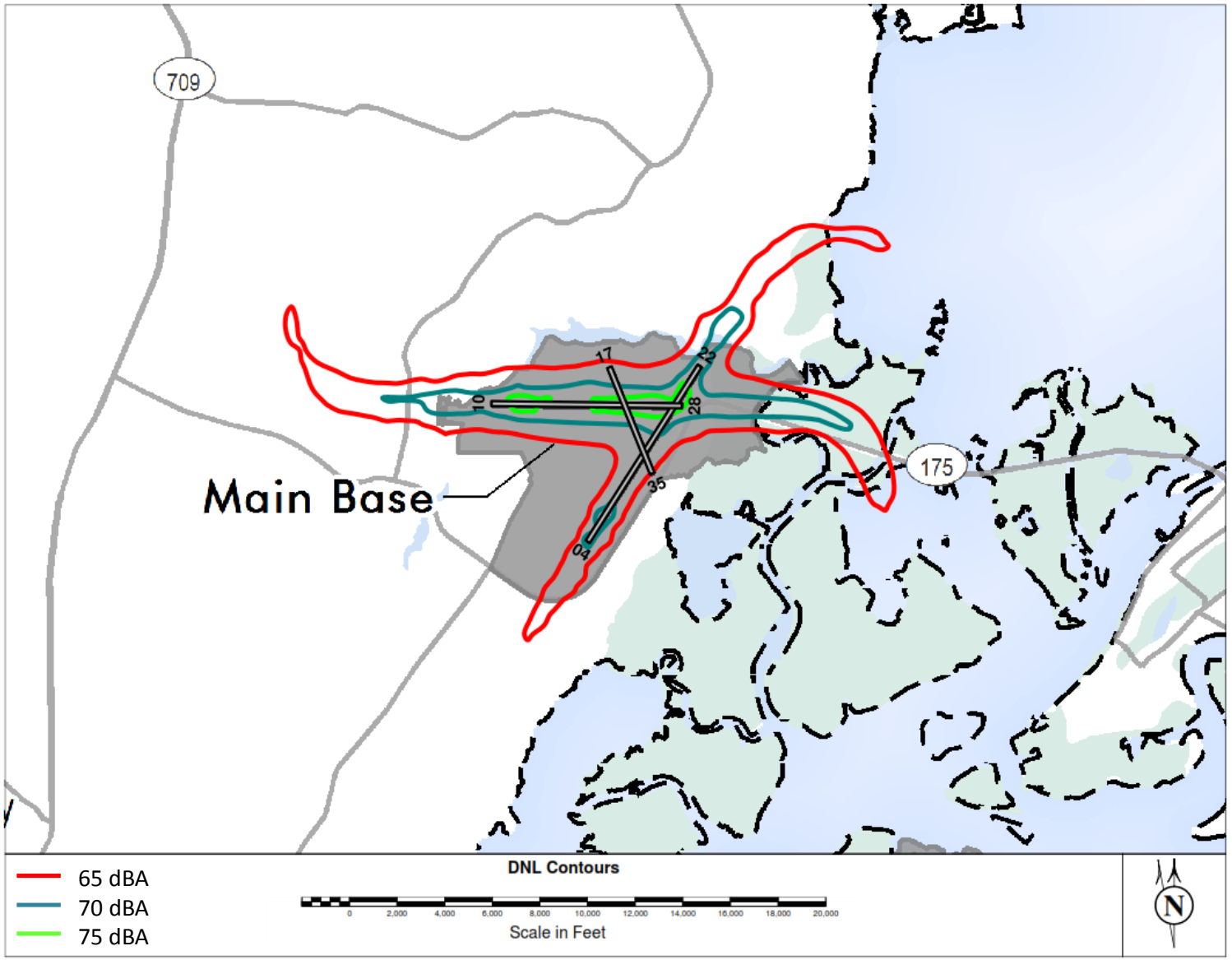


Figure 4-20. DNL Contours for Alternative 2D at Wallops Flight Facility

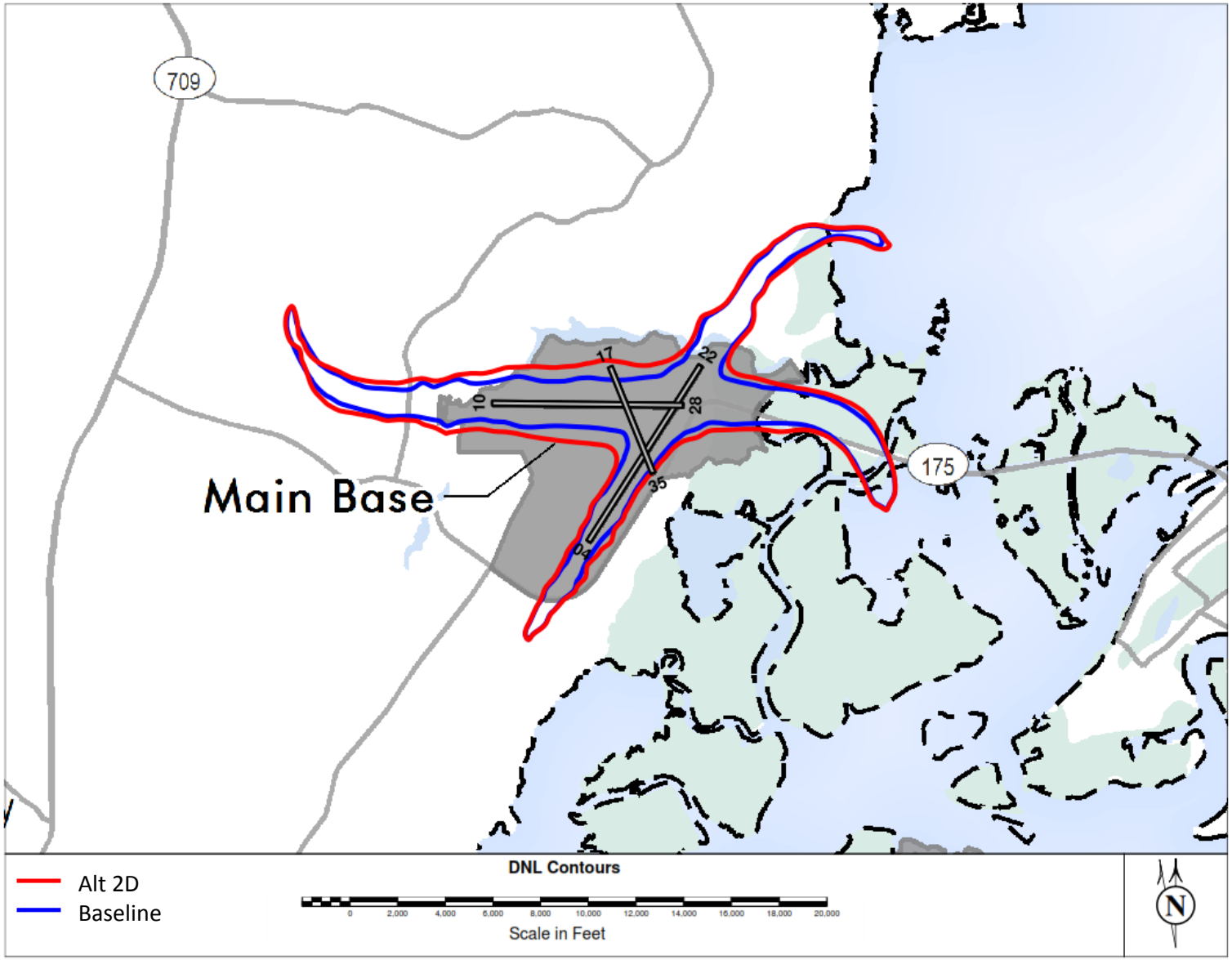


Figure 4-21. Comparison of 65 dBA DNL contours between Alternative 2D and Baseline at Wallops Flight Facility

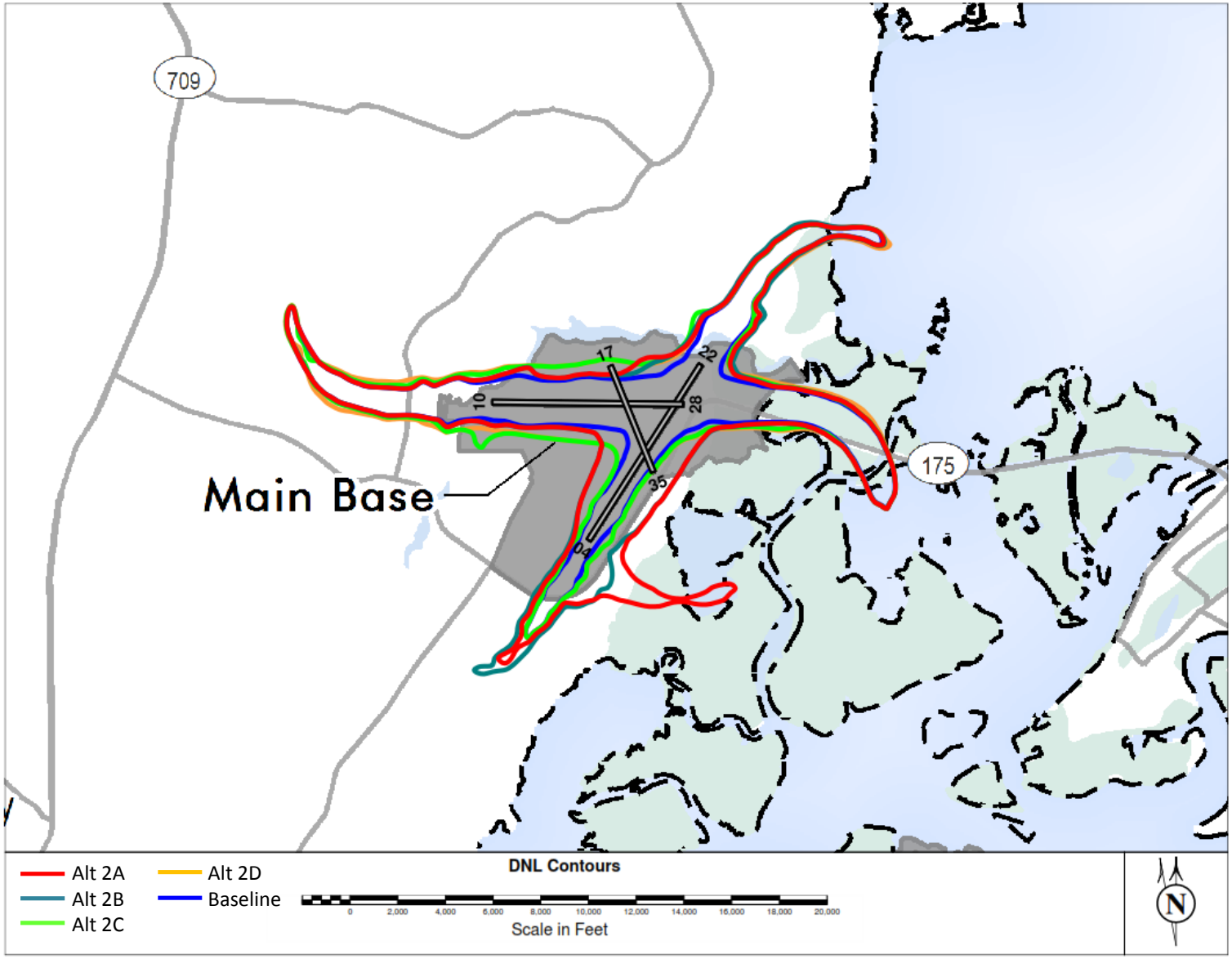


Figure 4-22. Comparison of 65 dBA DNL contours between all Alternatives and Baseline at Wallops Flight Facility

4.2.2 Points of Interest for Wallops Flight Facility

In addition to the DNL noise contours, specific noise projections were calculated at a series of points shown in Figure 4-23. The calculated DNL values at these points are provided in Table 4-8 along with a description and location of each point. For baseline points that have DNL > 45 dBA, the four alternatives have an average increase between 1.4 to 2.8 dB. For Alternative 2A, the maximum increase of 5.5 dB occurs at point AC-10, and for Alternative 2B, the maximum increase of 6.8 dB occurs at point AC-6. For Alternative 2C and 2D, the maximum difference occurs at point AC-12 with differences of 4.9 dB and 4.2 dB, respectively.

The top contributors to the DNL at each of these points are provided in Appendix C. These tables identify an individual operation's SEL for that point as well as its contribution to the overall DNL values. Additional details about the operation such as type and distance of the closet point of approach are also listed in the tables. These tables provide a detailed description of the current and projected aircraft noise environment surrounding the airfield.

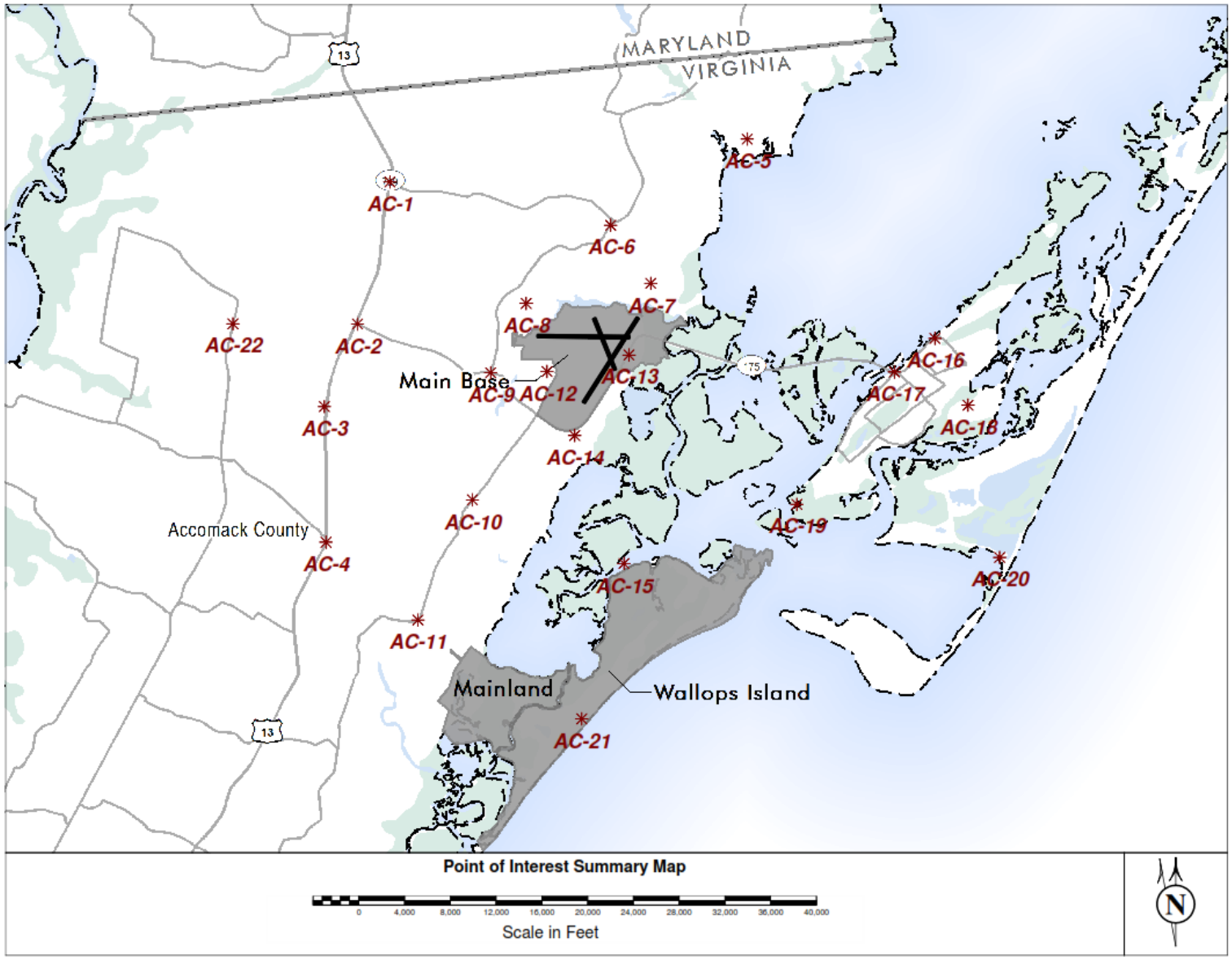


Figure 4-23. Points of Interest for supplemental noise analysis around Wallops Flight Facility

Table 4-8. DNL values for Point for Interest around Wallops Flight Facility

Location ID	Description	Latitude	Longitude	Total DNL (dB)				
				Baseline	Alt 2A	Alt 2B	Alt 2C	Alt 2D
AC-1	Intersection of US 13 and SR 709	37.979862	75.530116	<45	<45	<45	48.3	48.3
AC-2	T's Corner (east of intersection of US 13 and Chincoteague Road)	37.945590	75.539688	49.1	49.8	49.8	50.7	51.9
AC-3	Arcadia High School	37.925653	75.549588	<45	48.2	48.1	<45	<45
AC-4	Temperanceville at Intersection of US 13 and SR 695	37.892998	75.548880	<45	<45	<45	<45	<45
AC-5	Captain's Cove Community Pool	37.990629	75.421811	<45	<45	45.3	47.6	47.6
AC-6	Horntown at Intersection of SR 679 and SR 709	37.969714	75.463103	52.8	54.1	59.6	53.8	54
AC-7	Trail's End Community Pool	37.955769	75.450846	62.4	63.3	64.1	63	63.1
AC-8	Olde Mill Pointe Traffic Circle	37.950772	75.488573	56.1	57	57.1	58.2	58.5
AC-9	Wattsville at Intersection of SR 679 and Chincoteague Road	37.934026	75.499244	61.2	61.4	61.4	61.6	61.9
AC-10	Atlantic at Intersection of SR 679 and Nocks Landing Road	37.903404	75.504567	45.1	50.6	51.5	45.9	46.5
AC-11	Assawoman at Intersection of SR 670 and Wallops Island Road	37.874388	75.520869	<45	<45	<45	<45	<45
AC-12	Marine Science Consortium	37.934410	75.482184	55	57.6	57.7	59.9	59.2
AC-13	NASA Visitor Center	37.938484	75.457344	63.5	66.8	66.9	64.6	64.7
AC-14	USFWS Maintenance Yard at Wallops Island NWR	37.919021	75.473680	62.4	63.7	64.3	62.7	62.8
AC-15	Ballast Narrows at Wallops Island NWR	37.888266	75.458558	<45	<45	47.4	<45	<45
AC-16	Chincoteague High School	37.942804	75.364619	<45	<45	<45	<45	<45
AC-17	Chincoteague Waterfront Park	37.934675	75.376869	<45	<45	<45	<45	<45
AC-18	Chincoteague Chamber of Commerce on Piney Island	37.926754	75.354520	<45	<45	<45	<45	<45
AC-19	Curtis Merritt Harbor, Chincoteague Island	37.902697	75.406283	<45	<45	<45	<45	<45
AC-20	Tom's Cove Visitor Center	37.890114	75.344757	<45	<45	<45	<45	<45
AC-21	Mid-Atlantic Regional Spaceport	37.850806	75.471128	<45	<45	<45	<45	<45
AC-22	Withams at Intersection of SR 693 and SR 703	37.945463	75.577460	<45	<45	<45	<45	<45

References

1 U.S. Department of the Navy, "Description of the Proposed Action and Alternatives for the Environmental Assessment for E-2/C-2 Field Carrier Landing Practice Operations at Emporia-Greensville Regional Airport and National Aeronautics and Space Administration Wallops Flight Facility," Final Version, 27 February 2012.

2 Federal Interagency Committee on Urban Noise (FICUN), Guidelines for Considering Noise in Land-Use Planning and Control, August 1980.

3 US Environmental Protection Agency (EPA), Guidelines for Noise Impact Analysis, Report 550/9-82-105 and #PB82-219205, April 1982.

4 American National Standards Institute, Inc. (ANSI), American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, Part 5: Sound Level Descriptors for Determination of Compatible Land Use, ANSI S12.9/Part 5-1998 (R 2003), 2003.

5 Federal Interagency Committee on Noise (FICON), Federal Agency Review of Selected Airport Noise Analysis Issues, August 1992.

6 Czech, J. and Plotkin, K.J., NMAP 7.0 User's Manual, Wyle Research Report, WR 98-13, November 1998.

7 Page, Juliet, Kenneth Plotkin, and Micah Downing, Rotorcraft Noise Model (RNM 3.0) Technical Reference and User Manual, Wyle Report, WR 02-05, March 2002.

8 Downing, Micah "Noise Modeling Parameters Report," 28 February 2012

9 Richard Franklin, Jr., and Melvin Vick (Airfield Manager), site visit, 19 July 2011

10 Chief Warrant Officer (CW4), e-mail communication on 26 January 2012 and 8 February 2012 regarding assumptions for CH-47 operating out of Fort Eustis.

11 AirNav.com, FAA Information for Emporia-Greensville Regional Airport (KEMV) effective 09 February 2012, available at http://www.airnav.com/airport/KEMV .

12 Silbert, Shari and Bundick, Joshua, Wallops Flight Facility site visit, 15 December 2011.

13 Silbert, Shari, email communication, 4 January 2012.

14 Littleton, Eric, email communication, 6 January 2012.

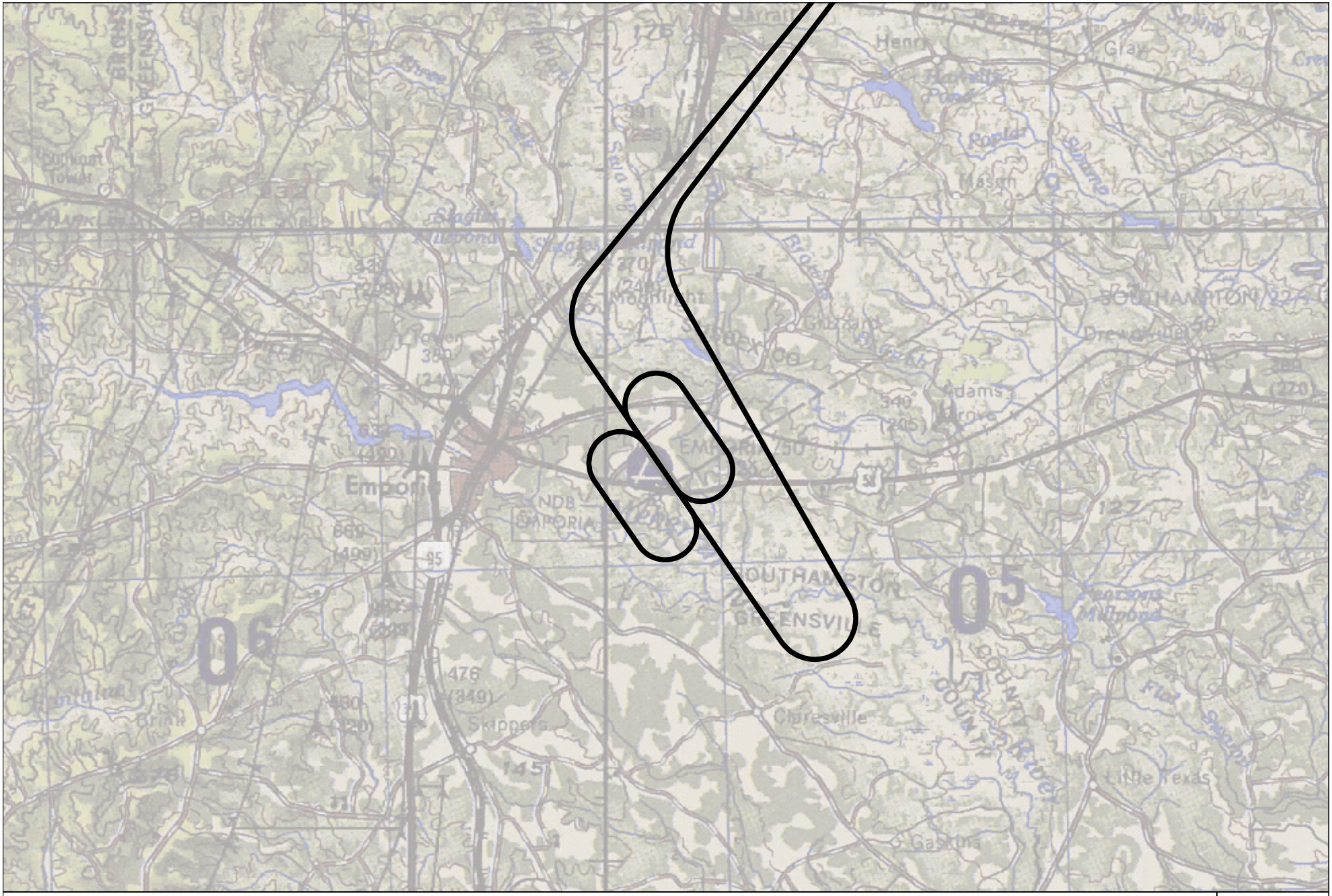
Appendix A: E-2/C-2 Modeling Parameters Report for Proposed FCLP Training Operations at Emporia-Greensville Regional Airport and Wallops Flight Facility

E2 Auxiliary Use EA -- Emporia/Greenville

E-2 Ops

11:32 AM
Tuesday, February 28, 2012
BaseOps 7.357

Summary Map of Arrival Flight Tracks



Flight Track Summary Map

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000 44,000 48,000 52,000

Scale in Feet 1:150,000 (1 inch = 12,500 feet)

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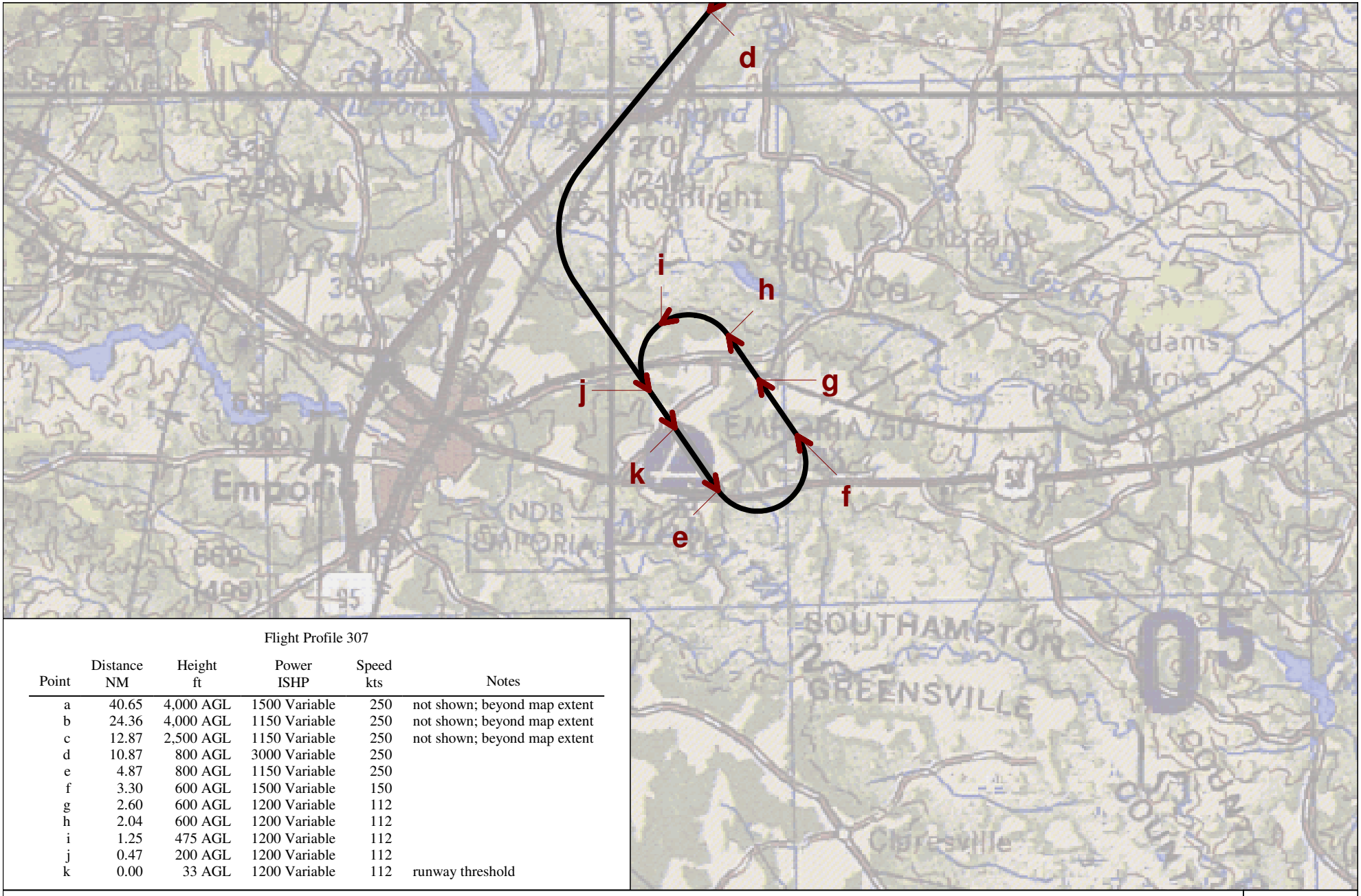
Maps of Arrival Flight Profiles



Flight Profile 307

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	40.65	4,000 AGL	1500 Variable	250	not shown; beyond map extent
b	24.36	4,000 AGL	1150 Variable	250	not shown; beyond map extent
c	12.87	2,500 AGL	1150 Variable	250	not shown; beyond map extent
d	10.87	800 AGL	3000 Variable	250	
e	4.87	800 AGL	1150 Variable	250	
f	3.30	600 AGL	1500 Variable	150	
g	2.60	600 AGL	1200 Variable	112	
h	2.04	600 AGL	1200 Variable	112	
i	1.25	475 AGL	1200 Variable	112	
j	0.47	200 AGL	1200 Variable	112	
k	0.00	33 AGL	1200 Variable	112	runway threshold

Flight Profile 307

Overhead Arrival From NGU

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Scale in Feet 1:100,000 (1 inch = 8,330 feet)

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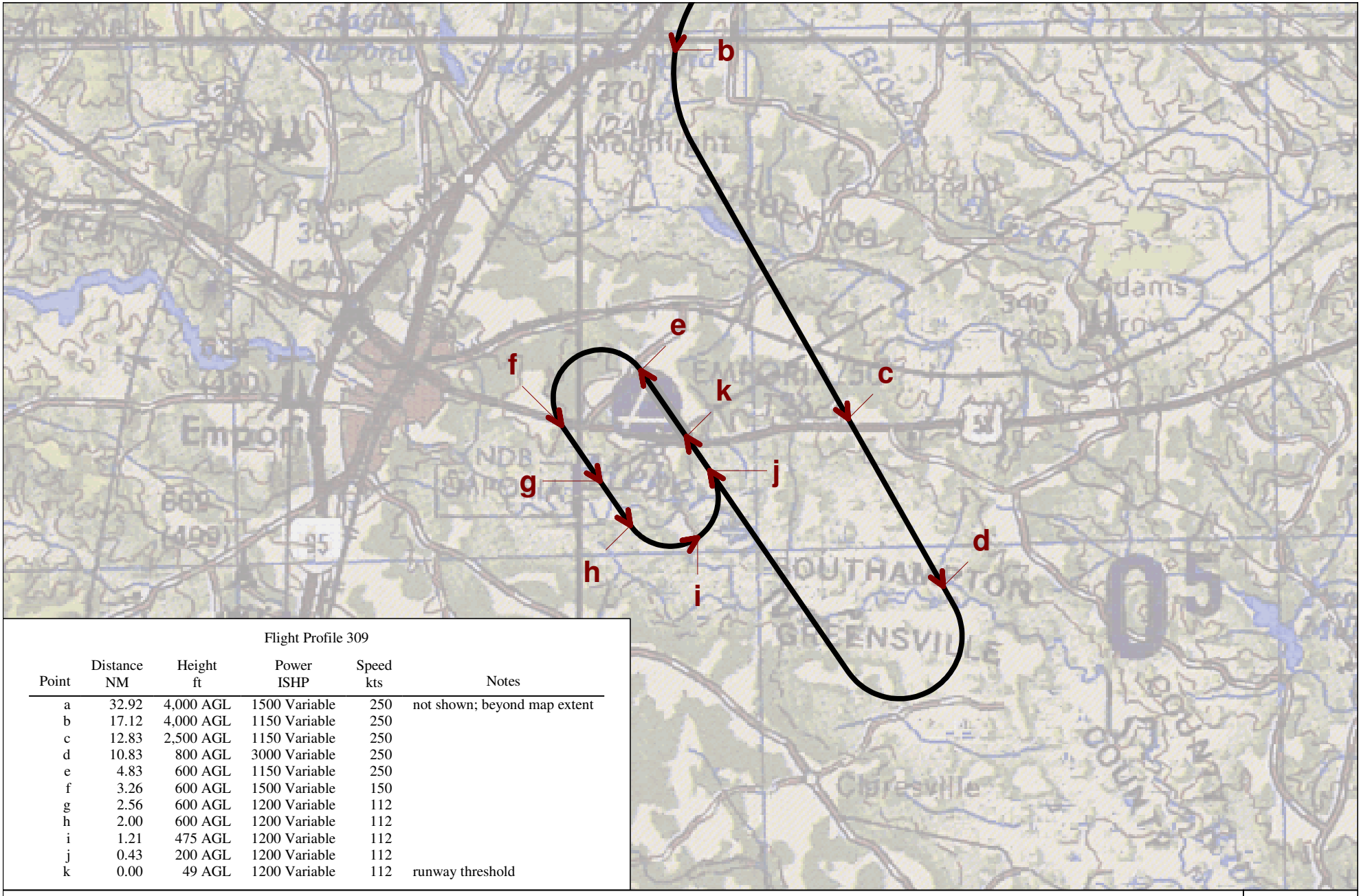

Flight Profile 309

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	32.92	4,000 AGL	1500 Variable	250	not shown; beyond map extent
b	17.12	4,000 AGL	1150 Variable	250	
c	12.83	2,500 AGL	1150 Variable	250	
d	10.83	800 AGL	3000 Variable	250	
e	4.83	600 AGL	1150 Variable	250	
f	3.26	600 AGL	1500 Variable	150	
g	2.56	600 AGL	1200 Variable	112	
h	2.00	600 AGL	1200 Variable	112	
i	1.21	475 AGL	1200 Variable	112	
j	0.43	200 AGL	1200 Variable	112	
k	0.00	49 AGL	1200 Variable	112	runway threshold

Flight Profile 309

Overhead Arrival From NGU

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0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

Summary Map of Departure Flight Tracks

Flight Track Summary Map

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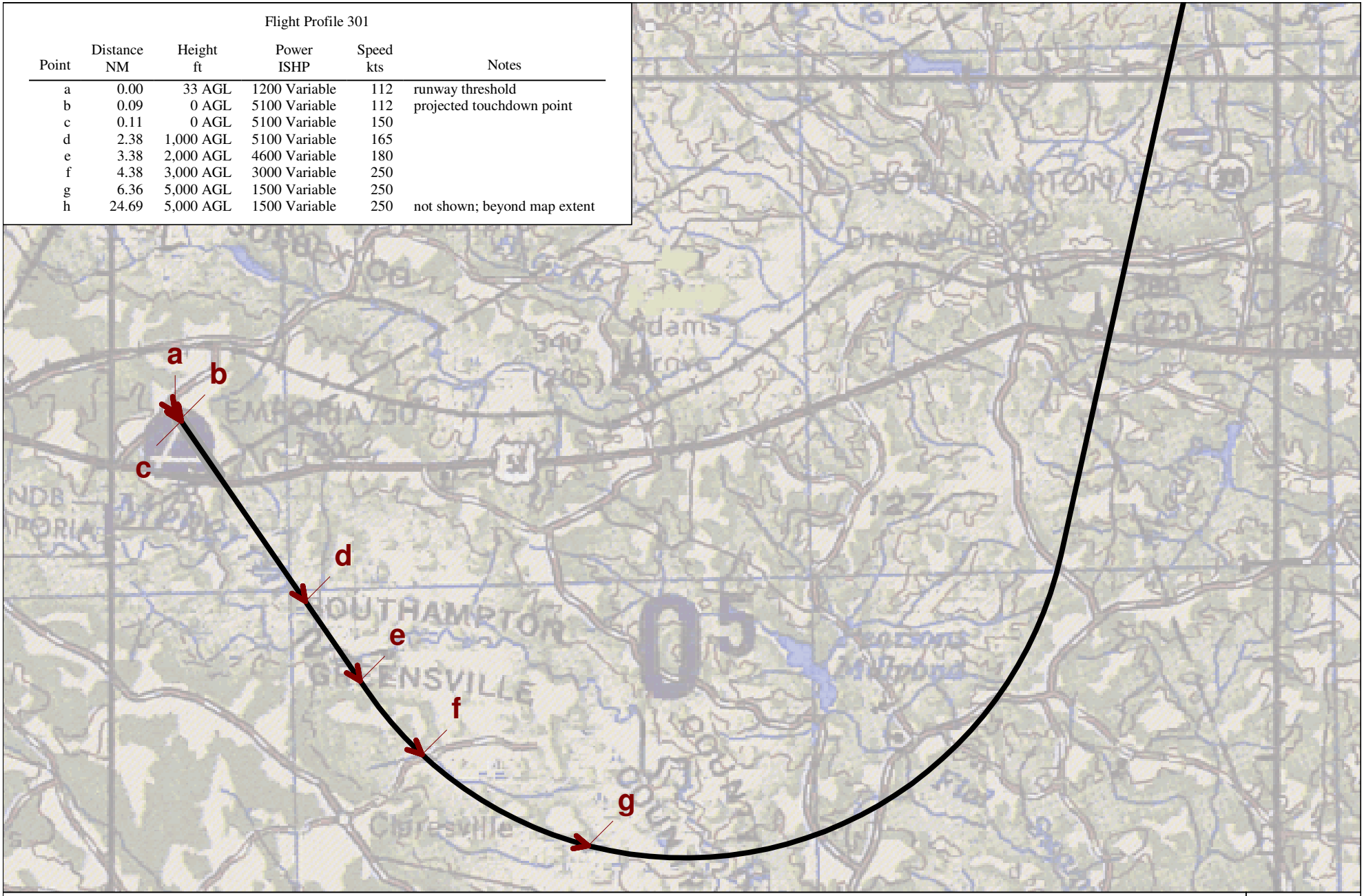
Scale in Feet 1:150,000 (1 inch = 12,500 feet)

N

Maps of Departure Flight Profiles

Flight Profile 301

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	33 AGL	1200 Variable	112	runway threshold
b	0.09	0 AGL	5100 Variable	112	projected touchdown point
c	0.11	0 AGL	5100 Variable	150	
d	2.38	1,000 AGL	5100 Variable	165	
e	3.38	2,000 AGL	4600 Variable	180	
f	4.38	3,000 AGL	3000 Variable	250	
g	6.36	5,000 AGL	1500 Variable	250	
h	24.69	5,000 AGL	1500 Variable	250	not shown; beyond map extent



Flight Profile 301

Departure to NGU

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0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

N

Flight Profile 303

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	49 AGL	1200 Variable	112	runway threshold
b	0.13	0 AGL	5100 Variable	112	projected touchdown point
c	0.15	0 AGL	5100 Variable	150	
d	2.42	1,000 AGL	5100 Variable	165	
e	3.42	2,000 AGL	4600 Variable	180	
f	4.42	3,000 AGL	3000 Variable	250	
g	6.40	5,000 AGL	1500 Variable	250	
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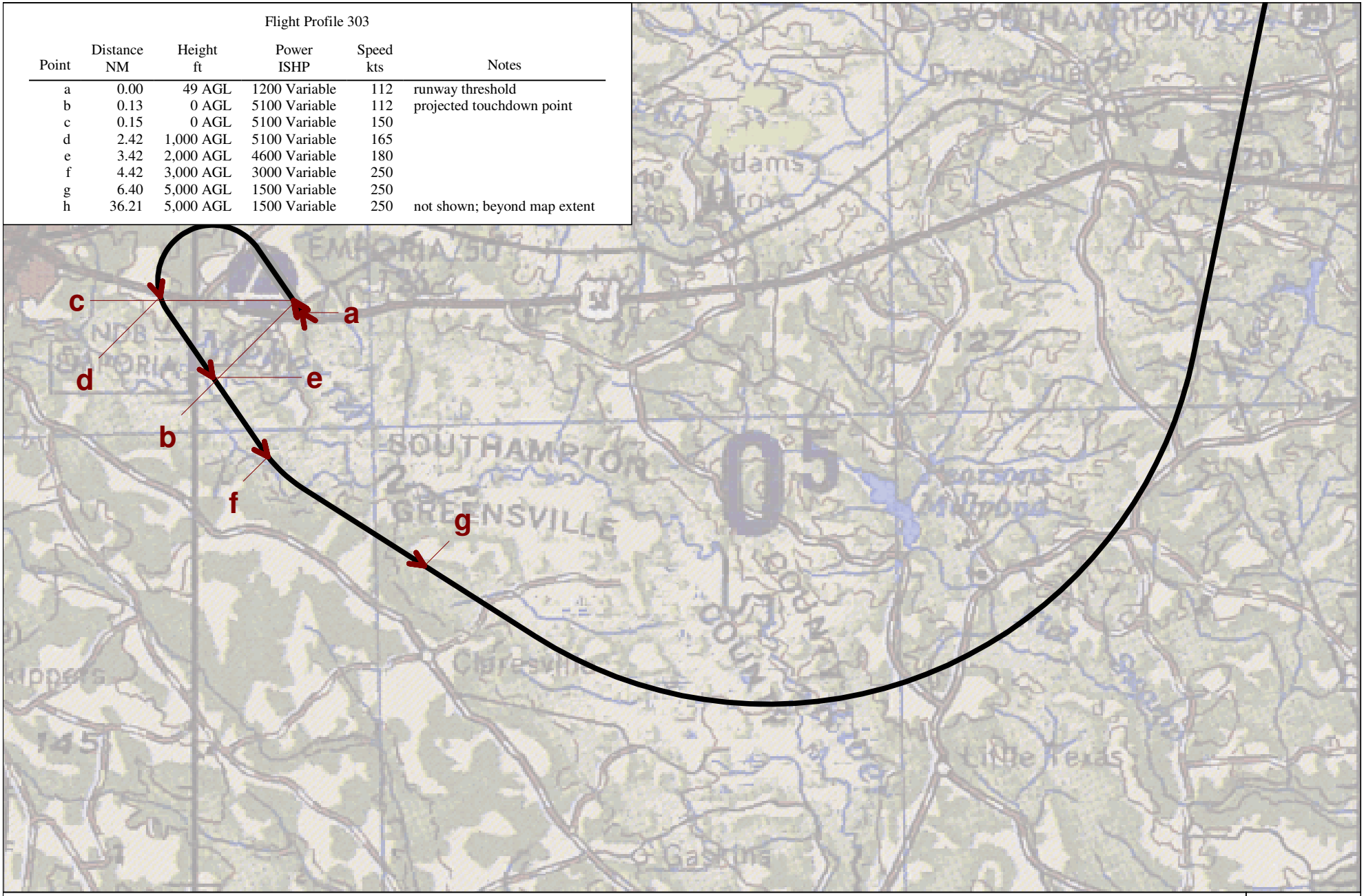

Flight Profile 303

Departure to NGU

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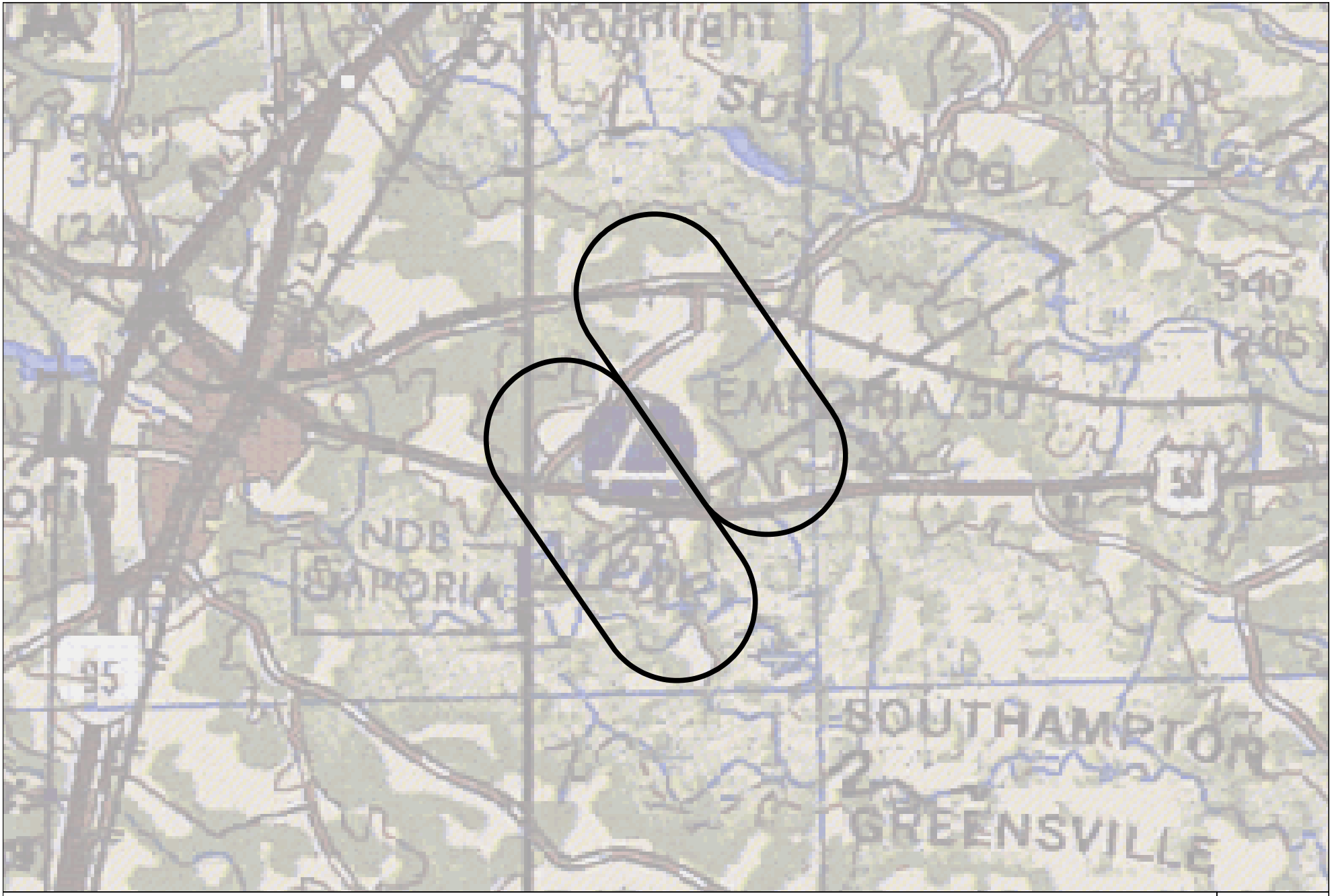
Summary Map of 3-Ship FCLP Flight Tracks



Flight Track Summary Map

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Scale in Feet 1:60,000 (1 inch = 5,000 feet)

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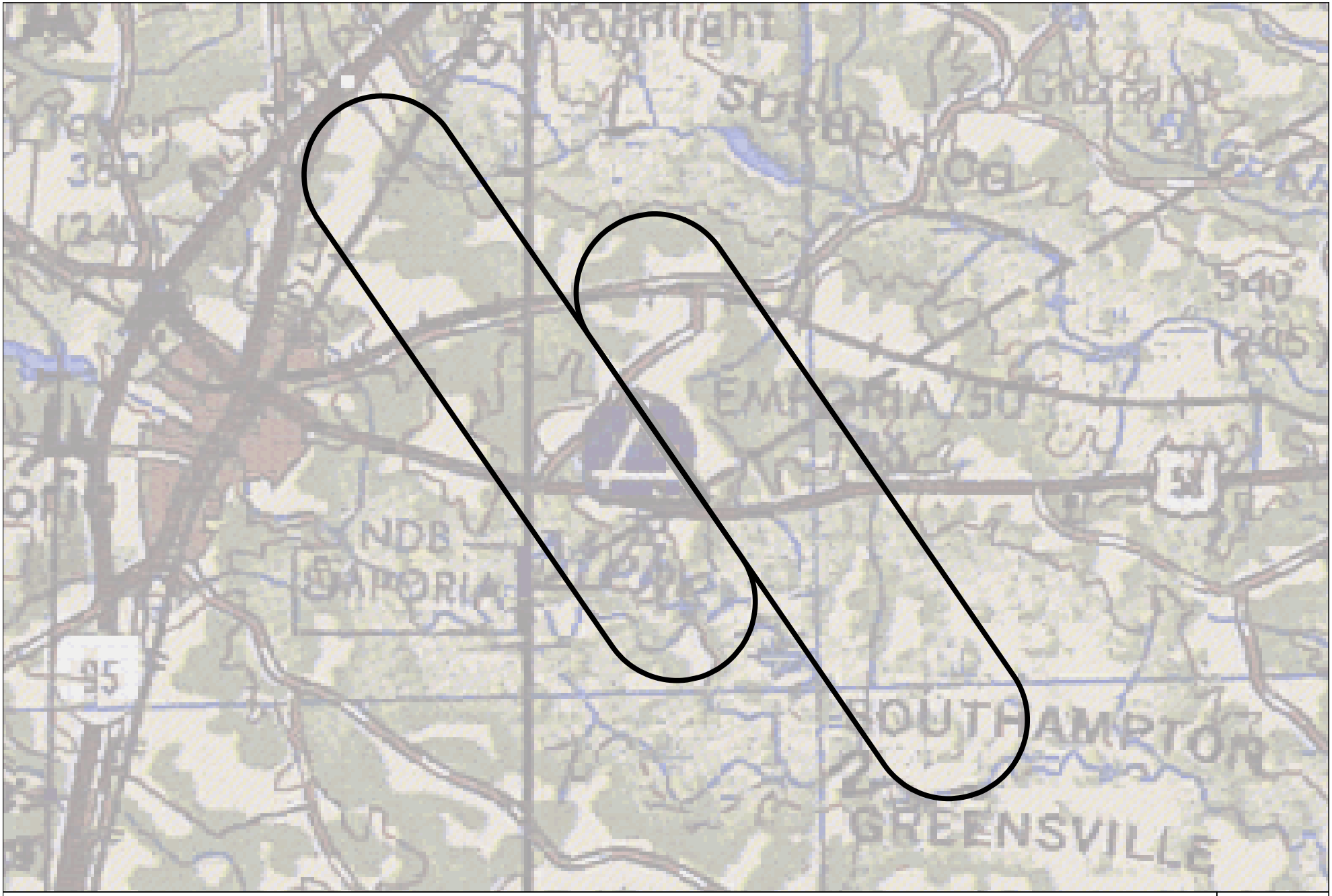
Summary Map of 5-Ship FCLP Flight Tracks



Flight Track Summary Map

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Scale in Feet 1:60,000 (1 inch = 5,000 feet)

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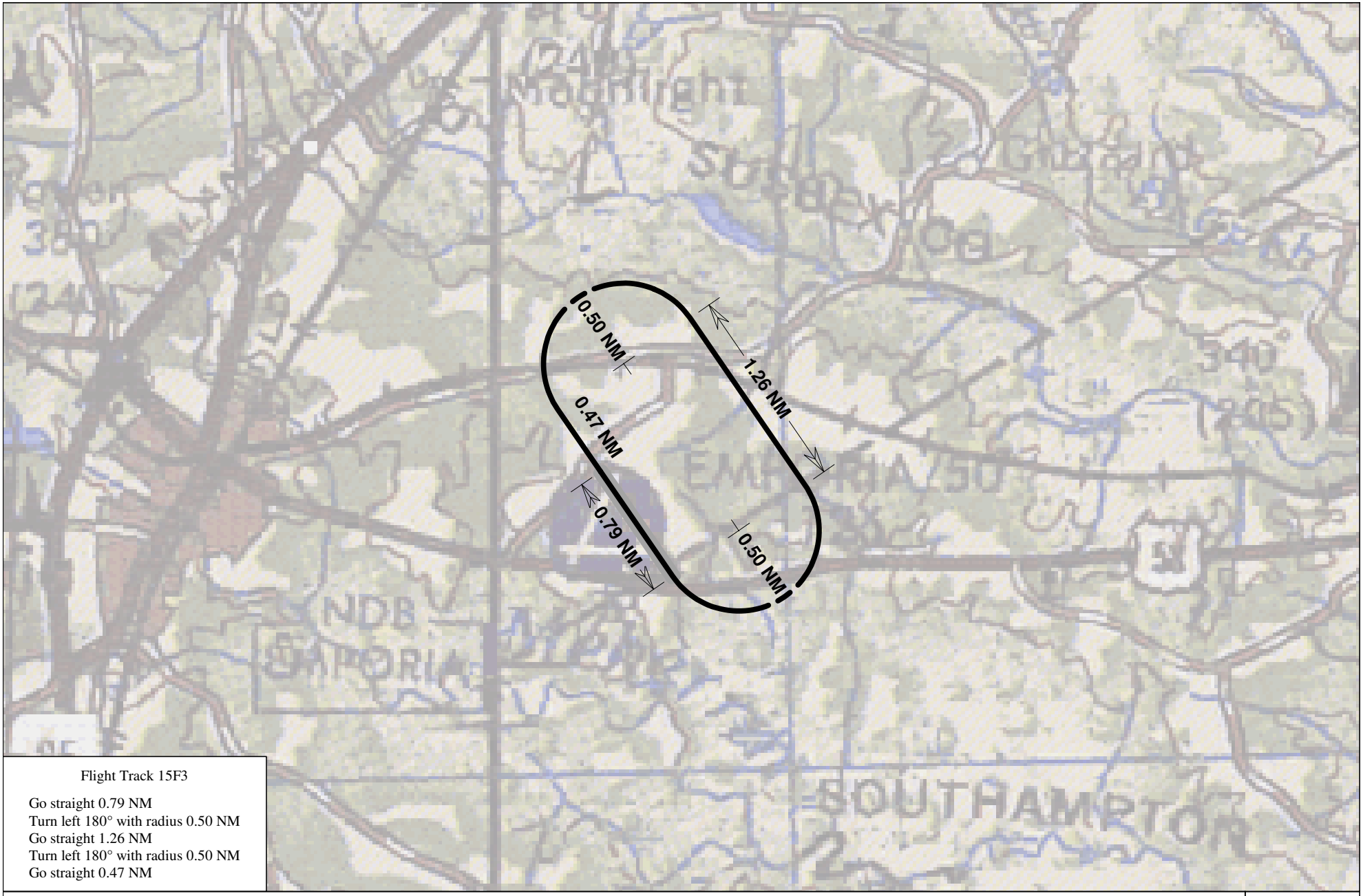
Maps of Individual FCLP Flight Tracks



Flight Track 15F3

Go straight 0.79 NM
Turn left 180° with radius 0.50 NM
Go straight 1.26 NM
Turn left 180° with radius 0.50 NM
Go straight 0.47 NM

Flight Track 15F3

FCLP 3 ship

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Scale in Feet 1:60,000 (1 inch = 5,000 feet)

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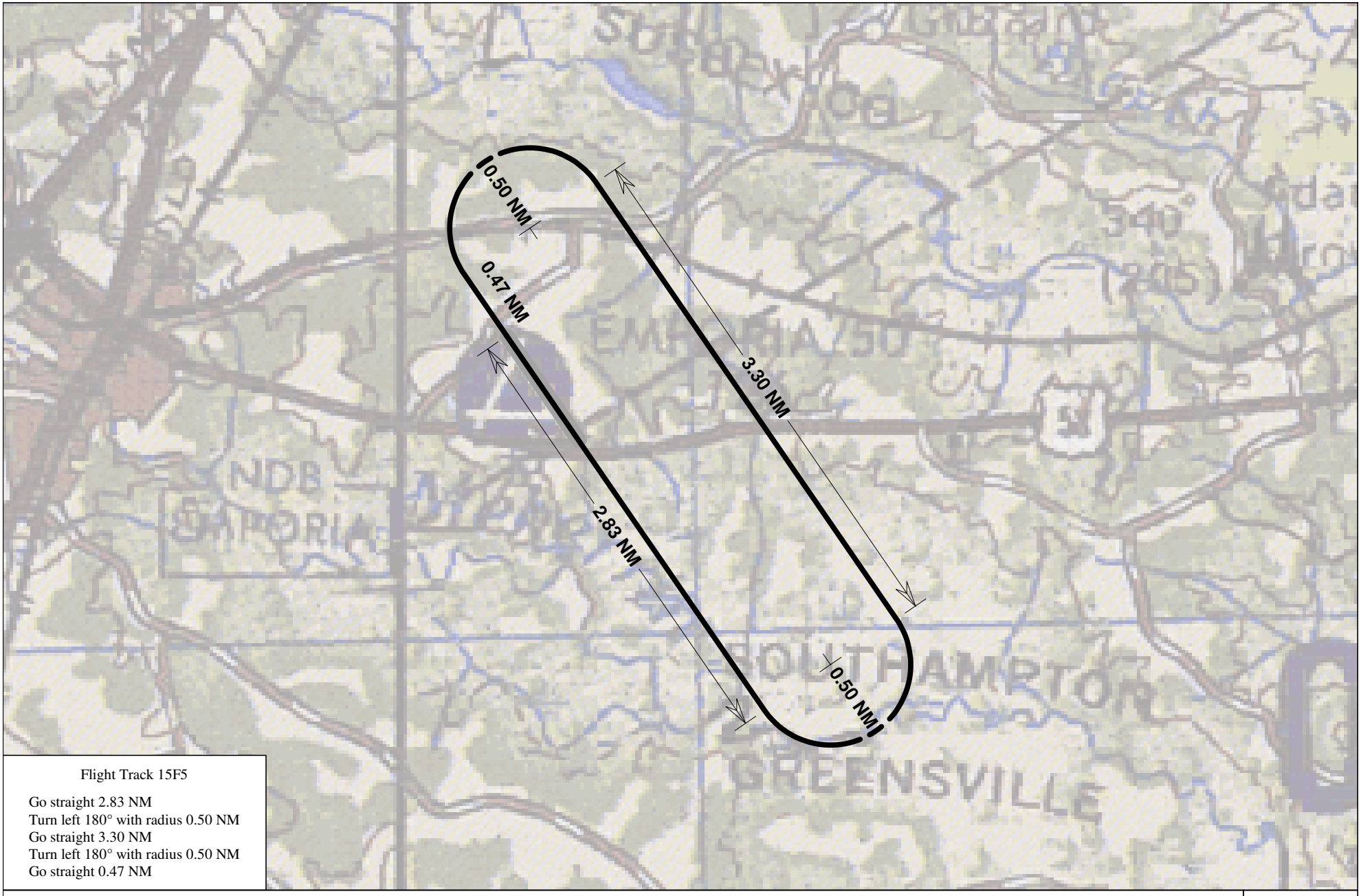

Flight Track 15F5

Go straight 2.83 NM
Turn left 180° with radius 0.50 NM
Go straight 3.30 NM
Turn left 180° with radius 0.50 NM
Go straight 0.47 NM

Flight Track 15F5

FCLP 5 ship

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Scale in Feet 1:60,000 (1 inch = 5,000 feet)

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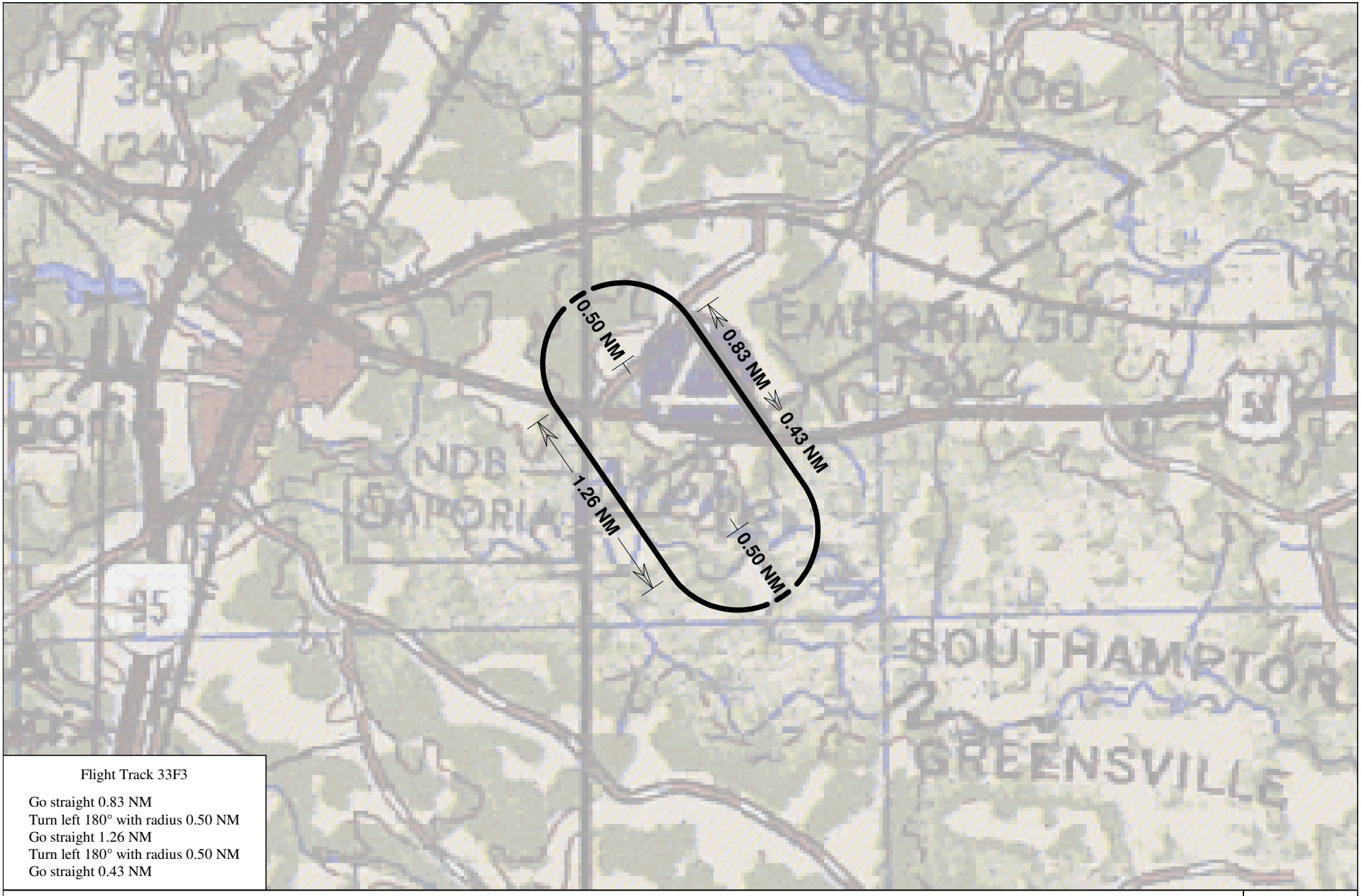

Flight Track 33F3

Go straight 0.83 NM
Turn left 180° with radius 0.50 NM
Go straight 1.26 NM
Turn left 180° with radius 0.50 NM
Go straight 0.43 NM

Flight Track 33F3

FCLP 3 ship

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Scale in Feet 1:60,000 (1 inch = 5,000 feet)

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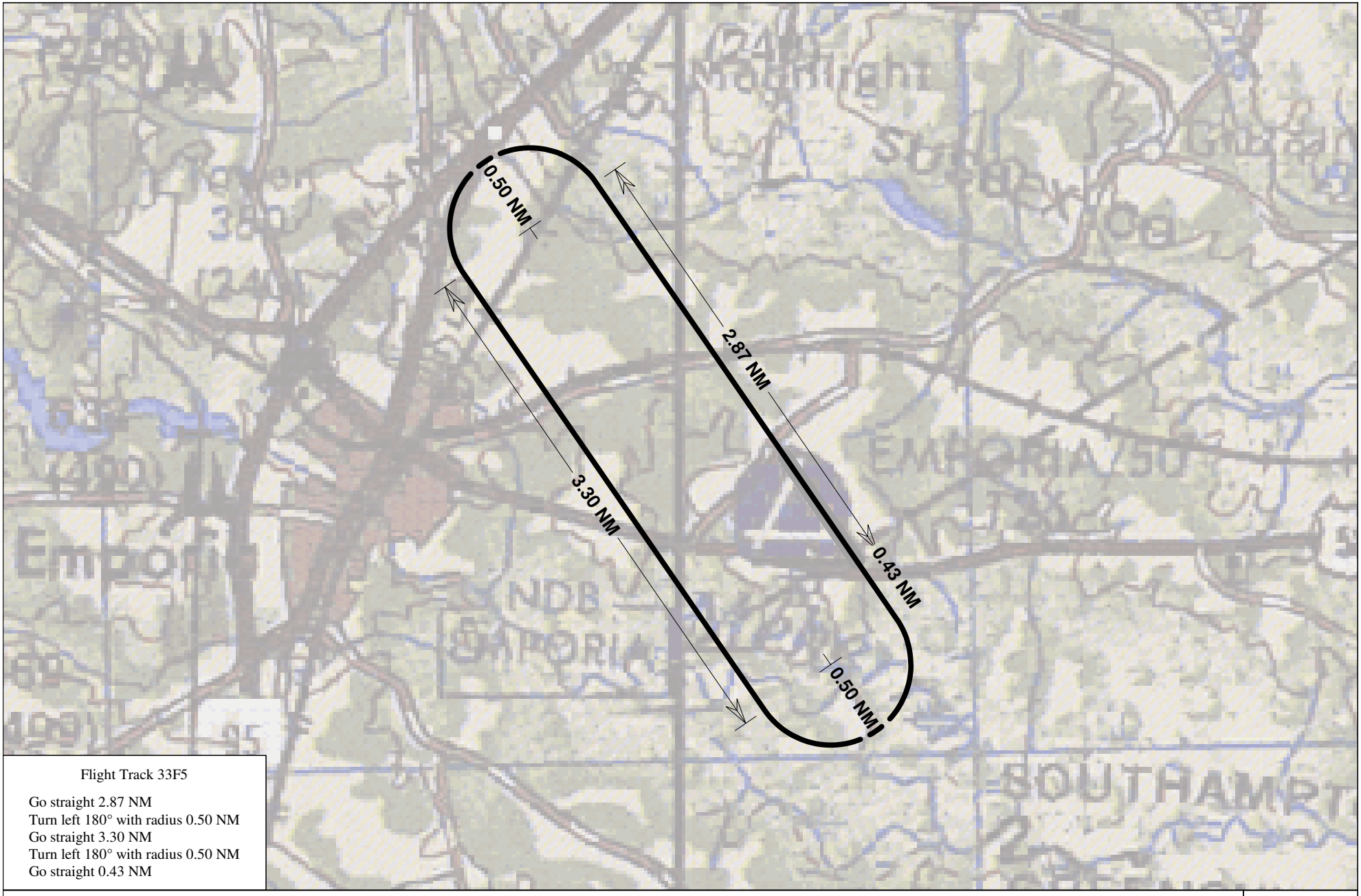

Flight Track 33F5

Go straight 2.87 NM
Turn left 180° with radius 0.50 NM
Go straight 3.30 NM
Turn left 180° with radius 0.50 NM
Go straight 0.43 NM

Flight Track 33F5

FCLP 5 ship

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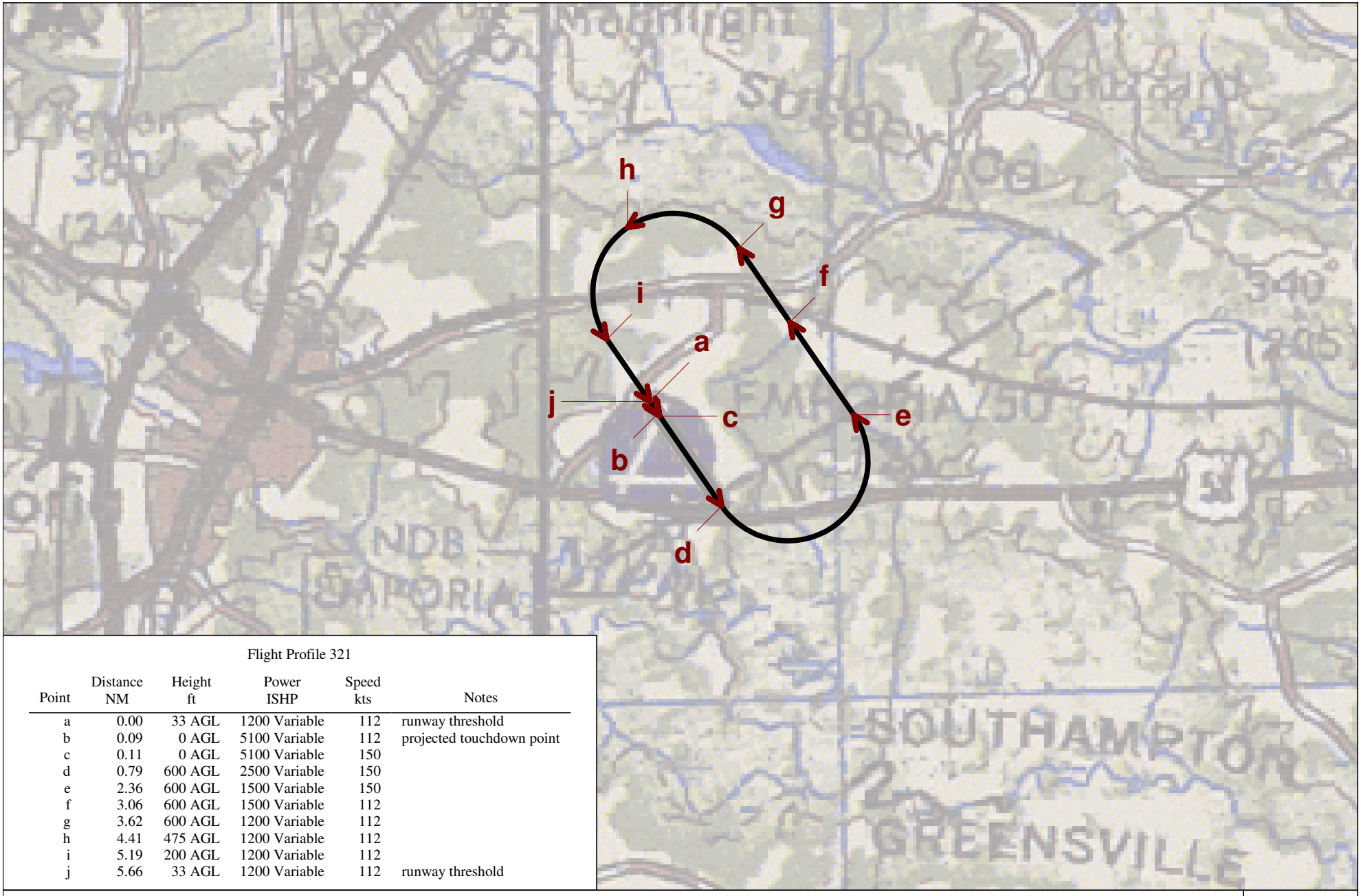
0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N

FCLP Flight Profiles



Flight Profile 321

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	33 AGL	1200 Variable	112	runway threshold
b	0.09	0 AGL	5100 Variable	112	projected touchdown point
c	0.11	0 AGL	5100 Variable	150	
d	0.79	600 AGL	2500 Variable	150	
e	2.36	600 AGL	1500 Variable	150	
f	3.06	600 AGL	1500 Variable	112	
g	3.62	600 AGL	1200 Variable	112	
h	4.41	475 AGL	1200 Variable	112	
i	5.19	200 AGL	1200 Variable	112	
j	5.66	33 AGL	1200 Variable	112	runway threshold

Flight Profile 321

FCLP 3 ship

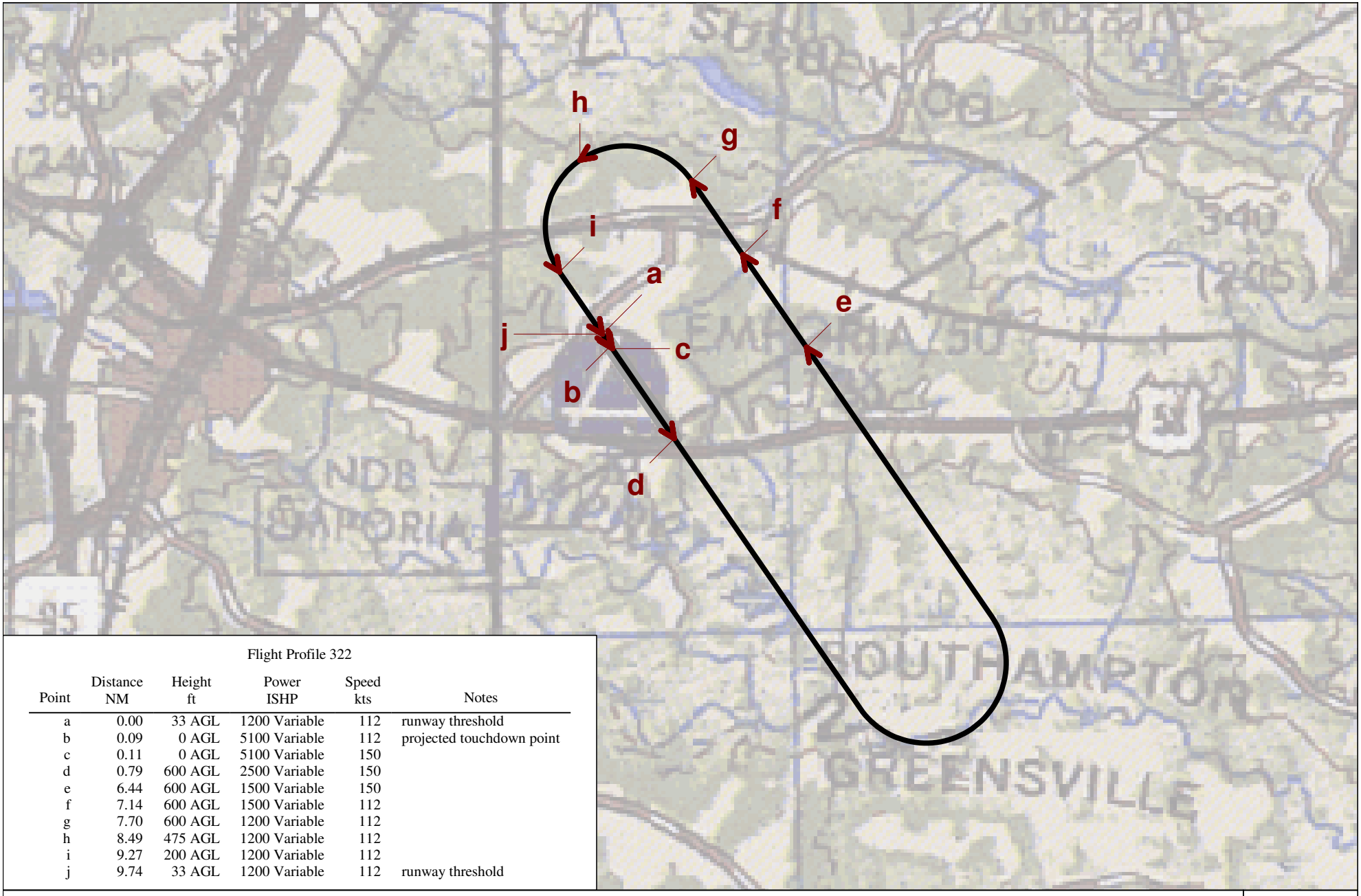
FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile 322

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	33 AGL	1200 Variable	112	runway threshold
b	0.09	0 AGL	5100 Variable	112	projected touchdown point
c	0.11	0 AGL	5100 Variable	150	
d	0.79	600 AGL	2500 Variable	150	
e	6.44	600 AGL	1500 Variable	150	
f	7.14	600 AGL	1500 Variable	112	
g	7.70	600 AGL	1200 Variable	112	
h	8.49	475 AGL	1200 Variable	112	
i	9.27	200 AGL	1200 Variable	112	
j	9.74	33 AGL	1200 Variable	112	runway threshold

Flight Profile 322

FCLP 5 ship

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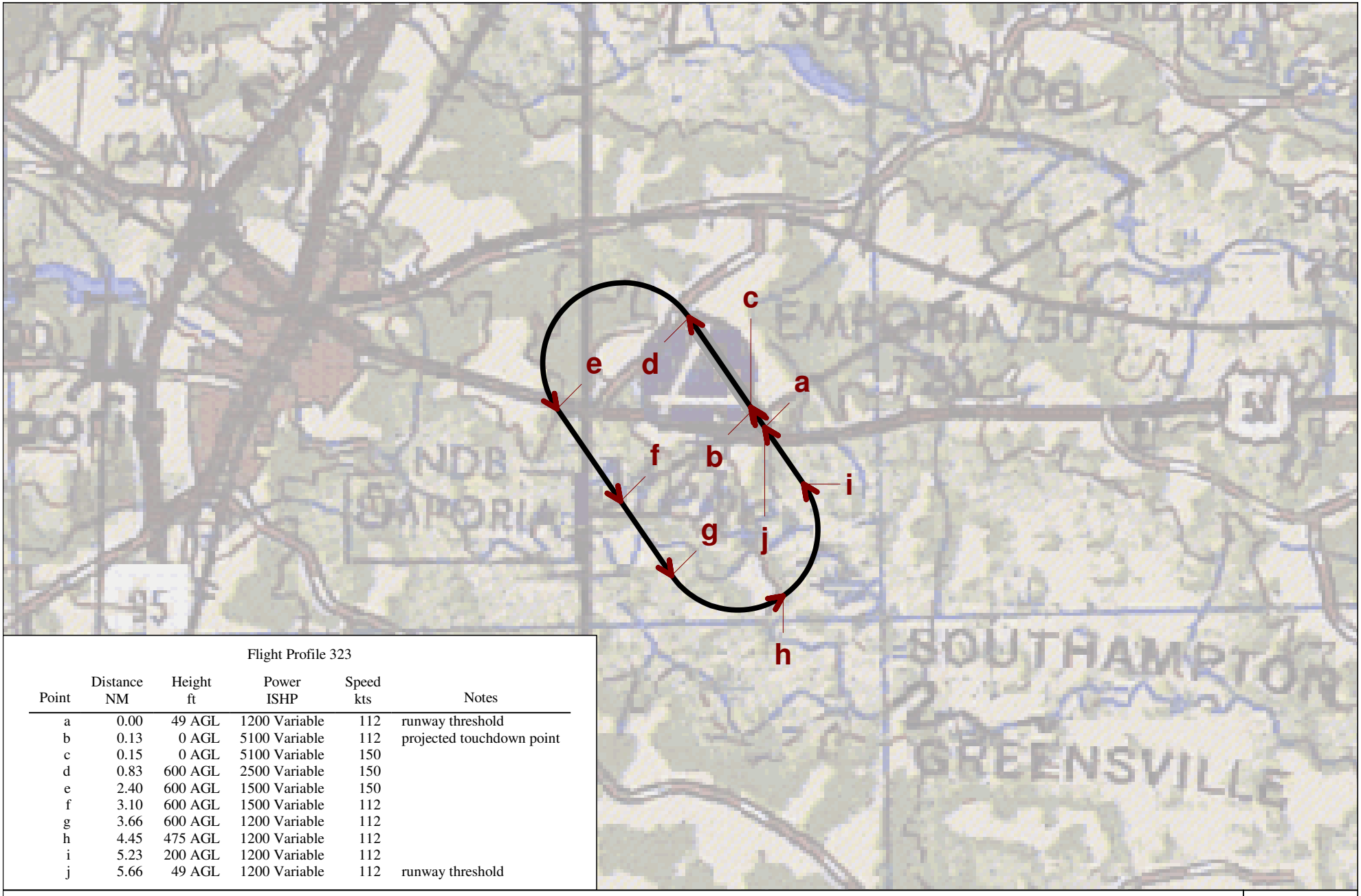
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile 323

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	49 AGL	1200 Variable	112	runway threshold
b	0.13	0 AGL	5100 Variable	112	projected touchdown point
c	0.15	0 AGL	5100 Variable	150	
d	0.83	600 AGL	2500 Variable	150	
e	2.40	600 AGL	1500 Variable	150	
f	3.10	600 AGL	1500 Variable	112	
g	3.66	600 AGL	1200 Variable	112	
h	4.45	475 AGL	1200 Variable	112	
i	5.23	200 AGL	1200 Variable	112	
j	5.66	49 AGL	1200 Variable	112	runway threshold

Flight Profile 323

FCLP 3 ship

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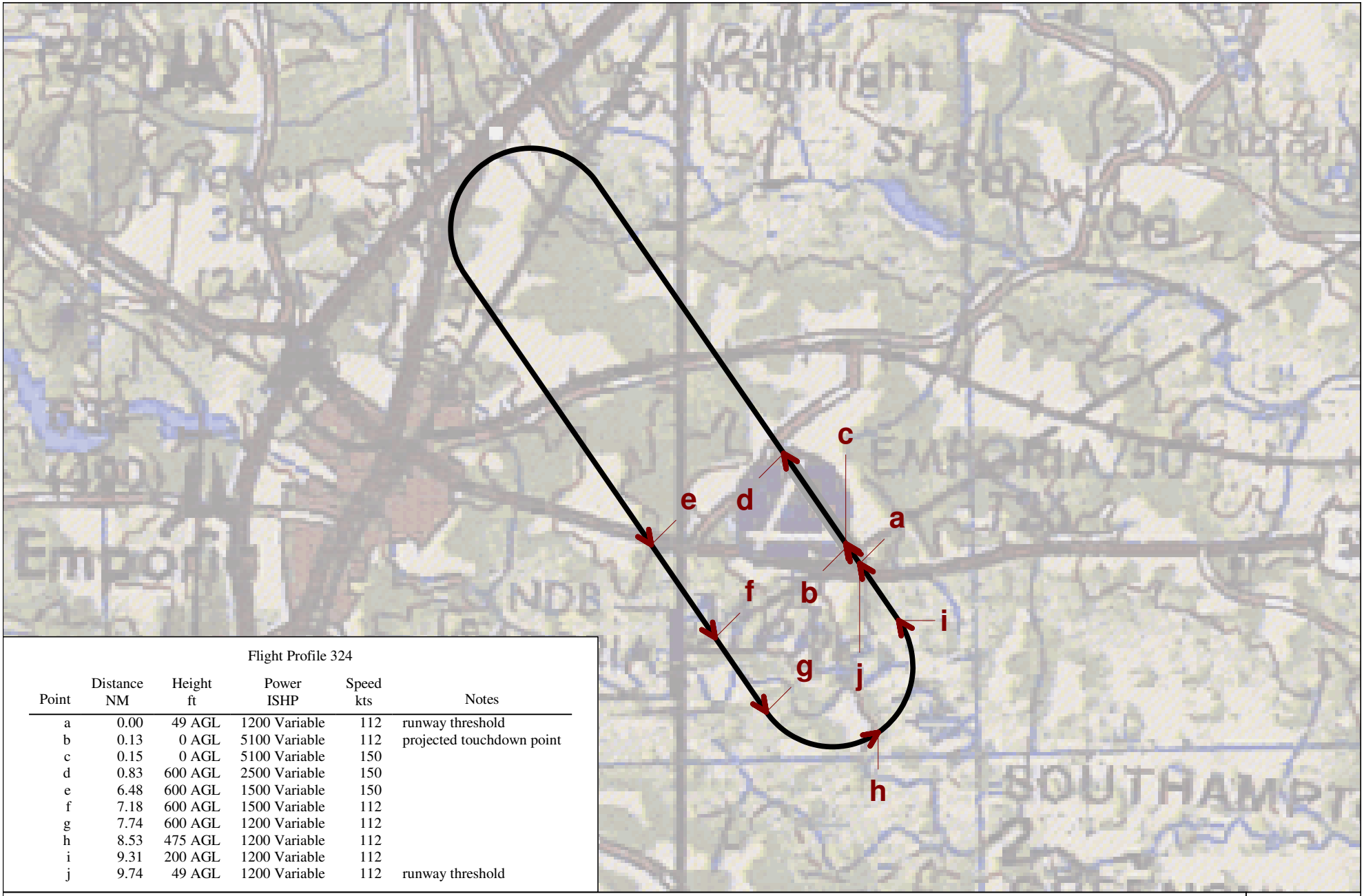
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile 324

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	49 AGL	1200 Variable	112	runway threshold
b	0.13	0 AGL	5100 Variable	112	projected touchdown point
c	0.15	0 AGL	5100 Variable	150	
d	0.83	600 AGL	2500 Variable	150	
e	6.48	600 AGL	1500 Variable	150	
f	7.18	600 AGL	1500 Variable	112	
g	7.74	600 AGL	1200 Variable	112	
h	8.53	475 AGL	1200 Variable	112	
i	9.31	200 AGL	1200 Variable	112	
j	9.74	49 AGL	1200 Variable	112	runway threshold

Flight Profile 324

FCLP 5 ship

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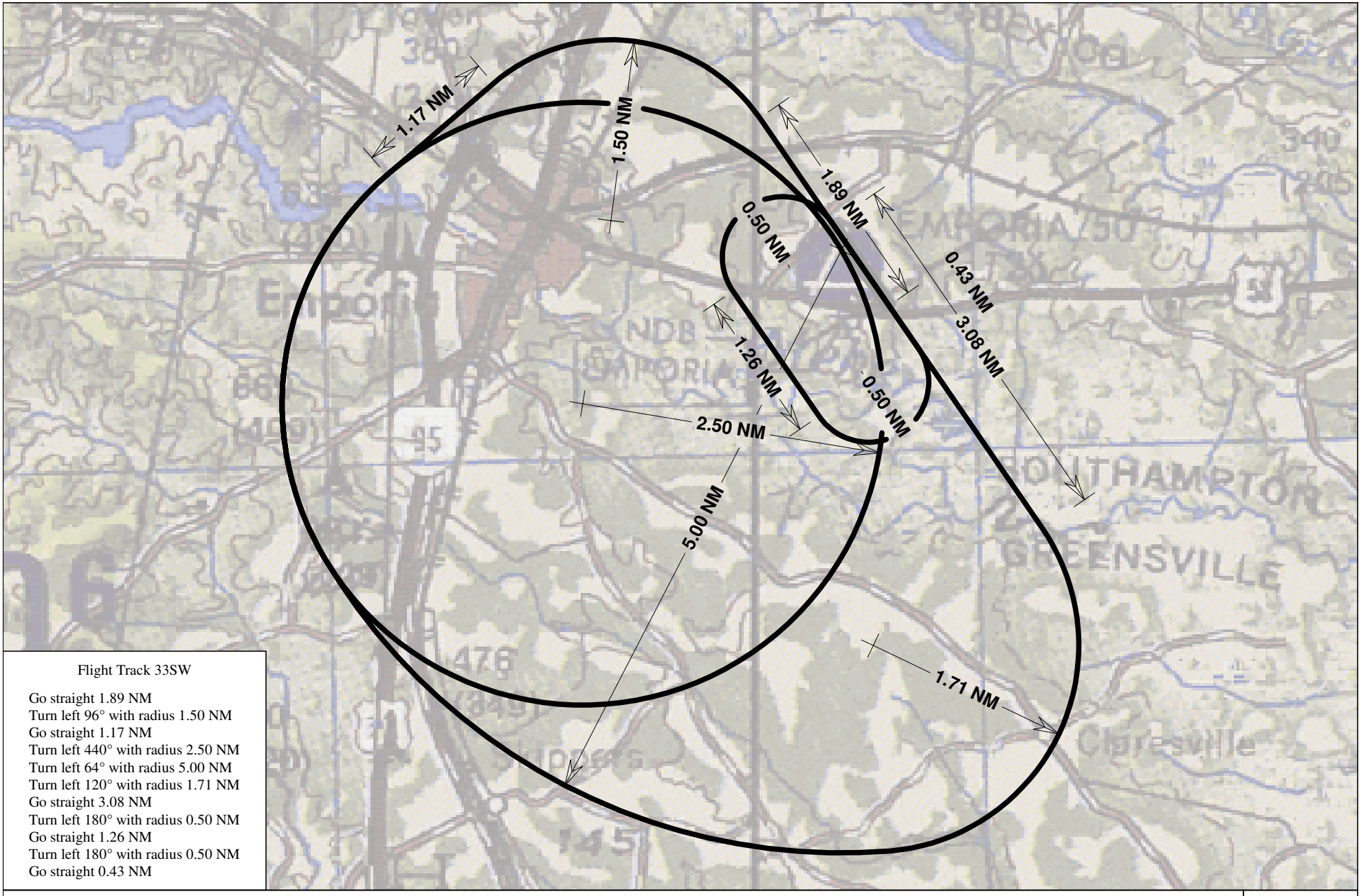
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

Example of Crew Swap Flight Track



Flight Track 33SW

Go straight 1.89 NM
Turn left 96° with radius 1.50 NM
Go straight 1.17 NM
Turn left 440° with radius 2.50 NM
Turn left 64° with radius 5.00 NM
Turn left 120° with radius 1.71 NM
Go straight 3.08 NM
Turn left 180° with radius 0.50 NM
Go straight 1.26 NM
Turn left 180° with radius 0.50 NM
Go straight 0.43 NM

Flight Track 33SW

Crew Swap Pattern

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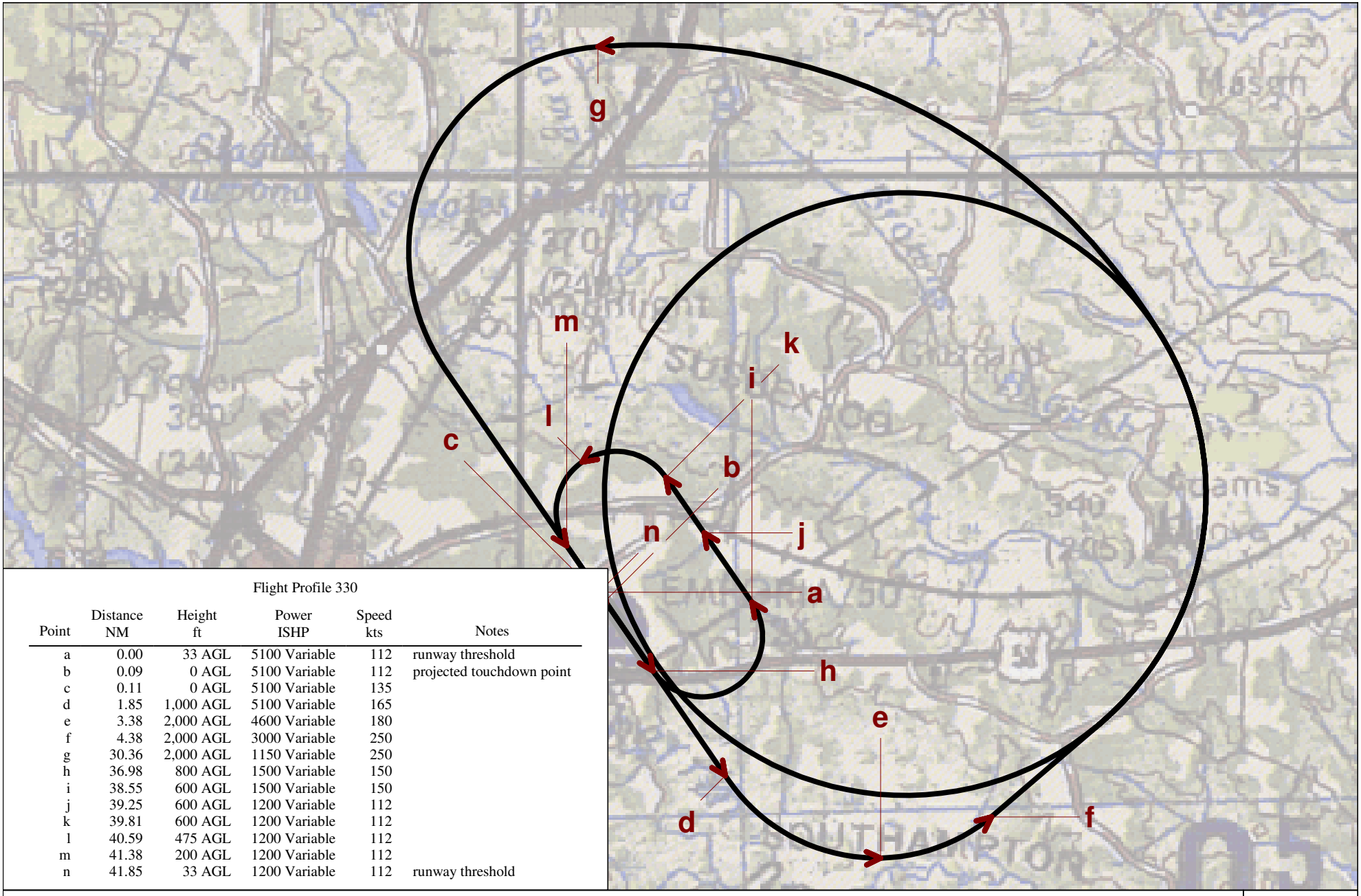
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000

Scale in Feet 1:80,000 (1 inch = 6,670 feet)

N

Maps of Crew Swap Flight Profiles



Flight Profile 330

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	33 AGL	5100 Variable	112	runway threshold
b	0.09	0 AGL	5100 Variable	112	projected touchdown point
c	0.11	0 AGL	5100 Variable	135	
d	1.85	1,000 AGL	5100 Variable	165	
e	3.38	2,000 AGL	4600 Variable	180	
f	4.38	2,000 AGL	3000 Variable	250	
g	30.36	2,000 AGL	1150 Variable	250	
h	36.98	800 AGL	1500 Variable	150	
i	38.55	600 AGL	1500 Variable	150	
j	39.25	600 AGL	1200 Variable	112	
k	39.81	600 AGL	1200 Variable	112	
l	40.59	475 AGL	1200 Variable	112	
m	41.38	200 AGL	1200 Variable	112	
n	41.85	33 AGL	1200 Variable	112	runway threshold

Flight Profile 330

Crew Swap

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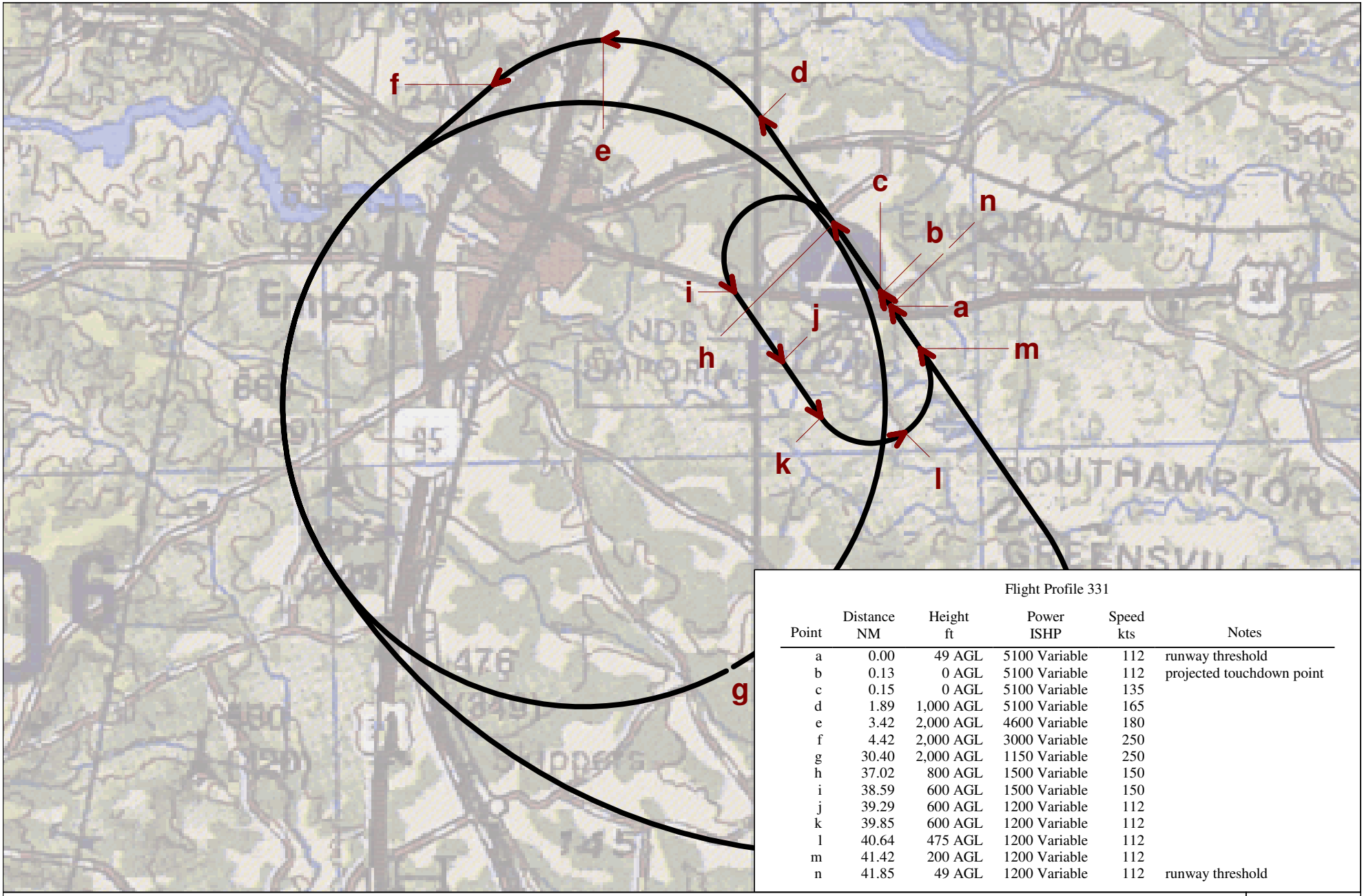
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000

Scale in Feet 1:80,000 (1 inch = 6,670 feet)



Flight Profile 331

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	49 AGL	5100 Variable	112	runway threshold
b	0.13	0 AGL	5100 Variable	112	projected touchdown point
c	0.15	0 AGL	5100 Variable	135	
d	1.89	1,000 AGL	5100 Variable	165	
e	3.42	2,000 AGL	4600 Variable	180	
f	4.42	2,000 AGL	3000 Variable	250	
g	30.40	2,000 AGL	1150 Variable	250	
h	37.02	800 AGL	1500 Variable	150	
i	38.59	600 AGL	1500 Variable	150	
j	39.29	600 AGL	1200 Variable	112	
k	39.85	600 AGL	1200 Variable	112	
l	40.64	475 AGL	1200 Variable	112	
m	41.42	200 AGL	1200 Variable	112	
n	41.85	49 AGL	1200 Variable	112	runway threshold

Flight Profile 331

Crew Swap

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DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000

Scale in Feet 1:80,000 (1 inch = 6,670 feet)

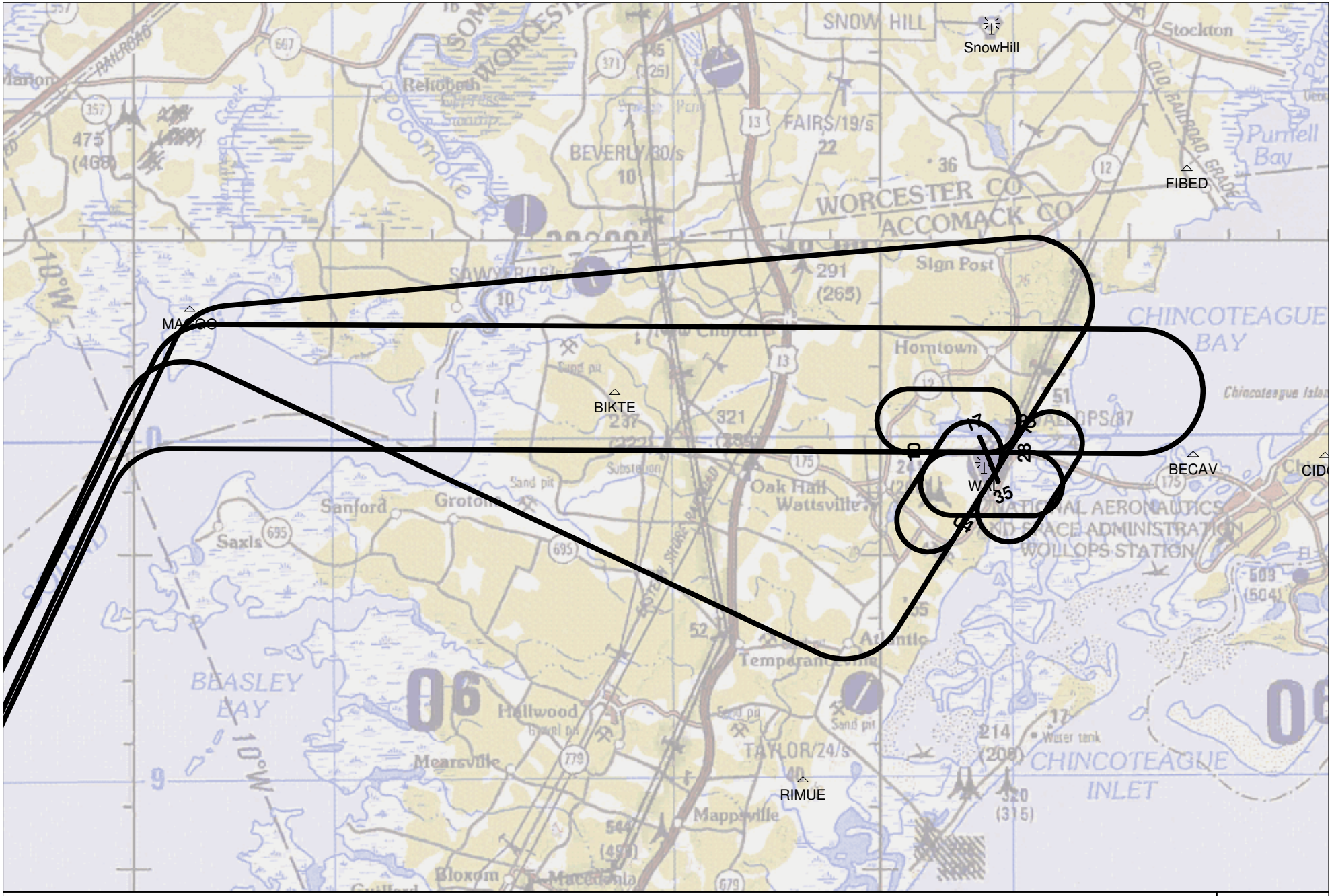
N

E2 Auxiliary Use EA -- Wallops Island

E-2 Ops

12:21 AM
Saturday, March 3, 2012
BaseOps 7.357

Summary Map of Arrival Flight Tracks



Flight Track Summary Map

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

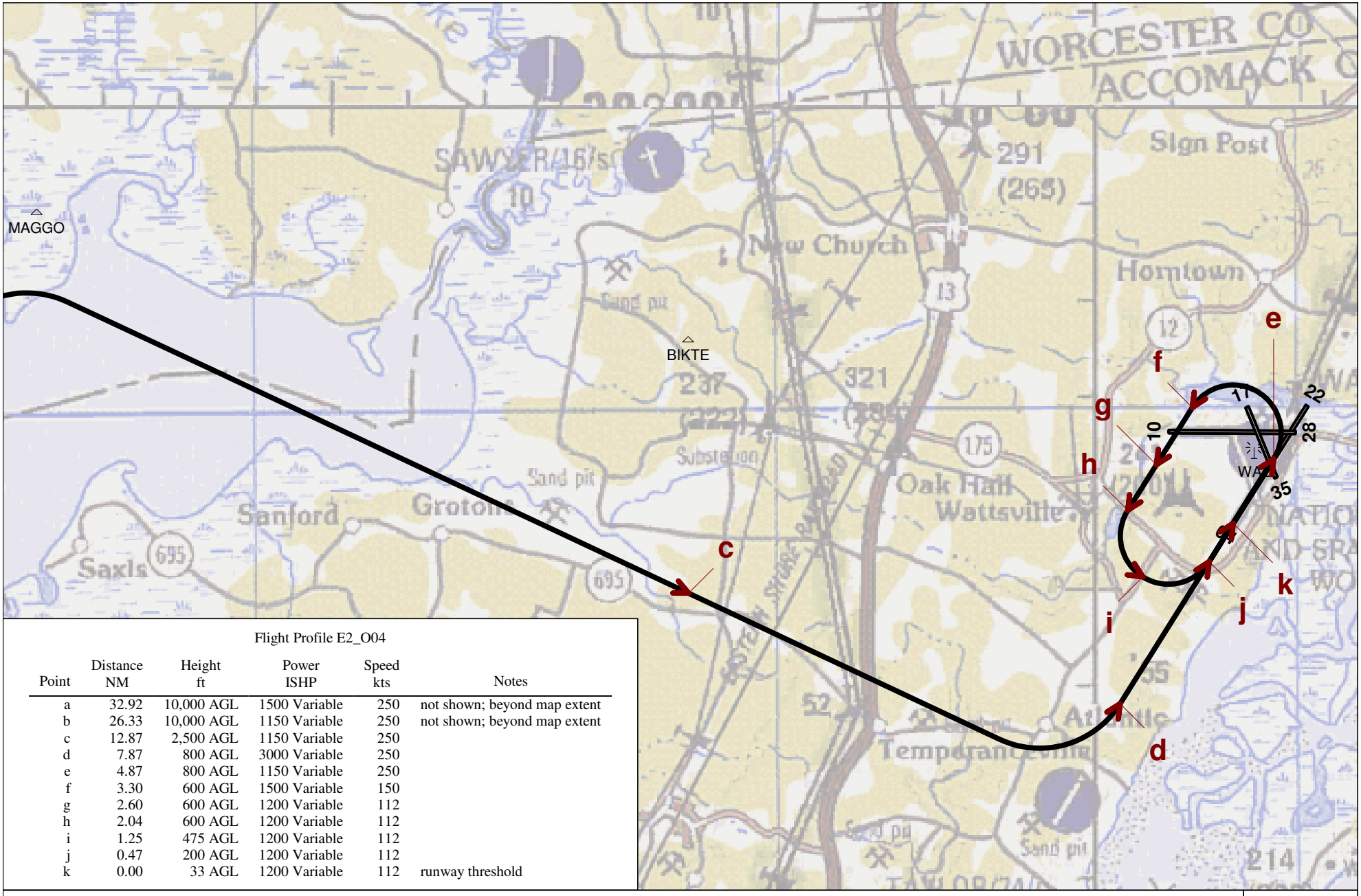
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000 44,000 48,000 52,000

Scale in Feet 1:150,000 (1 inch = 12,500 feet)

N

Maps of Arrival Flight Profiles



Flight Profile E2_O04

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	32.92	10,000 AGL	1500 Variable	250	not shown; beyond map extent
b	26.33	10,000 AGL	1150 Variable	250	not shown; beyond map extent
c	12.87	2,500 AGL	1150 Variable	250	
d	7.87	800 AGL	3000 Variable	250	
e	4.87	800 AGL	1150 Variable	250	
f	3.30	600 AGL	1500 Variable	150	
g	2.60	600 AGL	1200 Variable	112	
h	2.04	600 AGL	1200 Variable	112	
i	1.25	475 AGL	1200 Variable	112	
j	0.47	200 AGL	1200 Variable	112	
k	0.00	33 AGL	1200 Variable	112	runway threshold

Flight Profile E2_O04

Overhead Break

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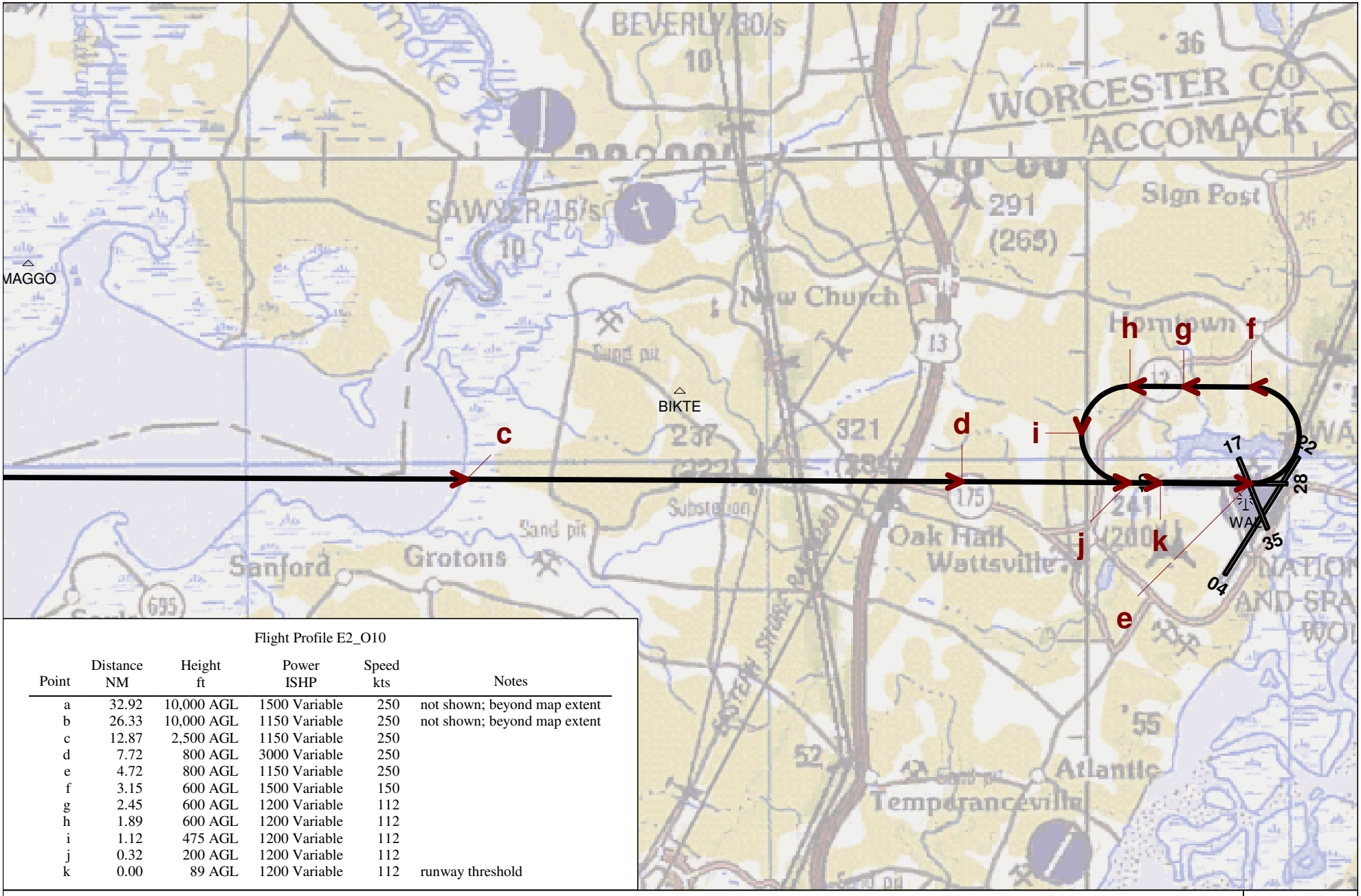
0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

N



Flight Profile E2_O10

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	32.92	10,000 AGL	1500 Variable	250	not shown; beyond map extent
b	26.33	10,000 AGL	1150 Variable	250	not shown; beyond map extent
c	12.87	2,500 AGL	1150 Variable	250	
d	7.72	800 AGL	3000 Variable	250	
e	4.72	800 AGL	1150 Variable	250	
f	3.15	600 AGL	1500 Variable	150	
g	2.45	600 AGL	1200 Variable	112	
h	1.89	600 AGL	1200 Variable	112	
i	1.12	475 AGL	1200 Variable	112	
j	0.32	200 AGL	1200 Variable	112	
k	0.00	89 AGL	1200 Variable	112	runway threshold

Flight Profile E2_O10

Overhead Arrival from Norfolk

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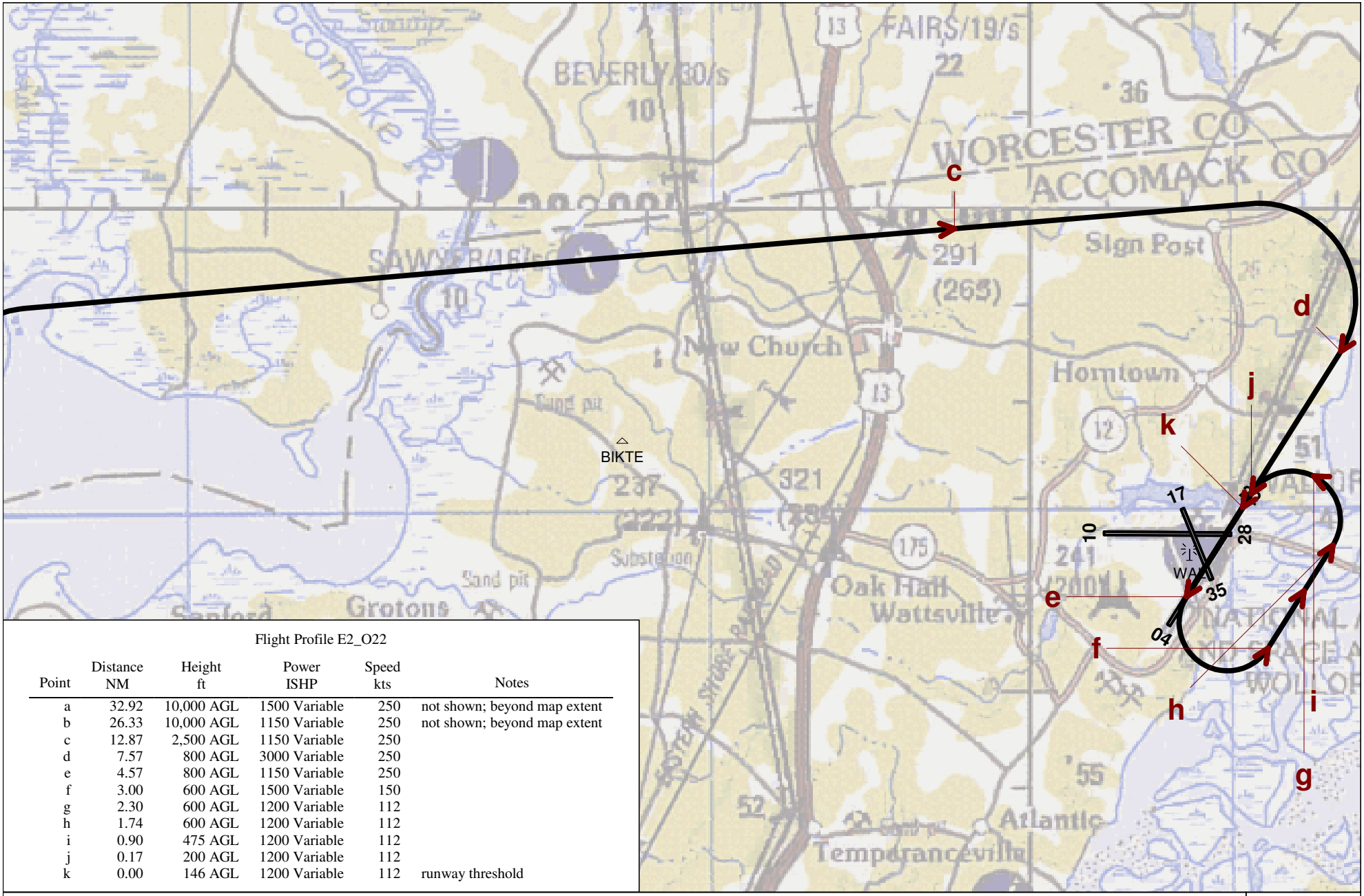
0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

N



Flight Profile E2_O22

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	32.92	10,000 AGL	1500 Variable	250	not shown; beyond map extent
b	26.33	10,000 AGL	1150 Variable	250	not shown; beyond map extent
c	12.87	2,500 AGL	1150 Variable	250	
d	7.57	800 AGL	3000 Variable	250	
e	4.57	800 AGL	1150 Variable	250	
f	3.00	600 AGL	1500 Variable	150	
g	2.30	600 AGL	1200 Variable	112	
h	1.74	600 AGL	1200 Variable	112	
i	0.90	475 AGL	1200 Variable	112	
j	0.17	200 AGL	1200 Variable	112	
k	0.00	146 AGL	1200 Variable	112	runway threshold

Flight Profile E2_O22

Overhead Arrival from Norfolk

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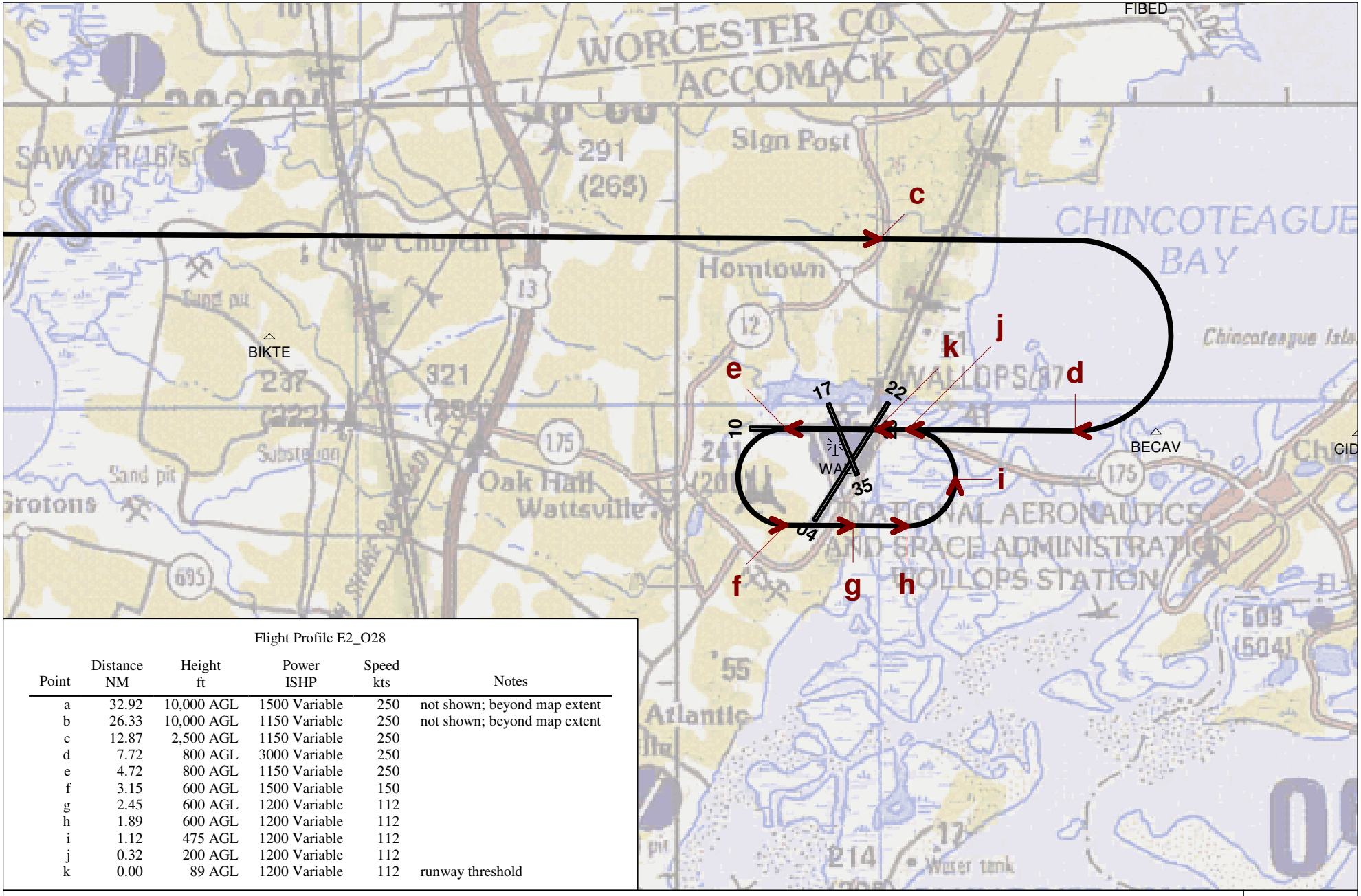
0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

N



Flight Profile E2_O28

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	32.92	10,000 AGL	1500 Variable	250	not shown; beyond map extent
b	26.33	10,000 AGL	1150 Variable	250	not shown; beyond map extent
c	12.87	2,500 AGL	1150 Variable	250	
d	7.72	800 AGL	3000 Variable	250	
e	4.72	800 AGL	1150 Variable	250	
f	3.15	600 AGL	1500 Variable	150	
g	2.45	600 AGL	1200 Variable	112	
h	1.89	600 AGL	1200 Variable	112	
i	1.12	475 AGL	1200 Variable	112	
j	0.32	200 AGL	1200 Variable	112	
k	0.00	89 AGL	1200 Variable	112	runway threshold

Flight Profile E2_O28

Overhead Arrival from Norfolk

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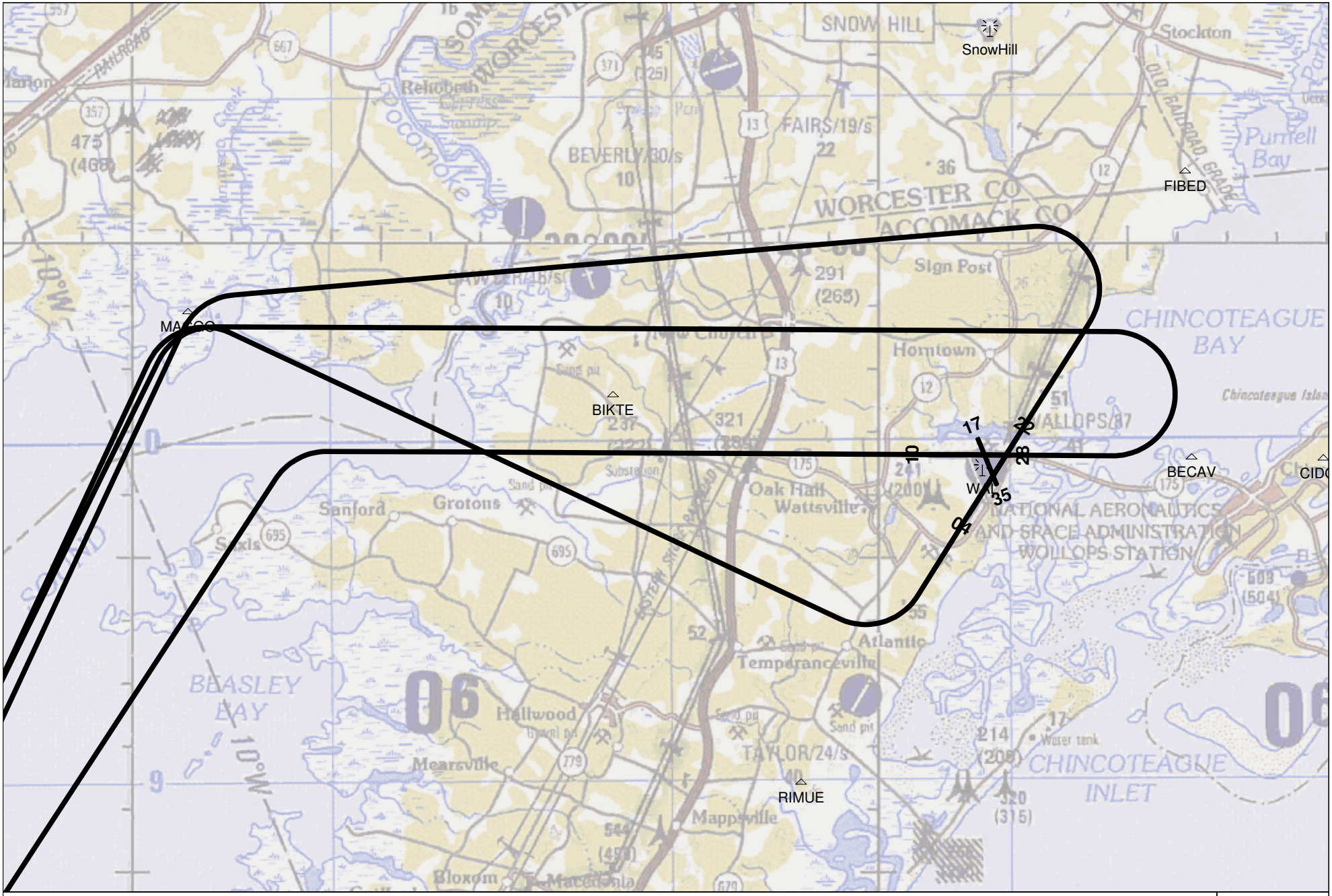
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

Summary Map of Departure Flight Tracks



Flight Track Summary Map

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

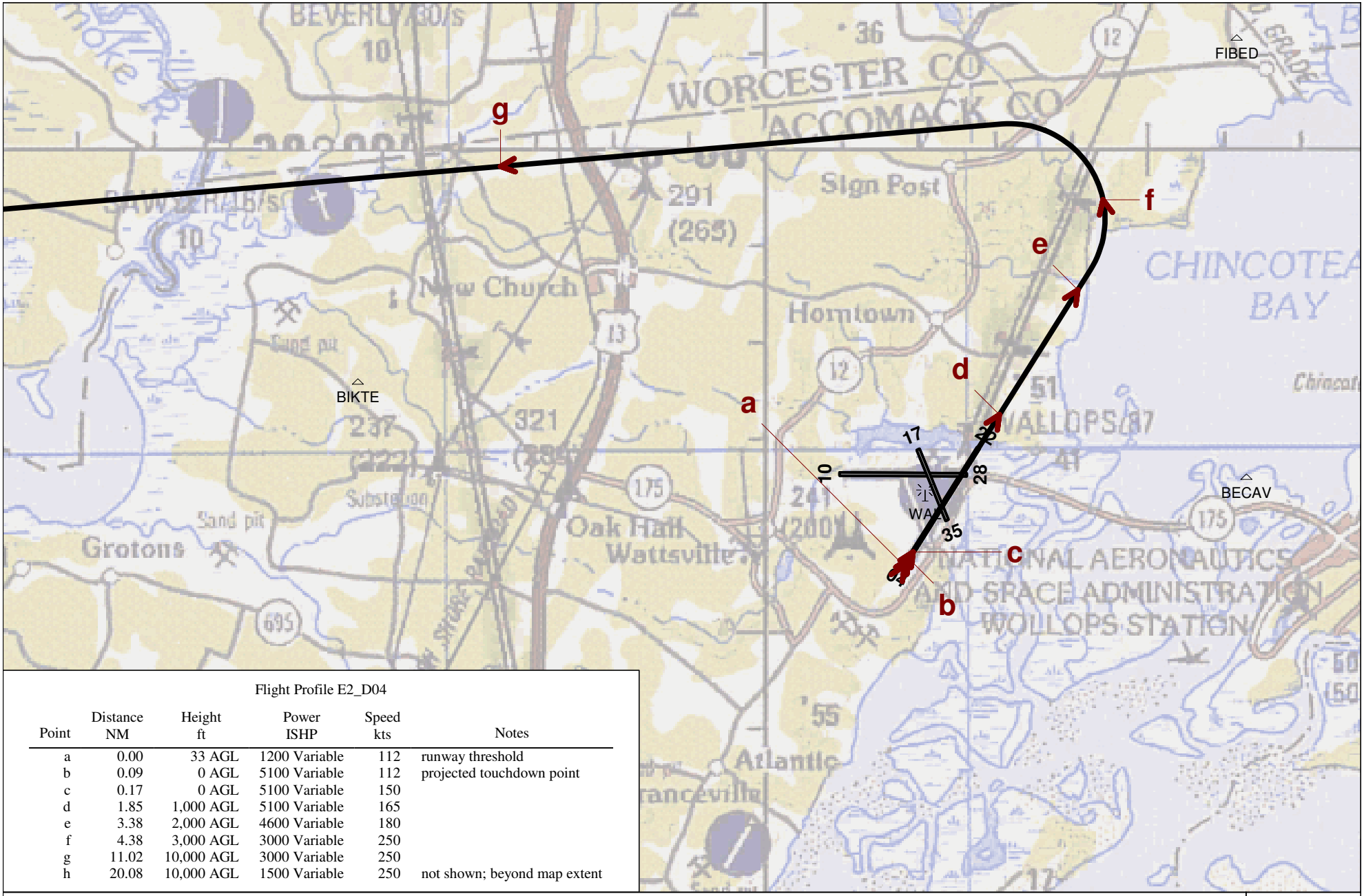
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000 44,000 48,000 52,000

Scale in Feet 1:150,000 (1 inch = 12,500 feet)

N

Maps of Departure Flight Profiles



Flight Profile E2_D04

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	33 AGL	1200 Variable	112	runway threshold
b	0.09	0 AGL	5100 Variable	112	projected touchdown point
c	0.17	0 AGL	5100 Variable	150	
d	1.85	1,000 AGL	5100 Variable	165	
e	3.38	2,000 AGL	4600 Variable	180	
f	4.38	3,000 AGL	3000 Variable	250	
g	11.02	10,000 AGL	3000 Variable	250	
h	20.08	10,000 AGL	1500 Variable	250	not shown; beyond map extent

Flight Profile E2_D04

Interfacility Departure to Norfolk

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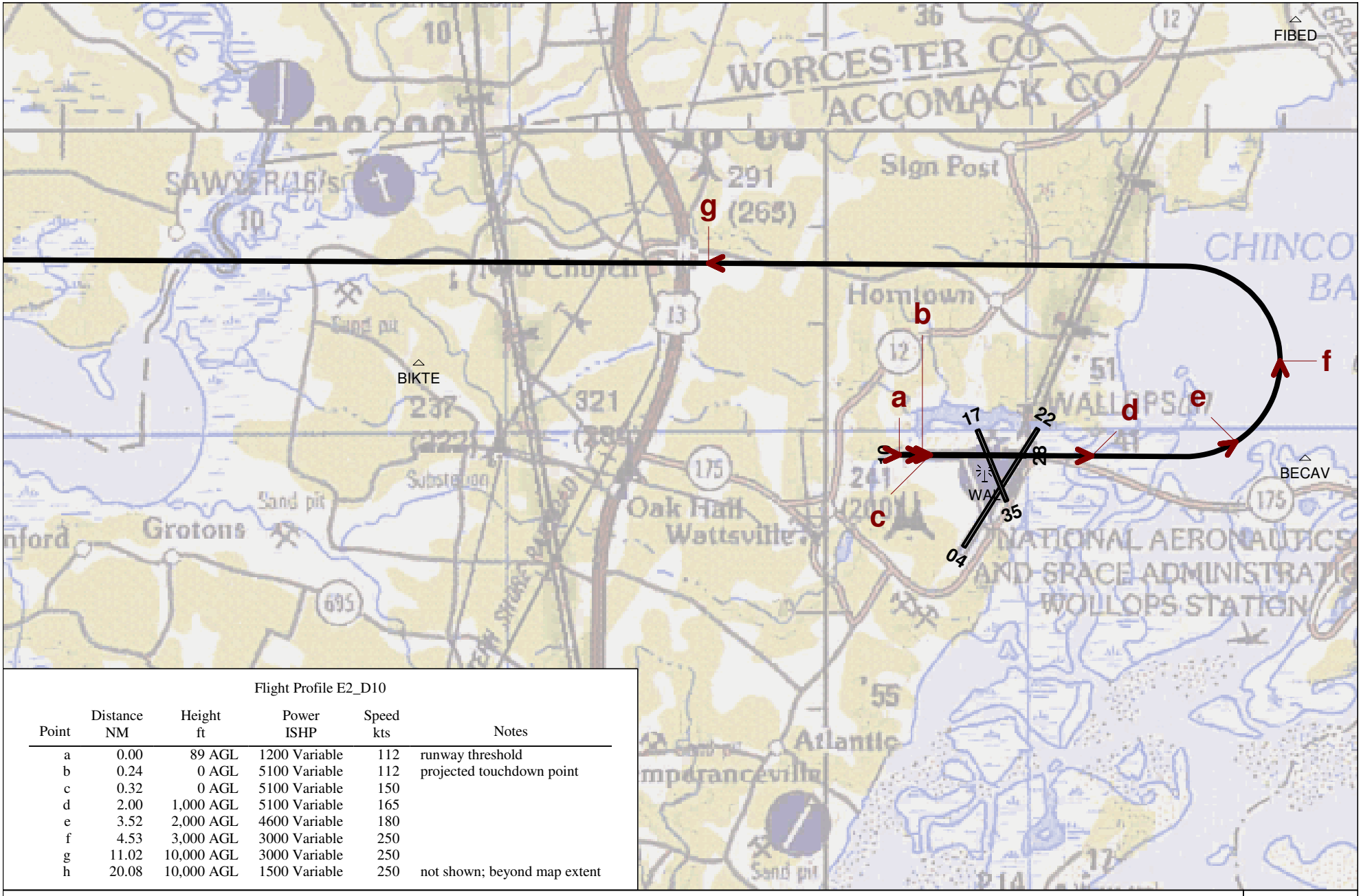
0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

N



Flight Profile E2_D10

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	89 AGL	1200 Variable	112	runway threshold
b	0.24	0 AGL	5100 Variable	112	projected touchdown point
c	0.32	0 AGL	5100 Variable	150	
d	2.00	1,000 AGL	5100 Variable	165	
e	3.52	2,000 AGL	4600 Variable	180	
f	4.53	3,000 AGL	3000 Variable	250	
g	11.02	10,000 AGL	3000 Variable	250	
h	20.08	10,000 AGL	1500 Variable	250	not shown; beyond map extent

Flight Profile E2_D10

Interfacility Departure to Norfolk

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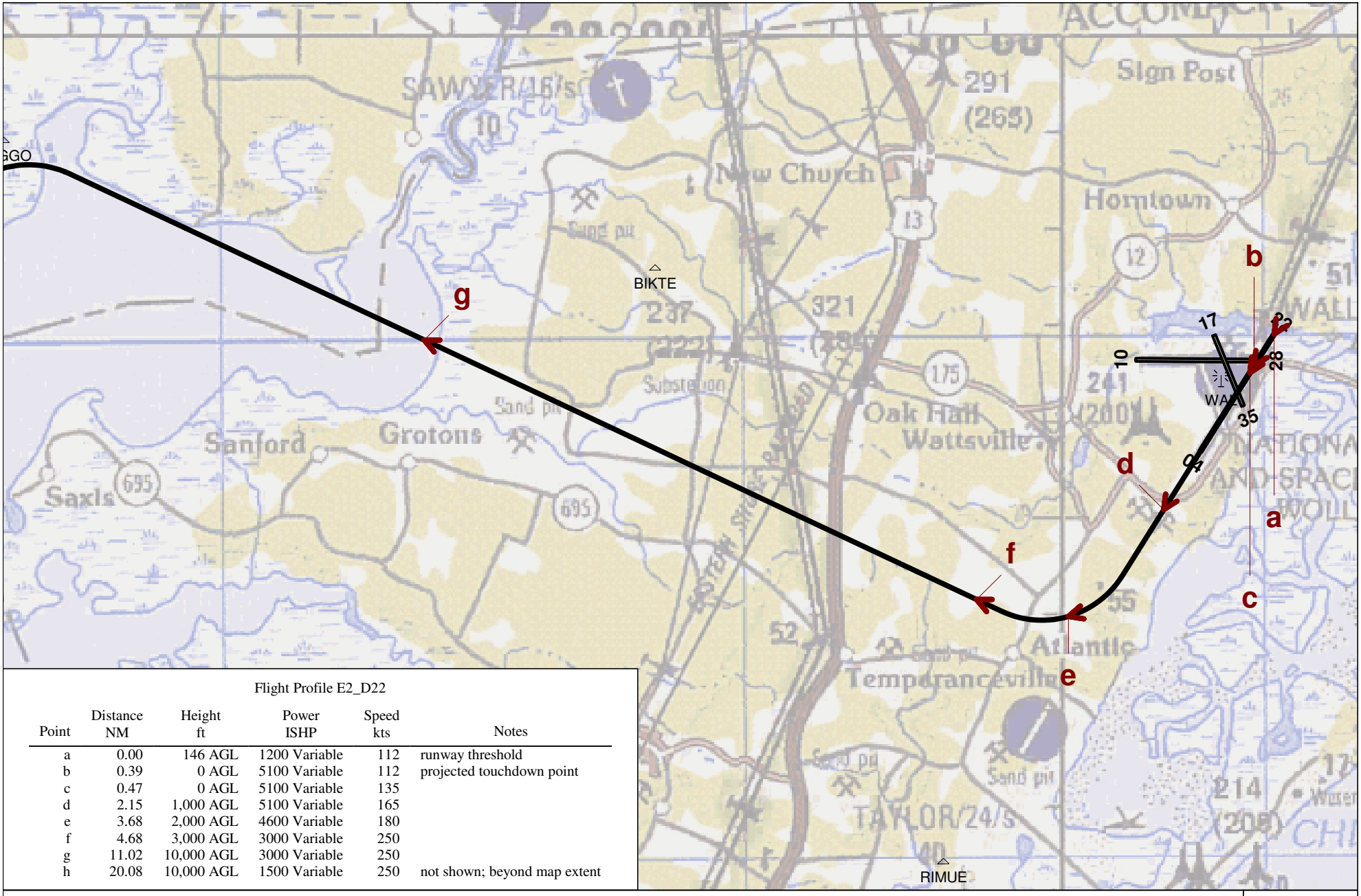
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

N



Flight Profile E2_D22

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	146 AGL	1200 Variable	112	runway threshold
b	0.39	0 AGL	5100 Variable	112	projected touchdown point
c	0.47	0 AGL	5100 Variable	135	
d	2.15	1,000 AGL	5100 Variable	165	
e	3.68	2,000 AGL	4600 Variable	180	
f	4.68	3,000 AGL	3000 Variable	250	
g	11.02	10,000 AGL	3000 Variable	250	
h	20.08	10,000 AGL	1500 Variable	250	not shown; beyond map extent

Flight Profile E2_D22

Interfacility Departure to Norfolk

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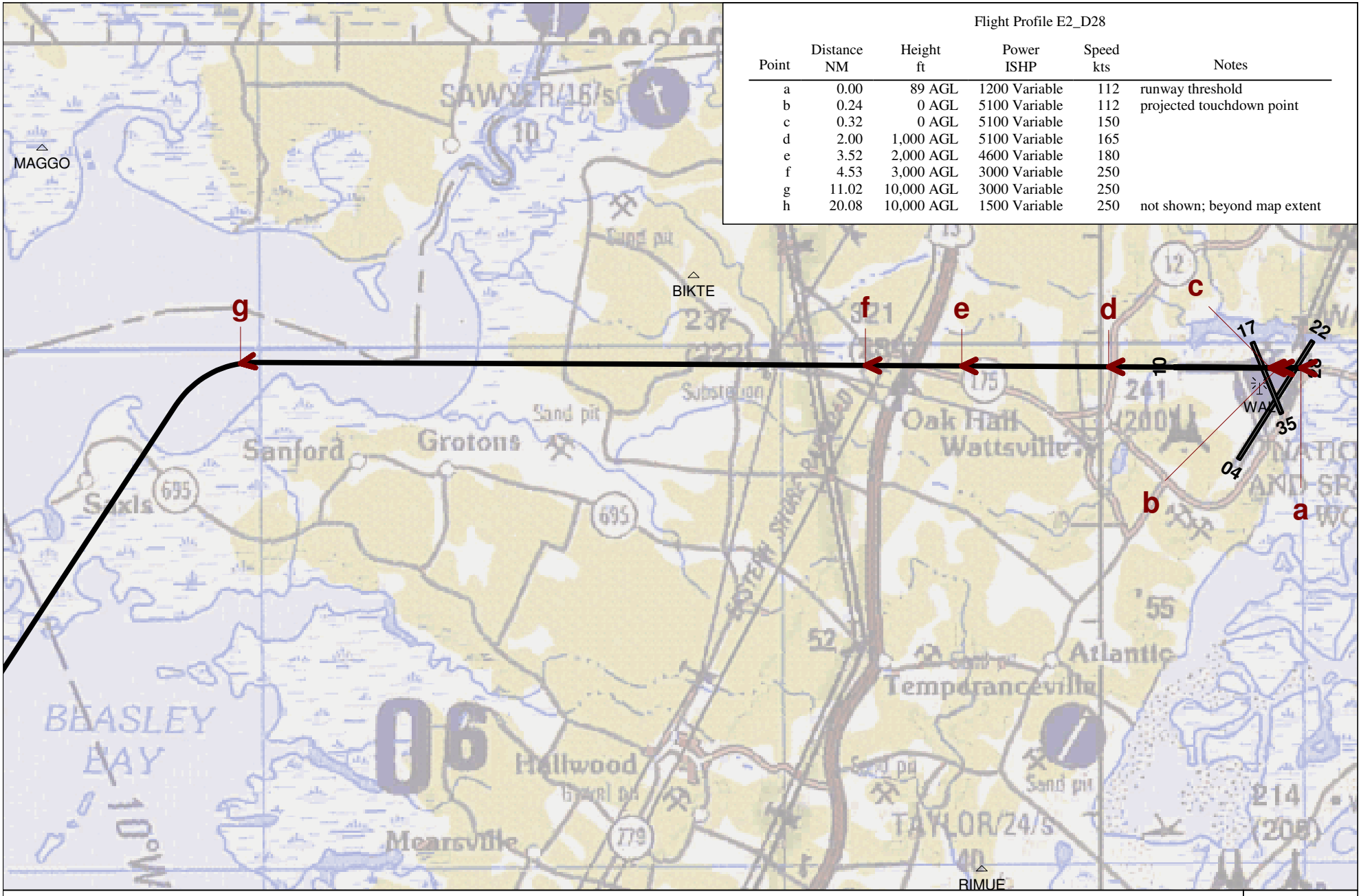
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

Flight Profile E2_D28

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	89 AGL	1200 Variable	112	runway threshold
b	0.24	0 AGL	5100 Variable	112	projected touchdown point
c	0.32	0 AGL	5100 Variable	150	
d	2.00	1,000 AGL	5100 Variable	165	
e	3.52	2,000 AGL	4600 Variable	180	
f	4.53	3,000 AGL	3000 Variable	250	
g	11.02	10,000 AGL	3000 Variable	250	
h	20.08	10,000 AGL	1500 Variable	250	not shown; beyond map extent



Flight Profile E2_D28

Interfacility Departure to Norfolk

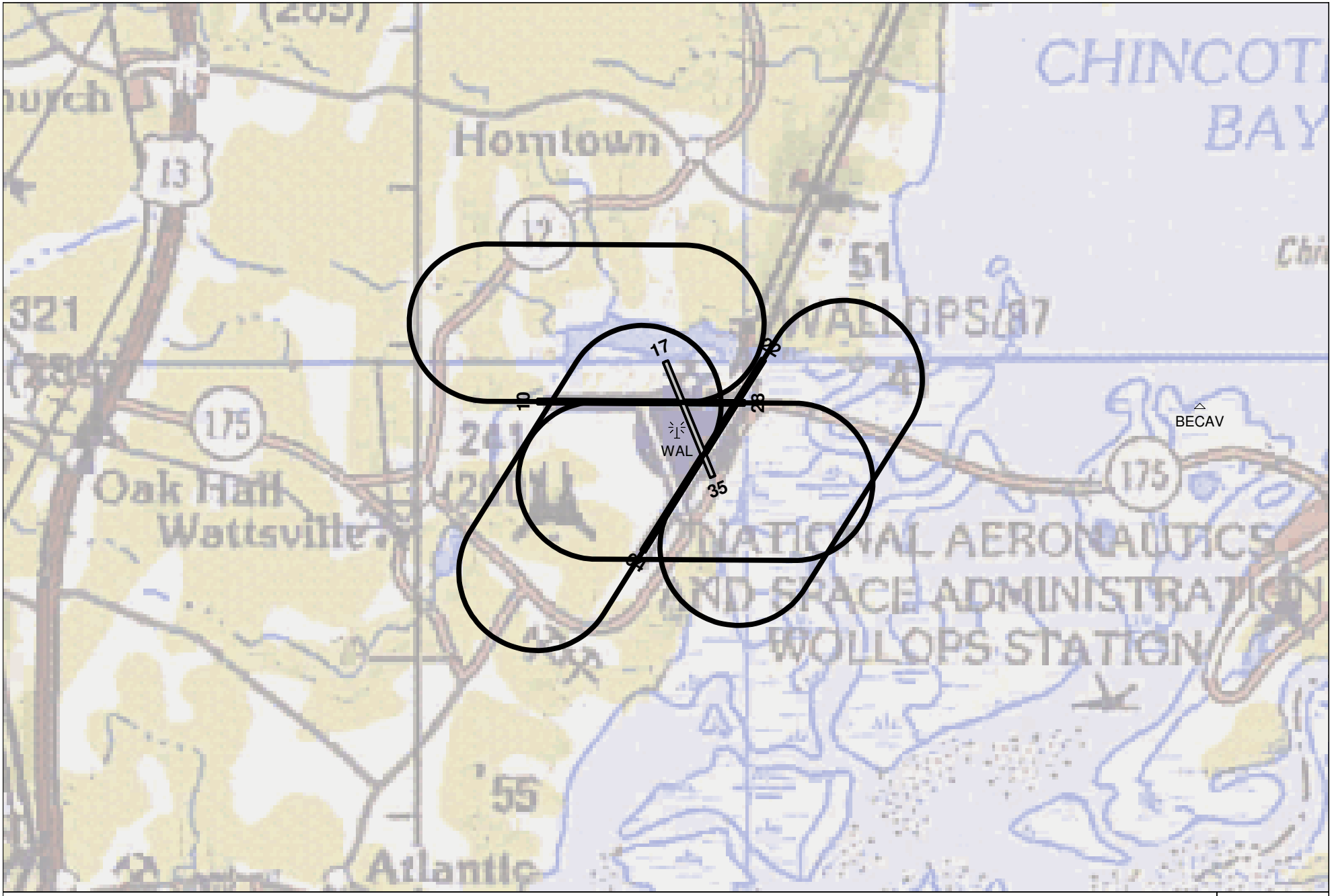
FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000

Scale in Feet 1:100,000 (1 inch = 8,330 feet)

Summary Map of 3-Ship FCLP Flight Tracks



Flight Track Summary Map

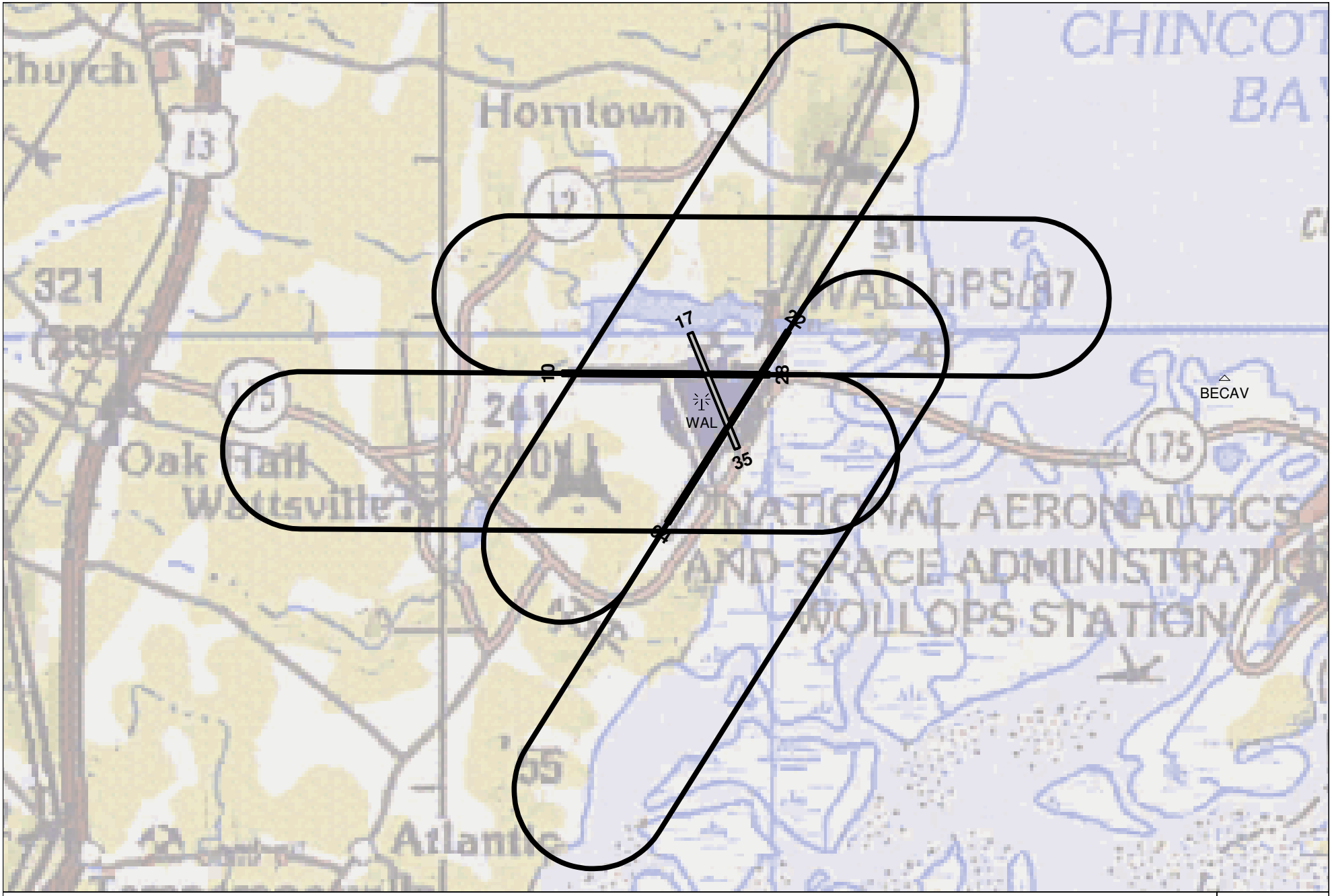
FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N

Summary Map of 5-Ship FCLP Flight Tracks



Flight Track Summary Map

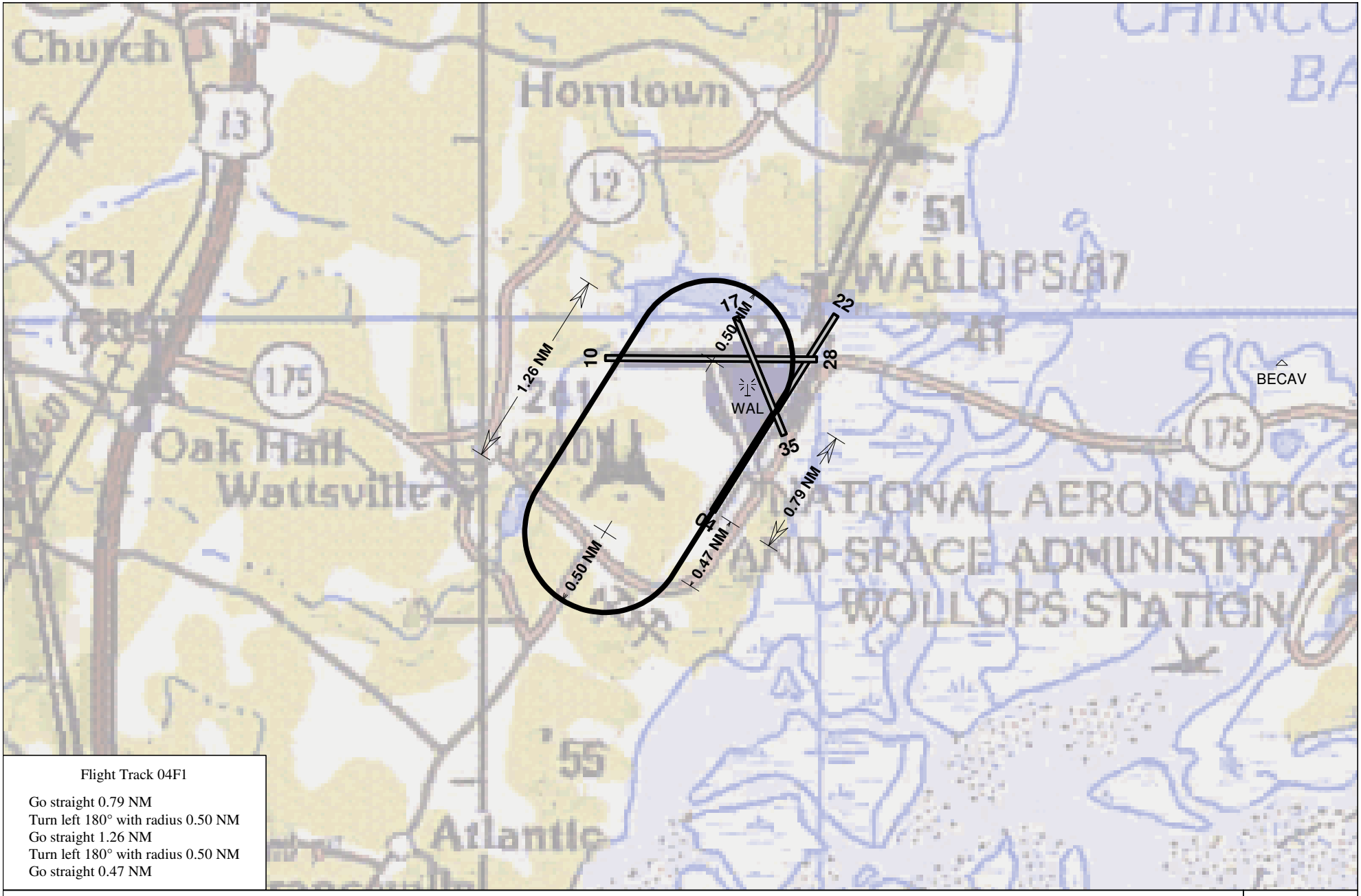
FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N

Maps of Individual FCLP Flight Tracks



Flight Track 04F1

Go straight 0.79 NM
Turn left 180° with radius 0.50 NM
Go straight 1.26 NM
Turn left 180° with radius 0.50 NM
Go straight 0.47 NM

Flight Track 04F1

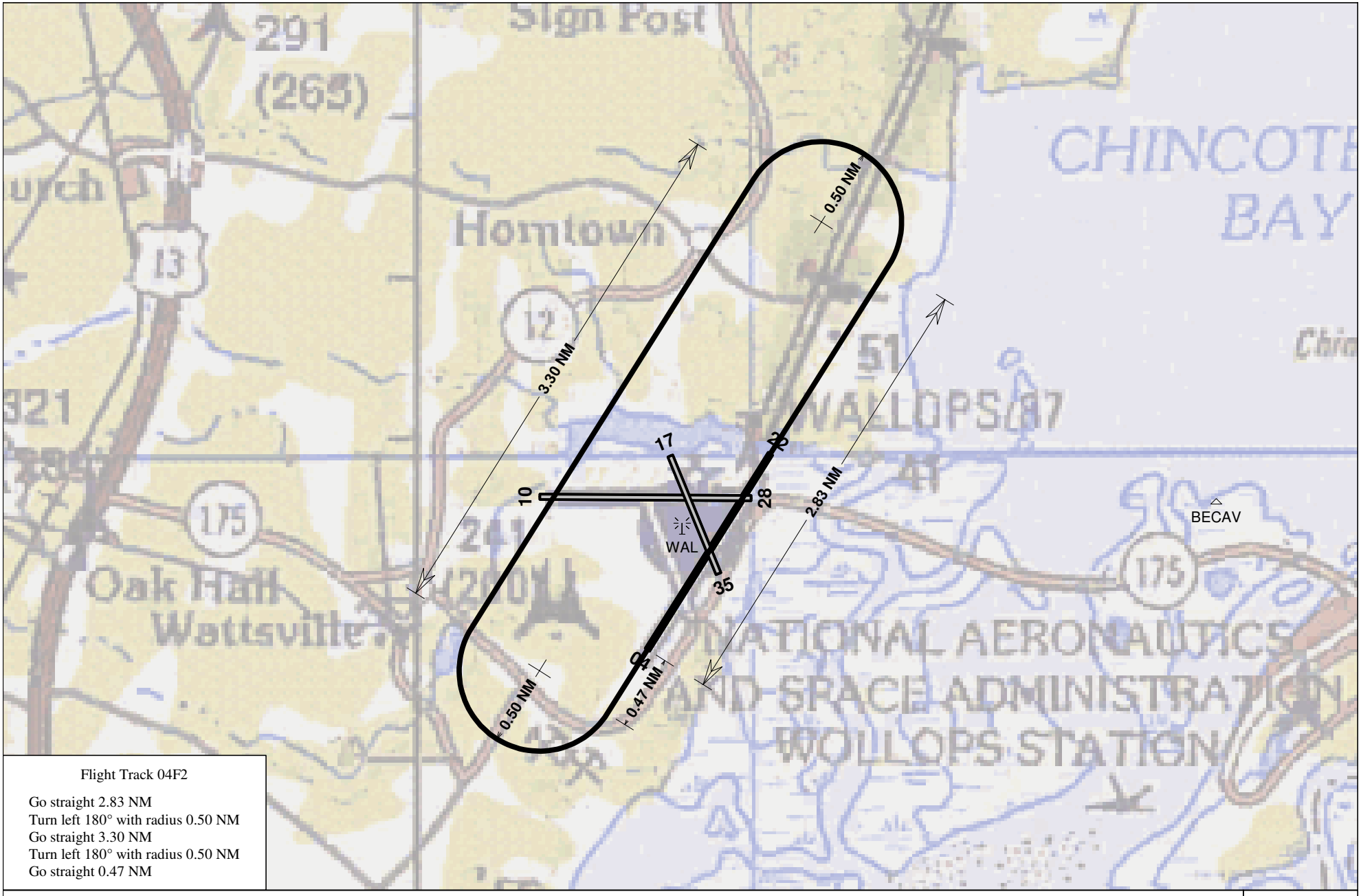
FCLP 3 ship

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Track 04F2

Go straight 2.83 NM
Turn left 180° with radius 0.50 NM
Go straight 3.30 NM
Turn left 180° with radius 0.50 NM
Go straight 0.47 NM

Flight Track 04F2

FCLP 5 ship

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
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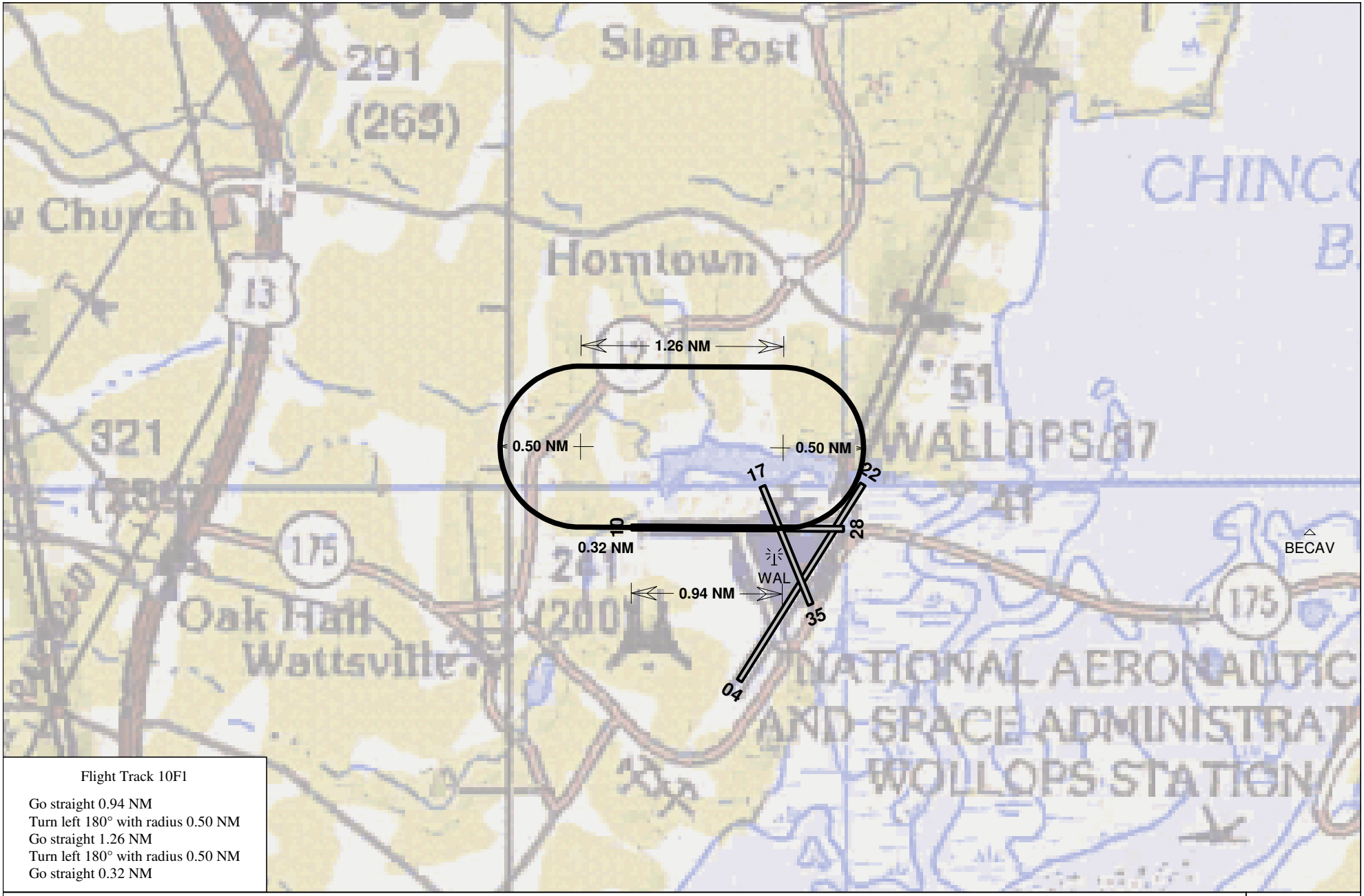
0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Track 10F1

Go straight 0.94 NM
Turn left 180° with radius 0.50 NM
Go straight 1.26 NM
Turn left 180° with radius 0.50 NM
Go straight 0.32 NM

Flight Track 10F1

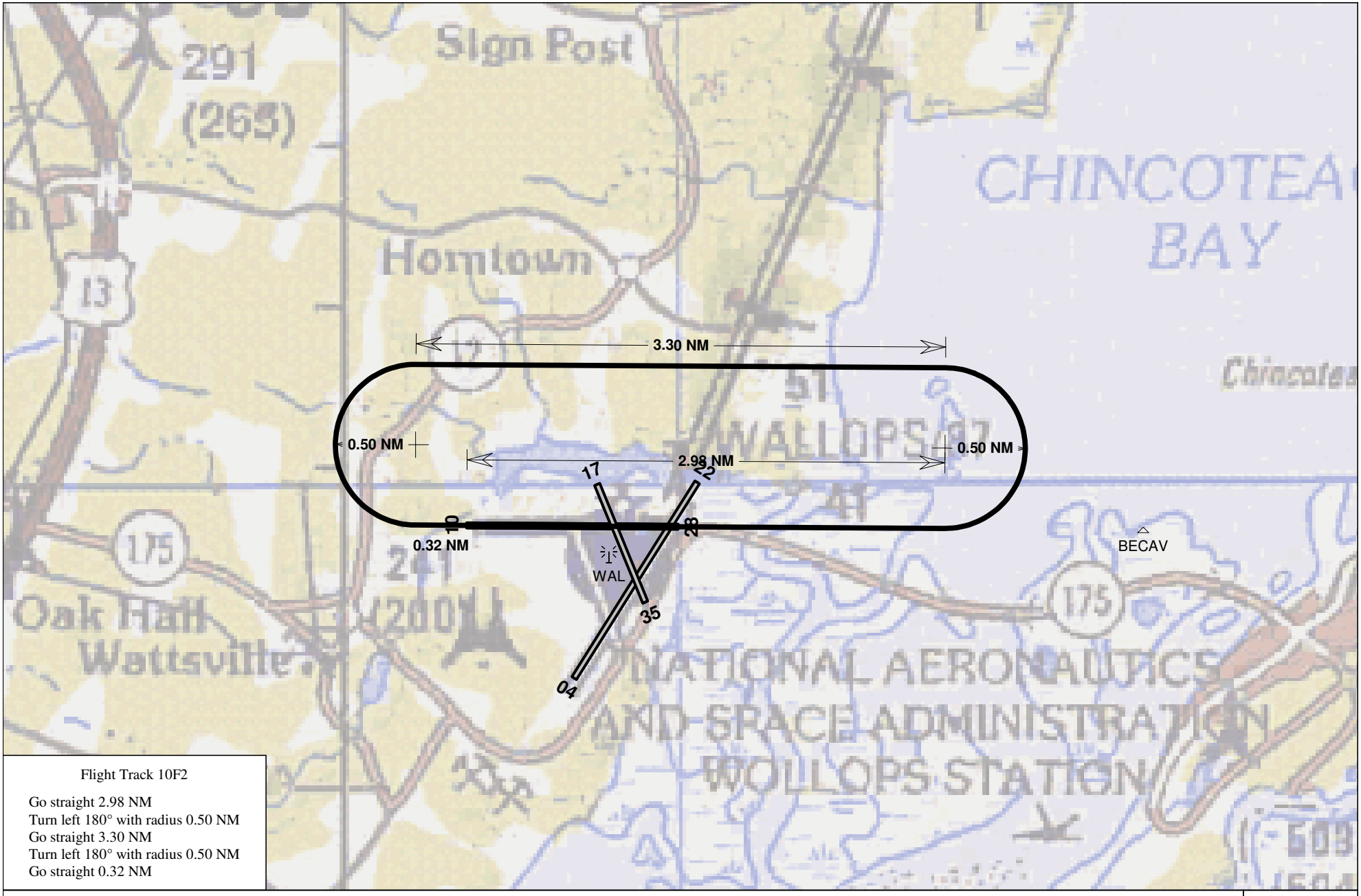
FCLP 3 ship

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Track 10F2

Go straight 2.98 NM
Turn left 180° with radius 0.50 NM
Go straight 3.30 NM
Turn left 180° with radius 0.50 NM
Go straight 0.32 NM

Flight Track 10F2

FCLP 5 ship

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
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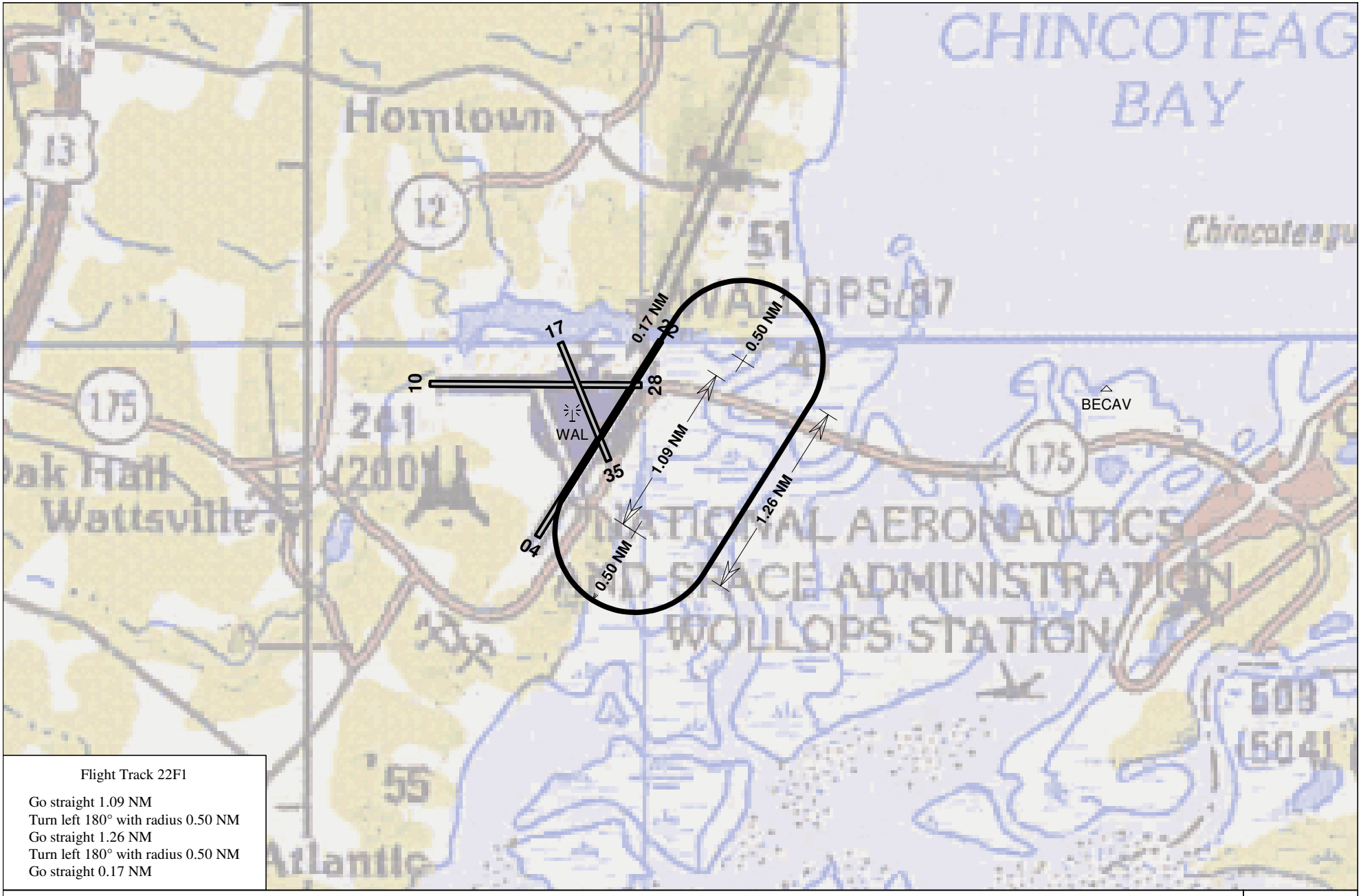
0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Track 22F1

Go straight 1.09 NM
Turn left 180° with radius 0.50 NM
Go straight 1.26 NM
Turn left 180° with radius 0.50 NM
Go straight 0.17 NM

Flight Track 22F1

FCLP 3 ship

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N

Flight Track 22F2

Go straight 3.13 NM
Turn left 180° with radius 0.50 NM
Go straight 3.30 NM
Turn left 180° with radius 0.50 NM
Go straight 0.17 NM

Flight Track 22F2

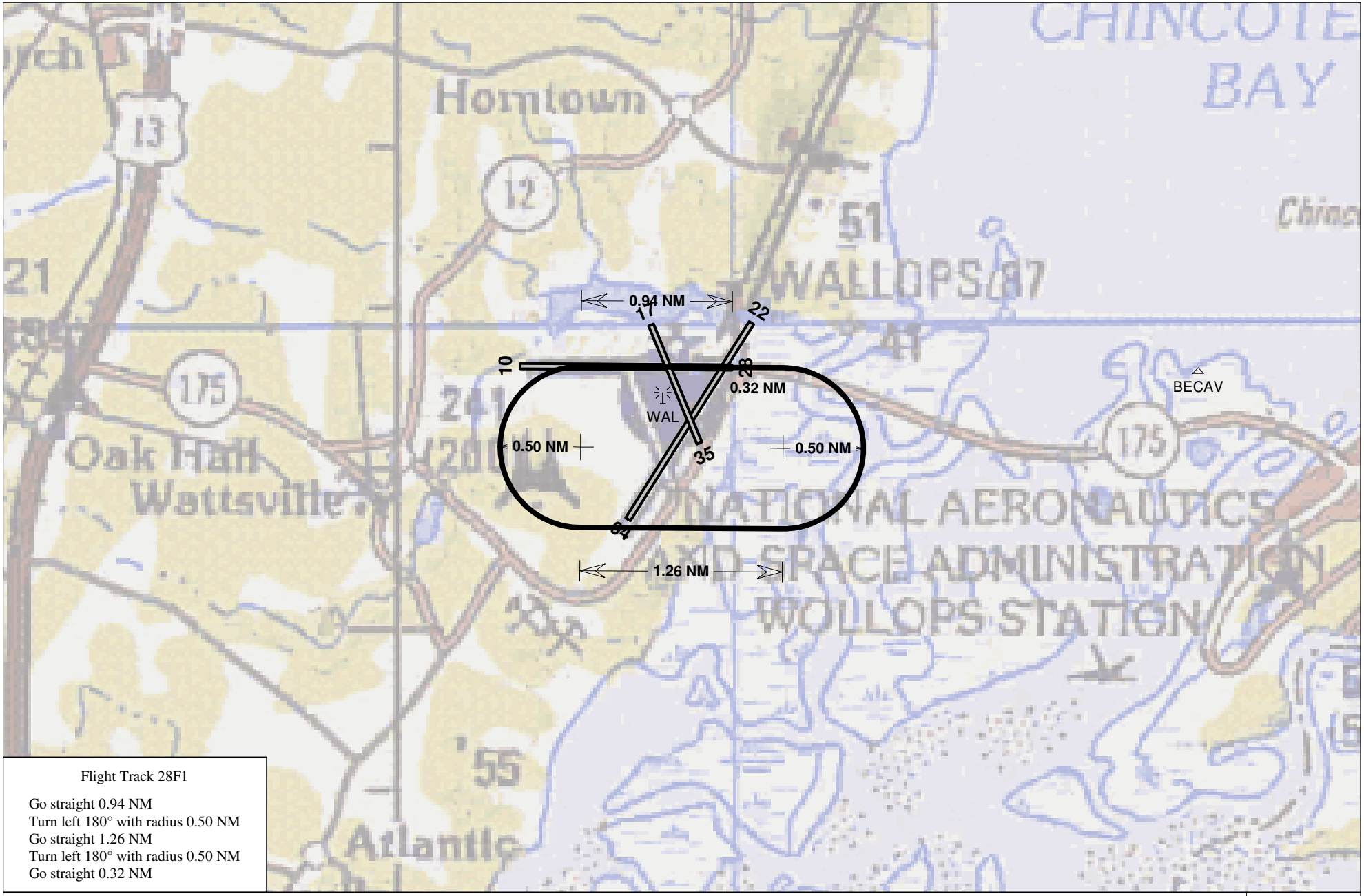
FCLP 5 ship

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Track 28F1

Go straight 0.94 NM
Turn left 180° with radius 0.50 NM
Go straight 1.26 NM
Turn left 180° with radius 0.50 NM
Go straight 0.32 NM

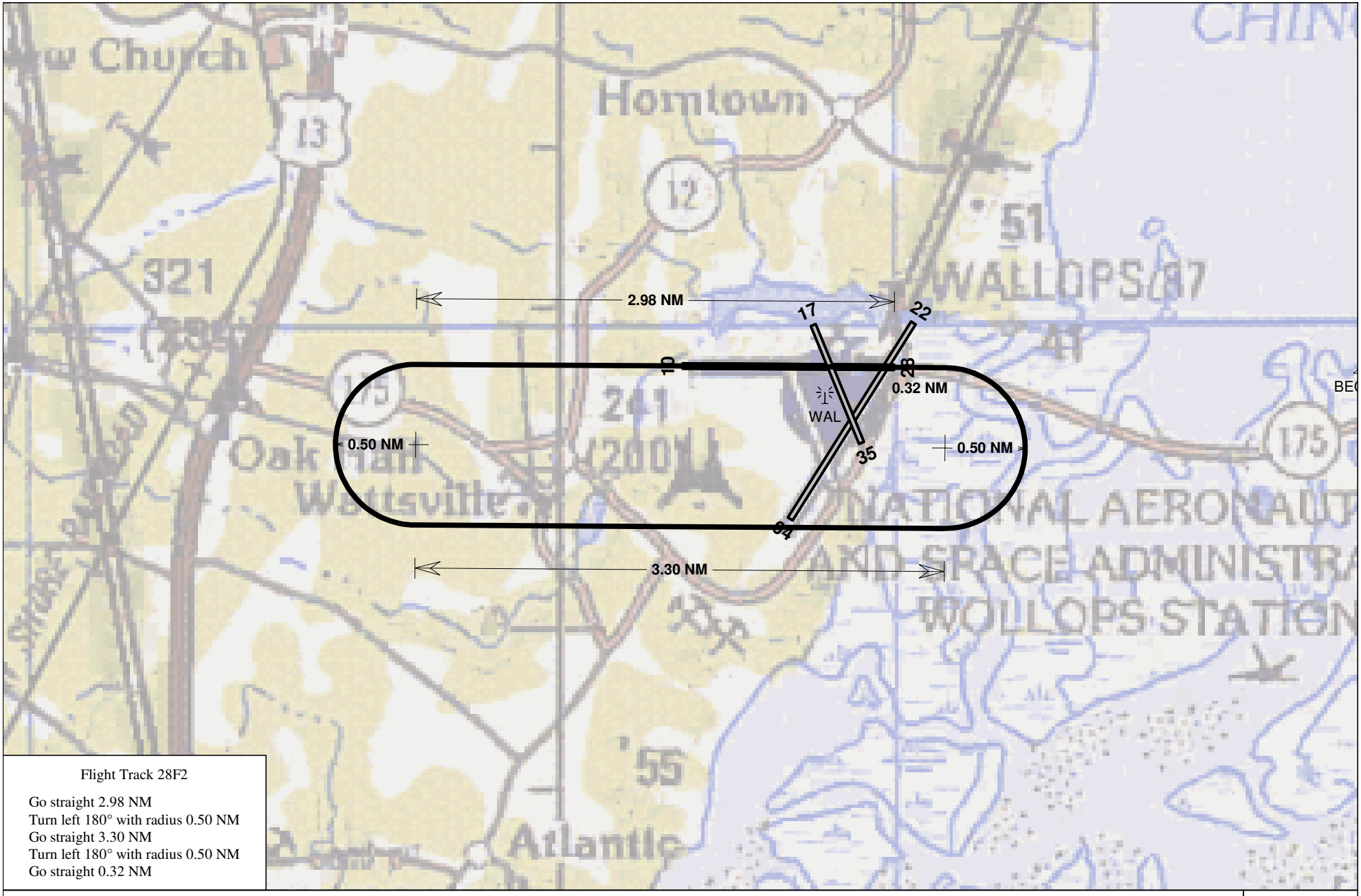
Flight Track 28F1

FCLP 3 ship

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)



Flight Track 28F2

Go straight 2.98 NM
Turn left 180° with radius 0.50 NM
Go straight 3.30 NM
Turn left 180° with radius 0.50 NM
Go straight 0.32 NM

Flight Track 28F2

FCLP 5 ship

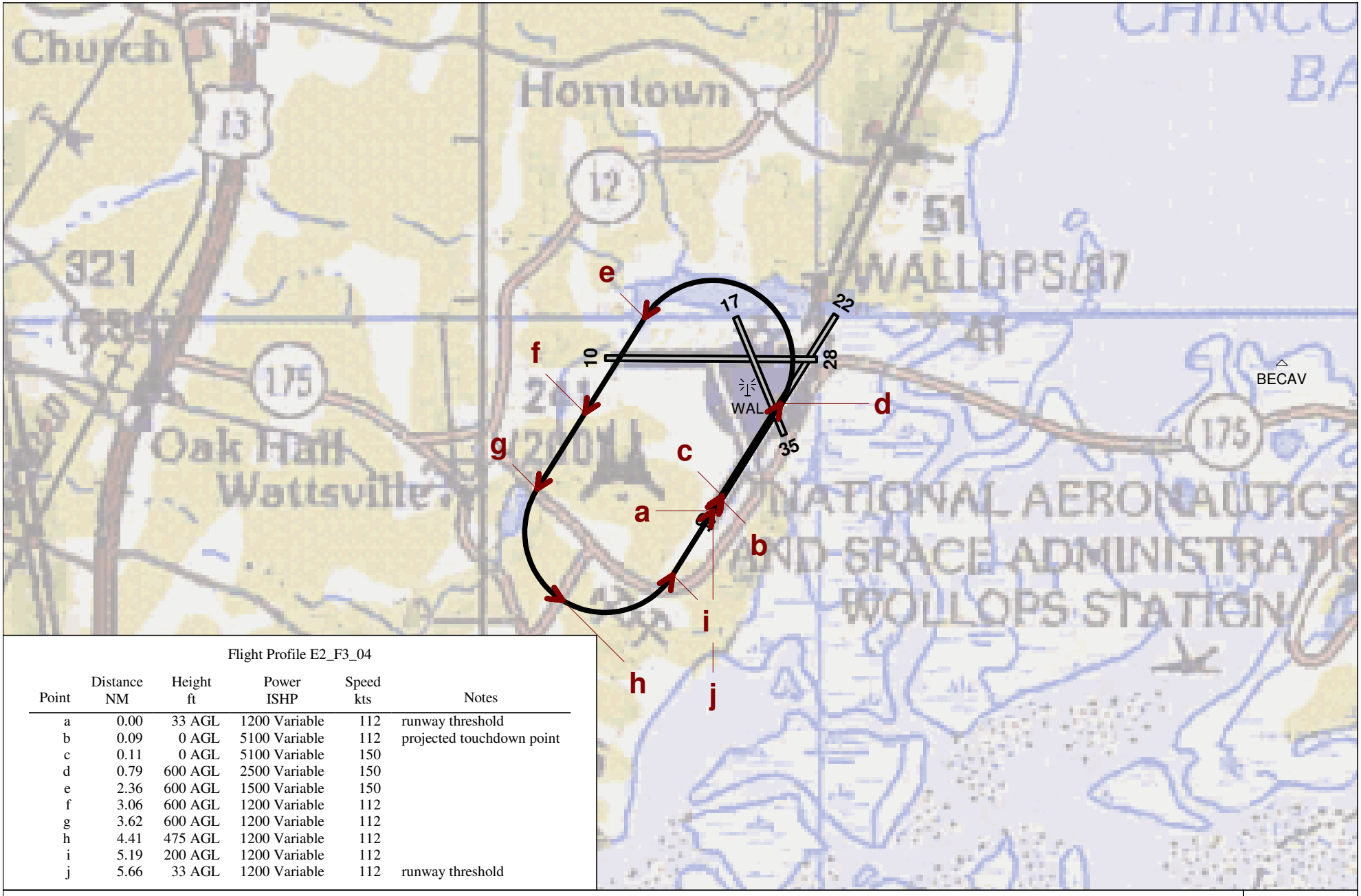
FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N

FCLP Flight Profiles



Flight Profile E2_F3_04

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	33 AGL	1200 Variable	112	runway threshold
b	0.09	0 AGL	5100 Variable	112	projected touchdown point
c	0.11	0 AGL	5100 Variable	150	
d	0.79	600 AGL	2500 Variable	150	
e	2.36	600 AGL	1500 Variable	150	
f	3.06	600 AGL	1200 Variable	112	
g	3.62	600 AGL	1200 Variable	112	
h	4.41	475 AGL	1200 Variable	112	
i	5.19	200 AGL	1200 Variable	112	
j	5.66	33 AGL	1200 Variable	112	runway threshold

Flight Profile E2_F3_04

FCLP 3 ship

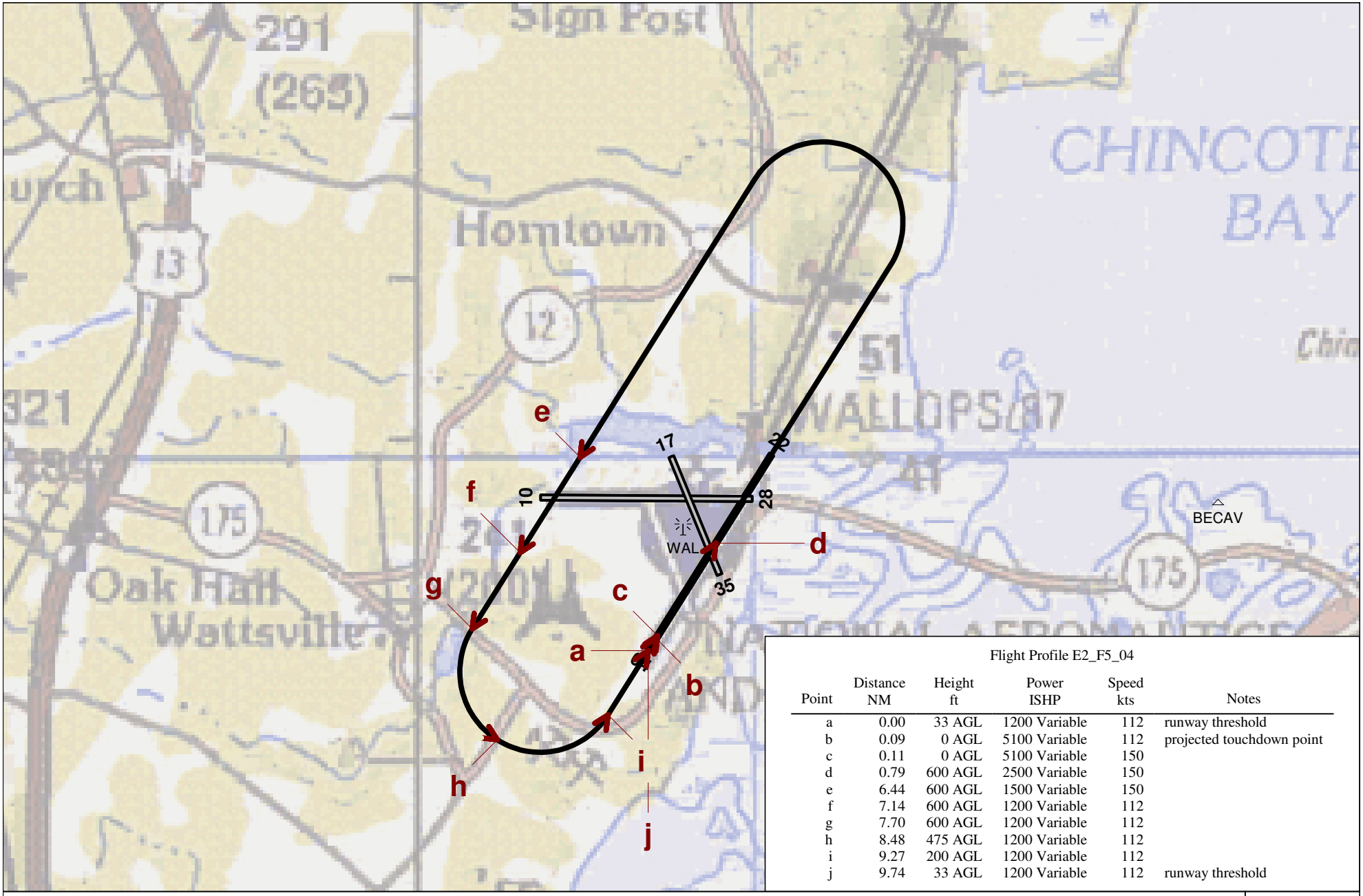
FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile E2_F5_04

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	33 AGL	1200 Variable	112	runway threshold
b	0.09	0 AGL	5100 Variable	112	projected touchdown point
c	0.11	0 AGL	5100 Variable	150	
d	0.79	600 AGL	2500 Variable	150	
e	6.44	600 AGL	1500 Variable	150	
f	7.14	600 AGL	1200 Variable	112	
g	7.70	600 AGL	1200 Variable	112	
h	8.48	475 AGL	1200 Variable	112	
i	9.27	200 AGL	1200 Variable	112	
j	9.74	33 AGL	1200 Variable	112	runway threshold

Flight Profile E2_F5_04

FCLP 5 ship

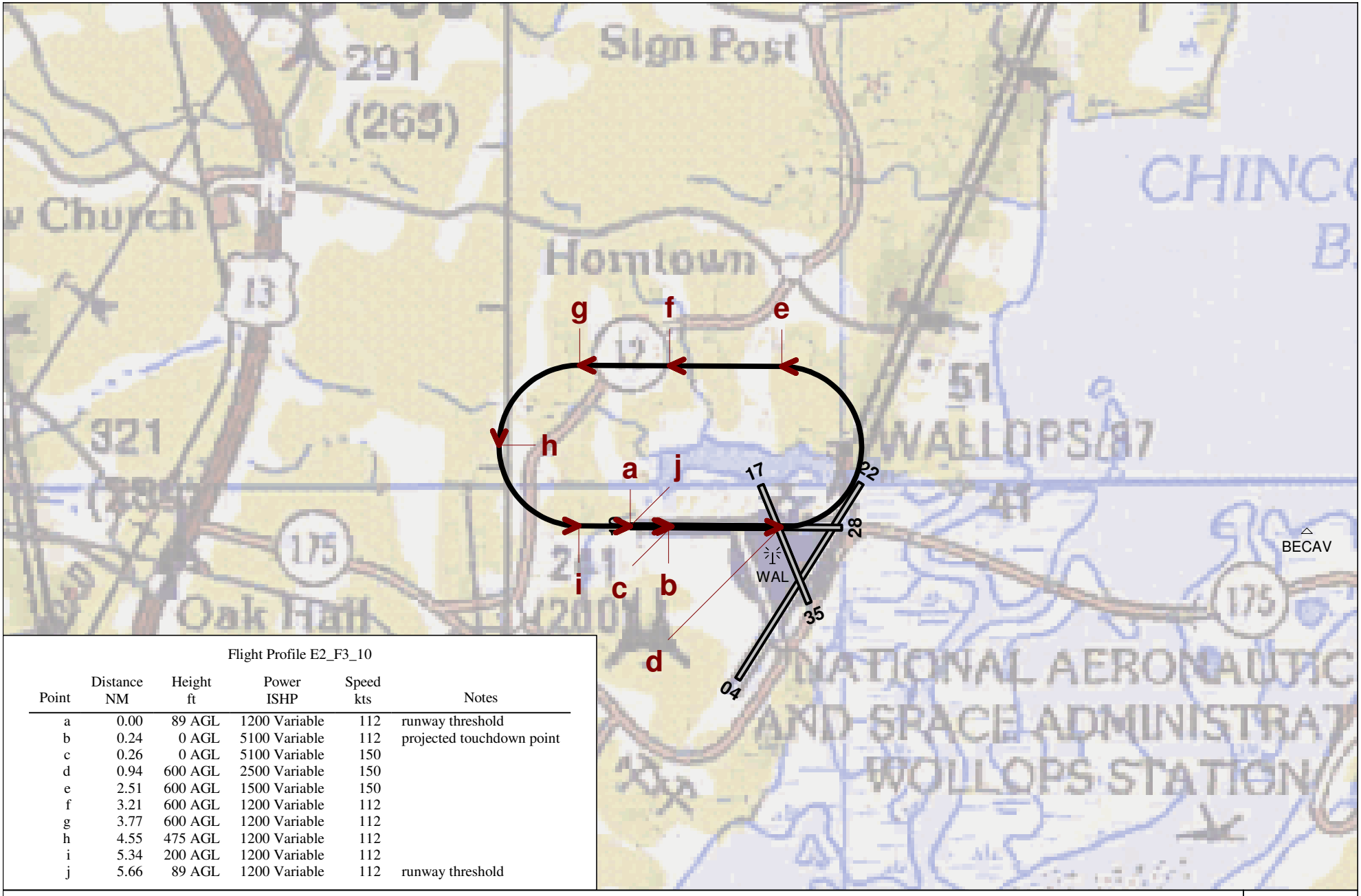
FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile E2_F3_10

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	89 AGL	1200 Variable	112	runway threshold
b	0.24	0 AGL	5100 Variable	112	projected touchdown point
c	0.26	0 AGL	5100 Variable	150	
d	0.94	600 AGL	2500 Variable	150	
e	2.51	600 AGL	1500 Variable	150	
f	3.21	600 AGL	1200 Variable	112	
g	3.77	600 AGL	1200 Variable	112	
h	4.55	475 AGL	1200 Variable	112	
i	5.34	200 AGL	1200 Variable	112	
j	5.66	89 AGL	1200 Variable	112	runway threshold

Flight Profile E2_F3_10

FCLP 3 ship

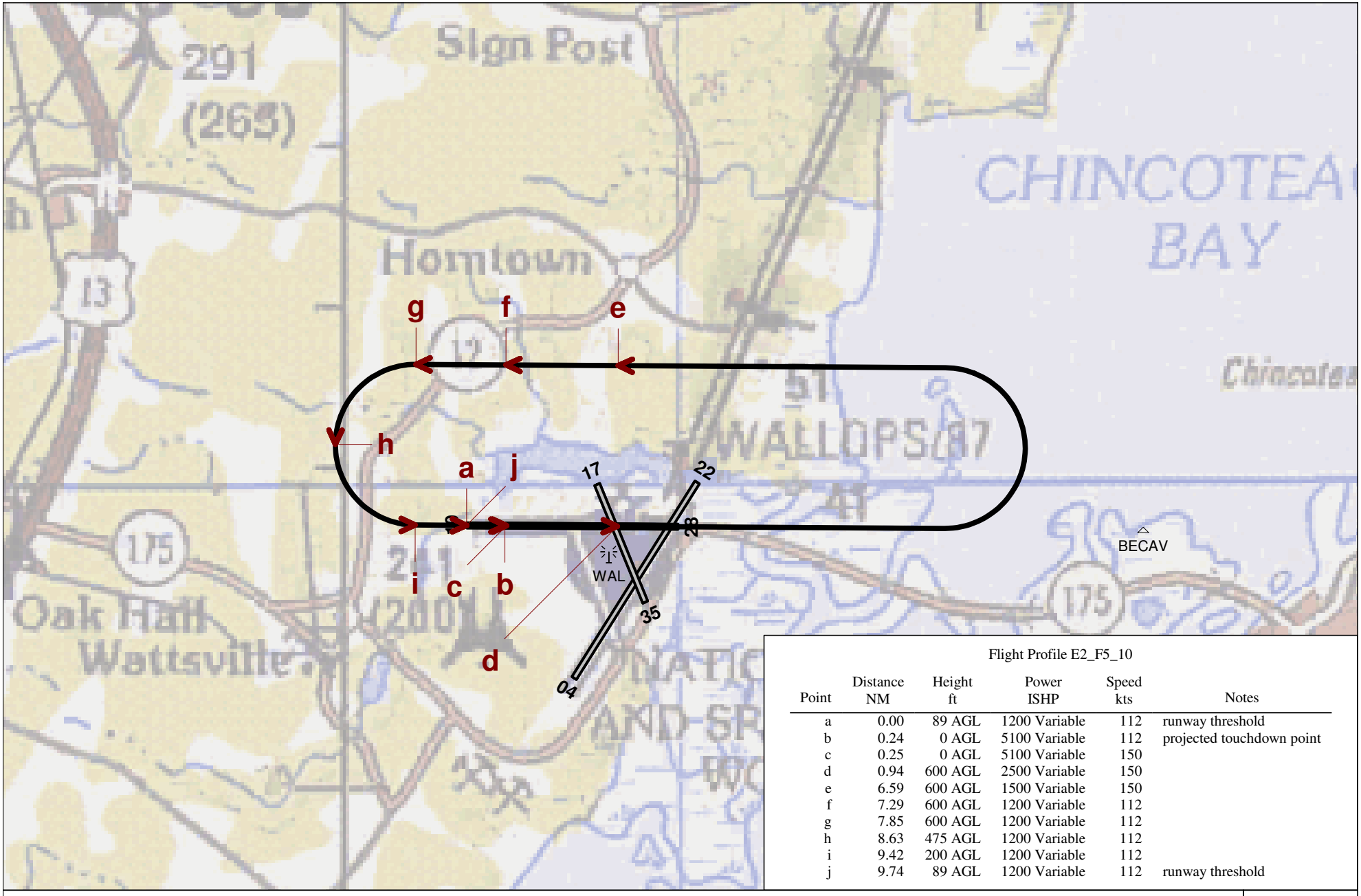
FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile E2_F5_10

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	89 AGL	1200 Variable	112	runway threshold
b	0.24	0 AGL	5100 Variable	112	projected touchdown point
c	0.25	0 AGL	5100 Variable	150	
d	0.94	600 AGL	2500 Variable	150	
e	6.59	600 AGL	1500 Variable	150	
f	7.29	600 AGL	1200 Variable	112	
g	7.85	600 AGL	1200 Variable	112	
h	8.63	475 AGL	1200 Variable	112	
i	9.42	200 AGL	1200 Variable	112	
j	9.74	89 AGL	1200 Variable	112	runway threshold

Flight Profile E2_F5_10

FCLP 5 ship

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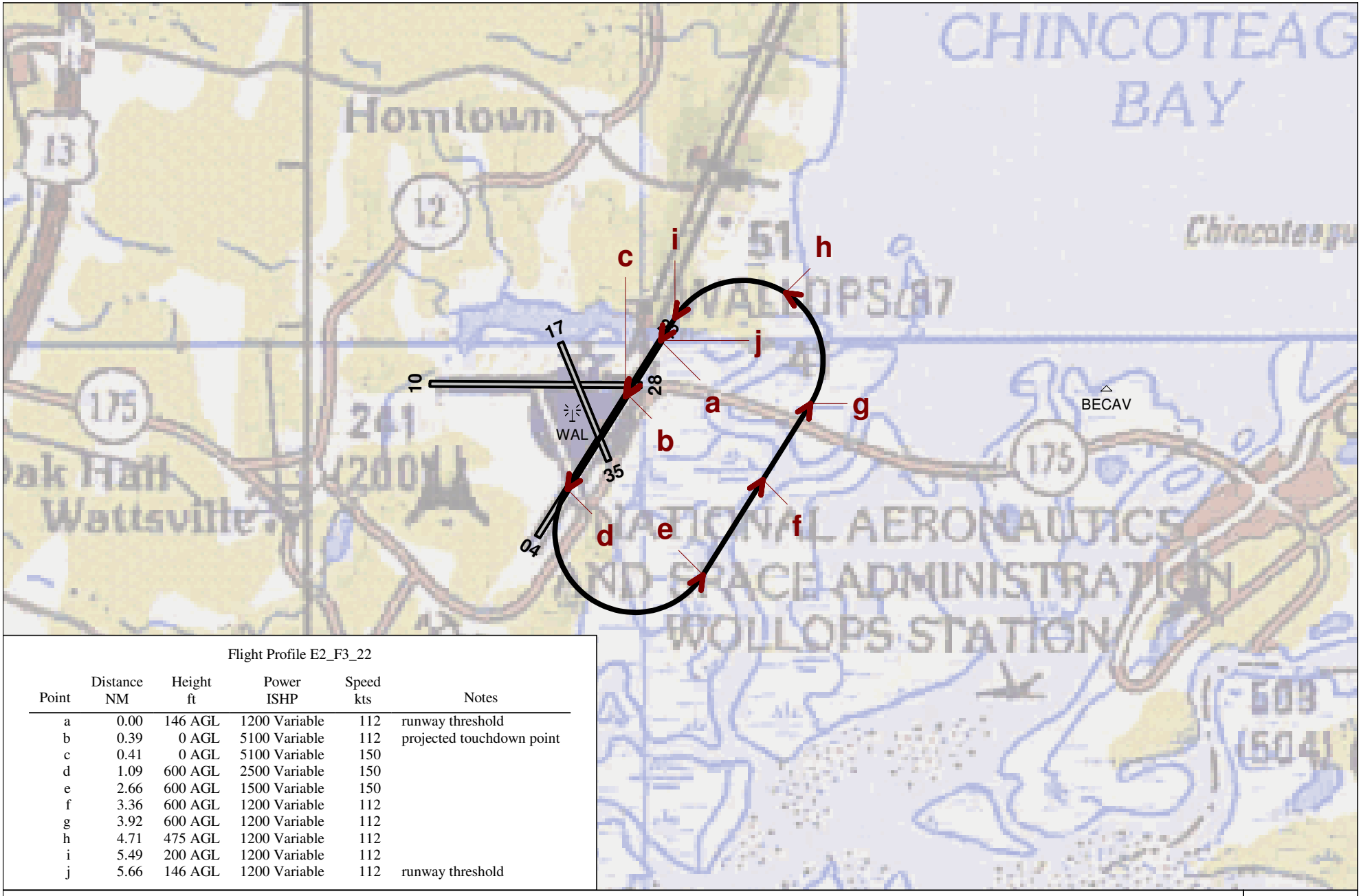
0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile E2_F3_22

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	146 AGL	1200 Variable	112	runway threshold
b	0.39	0 AGL	5100 Variable	112	projected touchdown point
c	0.41	0 AGL	5100 Variable	150	
d	1.09	600 AGL	2500 Variable	150	
e	2.66	600 AGL	1500 Variable	150	
f	3.36	600 AGL	1200 Variable	112	
g	3.92	600 AGL	1200 Variable	112	
h	4.71	475 AGL	1200 Variable	112	
i	5.49	200 AGL	1200 Variable	112	
j	5.66	146 AGL	1200 Variable	112	runway threshold

Flight Profile E2_F3_22

FCLP 3 ship

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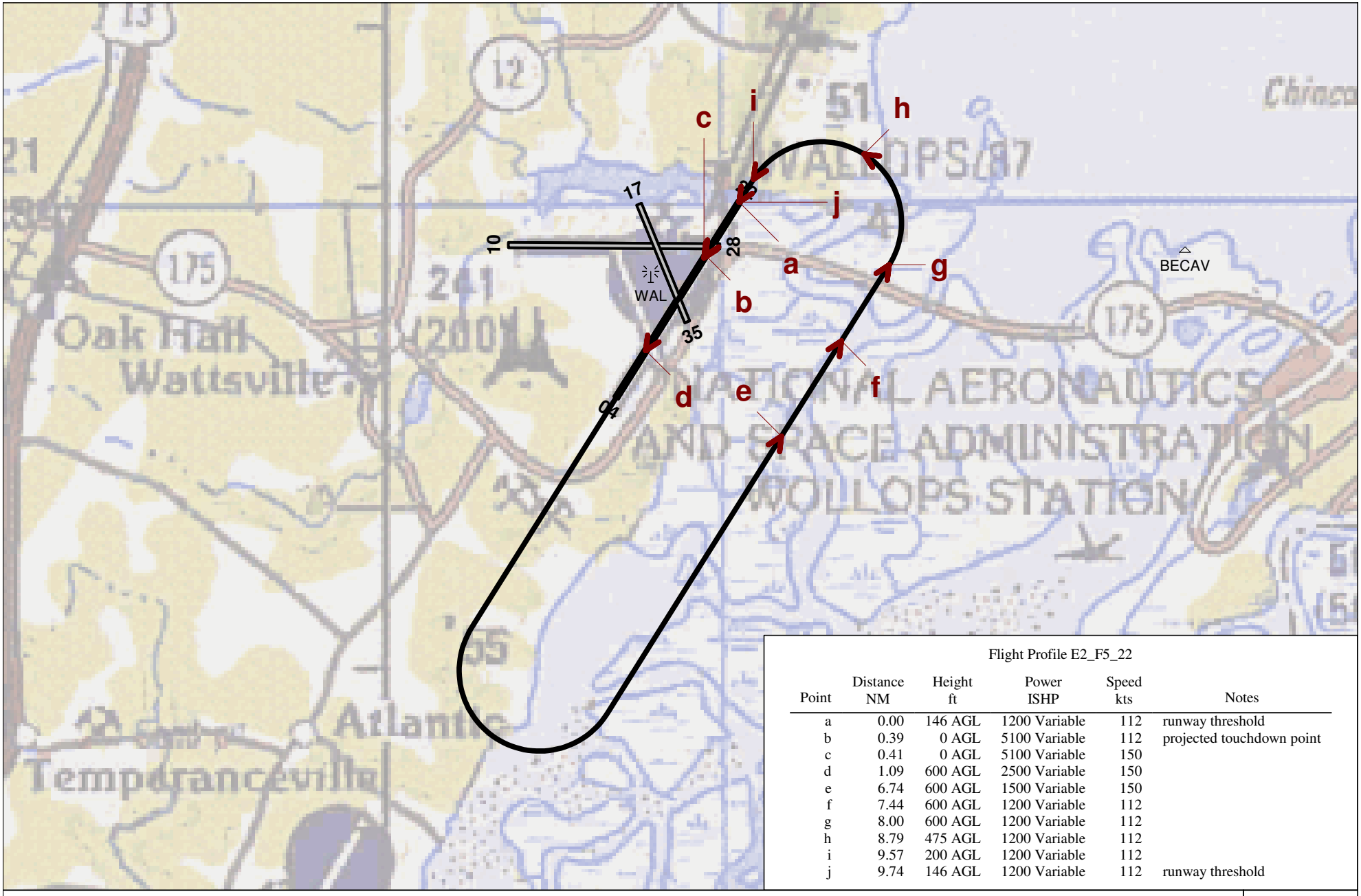
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile E2_F5_22

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	146 AGL	1200 Variable	112	runway threshold
b	0.39	0 AGL	5100 Variable	112	projected touchdown point
c	0.41	0 AGL	5100 Variable	150	
d	1.09	600 AGL	2500 Variable	150	
e	6.74	600 AGL	1500 Variable	150	
f	7.44	600 AGL	1200 Variable	112	
g	8.00	600 AGL	1200 Variable	112	
h	8.79	475 AGL	1200 Variable	112	
i	9.57	200 AGL	1200 Variable	112	
j	9.74	146 AGL	1200 Variable	112	runway threshold

Flight Profile E2_F5_22

FCLP 5 ship

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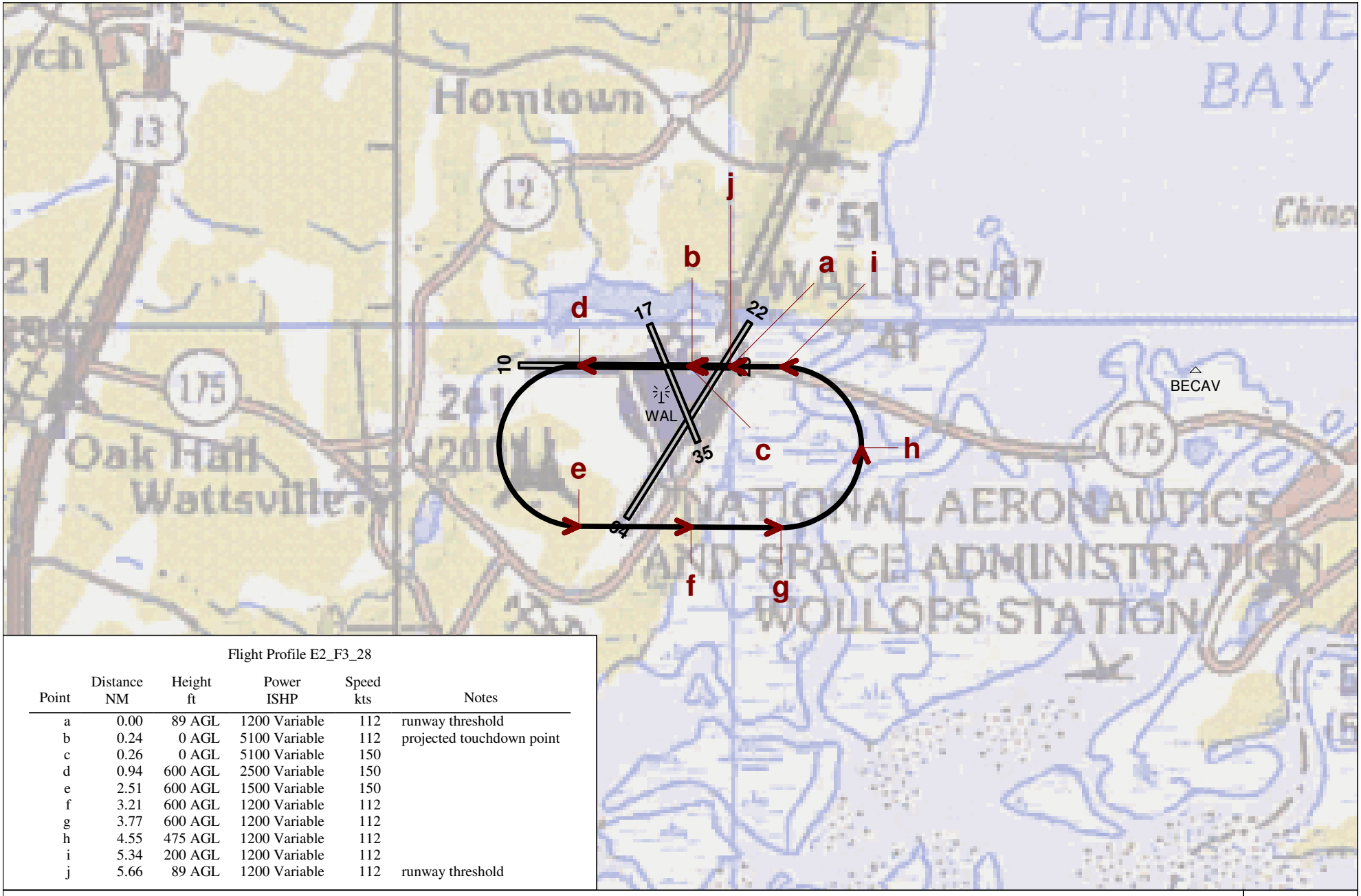
0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile E2_F3_28

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	89 AGL	1200 Variable	112	runway threshold
b	0.24	0 AGL	5100 Variable	112	projected touchdown point
c	0.26	0 AGL	5100 Variable	150	
d	0.94	600 AGL	2500 Variable	150	
e	2.51	600 AGL	1500 Variable	150	
f	3.21	600 AGL	1200 Variable	112	
g	3.77	600 AGL	1200 Variable	112	
h	4.55	475 AGL	1200 Variable	112	
i	5.34	200 AGL	1200 Variable	112	
j	5.66	89 AGL	1200 Variable	112	runway threshold

Flight Profile E2_F3_28

FCLP 3 ship

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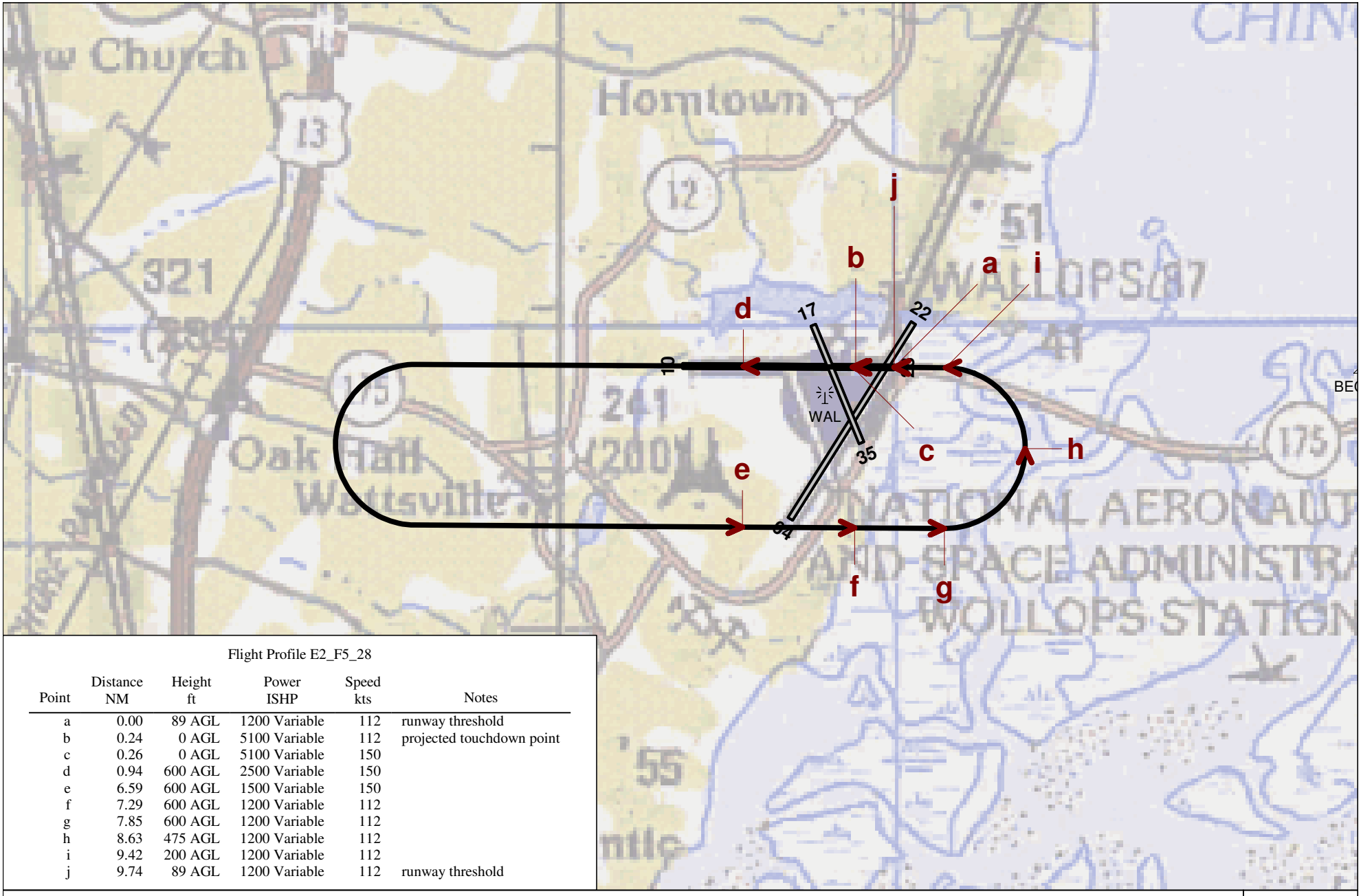
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N



Flight Profile E2_F5_28

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	89 AGL	1200 Variable	112	runway threshold
b	0.24	0 AGL	5100 Variable	112	projected touchdown point
c	0.26	0 AGL	5100 Variable	150	
d	0.94	600 AGL	2500 Variable	150	
e	6.59	600 AGL	1500 Variable	150	
f	7.29	600 AGL	1200 Variable	112	
g	7.85	600 AGL	1200 Variable	112	
h	8.63	475 AGL	1200 Variable	112	
i	9.42	200 AGL	1200 Variable	112	
j	9.74	89 AGL	1200 Variable	112	runway threshold

Flight Profile E2_F5_28

FCLP 5 ship

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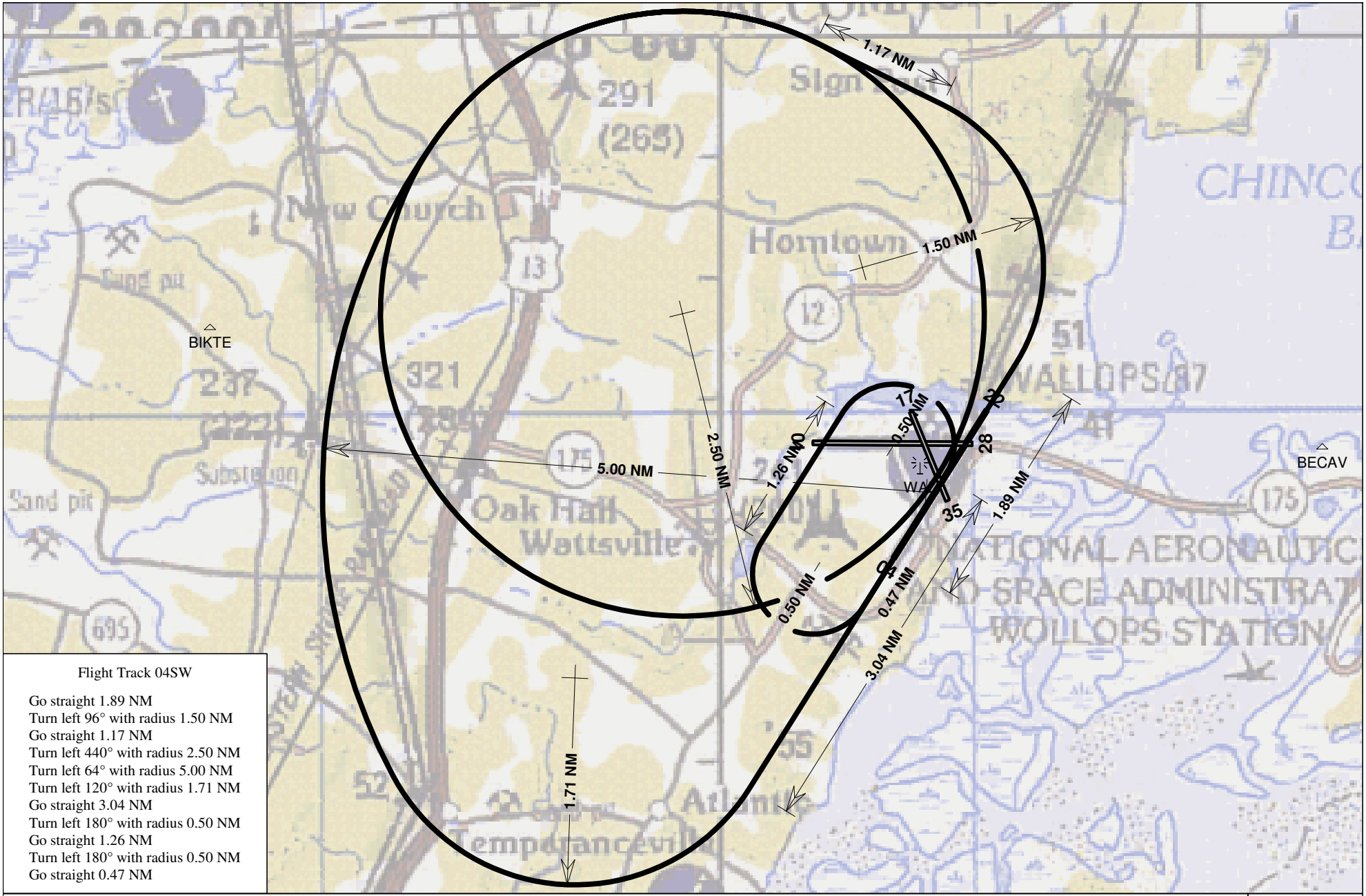
DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000

Scale in Feet 1:60,000 (1 inch = 5,000 feet)

N

Example of Crew Swap Flight Track



Flight Track 04SW

Go straight 1.89 NM
Turn left 96° with radius 1.50 NM
Go straight 1.17 NM
Turn left 440° with radius 2.50 NM
Turn left 64° with radius 5.00 NM
Turn left 120° with radius 1.71 NM
Go straight 3.04 NM
Turn left 180° with radius 0.50 NM
Go straight 1.26 NM
Turn left 180° with radius 0.50 NM
Go straight 0.47 NM

Flight Track 04SW

Crew Swap Pattern

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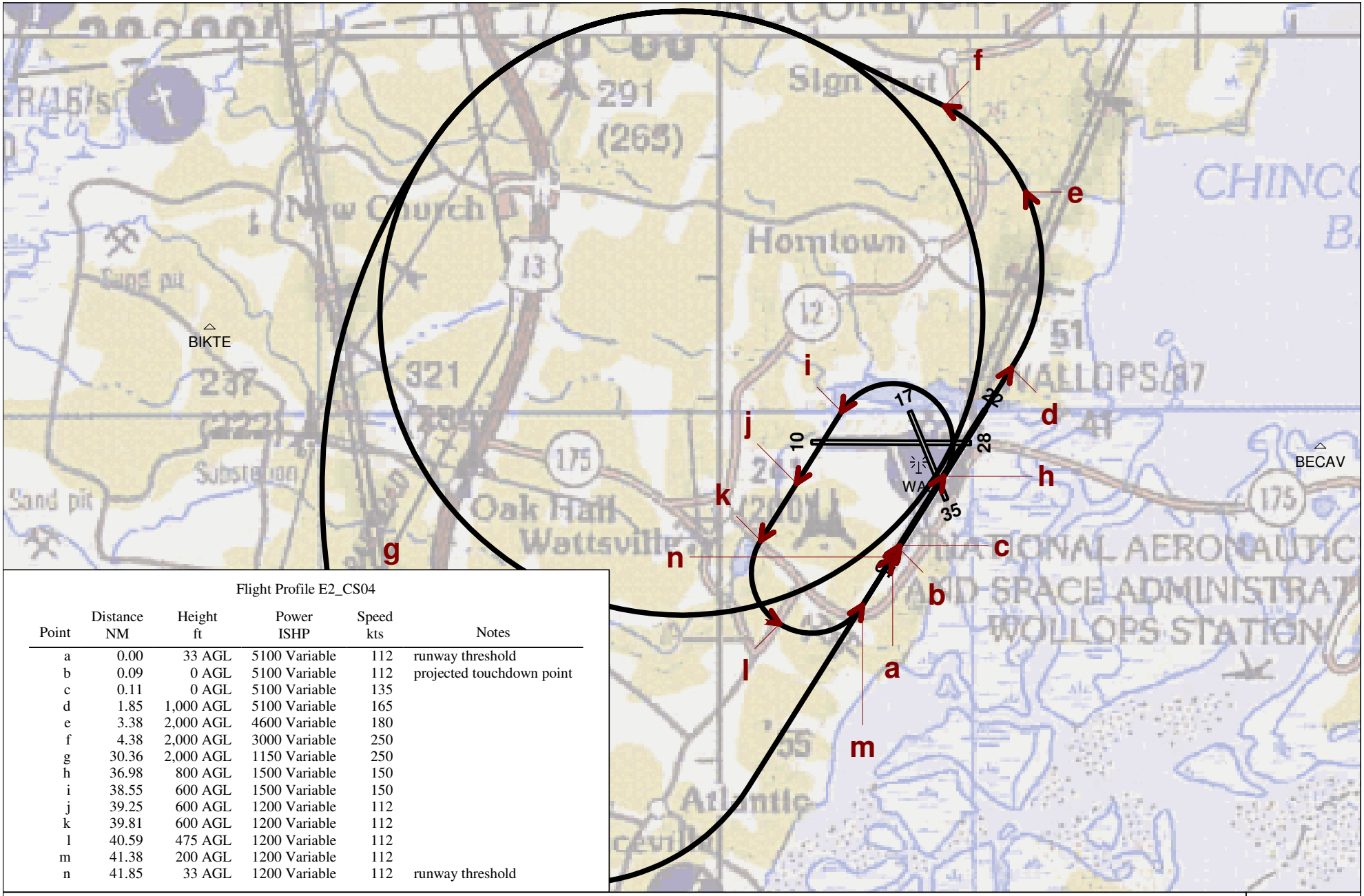
0 4,000 8,000 12,000 16,000 20,000 24,000

Scale in Feet 1:80,000 (1 inch = 6,670 feet)

N

Maps of Crew Swap Flight Profiles



Flight Profile E2_CS04

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	33 AGL	5100 Variable	112	runway threshold
b	0.09	0 AGL	5100 Variable	112	projected touchdown point
c	0.11	0 AGL	5100 Variable	135	
d	1.85	1,000 AGL	5100 Variable	165	
e	3.38	2,000 AGL	4600 Variable	180	
f	4.38	2,000 AGL	3000 Variable	250	
g	30.36	2,000 AGL	1150 Variable	250	
h	36.98	800 AGL	1500 Variable	150	
i	38.55	600 AGL	1500 Variable	150	
j	39.25	600 AGL	1200 Variable	112	
k	39.81	600 AGL	1200 Variable	112	
l	40.59	475 AGL	1200 Variable	112	
m	41.38	200 AGL	1200 Variable	112	
n	41.85	33 AGL	1200 Variable	112	runway threshold

Flight Profile E2_CS04

Crew Swap

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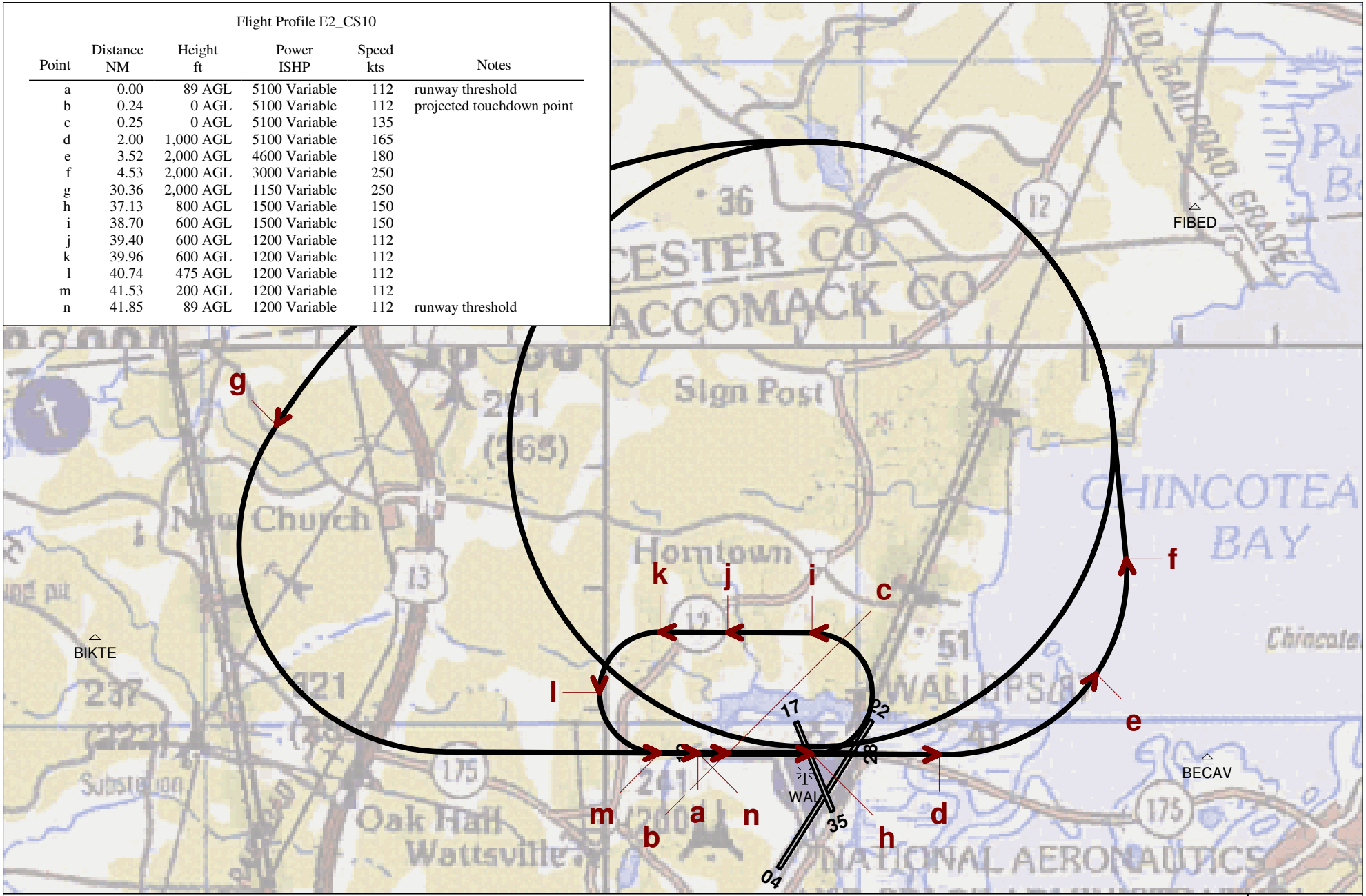
0 4,000 8,000 12,000 16,000 20,000 24,000

Scale in Feet 1:80,000 (1 inch = 6,670 feet)

N

Flight Profile E2_CS10

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	89 AGL	5100 Variable	112	runway threshold
b	0.24	0 AGL	5100 Variable	112	projected touchdown point
c	0.25	0 AGL	5100 Variable	135	
d	2.00	1,000 AGL	5100 Variable	165	
e	3.52	2,000 AGL	4600 Variable	180	
f	4.53	2,000 AGL	3000 Variable	250	
g	30.36	2,000 AGL	1150 Variable	250	
h	37.13	800 AGL	1500 Variable	150	
i	38.70	600 AGL	1500 Variable	150	
j	39.40	600 AGL	1200 Variable	112	
k	39.96	600 AGL	1200 Variable	112	
l	40.74	475 AGL	1200 Variable	112	
m	41.53	200 AGL	1200 Variable	112	
n	41.85	89 AGL	1200 Variable	112	runway threshold



Flight Profile E2_CS10

Crew Swap

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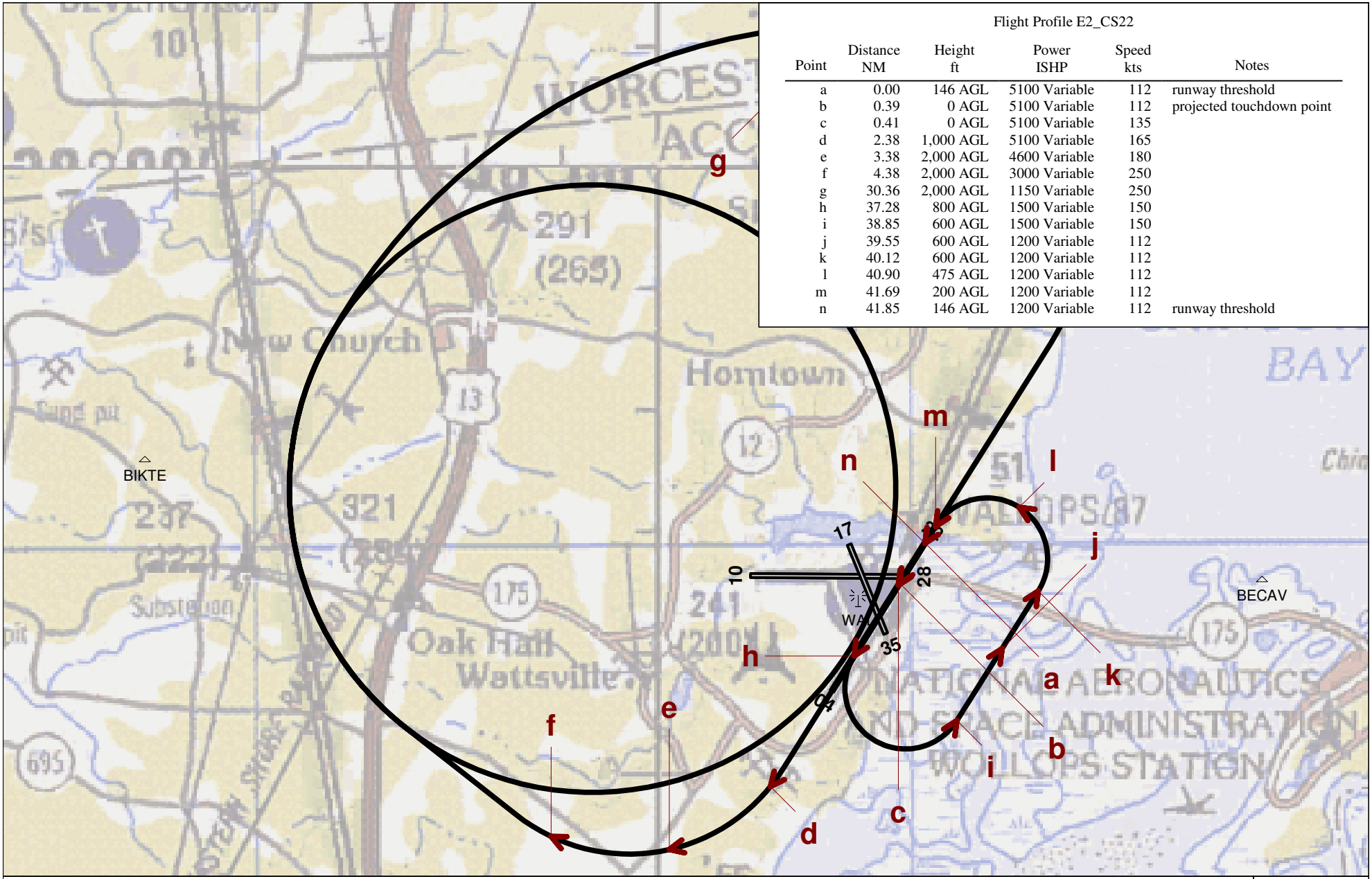
0 4,000 8,000 12,000 16,000 20,000 24,000

Scale in Feet 1:80,000 (1 inch = 6,670 feet)

Flight Profile E2_CS22

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	146 AGL	5100 Variable	112	runway threshold
b	0.39	0 AGL	5100 Variable	112	projected touchdown point
c	0.41	0 AGL	5100 Variable	135	
d	2.38	1,000 AGL	5100 Variable	165	
e	3.38	2,000 AGL	4600 Variable	180	
f	4.38	2,000 AGL	3000 Variable	250	
g	30.36	2,000 AGL	1150 Variable	250	
h	37.28	800 AGL	1500 Variable	150	
i	38.85	600 AGL	1500 Variable	150	
j	39.55	600 AGL	1200 Variable	112	
k	40.12	600 AGL	1200 Variable	112	
l	40.90	475 AGL	1200 Variable	112	
m	41.69	200 AGL	1200 Variable	112	
n	41.85	146 AGL	1200 Variable	112	runway threshold



Flight Profile E2_CS22

Crew Swap

Hold Pattern to the right to avoid no fly areas

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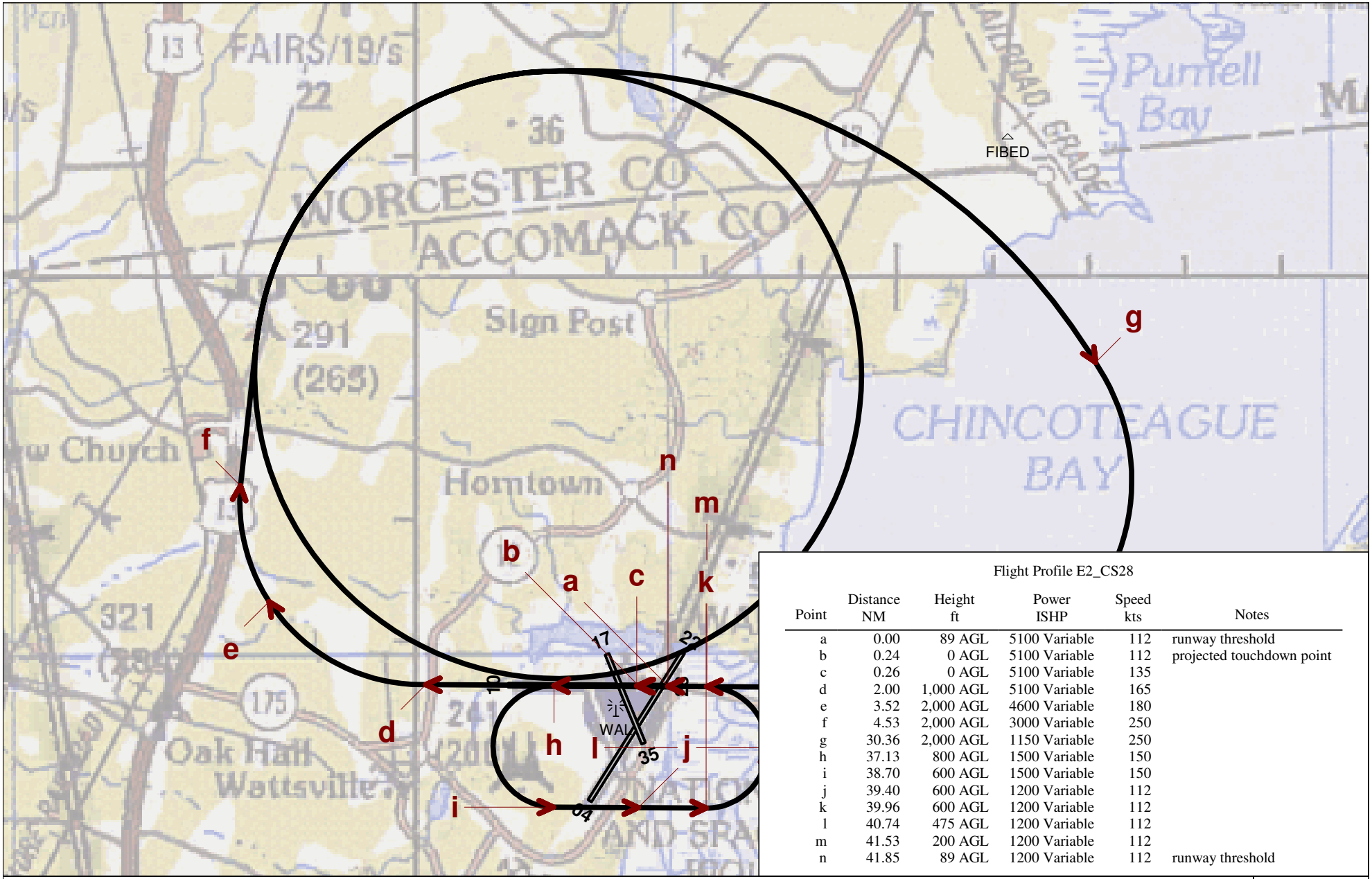
0 4,000 8,000 12,000 16,000 20,000 24,000

Scale in Feet 1:80,000 (1 inch = 6,670 feet)



Flight Profile E2_CS28

Point	Distance NM	Height ft	Power ISHP	Speed kts	Notes
a	0.00	89 AGL	5100 Variable	112	runway threshold
b	0.24	0 AGL	5100 Variable	112	projected touchdown point
c	0.26	0 AGL	5100 Variable	135	
d	2.00	1,000 AGL	5100 Variable	165	
e	3.52	2,000 AGL	4600 Variable	180	
f	4.53	2,000 AGL	3000 Variable	250	
g	30.36	2,000 AGL	1150 Variable	250	
h	37.13	800 AGL	1500 Variable	150	
i	38.70	600 AGL	1500 Variable	150	
j	39.40	600 AGL	1200 Variable	112	
k	39.96	600 AGL	1200 Variable	112	
l	40.74	475 AGL	1200 Variable	112	
m	41.53	200 AGL	1200 Variable	112	
n	41.85	89 AGL	1200 Variable	112	runway threshold

Flight Profile E2_CS28

Crew Swap

Hold Pattern to the right to avoid no fly areas

FOR OFFICIAL USE ONLY: DELIBERATIVE PROCESS PRIVILEGED MATERIAL

DO NOT FORWARD TO PERSONS WITHOUT A DEMONSTRATED OFFICIAL NEED FOR THE INFORMATION CONTAINED HEREIN

0 4,000 8,000 12,000 16,000 20,000 24,000

Scale in Feet 1:80,000 (1 inch = 6,670 feet)

N

Appendix B: Points of Interest SEL Tables for Top Contributor to the DNL at Emporia-Greensville Regional Airport

Location ID	Description	Latitude	Longitude	Total DNL (dB)		
				Baseline	Alt 1A	Alt 1B
City of Emporia, Virginia						
CoE-1	Emmanuel Worship Center	36.687824	-77.514771	<45	51.8	54.3
CoE-2	Industrial Park	36.716045	-77.517539	<45	50.4	53.8
CoE-3	Meherrin River Park Complex	36.682772	-77.531704	<45	<45	<45
CoE-4	Tall Oaks Residential Subdivision	36.680288	-77.535863	<45	<45	<45
CoE-5	Belfield-Emporia Historic District	36.692984	-77.536558	<45	<45	<45
CoE-6	Southern Virginia Regional Medical Center	36.699362	-77.538916	<45	<45	45.9
CoE-7	City of Emporia Municipal Building	36.688002	-77.541840	<45	<45	<45
CoE-8	Hicksford-Emporia Historic District	36.686039	-77.542791	<45	<45	<45
CoE-9	Greensville High School	36.680843	-77.552709	<45	<45	<45
CoE-10	Interchange at Route 58/I-95	36.702553	-77.549382	<45	<45	45.3
Greensville County, Virginia						
GC-1	Intersection of Low Ground Road and Goose Pond Road	36.622709	-77.450927	<45	<45	<45
GC-2	Elnora Jarrell Worship Center	36.651628	-77.549726	<45	<45	<45
GC-3	Bryants Corner	36.662827	-77.529116	<45	<45	<45
GC-4	Union Grove Church of Christ	36.710794	-77.508063	<45	52.3	56.2
GC-5	Edward W. Wyatt Middle School	36.714811	-77.532409	<45	47.6	57.7
GC-6	Greensville County Administration Offices	36.736358	-77.513853	<45	<45	45.7
GC-7	Emporia Country Club	36.751344	-77.492538	<45	<45	<45
GC-8	Future Industrial Area #1	36.768650	-77.518131	<45	<45	<45
GC-9	Greensville Correctional Center	36.798275	-77.486699	<45	<45	<45
GC-10	Intersection of State Route 611 and James River Junction	36.704000	-77.477727	<45	54.8	54.9
GC-11	Oak Grove Baptist Church	36.69437	-77.48711	50.0	64.9	64.9
Southampton County, Virginia						
SC-1	Mid Atlantic Gin	36.680454	-77.481219	47.3	63.3	63.3
SC-2	Intersection of Route 58 and State Route 711	36.683124	-77.439622	<45	<45	47.6
SC-3	Valley Proteins Inc.	36.681352	-77.401437	<45	<45	<45
SC-4	Intersection of Adams Grove Road at Railroad	36.693175	-77.386009	<45	45.3	45.2
SC-5	Pleasant Grove Baptist Church	36.685513	-77.381253	<45	<45	<45
SC-6	Capron Community Church of God	36.687227	-77.373468	<45	<45	<45
SC-7	Deerfield Correctional Center	36.726363	-77.245067	<45	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-1	1	CH-47D	GCA Box	33GCA	2259	0.5	0.0	85.1	<45	<45
CoE-1	2	CH-53	GCA Box	33GCA	2277	0.1	0.0	90.3	<45	<45
CoE-1	3	Single Prop	FCLP	33F3	2523	0.7	0.1	74.3	<45	<45
CoE-1	4	Single Prop	GCA Box	33GCA	1887	0.2	0.0	78.5	<45	<45
CoE-1	5	CH-47D	DEP	RWY33D	7544	0.5	0.0	70.6	<45	<45
CoE-1	6	Single Prop	DEP	RWY33D	7569	0.4	0.1	64.8	<45	<45
CoE-1	7	CH-47D	Para Drops	33PARA	6077	0.1	0.0	76.6	<45	<45
CoE-1	8	CH-47D	Para Drops	33PARA	6077	0.1	0.0	76.5	<45	<45
CoE-1	9	CH-47D	Para Drops	15PARA	6959	0.1	0.0	75.3	<45	<45
CoE-1	10	CH-47D	ARR	33VOR	9611	0.5	0.0	63.1	<45	<45
CoE-1	11	CH-47D	Para Drops	15PARA	7229	0.1	0.0	74.8	<45	<45
CoE-1	12	Business Jet	DEP	RWY33D	7563	0.1	0.0	71.1	<45	<45
CoE-1	13	Single Prop	FCLP	15F3	7535	0.2	0.0	60.5	<45	<45
CoE-1	14	Super King Air	DEP	RWY33D	7550	0.1	0.0	63.4	<45	<45
CoE-1	15	Single Prop	DEP	RWY15D	8147	0.1	0.0	60.7	<45	<45
CoE-1	16	CH-53	ARR	33VORH	10968	0.1	0.0	65.4	<45	<45
CoE-1	17	Single Prop	GCA Box	15GCA	7529	0.1	0.0	62.9	<45	<45
CoE-1	18	CH-53	DEP	33D3	8624	0.1	0.0	63.6	<45	<45
CoE-1	19	Business Jet	DEP	RWY15D	8147	0.0	0.0	68.7	<45	<45
CoE-1	20	Single Prop	ARR	RWY15A	7528	0.1	0.0	56.7	<45	<45
CoE-2	1	CH-47D	DEP	RWY33D	2558	0.5	0.0	85.4	<45	<45
CoE-2	2	Single Prop	DEP	RWY33D	2863	0.4	0.1	72.7	<45	<45
CoE-2	3	Business Jet	DEP	RWY33D	2706	0.1	0.0	82.4	<45	<45
CoE-2	4	CH-47D	GCA Box	33GCA	8123	0.5	0.0	71.6	<45	<45
CoE-2	5	CH-47D	DEP	RWY33D	2558	0.0	0.0	85.4	<45	<45
CoE-2	6	Single Prop	ARR	RWY15A	2438	0.1	0.0	68.7	<45	<45
CoE-2	7	Super King Air	DEP	RWY33D	3185	0.1	0.0	71.1	<45	<45
CoE-2	8	CH-47D	Para Drops	33PARA	5864	0.1	0.0	76.7	<45	<45
CoE-2	9	Single Prop	FCLP	33F3	8875	0.7	0.1	61.5	<45	<45
CoE-2	10	CH-53	GCA Box	33GCA	8098	0.1	0.0	73.1	<45	<45
CoE-2	11	CH-47D	Para Drops	33PARA	5534	0.1	0.0	75.9	<45	<45
CoE-2	12	CH-47D	ARR	RWY15A	2568	0.0	0.0	81.2	<45	<45
CoE-2	13	Single Prop	GCA Box	15GCA	2484	0.1	0.0	69.7	<45	<45
CoE-2	14	Single Prop	GCA Box	33GCA	7952	0.2	0.0	64.4	<45	<45
CoE-2	15	Single Prop	FCLP	15F3	7632	0.2	0.0	58.8	<45	<45
CoE-2	16	CH-47D	Para Drops	15PARA	8813	0.1	0.0	69.6	<45	<45

Emporia: Baseline										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
CoE-2	17	CH-47D	ARR	33VOR	15078	0.5	0.0	57.3	<45	<45
CoE-2	18	CH-47D	Para Drops	15PARA	8813	0.1	0.0	69.2	<45	<45
CoE-2	19	Super King Air	ARR	RWY15A	2448	0.0	0.0	67.5	<45	<45
CoE-2	20	Business Jet	ARR	RWY15A	2450	0.0	0.0	69.9	<45	<45
CoE-3	1	CH-47D	GCA Box	33GCA	2683	0.5	0.0	83.0	<45	<45
CoE-3	2	CH-53	GCA Box	33GCA	2648	0.1	0.0	85.0	<45	<45
CoE-3	3	Single Prop	GCA Box	33GCA	2682	0.2	0.0	74.4	<45	<45
CoE-3	4	Single Prop	FCLP	33F3	7542	0.7	0.1	63.7	<45	<45
CoE-3	5	CH-47D	DEP	RWY33D	12671	0.5	0.0	67.0	<45	<45
CoE-3	6	Single Prop	DEP	RWY33D	12694	0.4	0.1	58.5	<45	<45
CoE-3	7	CH-47D	ARR	33VOR	14604	0.5	0.0	59.1	<45	<45
CoE-3	8	CH-47D	Para Drops	33PARA	10197	0.1	0.0	70.2	<45	<45
CoE-3	9	CH-47D	Para Drops	33PARA	10197	0.1	0.0	70.2	<45	<45
CoE-3	10	CH-47D	Para Drops	15PARA	10493	0.1	0.0	70.1	<45	<45
CoE-3	11	CH-47D	Para Drops	15PARA	10723	0.1	0.0	69.4	<45	<45
CoE-3	12	CH-53	ARR	33VORH	15699	0.1	0.0	64.0	<45	<45
CoE-3	13	Single Prop	FCLP	15F3	12746	0.2	0.0	54.0	<45	<45
CoE-3	14	Business Jet	DEP	RWY33D	12689	0.1	0.0	62.8	<45	<45
CoE-3	15	Super King Air	DEP	RWY33D	12684	0.1	0.0	57.7	<45	<45
CoE-3	16	Single Prop	DEP	RWY15D	13409	0.1	0.0	55.0	<45	<45
CoE-3	17	Single Prop	GCA Box	15GCA	12661	0.1	0.0	57.4	<45	<45
CoE-3	18	CH-53	DEP	33D3	13821	0.1	0.0	55.0	<45	<45
CoE-3	19	CH-47D	DEP	RWY33D	12671	0.0	0.0	67.1	<45	<45
CoE-3	20	Single Prop	ARR	RWY15A	12659	0.1	0.0	52.0	<45	<45
CoE-4	1	CH-47D	GCA Box	33GCA	3576	0.5	0.0	80.5	<45	<45
CoE-4	2	CH-53	GCA Box	33GCA	3578	0.1	0.0	83.6	<45	<45
CoE-4	3	Single Prop	GCA Box	33GCA	3578	0.2	0.0	71.7	<45	<45
CoE-4	4	CH-47D	DEP	RWY33D	14188	0.5	0.0	66.1	<45	<45
CoE-4	5	Single Prop	FCLP	33F3	8922	0.7	0.1	61.7	<45	<45
CoE-4	6	Single Prop	DEP	RWY33D	14208	0.4	0.1	57.3	<45	<45
CoE-4	7	CH-47D	ARR	33VOR	15915	0.5	0.0	58.4	<45	<45
CoE-4	8	CH-47D	Para Drops	33PARA	11289	0.1	0.0	68.9	<45	<45
CoE-4	9	CH-47D	Para Drops	33PARA	11289	0.1	0.0	68.8	<45	<45
CoE-4	10	CH-47D	Para Drops	15PARA	11391	0.1	0.0	69.0	<45	<45
CoE-4	11	CH-47D	Para Drops	15PARA	11616	0.1	0.0	68.3	<45	<45
CoE-4	12	CH-53	ARR	33VORH	16919	0.1	0.0	63.3	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-4	13	Single Prop	FCLP	15F3	14252	0.2	0.0	52.5	<45	<45
CoE-4	14	Business Jet	DEP	RWY33D	14204	0.1	0.0	61.1	<45	<45
CoE-4	15	Single Prop	DEP	RWY15D	14836	0.1	0.0	54.0	<45	<45
CoE-4	16	Super King Air	DEP	RWY33D	14199	0.1	0.0	56.4	<45	<45
CoE-4	17	CH-53	DEP	33D3	15213	0.1	0.0	53.2	<45	<45
CoE-4	18	Single Prop	GCA Box	15GCA	14179	0.1	0.0	56.3	<45	<45
CoE-4	19	CH-47D	DEP	RWY33D	14188	0.0	0.0	66.2	<45	<45
CoE-4	20	Single Prop	ARR	RWY15A	14178	0.1	0.0	50.9	<45	<45
CoE-5	1	CH-47D	GCA Box	33GCA	4993	0.5	0.0	77.4	<45	<45
CoE-5	2	CH-53	GCA Box	33GCA	4930	0.1	0.0	81.4	<45	<45
CoE-5	3	CH-47D	DEP	RWY33D	11746	0.5	0.0	69.4	<45	<45
CoE-5	4	Single Prop	GCA Box	33GCA	4943	0.2	0.0	68.9	<45	<45
CoE-5	5	Single Prop	FCLP	33F3	8887	0.7	0.1	61.7	<45	<45
CoE-5	6	Single Prop	DEP	RWY33D	11785	0.4	0.1	59.7	<45	<45
CoE-5	7	CH-47D	Para Drops	33PARA	12073	0.1	0.0	69.4	<45	<45
CoE-5	8	CH-47D	Para Drops	33PARA	11249	0.1	0.0	69.4	<45	<45
CoE-5	9	CH-47D	ARR	33VOR	16176	0.5	0.0	57.1	<45	<45
CoE-5	10	CH-47D	Para Drops	15PARA	13210	0.1	0.0	67.6	<45	<45
CoE-5	11	CH-47D	Para Drops	15PARA	13210	0.1	0.0	67.2	<45	<45
CoE-5	12	Business Jet	DEP	RWY33D	11772	0.1	0.0	64.3	<45	<45
CoE-5	13	CH-53	ARR	33VORH	17615	0.1	0.0	62.4	<45	<45
CoE-5	14	Super King Air	DEP	RWY33D	11811	0.1	0.0	58.9	<45	<45
CoE-5	15	Single Prop	FCLP	15F3	12695	0.2	0.0	53.4	<45	<45
CoE-5	16	CH-47D	DEP	RWY33D	11746	0.0	0.0	69.5	<45	<45
CoE-5	17	Single Prop	DEP	RWY15D	14355	0.1	0.0	54.0	<45	<45
CoE-5	18	Single Prop	ARR	RWY15A	11724	0.1	0.0	53.9	<45	<45
CoE-5	19	Single Prop	GCA Box	15GCA	11728	0.1	0.0	57.7	<45	<45
CoE-5	20	CH-53	DEP	33D3	14967	0.1	0.0	54.6	<45	<45
CoE-6	1	CH-47D	GCA Box	33GCA	6892	0.5	0.0	74.4	<45	<45
CoE-6	2	CH-47D	DEP	RWY33D	11010	0.5	0.0	71.0	<45	<45
CoE-6	3	CH-53	GCA Box	33GCA	6896	0.1	0.0	79.0	<45	<45
CoE-6	4	Single Prop	FCLP	33F3	10089	0.7	0.1	60.2	<45	<45
CoE-6	5	Single Prop	GCA Box	33GCA	6843	0.2	0.0	65.8	<45	<45
CoE-6	6	Single Prop	DEP	RWY33D	11066	0.4	0.1	60.4	<45	<45
CoE-6	7	CH-47D	Para Drops	33PARA	11916	0.1	0.0	69.1	<45	<45
CoE-6	8	CH-47D	Para Drops	33PARA	11410	0.1	0.0	68.9	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-6	9	CH-47D	ARR	33VOR	17359	0.5	0.0	55.5	<45	<45
CoE-6	10	Business Jet	DEP	RWY33D	11037	0.1	0.0	65.3	<45	<45
CoE-6	11	CH-47D	Para Drops	15PARA	13663	0.1	0.0	66.2	<45	<45
CoE-6	12	Super King Air	DEP	RWY33D	11127	0.1	0.0	59.7	<45	<45
CoE-6	13	CH-47D	Para Drops	15PARA	13663	0.1	0.0	66.0	<45	<45
CoE-6	14	CH-47D	DEP	RWY33D	11010	0.0	0.0	71.1	<45	<45
CoE-6	15	CH-53	ARR	33VORH	18952	0.1	0.0	61.3	<45	<45
CoE-6	16	Single Prop	ARR	RWY15A	10979	0.1	0.0	55.1	<45	<45
CoE-6	17	Single Prop	FCLP	15F3	12967	0.2	0.0	52.9	<45	<45
CoE-6	18	Single Prop	GCA Box	15GCA	10987	0.1	0.0	58.2	<45	<45
CoE-6	19	CH-47D	ARR	RWY15A	11003	0.0	0.0	68.3	<45	<45
CoE-6	20	CH-53	DEP	33D3	15904	0.1	0.0	54.4	<45	<45
CoE-7	1	CH-47D	GCA Box	33GCA	5524	0.5	0.0	76.4	<45	<45
CoE-7	2	CH-53	GCA Box	33GCA	5495	0.1	0.0	79.2	<45	<45
CoE-7	3	CH-47D	DEP	RWY33D	14043	0.5	0.0	67.4	<45	<45
CoE-7	4	Single Prop	GCA Box	33GCA	5516	0.2	0.0	67.7	<45	<45
CoE-7	5	Single Prop	FCLP	33F3	10301	0.7	0.1	59.9	<45	<45
CoE-7	6	Single Prop	DEP	RWY33D	14073	0.4	0.1	57.6	<45	<45
CoE-7	7	CH-47D	ARR	33VOR	17541	0.5	0.0	56.3	<45	<45
CoE-7	8	CH-47D	Para Drops	33PARA	13492	0.1	0.0	67.8	<45	<45
CoE-7	9	CH-47D	Para Drops	33PARA	13276	0.1	0.0	67.6	<45	<45
CoE-7	10	CH-47D	Para Drops	15PARA	13901	0.1	0.0	66.7	<45	<45
CoE-7	11	CH-47D	Para Drops	15PARA	14087	0.1	0.0	66.2	<45	<45
CoE-7	12	CH-53	ARR	33VORH	18812	0.1	0.0	62.3	<45	<45
CoE-7	13	Business Jet	DEP	RWY33D	14065	0.1	0.0	61.4	<45	<45
CoE-7	14	Super King Air	DEP	RWY33D	14089	0.1	0.0	56.7	<45	<45
CoE-7	15	Single Prop	FCLP	15F3	14701	0.2	0.0	51.4	<45	<45
CoE-7	16	CH-53	DEP	33D3	16531	0.1	0.0	52.3	<45	<45
CoE-7	17	CH-47D	DEP	RWY33D	14043	0.0	0.0	67.4	<45	<45
CoE-7	18	Single Prop	DEP	RWY15D	15987	0.1	0.0	52.8	<45	<45
CoE-7	19	Single Prop	GCA Box	15GCA	14029	0.1	0.0	56.0	<45	<45
CoE-7	20	Single Prop	ARR	RWY15A	14026	0.1	0.0	51.9	<45	<45
CoE-8	1	CH-47D	GCA Box	33GCA	5586	0.5	0.0	76.3	<45	<45
CoE-8	2	CH-53	GCA Box	33GCA	5528	0.1	0.0	79.4	<45	<45
CoE-8	3	CH-47D	DEP	RWY33D	14677	0.5	0.0	66.7	<45	<45
CoE-8	4	Single Prop	GCA Box	33GCA	5582	0.2	0.0	67.5	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-8	5	Single Prop	FCLP	33F3	10604	0.7	0.1	59.6	<45	<45
CoE-8	6	Single Prop	DEP	RWY33D	14704	0.4	0.1	57.0	<45	<45
CoE-8	7	CH-47D	ARR	33VOR	17807	0.5	0.0	56.2	<45	<45
CoE-8	8	CH-47D	Para Drops	33PARA	13598	0.1	0.0	67.4	<45	<45
CoE-8	9	CH-47D	Para Drops	33PARA	13598	0.1	0.0	67.3	<45	<45
CoE-8	10	CH-47D	Para Drops	15PARA	13928	0.1	0.0	66.6	<45	<45
CoE-8	11	CH-47D	Para Drops	15PARA	14103	0.1	0.0	66.1	<45	<45
CoE-8	12	CH-53	ARR	33VORH	19014	0.1	0.0	62.3	<45	<45
CoE-8	13	Business Jet	DEP	RWY33D	14698	0.1	0.0	60.7	<45	<45
CoE-8	14	Super King Air	DEP	RWY33D	14716	0.1	0.0	56.1	<45	<45
CoE-8	15	CH-53	DEP	33D3	16863	0.1	0.0	51.8	<45	<45
CoE-8	16	Single Prop	FCLP	15F3	15206	0.2	0.0	51.0	<45	<45
CoE-8	17	Single Prop	DEP	RWY15D	16353	0.1	0.0	52.6	<45	<45
CoE-8	18	CH-47D	DEP	RWY33D	14677	0.0	0.0	66.8	<45	<45
CoE-8	19	Single Prop	GCA Box	15GCA	14664	0.1	0.0	55.6	<45	<45
CoE-8	20	Single Prop	ARR	RWY15A	14662	0.1	0.0	51.3	<45	<45
CoE-9	1	CH-47D	GCA Box	33GCA	8151	0.5	0.0	72.7	<45	<45
CoE-9	2	CH-53	GCA Box	33GCA	8154	0.1	0.0	74.5	<45	<45
CoE-9	3	CH-47D	DEP	RWY33D	18141	0.5	0.0	64.3	<45	<45
CoE-9	4	Single Prop	GCA Box	33GCA	8152	0.2	0.0	63.7	<45	<45
CoE-9	5	Single Prop	FCLP	33F3	13699	0.7	0.1	56.2	<45	<45
CoE-9	6	Single Prop	DEP	RWY33D	18164	0.4	0.1	54.3	<45	<45
CoE-9	7	CH-47D	ARR	33VOR	20802	0.5	0.0	53.8	<45	<45
CoE-9	8	CH-47D	Para Drops	33PARA	16212	0.1	0.0	64.7	<45	<45
CoE-9	9	CH-47D	Para Drops	33PARA	16212	0.1	0.0	64.5	<45	<45
CoE-9	10	CH-47D	Para Drops	15PARA	16216	0.1	0.0	64.3	<45	<45
CoE-9	11	CH-53	ARR	33VORH	21853	0.1	0.0	60.1	<45	<45
CoE-9	12	CH-47D	Para Drops	15PARA	16382	0.1	0.0	63.7	<45	<45
CoE-9	13	CH-53	DEP	33D3	20003	0.1	0.0	48.6	<45	<45
CoE-9	14	Super King Air	DEP	RWY33D	18173	0.1	0.0	53.2	<45	<45
CoE-9	15	Single Prop	DEP	RWY15D	19558	0.1	0.0	50.4	<45	<45
CoE-9	16	CH-47D	DEP	RWY33D	18141	0.0	0.0	64.4	<45	<45
CoE-9	17	Business Jet	DEP	RWY33D	18158	0.1	0.0	56.9	<45	<45
CoE-9	18	Single Prop	FCLP	15F3	18608	0.2	0.0	47.6	<45	<45
CoE-9	19	Single Prop	GCA Box	15GCA	18131	0.1	0.0	53.3	<45	<45
CoE-9	20	Single Prop	ARR	RWY15A	18129	0.1	0.0	48.8	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-10	1	CH-47D	GCA Box	33GCA	9878	0.5	0.0	70.5	<45	<45
CoE-10	2	CH-47D	DEP	RWY33D	12867	0.5	0.0	70.0	<45	<45
CoE-10	3	CH-53	GCA Box	33GCA	9826	0.1	0.0	73.3	<45	<45
CoE-10	4	Single Prop	FCLP	33F3	13356	0.7	0.1	56.9	<45	<45
CoE-10	5	Single Prop	DEP	RWY33D	12946	0.4	0.1	58.5	<45	<45
CoE-10	6	Single Prop	GCA Box	33GCA	9850	0.2	0.0	61.8	<45	<45
CoE-10	7	CH-47D	Para Drops	33PARA	14643	0.1	0.0	66.1	<45	<45
CoE-10	8	CH-47D	Para Drops	33PARA	14358	0.1	0.0	66.0	<45	<45
CoE-10	9	Business Jet	DEP	RWY33D	12904	0.1	0.0	62.6	<45	<45
CoE-10	10	CH-47D	DEP	RWY33D	12867	0.0	0.0	70.0	<45	<45
CoE-10	11	Super King Air	DEP	RWY33D	13044	0.1	0.0	57.8	<45	<45
CoE-10	12	CH-53	ARR	33VORH	22232	0.1	0.0	60.1	<45	<45
CoE-10	13	CH-47D	Para Drops	15PARA	16736	0.1	0.0	63.3	<45	<45
CoE-10	14	CH-47D	Para Drops	15PARA	16736	0.1	0.0	63.2	<45	<45
CoE-10	15	CH-47D	ARR	33VOR	20630	0.5	0.0	50.9	<45	<45
CoE-10	16	Single Prop	ARR	RWY15A	12847	0.1	0.0	53.7	<45	<45
CoE-10	17	CH-53	DEP	33D3	19139	0.1	0.0	51.8	<45	<45
CoE-10	18	CH-47D	ARR	RWY15A	12877	0.0	0.0	67.6	<45	<45
CoE-10	19	Single Prop	GCA Box	15GCA	12858	0.1	0.0	56.5	<45	<45
CoE-10	20	Single Prop	FCLP	15F3	15959	0.2	0.0	49.8	<45	<45
GC-1	1	CH-47D	GCA Box	33GCA	5795	0.5	0.0	79.1	<45	<45
GC-1	2	CH-47D	ARR	33VOR	5802	0.5	0.0	78.0	<45	<45
GC-1	3	CH-53	GCA Box	33GCA	5795	0.1	0.0	83.0	<45	<45
GC-1	4	CH-53	ARR	33VORH	5786	0.1	0.0	82.9	<45	<45
GC-1	5	Single Prop	GCA Box	33GCA	5762	0.2	0.0	68.3	<45	<45
GC-1	6	Single Prop	ARR	RWY33A	5694	0.4	0.1	62.6	<45	<45
GC-1	7	Single Prop	DEP	RWY15D	6139	0.1	0.0	65.8	<45	<45
GC-1	8	CH-47D	DEP	RWY15D	5664	0.0	0.0	79.9	<45	<45
GC-1	9	CH-47D	ARR	RWY33A	5802	0.0	0.0	78.0	<45	<45
GC-1	10	Business Jet	DEP	RWY15D	5867	0.0	0.0	73.5	<45	<45
GC-1	11	Super King Air	ARR	RWY33A	5700	0.1	0.0	60.0	<45	<45
GC-1	12	Super King Air	DEP	RWY15D	6805	0.0	0.0	64.4	<45	<45
GC-1	13	CH-47D	Para Drops	15PARA	14214	0.1	0.0	65.9	<45	<45
GC-1	14	CH-47D	Para Drops	15PARA	14482	0.1	0.0	65.8	<45	<45
GC-1	15	Single Prop	FCLP	33F3	16717	0.7	0.1	49.7	<45	<45
GC-1	16	Business Jet	ARR	RWY33A	5703	0.1	0.0	61.1	<45	<45
GC-1	17	CH-53	DEP	33D3	24320	0.1	0.0	51.2	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-1	18	CH-47D	Para Drops	33PARA	17805	0.1	0.0	60.8	<45	<45
GC-1	19	Single Prop	FCLP	15F3	20823	0.2	0.0	49.7	<45	<45
GC-1	20	CH-47D	Para Drops	33PARA	17805	0.1	0.0	59.5	<45	<45
GC-2	1	CH-47D	GCA Box	33GCA	11475	0.5	0.0	70.8	<45	<45
GC-2	2	CH-53	GCA Box	33GCA	11439	0.1	0.0	73.1	<45	<45
GC-2	3	Single Prop	GCA Box	33GCA	11475	0.2	0.0	61.3	<45	<45
GC-2	4	CH-47D	DEP	RWY33D	23453	0.5	0.0	57.5	<45	<45
GC-2	5	Single Prop	FCLP	33F3	17404	0.7	0.1	53.1	<45	<45
GC-2	6	CH-47D	ARR	33VOR	23472	0.5	0.0	56.4	<45	<45
GC-2	7	CH-47D	Para Drops	15PARA	15861	0.1	0.0	64.2	<45	<45
GC-2	8	CH-47D	Para Drops	15PARA	16120	0.1	0.0	63.8	<45	<45
GC-2	9	Single Prop	DEP	RWY33D	23453	0.4	0.1	49.7	<45	<45
GC-2	10	CH-53	ARR	33VORH	23639	0.1	0.0	57.3	<45	<45
GC-2	11	CH-53	DEP	33D3	23453	0.1	0.0	42.9	<45	<45
GC-2	12	CH-47D	Para Drops	33PARA	17563	0.1	0.0	60.9	<45	<45
GC-2	13	CH-47D	Para Drops	33PARA	17563	0.1	0.0	60.8	<45	<45
GC-2	14	Single Prop	DEP	RWY15D	23452	0.1	0.0	49.5	<45	<45
GC-2	15	Super King Air	DEP	RWY33D	23452	0.1	0.0	49.8	<45	<45
GC-2	16	Single Prop	GCA Box	15GCA	23452	0.1	0.0	50.6	<45	<45
GC-2	17	Single Prop	FCLP	15F3	23452	0.2	0.0	43.4	<45	<45
GC-2	18	Business Jet	DEP	RWY33D	23452	0.1	0.0	50.6	<45	<45
GC-2	19	CH-47D	DEP	RWY33D	23453	0.0	0.0	57.7	<45	<45
GC-2	20	Super King Air	DEP	RWY15D	23452	0.0	0.0	50.0	<45	<45
GC-3	1	CH-47D	GCA Box	33GCA	4477	0.5	0.0	79.9	<45	<45
GC-3	2	CH-53	GCA Box	33GCA	4445	0.1	0.0	84.1	<45	<45
GC-3	3	Single Prop	GCA Box	33GCA	4477	0.2	0.0	70.5	<45	<45
GC-3	4	Single Prop	FCLP	33F3	10133	0.7	0.1	60.7	<45	<45
GC-3	5	CH-47D	DEP	RWY33D	16161	0.5	0.0	62.4	<45	<45
GC-3	6	CH-47D	ARR	33VOR	16184	0.5	0.0	60.5	<45	<45
GC-3	7	CH-47D	Para Drops	15PARA	9075	0.1	0.0	71.3	<45	<45
GC-3	8	CH-47D	Para Drops	15PARA	9480	0.1	0.0	70.7	<45	<45
GC-3	9	Single Prop	DEP	RWY33D	16161	0.4	0.1	54.5	<45	<45
GC-3	10	CH-47D	Para Drops	33PARA	10365	0.1	0.0	67.5	<45	<45
GC-3	11	CH-47D	Para Drops	33PARA	10365	0.1	0.0	67.5	<45	<45
GC-3	12	CH-53	ARR	33VORH	16415	0.1	0.0	63.0	<45	<45
GC-3	13	Single Prop	DEP	RWY15D	16161	0.1	0.0	54.3	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-3	14	Single Prop	FCLP	15F3	16160	0.2	0.0	51.9	<45	<45
GC-3	15	CH-53	DEP	33D3	16161	0.1	0.0	48.6	<45	<45
GC-3	16	Super King Air	DEP	RWY33D	16160	0.1	0.0	54.6	<45	<45
GC-3	17	Single Prop	GCA Box	15GCA	16161	0.1	0.0	55.8	<45	<45
GC-3	18	Business Jet	DEP	RWY33D	16161	0.1	0.0	57.8	<45	<45
GC-3	19	Single Prop	ARR	RWY33A	16415	0.4	0.1	45.4	<45	<45
GC-3	20	CH-47D	DEP	RWY33D	16161	0.0	0.0	62.5	<45	<45
GC-4	1	CH-47D	DEP	RWY33D	1453	0.5	0.0	84.8	<45	<45
GC-4	2	Single Prop	DEP	RWY33D	1765	0.4	0.1	76.6	<45	<45
GC-4	3	Business Jet	DEP	RWY33D	1650	0.1	0.0	87.2	<45	<45
GC-4	4	CH-47D	GCA Box	33GCA	5276	0.5	0.0	74.9	<45	<45
GC-4	5	CH-47D	Para Drops	33PARA	2650	0.1	0.0	82.6	<45	<45
GC-4	6	CH-47D	Para Drops	33PARA	3214	0.1	0.0	82.6	<45	<45
GC-4	7	Single Prop	ARR	RWY15A	1245	0.1	0.0	73.1	<45	<45
GC-4	8	Single Prop	FCLP	33F3	5938	0.7	0.1	66.3	<45	<45
GC-4	9	Super King Air	DEP	RWY33D	1972	0.1	0.0	74.7	<45	<45
GC-4	10	CH-47D	ARR	RWY15A	1403	0.0	0.0	85.7	<45	<45
GC-4	11	CH-53	GCA Box	33GCA	5270	0.1	0.0	76.4	<45	<45
GC-4	12	CH-47D	DEP	RWY33D	1453	0.0	0.0	84.8	<45	<45
GC-4	13	Single Prop	GCA Box	15GCA	1293	0.1	0.0	74.4	<45	<45
GC-4	14	Single Prop	GCA Box	33GCA	5038	0.2	0.0	68.8	<45	<45
GC-4	15	Single Prop	FCLP	15F3	4343	0.2	0.0	64.0	<45	<45
GC-4	16	Super King Air	ARR	RWY15A	1260	0.0	0.0	72.8	<45	<45
GC-4	17	CH-47D	Para Drops	15PARA	5478	0.1	0.0	74.2	<45	<45
GC-4	18	CH-47D	Para Drops	15PARA	5478	0.1	0.0	74.0	<45	<45
GC-4	19	Business Jet	ARR	RWY15A	1263	0.0	0.0	75.9	<45	<45
GC-4	20	CH-47D	ARR	33VOR	11799	0.5	0.0	60.1	<45	<45
GC-5	1	CH-47D	DEP	RWY33D	6277	0.5	0.0	77.9	<45	<45
GC-5	2	CH-47D	GCA Box	33GCA	10160	0.5	0.0	70.1	<45	<45
GC-5	3	Single Prop	DEP	RWY33D	6460	0.4	0.1	65.6	<45	<45
GC-5	4	CH-53	GCA Box	33GCA	10125	0.1	0.0	73.5	<45	<45
GC-5	5	Business Jet	DEP	RWY33D	6362	0.1	0.0	72.6	<45	<45
GC-5	6	Single Prop	FCLP	33F3	11307	0.7	0.1	58.4	<45	<45
GC-5	7	CH-47D	DEP	RWY33D	6277	0.0	0.0	77.9	<45	<45
GC-5	8	Single Prop	GCA Box	33GCA	10062	0.2	0.0	62.2	<45	<45
GC-5	9	CH-47D	Para Drops	33PARA	9755	0.1	0.0	71.3	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-5	10	Super King Air	DEP	RWY33D	6686	0.1	0.0	64.9	<45	<45
GC-5	11	CH-47D	Para Drops	33PARA	9573	0.1	0.0	70.4	<45	<45
GC-5	12	Single Prop	ARR	RWY15A	6241	0.1	0.0	61.0	<45	<45
GC-5	13	CH-47D	ARR	RWY15A	6308	0.0	0.0	74.3	<45	<45
GC-5	14	Single Prop	GCA Box	15GCA	6266	0.1	0.0	62.7	<45	<45
GC-5	15	CH-47D	Para Drops	15PARA	12633	0.1	0.0	66.0	<45	<45
GC-5	16	CH-47D	ARR	33VOR	18095	0.5	0.0	53.6	<45	<45
GC-5	17	CH-47D	Para Drops	15PARA	12633	0.1	0.0	65.6	<45	<45
GC-5	18	Single Prop	FCLP	15F3	11561	0.2	0.0	54.3	<45	<45
GC-5	19	CH-53	ARR	33VORH	19986	0.1	0.0	60.4	<45	<45
GC-5	20	CH-53	DEP	33D3	16082	0.1	0.0	57.7	<45	<45
GC-6	1	CH-47D	DEP	RWY33D	2909	0.5	0.0	85.4	<45	<45
GC-6	2	Single Prop	DEP	RWY33D	3469	0.4	0.1	70.9	<45	<45
GC-6	3	Business Jet	DEP	RWY33D	3166	0.1	0.0	80.6	<45	<45
GC-6	4	CH-47D	DEP	RWY33D	2909	0.0	0.0	85.4	<45	<45
GC-6	5	Single Prop	ARR	RWY15A	2882	0.1	0.0	68.2	<45	<45
GC-6	6	CH-47D	GCA Box	33GCA	14433	0.5	0.0	64.9	<45	<45
GC-6	7	CH-47D	ARR	RWY15A	3080	0.0	0.0	81.7	<45	<45
GC-6	8	Super King Air	DEP	RWY33D	4127	0.1	0.0	68.9	<45	<45
GC-6	9	Single Prop	GCA Box	15GCA	2964	0.1	0.0	69.2	<45	<45
GC-6	10	CH-47D	Para Drops	33PARA	9780	0.1	0.0	70.9	<45	<45
GC-6	11	CH-47D	Para Drops	33PARA	9483	0.1	0.0	70.7	<45	<45
GC-6	12	Single Prop	FCLP	33F3	15242	0.7	0.1	54.1	<45	<45
GC-6	13	CH-53	GCA Box	33GCA	14397	0.1	0.0	65.6	<45	<45
GC-6	14	Super King Air	ARR	RWY15A	2892	0.0	0.0	66.2	<45	<45
GC-6	15	Single Prop	GCA Box	33GCA	14351	0.2	0.0	57.0	<45	<45
GC-6	16	Business Jet	ARR	RWY15A	2896	0.0	0.0	68.5	<45	<45
GC-6	17	Single Prop	FCLP	15F3	11629	0.2	0.0	54.8	<45	<45
GC-6	18	CH-47D	Para Drops	15PARA	12979	0.1	0.0	64.7	<45	<45
GC-6	19	CH-53	DEP	33D3	17903	0.1	0.0	60.5	<45	<45
GC-6	20	CH-47D	Para Drops	15PARA	12979	0.1	0.0	64.0	<45	<45
GC-7	1	CH-47D	DEP	RWY33D	11018	0.5	0.0	72.9	<45	<45
GC-7	2	Single Prop	GCA Box	15GCA	2317	0.1	0.0	75.9	<45	<45
GC-7	3	Single Prop	DEP	RWY33D	11196	0.4	0.1	60.1	<45	<45
GC-7	4	CH-47D	GCA Box	33GCA	19296	0.5	0.0	59.7	<45	<45
GC-7	5	CH-47D	Para Drops	33PARA	12513	0.1	0.0	67.7	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-7	6	CH-47D	Para Drops	33PARA	12105	0.1	0.0	67.7	<45	<45
GC-7	7	CH-47D	DEP	RWY33D	11018	0.0	0.0	72.9	<45	<45
GC-7	8	Business Jet	DEP	RWY33D	11095	0.1	0.0	65.0	<45	<45
GC-7	9	CH-53	DEP	33D3	19148	0.1	0.0	63.2	<45	<45
GC-7	10	Super King Air	DEP	RWY33D	11445	0.1	0.0	59.4	<45	<45
GC-7	11	Single Prop	FCLP	33F3	19983	0.7	0.1	49.7	<45	<45
GC-7	12	CH-47D	ARR	RWY15A	11073	0.0	0.0	70.7	<45	<45
GC-7	13	Single Prop	ARR	RWY15A	11015	0.1	0.0	56.0	<45	<45
GC-7	14	Single Prop	FCLP	15F3	14476	0.2	0.0	52.9	<45	<45
GC-7	15	CH-53	GCA Box	33GCA	19279	0.1	0.0	60.1	<45	<45
GC-7	16	Single Prop	GCA Box	33GCA	19247	0.2	0.0	52.8	<45	<45
GC-7	17	CH-53	ARR	33VORH	25762	0.1	0.0	57.2	<45	<45
GC-7	18	CH-47D	Para Drops	15PARA	15689	0.1	0.0	61.5	<45	<45
GC-7	19	CH-47D	Para Drops	15PARA	15689	0.1	0.0	60.7	<45	<45
GC-7	20	CH-47D	ARR	33VOR	23967	0.5	0.0	44.5	<45	<45
GC-8	1	CH-47D	DEP	RWY33D	8442	0.5	0.0	76.2	<45	<45
GC-8	2	Single Prop	GCA Box	15GCA	4264	0.1	0.0	72.1	<45	<45
GC-8	3	Single Prop	DEP	RWY33D	8936	0.4	0.1	62.1	<45	<45
GC-8	4	CH-47D	DEP	RWY33D	8442	0.0	0.0	76.2	<45	<45
GC-8	5	Business Jet	DEP	RWY33D	8643	0.1	0.0	68.3	<45	<45
GC-8	6	CH-47D	GCA Box	33GCA	26113	0.5	0.0	57.4	<45	<45
GC-8	7	CH-47D	ARR	RWY15A	8569	0.0	0.0	75.0	<45	<45
GC-8	8	Single Prop	ARR	RWY15A	8508	0.1	0.0	58.5	<45	<45
GC-8	9	Super King Air	DEP	RWY33D	9706	0.1	0.0	60.8	<45	<45
GC-8	10	CH-47D	Para Drops	33PARA	20472	0.1	0.0	62.2	<45	<45
GC-8	11	CH-53	GCA Box	33GCA	26077	0.1	0.0	56.6	<45	<45
GC-8	12	CH-53	DEP	33D3	28486	0.1	0.0	55.7	<45	<45
GC-8	13	CH-53	ARR	33VORH	33808	0.1	0.0	54.9	<45	<45
GC-8	14	CH-47D	Para Drops	33PARA	20269	0.1	0.0	60.8	<45	<45
GC-8	15	Single Prop	GCA Box	33GCA	26069	0.2	0.0	48.4	<45	<45
GC-8	16	Single Prop	FCLP	33F3	26940	0.7	0.1	42.1	<45	<45
GC-8	17	Super King Air	ARR	RWY15A	8512	0.0	0.0	55.8	<45	<45
GC-8	18	Single Prop	FCLP	15F3	22581	0.2	0.0	45.6	<45	<45
GC-8	19	CH-47D	Para Drops	15PARA	23906	0.1	0.0	56.2	<45	<45
GC-8	20	Business Jet	ARR	RWY15A	8514	0.0	0.0	56.2	<45	<45
GC-9	1	CH-47D	DEP	RWY33D	22108	0.5	0.0	64.5	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-9	2	Single Prop	GCA Box	15GCA	10183	0.1	0.0	61.6	<45	<45
GC-9	3	Single Prop	DEP	RWY33D	22348	0.4	0.1	51.7	<45	<45
GC-9	4	CH-53	DEP	33D3	32617	0.1	0.0	56.2	<45	<45
GC-9	5	CH-53	ARR	33VORH	42576	0.1	0.0	54.4	<45	<45
GC-9	6	CH-53	GCA Box	33GCA	36413	0.1	0.0	52.0	<45	<45
GC-9	7	CH-47D	GCA Box	33GCA	36434	0.5	0.0	50.1	<45	<45
GC-9	8	CH-47D	ARR	RWY15A	22167	0.0	0.0	64.8	<45	<45
GC-9	9	CH-47D	DEP	RWY33D	22108	0.0	0.0	64.7	<45	<45
GC-9	10	Super King Air	DEP	RWY33D	22766	0.1	0.0	50.6	<45	<45
GC-9	11	Single Prop	ARR	RWY15A	22147	0.1	0.0	48.0	<45	<45
GC-9	12	CH-47D	Para Drops	33PARA	29144	0.1	0.0	55.5	<45	<45
GC-9	13	Business Jet	DEP	RWY33D	22204	0.1	0.0	52.9	<45	<45
GC-9	14	CH-47D	Para Drops	33PARA	28927	0.1	0.0	54.3	<45	<45
GC-9	15	CH-47D	Para Drops	15PARA	32537	0.1	0.0	49.3	<45	<45
GC-9	16	Single Prop	GCA Box	33GCA	36408	0.2	0.0	39.7	<45	<45
GC-9	17	CH-47D	ARR	33VOR	40879	0.5	0.0	34.2	<45	<45
GC-9	18	Single Prop	FCLP	15F3	31402	0.2	0.0	34.7	<45	<45
GC-9	19	Single Prop	FCLP	33F3	37138	0.7	0.1	29.0	<45	<45
GC-9	20	Super King Air	ARR	RWY15A	22149	0.0	0.0	42.6	<45	<45
GC-10	1	CH-53	DEP	33D3	2318	0.1	0.0	86.4	<45	<45
GC-10	2	Single Prop	FCLP	15F3	1652	0.2	0.0	78.0	<45	<45
GC-10	3	CH-47D	Para Drops	15PARA	1523	0.1	0.0	87.7	<45	<45
GC-10	4	CH-47D	Para Drops	15PARA	1523	0.1	0.0	87.7	<45	<45
GC-10	5	CH-47D	DEP	RWY33D	4775	0.5	0.0	73.7	<45	<45
GC-10	6	CH-47D	GCA Box	33GCA	4919	0.5	0.0	73.6	<45	<45
GC-10	7	Single Prop	FCLP	33F3	4928	0.7	0.1	69.7	<45	<45
GC-10	8	CH-47D	Para Drops	33PARA	3540	0.1	0.0	84.4	<45	<45
GC-10	9	CH-47D	Para Drops	33PARA	4153	0.1	0.0	83.0	<45	<45
GC-10	10	Single Prop	DEP	RWY33D	4799	0.4	0.1	69.8	<45	<45
GC-10	11	CH-53	GCA Box	33GCA	4948	0.1	0.0	78.0	<45	<45
GC-10	12	Business Jet	DEP	RWY33D	4791	0.1	0.0	77.4	<45	<45
GC-10	13	Single Prop	GCA Box	33GCA	4815	0.2	0.0	69.8	<45	<45
GC-10	14	CH-47D	ARR	33VOR	6655	0.5	0.0	66.1	<45	<45
GC-10	15	Single Prop	DEP	RWY15D	5084	0.1	0.0	66.3	<45	<45
GC-10	16	Single Prop	GCA Box	15GCA	4758	0.1	0.0	69.8	<45	<45
GC-10	17	Super King Air	DEP	RWY33D	4776	0.1	0.0	67.7	<45	<45
GC-10	18	Business Jet	DEP	RWY15D	5084	0.0	0.0	74.3	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-10	19	CH-53	ARR	33VORH	8180	0.1	0.0	66.1	<45	<45
GC-10	20	C-23	Para Drops	33PARA_2	3387	0.0	0.0	75.5	<45	<45
GC-11	1	Business Jet	DEP	RWY15D	688	0.03	0.00	110.0	45.0	45.0
GC-11	2	Single Prop	FCLP	33F3	566	0.68	0.12	88.9	<45	46.9
GC-11	3	CH-47D	DEP	RWY33D	602	0.55	0.03	90.9	<45	47.8
GC-11	4	Super King Air	DEP	RWY15D	688	0.03	0.01	98.8	<45	48.3
GC-11	5	Business Jet	DEP	RWY33D	646	0.08	0.00	97.6	<45	48.6
GC-11	6	CH-47D	GCA Box	33GCA	1086	0.55	0.03	86.9	<45	48.9
GC-11	7	Single Prop	DEP	RWY33D	688	0.43	0.08	84.9	<45	49.1
GC-11	8	Single Prop	FCLP	15F3	502	0.23	0.04	86.8	<45	49.3
GC-11	9	Single Prop	DEP	RWY15D	688	0.14	0.03	88.0	<45	49.4
GC-11	10	Single Prop	GCA Box	33GCA	670	0.17	0.03	85.9	<45	49.5
GC-11	11	CH-53	DEP	33D3	919	0.08	0.00	91.0	<45	49.6
GC-11	12	CH-47D	Para Drops	15PARA	512	0.05	0.00	94.6	<45	49.7
GC-11	13	CH-47D	Para Drops	15PARA	512	0.05	0.00	94.6	<45	49.8
GC-11	14	CH-47D	Para Drops	33PARA	1017	0.06	0.00	93.0	<45	49.8
GC-11	15	CH-53	GCA Box	33GCA	1154	0.08	0.00	89.8	<45	49.9
GC-11	116	CH-47D	Para Drops	33PARA	1003	0.06	0.00	92.7	<45	49.9
GC-11	17	CH-47D	ARR	RWY15A	534	0.02	0.00	91.2	<45	49.9
GC-11	18	CH-47D	DEP	RWY33D	602	0.02	0.00	90.9	<45	50.0
GC-11	19	C-23	DEP	RWY15D	688	0.00	0.00	96.0	<45	50.0
GC-11	20	CH-47D	DEP	RWY15D	688	0.01	0.00	88.0	<45	50.0
SC-1	1	Single Prop	FCLP	33F3	955	0.7	0.1	87.0	<45	<45
SC-1	2	CH-47D	GCA Box	33GCA	954	0.5	0.0	88.9	<45	<45
SC-1	3	Super King Air	DEP	RWY33D	954	0.1	0.0	92.9	<45	<45
SC-1	4	Single Prop	DEP	RWY33D	954	0.4	0.1	85.6	<45	<45
SC-1	5	CH-47D	DEP	RWY33D	954	0.5	0.0	86.6	<45	45.2
SC-1	6	CH-47D	ARR	33VOR	964	0.5	0.0	86.5	<45	45.7
SC-1	7	Single Prop	FCLP	15F3	970	0.2	0.0	87.1	<45	46.1
SC-1	8	Business Jet	DEP	RWY33D	954	0.1	0.0	94.7	<45	46.4
SC-1	9	CH-53	GCA Box	33GCA	955	0.1	0.0	91.3	<45	46.6
SC-1	10	Single Prop	GCA Box	33GCA	954	0.2	0.0	84.7	<45	46.7
SC-1	11	CH-47D	Para Drops	15PARA	1214	0.1	0.0	92.1	<45	46.8
SC-1	12	CH-47D	Para Drops	15PARA	1205	0.1	0.0	91.7	<45	46.9
SC-1	13	Single Prop	DEP	RWY15D	1031	0.1	0.0	82.5	<45	47.0
SC-1	14	CH-47D	Para Drops	33PARA	956	0.1	0.0	90.7	<45	47.0

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
SC-1	15	Business Jet	DEP	RWY15D	1009	0.0	0.0	93.9	<45	47.1
SC-1	16	CH-47D	Para Drops	33PARA	956	0.1	0.0	90.7	<45	47.2
SC-1	17	CH-53	ARR	33VORH	971	0.1	0.0	87.2	<45	47.2
SC-1	18	Single Prop	GCA Box	15GCA	1024	0.1	0.0	83.3	<45	47.3
SC-1	19	Single Prop	ARR	RWY33A	971	0.4	0.1	69.2	<45	47.3
SC-1	20	Super King Air	DEP	RWY15D	982	0.0	0.0	80.0	<45	47.3
SC-2	1	CH-47D	GCA Box	33GCA	9648	0.5	0.0	69.2	<45	<45
SC-2	2	Single Prop	GCA Box	15GCA	2529	0.1	0.0	75.4	<45	<45
SC-2	3	CH-47D	ARR	33VOR	9656	0.5	0.0	68.0	<45	<45
SC-2	4	Single Prop	FCLP	15F3	5968	0.2	0.0	66.0	<45	<45
SC-2	5	CH-53	ARR	33VORH	9649	0.1	0.0	73.2	<45	<45
SC-2	6	CH-53	DEP	33D3	10183	0.1	0.0	72.1	<45	<45
SC-2	7	CH-53	GCA Box	33GCA	9649	0.1	0.0	71.9	<45	<45
SC-2	8	CH-47D	DEP	RWY33D	11324	0.5	0.0	62.0	<45	<45
SC-2	9	CH-47D	Para Drops	15PARA	8660	0.1	0.0	72.6	<45	<45
SC-2	10	CH-47D	Para Drops	15PARA	9534	0.1	0.0	72.6	<45	<45
SC-2	11	Single Prop	FCLP	33F3	10085	0.7	0.1	56.4	<45	<45
SC-2	12	CH-47D	Para Drops	33PARA	10313	0.1	0.0	70.8	<45	<45
SC-2	13	CH-47D	Para Drops	33PARA	10405	0.1	0.0	70.4	<45	<45
SC-2	14	Single Prop	DEP	RWY15D	9699	0.1	0.0	61.8	<45	<45
SC-2	15	Single Prop	DEP	RWY33D	11324	0.4	0.1	56.6	<45	<45
SC-2	16	Single Prop	GCA Box	33GCA	9646	0.2	0.0	59.9	<45	<45
SC-2	17	Single Prop	ARR	RWY33A	9643	0.4	0.1	55.3	<45	<45
SC-2	18	Business Jet	DEP	RWY33D	11324	0.1	0.0	65.5	<45	<45
SC-2	19	Business Jet	DEP	RWY15D	9694	0.0	0.0	67.3	<45	<45
SC-2	20	CH-47D	DEP	RWY15D	9663	0.0	0.0	70.2	<45	<45
SC-3	1	CH-47D	ARR	33VOR	18525	0.5	0.0	63.8	<45	<45
SC-3	2	CH-47D	GCA Box	33GCA	18517	0.5	0.0	62.1	<45	<45
SC-3	3	CH-53	DEP	33D3	16753	0.1	0.0	66.4	<45	<45
SC-3	4	CH-53	ARR	33VORH	18517	0.1	0.0	65.1	<45	<45
SC-3	5	CH-53	GCA Box	33GCA	18517	0.1	0.0	64.7	<45	<45
SC-3	6	Single Prop	GCA Box	15GCA	12116	0.1	0.0	59.6	<45	<45
SC-3	7	Single Prop	FCLP	15F3	17115	0.2	0.0	53.1	<45	<45
SC-3	8	Single Prop	ARR	RWY33A	18505	0.4	0.1	49.5	<45	<45
SC-3	9	Single Prop	DEP	RWY15D	18571	0.1	0.0	54.2	<45	<45
SC-3	10	CH-47D	Para Drops	15PARA	19681	0.1	0.0	62.4	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
SC-3	11	Single Prop	GCA Box	33GCA	18512	0.2	0.0	52.8	<45	<45
SC-3	12	CH-47D	Para Drops	15PARA	19150	0.1	0.0	62.2	<45	<45
SC-3	13	Single Prop	DEP	RWY33D	22508	0.4	0.1	47.9	<45	<45
SC-3	14	CH-47D	Para Drops	33PARA	20667	0.1	0.0	60.9	<45	<45
SC-3	15	CH-47D	Para Drops	33PARA	20789	0.1	0.0	60.6	<45	<45
SC-3	16	Single Prop	FCLP	33F3	20803	0.7	0.1	44.2	<45	<45
SC-3	17	CH-47D	DEP	RWY33D	22508	0.5	0.0	47.5	<45	<45
SC-3	18	CH-47D	DEP	RWY15D	18520	0.0	0.0	65.4	<45	<45
SC-3	19	CH-47D	ARR	RWY33A	18525	0.0	0.0	63.8	<45	<45
SC-3	20	Business Jet	DEP	RWY33D	22508	0.1	0.0	53.8	<45	<45
SC-4	1	CH-47D	ARR	33VOR	24681	0.5	0.0	60.1	<45	<45
SC-4	2	CH-53	DEP	33D3	15561	0.1	0.0	68.0	<45	<45
SC-4	3	CH-47D	GCA Box	33GCA	24676	0.5	0.0	58.3	<45	<45
SC-4	4	CH-53	GCA Box	33GCA	24676	0.1	0.0	60.9	<45	<45
SC-4	5	CH-53	ARR	33VORH	24676	0.1	0.0	60.1	<45	<45
SC-4	6	Single Prop	GCA Box	15GCA	15965	0.1	0.0	56.3	<45	<45
SC-4	7	Single Prop	FCLP	15F3	21671	0.2	0.0	49.2	<45	<45
SC-4	8	Single Prop	DEP	RWY15D	24713	0.1	0.0	50.1	<45	<45
SC-4	9	CH-47D	Para Drops	15PARA	24120	0.1	0.0	58.9	<45	<45
SC-4	10	Single Prop	GCA Box	33GCA	24673	0.2	0.0	49.2	<45	<45
SC-4	11	CH-47D	Para Drops	33PARA	23989	0.1	0.0	58.2	<45	<45
SC-4	12	Single Prop	ARR	RWY33A	24668	0.4	0.1	45.0	<45	<45
SC-4	13	CH-47D	Para Drops	15PARA	24120	0.1	0.0	58.5	<45	<45
SC-4	14	Single Prop	DEP	RWY33D	27360	0.4	0.1	44.8	<45	<45
SC-4	15	CH-47D	Para Drops	33PARA	24111	0.1	0.0	57.8	<45	<45
SC-4	16	CH-47D	DEP	RWY15D	24681	0.0	0.0	60.7	<45	<45
SC-4	17	CH-47D	ARR	RWY33A	24681	0.0	0.0	60.1	<45	<45
SC-4	18	CH-47D	DEP	RWY33D	27360	0.5	0.0	41.8	<45	<45
SC-4	19	Super King Air	DEP	RWY33D	27360	0.1	0.0	46.3	<45	<45
SC-4	20	Single Prop	FCLP	33F3	26171	0.7	0.1	36.5	<45	<45
SC-5	1	CH-47D	ARR	33VOR	24258	0.5	0.0	61.0	<45	<45
SC-5	2	CH-47D	GCA Box	33GCA	24251	0.5	0.0	58.6	<45	<45
SC-5	3	CH-53	DEP	33D3	18657	0.1	0.0	65.1	<45	<45
SC-5	4	CH-53	GCA Box	33GCA	24252	0.1	0.0	61.2	<45	<45
SC-5	5	CH-53	ARR	33VORH	24252	0.1	0.0	60.8	<45	<45
SC-5	6	Single Prop	GCA Box	15GCA	17539	0.1	0.0	55.2	<45	<45

Emporia: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
SC-5	7	Single Prop	ARR	RWY33A	24239	0.4	0.1	45.9	<45	<45
SC-5	8	Single Prop	DEP	RWY15D	24301	0.1	0.0	50.5	<45	<45
SC-5	9	Single Prop	FCLP	15F3	22943	0.2	0.0	48.3	<45	<45
SC-5	10	Single Prop	GCA Box	33GCA	24247	0.2	0.0	49.4	<45	<45
SC-5	11	CH-47D	Para Drops	15PARA	25699	0.1	0.0	58.2	<45	<45
SC-5	12	CH-47D	Para Drops	15PARA	25241	0.1	0.0	57.7	<45	<45
SC-5	13	Single Prop	DEP	RWY33D	28462	0.4	0.1	44.0	<45	<45
SC-5	14	CH-47D	Para Drops	33PARA	25907	0.1	0.0	56.8	<45	<45
SC-5	15	CH-47D	Para Drops	33PARA	26009	0.1	0.0	56.7	<45	<45
SC-5	16	CH-47D	DEP	RWY15D	24247	0.0	0.0	61.5	<45	<45
SC-5	17	CH-47D	ARR	RWY33A	24258	0.0	0.0	61.0	<45	<45
SC-5	18	Super King Air	DEP	RWY33D	28462	0.1	0.0	45.1	<45	<45
SC-5	19	CH-47D	DEP	RWY33D	28462	0.5	0.0	39.2	<45	<45
SC-5	20	Single Prop	FCLP	33F3	26892	0.7	0.1	35.4	<45	<45
SC-6	1	CH-47D	ARR	33VOR	26493	0.5	0.0	59.9	<45	<45
SC-6	2	CH-47D	GCA Box	33GCA	26486	0.5	0.0	57.3	<45	<45
SC-6	3	CH-53	DEP	33D3	19357	0.1	0.0	64.7	<45	<45
SC-6	4	CH-53	GCA Box	33GCA	26487	0.1	0.0	60.1	<45	<45
SC-6	5	CH-53	ARR	33VORH	26487	0.1	0.0	59.4	<45	<45
SC-6	6	Single Prop	GCA Box	15GCA	19722	0.1	0.0	53.7	<45	<45
SC-6	7	Single Prop	ARR	RWY33A	26474	0.4	0.1	44.4	<45	<45
SC-6	8	Single Prop	DEP	RWY15D	26535	0.1	0.0	49.0	<45	<45
SC-6	9	Single Prop	GCA Box	33GCA	26481	0.2	0.0	48.1	<45	<45
SC-6	10	Single Prop	FCLP	15F3	25223	0.2	0.0	46.0	<45	<45
SC-6	11	Single Prop	DEP	RWY33D	30778	0.4	0.1	42.6	<45	<45
SC-6	12	CH-47D	Para Drops	15PARA	27966	0.1	0.0	56.0	<45	<45
SC-6	13	CH-47D	Para Drops	15PARA	27601	0.1	0.0	56.0	<45	<45
SC-6	14	CH-47D	Para Drops	33PARA	28096	0.1	0.0	55.4	<45	<45
SC-6	15	CH-47D	Para Drops	33PARA	27996	0.1	0.0	55.2	<45	<45
SC-6	16	CH-47D	ARR	RWY33A	26493	0.0	0.0	59.9	<45	<45
SC-6	17	CH-47D	DEP	RWY15D	26480	0.0	0.0	59.4	<45	<45
SC-6	18	Super King Air	DEP	RWY33D	30778	0.1	0.0	44.1	<45	<45
SC-6	19	Super King Air	DEP	RWY15D	26607	0.0	0.0	48.0	<45	<45
SC-6	20	CH-47D	DEP	RWY33D	30778	0.5	0.0	37.3	<45	<45
SC-7	1	CH-47D	ARR	33VOR	65574	0.5	0.0	31.9	<45	<45
SC-7	2	Single Prop	DEP	RWY15D	65614	0.1	0.0	34.6	<45	<45

Emporia: Baseline										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
SC-7	3	Single Prop	DEP	RWY33D	70264	0.4	0.1	27.3	<45	<45
SC-7	4	CH-47D	DEP	RWY33D	70264	0.5	0.0	28.3	<45	<45
SC-7	5	Super King Air	DEP	RWY33D	70264	0.1	0.0	33.8	<45	<45
SC-7	6	CH-47D	GCA Box	33GCA	65575	0.5	0.0	27.2	<45	<45
SC-7	7	CH-47D	Para Drops	33PARA	65439	0.1	0.0	38.4	<45	<45
SC-7	8	Super King Air	DEP	RWY15D	65702	0.0	0.0	35.4	<45	<45
SC-7	9	CH-47D	Para Drops	15PARA	66216	0.1	0.0	36.8	<45	<45
SC-7	10	Single Prop	FCLP	33F3	69216	0.7	0.1	17.1	<45	<45
SC-7	11	Single Prop	GCA Box	33GCA	65573	0.2	0.0	20.5	<45	<45
SC-7	12	Single Prop	ARR	RWY33A	65565	0.4	0.1	16.4	<45	<45
SC-7	13	Single Prop	FCLP	15F3	64434	0.2	0.0	18.0	<45	<45
SC-7	14	Single Prop	GCA Box	15GCA	58392	0.1	0.0	22.8	<45	<45
SC-7	15	Business Jet	DEP	RWY33D	70264	0.1	0.0	25.2	<45	<45
SC-7	16	CH-47D	Para Drops	33PARA	65374	0.1	0.0	26.0	<45	<45
SC-7	17	CH-47D	DEP	RWY15D	65559	0.0	0.0	32.1	<45	<45
SC-7	18	CH-47D	ARR	RWY33A	65574	0.0	0.0	31.9	<45	<45
SC-7	19	CH-47D	Para Drops	15PARA	66216	0.1	0.0	25.9	<45	<45
SC-7	20	Business Jet	DEP	RWY15D	65582	0.0	0.0	26.5	<45	<45

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-1	1	E-2/C-2	FCLP	33F3	2392	25.6	3.0	82.0	50.1	50.1
CoE-1	2	E-2/C-2	DEP	33D2	1915	0.7	0.1	89.5	<45	50.7
CoE-1	3	E-2/C-2	Crew Swap	33SW	2401	2.9	0.3	83.1	<45	51.2
CoE-1	4	E-2/C-2	FCLP	15F3	7534	22.7	2.6	72.1	<45	51.5
CoE-1	5	CH-47D	GCA Box	33GCA	2259	0.5	0.0	85.1	<45	51.6
CoE-1	6	E-2/C-2	Crew Swap	15SW	7526	2.6	0.3	75.8	<45	51.7
CoE-1	7	CH-53	GCA Box	33GCA	2277	0.1	0.0	90.3	<45	51.7
CoE-1	8	E-2/C-2	ARR	33O1	2411	0.7	0.1	75.1	<45	51.8
CoE-1	9	Single Prop	FCLP	33F3	2523	0.7	0.1	74.3	<45	51.8
CoE-1	10	Single Prop	GCA Box	33GCA	1887	0.2	0.0	78.5	<45	51.8
CoE-1	11	E-2/C-2	DEP	15D2	8147	0.6	0.1	73.3	<45	51.8
CoE-1	12	E-2/C-2	ARR	15O1	7533	0.6	0.1	72.4	<45	51.8
CoE-1	13	CH-47D	DEP	RWY33D	7544	0.5	0.0	70.6	<45	51.8
CoE-1	14	Single Prop	DEP	RWY33D	7569	0.4	0.1	64.8	<45	51.8
CoE-1	15	CH-47D	Para Drops	33PARA	6077	0.1	0.0	76.6	<45	51.8
CoE-1	16	CH-47D	Para Drops	33PARA	6077	0.1	0.0	76.5	<45	51.8
CoE-1	17	CH-47D	Para Drops	15PARA	6959	0.1	0.0	75.3	<45	51.8
CoE-1	18	CH-47D	ARR	33VOR	9611	0.5	0.0	63.1	<45	51.8
CoE-1	19	CH-47D	Para Drops	15PARA	7229	0.1	0.0	74.8	<45	51.8
CoE-1	20	Business Jet	DEP	RWY33D	7563	0.1	0.0	71.1	<45	51.8
CoE-2	1	E-2/C-2	Crew Swap	33SW	1705	2.9	0.3	91.0	49.6	49.6
CoE-2	2	E-2/C-2	FCLP	33F3	8845	25.6	3.0	70.2	<45	49.9
CoE-2	3	CH-47D	DEP	RWY33D	2558	0.5	0.0	85.4	<45	50.0
CoE-2	4	E-2/C-2	FCLP	15F3	7627	22.7	2.6	67.1	<45	50.2
CoE-2	5	E-2/C-2	ARR	15O1	2543	0.6	0.1	81.2	<45	50.3
CoE-2	6	E-2/C-2	Crew Swap	15SW	2682	2.6	0.3	75.2	<45	50.3
CoE-2	7	E-2/C-2	DEP	33D2	8656	0.7	0.1	75.0	<45	50.4
CoE-2	8	Single Prop	DEP	RWY33D	2863	0.4	0.1	72.7	<45	50.4
CoE-2	9	Business Jet	DEP	RWY33D	2706	0.1	0.0	82.4	<45	50.4
CoE-2	10	CH-47D	GCA Box	33GCA	8123	0.5	0.0	71.6	<45	50.4
CoE-2	11	E-2/C-2	DEP	15D2	12262	0.6	0.1	65.9	<45	50.4
CoE-2	12	CH-47D	DEP	RWY33D	2558	0.0	0.0	85.4	<45	50.4
CoE-2	13	E-2/C-2	ARR	33O1	8839	0.7	0.1	64.9	<45	50.4
CoE-2	14	Single Prop	ARR	RWY15A	2438	0.1	0.0	68.7	<45	50.4
CoE-2	15	Super King Air	DEP	RWY33D	3185	0.1	0.0	71.1	<45	50.4
CoE-2	16	CH-47D	Para Drops	33PARA	5864	0.1	0.0	76.7	<45	50.4
CoE-2	17	Single Prop	FCLP	33F3	8875	0.7	0.1	61.5	<45	50.4

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-2	18	CH-53	GCA Box	33GCA	8098	0.1	0.0	73.1	<45	50.4
CoE-2	19	CH-47D	Para Drops	33PARA	5534	0.1	0.0	75.9	<45	50.4
CoE-2	20	CH-47D	ARR	RWY15A	2568	0.0	0.0	81.2	<45	50.4
CoE-3	1	E-2/C-2	FCLP	33F3	7498	25.6	3.0	71.6	<45	<45
CoE-3	2	E-2/C-2	Crew Swap	33SW	7502	2.9	0.3	77.3	<45	<45
CoE-3	3	CH-47D	GCA Box	33GCA	2683	0.5	0.0	83.0	<45	<45
CoE-3	4	E-2/C-2	FCLP	15F3	12746	22.7	2.6	65.0	<45	<45
CoE-3	5	E-2/C-2	DEP	33D2	6801	0.7	0.1	77.9	<45	<45
CoE-3	6	E-2/C-2	Crew Swap	15SW	12694	2.6	0.3	70.5	<45	<45
CoE-3	7	CH-53	GCA Box	33GCA	2648	0.1	0.0	85.0	<45	<45
CoE-3	8	Single Prop	GCA Box	33GCA	2682	0.2	0.0	74.4	<45	<45
CoE-3	9	E-2/C-2	DEP	15D2	13409	0.6	0.1	68.0	<45	<45
CoE-3	10	E-2/C-2	ARR	33O1	7499	0.7	0.1	67.3	<45	<45
CoE-3	11	E-2/C-2	ARR	15O1	12682	0.6	0.1	66.0	<45	<45
CoE-3	12	Single Prop	FCLP	33F3	7542	0.7	0.1	63.7	<45	<45
CoE-3	13	CH-47D	DEP	RWY33D	12671	0.5	0.0	67.0	<45	<45
CoE-3	14	Single Prop	DEP	RWY33D	12694	0.4	0.1	58.5	<45	<45
CoE-3	15	CH-47D	ARR	33VOR	14604	0.5	0.0	59.1	<45	<45
CoE-3	16	CH-47D	Para Drops	33PARA	10197	0.1	0.0	70.2	<45	<45
CoE-3	17	CH-47D	Para Drops	33PARA	10197	0.1	0.0	70.2	<45	<45
CoE-3	18	CH-47D	Para Drops	15PARA	10493	0.1	0.0	70.1	<45	<45
CoE-3	19	CH-47D	Para Drops	15PARA	10723	0.1	0.0	69.4	<45	<45
CoE-3	20	CH-53	ARR	33VORH	15699	0.1	0.0	64.0	<45	<45
CoE-4	1	E-2/C-2	FCLP	33F3	8884	25.6	3.0	69.8	<45	<45
CoE-4	2	E-2/C-2	Crew Swap	33SW	8888	2.9	0.3	76.5	<45	<45
CoE-4	3	E-2/C-2	FCLP	15F3	14252	22.7	2.6	63.2	<45	<45
CoE-4	4	CH-47D	GCA Box	33GCA	3576	0.5	0.0	80.5	<45	<45
CoE-4	5	E-2/C-2	DEP	33D2	8138	0.7	0.1	75.9	<45	<45
CoE-4	6	E-2/C-2	Crew Swap	15SW	14208	2.6	0.3	69.4	<45	<45
CoE-4	7	CH-53	GCA Box	33GCA	3578	0.1	0.0	83.6	<45	<45
CoE-4	8	E-2/C-2	DEP	15D2	14836	0.6	0.1	66.9	<45	<45
CoE-4	9	Single Prop	GCA Box	33GCA	3578	0.2	0.0	71.7	<45	<45
CoE-4	10	E-2/C-2	ARR	33O1	8881	0.7	0.1	65.8	<45	<45
CoE-4	11	E-2/C-2	ARR	15O1	14198	0.6	0.1	64.5	<45	<45
CoE-4	12	CH-47D	DEP	RWY33D	14188	0.5	0.0	66.1	<45	<45
CoE-4	13	Single Prop	FCLP	33F3	8922	0.7	0.1	61.7	<45	<45

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-4	14	Single Prop	DEP	RWY33D	14208	0.4	0.1	57.3	<45	<45
CoE-4	15	CH-47D	ARR	33VOR	15915	0.5	0.0	58.4	<45	<45
CoE-4	16	CH-47D	Para Drops	33PARA	11289	0.1	0.0	68.9	<45	<45
CoE-4	17	CH-47D	Para Drops	33PARA	11289	0.1	0.0	68.8	<45	<45
CoE-4	18	CH-47D	Para Drops	15PARA	11391	0.1	0.0	69.0	<45	<45
CoE-4	19	CH-47D	Para Drops	15PARA	11616	0.1	0.0	68.3	<45	<45
CoE-4	20	CH-53	ARR	33VORH	16919	0.1	0.0	63.3	<45	<45
CoE-5	1	E-2/C-2	Crew Swap	33SW	5952	2.9	0.3	79.6	<45	<45
CoE-5	2	E-2/C-2	FCLP	33F3	8852	25.6	3.0	69.8	<45	<45
CoE-5	3	E-2/C-2	FCLP	15F3	12694	22.7	2.6	63.4	<45	<45
CoE-5	4	E-2/C-2	DEP	33D2	8291	0.7	0.1	75.6	<45	<45
CoE-5	5	E-2/C-2	Crew Swap	15SW	11767	2.6	0.3	69.6	<45	<45
CoE-5	6	CH-47D	GCA Box	33GCA	4993	0.5	0.0	77.4	<45	<45
CoE-5	7	CH-53	GCA Box	33GCA	4930	0.1	0.0	81.4	<45	<45
CoE-5	8	CH-47D	DEP	RWY33D	11746	0.5	0.0	69.4	<45	<45
CoE-5	9	E-2/C-2	ARR	15O1	11743	0.6	0.1	67.1	<45	<45
CoE-5	10	E-2/C-2	DEP	15D2	14355	0.6	0.1	66.1	<45	<45
CoE-5	11	E-2/C-2	ARR	33O1	8854	0.7	0.1	65.1	<45	<45
CoE-5	12	Single Prop	GCA Box	33GCA	4943	0.2	0.0	68.9	<45	<45
CoE-5	13	Single Prop	FCLP	33F3	8887	0.7	0.1	61.7	<45	<45
CoE-5	14	Single Prop	DEP	RWY33D	11785	0.4	0.1	59.7	<45	<45
CoE-5	15	CH-47D	Para Drops	33PARA	12073	0.1	0.0	69.4	<45	<45
CoE-5	16	CH-47D	Para Drops	33PARA	11249	0.1	0.0	69.4	<45	<45
CoE-5	17	CH-47D	ARR	33VOR	16176	0.5	0.0	57.1	<45	<45
CoE-5	18	CH-47D	Para Drops	15PARA	13210	0.1	0.0	67.6	<45	<45
CoE-5	19	CH-47D	Para Drops	15PARA	13210	0.1	0.0	67.2	<45	<45
CoE-5	20	Business Jet	DEP	RWY33D	11772	0.1	0.0	64.3	<45	<45
CoE-6	1	E-2/C-2	Crew Swap	33SW	3403	2.9	0.3	82.2	<45	<45
CoE-6	2	E-2/C-2	FCLP	33F3	10068	25.6	3.0	68.3	<45	<45
CoE-6	3	E-2/C-2	FCLP	15F3	12966	22.7	2.6	62.0	<45	<45
CoE-6	4	E-2/C-2	Crew Swap	15SW	11028	2.6	0.3	68.9	<45	<45
CoE-6	5	E-2/C-2	DEP	33D2	9557	0.7	0.1	73.9	<45	<45
CoE-6	6	CH-47D	GCA Box	33GCA	6892	0.5	0.0	74.4	<45	<45
CoE-6	7	CH-47D	DEP	RWY33D	11010	0.5	0.0	71.0	<45	<45
CoE-6	8	CH-53	GCA Box	33GCA	6896	0.1	0.0	79.0	<45	<45
CoE-6	9	E-2/C-2	ARR	15O1	10994	0.6	0.1	67.7	<45	<45

Emporia: Alt 1A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
CoE-6	10	E-2/C-2	DEP	15D2	15249	0.6	0.1	64.5	<45	<45
CoE-6	11	E-2/C-2	ARR	33O1	10057	0.7	0.1	63.6	<45	<45
CoE-6	12	Single Prop	FCLP	33F3	10089	0.7	0.1	60.2	<45	<45
CoE-6	13	Single Prop	GCA Box	33GCA	6843	0.2	0.0	65.8	<45	<45
CoE-6	14	Single Prop	DEP	RWY33D	11066	0.4	0.1	60.4	<45	<45
CoE-6	15	CH-47D	Para Drops	33PARA	11916	0.1	0.0	69.1	<45	<45
CoE-6	16	CH-47D	Para Drops	33PARA	11410	0.1	0.0	68.9	<45	<45
CoE-6	17	CH-47D	ARR	33VOR	17359	0.5	0.0	55.5	<45	<45
CoE-6	18	Business Jet	DEP	RWY33D	11037	0.1	0.0	65.3	<45	<45
CoE-6	19	CH-47D	Para Drops	15PARA	13663	0.1	0.0	66.2	<45	<45
CoE-6	20	Super King Air	DEP	RWY33D	11127	0.1	0.0	59.7	<45	<45
CoE-7	1	E-2/C-2	Crew Swap	33SW	7486	2.9	0.3	78.2	<45	<45
CoE-7	2	E-2/C-2	FCLP	33F3	10270	25.6	3.0	68.0	<45	<45
CoE-7	3	E-2/C-2	FCLP	15F3	14700	22.7	2.6	61.0	<45	<45
CoE-7	4	E-2/C-2	DEP	33D2	9649	0.7	0.1	73.9	<45	<45
CoE-7	5	E-2/C-2	Crew Swap	15SW	14060	2.6	0.3	68.2	<45	<45
CoE-7	6	CH-47D	GCA Box	33GCA	5524	0.5	0.0	76.4	<45	<45
CoE-7	7	CH-53	GCA Box	33GCA	5495	0.1	0.0	79.2	<45	<45
CoE-7	8	CH-47D	DEP	RWY33D	14043	0.5	0.0	67.4	<45	<45
CoE-7	9	E-2/C-2	DEP	15D2	15987	0.6	0.1	64.9	<45	<45
CoE-7	10	E-2/C-2	ARR	15O1	14043	0.6	0.1	64.7	<45	<45
CoE-7	11	E-2/C-2	ARR	33O1	10281	0.7	0.1	63.7	<45	<45
CoE-7	12	Single Prop	GCA Box	33GCA	5516	0.2	0.0	67.7	<45	<45
CoE-7	13	Single Prop	FCLP	33F3	10301	0.7	0.1	59.9	<45	<45
CoE-7	14	Single Prop	DEP	RWY33D	14073	0.4	0.1	57.6	<45	<45
CoE-7	15	CH-47D	ARR	33VOR	17541	0.5	0.0	56.3	<45	<45
CoE-7	16	CH-47D	Para Drops	33PARA	13492	0.1	0.0	67.8	<45	<45
CoE-7	17	CH-47D	Para Drops	33PARA	13276	0.1	0.0	67.6	<45	<45
CoE-7	18	CH-47D	Para Drops	15PARA	13901	0.1	0.0	66.7	<45	<45
CoE-7	19	CH-47D	Para Drops	15PARA	14087	0.1	0.0	66.2	<45	<45
CoE-7	20	CH-53	ARR	33VORH	18812	0.1	0.0	62.3	<45	<45
CoE-8	1	E-2/C-2	Crew Swap	33SW	7996	2.9	0.3	77.7	<45	<45
CoE-8	2	E-2/C-2	FCLP	33F3	10573	25.6	3.0	67.7	<45	<45
CoE-8	3	E-2/C-2	FCLP	15F3	15206	22.7	2.6	60.4	<45	<45
CoE-8	4	CH-47D	GCA Box	33GCA	5586	0.5	0.0	76.3	<45	<45
CoE-8	5	E-2/C-2	DEP	33D2	9929	0.7	0.1	73.5	<45	<45

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-8	6	E-2/C-2	Crew Swap	15SW	14694	2.6	0.3	67.9	<45	<45
CoE-8	7	CH-53	GCA Box	33GCA	5528	0.1	0.0	79.4	<45	<45
CoE-8	8	E-2/C-2	DEP	15D2	16353	0.6	0.1	64.7	<45	<45
CoE-8	9	CH-47D	DEP	RWY33D	14677	0.5	0.0	66.7	<45	<45
CoE-8	10	E-2/C-2	ARR	33O1	10583	0.7	0.1	63.5	<45	<45
CoE-8	11	E-2/C-2	ARR	15O1	14678	0.6	0.1	64.1	<45	<45
CoE-8	12	Single Prop	GCA Box	33GCA	5582	0.2	0.0	67.5	<45	<45
CoE-8	13	Single Prop	FCLP	33F3	10604	0.7	0.1	59.6	<45	<45
CoE-8	14	Single Prop	DEP	RWY33D	14704	0.4	0.1	57.0	<45	<45
CoE-8	15	CH-47D	ARR	33VOR	17807	0.5	0.0	56.2	<45	<45
CoE-8	16	CH-47D	Para Drops	33PARA	13598	0.1	0.0	67.4	<45	<45
CoE-8	17	CH-47D	Para Drops	33PARA	13598	0.1	0.0	67.3	<45	<45
CoE-8	18	CH-47D	Para Drops	15PARA	13928	0.1	0.0	66.6	<45	<45
CoE-8	19	CH-47D	Para Drops	15PARA	14103	0.1	0.0	66.1	<45	<45
CoE-8	20	CH-53	ARR	33VORH	19014	0.1	0.0	62.3	<45	<45
CoE-9	1	E-2/C-2	Crew Swap	33SW	7530	2.9	0.3	77.6	<45	<45
CoE-9	2	E-2/C-2	FCLP	33F3	13674	25.6	3.0	63.8	<45	<45
CoE-9	3	E-2/C-2	Crew Swap	15SW	18153	2.6	0.3	65.2	<45	<45
CoE-9	4	E-2/C-2	DEP	33D2	12969	0.7	0.1	70.5	<45	<45
CoE-9	5	CH-47D	GCA Box	33GCA	8151	0.5	0.0	72.7	<45	<45
CoE-9	6	E-2/C-2	FCLP	15F3	18607	22.7	2.6	54.9	<45	<45
CoE-9	7	CH-53	GCA Box	33GCA	8154	0.1	0.0	74.5	<45	<45
CoE-9	8	CH-47D	DEP	RWY33D	18141	0.5	0.0	64.3	<45	<45
CoE-9	9	E-2/C-2	DEP	15D2	19558	0.6	0.1	61.5	<45	<45
CoE-9	10	E-2/C-2	ARR	33O1	13677	0.7	0.1	60.2	<45	<45
CoE-9	11	E-2/C-2	ARR	15O1	18142	0.6	0.1	60.5	<45	<45
CoE-9	12	Single Prop	GCA Box	33GCA	8152	0.2	0.0	63.7	<45	<45
CoE-9	13	Single Prop	FCLP	33F3	13699	0.7	0.1	56.2	<45	<45
CoE-9	14	Single Prop	DEP	RWY33D	18164	0.4	0.1	54.3	<45	<45
CoE-9	15	CH-47D	ARR	33VOR	20802	0.5	0.0	53.8	<45	<45
CoE-9	16	CH-47D	Para Drops	33PARA	16212	0.1	0.0	64.7	<45	<45
CoE-9	17	CH-47D	Para Drops	33PARA	16212	0.1	0.0	64.5	<45	<45
CoE-9	18	CH-47D	Para Drops	15PARA	16216	0.1	0.0	64.3	<45	<45
CoE-9	19	CH-53	ARR	33VORH	21853	0.1	0.0	60.1	<45	<45
CoE-9	20	CH-47D	Para Drops	15PARA	16382	0.1	0.0	63.7	<45	<45
CoE-10	1	E-2/C-2	Crew Swap	33SW	2470	2.9	0.3	85.0	<45	<45

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-10	2	E-2/C-2	FCLP	33F3	13341	25.6	3.0	64.4	<45	<45
CoE-10	3	E-2/C-2	Crew Swap	15SW	12889	2.6	0.3	66.0	<45	<45
CoE-10	4	E-2/C-2	FCLP	15F3	15958	22.7	2.6	56.1	<45	<45
CoE-10	5	E-2/C-2	DEP	33D2	12828	0.7	0.1	70.1	<45	<45
CoE-10	6	CH-47D	GCA Box	33GCA	9878	0.5	0.0	70.5	<45	<45
CoE-10	7	CH-47D	DEP	RWY33D	12867	0.5	0.0	70.0	<45	<45
CoE-10	8	E-2/C-2	ARR	15O1	12990	0.6	0.1	65.2	<45	<45
CoE-10	9	CH-53	GCA Box	33GCA	9826	0.1	0.0	73.3	<45	<45
CoE-10	10	E-2/C-2	ARR	33O1	13330	0.7	0.1	60.5	<45	<45
CoE-10	11	E-2/C-2	DEP	15D2	18476	0.6	0.1	60.1	<45	<45
CoE-10	12	Single Prop	FCLP	33F3	13356	0.7	0.1	56.9	<45	<45
CoE-10	13	Single Prop	DEP	RWY33D	12946	0.4	0.1	58.5	<45	<45
CoE-10	14	Single Prop	GCA Box	33GCA	9850	0.2	0.0	61.8	<45	<45
CoE-10	15	CH-47D	Para Drops	33PARA	14643	0.1	0.0	66.1	<45	<45
CoE-10	16	CH-47D	Para Drops	33PARA	14358	0.1	0.0	66.0	<45	<45
CoE-10	17	Business Jet	DEP	RWY33D	12904	0.1	0.0	62.6	<45	<45
CoE-10	18	CH-47D	DEP	RWY33D	12867	0.0	0.0	70.0	<45	<45
CoE-10	19	Super King Air	DEP	RWY33D	13044	0.1	0.0	57.8	<45	<45
CoE-10	20	CH-53	ARR	33VORH	22232	0.1	0.0	60.1	<45	<45
GC-1	1	E-2/C-2	Crew Swap	33SW	1809	2.9	0.3	75.3	<45	<45
GC-1	2	E-2/C-2	Crew Swap	15SW	12367	2.6	0.3	71.9	<45	<45
GC-1	3	CH-47D	GCA Box	33GCA	5795	0.5	0.0	79.1	<45	<45
GC-1	4	E-2/C-2	DEP	15D2	6741	0.6	0.1	76.6	<45	<45
GC-1	5	CH-47D	ARR	33VOR	5802	0.5	0.0	78.0	<45	<45
GC-1	6	E-2/C-2	ARR	33O1	6504	0.7	0.1	72.4	<45	<45
GC-1	7	E-2/C-2	DEP	33D2	6721	0.7	0.1	71.7	<45	<45
GC-1	8	CH-53	GCA Box	33GCA	5795	0.1	0.0	83.0	<45	<45
GC-1	9	CH-53	ARR	33VORH	5786	0.1	0.0	82.9	<45	<45
GC-1	10	E-2/C-2	FCLP	15F3	20816	22.7	2.6	54.4	<45	<45
GC-1	11	E-2/C-2	FCLP	33F3	16712	25.6	3.0	52.2	<45	<45
GC-1	12	Single Prop	GCA Box	33GCA	5762	0.2	0.0	68.3	<45	<45
GC-1	13	Single Prop	ARR	RWY33A	5694	0.4	0.1	62.6	<45	<45
GC-1	14	Single Prop	DEP	RWY15D	6139	0.1	0.0	65.8	<45	<45
GC-1	15	CH-47D	DEP	RWY15D	5664	0.0	0.0	79.9	<45	<45
GC-1	16	CH-47D	ARR	RWY33A	5802	0.0	0.0	78.0	<45	<45
GC-1	17	Business Jet	DEP	RWY15D	5867	0.0	0.0	73.5	<45	<45
GC-1	18	E-2/C-2	ARR	15O1	20819	0.6	0.1	53.7	<45	<45

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-1	19	Super King Air	ARR	RWY33A	5700	0.1	0.0	60.0	<45	<45
GC-1	20	Super King Air	DEP	RWY15D	6805	0.0	0.0	64.4	<45	<45
GC-2	1	E-2/C-2	Crew Swap	33SW	7384	2.9	0.3	77.1	<45	<45
GC-2	2	E-2/C-2	FCLP	33F3	17386	25.6	3.0	59.1	<45	<45
GC-2	3	E-2/C-2	Crew Swap	15SW	23452	2.6	0.3	63.5	<45	<45
GC-2	4	CH-47D	GCA Box	33GCA	11475	0.5	0.0	70.8	<45	<45
GC-2	5	E-2/C-2	DEP	33D2	16590	0.7	0.1	67.3	<45	<45
GC-2	6	E-2/C-2	FCLP	15F3	23453	22.7	2.6	50.0	<45	<45
GC-2	7	CH-53	GCA Box	33GCA	11439	0.1	0.0	73.1	<45	<45
GC-2	8	E-2/C-2	DEP	15D2	23452	0.6	0.1	61.5	<45	<45
GC-2	9	E-2/C-2	ARR	33O1	17386	0.7	0.1	56.8	<45	<45
GC-2	10	Single Prop	GCA Box	33GCA	11475	0.2	0.0	61.3	<45	<45
GC-2	11	CH-47D	DEP	RWY33D	23453	0.5	0.0	57.5	<45	<45
GC-2	12	Single Prop	FCLP	33F3	17404	0.7	0.1	53.1	<45	<45
GC-2	13	CH-47D	ARR	33VOR	23472	0.5	0.0	56.4	<45	<45
GC-2	14	E-2/C-2	ARR	15O1	23465	0.6	0.1	53.0	<45	<45
GC-2	15	CH-47D	Para Drops	15PARA	15861	0.1	0.0	64.2	<45	<45
GC-2	16	CH-47D	Para Drops	15PARA	16120	0.1	0.0	63.8	<45	<45
GC-2	17	Single Prop	DEP	RWY33D	23453	0.4	0.1	49.7	<45	<45
GC-2	18	CH-53	ARR	33VORH	23639	0.1	0.0	57.3	<45	<45
GC-2	19	CH-53	DEP	33D3	23453	0.1	0.0	42.9	<45	<45
GC-2	20	CH-47D	Para Drops	33PARA	17563	0.1	0.0	60.9	<45	<45
GC-3	1	E-2/C-2	FCLP	33F3	10102	25.6	3.0	68.7	<45	<45
GC-3	2	E-2/C-2	Crew Swap	33SW	10110	2.9	0.3	74.6	<45	<45
GC-3	3	E-2/C-2	FCLP	15F3	16161	22.7	2.6	62.8	<45	<45
GC-3	4	CH-47D	GCA Box	33GCA	4477	0.5	0.0	79.9	<45	<45
GC-3	5	E-2/C-2	DEP	33D2	9351	0.7	0.1	75.1	<45	<45
GC-3	6	E-2/C-2	Crew Swap	15SW	16161	2.6	0.3	69.4	<45	<45
GC-3	7	CH-53	GCA Box	33GCA	4445	0.1	0.0	84.1	<45	<45
GC-3	8	E-2/C-2	DEP	15D2	16161	0.6	0.1	67.7	<45	<45
GC-3	9	E-2/C-2	ARR	33O1	10102	0.7	0.1	65.8	<45	<45
GC-3	10	Single Prop	GCA Box	33GCA	4477	0.2	0.0	70.5	<45	<45
GC-3	11	Single Prop	FCLP	33F3	10133	0.7	0.1	60.7	<45	<45
GC-3	12	E-2/C-2	ARR	15O1	16180	0.6	0.1	61.4	<45	<45
GC-3	13	CH-47D	DEP	RWY33D	16161	0.5	0.0	62.4	<45	<45
GC-3	14	CH-47D	ARR	33VOR	16184	0.5	0.0	60.5	<45	<45

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-3	15	CH-47D	Para Drops	15PARA	9075	0.1	0.0	71.3	<45	<45
GC-3	16	CH-47D	Para Drops	15PARA	9480	0.1	0.0	70.7	<45	<45
GC-3	17	Single Prop	DEP	RWY33D	16161	0.4	0.1	54.5	<45	<45
GC-3	18	CH-47D	Para Drops	33PARA	10365	0.1	0.0	67.5	<45	<45
GC-3	19	CH-47D	Para Drops	33PARA	10365	0.1	0.0	67.5	<45	<45
GC-3	20	CH-53	ARR	33VORH	16415	0.1	0.0	63.0	<45	<45
GC-4	1	E-2/C-2	Crew Swap	33SW	1519	2.9	0.3	92.3	50.9	50.9
GC-4	2	E-2/C-2	FCLP	33F3	5892	25.6	3.0	74.5	<45	51.5
GC-4	3	E-2/C-2	FCLP	15F3	4334	22.7	2.6	72.0	<45	51.8
GC-4	4	E-2/C-2	ARR	15O1	1403	0.6	0.1	86.2	<45	51.9
GC-4	5	E-2/C-2	Crew Swap	15SW	1663	2.6	0.3	79.0	<45	52.1
GC-4	6	CH-47D	DEP	RWY33D	1453	0.5	0.0	84.8	<45	52.2
GC-4	7	E-2/C-2	DEP	33D2	5749	0.7	0.1	79.5	<45	52.2
GC-4	8	Single Prop	DEP	RWY33D	1765	0.4	0.1	76.6	<45	52.2
GC-4	9	Business Jet	DEP	RWY33D	1650	0.1	0.0	87.2	<45	52.2
GC-4	10	CH-47D	GCA Box	33GCA	5276	0.5	0.0	74.9	<45	52.2
GC-4	11	E-2/C-2	DEP	15D2	8957	0.6	0.1	68.8	<45	52.2
GC-4	12	CH-47D	Para Drops	33PARA	2650	0.1	0.0	82.6	<45	52.2
GC-4	13	CH-47D	Para Drops	33PARA	3214	0.1	0.0	82.6	<45	52.3
GC-4	14	E-2/C-2	ARR	33O1	5880	0.7	0.1	67.7	<45	52.3
GC-4	15	Single Prop	ARR	RWY15A	1245	0.1	0.0	73.1	<45	52.3
GC-4	16	Single Prop	FCLP	33F3	5938	0.7	0.1	66.3	<45	52.3
GC-4	17	Super King Air	DEP	RWY33D	1972	0.1	0.0	74.7	<45	52.3
GC-4	18	CH-47D	ARR	RWY15A	1403	0.0	0.0	85.7	<45	52.3
GC-4	19	CH-53	GCA Box	33GCA	5270	0.1	0.0	76.4	<45	52.3
GC-4	20	CH-47D	DEP	RWY33D	1453	0.0	0.0	84.8	<45	52.3
GC-5	1	E-2/C-2	Crew Swap	33SW	2255	2.9	0.3	88.5	47.1	47.1
GC-5	2	E-2/C-2	FCLP	33F3	11276	25.6	3.0	67.0	<45	47.4
GC-5	3	E-2/C-2	FCLP	15F3	11558	22.7	2.6	62.2	<45	47.4
GC-5	4	E-2/C-2	Crew Swap	15SW	6353	2.6	0.3	70.1	<45	47.5
GC-5	5	CH-47D	DEP	RWY33D	6277	0.5	0.0	77.9	<45	47.5
GC-5	6	E-2/C-2	ARR	15O1	6641	0.6	0.1	72.6	<45	47.6
GC-5	7	E-2/C-2	DEP	33D2	10951	0.7	0.1	72.1	<45	47.6
GC-5	8	CH-47D	GCA Box	33GCA	10160	0.5	0.0	70.1	<45	47.6
GC-5	9	Single Prop	DEP	RWY33D	6460	0.4	0.1	65.6	<45	47.6
GC-5	10	E-2/C-2	ARR	33O1	11287	0.7	0.1	62.3	<45	47.6

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-5	11	E-2/C-2	DEP	15D2	15440	0.6	0.1	62.8	<45	47.6
GC-5	12	CH-53	GCA Box	33GCA	10125	0.1	0.0	73.5	<45	47.6
GC-5	13	Business Jet	DEP	RWY33D	6362	0.1	0.0	72.6	<45	47.6
GC-5	14	Single Prop	FCLP	33F3	11307	0.7	0.1	58.4	<45	47.6
GC-5	15	CH-47D	DEP	RWY33D	6277	0.0	0.0	77.9	<45	47.6
GC-5	16	Single Prop	GCA Box	33GCA	10062	0.2	0.0	62.2	<45	47.6
GC-5	17	CH-47D	Para Drops	33PARA	9755	0.1	0.0	71.3	<45	47.6
GC-5	18	Super King Air	DEP	RWY33D	6686	0.1	0.0	64.9	<45	47.6
GC-5	19	CH-47D	Para Drops	33PARA	9573	0.1	0.0	70.4	<45	47.6
GC-5	20	Single Prop	ARR	RWY15A	6241	0.1	0.0	61.0	<45	47.6
GC-6	1	E-2/C-2	ARR	15O1	1519	0.6	0.1	85.2	<45	<45
GC-6	2	E-2/C-2	Crew Swap	33SW	7169	2.9	0.3	78.2	<45	<45
GC-6	3	CH-47D	DEP	RWY33D	2909	0.5	0.0	85.4	<45	<45
GC-6	4	E-2/C-2	Crew Swap	15SW	2354	2.6	0.3	74.9	<45	<45
GC-6	5	E-2/C-2	FCLP	33F3	15226	25.6	3.0	63.0	<45	<45
GC-6	6	E-2/C-2	FCLP	15F3	11623	22.7	2.6	60.8	<45	<45
GC-6	7	Single Prop	DEP	RWY33D	3469	0.4	0.1	70.9	<45	<45
GC-6	8	Business Jet	DEP	RWY33D	3166	0.1	0.0	80.6	<45	<45
GC-6	9	E-2/C-2	DEP	33D2	15117	0.7	0.1	67.4	<45	<45
GC-6	10	CH-47D	DEP	RWY33D	2909	0.0	0.0	85.4	<45	<45
GC-6	11	E-2/C-2	ARR	33O1	10611	0.7	0.1	63.0	<45	<45
GC-6	12	Single Prop	ARR	RWY15A	2882	0.1	0.0	68.2	<45	<45
GC-6	13	CH-47D	GCA Box	33GCA	14433	0.5	0.0	64.9	<45	<45
GC-6	14	CH-47D	ARR	RWY15A	3080	0.0	0.0	81.7	<45	<45
GC-6	15	Super King Air	DEP	RWY33D	4127	0.1	0.0	68.9	<45	<45
GC-6	16	Single Prop	GCA Box	15GCA	2964	0.1	0.0	69.2	<45	<45
GC-6	17	E-2/C-2	DEP	15D2	17717	0.6	0.1	58.9	<45	<45
GC-6	18	CH-47D	Para Drops	33PARA	9780	0.1	0.0	70.9	<45	<45
GC-6	19	CH-47D	Para Drops	33PARA	9483	0.1	0.0	70.7	<45	<45
GC-6	20	Single Prop	FCLP	33F3	15242	0.7	0.1	54.1	<45	<45
GC-7	1	E-2/C-2	ARR	15O1	837	0.6	0.1	89.8	<45	<45
GC-7	2	E-2/C-2	Crew Swap	15SW	5877	2.6	0.3	74.0	<45	<45
GC-7	3	E-2/C-2	Crew Swap	33SW	14267	2.9	0.3	71.0	<45	<45
GC-7	4	E-2/C-2	FCLP	15F3	14466	22.7	2.6	57.7	<45	<45
GC-7	5	E-2/C-2	FCLP	33F3	19980	25.6	3.0	56.4	<45	<45
GC-7	6	CH-47D	DEP	RWY33D	11018	0.5	0.0	72.9	<45	<45

Emporia: Alt 1A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
GC-7	7	E-2/C-2	ARR	33O1	5407	0.7	0.1	69.4	<45	<45
GC-7	8	Single Prop	GCA Box	15GCA	2317	0.1	0.0	75.9	<45	<45
GC-7	9	E-2/C-2	DEP	33D2	19927	0.7	0.1	61.9	<45	<45
GC-7	10	Single Prop	DEP	RWY33D	11196	0.4	0.1	60.1	<45	<45
GC-7	11	CH-47D	GCA Box	33GCA	19296	0.5	0.0	59.7	<45	<45
GC-7	12	E-2/C-2	DEP	15D2	21464	0.6	0.1	55.9	<45	<45
GC-7	13	CH-47D	Para Drops	33PARA	12513	0.1	0.0	67.7	<45	<45
GC-7	14	CH-47D	Para Drops	33PARA	12105	0.1	0.0	67.7	<45	<45
GC-7	15	CH-47D	DEP	RWY33D	11018	0.0	0.0	72.9	<45	<45
GC-7	16	Business Jet	DEP	RWY33D	11095	0.1	0.0	65.0	<45	<45
GC-7	17	CH-53	DEP	33D3	19148	0.1	0.0	63.2	<45	<45
GC-7	18	Super King Air	DEP	RWY33D	11445	0.1	0.0	59.4	<45	<45
GC-7	19	Single Prop	FCLP	33F3	19983	0.7	0.1	49.7	<45	<45
GC-7	20	CH-47D	ARR	RWY15A	11073	0.0	0.0	70.7	<45	<45
GC-8	1	E-2/C-2	Crew Swap	15SW	4385	2.6	0.3	69.4	<45	<45
GC-8	2	CH-47D	DEP	RWY33D	8442	0.5	0.0	76.2	<45	<45
GC-8	3	E-2/C-2	Crew Swap	33SW	18518	2.9	0.3	66.7	<45	<45
GC-8	4	E-2/C-2	ARR	15O1	9561	0.6	0.1	68.9	<45	<45
GC-8	5	Single Prop	GCA Box	15GCA	4264	0.1	0.0	72.1	<45	<45
GC-8	6	E-2/C-2	ARR	33O1	13348	0.7	0.1	61.2	<45	<45
GC-8	7	Single Prop	DEP	RWY33D	8936	0.4	0.1	62.1	<45	<45
GC-8	8	E-2/C-2	FCLP	15F3	22577	22.7	2.6	43.4	<45	<45
GC-8	9	E-2/C-2	FCLP	33F3	26931	25.6	3.0	42.8	<45	<45
GC-8	10	E-2/C-2	DEP	33D2	26845	0.7	0.1	57.1	<45	<45
GC-8	11	CH-47D	DEP	RWY33D	8442	0.0	0.0	76.2	<45	<45
GC-8	12	Business Jet	DEP	RWY33D	8643	0.1	0.0	68.3	<45	<45
GC-8	13	CH-47D	GCA Box	33GCA	26113	0.5	0.0	57.4	<45	<45
GC-8	14	CH-47D	ARR	RWY15A	8569	0.0	0.0	75.0	<45	<45
GC-8	15	Single Prop	ARR	RWY15A	8508	0.1	0.0	58.5	<45	<45
GC-8	16	Super King Air	DEP	RWY33D	9706	0.1	0.0	60.8	<45	<45
GC-8	17	CH-47D	Para Drops	33PARA	20472	0.1	0.0	62.2	<45	<45
GC-8	18	E-2/C-2	DEP	15D2	29125	0.6	0.1	48.0	<45	<45
GC-8	19	CH-53	GCA Box	33GCA	26077	0.1	0.0	56.6	<45	<45
GC-8	20	CH-53	DEP	33D3	28486	0.1	0.0	55.7	<45	<45
GC-9	1	E-2/C-2	Crew Swap	15SW	11193	2.6	0.3	66.8	<45	<45
GC-9	2	E-2/C-2	ARR	33O1	12029	0.7	0.1	64.3	<45	<45

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-9	3	E-2/C-2	Crew Swap	33SW	30846	2.9	0.3	57.4	<45	<45
GC-9	4	E-2/C-2	ARR	15O1	9455	0.6	0.1	63.6	<45	<45
GC-9	5	CH-47D	DEP	RWY33D	22108	0.5	0.0	64.5	<45	<45
GC-9	6	Single Prop	GCA Box	15GCA	10183	0.1	0.0	61.6	<45	<45
GC-9	7	E-2/C-2	FCLP	15F3	31397	22.7	2.6	35.8	<45	<45
GC-9	8	Single Prop	DEP	RWY33D	22348	0.4	0.1	51.7	<45	<45
GC-9	9	E-2/C-2	FCLP	33F3	37137	25.6	3.0	34.9	<45	<45
GC-9	10	E-2/C-2	DEP	33D2	37095	0.7	0.1	49.2	<45	<45
GC-9	11	CH-53	DEP	33D3	32617	0.1	0.0	56.2	<45	<45
GC-9	12	CH-53	ARR	33VORH	42576	0.1	0.0	54.4	<45	<45
GC-9	13	CH-53	GCA Box	33GCA	36413	0.1	0.0	52.0	<45	<45
GC-9	14	CH-47D	GCA Box	33GCA	36434	0.5	0.0	50.1	<45	<45
GC-9	15	CH-47D	ARR	RWY15A	22167	0.0	0.0	64.8	<45	<45
GC-9	16	E-2/C-2	DEP	15D2	38503	0.6	0.1	44.9	<45	<45
GC-9	17	CH-47D	DEP	RWY33D	22108	0.0	0.0	64.7	<45	<45
GC-9	18	Super King Air	DEP	RWY33D	22766	0.1	0.0	50.6	<45	<45
GC-9	19	Single Prop	ARR	RWY15A	22147	0.1	0.0	48.0	<45	<45
GC-9	20	CH-47D	Para Drops	33PARA	29144	0.1	0.0	55.5	<45	<45
GC-10	1	E-2/C-2	FCLP	15F3	1446	22.7	2.6	85.6	53.2	53.2
GC-10	2	E-2/C-2	FCLP	33F3	4954	25.6	3.0	78.6	46.7	54.1
GC-10	3	E-2/C-2	Crew Swap	15SW	1439	2.6	0.3	84.7	<45	54.4
GC-10	4	E-2/C-2	Crew Swap	33SW	4786	2.9	0.3	83.8	<45	54.7
GC-10	5	E-2/C-2	ARR	15O1	1446	0.6	0.1	82.0	<45	54.7
GC-10	6	E-2/C-2	DEP	33D2	4960	0.7	0.1	80.9	<45	54.7
GC-10	7	E-2/C-2	DEP	15D2	5084	0.6	0.1	77.5	<45	54.7
GC-10	8	CH-53	DEP	33D3	2318	0.1	0.0	86.4	<45	54.7
GC-10	9	Single Prop	FCLP	15F3	1652	0.2	0.0	78.0	<45	54.8
GC-10	10	E-2/C-2	ARR	33O1	4968	0.7	0.1	73.2	<45	54.8
GC-10	11	CH-47D	Para Drops	15PARA	1523	0.1	0.0	87.7	<45	54.8
GC-10	12	CH-47D	Para Drops	15PARA	1523	0.1	0.0	87.7	<45	54.8
GC-10	13	CH-47D	DEP	RWY33D	4775	0.5	0.0	73.7	<45	54.8
GC-10	14	CH-47D	GCA Box	33GCA	4919	0.5	0.0	73.6	<45	54.8
GC-10	15	Single Prop	FCLP	33F3	4928	0.7	0.1	69.7	<45	54.8
GC-10	16	CH-47D	Para Drops	33PARA	3540	0.1	0.0	84.4	<45	54.8
GC-10	17	CH-47D	Para Drops	33PARA	4153	0.1	0.0	83.0	<45	54.8
GC-10	18	Single Prop	DEP	RWY33D	4799	0.4	0.1	69.8	<45	54.8
GC-10	19	CH-53	GCA Box	33GCA	4948	0.1	0.0	78.0	<45	54.8

Emporia: Alt 1A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
GC-10	20	Business Jet	DEP	RWY33D	4791	0.1	0.0	77.4	<45	54.8
GC-11	1	E-2/C-2	FCLP	33F3	783	25.60	2.99	94.1	62.2	62.2
GC-11	2	E-2/C-2	Crew Swap	33SW	647	2.93	0.34	98.6	57.3	63.4
GC-11	3	E-2/C-2	FCLP	15F3	504	22.70	2.65	89.5	57.0	64.3
GC-11	4	E-2/C-2	Crew Swap	15SW	513	2.59	0.30	93.2	51.3	64.5
GC-11	5	E-2/C-2	DEP	33D2	609	0.73	0.09	98.2	50.8	64.7
GC-11	6	Business Jet	DEP	RWY15D	688	0.03	0.00	110.0	45.0	64.7
GC-11	7	E-2/C-2	ARR	15O1	504	0.65	0.08	90.5	<45	64.8
GC-11	8	Single Prop	FCLP	33F3	566	0.68	0.12	88.9	<45	64.8
GC-11	9	CH-47D	DEP	RWY33D	602	0.55	0.03	90.9	<45	64.8
GC-11	10	Super King Air	DEP	RWY15D	688	0.03	0.01	98.8	<45	64.8
GC-11	11	Business Jet	DEP	RWY33D	646	0.08	0.00	97.6	<45	64.8
GC-11	12	Single Prop	DEP	RWY15D	688	0.14	0.03	88.0	<45	64.8
GC-11	13	CH-53	DEP	33D3	919	0.08	0.00	91.0	<45	64.8
GC-11	14	CH-47D	Para Drops	15PARA	512	0.05	0.00	94.6	<45	64.8
GC-11	15	CH-47D	Para Drops	15PARA	512	0.05	0.00	94.6	<45	64.8
GC-11	116	CH-47D	Para Drops	33PARA	1017	0.06	0.00	93.0	<45	64.8
GC-11	17	CH-53	GCA Box	33GCA	1154	0.08	0.00	89.8	<45	64.8
GC-11	18	CH-47D	Para Drops	33PARA	1003	0.06	0.00	92.7	<45	64.9
GC-11	19	CH-47D	ARR	RWY15A	534	0.02	0.00	91.2	<45	64.9
GC-11	20	CH-47D	DEP	RWY33D	602	0.02	0.00	90.9	<45	64.9
SC-1	1	E-2/C-2	FCLP	15F3	1112	22.7	2.6	92.9	60.4	60.4
SC-1	2	E-2/C-2	FCLP	33F3	955	25.6	3.0	89.1	57.1	62.1
SC-1	3	E-2/C-2	Crew Swap	15SW	1024	2.6	0.3	95.5	53.6	62.6
SC-1	4	E-2/C-2	Crew Swap	33SW	955	2.9	0.3	93.6	52.3	63.0
SC-1	5	E-2/C-2	DEP	15D2	996	0.6	0.1	95.0	47.0	63.1
SC-1	6	E-2/C-2	DEP	33D2	955	0.7	0.1	88.5	<45	63.2
SC-1	7	E-2/C-2	ARR	33O1	972	0.7	0.1	88.1	<45	63.2
SC-1	8	Single Prop	FCLP	33F3	955	0.7	0.1	87.0	<45	63.2
SC-1	9	CH-47D	GCA Box	33GCA	954	0.5	0.0	88.9	<45	63.2
SC-1	10	Super King Air	DEP	RWY33D	954	0.1	0.0	92.9	<45	63.2
SC-1	11	Single Prop	DEP	RWY33D	954	0.4	0.1	85.6	<45	63.2
SC-1	12	E-2/C-2	ARR	15O1	1242	0.6	0.1	84.8	<45	63.3
SC-1	13	CH-47D	DEP	RWY33D	954	0.5	0.0	86.6	<45	63.3
SC-1	14	CH-47D	ARR	33VOR	964	0.5	0.0	86.5	<45	63.3
SC-1	15	Single Prop	FCLP	15F3	970	0.2	0.0	87.1	<45	63.3

Emporia: Alt 1A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
SC-1	16	Business Jet	DEP	RWY33D	954	0.1	0.0	94.7	<45	63.3
SC-1	17	CH-53	GCA Box	33GCA	955	0.1	0.0	91.3	<45	63.3
SC-1	18	Single Prop	GCA Box	33GCA	954	0.2	0.0	84.7	<45	63.3
SC-1	19	CH-47D	Para Drops	15PARA	1214	0.1	0.0	92.1	<45	63.3
SC-1	20	CH-47D	Para Drops	15PARA	1205	0.1	0.0	91.7	<45	63.3
SC-2	1	E-2/C-2	FCLP	15F3	5915	22.7	2.6	74.1	<45	<45
SC-2	2	E-2/C-2	Crew Swap	15SW	5917	2.6	0.3	80.0	<45	<45
SC-2	3	E-2/C-2	FCLP	33F3	10084	25.6	3.0	67.4	<45	<45
SC-2	4	E-2/C-2	Crew Swap	33SW	9695	2.9	0.3	72.2	<45	<45
SC-2	5	E-2/C-2	DEP	15D2	9666	0.6	0.1	75.8	<45	<45
SC-2	6	E-2/C-2	ARR	33O1	2424	0.7	0.1	73.7	<45	<45
SC-2	7	E-2/C-2	DEP	33D2	11324	0.7	0.1	68.4	<45	<45
SC-2	8	E-2/C-2	ARR	15O1	5925	0.6	0.1	68.4	<45	<45
SC-2	9	CH-47D	GCA Box	33GCA	9648	0.5	0.0	69.2	<45	<45
SC-2	10	Single Prop	GCA Box	15GCA	2529	0.1	0.0	75.4	<45	<45
SC-2	11	CH-47D	ARR	33VOR	9656	0.5	0.0	68.0	<45	<45
SC-2	12	Single Prop	FCLP	15F3	5968	0.2	0.0	66.0	<45	<45
SC-2	13	CH-53	ARR	33VORH	9649	0.1	0.0	73.2	<45	<45
SC-2	14	CH-53	DEP	33D3	10183	0.1	0.0	72.1	<45	<45
SC-2	15	CH-53	GCA Box	33GCA	9649	0.1	0.0	71.9	<45	<45
SC-2	16	CH-47D	DEP	RWY33D	11324	0.5	0.0	62.0	<45	<45
SC-2	17	CH-47D	Para Drops	15PARA	8660	0.1	0.0	72.6	<45	<45
SC-2	18	CH-47D	Para Drops	15PARA	9534	0.1	0.0	72.6	<45	<45
SC-2	19	Single Prop	FCLP	33F3	10085	0.7	0.1	56.4	<45	<45
SC-2	20	CH-47D	Para Drops	33PARA	10313	0.1	0.0	70.8	<45	<45
SC-3	1	E-2/C-2	Crew Swap	15SW	2731	2.6	0.3	84.3	<45	<45
SC-3	2	E-2/C-2	FCLP	15F3	17096	22.7	2.6	59.1	<45	<45
SC-3	3	E-2/C-2	Crew Swap	33SW	18532	2.9	0.3	62.0	<45	<45
SC-3	4	E-2/C-2	DEP	15D2	18555	0.6	0.1	67.4	<45	<45
SC-3	5	E-2/C-2	ARR	33O1	10199	0.7	0.1	64.3	<45	<45
SC-3	6	E-2/C-2	FCLP	33F3	20803	25.6	3.0	47.7	<45	<45
SC-3	7	E-2/C-2	DEP	33D2	21886	0.7	0.1	61.4	<45	<45
SC-3	8	CH-47D	ARR	33VOR	18525	0.5	0.0	63.8	<45	<45
SC-3	9	CH-47D	GCA Box	33GCA	18517	0.5	0.0	62.1	<45	<45
SC-3	10	E-2/C-2	ARR	15O1	17106	0.6	0.1	56.3	<45	<45
SC-3	11	CH-53	DEP	33D3	16753	0.1	0.0	66.4	<45	<45

Emporia: Alt 1A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
SC-3	12	CH-53	ARR	33VORH	18517	0.1	0.0	65.1	<45	<45
SC-3	13	CH-53	GCA Box	33GCA	18517	0.1	0.0	64.7	<45	<45
SC-3	14	Single Prop	GCA Box	15GCA	12116	0.1	0.0	59.6	<45	<45
SC-3	15	Single Prop	FCLP	15F3	17115	0.2	0.0	53.1	<45	<45
SC-3	16	Single Prop	ARR	RWY33A	18505	0.4	0.1	49.5	<45	<45
SC-3	17	Single Prop	DEP	RWY15D	18571	0.1	0.0	54.2	<45	<45
SC-3	18	CH-47D	Para Drops	15PARA	19681	0.1	0.0	62.4	<45	<45
SC-3	19	Single Prop	GCA Box	33GCA	18512	0.2	0.0	52.8	<45	<45
SC-3	20	CH-47D	Para Drops	15PARA	19150	0.1	0.0	62.2	<45	<45
SC-4	1	E-2/C-2	Crew Swap	15SW	637	2.6	0.3	87.2	45.3	45.3
SC-4	2	E-2/C-2	FCLP	15F3	21656	22.7	2.6	51.0	<45	45.3
SC-4	3	E-2/C-2	Crew Swap	33SW	24686	2.9	0.3	57.0	<45	45.3
SC-4	4	E-2/C-2	DEP	15D2	24698	0.6	0.1	63.1	<45	45.3
SC-4	5	E-2/C-2	DEP	33D2	27360	0.7	0.1	58.7	<45	45.3
SC-4	6	E-2/C-2	ARR	33O1	16238	0.7	0.1	58.6	<45	45.3
SC-4	7	CH-47D	ARR	33VOR	24681	0.5	0.0	60.1	<45	45.3
SC-4	8	CH-53	DEP	33D3	15561	0.1	0.0	68.0	<45	45.3
SC-4	9	CH-47D	GCA Box	33GCA	24676	0.5	0.0	58.3	<45	45.3
SC-4	10	E-2/C-2	FCLP	33F3	26171	25.6	3.0	39.6	<45	45.3
SC-4	11	CH-53	GCA Box	33GCA	24676	0.1	0.0	60.9	<45	45.3
SC-4	12	E-2/C-2	ARR	15O1	21664	0.6	0.1	49.4	<45	45.3
SC-4	13	CH-53	ARR	33VORH	24676	0.1	0.0	60.1	<45	45.3
SC-4	14	Single Prop	GCA Box	15GCA	15965	0.1	0.0	56.3	<45	45.3
SC-4	15	Single Prop	FCLP	15F3	21671	0.2	0.0	49.2	<45	45.3
SC-4	16	Single Prop	DEP	RWY15D	24713	0.1	0.0	50.1	<45	45.3
SC-4	17	CH-47D	Para Drops	15PARA	24120	0.1	0.0	58.9	<45	45.3
SC-4	18	Single Prop	GCA Box	33GCA	24673	0.2	0.0	49.2	<45	45.3
SC-4	19	CH-47D	Para Drops	33PARA	23989	0.1	0.0	58.2	<45	45.3
SC-4	20	Single Prop	ARR	RWY33A	24668	0.4	0.1	45.0	<45	45.3
SC-5	1	E-2/C-2	Crew Swap	15SW	1499	2.6	0.3	83.4	<45	<45
SC-5	2	E-2/C-2	FCLP	15F3	22929	22.7	2.6	48.5	<45	<45
SC-5	3	E-2/C-2	DEP	15D2	24298	0.6	0.1	63.5	<45	<45
SC-5	4	E-2/C-2	Crew Swap	33SW	24290	2.9	0.3	56.2	<45	<45
SC-5	5	E-2/C-2	ARR	33O1	16036	0.7	0.1	59.5	<45	<45
SC-5	6	E-2/C-2	DEP	33D2	26243	0.7	0.1	59.4	<45	<45
SC-5	7	CH-47D	ARR	33VOR	24258	0.5	0.0	61.0	<45	<45

Emporia: Alt 1A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
SC-5	8	CH-47D	GCA Box	33GCA	24251	0.5	0.0	58.6	<45	<45
SC-5	9	CH-53	DEP	33D3	18657	0.1	0.0	65.1	<45	<45
SC-5	10	E-2/C-2	FCLP	33F3	26892	25.6	3.0	38.3	<45	<45
SC-5	11	CH-53	GCA Box	33GCA	24252	0.1	0.0	61.2	<45	<45
SC-5	12	CH-53	ARR	33VORH	24252	0.1	0.0	60.8	<45	<45
SC-5	13	E-2/C-2	ARR	15O1	22940	0.6	0.1	47.2	<45	<45
SC-5	14	Single Prop	GCA Box	15GCA	17539	0.1	0.0	55.2	<45	<45
SC-5	15	Single Prop	ARR	RWY33A	24239	0.4	0.1	45.9	<45	<45
SC-5	16	Single Prop	DEP	RWY15D	24301	0.1	0.0	50.5	<45	<45
SC-5	17	Single Prop	FCLP	15F3	22943	0.2	0.0	48.3	<45	<45
SC-5	18	Single Prop	GCA Box	33GCA	24247	0.2	0.0	49.4	<45	<45
SC-5	19	CH-47D	Para Drops	15PARA	25699	0.1	0.0	58.2	<45	<45
SC-5	20	CH-47D	Para Drops	15PARA	25241	0.1	0.0	57.7	<45	<45
SC-6	1	E-2/C-2	Crew Swap	15SW	3626	2.6	0.3	79.8	<45	<45
SC-6	2	E-2/C-2	DEP	15D2	23864	0.6	0.1	62.4	<45	<45
SC-6	3	E-2/C-2	Crew Swap	33SW	26568	2.9	0.3	54.4	<45	<45
SC-6	4	E-2/C-2	DEP	33D2	26334	0.7	0.1	59.1	<45	<45
SC-6	5	E-2/C-2	FCLP	15F3	25210	22.7	2.6	43.8	<45	<45
SC-6	6	E-2/C-2	ARR	33O1	18318	0.7	0.1	57.2	<45	<45
SC-6	7	CH-47D	ARR	33VOR	26493	0.5	0.0	59.9	<45	<45
SC-6	8	CH-47D	GCA Box	33GCA	26486	0.5	0.0	57.3	<45	<45
SC-6	9	CH-53	DEP	33D3	19357	0.1	0.0	64.7	<45	<45
SC-6	10	E-2/C-2	FCLP	33F3	29250	25.6	3.0	36.8	<45	<45
SC-6	11	CH-53	GCA Box	33GCA	26487	0.1	0.0	60.1	<45	<45
SC-6	12	CH-53	ARR	33VORH	26487	0.1	0.0	59.4	<45	<45
SC-6	13	Single Prop	GCA Box	15GCA	19722	0.1	0.0	53.7	<45	<45
SC-6	14	Single Prop	ARR	RWY33A	26474	0.4	0.1	44.4	<45	<45
SC-6	15	E-2/C-2	ARR	15O1	25221	0.6	0.1	43.5	<45	<45
SC-6	16	Single Prop	DEP	RWY15D	26535	0.1	0.0	49.0	<45	<45
SC-6	17	Single Prop	GCA Box	33GCA	26481	0.2	0.0	48.1	<45	<45
SC-6	18	Single Prop	FCLP	15F3	25223	0.2	0.0	46.0	<45	<45
SC-6	19	Single Prop	DEP	RWY33D	30778	0.4	0.1	42.6	<45	<45
SC-6	20	CH-47D	Para Drops	15PARA	27966	0.1	0.0	56.0	<45	<45
SC-7	1	E-2/C-2	DEP	33D2	9554	0.7	0.1	66.8	<45	<45
SC-7	2	E-2/C-2	DEP	15D2	11474	0.6	0.1	65.1	<45	<45
SC-7	3	E-2/C-2	Crew Swap	15SW	40692	2.6	0.3	49.6	<45	<45

Emporia: Alt 1A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
SC-7	4	E-2/C-2	ARR	33O1	58094	0.7	0.1	45.2	<45	<45
SC-7	5	E-2/C-2	FCLP	15F3	64429	22.7	2.6	24.4	<45	<45
SC-7	6	E-2/C-2	ARR	15O1	62100	0.6	0.1	39.8	<45	<45
SC-7	7	E-2/C-2	FCLP	33F3	69216	25.6	3.0	23.2	<45	<45
SC-7	8	E-2/C-2	Crew Swap	33SW	66474	2.9	0.3	29.4	<45	<45
SC-7	9	CH-47D	ARR	33VOR	65574	0.5	0.0	31.9	<45	<45
SC-7	10	Single Prop	DEP	RWY15D	65614	0.1	0.0	34.6	<45	<45
SC-7	11	Single Prop	DEP	RWY33D	70264	0.4	0.1	27.3	<45	<45
SC-7	12	CH-47D	DEP	RWY33D	70264	0.5	0.0	28.3	<45	<45
SC-7	13	Super King Air	DEP	RWY33D	70264	0.1	0.0	33.8	<45	<45
SC-7	14	CH-47D	GCA Box	33GCA	65575	0.5	0.0	27.2	<45	<45
SC-7	15	CH-47D	Para Drops	33PARA	65439	0.1	0.0	38.4	<45	<45
SC-7	16	Super King Air	DEP	RWY15D	65702	0.0	0.0	35.4	<45	<45
SC-7	17	CH-47D	Para Drops	15PARA	66216	0.1	0.0	36.8	<45	<45
SC-7	18	Single Prop	FCLP	33F3	69216	0.7	0.1	17.1	<45	<45
SC-7	19	Single Prop	GCA Box	33GCA	65573	0.2	0.0	20.5	<45	<45
SC-7	20	Single Prop	ARR	RWY33A	65565	0.4	0.1	16.4	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-1	1	E-2/C-2	FCLP	33F5	1568	17.1	2.0	86.4	52.7	52.7
CoE-1	2	E-2/C-2	FCLP	33F3	2392	8.5	1.0	82.0	45.3	53.4
CoE-1	3	E-2/C-2	DEP	33D2	1915	0.9	0.1	89.5	<45	53.8
CoE-1	4	E-2/C-2	Crew Swap	33SW	2401	2.8	0.3	83.1	<45	54.0
CoE-1	5	E-2/C-2	FCLP	15F5	7534	15.1	1.8	72.4	<45	54.1
CoE-1	6	CH-47D	GCA Box	33GCA	2259	0.5	0.0	85.1	<45	54.2
CoE-1	7	E-2/C-2	FCLP	15F3	7534	7.6	0.9	72.1	<45	54.2
CoE-1	8	E-2/C-2	Crew Swap	15SW	7526	2.5	0.3	75.8	<45	54.3
CoE-1	9	CH-53	GCA Box	33GCA	2277	0.1	0.0	90.3	<45	54.3
CoE-1	10	E-2/C-2	ARR	33O1	2411	0.9	0.1	75.1	<45	54.3
CoE-1	11	Single Prop	FCLP	33F3	2523	0.7	0.1	74.3	<45	54.3
CoE-1	12	E-2/C-2	DEP	15D2	8147	0.8	0.1	73.3	<45	54.3
CoE-1	13	Single Prop	GCA Box	33GCA	1887	0.2	0.0	78.5	<45	54.3
CoE-1	14	E-2/C-2	ARR	15O1	7533	0.8	0.1	72.4	<45	54.4
CoE-1	15	CH-47D	DEP	RWY33D	7544	0.5	0.0	70.6	<45	54.4
CoE-1	16	Single Prop	DEP	RWY33D	7569	0.4	0.1	64.8	<45	54.4
CoE-1	17	CH-47D	Para Drops	33PARA	6077	0.1	0.0	76.6	<45	54.4
CoE-1	18	CH-47D	Para Drops	33PARA	6077	0.1	0.0	76.5	<45	54.4
CoE-1	19	CH-47D	Para Drops	15PARA	6959	0.1	0.0	75.3	<45	54.4
CoE-1	20	CH-47D	ARR	33VOR	9611	0.5	0.0	63.1	<45	54.4
CoE-2	1	E-2/C-2	FCLP	33F5	2430	17.1	2.0	85.0	51.3	51.3
CoE-2	2	E-2/C-2	Crew Swap	33SW	1705	2.8	0.3	91.0	49.5	53.5
CoE-2	3	CH-47D	DEP	RWY33D	2558	0.5	0.0	85.4	<45	53.6
CoE-2	4	E-2/C-2	ARR	15O1	2543	0.8	0.1	81.2	<45	53.6
CoE-2	5	E-2/C-2	FCLP	33F3	8845	8.5	1.0	70.2	<45	53.7
CoE-2	6	E-2/C-2	FCLP	15F5	7627	15.1	1.8	67.5	<45	53.7
CoE-2	7	E-2/C-2	Crew Swap	15SW	2682	2.5	0.3	75.2	<45	53.7
CoE-2	8	E-2/C-2	FCLP	15F3	7627	7.6	0.9	67.1	<45	53.8
CoE-2	9	E-2/C-2	DEP	33D2	8656	0.9	0.1	75.0	<45	53.8
CoE-2	10	Single Prop	DEP	RWY33D	2863	0.4	0.1	72.7	<45	53.8
CoE-2	11	Business Jet	DEP	RWY33D	2706	0.1	0.0	82.4	<45	53.8
CoE-2	12	CH-47D	GCA Box	33GCA	8123	0.5	0.0	71.6	<45	53.8
CoE-2	13	E-2/C-2	DEP	15D2	12262	0.8	0.1	65.9	<45	53.8
CoE-2	14	E-2/C-2	ARR	33O1	8839	0.9	0.1	64.9	<45	53.8
CoE-2	15	CH-47D	DEP	RWY33D	2558	0.0	0.0	85.4	<45	53.8
CoE-2	16	Single Prop	ARR	RWY15A	2438	0.1	0.0	68.7	<45	53.8
CoE-2	17	Super King Air	DEP	RWY33D	3185	0.1	0.0	71.1	<45	53.8

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-2	18	CH-47D	Para Drops	33PARA	5864	0.1	0.0	76.7	<45	53.8
CoE-2	19	Single Prop	FCLP	33F3	8875	0.7	0.1	61.5	<45	53.8
CoE-2	20	CH-53	GCA Box	33GCA	8098	0.1	0.0	73.1	<45	53.8
CoE-3	1	E-2/C-2	FCLP	33F5	6608	17.1	2.0	75.1	<45	<45
CoE-3	2	E-2/C-2	Crew Swap	33SW	7502	2.8	0.3	77.3	<45	<45
CoE-3	3	E-2/C-2	FCLP	33F3	7498	8.5	1.0	71.6	<45	<45
CoE-3	4	CH-47D	GCA Box	33GCA	2683	0.5	0.0	83.0	<45	<45
CoE-3	5	E-2/C-2	FCLP	15F5	12746	15.1	1.8	65.7	<45	<45
CoE-3	6	E-2/C-2	DEP	33D2	6801	0.9	0.1	77.9	<45	<45
CoE-3	7	E-2/C-2	Crew Swap	15SW	12694	2.5	0.3	70.5	<45	<45
CoE-3	8	E-2/C-2	FCLP	15F3	12746	7.6	0.9	65.0	<45	<45
CoE-3	9	CH-53	GCA Box	33GCA	2648	0.1	0.0	85.0	<45	<45
CoE-3	10	Single Prop	GCA Box	33GCA	2682	0.2	0.0	74.4	<45	<45
CoE-3	11	E-2/C-2	DEP	15D2	13409	0.8	0.1	68.0	<45	<45
CoE-3	12	E-2/C-2	ARR	33O1	7499	0.9	0.1	67.3	<45	<45
CoE-3	13	E-2/C-2	ARR	15O1	12682	0.8	0.1	66.0	<45	<45
CoE-3	14	Single Prop	FCLP	33F3	7542	0.7	0.1	63.7	<45	<45
CoE-3	15	CH-47D	DEP	RWY33D	12671	0.5	0.0	67.0	<45	<45
CoE-3	16	Single Prop	DEP	RWY33D	12694	0.4	0.1	58.5	<45	<45
CoE-3	17	CH-47D	ARR	33VOR	14604	0.5	0.0	59.1	<45	<45
CoE-3	18	CH-47D	Para Drops	33PARA	10197	0.1	0.0	70.2	<45	<45
CoE-3	19	CH-47D	Para Drops	33PARA	10197	0.1	0.0	70.2	<45	<45
CoE-3	20	CH-47D	Para Drops	15PARA	10493	0.1	0.0	70.1	<45	<45
CoE-4	1	E-2/C-2	FCLP	33F5	8122	17.1	2.0	73.0	<45	<45
CoE-4	2	E-2/C-2	Crew Swap	33SW	8888	2.8	0.3	76.5	<45	<45
CoE-4	3	E-2/C-2	FCLP	33F3	8884	8.5	1.0	69.8	<45	<45
CoE-4	4	CH-47D	GCA Box	33GCA	3576	0.5	0.0	80.5	<45	<45
CoE-4	5	E-2/C-2	FCLP	15F5	14252	15.1	1.8	64.0	<45	<45
CoE-4	6	E-2/C-2	DEP	33D2	8138	0.9	0.1	75.9	<45	<45
CoE-4	7	E-2/C-2	Crew Swap	15SW	14208	2.5	0.3	69.4	<45	<45
CoE-4	8	E-2/C-2	FCLP	15F3	14252	7.6	0.9	63.2	<45	<45
CoE-4	9	CH-53	GCA Box	33GCA	3578	0.1	0.0	83.6	<45	<45
CoE-4	10	E-2/C-2	DEP	15D2	14836	0.8	0.1	66.9	<45	<45
CoE-4	11	E-2/C-2	ARR	33O1	8881	0.9	0.1	65.8	<45	<45
CoE-4	12	Single Prop	GCA Box	33GCA	3578	0.2	0.0	71.7	<45	<45
CoE-4	13	E-2/C-2	ARR	15O1	14198	0.8	0.1	64.5	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-4	14	CH-47D	DEP	RWY33D	14188	0.5	0.0	66.1	<45	<45
CoE-4	15	Single Prop	FCLP	33F3	8922	0.7	0.1	61.7	<45	<45
CoE-4	16	Single Prop	DEP	RWY33D	14208	0.4	0.1	57.3	<45	<45
CoE-4	17	CH-47D	ARR	33VOR	15915	0.5	0.0	58.4	<45	<45
CoE-4	18	CH-47D	Para Drops	33PARA	11289	0.1	0.0	68.9	<45	<45
CoE-4	19	CH-47D	Para Drops	33PARA	11289	0.1	0.0	68.8	<45	<45
CoE-4	20	CH-47D	Para Drops	15PARA	11391	0.1	0.0	69.0	<45	<45
CoE-5	1	E-2/C-2	FCLP	33F5	5671	17.1	2.0	76.5	<45	<45
CoE-5	2	E-2/C-2	Crew Swap	33SW	5952	2.8	0.3	79.6	<45	<45
CoE-5	3	E-2/C-2	FCLP	33F3	8852	8.5	1.0	69.8	<45	<45
CoE-5	4	E-2/C-2	FCLP	15F5	12694	15.1	1.8	64.1	<45	<45
CoE-5	5	E-2/C-2	DEP	33D2	8291	0.9	0.1	75.6	<45	<45
CoE-5	6	E-2/C-2	Crew Swap	15SW	11767	2.5	0.3	69.6	<45	<45
CoE-5	7	CH-47D	GCA Box	33GCA	4993	0.5	0.0	77.4	<45	<45
CoE-5	8	E-2/C-2	FCLP	15F3	12694	7.6	0.9	63.4	<45	<45
CoE-5	9	CH-53	GCA Box	33GCA	4930	0.1	0.0	81.4	<45	<45
CoE-5	10	E-2/C-2	ARR	15O1	11743	0.8	0.1	67.1	<45	<45
CoE-5	11	CH-47D	DEP	RWY33D	11746	0.5	0.0	69.4	<45	<45
CoE-5	12	E-2/C-2	DEP	15D2	14355	0.8	0.1	66.1	<45	<45
CoE-5	13	E-2/C-2	ARR	33O1	8854	0.9	0.1	65.1	<45	<45
CoE-5	14	Single Prop	GCA Box	33GCA	4943	0.2	0.0	68.9	<45	<45
CoE-5	15	Single Prop	FCLP	33F3	8887	0.7	0.1	61.7	<45	<45
CoE-5	16	Single Prop	DEP	RWY33D	11785	0.4	0.1	59.7	<45	<45
CoE-5	17	CH-47D	Para Drops	33PARA	12073	0.1	0.0	69.4	<45	<45
CoE-5	18	CH-47D	Para Drops	33PARA	11249	0.1	0.0	69.4	<45	<45
CoE-5	19	CH-47D	ARR	33VOR	16176	0.5	0.0	57.1	<45	<45
CoE-5	20	CH-47D	Para Drops	15PARA	13210	0.1	0.0	67.6	<45	<45
CoE-6	1	E-2/C-2	FCLP	33F5	4925	17.1	2.0	77.4	<45	<45
CoE-6	2	E-2/C-2	Crew Swap	33SW	3403	2.8	0.3	82.2	<45	45.4
CoE-6	3	E-2/C-2	FCLP	33F3	10068	8.5	1.0	68.3	<45	45.6
CoE-6	4	E-2/C-2	FCLP	15F5	12966	15.1	1.8	62.7	<45	45.7
CoE-6	5	E-2/C-2	DEP	33D2	9557	0.9	0.1	73.9	<45	45.8
CoE-6	6	E-2/C-2	Crew Swap	15SW	11028	2.5	0.3	68.9	<45	45.8
CoE-6	7	E-2/C-2	FCLP	15F3	12966	7.6	0.9	62.0	<45	45.8
CoE-6	8	CH-47D	GCA Box	33GCA	6892	0.5	0.0	74.4	<45	45.9
CoE-6	9	CH-47D	DEP	RWY33D	11010	0.5	0.0	71.0	<45	45.9

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-6	10	E-2/C-2	ARR	15O1	10994	0.8	0.1	67.7	<45	45.9
CoE-6	11	CH-53	GCA Box	33GCA	6896	0.1	0.0	79.0	<45	45.9
CoE-6	12	E-2/C-2	DEP	15D2	15249	0.8	0.1	64.5	<45	45.9
CoE-6	13	E-2/C-2	ARR	33O1	10057	0.9	0.1	63.6	<45	45.9
CoE-6	14	Single Prop	FCLP	33F3	10089	0.7	0.1	60.2	<45	45.9
CoE-6	15	Single Prop	GCA Box	33GCA	6843	0.2	0.0	65.8	<45	45.9
CoE-6	16	Single Prop	DEP	RWY33D	11066	0.4	0.1	60.4	<45	45.9
CoE-6	17	CH-47D	Para Drops	33PARA	11916	0.1	0.0	69.1	<45	45.9
CoE-6	18	CH-47D	Para Drops	33PARA	11410	0.1	0.0	68.9	<45	45.9
CoE-6	19	CH-47D	ARR	33VOR	17359	0.5	0.0	55.5	<45	45.9
CoE-6	20	Business Jet	DEP	RWY33D	11037	0.1	0.0	65.3	<45	45.9
CoE-7	1	E-2/C-2	FCLP	33F5	7967	17.1	2.0	73.1	<45	<45
CoE-7	2	E-2/C-2	Crew Swap	33SW	7486	2.8	0.3	78.2	<45	<45
CoE-7	3	E-2/C-2	FCLP	33F3	10270	8.5	1.0	68.0	<45	<45
CoE-7	4	E-2/C-2	FCLP	15F5	14700	15.1	1.8	61.7	<45	<45
CoE-7	5	E-2/C-2	DEP	33D2	9649	0.9	0.1	73.9	<45	<45
CoE-7	6	CH-47D	GCA Box	33GCA	5524	0.5	0.0	76.4	<45	<45
CoE-7	7	E-2/C-2	Crew Swap	15SW	14060	2.5	0.3	68.2	<45	<45
CoE-7	8	E-2/C-2	FCLP	15F3	14700	7.6	0.9	61.0	<45	<45
CoE-7	9	CH-53	GCA Box	33GCA	5495	0.1	0.0	79.2	<45	<45
CoE-7	10	E-2/C-2	DEP	15D2	15987	0.8	0.1	64.9	<45	<45
CoE-7	11	E-2/C-2	ARR	15O1	14043	0.8	0.1	64.7	<45	<45
CoE-7	12	CH-47D	DEP	RWY33D	14043	0.5	0.0	67.4	<45	<45
CoE-7	13	E-2/C-2	ARR	33O1	10281	0.9	0.1	63.7	<45	<45
CoE-7	14	Single Prop	GCA Box	33GCA	5516	0.2	0.0	67.7	<45	<45
CoE-7	15	Single Prop	FCLP	33F3	10301	0.7	0.1	59.9	<45	<45
CoE-7	16	Single Prop	DEP	RWY33D	14073	0.4	0.1	57.6	<45	<45
CoE-7	17	CH-47D	ARR	33VOR	17541	0.5	0.0	56.3	<45	<45
CoE-7	18	CH-47D	Para Drops	33PARA	13492	0.1	0.0	67.8	<45	<45
CoE-7	19	CH-47D	Para Drops	33PARA	13276	0.1	0.0	67.6	<45	<45
CoE-7	20	CH-47D	Para Drops	15PARA	13901	0.1	0.0	66.7	<45	<45
CoE-8	1	E-2/C-2	FCLP	33F5	8601	17.1	2.0	72.4	<45	<45
CoE-8	2	E-2/C-2	Crew Swap	33SW	7996	2.8	0.3	77.7	<45	<45
CoE-8	3	E-2/C-2	FCLP	33F3	10573	8.5	1.0	67.7	<45	<45
CoE-8	4	E-2/C-2	FCLP	15F5	15206	15.1	1.8	61.2	<45	<45
CoE-8	5	E-2/C-2	DEP	33D2	9929	0.9	0.1	73.5	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-8	6	CH-47D	GCA Box	33GCA	5586	0.5	0.0	76.3	<45	<45
CoE-8	7	E-2/C-2	Crew Swap	15SW	14694	2.5	0.3	67.9	<45	<45
CoE-8	8	E-2/C-2	FCLP	15F3	15206	7.6	0.9	60.4	<45	<45
CoE-8	9	CH-53	GCA Box	33GCA	5528	0.1	0.0	79.4	<45	<45
CoE-8	10	E-2/C-2	DEP	15D2	16353	0.8	0.1	64.7	<45	<45
CoE-8	11	E-2/C-2	ARR	33O1	10583	0.9	0.1	63.5	<45	<45
CoE-8	12	E-2/C-2	ARR	15O1	14678	0.8	0.1	64.1	<45	<45
CoE-8	13	CH-47D	DEP	RWY33D	14677	0.5	0.0	66.7	<45	<45
CoE-8	14	Single Prop	GCA Box	33GCA	5582	0.2	0.0	67.5	<45	<45
CoE-8	15	Single Prop	FCLP	33F3	10604	0.7	0.1	59.6	<45	<45
CoE-8	16	Single Prop	DEP	RWY33D	14704	0.4	0.1	57.0	<45	<45
CoE-8	17	CH-47D	ARR	33VOR	17807	0.5	0.0	56.2	<45	<45
CoE-8	18	CH-47D	Para Drops	33PARA	13598	0.1	0.0	67.4	<45	<45
CoE-8	19	CH-47D	Para Drops	33PARA	13598	0.1	0.0	67.3	<45	<45
CoE-8	20	CH-47D	Para Drops	15PARA	13928	0.1	0.0	66.6	<45	<45
CoE-9	1	E-2/C-2	Crew Swap	33SW	7530	2.8	0.3	77.6	<45	<45
CoE-9	2	E-2/C-2	FCLP	33F5	12063	17.1	2.0	68.1	<45	<45
CoE-9	3	E-2/C-2	FCLP	33F3	13674	8.5	1.0	63.8	<45	<45
CoE-9	4	E-2/C-2	DEP	33D2	12969	0.9	0.1	70.5	<45	<45
CoE-9	5	E-2/C-2	Crew Swap	15SW	18153	2.5	0.3	65.2	<45	<45
CoE-9	6	CH-47D	GCA Box	33GCA	8151	0.5	0.0	72.7	<45	<45
CoE-9	7	E-2/C-2	FCLP	15F5	18607	15.1	1.8	55.8	<45	<45
CoE-9	8	E-2/C-2	FCLP	15F3	18607	7.6	0.9	54.9	<45	<45
CoE-9	9	CH-53	GCA Box	33GCA	8154	0.1	0.0	74.5	<45	<45
CoE-9	10	E-2/C-2	DEP	15D2	19558	0.8	0.1	61.5	<45	<45
CoE-9	11	CH-47D	DEP	RWY33D	18141	0.5	0.0	64.3	<45	<45
CoE-9	12	E-2/C-2	ARR	33O1	13677	0.9	0.1	60.2	<45	<45
CoE-9	13	E-2/C-2	ARR	15O1	18142	0.8	0.1	60.5	<45	<45
CoE-9	14	Single Prop	GCA Box	33GCA	8152	0.2	0.0	63.7	<45	<45
CoE-9	15	Single Prop	FCLP	33F3	13699	0.7	0.1	56.2	<45	<45
CoE-9	16	Single Prop	DEP	RWY33D	18164	0.4	0.1	54.3	<45	<45
CoE-9	17	CH-47D	ARR	33VOR	20802	0.5	0.0	53.8	<45	<45
CoE-9	18	CH-47D	Para Drops	33PARA	16212	0.1	0.0	64.7	<45	<45
CoE-9	19	CH-47D	Para Drops	33PARA	16212	0.1	0.0	64.5	<45	<45
CoE-9	20	CH-47D	Para Drops	15PARA	16216	0.1	0.0	64.3	<45	<45
CoE-10	1	E-2/C-2	Crew Swap	33SW	2470	2.8	0.3	85.0	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
CoE-10	2	E-2/C-2	FCLP	33F5	6811	17.1	2.0	73.7	<45	45.1
CoE-10	3	E-2/C-2	FCLP	33F3	13341	8.5	1.0	64.4	<45	45.2
CoE-10	4	E-2/C-2	Crew Swap	15SW	12889	2.5	0.3	66.0	<45	45.2
CoE-10	5	E-2/C-2	DEP	33D2	12828	0.9	0.1	70.1	<45	45.2
CoE-10	6	E-2/C-2	FCLP	15F5	15958	15.1	1.8	56.9	<45	45.3
CoE-10	7	CH-47D	GCA Box	33GCA	9878	0.5	0.0	70.5	<45	45.3
CoE-10	8	CH-47D	DEP	RWY33D	12867	0.5	0.0	70.0	<45	45.3
CoE-10	9	E-2/C-2	FCLP	15F3	15958	7.6	0.9	56.1	<45	45.3
CoE-10	10	E-2/C-2	ARR	15O1	12990	0.8	0.1	65.2	<45	45.3
CoE-10	11	CH-53	GCA Box	33GCA	9826	0.1	0.0	73.3	<45	45.3
CoE-10	12	E-2/C-2	ARR	33O1	13330	0.9	0.1	60.5	<45	45.3
CoE-10	13	E-2/C-2	DEP	15D2	18476	0.8	0.1	60.1	<45	45.3
CoE-10	14	Single Prop	FCLP	33F3	13356	0.7	0.1	56.9	<45	45.3
CoE-10	15	Single Prop	DEP	RWY33D	12946	0.4	0.1	58.5	<45	45.3
CoE-10	16	Single Prop	GCA Box	33GCA	9850	0.2	0.0	61.8	<45	45.3
CoE-10	17	CH-47D	Para Drops	33PARA	14643	0.1	0.0	66.1	<45	45.3
CoE-10	18	CH-47D	Para Drops	33PARA	14358	0.1	0.0	66.0	<45	45.3
CoE-10	19	Business Jet	DEP	RWY33D	12904	0.1	0.0	62.6	<45	45.3
CoE-10	20	CH-47D	DEP	RWY33D	12867	0.0	0.0	70.0	<45	45.3
GC-1	1	E-2/C-2	FCLP	15F5	10054	15.1	1.8	68.7	<45	<45
GC-1	2	E-2/C-2	Crew Swap	33SW	1809	2.8	0.3	75.3	<45	<45
GC-1	3	E-2/C-2	Crew Swap	15SW	12367	2.5	0.3	71.9	<45	<45
GC-1	4	E-2/C-2	DEP	15D2	6741	0.8	0.1	76.6	<45	<45
GC-1	5	CH-47D	GCA Box	33GCA	5795	0.5	0.0	79.1	<45	<45
GC-1	6	CH-47D	ARR	33VOR	5802	0.5	0.0	78.0	<45	<45
GC-1	7	E-2/C-2	ARR	33O1	6504	0.9	0.1	72.4	<45	<45
GC-1	8	E-2/C-2	DEP	33D2	6721	0.9	0.1	71.7	<45	<45
GC-1	9	CH-53	GCA Box	33GCA	5795	0.1	0.0	83.0	<45	<45
GC-1	10	CH-53	ARR	33VORH	5786	0.1	0.0	82.9	<45	<45
GC-1	11	E-2/C-2	FCLP	33F5	16713	17.1	2.0	52.4	<45	<45
GC-1	12	E-2/C-2	FCLP	15F3	20816	7.6	0.9	54.4	<45	<45
GC-1	13	Single Prop	GCA Box	33GCA	5762	0.2	0.0	68.3	<45	<45
GC-1	14	E-2/C-2	FCLP	33F3	16712	8.5	1.0	52.2	<45	<45
GC-1	15	Single Prop	ARR	RWY33A	5694	0.4	0.1	62.6	<45	<45
GC-1	16	Single Prop	DEP	RWY15D	6139	0.1	0.0	65.8	<45	<45
GC-1	17	CH-47D	DEP	RWY15D	5664	0.0	0.0	79.9	<45	<45
GC-1	18	CH-47D	ARR	RWY33A	5802	0.0	0.0	78.0	<45	<45

Emporia: Alt 1B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
GC-1	19	Business Jet	DEP	RWY15D	5867	0.0	0.0	73.5	<45	<45
GC-1	20	E-2/C-2	ARR	15O1	20819	0.8	0.1	53.7	<45	<45
GC-2	1	E-2/C-2	Crew Swap	33SW	7384	2.8	0.3	77.1	<45	<45
GC-2	2	E-2/C-2	FCLP	33F5	17386	17.1	2.0	60.8	<45	<45
GC-2	3	E-2/C-2	FCLP	33F3	17386	8.5	1.0	59.1	<45	<45
GC-2	4	E-2/C-2	Crew Swap	15SW	23452	2.5	0.3	63.5	<45	<45
GC-2	5	CH-47D	GCA Box	33GCA	11475	0.5	0.0	70.8	<45	<45
GC-2	6	E-2/C-2	DEP	33D2	16590	0.9	0.1	67.3	<45	<45
GC-2	7	E-2/C-2	FCLP	15F5	23453	15.1	1.8	51.3	<45	<45
GC-2	8	CH-53	GCA Box	33GCA	11439	0.1	0.0	73.1	<45	<45
GC-2	9	E-2/C-2	DEP	15D2	23452	0.8	0.1	61.5	<45	<45
GC-2	10	E-2/C-2	FCLP	15F3	23453	7.6	0.9	50.0	<45	<45
GC-2	11	E-2/C-2	ARR	33O1	17386	0.9	0.1	56.8	<45	<45
GC-2	12	Single Prop	GCA Box	33GCA	11475	0.2	0.0	61.3	<45	<45
GC-2	13	CH-47D	DEP	RWY33D	23453	0.5	0.0	57.5	<45	<45
GC-2	14	Single Prop	FCLP	33F3	17404	0.7	0.1	53.1	<45	<45
GC-2	15	CH-47D	ARR	33VOR	23472	0.5	0.0	56.4	<45	<45
GC-2	16	E-2/C-2	ARR	15O1	23465	0.8	0.1	53.0	<45	<45
GC-2	17	CH-47D	Para Drops	15PARA	15861	0.1	0.0	64.2	<45	<45
GC-2	18	CH-47D	Para Drops	15PARA	16120	0.1	0.0	63.8	<45	<45
GC-2	19	Single Prop	DEP	RWY33D	23453	0.4	0.1	49.7	<45	<45
GC-2	20	CH-53	ARR	33VORH	23639	0.1	0.0	57.3	<45	<45
GC-3	1	E-2/C-2	FCLP	33F5	10102	17.1	2.0	69.9	<45	<45
GC-3	2	E-2/C-2	Crew Swap	33SW	10110	2.8	0.3	74.6	<45	<45
GC-3	3	E-2/C-2	FCLP	33F3	10102	8.5	1.0	68.7	<45	<45
GC-3	4	CH-47D	GCA Box	33GCA	4477	0.5	0.0	79.9	<45	<45
GC-3	5	E-2/C-2	FCLP	15F5	16161	15.1	1.8	63.8	<45	<45
GC-3	6	E-2/C-2	DEP	33D2	9351	0.9	0.1	75.1	<45	<45
GC-3	7	E-2/C-2	Crew Swap	15SW	16161	2.5	0.3	69.4	<45	<45
GC-3	8	E-2/C-2	FCLP	15F3	16161	7.6	0.9	62.8	<45	<45
GC-3	9	CH-53	GCA Box	33GCA	4445	0.1	0.0	84.1	<45	<45
GC-3	10	E-2/C-2	DEP	15D2	16161	0.8	0.1	67.7	<45	<45
GC-3	11	E-2/C-2	ARR	33O1	10102	0.9	0.1	65.8	<45	<45
GC-3	12	Single Prop	GCA Box	33GCA	4477	0.2	0.0	70.5	<45	<45
GC-3	13	E-2/C-2	ARR	15O1	16180	0.8	0.1	61.4	<45	<45
GC-3	14	Single Prop	FCLP	33F3	10133	0.7	0.1	60.7	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-3	15	CH-47D	DEP	RWY33D	16161	0.5	0.0	62.4	<45	<45
GC-3	16	CH-47D	ARR	33VOR	16184	0.5	0.0	60.5	<45	<45
GC-3	17	CH-47D	Para Drops	15PARA	9075	0.1	0.0	71.3	<45	<45
GC-3	18	CH-47D	Para Drops	15PARA	9480	0.1	0.0	70.7	<45	<45
GC-3	19	Single Prop	DEP	RWY33D	16161	0.4	0.1	54.5	<45	<45
GC-3	20	CH-47D	Para Drops	33PARA	10365	0.1	0.0	67.5	<45	<45
GC-4	1	E-2/C-2	FCLP	33F5	1301	17.1	2.0	87.9	54.2	54.2
GC-4	2	E-2/C-2	Crew Swap	33SW	1519	2.8	0.3	92.3	50.7	55.8
GC-4	3	E-2/C-2	ARR	15O1	1403	0.8	0.1	86.2	<45	55.9
GC-4	4	E-2/C-2	FCLP	15F5	4334	15.1	1.8	72.1	<45	56.0
GC-4	5	E-2/C-2	FCLP	33F3	5892	8.5	1.0	74.5	<45	56.0
GC-4	6	E-2/C-2	Crew Swap	15SW	1663	2.5	0.3	79.0	<45	56.1
GC-4	7	E-2/C-2	FCLP	15F3	4334	7.6	0.9	72.0	<45	56.1
GC-4	8	CH-47D	DEP	RWY33D	1453	0.5	0.0	84.8	<45	56.1
GC-4	9	E-2/C-2	DEP	33D2	5749	0.9	0.1	79.5	<45	56.2
GC-4	10	Single Prop	DEP	RWY33D	1765	0.4	0.1	76.6	<45	56.2
GC-4	11	Business Jet	DEP	RWY33D	1650	0.1	0.0	87.2	<45	56.2
GC-4	12	CH-47D	GCA Box	33GCA	5276	0.5	0.0	74.9	<45	56.2
GC-4	13	E-2/C-2	DEP	15D2	8957	0.8	0.1	68.8	<45	56.2
GC-4	14	E-2/C-2	ARR	33O1	5880	0.9	0.1	67.7	<45	56.2
GC-4	15	CH-47D	Para Drops	33PARA	2650	0.1	0.0	82.6	<45	56.2
GC-4	16	CH-47D	Para Drops	33PARA	3214	0.1	0.0	82.6	<45	56.2
GC-4	17	Single Prop	ARR	RWY15A	1245	0.1	0.0	73.1	<45	56.2
GC-4	18	Single Prop	FCLP	33F3	5938	0.7	0.1	66.3	<45	56.2
GC-4	19	Super King Air	DEP	RWY33D	1972	0.1	0.0	74.7	<45	56.2
GC-4	20	CH-47D	ARR	RWY15A	1403	0.0	0.0	85.7	<45	56.2
GC-5	1	E-2/C-2	FCLP	33F5	771	17.1	2.0	91.0	57.3	57.3
GC-5	2	E-2/C-2	Crew Swap	33SW	2255	2.8	0.3	88.5	46.9	57.7
GC-5	3	E-2/C-2	FCLP	33F3	11276	8.5	1.0	67.0	<45	57.7
GC-5	4	E-2/C-2	FCLP	15F5	11558	15.1	1.8	62.7	<45	57.7
GC-5	5	E-2/C-2	Crew Swap	15SW	6353	2.5	0.3	70.1	<45	57.7
GC-5	6	CH-47D	DEP	RWY33D	6277	0.5	0.0	77.9	<45	57.7
GC-5	7	E-2/C-2	ARR	15O1	6641	0.8	0.1	72.6	<45	57.7
GC-5	8	E-2/C-2	DEP	33D2	10951	0.9	0.1	72.1	<45	57.7
GC-5	9	E-2/C-2	FCLP	15F3	11558	7.6	0.9	62.2	<45	57.7
GC-5	10	CH-47D	GCA Box	33GCA	10160	0.5	0.0	70.1	<45	57.7

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-5	11	Single Prop	DEP	RWY33D	6460	0.4	0.1	65.6	<45	57.7
GC-5	12	E-2/C-2	ARR	33O1	11287	0.9	0.1	62.3	<45	57.7
GC-5	13	E-2/C-2	DEP	15D2	15440	0.8	0.1	62.8	<45	57.7
GC-5	14	CH-53	GCA Box	33GCA	10125	0.1	0.0	73.5	<45	57.7
GC-5	15	Business Jet	DEP	RWY33D	6362	0.1	0.0	72.6	<45	57.7
GC-5	16	Single Prop	FCLP	33F3	11307	0.7	0.1	58.4	<45	57.7
GC-5	17	CH-47D	DEP	RWY33D	6277	0.0	0.0	77.9	<45	57.7
GC-5	18	Single Prop	GCA Box	33GCA	10062	0.2	0.0	62.2	<45	57.7
GC-5	19	CH-47D	Para Drops	33PARA	9755	0.1	0.0	71.3	<45	57.7
GC-5	20	Super King Air	DEP	RWY33D	6686	0.1	0.0	64.9	<45	57.7
GC-6	1	E-2/C-2	FCLP	33F5	4590	17.1	2.0	76.6	<45	<45
GC-6	2	E-2/C-2	ARR	15O1	1519	0.8	0.1	85.2	<45	<45
GC-6	3	E-2/C-2	Crew Swap	33SW	7169	2.8	0.3	78.2	<45	<45
GC-6	4	CH-47D	DEP	RWY33D	2909	0.5	0.0	85.4	<45	45.3
GC-6	5	E-2/C-2	Crew Swap	15SW	2354	2.5	0.3	74.9	<45	45.5
GC-6	6	E-2/C-2	FCLP	15F5	11623	15.1	1.8	61.2	<45	45.6
GC-6	7	E-2/C-2	FCLP	33F3	15226	8.5	1.0	63.0	<45	45.6
GC-6	8	E-2/C-2	FCLP	15F3	11623	7.6	0.9	60.8	<45	45.7
GC-6	9	Single Prop	DEP	RWY33D	3469	0.4	0.1	70.9	<45	45.7
GC-6	10	E-2/C-2	DEP	33D2	15117	0.9	0.1	67.4	<45	45.7
GC-6	11	Business Jet	DEP	RWY33D	3166	0.1	0.0	80.6	<45	45.7
GC-6	12	CH-47D	DEP	RWY33D	2909	0.0	0.0	85.4	<45	45.7
GC-6	13	E-2/C-2	ARR	33O1	10611	0.9	0.1	63.0	<45	45.7
GC-6	14	Single Prop	ARR	RWY15A	2882	0.1	0.0	68.2	<45	45.7
GC-6	15	CH-47D	GCA Box	33GCA	14433	0.5	0.0	64.9	<45	45.7
GC-6	16	CH-47D	ARR	RWY15A	3080	0.0	0.0	81.7	<45	45.7
GC-6	17	Super King Air	DEP	RWY33D	4127	0.1	0.0	68.9	<45	45.7
GC-6	18	Single Prop	GCA Box	15GCA	2964	0.1	0.0	69.2	<45	45.7
GC-6	19	E-2/C-2	DEP	15D2	17717	0.8	0.1	58.9	<45	45.7
GC-6	20	CH-47D	Para Drops	33PARA	9780	0.1	0.0	70.9	<45	45.7
GC-7	1	E-2/C-2	ARR	15O1	837	0.8	0.1	89.8	<45	<45
GC-7	2	E-2/C-2	FCLP	33F5	12166	17.1	2.0	66.6	<45	<45
GC-7	3	E-2/C-2	Crew Swap	15SW	5877	2.5	0.3	74.0	<45	<45
GC-7	4	E-2/C-2	Crew Swap	33SW	14267	2.8	0.3	71.0	<45	<45
GC-7	5	E-2/C-2	FCLP	15F5	14466	15.1	1.8	58.1	<45	<45
GC-7	6	CH-47D	DEP	RWY33D	11018	0.5	0.0	72.9	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-7	7	E-2/C-2	ARR	33O1	5407	0.9	0.1	69.4	<45	<45
GC-7	8	E-2/C-2	FCLP	15F3	14466	7.6	0.9	57.7	<45	<45
GC-7	9	E-2/C-2	FCLP	33F3	19980	8.5	1.0	56.4	<45	<45
GC-7	10	Single Prop	GCA Box	15GCA	2317	0.1	0.0	75.9	<45	<45
GC-7	11	E-2/C-2	DEP	33D2	19927	0.9	0.1	61.9	<45	<45
GC-7	12	Single Prop	DEP	RWY33D	11196	0.4	0.1	60.1	<45	<45
GC-7	13	CH-47D	GCA Box	33GCA	19296	0.5	0.0	59.7	<45	<45
GC-7	14	E-2/C-2	DEP	15D2	21464	0.8	0.1	55.9	<45	<45
GC-7	15	CH-47D	Para Drops	33PARA	12513	0.1	0.0	67.7	<45	<45
GC-7	16	CH-47D	Para Drops	33PARA	12105	0.1	0.0	67.7	<45	<45
GC-7	17	CH-47D	DEP	RWY33D	11018	0.0	0.0	72.9	<45	<45
GC-7	18	Business Jet	DEP	RWY33D	11095	0.1	0.0	65.0	<45	<45
GC-7	19	CH-53	DEP	33D3	19148	0.1	0.0	63.2	<45	<45
GC-7	20	Super King Air	DEP	RWY33D	11445	0.1	0.0	59.4	<45	<45
GC-8	1	E-2/C-2	FCLP	33F5	16066	17.1	2.0	61.9	<45	<45
GC-8	2	E-2/C-2	Crew Swap	15SW	4385	2.5	0.3	69.4	<45	<45
GC-8	3	CH-47D	DEP	RWY33D	8442	0.5	0.0	76.2	<45	<45
GC-8	4	E-2/C-2	Crew Swap	33SW	18518	2.8	0.3	66.7	<45	<45
GC-8	5	E-2/C-2	ARR	15O1	9561	0.8	0.1	68.9	<45	<45
GC-8	6	Single Prop	GCA Box	15GCA	4264	0.1	0.0	72.1	<45	<45
GC-8	7	E-2/C-2	ARR	33O1	13348	0.9	0.1	61.2	<45	<45
GC-8	8	Single Prop	DEP	RWY33D	8936	0.4	0.1	62.1	<45	<45
GC-8	9	E-2/C-2	DEP	33D2	26845	0.9	0.1	57.1	<45	<45
GC-8	10	E-2/C-2	FCLP	15F5	22577	15.1	1.8	44.2	<45	<45
GC-8	11	CH-47D	DEP	RWY33D	8442	0.0	0.0	76.2	<45	<45
GC-8	12	Business Jet	DEP	RWY33D	8643	0.1	0.0	68.3	<45	<45
GC-8	13	CH-47D	GCA Box	33GCA	26113	0.5	0.0	57.4	<45	<45
GC-8	14	CH-47D	ARR	RWY15A	8569	0.0	0.0	75.0	<45	<45
GC-8	15	E-2/C-2	FCLP	15F3	22577	7.6	0.9	43.4	<45	<45
GC-8	16	E-2/C-2	FCLP	33F3	26931	8.5	1.0	42.8	<45	<45
GC-8	17	Single Prop	ARR	RWY15A	8508	0.1	0.0	58.5	<45	<45
GC-8	18	Super King Air	DEP	RWY33D	9706	0.1	0.0	60.8	<45	<45
GC-8	19	E-2/C-2	DEP	15D2	29125	0.8	0.1	48.0	<45	<45
GC-8	20	CH-47D	Para Drops	33PARA	20472	0.1	0.0	62.2	<45	<45
GC-9	1	E-2/C-2	Crew Swap	15SW	11193	2.5	0.3	66.8	<45	<45
GC-9	2	E-2/C-2	ARR	33O1	12029	0.9	0.1	64.3	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
GC-9	3	E-2/C-2	ARR	15O1	9455	0.8	0.1	63.6	<45	<45
GC-9	4	E-2/C-2	Crew Swap	33SW	30846	2.8	0.3	57.4	<45	<45
GC-9	5	CH-47D	DEP	RWY33D	22108	0.5	0.0	64.5	<45	<45
GC-9	6	E-2/C-2	FCLP	33F5	28445	17.1	2.0	41.0	<45	<45
GC-9	7	Single Prop	GCA Box	15GCA	10183	0.1	0.0	61.6	<45	<45
GC-9	8	E-2/C-2	FCLP	15F5	31397	15.1	1.8	37.9	<45	<45
GC-9	9	Single Prop	DEP	RWY33D	22348	0.4	0.1	51.7	<45	<45
GC-9	10	E-2/C-2	DEP	33D2	37095	0.9	0.1	49.2	<45	<45
GC-9	11	CH-53	DEP	33D3	32617	0.1	0.0	56.2	<45	<45
GC-9	12	CH-53	ARR	33VORH	42576	0.1	0.0	54.4	<45	<45
GC-9	13	CH-53	GCA Box	33GCA	36413	0.1	0.0	52.0	<45	<45
GC-9	14	CH-47D	GCA Box	33GCA	36434	0.5	0.0	50.1	<45	<45
GC-9	15	E-2/C-2	FCLP	15F3	31397	7.6	0.9	35.8	<45	<45
GC-9	16	E-2/C-2	FCLP	33F3	37137	8.5	1.0	34.9	<45	<45
GC-9	17	E-2/C-2	DEP	15D2	38503	0.8	0.1	44.9	<45	<45
GC-9	18	CH-47D	ARR	RWY15A	22167	0.0	0.0	64.8	<45	<45
GC-9	19	CH-47D	DEP	RWY33D	22108	0.0	0.0	64.7	<45	<45
GC-9	20	Super King Air	DEP	RWY33D	22766	0.1	0.0	50.6	<45	<45
GC-10	1	E-2/C-2	FCLP	15F5	1447	15.1	1.8	85.6	51.4	51.4
GC-10	2	E-2/C-2	FCLP	15F3	1446	7.6	0.9	85.6	48.4	53.2
GC-10	3	E-2/C-2	FCLP	33F5	4794	17.1	2.0	79.7	46.0	53.9
GC-10	4	E-2/C-2	Crew Swap	15SW	1439	2.5	0.3	84.7	<45	54.2
GC-10	5	E-2/C-2	Crew Swap	33SW	4786	2.8	0.3	83.8	<45	54.5
GC-10	6	E-2/C-2	FCLP	33F3	4954	8.5	1.0	78.6	<45	54.7
GC-10	7	E-2/C-2	ARR	15O1	1446	0.8	0.1	82.0	<45	54.8
GC-10	8	E-2/C-2	DEP	33D2	4960	0.9	0.1	80.9	<45	54.8
GC-10	9	E-2/C-2	DEP	15D2	5084	0.8	0.1	77.5	<45	54.8
GC-10	10	CH-53	DEP	33D3	2318	0.1	0.0	86.4	<45	54.8
GC-10	11	Single Prop	FCLP	15F3	1652	0.2	0.0	78.0	<45	54.8
GC-10	12	E-2/C-2	ARR	33O1	4968	0.9	0.1	73.2	<45	54.9
GC-10	13	CH-47D	Para Drops	15PARA	1523	0.1	0.0	87.7	<45	54.9
GC-10	14	CH-47D	Para Drops	15PARA	1523	0.1	0.0	87.7	<45	54.9
GC-10	15	CH-47D	DEP	RWY33D	4775	0.5	0.0	73.7	<45	54.9
GC-10	16	CH-47D	GCA Box	33GCA	4919	0.5	0.0	73.6	<45	54.9
GC-10	17	Single Prop	FCLP	33F3	4928	0.7	0.1	69.7	<45	54.9
GC-10	18	CH-47D	Para Drops	33PARA	3540	0.1	0.0	84.4	<45	54.9
GC-10	19	CH-47D	Para Drops	33PARA	4153	0.1	0.0	83.0	<45	54.9

Emporia: Alt 1B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
GC-10	20	Single Prop	DEP	RWY33D	4799	0.4	0.1	69.8	<45	54.9
GC-11	1	E-2/C-2	FCLP	33F5	778	17.08	1.99	94.2	60.5	60.5
GC-11	2	E-2/C-2	FCLP	33F3	783	8.53	1.00	94.1	57.4	62.2
GC-11	3	E-2/C-2	Crew Swap	33SW	647	2.80	0.33	98.6	57.1	63.4
GC-11	4	E-2/C-2	FCLP	15F5	504	15.14	1.77	89.5	55.2	64.0
GC-11	5	E-2/C-2	FCLP	15F3	504	7.56	0.88	89.5	52.2	64.3
GC-11	6	E-2/C-2	DEP	33D2	609	0.85	0.10	98.2	51.4	64.5
GC-11	7	E-2/C-2	Crew Swap	15SW	513	2.49	0.29	93.2	51.1	64.7
GC-11	8	Business Jet	DEP	RWY15D	688	0.03	0.00	110.0	45.0	64.7
GC-11	9	E-2/C-2	ARR	15O1	504	0.76	0.09	90.5	<45	64.8
GC-11	10	Single Prop	FCLP	33F3	566	0.68	0.12	88.9	<45	64.8
GC-11	11	CH-47D	DEP	RWY33D	602	0.55	0.03	90.9	<45	64.8
GC-11	12	Super King Air	DEP	RWY15D	688	0.03	0.01	98.8	<45	64.8
GC-11	13	Business Jet	DEP	RWY33D	646	0.08	0.00	97.6	<45	64.8
GC-11	14	CH-53	DEP	33D3	919	0.08	0.00	91.0	<45	64.8
GC-11	15	CH-47D	Para Drops	15PARA	512	0.05	0.00	94.6	<45	64.8
GC-11	16	CH-47D	Para Drops	15PARA	512	0.05	0.00	94.6	<45	64.8
GC-11	17	CH-47D	Para Drops	33PARA	1017	0.06	0.00	93.0	<45	64.8
GC-11	18	CH-53	GCA Box	33GCA	1154	0.08	0.00	89.8	<45	64.8
GC-11	19	CH-47D	Para Drops	33PARA	1003	0.06	0.00	92.7	<45	64.8
GC-11	20	CH-47D	ARR	RWY15A	534	0.02	0.00	91.2	<45	64.8
SC-1	1	E-2/C-2	FCLP	15F5	1112	15.1	1.8	92.9	58.7	58.7
SC-1	2	E-2/C-2	FCLP	15F3	1112	7.6	0.9	92.9	55.6	60.4
SC-1	3	E-2/C-2	FCLP	33F5	955	17.1	2.0	89.0	55.3	61.6
SC-1	4	E-2/C-2	Crew Swap	15SW	1024	2.5	0.3	95.5	53.4	62.2
SC-1	5	E-2/C-2	FCLP	33F3	955	8.5	1.0	89.1	52.3	62.6
SC-1	6	E-2/C-2	Crew Swap	33SW	955	2.8	0.3	93.6	52.1	63.0
SC-1	7	E-2/C-2	DEP	15D2	996	0.8	0.1	95.0	47.7	63.1
SC-1	8	E-2/C-2	DEP	33D2	955	0.9	0.1	88.5	<45	63.2
SC-1	9	E-2/C-2	ARR	33O1	972	0.9	0.1	88.1	<45	63.2
SC-1	10	Single Prop	FCLP	33F3	955	0.7	0.1	87.0	<45	63.2
SC-1	11	CH-47D	GCA Box	33GCA	954	0.5	0.0	88.9	<45	63.2
SC-1	12	E-2/C-2	ARR	15O1	1242	0.8	0.1	84.8	<45	63.2
SC-1	13	Super King Air	DEP	RWY33D	954	0.1	0.0	92.9	<45	63.2
SC-1	14	Single Prop	DEP	RWY33D	954	0.4	0.1	85.6	<45	63.3
SC-1	15	CH-47D	DEP	RWY33D	954	0.5	0.0	86.6	<45	63.3

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
SC-1	16	CH-47D	ARR	33VOR	964	0.5	0.0	86.5	<45	63.3
SC-1	17	Single Prop	FCLP	15F3	970	0.2	0.0	87.1	<45	63.3
SC-1	18	Business Jet	DEP	RWY33D	954	0.1	0.0	94.7	<45	63.3
SC-1	19	CH-53	GCA Box	33GCA	955	0.1	0.0	91.3	<45	63.3
SC-1	20	Single Prop	GCA Box	33GCA	954	0.2	0.0	84.7	<45	63.3
SC-2	1	E-2/C-2	FCLP	15F5	3612	15.1	1.8	80.3	46.1	46.1
SC-2	2	E-2/C-2	Crew Swap	15SW	5917	2.5	0.3	80.0	<45	46.7
SC-2	3	E-2/C-2	FCLP	15F3	5915	7.6	0.9	74.1	<45	47.1
SC-2	4	E-2/C-2	FCLP	33F5	10084	17.1	2.0	68.0	<45	47.4
SC-2	5	E-2/C-2	FCLP	33F3	10084	8.5	1.0	67.4	<45	47.4
SC-2	6	E-2/C-2	Crew Swap	33SW	9695	2.8	0.3	72.2	<45	47.5
SC-2	7	E-2/C-2	DEP	15D2	9666	0.8	0.1	75.8	<45	47.6
SC-2	8	E-2/C-2	ARR	33O1	2424	0.9	0.1	73.7	<45	47.6
SC-2	9	E-2/C-2	DEP	33D2	11324	0.9	0.1	68.4	<45	47.6
SC-2	10	E-2/C-2	ARR	15O1	5925	0.8	0.1	68.4	<45	47.7
SC-2	11	CH-47D	GCA Box	33GCA	9648	0.5	0.0	69.2	<45	47.7
SC-2	12	Single Prop	GCA Box	15GCA	2529	0.1	0.0	75.4	<45	47.7
SC-2	13	CH-47D	ARR	33VOR	9656	0.5	0.0	68.0	<45	47.7
SC-2	14	Single Prop	FCLP	15F3	5968	0.2	0.0	66.0	<45	47.7
SC-2	15	CH-53	ARR	33VORH	9649	0.1	0.0	73.2	<45	47.7
SC-2	16	CH-53	DEP	33D3	10183	0.1	0.0	72.1	<45	47.7
SC-2	17	CH-53	GCA Box	33GCA	9649	0.1	0.0	71.9	<45	47.7
SC-2	18	CH-47D	DEP	RWY33D	11324	0.5	0.0	62.0	<45	47.7
SC-2	19	CH-47D	Para Drops	15PARA	8660	0.1	0.0	72.6	<45	47.7
SC-2	20	CH-47D	Para Drops	15PARA	9534	0.1	0.0	72.6	<45	47.7
SC-3	1	E-2/C-2	Crew Swap	15SW	2731	2.5	0.3	84.3	<45	<45
SC-3	2	E-2/C-2	FCLP	15F5	12441	15.1	1.8	66.7	<45	<45
SC-3	3	E-2/C-2	FCLP	15F3	17096	7.6	0.9	59.1	<45	<45
SC-3	4	E-2/C-2	Crew Swap	33SW	18532	2.8	0.3	62.0	<45	<45
SC-3	5	E-2/C-2	DEP	15D2	18555	0.8	0.1	67.4	<45	<45
SC-3	6	E-2/C-2	ARR	33O1	10199	0.9	0.1	64.3	<45	<45
SC-3	7	E-2/C-2	FCLP	33F5	20803	17.1	2.0	48.8	<45	<45
SC-3	8	E-2/C-2	DEP	33D2	21886	0.9	0.1	61.4	<45	<45
SC-3	9	CH-47D	ARR	33VOR	18525	0.5	0.0	63.8	<45	<45
SC-3	10	CH-47D	GCA Box	33GCA	18517	0.5	0.0	62.1	<45	<45
SC-3	11	E-2/C-2	FCLP	33F3	20803	8.5	1.0	47.7	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
SC-3	12	E-2/C-2	ARR	15O1	17106	0.8	0.1	56.3	<45	<45
SC-3	13	CH-53	DEP	33D3	16753	0.1	0.0	66.4	<45	<45
SC-3	14	CH-53	ARR	33VORH	18517	0.1	0.0	65.1	<45	<45
SC-3	15	CH-53	GCA Box	33GCA	18517	0.1	0.0	64.7	<45	<45
SC-3	16	Single Prop	GCA Box	15GCA	12116	0.1	0.0	59.6	<45	<45
SC-3	17	Single Prop	FCLP	15F3	17115	0.2	0.0	53.1	<45	<45
SC-3	18	Single Prop	ARR	RWY33A	18505	0.4	0.1	49.5	<45	<45
SC-3	19	Single Prop	DEP	RWY15D	18571	0.1	0.0	54.2	<45	<45
SC-3	20	CH-47D	Para Drops	15PARA	19681	0.1	0.0	62.4	<45	<45
SC-4	1	E-2/C-2	Crew Swap	15SW	637	2.5	0.3	87.2	45.1	45.1
SC-4	2	E-2/C-2	FCLP	15F5	18594	15.1	1.8	58.7	<45	45.1
SC-4	3	E-2/C-2	DEP	15D2	24698	0.8	0.1	63.1	<45	45.1
SC-4	4	E-2/C-2	Crew Swap	33SW	24686	2.8	0.3	57.0	<45	45.1
SC-4	5	E-2/C-2	FCLP	15F3	21656	7.6	0.9	51.0	<45	45.2
SC-4	6	E-2/C-2	DEP	33D2	27360	0.9	0.1	58.7	<45	45.2
SC-4	7	E-2/C-2	ARR	33O1	16238	0.9	0.1	58.6	<45	45.2
SC-4	8	CH-47D	ARR	33VOR	24681	0.5	0.0	60.1	<45	45.2
SC-4	9	CH-53	DEP	33D3	15561	0.1	0.0	68.0	<45	45.2
SC-4	10	CH-47D	GCA Box	33GCA	24676	0.5	0.0	58.3	<45	45.2
SC-4	11	E-2/C-2	FCLP	33F5	26171	17.1	2.0	41.0	<45	45.2
SC-4	12	E-2/C-2	FCLP	33F3	26171	8.5	1.0	39.6	<45	45.2
SC-4	13	CH-53	GCA Box	33GCA	24676	0.1	0.0	60.9	<45	45.2
SC-4	14	E-2/C-2	ARR	15O1	21664	0.8	0.1	49.4	<45	45.2
SC-4	15	CH-53	ARR	33VORH	24676	0.1	0.0	60.1	<45	45.2
SC-4	16	Single Prop	GCA Box	15GCA	15965	0.1	0.0	56.3	<45	45.2
SC-4	17	Single Prop	FCLP	15F3	21671	0.2	0.0	49.2	<45	45.2
SC-4	18	Single Prop	DEP	RWY15D	24713	0.1	0.0	50.1	<45	45.2
SC-4	19	CH-47D	Para Drops	15PARA	24120	0.1	0.0	58.9	<45	45.2
SC-4	20	Single Prop	GCA Box	33GCA	24673	0.2	0.0	49.2	<45	45.2
SC-5	1	E-2/C-2	Crew Swap	15SW	1499	2.5	0.3	83.4	<45	<45
SC-5	2	E-2/C-2	FCLP	15F5	18329	15.1	1.8	58.8	<45	<45
SC-5	3	E-2/C-2	DEP	15D2	24298	0.8	0.1	63.5	<45	<45
SC-5	4	E-2/C-2	Crew Swap	33SW	24290	2.8	0.3	56.2	<45	<45
SC-5	5	E-2/C-2	ARR	33O1	16036	0.9	0.1	59.5	<45	<45
SC-5	6	E-2/C-2	DEP	33D2	26243	0.9	0.1	59.4	<45	<45
SC-5	7	E-2/C-2	FCLP	15F3	22929	7.6	0.9	48.5	<45	<45

Emporia: Alt 1B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
SC-5	8	CH-47D	ARR	33VOR	24258	0.5	0.0	61.0	<45	<45
SC-5	9	CH-47D	GCA Box	33GCA	24251	0.5	0.0	58.6	<45	<45
SC-5	10	CH-53	DEP	33D3	18657	0.1	0.0	65.1	<45	<45
SC-5	11	E-2/C-2	FCLP	33F5	26892	17.1	2.0	39.9	<45	<45
SC-5	12	CH-53	GCA Box	33GCA	24252	0.1	0.0	61.2	<45	<45
SC-5	13	CH-53	ARR	33VORH	24252	0.1	0.0	60.8	<45	<45
SC-5	14	E-2/C-2	FCLP	33F3	26892	8.5	1.0	38.3	<45	<45
SC-5	15	E-2/C-2	ARR	15O1	22940	0.8	0.1	47.2	<45	<45
SC-5	16	Single Prop	GCA Box	15GCA	17539	0.1	0.0	55.2	<45	<45
SC-5	17	Single Prop	ARR	RWY33A	24239	0.4	0.1	45.9	<45	<45
SC-5	18	Single Prop	DEP	RWY15D	24301	0.1	0.0	50.5	<45	<45
SC-5	19	Single Prop	FCLP	15F3	22943	0.2	0.0	48.3	<45	<45
SC-5	20	Single Prop	GCA Box	33GCA	24247	0.2	0.0	49.4	<45	<45
SC-6	1	E-2/C-2	Crew Swap	15SW	3626	2.5	0.3	79.8	<45	<45
SC-6	2	E-2/C-2	FCLP	15F5	20646	15.1	1.8	54.7	<45	<45
SC-6	3	E-2/C-2	DEP	15D2	23864	0.8	0.1	62.4	<45	<45
SC-6	4	E-2/C-2	Crew Swap	33SW	26568	2.8	0.3	54.4	<45	<45
SC-6	5	E-2/C-2	DEP	33D2	26334	0.9	0.1	59.1	<45	<45
SC-6	6	E-2/C-2	ARR	33O1	18318	0.9	0.1	57.2	<45	<45
SC-6	7	CH-47D	ARR	33VOR	26493	0.5	0.0	59.9	<45	<45
SC-6	8	CH-47D	GCA Box	33GCA	26486	0.5	0.0	57.3	<45	<45
SC-6	9	E-2/C-2	FCLP	15F3	25210	7.6	0.9	43.8	<45	<45
SC-6	10	CH-53	DEP	33D3	19357	0.1	0.0	64.7	<45	<45
SC-6	11	E-2/C-2	FCLP	33F5	29250	17.1	2.0	38.4	<45	<45
SC-6	12	CH-53	GCA Box	33GCA	26487	0.1	0.0	60.1	<45	<45
SC-6	13	CH-53	ARR	33VORH	26487	0.1	0.0	59.4	<45	<45
SC-6	14	E-2/C-2	FCLP	33F3	29250	8.5	1.0	36.8	<45	<45
SC-6	15	Single Prop	GCA Box	15GCA	19722	0.1	0.0	53.7	<45	<45
SC-6	16	E-2/C-2	ARR	15O1	25221	0.8	0.1	43.5	<45	<45
SC-6	17	Single Prop	ARR	RWY33A	26474	0.4	0.1	44.4	<45	<45
SC-6	18	Single Prop	DEP	RWY15D	26535	0.1	0.0	49.0	<45	<45
SC-6	19	Single Prop	GCA Box	33GCA	26481	0.2	0.0	48.1	<45	<45
SC-6	20	Single Prop	FCLP	15F3	25223	0.2	0.0	46.0	<45	<45
SC-7	1	E-2/C-2	DEP	33D2	9554	0.9	0.1	66.8	<45	<45
SC-7	2	E-2/C-2	DEP	15D2	11474	0.8	0.1	65.1	<45	<45
SC-7	3	E-2/C-2	Crew Swap	15SW	40692	2.5	0.3	49.6	<45	<45

Emporia: Alt 1B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
SC-7	4	E-2/C-2	ARR	33O1	58094	0.9	0.1	45.2	<45	<45
SC-7	5	E-2/C-2	FCLP	15F5	60817	15.1	1.8	27.2	<45	<45
SC-7	6	E-2/C-2	ARR	15O1	62100	0.8	0.1	39.8	<45	<45
SC-7	7	E-2/C-2	FCLP	33F5	69216	17.1	2.0	25.2	<45	<45
SC-7	8	E-2/C-2	Crew Swap	33SW	66474	2.8	0.3	29.4	<45	<45
SC-7	9	E-2/C-2	FCLP	15F3	64429	7.6	0.9	24.4	<45	<45
SC-7	10	E-2/C-2	FCLP	33F3	69216	8.5	1.0	23.2	<45	<45
SC-7	11	CH-47D	ARR	33VOR	65574	0.5	0.0	31.9	<45	<45
SC-7	12	Single Prop	DEP	RWY15D	65614	0.1	0.0	34.6	<45	<45
SC-7	13	Single Prop	DEP	RWY33D	70264	0.4	0.1	27.3	<45	<45
SC-7	14	CH-47D	DEP	RWY33D	70264	0.5	0.0	28.3	<45	<45
SC-7	15	Super King Air	DEP	RWY33D	70264	0.1	0.0	33.8	<45	<45
SC-7	16	CH-47D	GCA Box	33GCA	65575	0.5	0.0	27.2	<45	<45
SC-7	17	CH-47D	Para Drops	33PARA	65439	0.1	0.0	38.4	<45	<45
SC-7	18	Super King Air	DEP	RWY15D	65702	0.0	0.0	35.4	<45	<45
SC-7	19	CH-47D	Para Drops	15PARA	66216	0.1	0.0	36.8	<45	<45
SC-7	20	Single Prop	FCLP	33F3	69216	0.7	0.1	17.1	<45	<45

Appendix C: Points of Interest SEL Tables for Top Contributor to the DNL at Wallops Flight Facility

Location ID	Description	Latitude	Longitude	Total DNL (dB)				
				Baseline	Alt 2A	Alt 2B	Alt 2C	Alt 2D
AC-1	Intersection of US 13 and SR 709	37.979862	75.530116	<45	<45	<45	48.3	48.3
AC-2	T's Corner (east of intersection of US 13 and Chincoteague Road)	37.945590	75.539688	49.1	49.8	49.8	50.7	51.9
AC-3	Arcadia High School	37.925653	75.549588	<45	48.2	48.1	<45	<45
AC-4	Temperanceville at Intersection of US 13 and SR 695	37.892998	75.548880	<45	<45	<45	<45	<45
AC-5	Captain's Cove Community Pool	37.990629	75.421811	<45	<45	45.3	47.6	47.6
AC-6	Horntown at Intersection of SR 679 and SR 709	37.969714	75.463103	52.8	54.1	59.6	53.8	54
AC-7	Trail's End Community Pool	37.955769	75.450846	62.4	63.3	64.1	63	63.1
AC-8	Olde Mill Pointe Traffic Circle	37.950772	75.488573	56.1	57	57.1	58.2	58.5
AC-9	Wattsville at Intersection of SR 679 and Chincoteague Road	37.934026	75.499244	61.2	61.4	61.4	61.6	61.9
AC-10	Atlantic at Intersection of SR 679 and Nocks Landing Road	37.903404	75.504567	45.1	50.6	51.5	45.9	46.5
AC-11	Assawoman at Intersection of SR 670 and Wallops Island Road	37.874388	75.520869	<45	<45	<45	<45	<45
AC-12	Marine Science Consortium	37.934410	75.482184	55	57.6	57.7	59.9	59.2
AC-13	NASA Visitor Center	37.938484	75.457344	63.5	66.8	66.9	64.6	64.7
AC-14	USFWS Maintenance Yard at Wallops Island NWR	37.919021	75.473680	62.4	63.7	64.3	62.7	62.8
AC-15	Ballast Narrows at Wallops Island NWR	37.888266	75.458558	<45	<45	47.4	<45	<45
AC-16	Chincoteague High School	37.942804	75.364619	<45	<45	<45	<45	<45
AC-17	Chincoteague Waterfront Park	37.934675	75.376869	<45	<45	<45	<45	<45
AC-18	Chincoteague Chamber of Commerce on Piney Island	37.926754	75.354520	<45	<45	<45	<45	<45
AC-19	Curtis Merritt Harbor, Chincoteague Island	37.902697	75.406283	<45	<45	<45	<45	<45
AC-20	Tom's Cove Visitor Center	37.890114	75.344757	<45	<45	<45	<45	<45
AC-21	Mid-Atlantic Regional Spaceport	37.850806	75.471128	<45	<45	<45	<45	<45
AC-22	Withams at Intersection of SR 693 and SR 703	37.945463	75.577460	<45	<45	<45	<45	<45

Wallops Island: Baseline										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-1	1	Jet Fighter	T & G	10T1	8777	0.3	0.0	87.0	<45	<45
AC-1	2	Jet Fighter	ARR	P10O1	9278	0.0	0.0	88.9	<45	<45
AC-1	3	Jet Fighter	DEP	P10D2	11460	0.0	0.0	88.1	<45	<45
AC-1	4	Jet Fighter	DEP	P28D2	13597	0.1	0.0	85.7	<45	<45
AC-1	5	Jet Fighter	T & G	28T1	17787	0.4	0.0	76.2	<45	<45
AC-1	6	P-3C	DEP	10D3	5654	1.0	0.0	71.9	<45	<45
AC-1	7	P-3C	DEP	28D3	12683	1.6	0.0	68.3	<45	<45
AC-1	8	Jet Fighter	DEP	P04D2	12312	0.0	0.0	87.2	<45	<45
AC-1	9	E-2/C-2	DEP	N28D2	13506	0.5	0.0	71.5	<45	<45
AC-1	10	B-737-400*	DEP	10D3	7434	0.3	0.0	73.5	<45	<45
AC-1	11	Jet Fighter	T & G	04T1	16808	0.1	0.0	76.7	<45	<45
AC-1	12	E-2/C-2	T & G	10T1	8766	1.3	0.0	65.7	<45	<45
AC-1	13	E-2/C-2	T & G	10T1	8781	0.8	0.0	66.6	<45	<45
AC-1	14	E-2/C-2	DEP	N10D2	10064	0.3	0.0	70.3	<45	<45
AC-1	15	B-737-400*	DEP	28D3	12768	0.4	0.0	68.9	<45	<45
AC-1	16	E-2/C-2	T & G	28T1	17770	1.9	0.0	62.4	<45	<45
AC-1	17	E-2/C-2	T & G	28T1	17787	1.3	0.0	63.6	<45	<45
AC-1	18	E-2/C-2	ARR	N28O1	4601	0.5	0.0	67.0	<45	<45
AC-1	19	P-3C	DEP	04D3	9895	0.4	0.0	66.8	<45	<45
AC-1	20	Jet Fighter	T & G	22T1	24678	0.3	0.0	68.5	<45	<45
AC-2	1	Jet Fighter	DEP	P28D2	3181	0.1	0.0	105.6	<45	<45
AC-2	2	Jet Fighter	ARR	P10O1	1303	0.0	0.0	105.4	<45	46.8
AC-2	3	P-3C	DEP	28D3	1710	1.6	0.0	87.4	<45	47.6
AC-2	4	P-3C	ARR	10A1	865	1.0	0.0	88.8	<45	48.3
AC-2	5	E-2/C-2	DEP	N28D2	2480	0.5	0.0	87.1	<45	48.5
AC-2	6	B-737-400*	ARR	10A1	824	0.3	0.0	89.1	<45	48.6
AC-2	7	B-737-400*	DEP	28D3	2257	0.4	0.0	86.8	<45	48.8
AC-2	8	Jet Fighter	T & G	10T1	7671	0.3	0.0	88.3	<45	48.9
AC-2	9	Jet Fighter	T & G	28T1	12579	0.4	0.0	83.6	<45	48.9
AC-2	10	A-10A	ARR	10A1	809	0.0	0.0	95.2	<45	49.0
AC-2	11	E-2/C-2	ARR	N10O1	1284	0.3	0.0	78.3	<45	49.0
AC-2	12	Jet Fighter	DEP	P10D2	15779	0.0	0.0	86.7	<45	49.0
AC-2	13	C-12	ARR	10A1	845	0.1	0.0	81.5	<45	49.0
AC-2	14	Jet Fighter	T & G	04T1	12515	0.1	0.0	81.8	<45	49.0
AC-2	15	Jet Fighter	DEP	P22D2	13643	0.0	0.0	86.0	<45	49.1
AC-2	16	E-2/C-2	T & G	28T1	12555	1.9	0.0	66.9	<45	49.1
AC-2	17	C-12	DEP	28D3	1988	0.2	0.0	75.2	<45	49.1

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-2	18	E-2/C-2	T & G	28T1	12579	1.3	0.0	67.2	<45	49.1
AC-2	19	E-2/C-2	T & G	10T1	7674	1.3	0.0	66.7	<45	49.1
AC-2	20	Jet Fighter	ARR	P28O1	12553	0.1	0.0	79.1	<45	49.1
AC-3	1	Jet Fighter	DEP	P28D2	7378	0.1	0.0	95.3	<45	<45
AC-3	2	Jet Fighter	T & G	28T1	14817	0.4	0.0	86.0	<45	<45
AC-3	3	Jet Fighter	DEP	P22D2	7745	0.0	0.0	93.8	<45	<45
AC-3	4	E-2/C-2	DEP	N28D2	6980	0.5	0.0	77.4	<45	<45
AC-3	5	P-3C	DEP	28D3	8116	1.6	0.0	72.6	<45	<45
AC-3	6	Jet Fighter	T & G	10T1	13489	0.3	0.0	78.4	<45	<45
AC-3	7	P-3C	DEP	22D3	5524	1.0	0.0	72.3	<45	<45
AC-3	8	B-737-400*	DEP	22D3	5749	0.3	0.0	76.8	<45	<45
AC-3	9	Jet Fighter	ARR	P10O1	6490	0.0	0.0	84.3	<45	<45
AC-3	10	Jet Fighter	T & G	04T1	13046	0.1	0.0	80.3	<45	<45
AC-3	11	B-737-400*	DEP	28D3	8271	0.4	0.0	74.4	<45	<45
AC-3	12	E-2/C-2	DEP	N22D2	6604	0.3	0.0	74.5	<45	<45
AC-3	13	Jet Fighter	ARR	P28O1	14810	0.1	0.0	80.1	<45	<45
AC-3	14	Jet Fighter	DEP	P10D2	19642	0.0	0.0	81.3	<45	<45
AC-3	15	E-2/C-2	T & G	28T1	14797	1.9	0.0	63.8	<45	<45
AC-3	16	E-2/C-2	T & G	28T1	14817	1.3	0.0	64.7	<45	<45
AC-3	17	Jet Fighter	T & G	22T1	22526	0.3	0.0	70.0	<45	<45
AC-3	18	Jet Fighter	ARR	P04O1	13393	0.0	0.0	81.2	<45	<45
AC-3	19	E-2/C-2	ARR	N10O1	6495	0.3	0.0	68.1	<45	<45
AC-3	20	E-2/C-2	T & G	10T1	13490	0.8	0.0	63.1	<45	<45
AC-4	1	Jet Fighter	DEP	P22D2	8419	0.0	0.0	92.8	<45	<45
AC-4	2	Jet Fighter	T & G	28T1	19341	0.4	0.0	77.4	<45	<45
AC-4	3	P-3C	DEP	22D3	7019	1.0	0.0	70.6	<45	<45
AC-4	4	Jet Fighter	T & G	04T1	15883	0.1	0.0	79.0	<45	<45
AC-4	5	B-737-400*	DEP	22D3	7086	0.3	0.0	74.9	<45	<45
AC-4	6	E-2/C-2	DEP	N22D2	7509	0.3	0.0	74.1	<45	<45
AC-4	7	Jet Fighter	DEP	P28D2	18643	0.1	0.0	79.8	<45	<45
AC-4	8	Jet Fighter	ARR	P04O1	12523	0.0	0.0	82.3	<45	<45
AC-4	9	P-3C	DEP	28D3	19551	1.6	0.0	62.5	<45	<45
AC-4	10	E-2/C-2	DEP	N28D2	18494	0.5	0.0	67.1	<45	<45
AC-4	11	Jet Fighter	T & G	22T1	24486	0.3	0.0	68.9	<45	<45
AC-4	12	E-2/C-2	ARR	N04O1	2756	0.1	0.0	70.9	<45	<45
AC-4	13	E-2/C-2	T & G	28T1	19341	1.3	0.0	60.8	<45	<45
AC-4	14	Jet Fighter	ARR	P28O1	19313	0.1	0.0	72.8	<45	<45

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-4	15	E-2/C-2	T & G	28T1	19326	1.9	0.0	57.8	<45	<45
AC-4	16	Jet Fighter	T & G	10T1	22196	0.3	0.0	65.7	<45	<45
AC-4	17	B-737-400*	DEP	28D3	19595	0.4	0.0	62.1	<45	<45
AC-4	18	C-12	DEP	22D3	6924	0.1	0.0	64.8	<45	<45
AC-4	19	Jet Fighter	DEP	P10D2	25875	0.0	0.0	69.3	<45	<45
AC-4	20	E-2/C-2	T & G	22T1	24486	0.8	0.0	56.8	<45	<45
AC-5	1	P-3C	ARR	22A1	1054	1.0	0.0	86.0	<45	<45
AC-5	2	Jet Fighter	DEP	P04D2	4058	0.0	0.0	101.8	<45	<45
AC-5	3	Jet Fighter	ARR	P22O1	1188	0.0	0.0	98.3	<45	<45
AC-5	4	B-737-400*	ARR	22A1	1009	0.3	0.0	86.5	<45	<45
AC-5	5	Jet Fighter	DEP	P10D2	8124	0.0	0.0	93.0	<45	<45
AC-5	6	P-3C	DEP	04D3	2562	0.4	0.0	81.8	<45	<45
AC-5	7	Jet Fighter	T & G	22T1	10538	0.3	0.0	83.9	<45	<45
AC-5	8	Jet Fighter	T & G	10T1	12991	0.3	0.0	82.8	<45	<45
AC-5	9	A-10A	ARR	22A1	1002	0.0	0.0	92.3	<45	<45
AC-5	10	B-737-400*	DEP	04D3	3066	0.1	0.0	83.2	<45	<45
AC-5	11	E-2/C-2	DEP	N04D2	3391	0.1	0.0	82.2	<45	<45
AC-5	12	Jet Fighter	T & G	04T1	15566	0.1	0.0	80.5	<45	<45
AC-5	13	P-3C	DEP	10D3	6359	1.0	0.0	70.8	<45	<45
AC-5	14	B-737-400*	DEP	10D3	6446	0.3	0.0	75.2	<45	<45
AC-5	15	C-12	ARR	22A1	1032	0.1	0.0	78.6	<45	<45
AC-5	16	Jet Fighter	DEP	P22D2	18388	0.0	0.0	83.5	<45	<45
AC-5	17	E-2/C-2	DEP	N10D2	7179	0.3	0.0	74.0	<45	<45
AC-5	18	Jet Fighter	T & G	28T1	18209	0.4	0.0	71.5	<45	<45
AC-5	19	E-2/C-2	T & G	10T1	12967	1.3	0.0	66.4	<45	<45
AC-5	20	E-2/C-2	ARR	N22O1	3001	0.3	0.0	70.8	<45	<45
AC-6	1	Jet Fighter	T & G	10T1	2121	0.3	0.0	106.2	51.2	51.2
AC-6	2	Jet Fighter	T & G	04T1	3004	0.1	0.0	101.4	<45	51.8
AC-6	3	Jet Fighter	ARR	P10O1	2121	0.0	0.0	105.2	<45	52.3
AC-6	4	Jet Fighter	T & G	22T1	6426	0.3	0.0	90.6	<45	52.4
AC-6	5	E-2/C-2	T & G	10T1	1973	1.3	0.0	83.1	<45	52.5
AC-6	6	E-2/C-2	T & G	10T1	2121	0.8	0.0	82.9	<45	52.5
AC-6	7	Jet Fighter	T & G	28T1	9794	0.4	0.0	84.9	<45	52.5
AC-6	8	Jet Fighter	DEP	P10D2	8690	0.0	0.0	93.8	<45	52.6
AC-6	9	Jet Fighter	DEP	P04D2	6438	0.0	0.0	96.3	<45	52.6
AC-6	10	Jet Fighter	ARR	P22O1	6429	0.0	0.0	91.7	<45	52.6
AC-6	11	Jet Fighter	DEP	P28D2	9799	0.1	0.0	89.5	<45	52.6

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-6	12	E-2/C-2	T & G	04T1	2901	0.5	0.0	80.7	<45	52.6
AC-6	13	Jet Fighter	DEP	P22D2	8471	0.0	0.0	90.0	<45	52.7
AC-6	14	E-2/C-2	T & G	04T1	3004	0.4	0.0	80.6	<45	52.7
AC-6	15	P-3C	DEP	10D3	4608	1.0	0.0	75.1	<45	52.7
AC-6	16	E-2/C-2	T & G	28T1	9791	1.9	0.0	71.4	<45	52.7
AC-6	17	A-10A	T & G	10T1	2389	0.1	0.0	83.5	<45	52.7
AC-6	18	Jet Fighter	ARR	P04O1	3303	0.0	0.0	90.6	<45	52.7
AC-6	19	E-2/C-2	T & G	28T1	9793	1.3	0.0	71.8	<45	52.7
AC-6	20	P-3C	DEP	04D3	6421	0.4	0.0	76.4	<45	52.7
AC-7	1	Jet Fighter	T & G	22T1	674	0.3	0.0	115.8	60.5	60.5
AC-7	2	Jet Fighter	ARR	P22O1	695	0.0	0.0	116.0	52.9	61.2
AC-7	3	Jet Fighter	T & G	10T1	2181	0.3	0.0	107.4	52.5	61.8
AC-7	4	Jet Fighter	T & G	04T1	1525	0.1	0.0	108.7	50.0	62.0
AC-7	5	Jet Fighter	DEP	P04D2	876	0.0	0.0	112.7	46.2	62.2
AC-7	6	Jet Fighter	T & G	28T1	4737	0.4	0.0	96.5	<45	62.2
AC-7	7	P-3C	DEP	04D3	975	0.4	0.0	92.8	<45	62.2
AC-7	8	P-3C	ARR	22A1	689	1.0	0.0	89.1	<45	62.3
AC-7	9	Jet Fighter	DEP	P22D2	3252	0.0	0.0	102.0	<45	62.3
AC-7	10	E-2/C-2	T & G	10T1	2034	1.3	0.0	86.0	<45	62.3
AC-7	11	E-2/C-2	T & G	22T1	674	1.2	0.0	85.7	<45	62.3
AC-7	12	Jet Fighter	DEP	P10D2	4771	0.0	0.0	99.6	<45	62.3
AC-7	13	Jet Fighter	DEP	P28D2	5079	0.1	0.0	97.8	<45	62.3
AC-7	14	A-10A	T & G	22T1	691	0.1	0.0	95.3	<45	62.3
AC-7	15	E-2/C-2	DEP	N04D2	1235	0.1	0.0	93.3	<45	62.3
AC-7	16	E-2/C-2	T & G	10T1	2181	0.8	0.0	85.7	<45	62.4
AC-7	17	Jet Fighter	ARR	P28O1	4738	0.1	0.0	96.3	<45	62.4
AC-7	18	E-2/C-2	T & G	22T1	674	0.8	0.0	85.8	<45	62.4
AC-7	19	E-2/C-2	ARR	N22O1	1019	0.3	0.0	89.4	<45	62.4
AC-7	20	B-737-400*	DEP	04D3	1180	0.1	0.0	93.3	<45	62.4
AC-8	1	Jet Fighter	T & G	04T1	1400	0.1	0.0	110.4	51.7	51.7
AC-8	2	Jet Fighter	T & G	10T1	2848	0.3	0.0	104.0	49.1	53.6
AC-8	3	Jet Fighter	T & G	28T1	3082	0.4	0.0	102.1	48.9	54.9
AC-8	4	Jet Fighter	ARR	P04O1	1400	0.0	0.0	110.1	<45	55.2
AC-8	5	Jet Fighter	DEP	P28D2	2905	0.1	0.0	103.0	<45	55.4
AC-8	6	Jet Fighter	DEP	P10D2	3026	0.0	0.0	104.2	<45	55.6
AC-8	7	Jet Fighter	ARR	P10O1	2848	0.0	0.0	103.4	<45	55.7
AC-8	8	P-3C	DEP	28D3	2887	1.6	0.0	84.3	<45	55.7

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-8	9	E-2/C-2	T & G	04T1	1156	0.5	0.0	87.2	<45	55.8
AC-8	10	E-2/C-2	T & G	28T1	2980	1.9	0.0	81.6	<45	55.8
AC-8	11	E-2/C-2	DEP	N28D2	2925	0.5	0.0	87.0	<45	55.9
AC-8	12	P-3C	DEP	10D3	3026	1.0	0.0	83.6	<45	55.9
AC-8	13	E-2/C-2	T & G	10T1	2847	1.3	0.0	82.2	<45	55.9
AC-8	14	E-2/C-2	T & G	28T1	3082	1.3	0.0	81.5	<45	55.9
AC-8	15	B-737-400*	DEP	28D3	2884	0.4	0.0	86.1	<45	56.0
AC-8	16	Jet Fighter	T & G	22T1	8916	0.3	0.0	88.3	<45	56.0
AC-8	17	E-2/C-2	T & G	10T1	2847	0.8	0.0	82.4	<45	56.0
AC-8	18	E-2/C-2	T & G	04T1	1400	0.4	0.0	86.0	<45	56.0
AC-8	19	Jet Fighter	ARR	P28O1	3097	0.1	0.0	92.5	<45	56.0
AC-8	20	B-737-400*	DEP	10D3	3026	0.3	0.0	83.8	<45	56.0
AC-9	1	Jet Fighter	T & G	28T1	1027	0.4	0.0	112.6	59.4	59.4
AC-9	2	Jet Fighter	T & G	04T1	1032	0.1	0.0	112.6	53.9	60.5
AC-9	3	Jet Fighter	ARR	P04O1	1032	0.0	0.0	112.7	46.3	60.7
AC-9	4	E-2/C-2	T & G	28T1	665	1.9	0.0	92.4	45.7	60.8
AC-9	5	Jet Fighter	T & G	10T1	3273	0.3	0.0	100.3	45.4	60.9
AC-9	6	Jet Fighter	DEP	P28D2	3318	0.1	0.0	102.6	<45	61.0
AC-9	7	E-2/C-2	T & G	28T1	1027	1.3	0.0	89.5	<45	61.0
AC-9	8	A-10A	T & G	28T1	958	0.2	0.0	97.9	<45	61.1
AC-9	9	Jet Fighter	ARR	P10O1	3283	0.0	0.0	101.1	<45	61.1
AC-9	10	P-3C	DEP	28D3	3348	1.6	0.0	82.7	<45	61.1
AC-9	11	Jet Fighter	ARR	P28O1	977	0.1	0.0	96.1	<45	61.1
AC-9	12	E-2/C-2	T & G	04T1	672	0.5	0.0	86.3	<45	61.1
AC-9	13	Jet Fighter	DEP	P10D2	5218	0.0	0.0	96.8	<45	61.1
AC-9	14	E-2/C-2	DEP	N28D2	3406	0.5	0.0	85.7	<45	61.1
AC-9	15	Jet Fighter	T & G	22T1	8663	0.3	0.0	88.1	<45	61.1
AC-9	16	B-737-400*	DEP	28D3	3414	0.4	0.0	84.9	<45	61.1
AC-9	17	E-2/C-2	T & G	04T1	1032	0.4	0.0	84.1	<45	61.1
AC-9	18	Jet Fighter	DEP	P22D2	8277	0.0	0.0	93.1	<45	61.1
AC-9	19	E-2/C-2	T & G	10T1	3273	1.3	0.0	76.6	<45	61.1
AC-9	20	E-2/C-2	T & G	10T1	3273	0.8	0.0	76.9	<45	61.1
AC-10	1	Jet Fighter	DEP	P22D2	3592	0.0	0.0	104.2	<45	<45
AC-10	2	Jet Fighter	T & G	04T1	3974	0.1	0.0	96.4	<45	<45
AC-10	3	Jet Fighter	T & G	28T1	7964	0.4	0.0	89.3	<45	<45
AC-10	4	P-3C	DEP	22D3	2607	1.0	0.0	83.8	<45	<45
AC-10	5	E-2/C-2	DEP	N22D2	2919	0.3	0.0	86.3	<45	<45

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-10	6	Jet Fighter	ARR	P04O1	3746	0.0	0.0	97.6	<45	<45
AC-10	7	B-737-400*	DEP	22D3	2977	0.3	0.0	84.7	<45	<45
AC-10	8	Jet Fighter	T & G	22T1	11315	0.3	0.0	84.4	<45	<45
AC-10	9	E-2/C-2	T & G	28T1	7926	1.9	0.0	70.8	<45	<45
AC-10	10	Jet Fighter	ARR	P28O1	7965	0.1	0.0	84.9	<45	<45
AC-10	11	E-2/C-2	T & G	28T1	7964	1.3	0.0	71.2	<45	<45
AC-10	12	Jet Fighter	DEP	P28D2	14454	0.1	0.0	83.5	<45	<45
AC-10	13	Jet Fighter	T & G	10T1	14462	0.3	0.0	75.1	<45	<45
AC-10	14	P-3C	DEP	28D3	14453	1.6	0.0	66.9	<45	<45
AC-10	15	E-2/C-2	ARR	N04O1	3700	0.1	0.0	76.8	<45	45.0
AC-10	16	P-3C	ARR	04A1	3681	0.4	0.0	72.0	<45	45.0
AC-10	17	E-2/C-2	T & G	04T1	3981	0.5	0.0	71.2	<45	45.0
AC-10	18	Jet Fighter	DEP	P04D2	12974	0.0	0.0	85.3	<45	45.0
AC-10	19	E-2/C-2	DEP	N28D2	14471	0.5	0.0	70.8	<45	45.0
AC-10	20	E-2/C-2	T & G	22T1	11288	1.2	0.0	67.2	<45	45.0
AC-11	1	Jet Fighter	DEP	P22D2	9883	0.0	0.0	89.4	<45	<45
AC-11	2	P-3C	ARR	04A1	2346	0.4	0.0	78.0	<45	<45
AC-11	3	Jet Fighter	ARR	P04O1	2596	0.0	0.0	88.1	<45	<45
AC-11	4	B-737-400*	ARR	04A1	2320	0.1	0.0	79.4	<45	<45
AC-11	5	Jet Fighter	T & G	28T1	19482	0.4	0.0	73.4	<45	<45
AC-11	6	P-3C	DEP	22D3	9410	1.0	0.0	69.0	<45	<45
AC-11	7	Jet Fighter	T & G	22T1	21445	0.3	0.0	74.5	<45	<45
AC-11	8	E-2/C-2	DEP	N22D2	9563	0.3	0.0	73.0	<45	<45
AC-11	9	Jet Fighter	T & G	04T1	15505	0.1	0.0	77.3	<45	<45
AC-11	10	B-737-400*	DEP	22D3	9558	0.3	0.0	71.0	<45	<45
AC-11	11	E-2/C-2	T & G	28T1	19482	1.3	0.0	60.0	<45	<45
AC-11	12	A-10A	ARR	04A1	2319	0.0	0.0	82.1	<45	<45
AC-11	13	C-12	ARR	04A1	2330	0.1	0.0	73.0	<45	<45
AC-11	14	Jet Fighter	DEP	P28D2	25092	0.1	0.0	72.2	<45	<45
AC-11	15	P-3C	DEP	28D3	25054	1.6	0.0	58.4	<45	<45
AC-11	16	E-2/C-2	DEP	N28D2	25075	0.5	0.0	62.2	<45	<45
AC-11	17	Jet Fighter	ARR	P22O1	21414	0.0	0.0	72.3	<45	<45
AC-11	18	Jet Fighter	ARR	P28O1	19479	0.1	0.0	70.1	<45	<45
AC-11	19	E-2/C-2	T & G	28T1	19467	1.9	0.0	55.5	<45	<45
AC-11	20	E-2/C-2	T & G	22T1	21445	0.8	0.0	58.9	<45	<45
AC-12	1	Jet Fighter	T & G	28T1	3216	0.4	0.0	104.1	51.0	51.0
AC-12	2	Jet Fighter	T & G	10T1	3099	0.3	0.0	102.4	47.5	52.6

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-12	3	Jet Fighter	DEP	P28D2	3149	0.1	0.0	104.4	<45	53.1
AC-12	4	Jet Fighter	T & G	04T1	3850	0.1	0.0	102.0	<45	53.5
AC-12	5	Jet Fighter	T & G	22T1	4279	0.3	0.0	98.5	<45	53.9
AC-12	6	Jet Fighter	DEP	P10D2	3104	0.0	0.0	105.8	<45	54.2
AC-12	7	Jet Fighter	DEP	P22D2	4205	0.0	0.0	100.6	<45	54.3
AC-12	8	E-2/C-2	T & G	28T1	3149	1.9	0.0	83.8	<45	54.4
AC-12	9	P-3C	DEP	28D3	3114	1.6	0.0	84.0	<45	54.5
AC-12	10	Jet Fighter	ARR	P10O1	3214	0.0	0.0	99.0	<45	54.5
AC-12	11	Jet Fighter	ARR	P28O1	3244	0.1	0.0	97.1	<45	54.6
AC-12	12	Jet Fighter	DEP	P04D2	4168	0.0	0.0	101.9	<45	54.7
AC-12	13	E-2/C-2	T & G	28T1	3244	1.3	0.0	83.8	<45	54.7
AC-12	14	E-2/C-2	T & G	10T1	3099	1.3	0.0	83.5	<45	54.8
AC-12	15	Jet Fighter	ARR	P04O1	3850	0.0	0.0	101.1	<45	54.8
AC-12	16	E-2/C-2	DEP	N28D2	3134	0.5	0.0	86.4	<45	54.8
AC-12	17	E-2/C-2	T & G	10T1	3099	0.8	0.0	83.7	<45	54.9
AC-12	18	P-3C	DEP	22D3	4186	1.0	0.0	80.8	<45	54.9
AC-12	19	B-737-400*	DEP	28D3	3101	0.4	0.0	84.2	<45	54.9
AC-12	20	E-2/C-2	T & G	22T1	4207	1.2	0.0	79.3	<45	54.9
AC-13	1	Jet Fighter	T & G	22T1	1188	0.3	0.0	113.3	58.0	58.0
AC-13	2	Jet Fighter	T & G	28T1	1570	0.4	0.0	109.8	56.6	60.4
AC-13	3	Jet Fighter	DEP	P22D2	1248	0.0	0.0	117.2	54.1	61.3
AC-13	4	Jet Fighter	T & G	10T1	1848	0.3	0.0	108.6	53.6	62.0
AC-13	5	Jet Fighter	T & G	04T1	1313	0.1	0.0	111.9	53.2	62.5
AC-13	6	Jet Fighter	DEP	P28D2	1570	0.1	0.0	111.1	50.1	62.8
AC-13	7	Jet Fighter	DEP	P04D2	1248	0.0	0.0	115.8	49.3	63.0
AC-13	8	Jet Fighter	ARR	P28O1	1570	0.1	0.0	107.3	46.3	63.1
AC-13	9	Jet Fighter	DEP	P10D2	1674	0.0	0.0	108.4	45.7	63.1
AC-13	10	E-2/C-2	T & G	22T1	1154	1.2	0.0	93.7	45.0	63.2
AC-13	11	E-2/C-2	T & G	22T1	1240	0.8	0.0	93.2	<45	63.3
AC-13	12	P-3C	DEP	10D3	1619	1.0	0.0	90.5	<45	63.3
AC-13	13	P-3C	DEP	22D3	1104	1.0	0.0	90.9	<45	63.3
AC-13	14	Jet Fighter	ARR	P22O1	1477	0.0	0.0	104.2	<45	63.3
AC-13	15	E-2/C-2	T & G	28T1	1570	1.9	0.0	87.0	<45	63.4
AC-13	16	P-3C	DEP	04D3	1122	0.4	0.0	92.9	<45	63.4
AC-13	17	E-2/C-2	DEP	N22D2	1104	0.3	0.0	93.4	<45	63.4
AC-13	18	E-2/C-2	T & G	28T1	1570	1.3	0.0	87.2	<45	63.4
AC-13	19	E-2/C-2	DEP	N10D2	1671	0.3	0.0	92.4	<45	63.4
AC-13	20	E-2/C-2	T & G	10T1	1674	1.3	0.0	86.6	<45	63.4

Wallops Island: Baseline										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-14	1	Jet Fighter	T & G	28T1	1250	0.4	0.0	111.9	58.7	58.7
AC-14	2	Jet Fighter	T & G	22T1	1261	0.3	0.0	110.9	55.6	60.4
AC-14	3	Jet Fighter	T & G	04T1	899	0.1	0.0	113.4	54.8	61.5
AC-14	4	Jet Fighter	ARR	P28O1	1250	0.1	0.0	111.8	50.8	61.8
AC-14	5	Jet Fighter	DEP	P22D2	1058	0.0	0.0	110.6	47.6	62.0
AC-14	6	Jet Fighter	ARR	P04O1	912	0.0	0.0	113.7	47.3	62.1
AC-14	7	P-3C	DEP	22D3	1126	1.0	0.0	92.2	<45	62.2
AC-14	8	E-2/C-2	T & G	28T1	973	1.9	0.0	88.8	<45	62.2
AC-14	9	E-2/C-2	T & G	22T1	988	1.2	0.0	89.6	<45	62.3
AC-14	10	E-2/C-2	DEP	N22D2	1215	0.3	0.0	93.6	<45	62.3
AC-14	11	E-2/C-2	T & G	28T1	1250	1.3	0.0	87.2	<45	62.3
AC-14	12	A-10A	T & G	22T1	1040	0.1	0.0	96.9	<45	62.3
AC-14	13	B-737-400*	DEP	22D3	1282	0.3	0.0	92.9	<45	62.3
AC-14	14	E-2/C-2	T & G	22T1	1261	0.8	0.0	88.0	<45	62.3
AC-14	15	Jet Fighter	DEP	P04D2	3034	0.0	0.0	102.6	<45	62.4
AC-14	16	P-3C	ARR	04A1	908	0.4	0.0	86.6	<45	62.4
AC-14	17	Jet Fighter	T & G	10T1	8699	0.3	0.0	88.4	<45	62.4
AC-14	18	E-2/C-2	T & G	04T1	899	0.5	0.0	84.1	<45	62.4
AC-14	19	Jet Fighter	ARR	P22O1	1256	0.0	0.0	94.7	<45	62.4
AC-14	20	E-2/C-2	ARR	N04O1	909	0.1	0.0	88.9	<45	62.4
AC-15	1	Jet Fighter	T & G	22T1	8782	0.3	0.0	88.9	<45	<45
AC-15	2	Jet Fighter	T & G	28T1	12002	0.4	0.0	84.6	<45	<45
AC-15	3	Jet Fighter	T & G	04T1	11567	0.1	0.0	86.3	<45	<45
AC-15	4	Jet Fighter	DEP	P22D2	10746	0.0	0.0	89.4	<45	<45
AC-15	5	Jet Fighter	ARR	P22O1	8751	0.0	0.0	87.0	<45	<45
AC-15	6	Jet Fighter	ARR	P28O1	12002	0.1	0.0	84.4	<45	<45
AC-15	7	P-3C	DEP	22D3	10645	1.0	0.0	72.6	<45	<45
AC-15	8	E-2/C-2	T & G	22T1	8746	1.2	0.0	71.3	<45	<45
AC-15	9	E-2/C-2	T & G	28T1	11975	1.9	0.0	68.5	<45	<45
AC-15	10	E-2/C-2	DEP	N22D2	10683	0.3	0.0	75.8	<45	<45
AC-15	11	E-2/C-2	T & G	22T1	8782	0.8	0.0	71.6	<45	<45
AC-15	12	Jet Fighter	T & G	10T1	19882	0.3	0.0	75.0	<45	<45
AC-15	13	E-2/C-2	T & G	28T1	12002	1.3	0.0	68.2	<45	<45
AC-15	14	Jet Fighter	ARR	P04O1	10597	0.0	0.0	85.8	<45	<45
AC-15	15	P-3C	DEP	28D3	19858	1.6	0.0	66.3	<45	<45
AC-15	16	Jet Fighter	DEP	P04D2	14574	0.0	0.0	85.2	<45	<45
AC-15	17	Jet Fighter	DEP	P28D2	19858	0.1	0.0	79.0	<45	<45

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-15	18	Jet Fighter	DEP	P10D2	19867	0.0	0.0	79.8	<45	<45
AC-15	19	B-737-400*	DEP	22D3	10688	0.3	0.0	72.0	<45	<45
AC-15	20	E-2/C-2	T & G	04T1	11567	0.5	0.0	68.3	<45	<45
AC-16	1	P-3C	ARR	28A1	1456	1.6	0.0	87.6	<45	<45
AC-16	2	Jet Fighter	T & G	28T1	18612	0.4	0.0	85.3	<45	<45
AC-16	3	B-737-400*	ARR	28A1	1406	0.4	0.0	84.9	<45	<45
AC-16	4	Jet Fighter	ARR	P28O1	2138	0.1	0.0	90.3	<45	<45
AC-16	5	A-10A	ARR	28A1	1407	0.0	0.0	91.2	<45	<45
AC-16	6	Jet Fighter	T & G	10T1	23084	0.3	0.0	80.3	<45	<45
AC-16	7	Jet Fighter	DEP	P10D2	12242	0.0	0.0	87.6	<45	<45
AC-16	8	C-12	ARR	28A1	1422	0.2	0.0	79.9	<45	<45
AC-16	9	Jet Fighter	T & G	22T1	16596	0.3	0.0	78.7	<45	<45
AC-16	10	Jet Fighter	DEP	P28D2	26733	0.1	0.0	82.9	<45	<45
AC-16	11	P-3C	DEP	10D3	11881	1.0	0.0	67.5	<45	<45
AC-16	12	E-2/C-2	DEP	N10D2	12009	0.3	0.0	71.1	<45	<45
AC-16	13	Jet Fighter	ARR	P22O1	16888	0.0	0.0	78.6	<45	<45
AC-16	14	Jet Fighter	ARR	P10O1	23396	0.0	0.0	78.0	<45	<45
AC-16	15	E-2/C-2	T & G	28T1	18613	1.9	0.0	61.9	<45	<45
AC-16	16	E-2/C-2	T & G	22T1	16584	1.2	0.0	64.0	<45	<45
AC-16	17	P-3C	DEP	22D3	26055	1.0	0.0	64.6	<45	<45
AC-16	18	B-737-400*	DEP	10D3	11979	0.3	0.0	69.2	<45	<45
AC-16	19	Jet Fighter	T & G	04T1	25985	0.1	0.0	72.9	<45	<45
AC-16	20	E-2/C-2	T & G	10T1	23071	1.3	0.0	62.2	<45	<45
AC-17	1	P-3C	ARR	28A1	3066	1.6	0.0	79.0	<45	<45
AC-17	2	Jet Fighter	T & G	28T1	14755	0.4	0.0	83.8	<45	<45
AC-17	3	Jet Fighter	DEP	P10D2	10377	0.0	0.0	89.9	<45	<45
AC-17	4	Jet Fighter	ARR	P28O1	3281	0.1	0.0	87.5	<45	<45
AC-17	5	Jet Fighter	T & G	22T1	13958	0.3	0.0	81.6	<45	<45
AC-17	6	B-737-400*	ARR	28A1	3046	0.4	0.0	78.8	<45	<45
AC-17	7	Jet Fighter	T & G	10T1	20271	0.3	0.0	80.6	<45	<45
AC-17	8	Jet Fighter	DEP	P28D2	23389	0.1	0.0	84.3	<45	<45
AC-17	9	P-3C	DEP	10D3	10034	1.0	0.0	69.8	<45	<45
AC-17	10	E-2/C-2	DEP	N10D2	10180	0.3	0.0	73.5	<45	<45
AC-17	11	C-12	ARR	28A1	3055	0.2	0.0	75.0	<45	<45
AC-17	12	Jet Fighter	ARR	P22O1	14130	0.0	0.0	81.5	<45	<45
AC-17	13	P-3C	DEP	22D3	22943	1.0	0.0	67.4	<45	<45
AC-17	14	E-2/C-2	T & G	28T1	14757	1.9	0.0	64.2	<45	<45

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-17	15	E-2/C-2	T & G	22T1	13940	1.2	0.0	66.0	<45	<45
AC-17	16	B-737-400*	DEP	10D3	10029	0.3	0.0	71.3	<45	<45
AC-17	17	Jet Fighter	T & G	04T1	22987	0.1	0.0	75.0	<45	<45
AC-17	18	B-737-400*	DEP	22D3	22943	0.3	0.0	70.7	<45	<45
AC-17	19	E-2/C-2	T & G	28T1	14757	1.3	0.0	63.6	<45	<45
AC-17	20	E-2/C-2	T & G	22T1	13959	0.8	0.0	65.7	<45	<45
AC-18	1	Jet Fighter	T & G	28T1	21250	0.4	0.0	82.4	<45	<45
AC-18	2	P-3C	ARR	28A1	5853	1.6	0.0	70.4	<45	<45
AC-18	3	Jet Fighter	ARR	P28O1	6151	0.1	0.0	82.5	<45	<45
AC-18	4	Jet Fighter	T & G	10T1	27279	0.3	0.0	76.5	<45	<45
AC-18	5	Jet Fighter	DEP	P10D2	17181	0.0	0.0	82.6	<45	<45
AC-18	6	Jet Fighter	DEP	P28D2	30218	0.1	0.0	79.8	<45	<45
AC-18	7	Jet Fighter	T & G	22T1	21003	0.3	0.0	73.5	<45	<45
AC-18	8	B-737-400*	ARR	28A1	5840	0.4	0.0	70.8	<45	<45
AC-18	9	P-3C	DEP	10D3	16965	1.0	0.0	64.3	<45	<45
AC-18	10	E-2/C-2	DEP	N10D2	17062	0.3	0.0	68.0	<45	<45
AC-18	11	E-2/C-2	T & G	28T1	21252	1.9	0.0	59.9	<45	<45
AC-18	12	C-12	ARR	28A1	5843	0.2	0.0	68.4	<45	<45
AC-18	13	E-2/C-2	T & G	10T1	27267	1.3	0.0	60.3	<45	<45
AC-18	14	E-2/C-2	T & G	28T1	21252	1.3	0.0	59.7	<45	<45
AC-18	15	P-3C	DEP	28D3	30218	1.6	0.0	58.0	<45	<45
AC-18	16	Jet Fighter	ARR	P22O1	21159	0.0	0.0	73.6	<45	<45
AC-18	17	B-737-400*	DEP	10D3	16946	0.3	0.0	65.1	<45	<45
AC-18	18	E-2/C-2	T & G	22T1	20991	1.2	0.0	59.1	<45	<45
AC-18	19	Jet Fighter	ARR	P10O1	27584	0.0	0.0	73.0	<45	<45
AC-18	20	E-2/C-2	ARR	N28O1	14777	0.5	0.0	61.4	<45	<45
AC-19	1	Jet Fighter	T & G	28T1	10794	0.4	0.0	85.8	<45	<45
AC-19	2	Jet Fighter	T & G	22T1	12655	0.3	0.0	83.8	<45	<45
AC-19	3	Jet Fighter	ARR	P28O1	11319	0.1	0.0	87.5	<45	<45
AC-19	4	Jet Fighter	DEP	P10D2	15218	0.0	0.0	84.1	<45	<45
AC-19	5	Jet Fighter	T & G	10T1	19756	0.3	0.0	75.5	<45	<45
AC-19	6	Jet Fighter	DEP	P28D2	20735	0.1	0.0	80.8	<45	<45
AC-19	7	E-2/C-2	T & G	28T1	10785	1.9	0.0	66.4	<45	<45
AC-19	8	Jet Fighter	T & G	04T1	20517	0.1	0.0	78.1	<45	<45
AC-19	9	E-2/C-2	T & G	22T1	12630	1.2	0.0	68.1	<45	<45
AC-19	10	Jet Fighter	ARR	P22O1	12655	0.0	0.0	82.4	<45	<45
AC-19	11	B-737-400*	DEP	28D3	20735	0.4	0.0	71.6	<45	<45

Wallops Island: Baseline										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-19	12	P-3C	DEP	22D3	20516	1.0	0.0	67.5	<45	<45
AC-19	13	E-2/C-2	T & G	28T1	10796	1.3	0.0	65.9	<45	<45
AC-19	14	E-2/C-2	T & G	22T1	12655	0.8	0.0	68.0	<45	<45
AC-19	15	P-3C	DEP	10D3	15122	1.0	0.0	66.4	<45	<45
AC-19	16	P-3C	DEP	28D3	20735	1.6	0.0	64.5	<45	<45
AC-19	17	Jet Fighter	DEP	P22D2	20523	0.0	0.0	79.5	<45	<45
AC-19	18	E-2/C-2	DEP	N10D2	15165	0.3	0.0	70.0	<45	<45
AC-19	19	E-2/C-2	T & G	10T1	19740	1.3	0.0	63.5	<45	<45
AC-19	20	E-2/C-2	DEP	N22D2	20517	0.3	0.0	69.3	<45	<45
AC-20	1	Jet Fighter	T & G	28T1	27869	0.4	0.0	74.1	<45	<45
AC-20	2	Jet Fighter	ARR	P28O1	19159	0.1	0.0	75.0	<45	<45
AC-20	3	Jet Fighter	T & G	22T1	30094	0.3	0.0	67.0	<45	<45
AC-20	4	Jet Fighter	DEP	P28D2	37716	0.1	0.0	72.1	<45	<45
AC-20	5	E-2/C-2	T & G	28T1	27868	1.9	0.0	57.6	<45	<45
AC-20	6	Jet Fighter	T & G	10T1	35915	0.3	0.0	65.8	<45	<45
AC-20	7	Jet Fighter	DEP	P10D2	27833	0.0	0.0	73.5	<45	<45
AC-20	8	E-2/C-2	T & G	28T1	27870	1.3	0.0	58.0	<45	<45
AC-20	9	E-2/C-2	T & G	22T1	30083	1.2	0.0	57.7	<45	<45
AC-20	10	P-3C	DEP	10D3	27723	1.0	0.0	57.7	<45	<45
AC-20	11	P-3C	DEP	22D3	37975	1.0	0.0	57.8	<45	<45
AC-20	12	P-3C	DEP	28D3	37716	1.6	0.0	55.7	<45	<45
AC-20	13	E-2/C-2	DEP	N10D2	27757	0.3	0.0	61.8	<45	<45
AC-20	14	E-2/C-2	T & G	10T1	35906	1.3	0.0	55.4	<45	<45
AC-20	15	B-737-400*	DEP	28D3	37716	0.4	0.0	59.4	<45	<45
AC-20	16	E-2/C-2	DEP	N28D2	37716	0.5	0.0	58.0	<45	<45
AC-20	17	E-2/C-2	T & G	22T1	30094	0.8	0.0	56.3	<45	<45
AC-20	18	Jet Fighter	T & G	04T1	37988	0.1	0.0	64.4	<45	<45
AC-20	19	P-3C	DEP	04D3	37978	0.4	0.0	58.3	<45	<45
AC-20	20	E-2/C-2	T & G	04T1	37980	0.5	0.0	56.6	<45	<45
AC-21	1	Jet Fighter	T & G	22T1	22652	0.3	0.0	79.7	<45	<45
AC-21	2	Jet Fighter	DEP	P22D2	19394	0.0	0.0	83.1	<45	<45
AC-21	3	Jet Fighter	T & G	04T1	22691	0.1	0.0	76.3	<45	<45
AC-21	4	Jet Fighter	T & G	28T1	25644	0.4	0.0	69.8	<45	<45
AC-21	5	Jet Fighter	ARR	P22O1	22633	0.0	0.0	77.6	<45	<45
AC-21	6	P-3C	DEP	22D3	19270	1.0	0.0	62.9	<45	<45
AC-21	7	E-2/C-2	T & G	22T1	22638	1.2	0.0	61.7	<45	<45
AC-21	8	E-2/C-2	T & G	28T1	25632	1.9	0.0	59.5	<45	<45

Wallops Island: Baseline										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-21	9	E-2/C-2	DEP	N22D2	19303	0.3	0.0	66.6	<45	<45
AC-21	10	E-2/C-2	T & G	22T1	22652	0.8	0.0	61.0	<45	<45
AC-21	11	E-2/C-2	T & G	28T1	25644	1.3	0.0	58.8	<45	<45
AC-21	12	Jet Fighter	DEP	P04D2	27771	0.0	0.0	76.7	<45	<45
AC-21	13	P-3C	DEP	28D3	33523	1.6	0.0	57.5	<45	<45
AC-21	14	Jet Fighter	T & G	10T1	33528	0.3	0.0	64.8	<45	<45
AC-21	15	P-3C	DEP	10D3	33523	1.0	0.0	58.8	<45	<45
AC-21	16	E-2/C-2	T & G	10T1	33527	1.3	0.0	56.8	<45	<45
AC-21	17	E-2/C-2	T & G	04T1	22691	0.5	0.0	60.4	<45	<45
AC-21	18	B-737-400*	DEP	22D3	19313	0.3	0.0	63.1	<45	<45
AC-21	19	Jet Fighter	ARR	P28O1	25644	0.1	0.0	68.7	<45	<45
AC-21	20	E-2/C-2	DEP	N28D2	33524	0.5	0.0	59.7	<45	<45
AC-22	1	Jet Fighter	DEP	P28D2	5477	0.1	0.0	98.6	<45	<45
AC-22	2	P-3C	ARR	10A1	2297	1.0	0.0	79.7	<45	<45
AC-22	3	P-3C	DEP	28D3	3975	1.6	0.0	76.1	<45	<45
AC-22	4	B-737-400*	DEP	28D3	4099	0.4	0.0	80.8	<45	<45
AC-22	5	E-2/C-2	DEP	N28D2	4256	0.5	0.0	78.3	<45	<45
AC-22	6	B-737-400*	ARR	10A1	2266	0.3	0.0	80.6	<45	<45
AC-22	7	Jet Fighter	ARR	P10O1	2166	0.0	0.0	88.0	<45	<45
AC-22	8	Jet Fighter	DEP	P22D2	11289	0.0	0.0	88.1	<45	<45
AC-22	9	Jet Fighter	T & G	10T1	18371	0.3	0.0	78.7	<45	<45
AC-22	10	Jet Fighter	T & G	28T1	23151	0.4	0.0	75.0	<45	<45
AC-22	11	E-2/C-2	ARR	N10O1	1727	0.3	0.0	74.5	<45	<45
AC-22	12	Jet Fighter	DEP	P10D2	17102	0.0	0.0	81.7	<45	<45
AC-22	13	P-3C	DEP	22D3	8556	1.0	0.0	67.3	<45	<45
AC-22	14	A-10A	ARR	10A1	2266	0.0	0.0	83.9	<45	<45
AC-22	15	C-12	ARR	10A1	2276	0.1	0.0	74.7	<45	<45
AC-22	16	B-737-400*	DEP	22D3	9058	0.3	0.0	71.5	<45	<45
AC-22	17	E-2/C-2	DEP	N22D2	10118	0.3	0.0	70.1	<45	<45
AC-22	18	C-12	DEP	28D3	3813	0.2	0.0	70.3	<45	<45
AC-22	19	P-3C	DEP	10D3	12976	1.0	0.0	62.8	<45	<45
AC-22	20	Jet Fighter	ARR	P28O1	23118	0.1	0.0	72.8	<45	<45

Wallops Island: Alt 2A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-1	1	E-2/C-2	Crew Swap	22SW	4742	3.6	0.4	80.0	<45	<45
AC-1	2	E-2/C-2	Crew Swap	04SW	6050	2.9	0.3	79.5	<45	<45
AC-1	3	Jet Fighter	T & G	10T1	8777	0.3	0.0	87.0	<45	<45
AC-1	4	E-2/C-2	FCLP	04F1	18750	20.7	2.4	59.8	<45	<45
AC-1	5	Jet Fighter	ARR	P10O1	9278	0.0	0.0	88.9	<45	<45
AC-1	6	Jet Fighter	DEP	P10D2	11460	0.0	0.0	88.1	<45	<45
AC-1	7	Jet Fighter	DEP	P28D2	13597	0.1	0.0	85.7	<45	<45
AC-1	8	E-2/C-2	FCLP	22F1	24678	26.4	3.1	56.3	<45	<45
AC-1	9	Jet Fighter	T & G	28T1	17787	0.4	0.0	76.2	<45	<45
AC-1	10	P-3C	DEP	10D3	5654	1.0	0.0	71.9	<45	<45
AC-1	11	E-2/C-2	DEP	N04D2	10742	0.7	0.1	69.8	<45	<45
AC-1	12	P-3C	DEP	28D3	12683	1.6	0.0	68.3	<45	<45
AC-1	13	Jet Fighter	DEP	P04D2	12312	0.0	0.0	87.2	<45	<45
AC-1	14	E-2/C-2	DEP	N28D2	13506	0.5	0.0	71.5	<45	<45
AC-1	15	B-737-400*	DEP	10D3	7434	0.3	0.0	73.5	<45	<45
AC-1	16	E-2/C-2	ARR	N22O1	6081	0.9	0.1	65.1	<45	<45
AC-1	17	Jet Fighter	T & G	04T1	16808	0.1	0.0	76.7	<45	<45
AC-1	18	E-2/C-2	T & G	10T1	8766	1.3	0.0	65.7	<45	<45
AC-1	19	E-2/C-2	DEP	N22D2	24678	0.9	0.1	63.0	<45	<45
AC-1	20	E-2/C-2	T & G	10T1	8781	0.8	0.0	66.6	<45	<45
AC-2	1	Jet Fighter	DEP	P28D2	3181	0.1	0.0	105.6	<45	<45
AC-2	2	Jet Fighter	ARR	P10O1	1303	0.0	0.0	105.4	<45	46.8
AC-2	3	P-3C	DEP	28D3	1710	1.6	0.0	87.4	<45	47.6
AC-2	4	P-3C	ARR	10A1	865	1.0	0.0	88.8	<45	48.3
AC-2	5	E-2/C-2	Crew Swap	22SW	6703	3.6	0.4	78.9	<45	48.7
AC-2	6	E-2/C-2	Crew Swap	04SW	4977	2.9	0.3	79.4	<45	49.0
AC-2	7	E-2/C-2	DEP	N28D2	2480	0.5	0.0	87.1	<45	49.2
AC-2	8	B-737-400*	ARR	10A1	824	0.3	0.0	89.1	<45	49.4
AC-2	9	B-737-400*	DEP	28D3	2257	0.4	0.0	86.8	<45	49.5
AC-2	10	Jet Fighter	T & G	10T1	7671	0.3	0.0	88.3	<45	49.6
AC-2	11	Jet Fighter	T & G	28T1	12579	0.4	0.0	83.6	<45	49.6
AC-2	12	E-2/C-2	FCLP	04F1	14422	20.7	2.4	62.7	<45	49.7
AC-2	13	A-10A	ARR	10A1	809	0.0	0.0	95.2	<45	49.7
AC-2	14	E-2/C-2	FCLP	22F1	21394	26.4	3.1	56.9	<45	49.7
AC-2	15	E-2/C-2	ARR	N10O1	1284	0.3	0.0	78.3	<45	49.7
AC-2	16	Jet Fighter	DEP	P10D2	15779	0.0	0.0	86.7	<45	49.8
AC-2	17	C-12	ARR	10A1	845	0.1	0.0	81.5	<45	49.8
AC-2	18	E-2/C-2	DEP	N22D2	13141	0.9	0.1	69.7	<45	49.8

Wallops Island: Alt 2A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-2	19	Jet Fighter	T & G	04T1	12515	0.1	0.0	81.8	<45	49.8
AC-2	20	Jet Fighter	DEP	P22D2	13643	0.0	0.0	86.0	<45	49.8
AC-3	1	E-2/C-2	Crew Swap	22SW	1951	3.6	0.4	86.8	46.4	46.4
AC-3	2	E-2/C-2	Crew Swap	04SW	1812	2.9	0.3	82.6	<45	47.6
AC-3	3	Jet Fighter	DEP	P28D2	7378	0.1	0.0	95.3	<45	47.8
AC-3	4	Jet Fighter	T & G	28T1	14817	0.4	0.0	86.0	<45	47.9
AC-3	5	Jet Fighter	DEP	P22D2	7745	0.0	0.0	93.8	<45	48.0
AC-3	6	E-2/C-2	DEP	N22D2	6604	0.9	0.1	74.5	<45	48.0
AC-3	7	E-2/C-2	FCLP	04F1	15574	20.7	2.4	60.0	<45	48.1
AC-3	8	E-2/C-2	DEP	N28D2	6980	0.5	0.0	77.4	<45	48.1
AC-3	9	P-3C	DEP	28D3	8116	1.6	0.0	72.6	<45	48.1
AC-3	10	Jet Fighter	T & G	10T1	13489	0.3	0.0	78.4	<45	48.1
AC-3	11	E-2/C-2	FCLP	22F1	23369	26.4	3.1	54.8	<45	48.1
AC-3	12	P-3C	DEP	22D3	5524	1.0	0.0	72.3	<45	48.2
AC-3	13	B-737-400*	DEP	22D3	5749	0.3	0.0	76.8	<45	48.2
AC-3	14	Jet Fighter	ARR	P10O1	6490	0.0	0.0	84.3	<45	48.2
AC-3	15	Jet Fighter	T & G	04T1	13046	0.1	0.0	80.3	<45	48.2
AC-3	16	B-737-400*	DEP	28D3	8271	0.4	0.0	74.4	<45	48.2
AC-3	17	E-2/C-2	DEP	N22D2	6604	0.3	0.0	74.5	<45	48.2
AC-3	18	Jet Fighter	ARR	P28O1	14810	0.1	0.0	80.1	<45	48.2
AC-3	19	Jet Fighter	DEP	P10D2	19642	0.0	0.0	81.3	<45	48.2
AC-3	20	E-2/C-2	T & G	28T1	14797	1.9	0.0	63.8	<45	48.2
AC-4	1	E-2/C-2	Crew Swap	04SW	2301	2.9	0.3	75.9	<45	<45
AC-4	2	E-2/C-2	Crew Swap	22SW	9216	3.6	0.4	74.2	<45	<45
AC-4	3	Jet Fighter	DEP	P22D2	8419	0.0	0.0	92.8	<45	<45
AC-4	4	E-2/C-2	DEP	N22D2	7509	0.9	0.1	74.1	<45	<45
AC-4	5	Jet Fighter	T & G	28T1	19341	0.4	0.0	77.4	<45	<45
AC-4	6	E-2/C-2	ARR	N04O1	2748	0.7	0.1	70.9	<45	<45
AC-4	7	P-3C	DEP	22D3	7019	1.0	0.0	70.6	<45	<45
AC-4	8	Jet Fighter	T & G	04T1	15883	0.1	0.0	79.0	<45	<45
AC-4	9	B-737-400*	DEP	22D3	7086	0.3	0.0	74.9	<45	<45
AC-4	10	E-2/C-2	DEP	N22D2	7509	0.3	0.0	74.1	<45	<45
AC-4	11	Jet Fighter	DEP	P28D2	18643	0.1	0.0	79.8	<45	<45
AC-4	12	E-2/C-2	FCLP	04F1	18718	20.7	2.4	51.3	<45	<45
AC-4	13	E-2/C-2	FCLP	22F1	26015	26.4	3.1	49.5	<45	<45
AC-4	14	Jet Fighter	ARR	P04O1	12523	0.0	0.0	82.3	<45	<45
AC-4	15	P-3C	DEP	28D3	19551	1.6	0.0	62.5	<45	<45

Wallops Island: Alt 2A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-4	16	E-2/C-2	DEP	N28D2	18494	0.5	0.0	67.1	<45	<45
AC-4	17	Jet Fighter	T & G	22T1	24486	0.3	0.0	68.9	<45	<45
AC-4	18	E-2/C-2	ARR	N04O1	2756	0.1	0.0	70.9	<45	<45
AC-4	19	E-2/C-2	T & G	28T1	19341	1.3	0.0	60.8	<45	<45
AC-4	20	Jet Fighter	ARR	P28O1	19313	0.1	0.0	72.8	<45	<45
AC-5	1	P-3C	ARR	22A1	1054	1.0	0.0	86.0	<45	<45
AC-5	2	Jet Fighter	DEP	P04D2	4058	0.0	0.0	101.8	<45	<45
AC-5	3	Jet Fighter	ARR	P22O1	1188	0.0	0.0	98.3	<45	<45
AC-5	4	E-2/C-2	DEP	N04D2	3391	0.7	0.1	82.2	<45	<45
AC-5	5	E-2/C-2	Crew Swap	04SW	8732	2.9	0.3	76.0	<45	<45
AC-5	6	E-2/C-2	Crew Swap	22SW	2177	3.6	0.4	74.4	<45	<45
AC-5	7	B-737-400*	ARR	22A1	1009	0.3	0.0	86.5	<45	<45
AC-5	8	Jet Fighter	DEP	P10D2	8124	0.0	0.0	93.0	<45	<45
AC-5	9	P-3C	DEP	04D3	2562	0.4	0.0	81.8	<45	<45
AC-5	10	Jet Fighter	T & G	22T1	10538	0.3	0.0	83.9	<45	<45
AC-5	11	E-2/C-2	FCLP	04F1	19476	20.7	2.4	60.7	<45	<45
AC-5	12	Jet Fighter	T & G	10T1	12991	0.3	0.0	82.8	<45	<45
AC-5	13	E-2/C-2	FCLP	22F1	14658	26.4	3.1	59.2	<45	<45
AC-5	14	A-10A	ARR	22A1	1002	0.0	0.0	92.3	<45	<45
AC-5	15	B-737-400*	DEP	04D3	3066	0.1	0.0	83.2	<45	<45
AC-5	16	E-2/C-2	DEP	N04D2	3391	0.1	0.0	82.2	<45	<45
AC-5	17	E-2/C-2	ARR	N22O1	3001	0.9	0.1	70.8	<45	<45
AC-5	18	Jet Fighter	T & G	04T1	15566	0.1	0.0	80.5	<45	<45
AC-5	19	P-3C	DEP	10D3	6359	1.0	0.0	70.8	<45	<45
AC-5	20	B-737-400*	DEP	10D3	6446	0.3	0.0	75.2	<45	<45
AC-6	1	Jet Fighter	T & G	10T1	2121	0.3	0.0	106.2	51.2	51.2
AC-6	2	E-2/C-2	Crew Swap	22SW	1720	3.6	0.4	84.8	<45	52.1
AC-6	3	E-2/C-2	Crew Swap	04SW	2911	2.9	0.3	85.0	<45	52.6
AC-6	4	Jet Fighter	T & G	04T1	3004	0.1	0.0	101.4	<45	53.1
AC-6	5	Jet Fighter	ARR	P10O1	2121	0.0	0.0	105.2	<45	53.4
AC-6	6	E-2/C-2	FCLP	04F1	7094	20.7	2.4	72.3	<45	53.6
AC-6	7	E-2/C-2	FCLP	22F1	7419	26.4	3.1	69.8	<45	53.7
AC-6	8	Jet Fighter	T & G	22T1	6426	0.3	0.0	90.6	<45	53.8
AC-6	9	E-2/C-2	T & G	10T1	1973	1.3	0.0	83.1	<45	53.8
AC-6	10	E-2/C-2	T & G	10T1	2121	0.8	0.0	82.9	<45	53.9
AC-6	11	E-2/C-2	DEP	N04D2	6486	0.7	0.1	79.9	<45	53.9
AC-6	12	Jet Fighter	T & G	28T1	9794	0.4	0.0	84.9	<45	53.9

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POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-6	13	Jet Fighter	DEP	P10D2	8690	0.0	0.0	93.8	<45	53.9
AC-6	14	Jet Fighter	DEP	P04D2	6438	0.0	0.0	96.3	<45	53.9
AC-6	15	Jet Fighter	ARR	P22O1	6429	0.0	0.0	91.7	<45	54.0
AC-6	16	Jet Fighter	DEP	P28D2	9799	0.1	0.0	89.5	<45	54.0
AC-6	17	E-2/C-2	T & G	04T1	2901	0.5	0.0	80.7	<45	54.0
AC-6	18	E-2/C-2	ARR	N22O1	6402	0.9	0.1	73.7	<45	54.0
AC-6	19	Jet Fighter	DEP	P22D2	8471	0.0	0.0	90.0	<45	54.0
AC-6	20	E-2/C-2	T & G	04T1	3004	0.4	0.0	80.6	<45	54.0
AC-7	1	Jet Fighter	T & G	22T1	674	0.3	0.0	115.8	60.5	60.5
AC-7	2	Jet Fighter	ARR	P22O1	695	0.0	0.0	116.0	52.9	61.2
AC-7	3	E-2/C-2	Crew Swap	04SW	1230	2.9	0.3	94.1	52.7	61.8
AC-7	4	Jet Fighter	T & G	10T1	2181	0.3	0.0	107.4	52.5	62.3
AC-7	5	Jet Fighter	T & G	04T1	1525	0.1	0.0	108.7	50.0	62.5
AC-7	6	E-2/C-2	FCLP	22F1	1276	26.4	3.1	80.7	48.9	62.7
AC-7	7	Jet Fighter	DEP	P04D2	876	0.0	0.0	112.7	46.2	62.8
AC-7	8	E-2/C-2	DEP	N04D2	1235	0.7	0.1	93.3	45.8	62.9
AC-7	9	E-2/C-2	Crew Swap	22SW	1250	3.6	0.4	85.2	<45	63.0
AC-7	10	E-2/C-2	FCLP	04F1	4525	20.7	2.4	77.3	<45	63.0
AC-7	11	Jet Fighter	T & G	28T1	4737	0.4	0.0	96.5	<45	63.1
AC-7	12	E-2/C-2	ARR	N22O1	1019	0.9	0.1	89.4	<45	63.1
AC-7	13	P-3C	DEP	04D3	975	0.4	0.0	92.8	<45	63.1
AC-7	14	P-3C	ARR	22A1	689	1.0	0.0	89.1	<45	63.1
AC-7	15	Jet Fighter	DEP	P22D2	3252	0.0	0.0	102.0	<45	63.2
AC-7	16	E-2/C-2	T & G	10T1	2034	1.3	0.0	86.0	<45	63.2
AC-7	17	E-2/C-2	T & G	22T1	674	1.2	0.0	85.7	<45	63.2
AC-7	18	Jet Fighter	DEP	P10D2	4771	0.0	0.0	99.6	<45	63.2
AC-7	19	Jet Fighter	DEP	P28D2	5079	0.1	0.0	97.8	<45	63.2
AC-7	20	A-10A	T & G	22T1	691	0.1	0.0	95.3	<45	63.2
AC-8	1	Jet Fighter	T & G	04T1	1400	0.1	0.0	110.4	51.7	51.7
AC-8	2	Jet Fighter	T & G	10T1	2848	0.3	0.0	104.0	49.1	53.6
AC-8	3	Jet Fighter	T & G	28T1	3082	0.4	0.0	102.1	48.9	54.9
AC-8	4	E-2/C-2	FCLP	04F1	2882	20.7	2.4	80.6	47.8	55.6
AC-8	5	Jet Fighter	ARR	P04O1	1400	0.0	0.0	110.1	<45	55.9
AC-8	6	Jet Fighter	DEP	P28D2	2905	0.1	0.0	103.0	<45	56.1
AC-8	7	Jet Fighter	DEP	P10D2	3026	0.0	0.0	104.2	<45	56.2
AC-8	8	E-2/C-2	FCLP	22F1	8902	26.4	3.1	72.9	<45	56.3
AC-8	9	Jet Fighter	ARR	P10O1	2848	0.0	0.0	103.4	<45	56.5

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POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-8	10	E-2/C-2	Crew Swap	04SW	2891	2.9	0.3	82.0	<45	56.6
AC-8	11	E-2/C-2	Crew Swap	22SW	8378	3.6	0.4	78.6	<45	56.6
AC-8	12	P-3C	DEP	28D3	2887	1.6	0.0	84.3	<45	56.7
AC-8	13	E-2/C-2	T & G	04T1	1156	0.5	0.0	87.2	<45	56.7
AC-8	14	E-2/C-2	T & G	28T1	2980	1.9	0.0	81.6	<45	56.7
AC-8	15	E-2/C-2	DEP	N28D2	2925	0.5	0.0	87.0	<45	56.8
AC-8	16	P-3C	DEP	10D3	3026	1.0	0.0	83.6	<45	56.8
AC-8	17	E-2/C-2	T & G	10T1	2847	1.3	0.0	82.2	<45	56.8
AC-8	18	E-2/C-2	T & G	28T1	3082	1.3	0.0	81.5	<45	56.8
AC-8	19	B-737-400*	DEP	28D3	2884	0.4	0.0	86.1	<45	56.9
AC-8	20	Jet Fighter	T & G	22T1	8916	0.3	0.0	88.3	<45	56.9
AC-9	1	Jet Fighter	T & G	28T1	1027	0.4	0.0	112.6	59.4	59.4
AC-9	2	Jet Fighter	T & G	04T1	1032	0.1	0.0	112.6	53.9	60.5
AC-9	3	Jet Fighter	ARR	P04O1	1032	0.0	0.0	112.7	46.3	60.7
AC-9	4	E-2/C-2	T & G	28T1	665	1.9	0.0	92.4	45.7	60.8
AC-9	5	E-2/C-2	FCLP	04F1	2254	20.7	2.4	78.4	45.6	60.9
AC-9	6	Jet Fighter	T & G	10T1	3273	0.3	0.0	100.3	45.4	61.0
AC-9	7	Jet Fighter	DEP	P28D2	3318	0.1	0.0	102.6	<45	61.1
AC-9	8	E-2/C-2	T & G	28T1	1027	1.3	0.0	89.5	<45	61.1
AC-9	9	A-10A	T & G	28T1	958	0.2	0.0	97.9	<45	61.2
AC-9	10	E-2/C-2	Crew Swap	22SW	6983	3.6	0.4	80.4	<45	61.2
AC-9	11	E-2/C-2	FCLP	22F1	9075	26.4	3.1	71.6	<45	61.2
AC-9	12	E-2/C-2	Crew Swap	04SW	2262	2.9	0.3	81.2	<45	61.3
AC-9	13	Jet Fighter	ARR	P10O1	3283	0.0	0.0	101.1	<45	61.3
AC-9	14	P-3C	DEP	28D3	3348	1.6	0.0	82.7	<45	61.3
AC-9	15	Jet Fighter	ARR	P28O1	977	0.1	0.0	96.1	<45	61.3
AC-9	16	E-2/C-2	T & G	04T1	672	0.5	0.0	86.3	<45	61.3
AC-9	17	Jet Fighter	DEP	P10D2	5218	0.0	0.0	96.8	<45	61.3
AC-9	18	E-2/C-2	DEP	N28D2	3406	0.5	0.0	85.7	<45	61.3
AC-9	19	Jet Fighter	T & G	22T1	8663	0.3	0.0	88.1	<45	61.3
AC-9	20	B-737-400*	DEP	28D3	3414	0.4	0.0	84.9	<45	61.3
AC-10	1	E-2/C-2	Crew Swap	22SW	2005	3.6	0.4	88.4	48.0	48.0
AC-10	2	Jet Fighter	DEP	P22D2	3592	0.0	0.0	104.2	<45	48.8
AC-10	3	E-2/C-2	DEP	N22D2	2919	0.9	0.1	86.3	<45	49.3
AC-10	4	Jet Fighter	T & G	04T1	3974	0.1	0.0	96.4	<45	49.6
AC-10	5	Jet Fighter	T & G	28T1	7964	0.4	0.0	89.3	<45	49.8
AC-10	6	E-2/C-2	Crew Swap	04SW	3847	2.9	0.3	76.4	<45	50.0

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POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-10	7	P-3C	DEP	22D3	2607	1.0	0.0	83.8	<45	50.1
AC-10	8	E-2/C-2	FCLP	04F1	6603	20.7	2.4	67.1	<45	50.2
AC-10	9	E-2/C-2	FCLP	22F1	12998	26.4	3.1	65.6	<45	50.3
AC-10	10	E-2/C-2	DEP	N22D2	2919	0.3	0.0	86.3	<45	50.4
AC-10	11	Jet Fighter	ARR	P04O1	3746	0.0	0.0	97.6	<45	50.4
AC-10	12	E-2/C-2	ARR	N04O1	3700	0.7	0.1	77.2	<45	50.4
AC-10	13	B-737-400*	DEP	22D3	2977	0.3	0.0	84.7	<45	50.5
AC-10	14	Jet Fighter	T & G	22T1	11315	0.3	0.0	84.4	<45	50.5
AC-10	15	E-2/C-2	T & G	28T1	7926	1.9	0.0	70.8	<45	50.5
AC-10	16	Jet Fighter	ARR	P28O1	7965	0.1	0.0	84.9	<45	50.5
AC-10	17	E-2/C-2	T & G	28T1	7964	1.3	0.0	71.2	<45	50.5
AC-10	18	Jet Fighter	DEP	P28D2	14454	0.1	0.0	83.5	<45	50.5
AC-10	19	Jet Fighter	T & G	10T1	14462	0.3	0.0	75.1	<45	50.5
AC-10	20	P-3C	DEP	28D3	14453	1.6	0.0	66.9	<45	50.5
AC-11	1	E-2/C-2	Crew Swap	22SW	11657	3.6	0.4	71.8	<45	<45
AC-11	2	E-2/C-2	Crew Swap	04SW	3361	2.9	0.3	70.6	<45	<45
AC-11	3	E-2/C-2	DEP	N22D2	9563	0.9	0.1	73.0	<45	<45
AC-11	4	Jet Fighter	DEP	P22D2	9883	0.0	0.0	89.4	<45	<45
AC-11	5	P-3C	ARR	04A1	2346	0.4	0.0	78.0	<45	<45
AC-11	6	Jet Fighter	ARR	P04O1	2596	0.0	0.0	88.1	<45	<45
AC-11	7	B-737-400*	ARR	04A1	2320	0.1	0.0	79.4	<45	<45
AC-11	8	Jet Fighter	T & G	28T1	19482	0.4	0.0	73.4	<45	<45
AC-11	9	P-3C	DEP	22D3	9410	1.0	0.0	69.0	<45	<45
AC-11	10	Jet Fighter	T & G	22T1	21445	0.3	0.0	74.5	<45	<45
AC-11	11	E-2/C-2	DEP	N22D2	9563	0.3	0.0	73.0	<45	<45
AC-11	12	E-2/C-2	ARR	N04O1	5375	0.7	0.1	66.1	<45	<45
AC-11	13	Jet Fighter	T & G	04T1	15505	0.1	0.0	77.3	<45	<45
AC-11	14	E-2/C-2	FCLP	22F1	23480	26.4	3.1	49.0	<45	<45
AC-11	15	E-2/C-2	FCLP	04F1	18045	20.7	2.4	49.5	<45	<45
AC-11	16	B-737-400*	DEP	22D3	9558	0.3	0.0	71.0	<45	<45
AC-11	17	E-2/C-2	T & G	28T1	19482	1.3	0.0	60.0	<45	<45
AC-11	18	A-10A	ARR	04A1	2319	0.0	0.0	82.1	<45	<45
AC-11	19	C-12	ARR	04A1	2330	0.1	0.0	73.0	<45	<45
AC-11	20	Jet Fighter	DEP	P28D2	25092	0.1	0.0	72.2	<45	<45
AC-12	1	E-2/C-2	FCLP	04F1	1987	20.7	2.4	83.8	51.0	51.0
AC-12	2	Jet Fighter	T & G	28T1	3216	0.4	0.0	104.1	51.0	54.0
AC-12	3	E-2/C-2	FCLP	22F1	4373	26.4	3.1	79.8	48.0	54.9

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POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-12	4	Jet Fighter	T & G	10T1	3099	0.3	0.0	102.4	47.5	55.7
AC-12	5	E-2/C-2	Crew Swap	22SW	3703	3.6	0.4	85.5	45.1	56.0
AC-12	6	E-2/C-2	Crew Swap	04SW	1979	2.9	0.3	85.8	<45	56.3
AC-12	7	Jet Fighter	DEP	P28D2	3149	0.1	0.0	104.4	<45	56.5
AC-12	8	Jet Fighter	T & G	04T1	3850	0.1	0.0	102.0	<45	56.7
AC-12	9	Jet Fighter	T & G	22T1	4279	0.3	0.0	98.5	<45	56.9
AC-12	10	Jet Fighter	DEP	P10D2	3104	0.0	0.0	105.8	<45	57.1
AC-12	11	E-2/C-2	DEP	N22D2	4195	0.9	0.1	84.0	<45	57.1
AC-12	12	Jet Fighter	DEP	P22D2	4205	0.0	0.0	100.6	<45	57.2
AC-12	13	E-2/C-2	T & G	28T1	3149	1.9	0.0	83.8	<45	57.2
AC-12	14	P-3C	DEP	28D3	3114	1.6	0.0	84.0	<45	57.3
AC-12	15	Jet Fighter	ARR	P10O1	3214	0.0	0.0	99.0	<45	57.3
AC-12	16	Jet Fighter	ARR	P28O1	3244	0.1	0.0	97.1	<45	57.3
AC-12	17	Jet Fighter	DEP	P04D2	4168	0.0	0.0	101.9	<45	57.4
AC-12	18	E-2/C-2	T & G	28T1	3244	1.3	0.0	83.8	<45	57.4
AC-12	19	E-2/C-2	T & G	10T1	3099	1.3	0.0	83.5	<45	57.4
AC-12	20	E-2/C-2	ARR	N04O1	1987	0.7	0.1	82.4	<45	57.4
AC-13	1	E-2/C-2	FCLP	22F1	1107	26.4	3.1	93.5	61.7	61.7
AC-13	2	Jet Fighter	T & G	22T1	1188	0.3	0.0	113.3	58.0	63.2
AC-13	3	E-2/C-2	FCLP	04F1	1316	20.7	2.4	89.5	56.6	64.1
AC-13	4	Jet Fighter	T & G	28T1	1570	0.4	0.0	109.8	56.6	64.8
AC-13	5	E-2/C-2	Crew Swap	22SW	1105	3.6	0.4	95.2	54.8	65.2
AC-13	6	Jet Fighter	DEP	P22D2	1248	0.0	0.0	117.2	54.1	65.5
AC-13	7	Jet Fighter	T & G	10T1	1848	0.3	0.0	108.6	53.6	65.8
AC-13	8	E-2/C-2	Crew Swap	04SW	1191	2.9	0.3	94.9	53.4	66.1
AC-13	9	Jet Fighter	T & G	04T1	1313	0.1	0.0	111.9	53.2	66.3
AC-13	10	Jet Fighter	DEP	P28D2	1570	0.1	0.0	111.1	50.1	66.4
AC-13	11	Jet Fighter	DEP	P04D2	1248	0.0	0.0	115.8	49.3	66.5
AC-13	12	E-2/C-2	DEP	N22D2	1104	0.9	0.1	93.4	47.0	66.5
AC-13	13	E-2/C-2	DEP	N04D2	1184	0.7	0.1	94.1	46.6	66.6
AC-13	14	Jet Fighter	ARR	P28O1	1570	0.1	0.0	107.3	46.3	66.6
AC-13	15	Jet Fighter	DEP	P10D2	1674	0.0	0.0	108.4	45.7	66.6
AC-13	16	E-2/C-2	T & G	22T1	1154	1.2	0.0	93.7	45.0	66.7
AC-13	17	E-2/C-2	T & G	22T1	1240	0.8	0.0	93.2	<45	66.7
AC-13	18	P-3C	DEP	10D3	1619	1.0	0.0	90.5	<45	66.7
AC-13	19	P-3C	DEP	22D3	1104	1.0	0.0	90.9	<45	66.7
AC-13	20	Jet Fighter	ARR	P22O1	1477	0.0	0.0	104.2	<45	66.7

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POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-14	1	Jet Fighter	T & G	28T1	1250	0.4	0.0	111.9	58.7	58.7
AC-14	2	Jet Fighter	T & G	22T1	1261	0.3	0.0	110.9	55.6	60.4
AC-14	3	Jet Fighter	T & G	04T1	899	0.1	0.0	113.4	54.8	61.5
AC-14	4	E-2/C-2	Crew Swap	22SW	1155	3.6	0.4	94.4	54.0	62.2
AC-14	5	E-2/C-2	FCLP	22F1	2487	26.4	3.1	82.8	51.0	62.5
AC-14	6	E-2/C-2	FCLP	04F1	909	20.7	2.4	83.8	51.0	62.8
AC-14	7	Jet Fighter	ARR	P28O1	1250	0.1	0.0	111.8	50.8	63.1
AC-14	8	Jet Fighter	DEP	P22D2	1058	0.0	0.0	110.6	47.6	63.2
AC-14	9	Jet Fighter	ARR	P04O1	912	0.0	0.0	113.7	47.3	63.3
AC-14	10	E-2/C-2	DEP	N22D2	1215	0.9	0.1	93.6	47.2	63.4
AC-14	11	E-2/C-2	Crew Swap	04SW	901	2.9	0.3	86.0	<45	63.5
AC-14	12	P-3C	DEP	22D3	1126	1.0	0.0	92.2	<45	63.5
AC-14	13	E-2/C-2	T & G	28T1	973	1.9	0.0	88.8	<45	63.5
AC-14	14	E-2/C-2	ARR	N04O1	909	0.7	0.1	88.9	<45	63.6
AC-14	15	E-2/C-2	T & G	22T1	988	1.2	0.0	89.6	<45	63.6
AC-14	16	E-2/C-2	DEP	N22D2	1215	0.3	0.0	93.6	<45	63.6
AC-14	17	E-2/C-2	T & G	28T1	1250	1.3	0.0	87.2	<45	63.6
AC-14	18	A-10A	T & G	22T1	1040	0.1	0.0	96.9	<45	63.6
AC-14	19	B-737-400*	DEP	22D3	1282	0.3	0.0	92.9	<45	63.6
AC-14	20	E-2/C-2	T & G	22T1	1261	0.8	0.0	88.0	<45	63.6
AC-15	1	E-2/C-2	FCLP	22F1	11288	26.4	3.1	68.8	<45	<45
AC-15	2	E-2/C-2	Crew Swap	22SW	11263	3.6	0.4	75.7	<45	<45
AC-15	3	E-2/C-2	FCLP	04F1	12343	20.7	2.4	67.2	<45	<45
AC-15	4	Jet Fighter	T & G	22T1	8782	0.3	0.0	88.9	<45	<45
AC-15	5	Jet Fighter	T & G	28T1	12002	0.4	0.0	84.6	<45	<45
AC-15	6	E-2/C-2	Crew Swap	04SW	10614	2.9	0.3	71.4	<45	<45
AC-15	7	E-2/C-2	DEP	N22D2	10683	0.9	0.1	75.8	<45	<45
AC-15	8	Jet Fighter	T & G	04T1	11567	0.1	0.0	86.3	<45	<45
AC-15	9	Jet Fighter	DEP	P22D2	10746	0.0	0.0	89.4	<45	<45
AC-15	10	Jet Fighter	ARR	P22O1	8751	0.0	0.0	87.0	<45	<45
AC-15	11	Jet Fighter	ARR	P28O1	12002	0.1	0.0	84.4	<45	<45
AC-15	12	P-3C	DEP	22D3	10645	1.0	0.0	72.6	<45	<45
AC-15	13	E-2/C-2	T & G	22T1	8746	1.2	0.0	71.3	<45	<45
AC-15	14	E-2/C-2	T & G	28T1	11975	1.9	0.0	68.5	<45	<45
AC-15	15	E-2/C-2	ARR	N04O1	10580	0.7	0.1	69.1	<45	<45
AC-15	16	E-2/C-2	DEP	N22D2	10683	0.3	0.0	75.8	<45	<45
AC-15	17	E-2/C-2	T & G	22T1	8782	0.8	0.0	71.6	<45	<45
AC-15	18	E-2/C-2	DEP	N04D2	14574	0.7	0.1	67.8	<45	<45

Wallops Island: Alt 2A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-15	19	Jet Fighter	T & G	10T1	19882	0.3	0.0	75.0	<45	<45
AC-15	20	E-2/C-2	T & G	28T1	12002	1.3	0.0	68.2	<45	<45
AC-16	1	P-3C	ARR	28A1	1456	1.6	0.0	87.6	<45	<45
AC-16	2	Jet Fighter	T & G	28T1	18612	0.4	0.0	85.3	<45	<45
AC-16	3	B-737-400*	ARR	28A1	1406	0.4	0.0	84.9	<45	<45
AC-16	4	E-2/C-2	FCLP	22F1	19883	26.4	3.1	61.3	<45	<45
AC-16	5	Jet Fighter	ARR	P28O1	2138	0.1	0.0	90.3	<45	<45
AC-16	6	E-2/C-2	FCLP	04F1	27654	20.7	2.4	60.5	<45	<45
AC-16	7	A-10A	ARR	28A1	1407	0.0	0.0	91.2	<45	<45
AC-16	8	E-2/C-2	Crew Swap	22SW	19890	3.6	0.4	65.8	<45	<45
AC-16	9	E-2/C-2	Crew Swap	04SW	24364	2.9	0.3	66.8	<45	<45
AC-16	10	Jet Fighter	T & G	10T1	23084	0.3	0.0	80.3	<45	<45
AC-16	11	Jet Fighter	DEP	P10D2	12242	0.0	0.0	87.6	<45	<45
AC-16	12	C-12	ARR	28A1	1422	0.2	0.0	79.9	<45	<45
AC-16	13	Jet Fighter	T & G	22T1	16596	0.3	0.0	78.7	<45	<45
AC-16	14	Jet Fighter	DEP	P28D2	26733	0.1	0.0	82.9	<45	<45
AC-16	15	P-3C	DEP	10D3	11881	1.0	0.0	67.5	<45	<45
AC-16	16	E-2/C-2	DEP	N04D2	22984	0.7	0.1	64.9	<45	<45
AC-16	17	E-2/C-2	DEP	N10D2	12009	0.3	0.0	71.1	<45	<45
AC-16	18	Jet Fighter	ARR	P22O1	16888	0.0	0.0	78.6	<45	<45
AC-16	19	Jet Fighter	ARR	P10O1	23396	0.0	0.0	78.0	<45	<45
AC-16	20	E-2/C-2	T & G	28T1	18613	1.9	0.0	61.9	<45	<45
AC-17	1	P-3C	ARR	28A1	3066	1.6	0.0	79.0	<45	<45
AC-17	2	E-2/C-2	FCLP	22F1	16714	26.4	3.1	63.1	<45	<45
AC-17	3	Jet Fighter	T & G	28T1	14755	0.4	0.0	83.8	<45	<45
AC-17	4	E-2/C-2	FCLP	04F1	24276	20.7	2.4	62.1	<45	<45
AC-17	5	Jet Fighter	DEP	P10D2	10377	0.0	0.0	89.9	<45	<45
AC-17	6	E-2/C-2	Crew Swap	22SW	16716	3.6	0.4	67.4	<45	<45
AC-17	7	E-2/C-2	Crew Swap	04SW	21968	2.9	0.3	68.3	<45	<45
AC-17	8	Jet Fighter	ARR	P28O1	3281	0.1	0.0	87.5	<45	<45
AC-17	9	Jet Fighter	T & G	22T1	13958	0.3	0.0	81.6	<45	<45
AC-17	10	B-737-400*	ARR	28A1	3046	0.4	0.0	78.8	<45	<45
AC-17	11	Jet Fighter	T & G	10T1	20271	0.3	0.0	80.6	<45	<45
AC-17	12	Jet Fighter	DEP	P28D2	23389	0.1	0.0	84.3	<45	<45
AC-17	13	P-3C	DEP	10D3	10034	1.0	0.0	69.8	<45	<45
AC-17	14	E-2/C-2	DEP	N04D2	21539	0.7	0.1	67.9	<45	<45
AC-17	15	E-2/C-2	DEP	N10D2	10180	0.3	0.0	73.5	<45	<45

Wallops Island: Alt 2A										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-17	16	E-2/C-2	DEP	N22D2	22943	0.9	0.1	65.5	<45	<45
AC-17	17	C-12	ARR	28A1	3055	0.2	0.0	75.0	<45	<45
AC-17	18	Jet Fighter	ARR	P22O1	14130	0.0	0.0	81.5	<45	<45
AC-17	19	P-3C	DEP	22D3	22943	1.0	0.0	67.4	<45	<45
AC-17	20	E-2/C-2	T & G	28T1	14757	1.9	0.0	64.2	<45	<45
AC-18	1	Jet Fighter	T & G	28T1	21250	0.4	0.0	82.4	<45	<45
AC-18	2	E-2/C-2	FCLP	22F1	23644	26.4	3.1	56.6	<45	<45
AC-18	3	E-2/C-2	FCLP	04F1	31061	20.7	2.4	56.8	<45	<45
AC-18	4	P-3C	ARR	28A1	5853	1.6	0.0	70.4	<45	<45
AC-18	5	E-2/C-2	Crew Swap	04SW	29020	2.9	0.3	63.0	<45	<45
AC-18	6	Jet Fighter	ARR	P28O1	6151	0.1	0.0	82.5	<45	<45
AC-18	7	Jet Fighter	T & G	10T1	27279	0.3	0.0	76.5	<45	<45
AC-18	8	E-2/C-2	Crew Swap	22SW	23644	3.6	0.4	61.7	<45	<45
AC-18	9	Jet Fighter	DEP	P10D2	17181	0.0	0.0	82.6	<45	<45
AC-18	10	Jet Fighter	DEP	P28D2	30218	0.1	0.0	79.8	<45	<45
AC-18	11	Jet Fighter	T & G	22T1	21003	0.3	0.0	73.5	<45	<45
AC-18	12	B-737-400*	ARR	28A1	5840	0.4	0.0	70.8	<45	<45
AC-18	13	E-2/C-2	DEP	N04D2	28522	0.7	0.1	62.7	<45	<45
AC-18	14	P-3C	DEP	10D3	16965	1.0	0.0	64.3	<45	<45
AC-18	15	E-2/C-2	DEP	N10D2	17062	0.3	0.0	68.0	<45	<45
AC-18	16	E-2/C-2	T & G	28T1	21252	1.9	0.0	59.9	<45	<45
AC-18	17	C-12	ARR	28A1	5843	0.2	0.0	68.4	<45	<45
AC-18	18	E-2/C-2	T & G	10T1	27267	1.3	0.0	60.3	<45	<45
AC-18	19	E-2/C-2	T & G	28T1	21252	1.3	0.0	59.7	<45	<45
AC-18	20	E-2/C-2	DEP	N22D2	29879	0.9	0.1	57.6	<45	<45
AC-19	1	E-2/C-2	FCLP	22F1	14450	26.4	3.1	66.1	<45	<45
AC-19	2	E-2/C-2	FCLP	04F1	20516	20.7	2.4	65.8	<45	<45
AC-19	3	Jet Fighter	T & G	28T1	10794	0.4	0.0	85.8	<45	<45
AC-19	4	E-2/C-2	Crew Swap	22SW	14442	3.6	0.4	71.5	<45	<45
AC-19	5	E-2/C-2	Crew Swap	04SW	20515	2.9	0.3	70.4	<45	<45
AC-19	6	Jet Fighter	T & G	22T1	12655	0.3	0.0	83.8	<45	<45
AC-19	7	Jet Fighter	ARR	P28O1	11319	0.1	0.0	87.5	<45	<45
AC-19	8	E-2/C-2	DEP	N22D2	20517	0.9	0.1	69.3	<45	<45
AC-19	9	E-2/C-2	DEP	N04D2	20514	0.7	0.1	69.4	<45	<45
AC-19	10	Jet Fighter	DEP	P10D2	15218	0.0	0.0	84.1	<45	<45
AC-19	11	Jet Fighter	T & G	10T1	19756	0.3	0.0	75.5	<45	<45
AC-19	12	Jet Fighter	DEP	P28D2	20735	0.1	0.0	80.8	<45	<45

Wallops Island: Alt 2A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-19	13	E-2/C-2	T & G	28T1	10785	1.9	0.0	66.4	<45	<45
AC-19	14	Jet Fighter	T & G	04T1	20517	0.1	0.0	78.1	<45	<45
AC-19	15	E-2/C-2	T & G	22T1	12630	1.2	0.0	68.1	<45	<45
AC-19	16	Jet Fighter	ARR	P22O1	12655	0.0	0.0	82.4	<45	<45
AC-19	17	B-737-400*	DEP	28D3	20735	0.4	0.0	71.6	<45	<45
AC-19	18	P-3C	DEP	22D3	20516	1.0	0.0	67.5	<45	<45
AC-19	19	E-2/C-2	T & G	28T1	10796	1.3	0.0	65.9	<45	<45
AC-19	20	E-2/C-2	T & G	22T1	12655	0.8	0.0	68.0	<45	<45
AC-20	1	E-2/C-2	FCLP	22F1	31905	26.4	3.1	56.6	<45	<45
AC-20	2	E-2/C-2	FCLP	04F1	38107	20.7	2.4	55.4	<45	<45
AC-20	3	Jet Fighter	T & G	28T1	27869	0.4	0.0	74.1	<45	<45
AC-20	4	E-2/C-2	Crew Swap	22SW	31896	3.6	0.4	60.9	<45	<45
AC-20	5	E-2/C-2	Crew Swap	04SW	37982	2.9	0.3	60.0	<45	<45
AC-20	6	Jet Fighter	ARR	P28O1	19159	0.1	0.0	75.0	<45	<45
AC-20	7	E-2/C-2	DEP	N22D2	37976	0.9	0.1	58.2	<45	<45
AC-20	8	Jet Fighter	T & G	22T1	30094	0.3	0.0	67.0	<45	<45
AC-20	9	E-2/C-2	DEP	N04D2	37981	0.7	0.1	58.7	<45	<45
AC-20	10	Jet Fighter	DEP	P28D2	37716	0.1	0.0	72.1	<45	<45
AC-20	11	E-2/C-2	T & G	28T1	27868	1.9	0.0	57.6	<45	<45
AC-20	12	Jet Fighter	T & G	10T1	35915	0.3	0.0	65.8	<45	<45
AC-20	13	Jet Fighter	DEP	P10D2	27833	0.0	0.0	73.5	<45	<45
AC-20	14	E-2/C-2	T & G	28T1	27870	1.3	0.0	58.0	<45	<45
AC-20	15	E-2/C-2	T & G	22T1	30083	1.2	0.0	57.7	<45	<45
AC-20	16	P-3C	DEP	10D3	27723	1.0	0.0	57.7	<45	<45
AC-20	17	P-3C	DEP	22D3	37975	1.0	0.0	57.8	<45	<45
AC-20	18	P-3C	DEP	28D3	37716	1.6	0.0	55.7	<45	<45
AC-20	19	E-2/C-2	DEP	N10D2	27757	0.3	0.0	61.8	<45	<45
AC-20	20	E-2/C-2	T & G	10T1	35906	1.3	0.0	55.4	<45	<45
AC-21	1	E-2/C-2	FCLP	22F1	25166	26.4	3.1	61.0	<45	<45
AC-21	2	E-2/C-2	Crew Swap	22SW	21455	3.6	0.4	68.4	<45	<45
AC-21	3	E-2/C-2	FCLP	04F1	24243	20.7	2.4	59.5	<45	<45
AC-21	4	Jet Fighter	T & G	22T1	22652	0.3	0.0	79.7	<45	<45
AC-21	5	E-2/C-2	Crew Swap	04SW	16679	2.9	0.3	65.7	<45	<45
AC-21	6	E-2/C-2	DEP	N22D2	19303	0.9	0.1	66.6	<45	<45
AC-21	7	Jet Fighter	DEP	P22D2	19394	0.0	0.0	83.1	<45	<45
AC-21	8	Jet Fighter	T & G	04T1	22691	0.1	0.0	76.3	<45	<45
AC-21	9	Jet Fighter	T & G	28T1	25644	0.4	0.0	69.8	<45	<45

Wallops Island: Alt 2A										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-21	10	E-2/C-2	DEP	N04D2	27771	0.7	0.1	63.8	<45	<45
AC-21	11	Jet Fighter	ARR	P22O1	22633	0.0	0.0	77.6	<45	<45
AC-21	12	E-2/C-2	ARR	N04O1	17115	0.7	0.1	61.2	<45	<45
AC-21	13	P-3C	DEP	22D3	19270	1.0	0.0	62.9	<45	<45
AC-21	14	E-2/C-2	T & G	22T1	22638	1.2	0.0	61.7	<45	<45
AC-21	15	E-2/C-2	T & G	28T1	25632	1.9	0.0	59.5	<45	<45
AC-21	16	E-2/C-2	DEP	N22D2	19303	0.3	0.0	66.6	<45	<45
AC-21	17	E-2/C-2	ARR	N22O1	25165	0.9	0.1	57.3	<45	<45
AC-21	18	E-2/C-2	T & G	22T1	22652	0.8	0.0	61.0	<45	<45
AC-21	19	E-2/C-2	T & G	28T1	25644	1.3	0.0	58.8	<45	<45
AC-21	20	Jet Fighter	DEP	P04D2	27771	0.0	0.0	76.7	<45	<45
AC-22	1	E-2/C-2	Crew Swap	22SW	4335	3.6	0.4	80.4	<45	<45
AC-22	2	E-2/C-2	Crew Swap	04SW	3085	2.9	0.3	80.8	<45	<45
AC-22	3	Jet Fighter	DEP	P28D2	5477	0.1	0.0	98.6	<45	<45
AC-22	4	P-3C	ARR	10A1	2297	1.0	0.0	79.7	<45	<45
AC-22	5	P-3C	DEP	28D3	3975	1.6	0.0	76.1	<45	<45
AC-22	6	B-737-400*	DEP	28D3	4099	0.4	0.0	80.8	<45	<45
AC-22	7	E-2/C-2	DEP	N28D2	4256	0.5	0.0	78.3	<45	<45
AC-22	8	B-737-400*	ARR	10A1	2266	0.3	0.0	80.6	<45	<45
AC-22	9	Jet Fighter	ARR	P10O1	2166	0.0	0.0	88.0	<45	<45
AC-22	10	Jet Fighter	DEP	P22D2	11289	0.0	0.0	88.1	<45	<45
AC-22	11	Jet Fighter	T & G	10T1	18371	0.3	0.0	78.7	<45	<45
AC-22	12	E-2/C-2	DEP	N22D2	10118	0.9	0.1	70.1	<45	<45
AC-22	13	Jet Fighter	T & G	28T1	23151	0.4	0.0	75.0	<45	<45
AC-22	14	E-2/C-2	FCLP	04F1	24633	20.7	2.4	54.4	<45	<45
AC-22	15	E-2/C-2	ARR	N10O1	1727	0.3	0.0	74.5	<45	<45
AC-22	16	Jet Fighter	DEP	P10D2	17102	0.0	0.0	81.7	<45	<45
AC-22	17	P-3C	DEP	22D3	8556	1.0	0.0	67.3	<45	<45
AC-22	18	A-10A	ARR	10A1	2266	0.0	0.0	83.9	<45	<45
AC-22	19	C-12	ARR	10A1	2276	0.1	0.0	74.7	<45	<45
AC-22	20	B-737-400*	DEP	22D3	9058	0.3	0.0	71.5	<45	<45

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-1	1	E-2/C-2	Crew Swap	22SW	4742	3.5	0.4	80.0	<45	<45
AC-1	2	E-2/C-2	Crew Swap	04SW	6050	2.7	0.3	79.5	<45	<45
AC-1	3	Jet Fighter	T & G	10T1	8777	0.3	0.0	87.0	<45	<45
AC-1	4	E-2/C-2	FCLP	04F2	18610	13.8	1.6	62.8	<45	<45
AC-1	5	Jet Fighter	ARR	P10O1	9278	0.0	0.0	88.9	<45	<45
AC-1	6	Jet Fighter	DEP	P10D2	11460	0.0	0.0	88.1	<45	<45
AC-1	7	Jet Fighter	DEP	P28D2	13597	0.1	0.0	85.7	<45	<45
AC-1	8	E-2/C-2	FCLP	22F2	24678	17.6	2.1	57.5	<45	<45
AC-1	9	E-2/C-2	DEP	N04D2	10742	0.8	0.1	69.8	<45	<45
AC-1	10	Jet Fighter	T & G	28T1	17787	0.4	0.0	76.2	<45	<45
AC-1	11	P-3C	DEP	10D3	5654	1.0	0.0	71.9	<45	<45
AC-1	12	E-2/C-2	FCLP	04F1	18750	6.9	0.8	59.8	<45	<45
AC-1	13	P-3C	DEP	28D3	12683	1.6	0.0	68.3	<45	<45
AC-1	14	Jet Fighter	DEP	P04D2	12312	0.0	0.0	87.2	<45	<45
AC-1	15	E-2/C-2	FCLP	22F1	24678	8.8	1.0	56.3	<45	<45
AC-1	16	E-2/C-2	ARR	N22O1	6081	1.1	0.1	65.1	<45	<45
AC-1	17	E-2/C-2	DEP	N28D2	13506	0.5	0.0	71.5	<45	<45
AC-1	18	B-737-400*	DEP	10D3	7434	0.3	0.0	73.5	<45	<45
AC-1	19	Jet Fighter	T & G	04T1	16808	0.1	0.0	76.7	<45	<45
AC-1	20	E-2/C-2	T & G	10T1	8766	1.3	0.0	65.7	<45	<45
AC-2	1	Jet Fighter	DEP	P28D2	3181	0.1	0.0	105.6	<45	<45
AC-2	2	Jet Fighter	ARR	P10O1	1303	0.0	0.0	105.4	<45	46.8
AC-2	3	P-3C	DEP	28D3	1710	1.6	0.0	87.4	<45	47.6
AC-2	4	P-3C	ARR	10A1	865	1.0	0.0	88.8	<45	48.3
AC-2	5	E-2/C-2	Crew Swap	22SW	6703	3.5	0.4	78.9	<45	48.7
AC-2	6	E-2/C-2	Crew Swap	04SW	4977	2.7	0.3	79.4	<45	49.0
AC-2	7	E-2/C-2	DEP	N28D2	2480	0.5	0.0	87.1	<45	49.2
AC-2	8	B-737-400*	ARR	10A1	824	0.3	0.0	89.1	<45	49.3
AC-2	9	B-737-400*	DEP	28D3	2257	0.4	0.0	86.8	<45	49.4
AC-2	10	Jet Fighter	T & G	10T1	7671	0.3	0.0	88.3	<45	49.6
AC-2	11	Jet Fighter	T & G	28T1	12579	0.4	0.0	83.6	<45	49.6
AC-2	12	E-2/C-2	FCLP	04F2	14422	13.8	1.6	64.0	<45	49.6
AC-2	13	A-10A	ARR	10A1	809	0.0	0.0	95.2	<45	49.7
AC-2	14	E-2/C-2	FCLP	22F2	20382	17.6	2.1	60.2	<45	49.7
AC-2	15	E-2/C-2	FCLP	04F1	14422	6.9	0.8	62.7	<45	49.7
AC-2	16	E-2/C-2	ARR	N10O1	1284	0.3	0.0	78.3	<45	49.7
AC-2	17	Jet Fighter	DEP	P10D2	15779	0.0	0.0	86.7	<45	49.7
AC-2	18	E-2/C-2	DEP	N22D2	13141	1.1	0.1	69.7	<45	49.8

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-2	19	C-12	ARR	10A1	845	0.1	0.0	81.5	<45	49.8
AC-2	20	Jet Fighter	T & G	04T1	12515	0.1	0.0	81.8	<45	49.8
AC-3	1	E-2/C-2	Crew Swap	22SW	1951	3.5	0.4	86.8	46.3	46.3
AC-3	2	E-2/C-2	Crew Swap	04SW	1812	2.7	0.3	82.6	<45	47.4
AC-3	3	Jet Fighter	DEP	P28D2	7378	0.1	0.0	95.3	<45	47.6
AC-3	4	Jet Fighter	T & G	28T1	14817	0.4	0.0	86.0	<45	47.7
AC-3	5	Jet Fighter	DEP	P22D2	7745	0.0	0.0	93.8	<45	47.8
AC-3	6	E-2/C-2	DEP	N22D2	6604	1.1	0.1	74.5	<45	47.9
AC-3	7	E-2/C-2	FCLP	22F2	19051	17.6	2.1	60.4	<45	47.9
AC-3	8	E-2/C-2	FCLP	04F2	15574	13.8	1.6	61.1	<45	47.9
AC-3	9	E-2/C-2	DEP	N28D2	6980	0.5	0.0	77.4	<45	48.0
AC-3	10	P-3C	DEP	28D3	8116	1.6	0.0	72.6	<45	48.0
AC-3	11	Jet Fighter	T & G	10T1	13489	0.3	0.0	78.4	<45	48.0
AC-3	12	P-3C	DEP	22D3	5524	1.0	0.0	72.3	<45	48.0
AC-3	13	E-2/C-2	FCLP	04F1	15574	6.9	0.8	60.0	<45	48.0
AC-3	14	B-737-400*	DEP	22D3	5749	0.3	0.0	76.8	<45	48.0
AC-3	15	Jet Fighter	ARR	P10O1	6490	0.0	0.0	84.3	<45	48.0
AC-3	16	Jet Fighter	T & G	04T1	13046	0.1	0.0	80.3	<45	48.1
AC-3	17	B-737-400*	DEP	28D3	8271	0.4	0.0	74.4	<45	48.1
AC-3	18	E-2/C-2	DEP	N22D2	6604	0.3	0.0	74.5	<45	48.1
AC-3	19	Jet Fighter	ARR	P28O1	14810	0.1	0.0	80.1	<45	48.1
AC-3	20	Jet Fighter	DEP	P10D2	19642	0.0	0.0	81.3	<45	48.1
AC-4	1	E-2/C-2	Crew Swap	04SW	2301	2.7	0.3	75.9	<45	<45
AC-4	2	E-2/C-2	Crew Swap	22SW	9216	3.5	0.4	74.2	<45	<45
AC-4	3	Jet Fighter	DEP	P22D2	8419	0.0	0.0	92.8	<45	<45
AC-4	4	E-2/C-2	DEP	N22D2	7509	1.1	0.1	74.1	<45	<45
AC-4	5	E-2/C-2	FCLP	22F2	16676	17.6	2.1	61.6	<45	<45
AC-4	6	Jet Fighter	T & G	28T1	19341	0.4	0.0	77.4	<45	<45
AC-4	7	E-2/C-2	ARR	N04O1	2748	0.8	0.1	70.9	<45	<45
AC-4	8	P-3C	DEP	22D3	7019	1.0	0.0	70.6	<45	<45
AC-4	9	Jet Fighter	T & G	04T1	15883	0.1	0.0	79.0	<45	<45
AC-4	10	B-737-400*	DEP	22D3	7086	0.3	0.0	74.9	<45	<45
AC-4	11	E-2/C-2	DEP	N22D2	7509	0.3	0.0	74.1	<45	<45
AC-4	12	Jet Fighter	DEP	P28D2	18643	0.1	0.0	79.8	<45	<45
AC-4	13	E-2/C-2	FCLP	04F2	18718	13.8	1.6	52.8	<45	<45
AC-4	14	Jet Fighter	ARR	P04O1	12523	0.0	0.0	82.3	<45	<45
AC-4	15	P-3C	DEP	28D3	19551	1.6	0.0	62.5	<45	<45

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-4	16	E-2/C-2	DEP	N28D2	18494	0.5	0.0	67.1	<45	<45
AC-4	17	E-2/C-2	FCLP	04F1	18718	6.9	0.8	51.3	<45	<45
AC-4	18	Jet Fighter	T & G	22T1	24486	0.3	0.0	68.9	<45	<45
AC-4	19	E-2/C-2	ARR	N04O1	2756	0.1	0.0	70.9	<45	<45
AC-4	20	E-2/C-2	FCLP	22F1	26015	8.8	1.0	49.5	<45	<45
AC-5	1	E-2/C-2	FCLP	04F2	7293	13.8	1.6	72.6	<45	<45
AC-5	2	P-3C	ARR	22A1	1054	1.0	0.0	86.0	<45	<45
AC-5	3	E-2/C-2	DEP	N04D2	3391	0.8	0.1	82.2	<45	<45
AC-5	4	Jet Fighter	DEP	P04D2	4058	0.0	0.0	101.8	<45	<45
AC-5	5	Jet Fighter	ARR	P22O1	1188	0.0	0.0	98.3	<45	<45
AC-5	6	E-2/C-2	Crew Swap	04SW	8732	2.7	0.3	76.0	<45	<45
AC-5	7	E-2/C-2	Crew Swap	22SW	2177	3.5	0.4	74.4	<45	<45
AC-5	8	B-737-400*	ARR	22A1	1009	0.3	0.0	86.5	<45	<45
AC-5	9	Jet Fighter	DEP	P10D2	8124	0.0	0.0	93.0	<45	<45
AC-5	10	P-3C	DEP	04D3	2562	0.4	0.0	81.8	<45	<45
AC-5	11	Jet Fighter	T & G	22T1	10538	0.3	0.0	83.9	<45	<45
AC-5	12	Jet Fighter	T & G	10T1	12991	0.3	0.0	82.8	<45	<45
AC-5	13	E-2/C-2	FCLP	22F2	14658	17.6	2.1	61.3	<45	<45
AC-5	14	A-10A	ARR	22A1	1002	0.0	0.0	92.3	<45	45.0
AC-5	15	E-2/C-2	ARR	N22O1	3001	1.1	0.1	70.8	<45	45.0
AC-5	16	B-737-400*	DEP	04D3	3066	0.1	0.0	83.2	<45	45.1
AC-5	17	E-2/C-2	DEP	N04D2	3391	0.1	0.0	82.2	<45	45.1
AC-5	18	E-2/C-2	FCLP	04F1	19476	6.9	0.8	60.7	<45	45.1
AC-5	19	E-2/C-2	FCLP	22F1	14658	8.8	1.0	59.2	<45	45.2
AC-5	20	Jet Fighter	T & G	04T1	15566	0.1	0.0	80.5	<45	45.2
AC-6	1	E-2/C-2	FCLP	04F2	624	13.8	1.6	92.8	58.2	58.2
AC-6	2	Jet Fighter	T & G	10T1	2121	0.3	0.0	106.2	51.2	59.0
AC-6	3	E-2/C-2	Crew Swap	22SW	1720	3.5	0.4	84.8	<45	59.1
AC-6	4	E-2/C-2	Crew Swap	04SW	2911	2.7	0.3	85.0	<45	59.2
AC-6	5	Jet Fighter	T & G	04T1	3004	0.1	0.0	101.4	<45	59.3
AC-6	6	Jet Fighter	ARR	P10O1	2121	0.0	0.0	105.2	<45	59.4
AC-6	7	E-2/C-2	FCLP	22F2	7419	17.6	2.1	70.2	<45	59.4
AC-6	8	Jet Fighter	T & G	22T1	6426	0.3	0.0	90.6	<45	59.4
AC-6	9	E-2/C-2	T & G	10T1	1973	1.3	0.0	83.1	<45	59.5
AC-6	10	E-2/C-2	FCLP	04F1	7094	6.9	0.8	72.3	<45	59.5
AC-6	11	E-2/C-2	FCLP	22F1	7419	8.8	1.0	69.8	<45	59.5
AC-6	12	E-2/C-2	DEP	N04D2	6486	0.8	0.1	79.9	<45	59.5

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-6	13	E-2/C-2	T & G	10T1	2121	0.8	0.0	82.9	<45	59.5
AC-6	14	Jet Fighter	T & G	28T1	9794	0.4	0.0	84.9	<45	59.5
AC-6	15	Jet Fighter	DEP	P10D2	8690	0.0	0.0	93.8	<45	59.5
AC-6	16	Jet Fighter	DEP	P04D2	6438	0.0	0.0	96.3	<45	59.5
AC-6	17	Jet Fighter	ARR	P22O1	6429	0.0	0.0	91.7	<45	59.5
AC-6	18	Jet Fighter	DEP	P28D2	9799	0.1	0.0	89.5	<45	59.5
AC-6	19	E-2/C-2	T & G	04T1	2901	0.5	0.0	80.7	<45	59.5
AC-6	20	E-2/C-2	ARR	N22O1	6402	1.1	0.1	73.7	<45	59.5
AC-7	1	Jet Fighter	T & G	22T1	674	0.3	0.0	115.8	60.5	60.5
AC-7	2	E-2/C-2	FCLP	04F2	876	13.8	1.6	90.9	56.3	61.9
AC-7	3	Jet Fighter	ARR	P22O1	695	0.0	0.0	116.0	52.9	62.4
AC-7	4	E-2/C-2	Crew Swap	04SW	1230	2.7	0.3	94.1	52.5	62.9
AC-7	5	Jet Fighter	T & G	10T1	2181	0.3	0.0	107.4	52.5	63.2
AC-7	6	Jet Fighter	T & G	04T1	1525	0.1	0.0	108.7	50.0	63.4
AC-7	7	E-2/C-2	FCLP	22F2	1276	17.6	2.1	80.7	47.1	63.5
AC-7	8	E-2/C-2	DEP	N04D2	1235	0.8	0.1	93.3	46.5	63.6
AC-7	9	Jet Fighter	DEP	P04D2	876	0.0	0.0	112.7	46.2	63.7
AC-7	10	E-2/C-2	Crew Swap	22SW	1250	3.5	0.4	85.2	<45	63.8
AC-7	11	E-2/C-2	FCLP	22F1	1276	8.8	1.0	80.7	<45	63.8
AC-7	12	E-2/C-2	ARR	N22O1	1019	1.1	0.1	89.4	<45	63.8
AC-7	13	Jet Fighter	T & G	28T1	4737	0.4	0.0	96.5	<45	63.9
AC-7	14	P-3C	DEP	04D3	975	0.4	0.0	92.8	<45	63.9
AC-7	15	E-2/C-2	FCLP	04F1	4525	6.9	0.8	77.3	<45	63.9
AC-7	16	P-3C	ARR	22A1	689	1.0	0.0	89.1	<45	63.9
AC-7	17	Jet Fighter	DEP	P22D2	3252	0.0	0.0	102.0	<45	63.9
AC-7	18	E-2/C-2	T & G	10T1	2034	1.3	0.0	86.0	<45	64.0
AC-7	19	E-2/C-2	T & G	22T1	674	1.2	0.0	85.7	<45	64.0
AC-7	20	Jet Fighter	DEP	P10D2	4771	0.0	0.0	99.6	<45	64.0
AC-8	1	Jet Fighter	T & G	04T1	1400	0.1	0.0	110.4	51.7	51.7
AC-8	2	Jet Fighter	T & G	10T1	2848	0.3	0.0	104.0	49.1	53.6
AC-8	3	Jet Fighter	T & G	28T1	3082	0.4	0.0	102.1	48.9	54.9
AC-8	4	E-2/C-2	FCLP	04F2	2882	13.8	1.6	81.4	46.8	55.5
AC-8	5	Jet Fighter	ARR	P04O1	1400	0.0	0.0	110.1	<45	55.8
AC-8	6	E-2/C-2	FCLP	04F1	2882	6.9	0.8	80.6	<45	56.0
AC-8	7	Jet Fighter	DEP	P28D2	2905	0.1	0.0	103.0	<45	56.2
AC-8	8	Jet Fighter	DEP	P10D2	3026	0.0	0.0	104.2	<45	56.3
AC-8	9	Jet Fighter	ARR	P10O1	2848	0.0	0.0	103.4	<45	56.4

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-8	10	E-2/C-2	Crew Swap	04SW	2891	2.7	0.3	82.0	<45	56.5
AC-8	11	E-2/C-2	FCLP	22F2	8902	17.6	2.1	73.6	<45	56.6
AC-8	12	E-2/C-2	Crew Swap	22SW	8378	3.5	0.4	78.6	<45	56.7
AC-8	13	P-3C	DEP	28D3	2887	1.6	0.0	84.3	<45	56.7
AC-8	14	E-2/C-2	FCLP	22F1	8902	8.8	1.0	72.9	<45	56.8
AC-8	15	E-2/C-2	T & G	04T1	1156	0.5	0.0	87.2	<45	56.8
AC-8	16	E-2/C-2	T & G	28T1	2980	1.9	0.0	81.6	<45	56.8
AC-8	17	E-2/C-2	DEP	N28D2	2925	0.5	0.0	87.0	<45	56.8
AC-8	18	P-3C	DEP	10D3	3026	1.0	0.0	83.6	<45	56.9
AC-8	19	E-2/C-2	T & G	10T1	2847	1.3	0.0	82.2	<45	56.9
AC-8	20	E-2/C-2	T & G	28T1	3082	1.3	0.0	81.5	<45	56.9
AC-9	1	Jet Fighter	T & G	28T1	1027	0.4	0.0	112.6	59.4	59.4
AC-9	2	Jet Fighter	T & G	04T1	1032	0.1	0.0	112.6	53.9	60.5
AC-9	3	Jet Fighter	ARR	P04O1	1032	0.0	0.0	112.7	46.3	60.7
AC-9	4	E-2/C-2	T & G	28T1	665	1.9	0.0	92.4	45.7	60.8
AC-9	5	Jet Fighter	T & G	10T1	3273	0.3	0.0	100.3	45.4	60.9
AC-9	6	E-2/C-2	FCLP	04F2	2254	13.8	1.6	78.5	<45	61.0
AC-9	7	Jet Fighter	DEP	P28D2	3318	0.1	0.0	102.6	<45	61.1
AC-9	8	E-2/C-2	T & G	28T1	1027	1.3	0.0	89.5	<45	61.1
AC-9	9	A-10A	T & G	28T1	958	0.2	0.0	97.9	<45	61.1
AC-9	10	E-2/C-2	FCLP	04F1	2254	6.9	0.8	78.4	<45	61.2
AC-9	11	E-2/C-2	FCLP	22F2	8277	17.6	2.1	74.1	<45	61.2
AC-9	12	E-2/C-2	Crew Swap	22SW	6983	3.5	0.4	80.4	<45	61.2
AC-9	13	E-2/C-2	Crew Swap	04SW	2262	2.7	0.3	81.2	<45	61.3
AC-9	14	Jet Fighter	ARR	P10O1	3283	0.0	0.0	101.1	<45	61.3
AC-9	15	P-3C	DEP	28D3	3348	1.6	0.0	82.7	<45	61.3
AC-9	16	Jet Fighter	ARR	P28O1	977	0.1	0.0	96.1	<45	61.3
AC-9	17	E-2/C-2	FCLP	22F1	9075	8.8	1.0	71.6	<45	61.3
AC-9	18	E-2/C-2	T & G	04T1	672	0.5	0.0	86.3	<45	61.3
AC-9	19	Jet Fighter	DEP	P10D2	5218	0.0	0.0	96.8	<45	61.3
AC-9	20	E-2/C-2	DEP	N28D2	3406	0.5	0.0	85.7	<45	61.4
AC-10	1	E-2/C-2	Crew Swap	22SW	2005	3.5	0.4	88.4	47.8	47.8
AC-10	2	E-2/C-2	FCLP	22F2	4009	17.6	2.1	78.1	<45	49.5
AC-10	3	Jet Fighter	DEP	P22D2	3592	0.0	0.0	104.2	<45	50.1
AC-10	4	E-2/C-2	DEP	N22D2	2919	1.1	0.1	86.3	<45	50.5
AC-10	5	Jet Fighter	T & G	04T1	3974	0.1	0.0	96.4	<45	50.8
AC-10	6	Jet Fighter	T & G	28T1	7964	0.4	0.0	89.3	<45	50.9

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-10	7	E-2/C-2	Crew Swap	04SW	3847	2.7	0.3	76.4	<45	51.0
AC-10	8	P-3C	DEP	22D3	2607	1.0	0.0	83.8	<45	51.1
AC-10	9	E-2/C-2	FCLP	04F2	6602	13.8	1.6	67.4	<45	51.2
AC-10	10	E-2/C-2	DEP	N22D2	2919	0.3	0.0	86.3	<45	51.2
AC-10	11	Jet Fighter	ARR	P04O1	3746	0.0	0.0	97.6	<45	51.3
AC-10	12	E-2/C-2	ARR	N04O1	3700	0.8	0.1	77.2	<45	51.3
AC-10	13	B-737-400*	DEP	22D3	2977	0.3	0.0	84.7	<45	51.3
AC-10	14	E-2/C-2	FCLP	04F1	6603	6.9	0.8	67.1	<45	51.4
AC-10	15	Jet Fighter	T & G	22T1	11315	0.3	0.0	84.4	<45	51.4
AC-10	16	E-2/C-2	FCLP	22F1	12998	8.8	1.0	65.6	<45	51.4
AC-10	17	E-2/C-2	T & G	28T1	7926	1.9	0.0	70.8	<45	51.4
AC-10	18	Jet Fighter	ARR	P28O1	7965	0.1	0.0	84.9	<45	51.4
AC-10	19	E-2/C-2	T & G	28T1	7964	1.3	0.0	71.2	<45	51.4
AC-10	20	Jet Fighter	DEP	P28D2	14454	0.1	0.0	83.5	<45	51.4
AC-11	1	E-2/C-2	FCLP	22F2	11503	17.6	2.1	66.0	<45	<45
AC-11	2	E-2/C-2	Crew Swap	22SW	11657	3.5	0.4	71.8	<45	<45
AC-11	3	E-2/C-2	Crew Swap	04SW	3361	2.7	0.3	70.6	<45	<45
AC-11	4	E-2/C-2	DEP	N22D2	9563	1.1	0.1	73.0	<45	<45
AC-11	5	Jet Fighter	DEP	P22D2	9883	0.0	0.0	89.4	<45	<45
AC-11	6	P-3C	ARR	04A1	2346	0.4	0.0	78.0	<45	<45
AC-11	7	Jet Fighter	ARR	P04O1	2596	0.0	0.0	88.1	<45	<45
AC-11	8	B-737-400*	ARR	04A1	2320	0.1	0.0	79.4	<45	<45
AC-11	9	Jet Fighter	T & G	28T1	19482	0.4	0.0	73.4	<45	<45
AC-11	10	P-3C	DEP	22D3	9410	1.0	0.0	69.0	<45	<45
AC-11	11	E-2/C-2	ARR	N04O1	5375	0.8	0.1	66.1	<45	<45
AC-11	12	Jet Fighter	T & G	22T1	21445	0.3	0.0	74.5	<45	<45
AC-11	13	E-2/C-2	DEP	N22D2	9563	0.3	0.0	73.0	<45	<45
AC-11	14	Jet Fighter	T & G	04T1	15505	0.1	0.0	77.3	<45	<45
AC-11	15	B-737-400*	DEP	22D3	9558	0.3	0.0	71.0	<45	<45
AC-11	16	E-2/C-2	FCLP	04F2	18045	13.8	1.6	50.4	<45	<45
AC-11	17	E-2/C-2	FCLP	22F1	23480	8.8	1.0	49.0	<45	<45
AC-11	18	E-2/C-2	FCLP	04F1	18045	6.9	0.8	49.5	<45	<45
AC-11	19	E-2/C-2	T & G	28T1	19482	1.3	0.0	60.0	<45	<45
AC-11	20	A-10A	ARR	04A1	2319	0.0	0.0	82.1	<45	<45
AC-12	1	Jet Fighter	T & G	28T1	3216	0.4	0.0	104.1	51.0	51.0
AC-12	2	E-2/C-2	FCLP	04F2	1987	13.8	1.6	83.8	49.2	53.2
AC-12	3	Jet Fighter	T & G	10T1	3099	0.3	0.0	102.4	47.5	54.2

Wallops Island: Alt 2B										
POINT ID	RANK	AIRCRAFT NAME	TRACK TYPE	TRACK ID	SLANT (ft)	DAY TIME	NIGHT TIME	SEL (dB)	DNL (dB)	CUMU (dB)
AC-12	4	E-2/C-2	FCLP	22F2	4205	17.6	2.1	80.9	47.3	55.0
AC-12	5	E-2/C-2	FCLP	04F1	1987	6.9	0.8	83.8	46.2	55.5
AC-12	6	E-2/C-2	Crew Swap	22SW	3703	3.5	0.4	85.5	<45	55.9
AC-12	7	E-2/C-2	Crew Swap	04SW	1979	2.7	0.3	85.8	<45	56.2
AC-12	8	Jet Fighter	DEP	P28D2	3149	0.1	0.0	104.4	<45	56.4
AC-12	9	Jet Fighter	T & G	04T1	3850	0.1	0.0	102.0	<45	56.6
AC-12	10	E-2/C-2	FCLP	22F1	4373	8.8	1.0	79.8	<45	56.8
AC-12	11	Jet Fighter	T & G	22T1	4279	0.3	0.0	98.5	<45	57.0
AC-12	12	Jet Fighter	DEP	P10D2	3104	0.0	0.0	105.8	<45	57.2
AC-12	13	E-2/C-2	DEP	N22D2	4195	1.1	0.1	84.0	<45	57.2
AC-12	14	Jet Fighter	DEP	P22D2	4205	0.0	0.0	100.6	<45	57.3
AC-12	15	E-2/C-2	T & G	28T1	3149	1.9	0.0	83.8	<45	57.3
AC-12	16	P-3C	DEP	28D3	3114	1.6	0.0	84.0	<45	57.3
AC-12	17	Jet Fighter	ARR	P10O1	3214	0.0	0.0	99.0	<45	57.4
AC-12	18	Jet Fighter	ARR	P28O1	3244	0.1	0.0	97.1	<45	57.4
AC-12	19	E-2/C-2	ARR	N04O1	1987	0.8	0.1	82.4	<45	57.4
AC-12	20	Jet Fighter	DEP	P04D2	4168	0.0	0.0	101.9	<45	57.5
AC-13	1	E-2/C-2	FCLP	22F2	1107	17.6	2.1	93.4	59.9	59.9
AC-13	2	Jet Fighter	T & G	22T1	1188	0.3	0.0	113.3	58.0	62.1
AC-13	3	E-2/C-2	FCLP	22F1	1107	8.8	1.0	93.5	56.9	63.2
AC-13	4	Jet Fighter	T & G	28T1	1570	0.4	0.0	109.8	56.6	64.1
AC-13	5	E-2/C-2	FCLP	04F2	1248	13.8	1.6	90.1	55.5	64.6
AC-13	6	E-2/C-2	Crew Swap	22SW	1105	3.5	0.4	95.2	54.6	65.1
AC-13	7	Jet Fighter	DEP	P22D2	1248	0.0	0.0	117.2	54.1	65.4
AC-13	8	Jet Fighter	T & G	10T1	1848	0.3	0.0	108.6	53.6	65.7
AC-13	9	E-2/C-2	Crew Swap	04SW	1191	2.7	0.3	94.9	53.3	65.9
AC-13	10	Jet Fighter	T & G	04T1	1313	0.1	0.0	111.9	53.2	66.1
AC-13	11	E-2/C-2	FCLP	04F1	1316	6.9	0.8	89.5	51.9	66.3
AC-13	12	Jet Fighter	DEP	P28D2	1570	0.1	0.0	111.1	50.1	66.4
AC-13	13	Jet Fighter	DEP	P04D2	1248	0.0	0.0	115.8	49.3	66.5
AC-13	14	E-2/C-2	DEP	N22D2	1104	1.1	0.1	93.4	47.7	66.5
AC-13	15	E-2/C-2	DEP	N04D2	1184	0.8	0.1	94.1	47.3	66.6
AC-13	16	Jet Fighter	ARR	P28O1	1570	0.1	0.0	107.3	46.3	66.6
AC-13	17	Jet Fighter	DEP	P10D2	1674	0.0	0.0	108.4	45.7	66.7
AC-13	18	E-2/C-2	T & G	22T1	1154	1.2	0.0	93.7	45.0	66.7
AC-13	19	E-2/C-2	T & G	22T1	1240	0.8	0.0	93.2	<45	66.7
AC-13	20	P-3C	DEP	10D3	1619	1.0	0.0	90.5	<45	66.7

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-14	1	Jet Fighter	T & G	28T1	1250	0.4	0.0	111.9	58.7	58.7
AC-14	2	E-2/C-2	FCLP	22F2	1058	17.6	2.1	89.7	56.1	60.6
AC-14	3	Jet Fighter	T & G	22T1	1261	0.3	0.0	110.9	55.6	61.8
AC-14	4	Jet Fighter	T & G	04T1	899	0.1	0.0	113.4	54.8	62.6
AC-14	5	E-2/C-2	Crew Swap	22SW	1155	3.5	0.4	94.4	53.9	63.1
AC-14	6	Jet Fighter	ARR	P28O1	1250	0.1	0.0	111.8	50.8	63.4
AC-14	7	E-2/C-2	FCLP	04F2	909	13.8	1.6	83.8	49.2	63.5
AC-14	8	E-2/C-2	DEP	N22D2	1215	1.1	0.1	93.6	47.9	63.7
AC-14	9	Jet Fighter	DEP	P22D2	1058	0.0	0.0	110.6	47.6	63.8
AC-14	10	Jet Fighter	ARR	P04O1	912	0.0	0.0	113.7	47.3	63.9
AC-14	11	E-2/C-2	FCLP	22F1	2487	8.8	1.0	82.8	46.2	63.9
AC-14	12	E-2/C-2	FCLP	04F1	909	6.9	0.8	83.8	46.2	64.0
AC-14	13	E-2/C-2	Crew Swap	04SW	901	2.7	0.3	86.0	<45	64.1
AC-14	14	P-3C	DEP	22D3	1126	1.0	0.0	92.2	<45	64.1
AC-14	15	E-2/C-2	T & G	28T1	973	1.9	0.0	88.8	<45	64.1
AC-14	16	E-2/C-2	ARR	N04O1	909	0.8	0.1	88.9	<45	64.1
AC-14	17	E-2/C-2	T & G	22T1	988	1.2	0.0	89.6	<45	64.2
AC-14	18	E-2/C-2	DEP	N22D2	1215	0.3	0.0	93.6	<45	64.2
AC-14	19	E-2/C-2	T & G	28T1	1250	1.3	0.0	87.2	<45	64.2
AC-14	20	A-10A	T & G	22T1	1040	0.1	0.0	96.9	<45	64.2
AC-15	1	E-2/C-2	FCLP	22F2	4514	17.6	2.1	79.2	45.7	45.7
AC-15	2	E-2/C-2	Crew Swap	22SW	11263	3.5	0.4	75.7	<45	46.1
AC-15	3	E-2/C-2	FCLP	04F2	12343	13.8	1.6	68.3	<45	46.3
AC-15	4	Jet Fighter	T & G	22T1	8782	0.3	0.0	88.9	<45	46.5
AC-15	5	E-2/C-2	FCLP	22F1	11288	8.8	1.0	68.8	<45	46.7
AC-15	6	Jet Fighter	T & G	28T1	12002	0.4	0.0	84.6	<45	46.8
AC-15	7	E-2/C-2	DEP	N22D2	10683	1.1	0.1	75.8	<45	46.9
AC-15	8	E-2/C-2	Crew Swap	04SW	10614	2.7	0.3	71.4	<45	47.0
AC-15	9	E-2/C-2	FCLP	04F1	12343	6.9	0.8	67.2	<45	47.1
AC-15	10	Jet Fighter	T & G	04T1	11567	0.1	0.0	86.3	<45	47.1
AC-15	11	Jet Fighter	DEP	P22D2	10746	0.0	0.0	89.4	<45	47.1
AC-15	12	Jet Fighter	ARR	P22O1	8751	0.0	0.0	87.0	<45	47.2
AC-15	13	Jet Fighter	ARR	P28O1	12002	0.1	0.0	84.4	<45	47.2
AC-15	14	P-3C	DEP	22D3	10645	1.0	0.0	72.6	<45	47.2
AC-15	15	E-2/C-2	T & G	22T1	8746	1.2	0.0	71.3	<45	47.2
AC-15	16	E-2/C-2	ARR	N04O1	10580	0.8	0.1	69.1	<45	47.2
AC-15	17	E-2/C-2	T & G	28T1	11975	1.9	0.0	68.5	<45	47.2
AC-15	18	E-2/C-2	DEP	N22D2	10683	0.3	0.0	75.8	<45	47.3

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-15	19	E-2/C-2	T & G	22T1	8782	0.8	0.0	71.6	<45	47.3
AC-15	20	E-2/C-2	DEP	N04D2	14574	0.8	0.1	67.8	<45	47.3
AC-16	1	P-3C	ARR	28A1	1456	1.6	0.0	87.6	<45	<45
AC-16	2	Jet Fighter	T & G	28T1	18612	0.4	0.0	85.3	<45	<45
AC-16	3	B-737-400*	ARR	28A1	1406	0.4	0.0	84.9	<45	<45
AC-16	4	E-2/C-2	FCLP	04F2	23204	13.8	1.6	64.1	<45	<45
AC-16	5	E-2/C-2	FCLP	22F2	19883	17.6	2.1	63.0	<45	<45
AC-16	6	Jet Fighter	ARR	P28O1	2138	0.1	0.0	90.3	<45	<45
AC-16	7	A-10A	ARR	28A1	1407	0.0	0.0	91.2	<45	<45
AC-16	8	Jet Fighter	T & G	10T1	23084	0.3	0.0	80.3	<45	<45
AC-16	9	E-2/C-2	Crew Swap	22SW	19890	3.5	0.4	65.8	<45	<45
AC-16	10	E-2/C-2	Crew Swap	04SW	24364	2.7	0.3	66.8	<45	<45
AC-16	11	Jet Fighter	DEP	P10D2	12242	0.0	0.0	87.6	<45	<45
AC-16	12	E-2/C-2	FCLP	22F1	19883	8.8	1.0	61.3	<45	<45
AC-16	13	C-12	ARR	28A1	1422	0.2	0.0	79.9	<45	<45
AC-16	14	Jet Fighter	T & G	22T1	16596	0.3	0.0	78.7	<45	<45
AC-16	15	E-2/C-2	FCLP	04F1	27654	6.9	0.8	60.5	<45	<45
AC-16	16	Jet Fighter	DEP	P28D2	26733	0.1	0.0	82.9	<45	<45
AC-16	17	P-3C	DEP	10D3	11881	1.0	0.0	67.5	<45	<45
AC-16	18	E-2/C-2	DEP	N04D2	22984	0.8	0.1	64.9	<45	<45
AC-16	19	E-2/C-2	DEP	N10D2	12009	0.3	0.0	71.1	<45	<45
AC-16	20	E-2/C-2	DEP	N22D2	26056	1.1	0.1	61.4	<45	<45
AC-17	1	P-3C	ARR	28A1	3066	1.6	0.0	79.0	<45	<45
AC-17	2	E-2/C-2	FCLP	22F2	16714	17.6	2.1	64.8	<45	<45
AC-17	3	E-2/C-2	FCLP	04F2	21489	13.8	1.6	65.5	<45	<45
AC-17	4	Jet Fighter	T & G	28T1	14755	0.4	0.0	83.8	<45	<45
AC-17	5	Jet Fighter	DEP	P10D2	10377	0.0	0.0	89.9	<45	<45
AC-17	6	E-2/C-2	Crew Swap	22SW	16716	3.5	0.4	67.4	<45	<45
AC-17	7	E-2/C-2	Crew Swap	04SW	21968	2.7	0.3	68.3	<45	<45
AC-17	8	Jet Fighter	ARR	P28O1	3281	0.1	0.0	87.5	<45	<45
AC-17	9	E-2/C-2	FCLP	22F1	16714	8.8	1.0	63.1	<45	<45
AC-17	10	Jet Fighter	T & G	22T1	13958	0.3	0.0	81.6	<45	<45
AC-17	11	B-737-400*	ARR	28A1	3046	0.4	0.0	78.8	<45	<45
AC-17	12	Jet Fighter	T & G	10T1	20271	0.3	0.0	80.6	<45	<45
AC-17	13	E-2/C-2	FCLP	04F1	24276	6.9	0.8	62.1	<45	<45
AC-17	14	Jet Fighter	DEP	P28D2	23389	0.1	0.0	84.3	<45	<45
AC-17	15	E-2/C-2	DEP	N04D2	21539	0.8	0.1	67.9	<45	<45

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-17	16	P-3C	DEP	10D3	10034	1.0	0.0	69.8	<45	<45
AC-17	17	E-2/C-2	DEP	N22D2	22943	1.1	0.1	65.5	<45	<45
AC-17	18	E-2/C-2	DEP	N10D2	10180	0.3	0.0	73.5	<45	<45
AC-17	19	C-12	ARR	28A1	3055	0.2	0.0	75.0	<45	<45
AC-17	20	Jet Fighter	ARR	P22O1	14130	0.0	0.0	81.5	<45	<45
AC-18	1	Jet Fighter	T & G	28T1	21250	0.4	0.0	82.4	<45	<45
AC-18	2	E-2/C-2	FCLP	04F2	28484	13.8	1.6	60.7	<45	<45
AC-18	3	E-2/C-2	FCLP	22F2	23644	17.6	2.1	57.8	<45	<45
AC-18	4	P-3C	ARR	28A1	5853	1.6	0.0	70.4	<45	<45
AC-18	5	Jet Fighter	ARR	P28O1	6151	0.1	0.0	82.5	<45	<45
AC-18	6	Jet Fighter	T & G	10T1	27279	0.3	0.0	76.5	<45	<45
AC-18	7	E-2/C-2	Crew Swap	04SW	29020	2.7	0.3	63.0	<45	<45
AC-18	8	E-2/C-2	Crew Swap	22SW	23644	3.5	0.4	61.7	<45	<45
AC-18	9	E-2/C-2	FCLP	22F1	23644	8.8	1.0	56.6	<45	<45
AC-18	10	Jet Fighter	DEP	P10D2	17181	0.0	0.0	82.6	<45	<45
AC-18	11	E-2/C-2	FCLP	04F1	31061	6.9	0.8	56.8	<45	<45
AC-18	12	Jet Fighter	DEP	P28D2	30218	0.1	0.0	79.8	<45	<45
AC-18	13	Jet Fighter	T & G	22T1	21003	0.3	0.0	73.5	<45	<45
AC-18	14	B-737-400*	ARR	28A1	5840	0.4	0.0	70.8	<45	<45
AC-18	15	E-2/C-2	DEP	N04D2	28522	0.8	0.1	62.7	<45	<45
AC-18	16	P-3C	DEP	10D3	16965	1.0	0.0	64.3	<45	<45
AC-18	17	E-2/C-2	DEP	N10D2	17062	0.3	0.0	68.0	<45	<45
AC-18	18	E-2/C-2	T & G	28T1	21252	1.9	0.0	59.9	<45	<45
AC-18	19	C-12	ARR	28A1	5843	0.2	0.0	68.4	<45	<45
AC-18	20	E-2/C-2	T & G	10T1	27267	1.3	0.0	60.3	<45	<45
AC-19	1	E-2/C-2	FCLP	22F2	14450	17.6	2.1	68.4	<45	<45
AC-19	2	E-2/C-2	FCLP	04F2	20516	13.8	1.6	67.4	<45	<45
AC-19	3	Jet Fighter	T & G	28T1	10794	0.4	0.0	85.8	<45	<45
AC-19	4	E-2/C-2	Crew Swap	22SW	14442	3.5	0.4	71.5	<45	<45
AC-19	5	E-2/C-2	FCLP	22F1	14450	8.8	1.0	66.1	<45	<45
AC-19	6	E-2/C-2	Crew Swap	04SW	20515	2.7	0.3	70.4	<45	<45
AC-19	7	Jet Fighter	T & G	22T1	12655	0.3	0.0	83.8	<45	<45
AC-19	8	E-2/C-2	FCLP	04F1	20516	6.9	0.8	65.8	<45	<45
AC-19	9	Jet Fighter	ARR	P28O1	11319	0.1	0.0	87.5	<45	<45
AC-19	10	E-2/C-2	DEP	N22D2	20517	1.1	0.1	69.3	<45	<45
AC-19	11	E-2/C-2	DEP	N04D2	20514	0.8	0.1	69.4	<45	<45
AC-19	12	Jet Fighter	DEP	P10D2	15218	0.0	0.0	84.1	<45	<45

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-19	13	Jet Fighter	T & G	10T1	19756	0.3	0.0	75.5	<45	<45
AC-19	14	Jet Fighter	DEP	P28D2	20735	0.1	0.0	80.8	<45	<45
AC-19	15	E-2/C-2	T & G	28T1	10785	1.9	0.0	66.4	<45	<45
AC-19	16	Jet Fighter	T & G	04T1	20517	0.1	0.0	78.1	<45	<45
AC-19	17	E-2/C-2	T & G	22T1	12630	1.2	0.0	68.1	<45	<45
AC-19	18	Jet Fighter	ARR	P22O1	12655	0.0	0.0	82.4	<45	<45
AC-19	19	B-737-400*	DEP	28D3	20735	0.4	0.0	71.6	<45	<45
AC-19	20	P-3C	DEP	22D3	20516	1.0	0.0	67.5	<45	<45
AC-20	1	E-2/C-2	FCLP	22F2	31905	17.6	2.1	58.3	<45	<45
AC-20	2	E-2/C-2	FCLP	04F2	37980	13.8	1.6	57.2	<45	<45
AC-20	3	Jet Fighter	T & G	28T1	27869	0.4	0.0	74.1	<45	<45
AC-20	4	E-2/C-2	Crew Swap	22SW	31896	3.5	0.4	60.9	<45	<45
AC-20	5	E-2/C-2	FCLP	22F1	31905	8.8	1.0	56.6	<45	<45
AC-20	6	E-2/C-2	Crew Swap	04SW	37982	2.7	0.3	60.0	<45	<45
AC-20	7	E-2/C-2	FCLP	04F1	38107	6.9	0.8	55.4	<45	<45
AC-20	8	Jet Fighter	ARR	P28O1	19159	0.1	0.0	75.0	<45	<45
AC-20	9	E-2/C-2	DEP	N22D2	37976	1.1	0.1	58.2	<45	<45
AC-20	10	E-2/C-2	DEP	N04D2	37981	0.8	0.1	58.7	<45	<45
AC-20	11	Jet Fighter	T & G	22T1	30094	0.3	0.0	67.0	<45	<45
AC-20	12	Jet Fighter	DEP	P28D2	37716	0.1	0.0	72.1	<45	<45
AC-20	13	E-2/C-2	T & G	28T1	27868	1.9	0.0	57.6	<45	<45
AC-20	14	Jet Fighter	T & G	10T1	35915	0.3	0.0	65.8	<45	<45
AC-20	15	Jet Fighter	DEP	P10D2	27833	0.0	0.0	73.5	<45	<45
AC-20	16	E-2/C-2	T & G	28T1	27870	1.3	0.0	58.0	<45	<45
AC-20	17	E-2/C-2	T & G	22T1	30083	1.2	0.0	57.7	<45	<45
AC-20	18	P-3C	DEP	10D3	27723	1.0	0.0	57.7	<45	<45
AC-20	19	P-3C	DEP	22D3	37975	1.0	0.0	57.8	<45	<45
AC-20	20	P-3C	DEP	28D3	37716	1.6	0.0	55.7	<45	<45
AC-21	1	E-2/C-2	FCLP	22F2	14662	17.6	2.1	67.6	<45	<45
AC-21	2	E-2/C-2	Crew Swap	22SW	21455	3.5	0.4	68.4	<45	<45
AC-21	3	E-2/C-2	FCLP	04F2	24242	13.8	1.6	62.1	<45	<45
AC-21	4	Jet Fighter	T & G	22T1	22652	0.3	0.0	79.7	<45	<45
AC-21	5	E-2/C-2	FCLP	22F1	25166	8.8	1.0	61.0	<45	<45
AC-21	6	E-2/C-2	Crew Swap	04SW	16679	2.7	0.3	65.7	<45	<45
AC-21	7	E-2/C-2	FCLP	04F1	24243	6.9	0.8	59.5	<45	<45
AC-21	8	E-2/C-2	DEP	N22D2	19303	1.1	0.1	66.6	<45	<45
AC-21	9	Jet Fighter	DEP	P22D2	19394	0.0	0.0	83.1	<45	<45

Wallops Island: Alt 2B										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-21	10	Jet Fighter	T & G	04T1	22691	0.1	0.0	76.3	<45	<45
AC-21	11	E-2/C-2	DEP	N04D2	27771	0.8	0.1	63.8	<45	<45
AC-21	12	Jet Fighter	T & G	28T1	25644	0.4	0.0	69.8	<45	<45
AC-21	13	Jet Fighter	ARR	P22O1	22633	0.0	0.0	77.6	<45	<45
AC-21	14	E-2/C-2	ARR	N04O1	17115	0.8	0.1	61.2	<45	<45
AC-21	15	P-3C	DEP	22D3	19270	1.0	0.0	62.9	<45	<45
AC-21	16	E-2/C-2	T & G	22T1	22638	1.2	0.0	61.7	<45	<45
AC-21	17	E-2/C-2	T & G	28T1	25632	1.9	0.0	59.5	<45	<45
AC-21	18	E-2/C-2	DEP	N22D2	19303	0.3	0.0	66.6	<45	<45
AC-21	19	E-2/C-2	ARR	N22O1	25165	1.1	0.1	57.3	<45	<45
AC-21	20	E-2/C-2	T & G	22T1	22652	0.8	0.0	61.0	<45	<45
AC-22	1	E-2/C-2	Crew Swap	22SW	4335	3.5	0.4	80.4	<45	<45
AC-22	2	E-2/C-2	Crew Swap	04SW	3085	2.7	0.3	80.8	<45	<45
AC-22	3	Jet Fighter	DEP	P28D2	5477	0.1	0.0	98.6	<45	<45
AC-22	4	P-3C	ARR	10A1	2297	1.0	0.0	79.7	<45	<45
AC-22	5	P-3C	DEP	28D3	3975	1.6	0.0	76.1	<45	<45
AC-22	6	B-737-400*	DEP	28D3	4099	0.4	0.0	80.8	<45	<45
AC-22	7	E-2/C-2	DEP	N28D2	4256	0.5	0.0	78.3	<45	<45
AC-22	8	B-737-400*	ARR	10A1	2266	0.3	0.0	80.6	<45	<45
AC-22	9	Jet Fighter	ARR	P10O1	2166	0.0	0.0	88.0	<45	<45
AC-22	10	Jet Fighter	DEP	P22D2	11289	0.0	0.0	88.1	<45	<45
AC-22	11	E-2/C-2	DEP	N22D2	10118	1.1	0.1	70.1	<45	<45
AC-22	12	Jet Fighter	T & G	10T1	18371	0.3	0.0	78.7	<45	<45
AC-22	13	Jet Fighter	T & G	28T1	23151	0.4	0.0	75.0	<45	<45
AC-22	14	E-2/C-2	FCLP	04F2	24633	13.8	1.6	56.3	<45	<45
AC-22	15	E-2/C-2	ARR	N10O1	1727	0.3	0.0	74.5	<45	<45
AC-22	16	Jet Fighter	DEP	P10D2	17102	0.0	0.0	81.7	<45	<45
AC-22	17	P-3C	DEP	22D3	8556	1.0	0.0	67.3	<45	<45
AC-22	18	A-10A	ARR	10A1	2266	0.0	0.0	83.9	<45	<45
AC-22	19	C-12	ARR	10A1	2276	0.1	0.0	74.7	<45	<45
AC-22	20	E-2/C-2	FCLP	04F1	24633	6.9	0.8	54.4	<45	<45

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-1	1	E-2/C-2	Crew Swap	28SW	1971	4.0	0.5	87.4	47.4	47.4
AC-1	2	E-2/C-2	Crew Swap	10SW	4124	2.5	0.3	79.5	<45	47.9
AC-1	3	Jet Fighter	T & G	10T1	8777	0.3	0.0	87.0	<45	48.0
AC-1	4	E-2/C-2	FCLP	28F1	19451	29.2	3.4	61.6	<45	48.0
AC-1	5	E-2/C-2	FCLP	10F1	12147	17.9	2.1	63.0	<45	48.1
AC-1	6	Jet Fighter	ARR	P10O1	9278	0.0	0.0	88.9	<45	48.1
AC-1	7	E-2/C-2	DEP	N28D2	13506	1.0	0.1	71.5	<45	48.2
AC-1	8	Jet Fighter	DEP	P10D2	11460	0.0	0.0	88.1	<45	48.2
AC-1	9	Jet Fighter	DEP	P28D2	13597	0.1	0.0	85.7	<45	48.2
AC-1	10	Jet Fighter	T & G	28T1	17787	0.4	0.0	76.2	<45	48.2
AC-1	11	P-3C	DEP	10D3	5654	1.0	0.0	71.9	<45	48.2
AC-1	12	E-2/C-2	DEP	N10D2	10064	0.6	0.1	70.3	<45	48.2
AC-1	13	E-2/C-2	ARR	N28O1	4601	1.0	0.1	67.0	<45	48.2
AC-1	14	P-3C	DEP	28D3	12683	1.6	0.0	68.3	<45	48.2
AC-1	15	Jet Fighter	DEP	P04D2	12312	0.0	0.0	87.2	<45	48.3
AC-1	16	E-2/C-2	DEP	N28D2	13506	0.5	0.0	71.5	<45	48.3
AC-1	17	B-737-400*	DEP	10D3	7434	0.3	0.0	73.5	<45	48.3
AC-1	18	Jet Fighter	T & G	04T1	16808	0.1	0.0	76.7	<45	48.3
AC-1	19	E-2/C-2	T & G	10T1	8766	1.3	0.0	65.7	<45	48.3
AC-1	20	E-2/C-2	ARR	N10O1	12152	0.6	0.1	65.1	<45	48.3
AC-2	1	Jet Fighter	DEP	P28D2	3181	0.1	0.0	105.6	<45	<45
AC-2	2	Jet Fighter	ARR	P10O1	1303	0.0	0.0	105.4	<45	46.8
AC-2	3	E-2/C-2	Crew Swap	28SW	4934	4.0	0.5	81.4	<45	47.9
AC-2	4	E-2/C-2	DEP	N28D2	2480	1.0	0.1	87.1	<45	48.7
AC-2	5	P-3C	DEP	28D3	1710	1.6	0.0	87.4	<45	49.3
AC-2	6	P-3C	ARR	10A1	865	1.0	0.0	88.8	<45	49.7
AC-2	7	E-2/C-2	Crew Swap	10SW	1528	2.5	0.3	78.0	<45	49.9
AC-2	8	E-2/C-2	DEP	N28D2	2480	0.5	0.0	87.1	<45	50.0
AC-2	9	B-737-400*	ARR	10A1	824	0.3	0.0	89.1	<45	50.2
AC-2	10	B-737-400*	DEP	28D3	2257	0.4	0.0	86.8	<45	50.3
AC-2	11	Jet Fighter	T & G	10T1	7671	0.3	0.0	88.3	<45	50.3
AC-2	12	E-2/C-2	FCLP	28F1	15455	29.2	3.4	63.7	<45	50.4
AC-2	13	E-2/C-2	FCLP	10F1	10941	17.9	2.1	64.4	<45	50.5
AC-2	14	Jet Fighter	T & G	28T1	12579	0.4	0.0	83.6	<45	50.5
AC-2	15	E-2/C-2	ARR	N10O1	1284	0.6	0.1	78.3	<45	50.5
AC-2	16	A-10A	ARR	10A1	809	0.0	0.0	95.2	<45	50.6
AC-2	17	E-2/C-2	ARR	N10O1	1284	0.3	0.0	78.3	<45	50.6
AC-2	18	Jet Fighter	DEP	P10D2	15779	0.0	0.0	86.7	<45	50.6

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-2	19	C-12	ARR	10A1	845	0.1	0.0	81.5	<45	50.6
AC-2	20	Jet Fighter	T & G	04T1	12515	0.1	0.0	81.8	<45	50.6
AC-3	1	Jet Fighter	DEP	P28D2	7378	0.1	0.0	95.3	<45	<45
AC-3	2	E-2/C-2	Crew Swap	28SW	12044	4.0	0.5	73.1	<45	<45
AC-3	3	Jet Fighter	T & G	28T1	14817	0.4	0.0	86.0	<45	<45
AC-3	4	E-2/C-2	DEP	N28D2	6980	1.0	0.1	77.4	<45	<45
AC-3	5	Jet Fighter	DEP	P22D2	7745	0.0	0.0	93.8	<45	<45
AC-3	6	E-2/C-2	FCLP	28F1	18109	29.2	3.4	61.2	<45	<45
AC-3	7	E-2/C-2	Crew Swap	10SW	7523	2.5	0.3	68.4	<45	<45
AC-3	8	E-2/C-2	DEP	N28D2	6980	0.5	0.0	77.4	<45	<45
AC-3	9	P-3C	DEP	28D3	8116	1.6	0.0	72.6	<45	<45
AC-3	10	E-2/C-2	FCLP	10F1	16086	17.9	2.1	58.5	<45	<45
AC-3	11	Jet Fighter	T & G	10T1	13489	0.3	0.0	78.4	<45	<45
AC-3	12	P-3C	DEP	22D3	5524	1.0	0.0	72.3	<45	<45
AC-3	13	B-737-400*	DEP	22D3	5749	0.3	0.0	76.8	<45	<45
AC-3	14	Jet Fighter	ARR	P10O1	6490	0.0	0.0	84.3	<45	<45
AC-3	15	Jet Fighter	T & G	04T1	13046	0.1	0.0	80.3	<45	<45
AC-3	16	B-737-400*	DEP	28D3	8271	0.4	0.0	74.4	<45	<45
AC-3	17	E-2/C-2	DEP	N22D2	6604	0.3	0.0	74.5	<45	<45
AC-3	18	E-2/C-2	ARR	N10O1	6495	0.6	0.1	68.1	<45	<45
AC-3	19	Jet Fighter	ARR	P28O1	14810	0.1	0.0	80.1	<45	<45
AC-3	20	Jet Fighter	DEP	P10D2	19642	0.0	0.0	81.3	<45	<45
AC-4	1	Jet Fighter	DEP	P22D2	8419	0.0	0.0	92.8	<45	<45
AC-4	2	E-2/C-2	Crew Swap	28SW	21689	4.0	0.5	65.8	<45	<45
AC-4	3	Jet Fighter	T & G	28T1	19341	0.4	0.0	77.4	<45	<45
AC-4	4	E-2/C-2	DEP	N28D2	18494	1.0	0.1	67.1	<45	<45
AC-4	5	P-3C	DEP	22D3	7019	1.0	0.0	70.6	<45	<45
AC-4	6	Jet Fighter	T & G	04T1	15883	0.1	0.0	79.0	<45	<45
AC-4	7	E-2/C-2	FCLP	28F1	22611	29.2	3.4	51.6	<45	<45
AC-4	8	B-737-400*	DEP	22D3	7086	0.3	0.0	74.9	<45	<45
AC-4	9	E-2/C-2	DEP	N22D2	7509	0.3	0.0	74.1	<45	<45
AC-4	10	Jet Fighter	DEP	P28D2	18643	0.1	0.0	79.8	<45	<45
AC-4	11	E-2/C-2	Crew Swap	10SW	18898	2.5	0.3	59.7	<45	<45
AC-4	12	Jet Fighter	ARR	P04O1	12523	0.0	0.0	82.3	<45	<45
AC-4	13	P-3C	DEP	28D3	19551	1.6	0.0	62.5	<45	<45
AC-4	14	E-2/C-2	DEP	N28D2	18494	0.5	0.0	67.1	<45	<45
AC-4	15	E-2/C-2	FCLP	10F1	23838	17.9	2.1	47.6	<45	<45

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-4	16	Jet Fighter	T & G	22T1	24486	0.3	0.0	68.9	<45	<45
AC-4	17	E-2/C-2	ARR	N04O1	2756	0.1	0.0	70.9	<45	<45
AC-4	18	E-2/C-2	T & G	28T1	19341	1.3	0.0	60.8	<45	<45
AC-4	19	Jet Fighter	ARR	P28O1	19313	0.1	0.0	72.8	<45	<45
AC-4	20	E-2/C-2	T & G	28T1	19326	1.9	0.0	57.8	<45	<45
AC-5	1	E-2/C-2	Crew Swap	28SW	1431	4.0	0.5	83.4	<45	<45
AC-5	2	E-2/C-2	Crew Swap	10SW	3213	2.5	0.3	83.8	<45	45.7
AC-5	3	P-3C	ARR	22A1	1054	1.0	0.0	86.0	<45	46.2
AC-5	4	Jet Fighter	DEP	P04D2	4058	0.0	0.0	101.8	<45	46.6
AC-5	5	Jet Fighter	ARR	P22O1	1188	0.0	0.0	98.3	<45	46.9
AC-5	6	B-737-400*	ARR	22A1	1009	0.3	0.0	86.5	<45	47.0
AC-5	7	Jet Fighter	DEP	P10D2	8124	0.0	0.0	93.0	<45	47.1
AC-5	8	E-2/C-2	FCLP	10F1	16024	17.9	2.1	63.2	<45	47.2
AC-5	9	P-3C	DEP	04D3	2562	0.4	0.0	81.8	<45	47.2
AC-5	10	Jet Fighter	T & G	22T1	10538	0.3	0.0	83.9	<45	47.3
AC-5	11	Jet Fighter	T & G	10T1	12991	0.3	0.0	82.8	<45	47.3
AC-5	12	E-2/C-2	FCLP	28F1	19057	29.2	3.4	58.3	<45	47.4
AC-5	13	E-2/C-2	DEP	N10D2	7179	0.6	0.1	74.0	<45	47.4
AC-5	14	A-10A	ARR	22A1	1002	0.0	0.0	92.3	<45	47.4
AC-5	15	B-737-400*	DEP	04D3	3066	0.1	0.0	83.2	<45	47.4
AC-5	16	E-2/C-2	DEP	N04D2	3391	0.1	0.0	82.2	<45	47.5
AC-5	17	Jet Fighter	T & G	04T1	15566	0.1	0.0	80.5	<45	47.5
AC-5	18	P-3C	DEP	10D3	6359	1.0	0.0	70.8	<45	47.5
AC-5	19	B-737-400*	DEP	10D3	6446	0.3	0.0	75.2	<45	47.5
AC-5	20	C-12	ARR	22A1	1032	0.1	0.0	78.6	<45	47.5
AC-6	1	Jet Fighter	T & G	10T1	2121	0.3	0.0	106.2	51.2	51.2
AC-6	2	E-2/C-2	FCLP	10F1	3790	17.9	2.1	78.1	<45	52.1
AC-6	3	Jet Fighter	T & G	04T1	3004	0.1	0.0	101.4	<45	52.6
AC-6	4	Jet Fighter	ARR	P10O1	2121	0.0	0.0	105.2	<45	53.0
AC-6	5	E-2/C-2	FCLP	28F1	9791	29.2	3.4	70.9	<45	53.2
AC-6	6	E-2/C-2	Crew Swap	10SW	3798	2.5	0.3	80.1	<45	53.3
AC-6	7	E-2/C-2	Crew Swap	28SW	8457	4.0	0.5	77.4	<45	53.4
AC-6	8	Jet Fighter	T & G	22T1	6426	0.3	0.0	90.6	<45	53.5
AC-6	9	E-2/C-2	T & G	10T1	1973	1.3	0.0	83.1	<45	53.5
AC-6	10	E-2/C-2	T & G	10T1	2121	0.8	0.0	82.9	<45	53.6
AC-6	11	Jet Fighter	T & G	28T1	9794	0.4	0.0	84.9	<45	53.6
AC-6	12	Jet Fighter	DEP	P10D2	8690	0.0	0.0	93.8	<45	53.6

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-6	13	Jet Fighter	DEP	P04D2	6438	0.0	0.0	96.3	<45	53.6
AC-6	14	E-2/C-2	DEP	N10D2	6954	0.6	0.1	77.0	<45	53.7
AC-6	15	Jet Fighter	ARR	P22O1	6429	0.0	0.0	91.7	<45	53.7
AC-6	16	Jet Fighter	DEP	P28D2	9799	0.1	0.0	89.5	<45	53.7
AC-6	17	E-2/C-2	T & G	04T1	2901	0.5	0.0	80.7	<45	53.7
AC-6	18	E-2/C-2	DEP	N28D2	9791	1.0	0.1	73.5	<45	53.7
AC-6	19	Jet Fighter	DEP	P22D2	8471	0.0	0.0	90.0	<45	53.7
AC-6	20	E-2/C-2	T & G	04T1	3004	0.4	0.0	80.6	<45	53.7
AC-7	1	Jet Fighter	T & G	22T1	674	0.3	0.0	115.8	60.5	60.5
AC-7	2	Jet Fighter	ARR	P22O1	695	0.0	0.0	116.0	52.9	61.2
AC-7	3	Jet Fighter	T & G	10T1	2181	0.3	0.0	107.4	52.5	61.8
AC-7	4	E-2/C-2	FCLP	10F1	1551	17.9	2.1	85.8	52.3	62.2
AC-7	5	Jet Fighter	T & G	04T1	1525	0.1	0.0	108.7	50.0	62.5
AC-7	6	Jet Fighter	DEP	P04D2	876	0.0	0.0	112.7	46.2	62.6
AC-7	7	E-2/C-2	Crew Swap	10SW	1575	2.5	0.3	87.0	<45	62.7
AC-7	8	E-2/C-2	FCLP	28F1	4739	29.2	3.4	76.0	<45	62.7
AC-7	9	E-2/C-2	Crew Swap	28SW	2620	4.0	0.5	83.4	<45	62.8
AC-7	10	Jet Fighter	T & G	28T1	4737	0.4	0.0	96.5	<45	62.8
AC-7	11	P-3C	DEP	04D3	975	0.4	0.0	92.8	<45	62.8
AC-7	12	P-3C	ARR	22A1	689	1.0	0.0	89.1	<45	62.9
AC-7	13	Jet Fighter	DEP	P22D2	3252	0.0	0.0	102.0	<45	62.9
AC-7	14	E-2/C-2	T & G	10T1	2034	1.3	0.0	86.0	<45	62.9
AC-7	15	E-2/C-2	T & G	22T1	674	1.2	0.0	85.7	<45	62.9
AC-7	16	Jet Fighter	DEP	P10D2	4771	0.0	0.0	99.6	<45	62.9
AC-7	17	Jet Fighter	DEP	P28D2	5079	0.1	0.0	97.8	<45	62.9
AC-7	18	A-10A	T & G	22T1	691	0.1	0.0	95.3	<45	62.9
AC-7	19	E-2/C-2	DEP	N04D2	1235	0.1	0.0	93.3	<45	62.9
AC-7	20	E-2/C-2	T & G	10T1	2181	0.8	0.0	85.7	<45	63.0
AC-8	1	Jet Fighter	T & G	04T1	1400	0.1	0.0	110.4	51.7	51.7
AC-8	2	Jet Fighter	T & G	10T1	2848	0.3	0.0	104.0	49.1	53.6
AC-8	3	Jet Fighter	T & G	28T1	3082	0.4	0.0	102.1	48.9	54.9
AC-8	4	E-2/C-2	FCLP	28F1	3779	29.2	3.4	80.1	48.8	55.8
AC-8	5	E-2/C-2	Crew Swap	28SW	1793	4.0	0.5	88.6	48.7	56.6
AC-8	6	E-2/C-2	FCLP	10F1	2850	17.9	2.1	81.5	48.0	57.1
AC-8	7	E-2/C-2	Crew Swap	10SW	2171	2.5	0.3	86.4	<45	57.4
AC-8	8	Jet Fighter	ARR	P04O1	1400	0.0	0.0	110.1	<45	57.5
AC-8	9	Jet Fighter	DEP	P28D2	2905	0.1	0.0	103.0	<45	57.7

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-8	10	Jet Fighter	DEP	P10D2	3026	0.0	0.0	104.2	<45	57.8
AC-8	11	E-2/C-2	DEP	N28D2	2925	1.0	0.1	87.0	<45	57.9
AC-8	12	Jet Fighter	ARR	P10O1	2848	0.0	0.0	103.4	<45	57.9
AC-8	13	P-3C	DEP	28D3	2887	1.6	0.0	84.3	<45	58.0
AC-8	14	E-2/C-2	T & G	04T1	1156	0.5	0.0	87.2	<45	58.0
AC-8	15	E-2/C-2	T & G	28T1	2980	1.9	0.0	81.6	<45	58.0
AC-8	16	E-2/C-2	DEP	N28D2	2925	0.5	0.0	87.0	<45	58.0
AC-8	17	P-3C	DEP	10D3	3026	1.0	0.0	83.6	<45	58.1
AC-8	18	E-2/C-2	ARR	N10O1	2850	0.6	0.1	82.2	<45	58.1
AC-8	19	E-2/C-2	T & G	10T1	2847	1.3	0.0	82.2	<45	58.1
AC-8	20	E-2/C-2	T & G	28T1	3082	1.3	0.0	81.5	<45	58.1
AC-9	1	Jet Fighter	T & G	28T1	1027	0.4	0.0	112.6	59.4	59.4
AC-9	2	Jet Fighter	T & G	04T1	1032	0.1	0.0	112.6	53.9	60.5
AC-9	3	E-2/C-2	FCLP	28F1	3380	29.2	3.4	79.5	48.1	60.7
AC-9	4	E-2/C-2	Crew Swap	28SW	3388	4.0	0.5	86.6	46.6	60.9
AC-9	5	Jet Fighter	ARR	P04O1	1032	0.0	0.0	112.7	46.3	61.0
AC-9	6	E-2/C-2	T & G	28T1	665	1.9	0.0	92.4	45.7	61.2
AC-9	7	Jet Fighter	T & G	10T1	3273	0.3	0.0	100.3	45.4	61.3
AC-9	8	E-2/C-2	FCLP	10F1	3631	17.9	2.1	75.2	<45	61.3
AC-9	9	Jet Fighter	DEP	P28D2	3318	0.1	0.0	102.6	<45	61.4
AC-9	10	E-2/C-2	T & G	28T1	1027	1.3	0.0	89.5	<45	61.4
AC-9	11	A-10A	T & G	28T1	958	0.2	0.0	97.9	<45	61.5
AC-9	12	E-2/C-2	DEP	N28D2	3406	1.0	0.1	85.7	<45	61.5
AC-9	13	Jet Fighter	ARR	P10O1	3283	0.0	0.0	101.1	<45	61.5
AC-9	14	E-2/C-2	Crew Swap	10SW	3427	2.5	0.3	79.2	<45	61.5
AC-9	15	P-3C	DEP	28D3	3348	1.6	0.0	82.7	<45	61.5
AC-9	16	Jet Fighter	ARR	P28O1	977	0.1	0.0	96.1	<45	61.5
AC-9	17	E-2/C-2	T & G	04T1	672	0.5	0.0	86.3	<45	61.6
AC-9	18	Jet Fighter	DEP	P10D2	5218	0.0	0.0	96.8	<45	61.6
AC-9	19	E-2/C-2	DEP	N28D2	3406	0.5	0.0	85.7	<45	61.6
AC-9	20	Jet Fighter	T & G	22T1	8663	0.3	0.0	88.1	<45	61.6
AC-10	1	Jet Fighter	DEP	P22D2	3592	0.0	0.0	104.2	<45	<45
AC-10	2	Jet Fighter	T & G	04T1	3974	0.1	0.0	96.4	<45	<45
AC-10	3	Jet Fighter	T & G	28T1	7964	0.4	0.0	89.3	<45	<45
AC-10	4	E-2/C-2	FCLP	28F1	10801	29.2	3.4	67.0	<45	<45
AC-10	5	P-3C	DEP	22D3	2607	1.0	0.0	83.8	<45	<45
AC-10	6	E-2/C-2	Crew Swap	28SW	10790	4.0	0.5	72.1	<45	<45

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-10	7	E-2/C-2	DEP	N22D2	2919	0.3	0.0	86.3	<45	45.1
AC-10	8	Jet Fighter	ARR	P04O1	3746	0.0	0.0	97.6	<45	45.3
AC-10	9	B-737-400*	DEP	22D3	2977	0.3	0.0	84.7	<45	45.4
AC-10	10	Jet Fighter	T & G	22T1	11315	0.3	0.0	84.4	<45	45.5
AC-10	11	E-2/C-2	FCLP	10F1	14804	17.9	2.1	60.6	<45	45.6
AC-10	12	E-2/C-2	Crew Swap	10SW	14461	2.5	0.3	68.4	<45	45.6
AC-10	13	E-2/C-2	DEP	N28D2	14471	1.0	0.1	70.8	<45	45.6
AC-10	14	E-2/C-2	T & G	28T1	7926	1.9	0.0	70.8	<45	45.7
AC-10	15	Jet Fighter	ARR	P28O1	7965	0.1	0.0	84.9	<45	45.7
AC-10	16	E-2/C-2	T & G	28T1	7964	1.3	0.0	71.2	<45	45.7
AC-10	17	Jet Fighter	DEP	P28D2	14454	0.1	0.0	83.5	<45	45.8
AC-10	18	Jet Fighter	T & G	10T1	14462	0.3	0.0	75.1	<45	45.8
AC-10	19	P-3C	DEP	28D3	14453	1.6	0.0	66.9	<45	45.8
AC-10	20	E-2/C-2	ARR	N04O1	3700	0.1	0.0	76.8	<45	45.8
AC-11	1	Jet Fighter	DEP	P22D2	9883	0.0	0.0	89.4	<45	<45
AC-11	2	P-3C	ARR	04A1	2346	0.4	0.0	78.0	<45	<45
AC-11	3	E-2/C-2	Crew Swap	28SW	22237	4.0	0.5	62.2	<45	<45
AC-11	4	Jet Fighter	ARR	P04O1	2596	0.0	0.0	88.1	<45	<45
AC-11	5	B-737-400*	ARR	04A1	2320	0.1	0.0	79.4	<45	<45
AC-11	6	Jet Fighter	T & G	28T1	19482	0.4	0.0	73.4	<45	<45
AC-11	7	P-3C	DEP	22D3	9410	1.0	0.0	69.0	<45	<45
AC-11	8	Jet Fighter	T & G	22T1	21445	0.3	0.0	74.5	<45	<45
AC-11	9	E-2/C-2	FCLP	28F1	22248	29.2	3.4	50.4	<45	<45
AC-11	10	E-2/C-2	DEP	N22D2	9563	0.3	0.0	73.0	<45	<45
AC-11	11	Jet Fighter	T & G	04T1	15505	0.1	0.0	77.3	<45	<45
AC-11	12	E-2/C-2	DEP	N28D2	25075	1.0	0.1	62.2	<45	<45
AC-11	13	B-737-400*	DEP	22D3	9558	0.3	0.0	71.0	<45	<45
AC-11	14	E-2/C-2	Crew Swap	10SW	25045	2.5	0.3	57.7	<45	<45
AC-11	15	E-2/C-2	T & G	28T1	19482	1.3	0.0	60.0	<45	<45
AC-11	16	A-10A	ARR	04A1	2319	0.0	0.0	82.1	<45	<45
AC-11	17	C-12	ARR	04A1	2330	0.1	0.0	73.0	<45	<45
AC-11	18	Jet Fighter	DEP	P28D2	25092	0.1	0.0	72.2	<45	<45
AC-11	19	P-3C	DEP	28D3	25054	1.6	0.0	58.4	<45	<45
AC-11	20	E-2/C-2	DEP	N28D2	25075	0.5	0.0	62.2	<45	<45
AC-12	1	E-2/C-2	FCLP	28F1	1684	29.2	3.4	88.0	56.6	56.6
AC-12	2	Jet Fighter	T & G	28T1	3216	0.4	0.0	104.1	51.0	57.6
AC-12	3	E-2/C-2	Crew Swap	28SW	1728	4.0	0.5	89.1	49.2	58.2

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POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-12	4	E-2/C-2	FCLP	10F1	3099	17.9	2.1	82.3	48.8	58.7
AC-12	5	Jet Fighter	T & G	10T1	3099	0.3	0.0	102.4	47.5	59.0
AC-12	6	Jet Fighter	DEP	P28D2	3149	0.1	0.0	104.4	<45	59.1
AC-12	7	Jet Fighter	T & G	04T1	3850	0.1	0.0	102.0	<45	59.2
AC-12	8	Jet Fighter	T & G	22T1	4279	0.3	0.0	98.5	<45	59.3
AC-12	9	Jet Fighter	DEP	P10D2	3104	0.0	0.0	105.8	<45	59.4
AC-12	10	E-2/C-2	Crew Swap	10SW	3099	2.5	0.3	85.1	<45	59.5
AC-12	11	E-2/C-2	DEP	N28D2	3134	1.0	0.1	86.4	<45	59.6
AC-12	12	Jet Fighter	DEP	P22D2	4205	0.0	0.0	100.6	<45	59.6
AC-12	13	E-2/C-2	T & G	28T1	3149	1.9	0.0	83.8	<45	59.7
AC-12	14	P-3C	DEP	28D3	3114	1.6	0.0	84.0	<45	59.7
AC-12	15	Jet Fighter	ARR	P10O1	3214	0.0	0.0	99.0	<45	59.7
AC-12	16	Jet Fighter	ARR	P28O1	3244	0.1	0.0	97.1	<45	59.7
AC-12	17	Jet Fighter	DEP	P04D2	4168	0.0	0.0	101.9	<45	59.7
AC-12	18	E-2/C-2	T & G	28T1	3244	1.3	0.0	83.8	<45	59.7
AC-12	19	E-2/C-2	T & G	10T1	3099	1.3	0.0	83.5	<45	59.8
AC-12	20	Jet Fighter	ARR	P04O1	3850	0.0	0.0	101.1	<45	59.8
AC-13	1	Jet Fighter	T & G	22T1	1188	0.3	0.0	113.3	58.0	58.0
AC-13	2	Jet Fighter	T & G	28T1	1570	0.4	0.0	109.8	56.6	60.4
AC-13	3	Jet Fighter	DEP	P22D2	1248	0.0	0.0	117.2	54.1	61.3
AC-13	4	Jet Fighter	T & G	10T1	1848	0.3	0.0	108.6	53.6	62.0
AC-13	5	E-2/C-2	FCLP	28F1	1571	29.2	3.4	84.6	53.3	62.5
AC-13	6	Jet Fighter	T & G	04T1	1313	0.1	0.0	111.9	53.2	63.0
AC-13	7	E-2/C-2	Crew Swap	10SW	1660	2.5	0.3	93.2	51.1	63.3
AC-13	8	E-2/C-2	FCLP	10F1	2203	17.9	2.1	84.4	50.9	63.5
AC-13	9	Jet Fighter	DEP	P28D2	1570	0.1	0.0	111.1	50.1	63.7
AC-13	10	Jet Fighter	DEP	P04D2	1248	0.0	0.0	115.8	49.3	63.9
AC-13	11	E-2/C-2	Crew Swap	28SW	1563	4.0	0.5	89.3	49.3	64.0
AC-13	12	Jet Fighter	ARR	P28O1	1570	0.1	0.0	107.3	46.3	64.1
AC-13	13	Jet Fighter	DEP	P10D2	1674	0.0	0.0	108.4	45.7	64.2
AC-13	14	E-2/C-2	T & G	22T1	1154	1.2	0.0	93.7	45.0	64.2
AC-13	15	E-2/C-2	DEP	N10D2	1671	0.6	0.1	92.4	<45	64.3
AC-13	16	E-2/C-2	T & G	22T1	1240	0.8	0.0	93.2	<45	64.3
AC-13	17	P-3C	DEP	10D3	1619	1.0	0.0	90.5	<45	64.3
AC-13	18	P-3C	DEP	22D3	1104	1.0	0.0	90.9	<45	64.3
AC-13	19	Jet Fighter	ARR	P22O1	1477	0.0	0.0	104.2	<45	64.4
AC-13	20	E-2/C-2	T & G	28T1	1570	1.9	0.0	87.0	<45	64.4

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POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-14	1	Jet Fighter	T & G	28T1	1250	0.4	0.0	111.9	58.7	58.7
AC-14	2	Jet Fighter	T & G	22T1	1261	0.3	0.0	110.9	55.6	60.4
AC-14	3	Jet Fighter	T & G	04T1	899	0.1	0.0	113.4	54.8	61.5
AC-14	4	Jet Fighter	ARR	P28O1	1250	0.1	0.0	111.8	50.8	61.8
AC-14	5	E-2/C-2	FCLP	28F1	2673	29.2	3.4	81.5	50.1	62.1
AC-14	6	Jet Fighter	DEP	P22D2	1058	0.0	0.0	110.6	47.6	62.3
AC-14	7	Jet Fighter	ARR	P04O1	912	0.0	0.0	113.7	47.3	62.4
AC-14	8	P-3C	DEP	22D3	1126	1.0	0.0	92.2	<45	62.4
AC-14	9	E-2/C-2	T & G	28T1	973	1.9	0.0	88.8	<45	62.5
AC-14	10	E-2/C-2	Crew Swap	28SW	2664	4.0	0.5	82.1	<45	62.5
AC-14	11	E-2/C-2	T & G	22T1	988	1.2	0.0	89.6	<45	62.6
AC-14	12	E-2/C-2	FCLP	10F1	8690	17.9	2.1	72.9	<45	62.6
AC-14	13	E-2/C-2	DEP	N22D2	1215	0.3	0.0	93.6	<45	62.6
AC-14	14	E-2/C-2	T & G	28T1	1250	1.3	0.0	87.2	<45	62.6
AC-14	15	A-10A	T & G	22T1	1040	0.1	0.0	96.9	<45	62.6
AC-14	16	B-737-400*	DEP	22D3	1282	0.3	0.0	92.9	<45	62.6
AC-14	17	E-2/C-2	T & G	22T1	1261	0.8	0.0	88.0	<45	62.7
AC-14	18	Jet Fighter	DEP	P04D2	3034	0.0	0.0	102.6	<45	62.7
AC-14	19	E-2/C-2	Crew Swap	10SW	8689	2.5	0.3	78.1	<45	62.7
AC-14	20	E-2/C-2	ARR	N28O1	2673	1.0	0.1	79.7	<45	62.7
AC-15	1	E-2/C-2	FCLP	28F1	13795	29.2	3.4	66.2	<45	<45
AC-15	2	Jet Fighter	T & G	22T1	8782	0.3	0.0	88.9	<45	<45
AC-15	3	Jet Fighter	T & G	28T1	12002	0.4	0.0	84.6	<45	<45
AC-15	4	E-2/C-2	FCLP	10F1	19960	17.9	2.1	63.2	<45	<45
AC-15	5	E-2/C-2	Crew Swap	28SW	13787	4.0	0.5	69.6	<45	<45
AC-15	6	Jet Fighter	T & G	04T1	11567	0.1	0.0	86.3	<45	<45
AC-15	7	E-2/C-2	Crew Swap	10SW	19867	2.5	0.3	69.0	<45	<45
AC-15	8	Jet Fighter	DEP	P22D2	10746	0.0	0.0	89.4	<45	<45
AC-15	9	Jet Fighter	ARR	P22O1	8751	0.0	0.0	87.0	<45	<45
AC-15	10	Jet Fighter	ARR	P28O1	12002	0.1	0.0	84.4	<45	<45
AC-15	11	P-3C	DEP	22D3	10645	1.0	0.0	72.6	<45	<45
AC-15	12	E-2/C-2	T & G	22T1	8746	1.2	0.0	71.3	<45	<45
AC-15	13	E-2/C-2	T & G	28T1	11975	1.9	0.0	68.5	<45	<45
AC-15	14	E-2/C-2	DEP	N22D2	10683	0.3	0.0	75.8	<45	<45
AC-15	15	E-2/C-2	T & G	22T1	8782	0.8	0.0	71.6	<45	<45
AC-15	16	Jet Fighter	T & G	10T1	19882	0.3	0.0	75.0	<45	<45
AC-15	17	E-2/C-2	T & G	28T1	12002	1.3	0.0	68.2	<45	<45
AC-15	18	E-2/C-2	DEP	N28D2	19858	1.0	0.1	65.7	<45	<45

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-15	19	Jet Fighter	ARR	P04O1	10597	0.0	0.0	85.8	<45	<45
AC-15	20	E-2/C-2	DEP	N10D2	19866	0.6	0.1	67.3	<45	<45
AC-16	1	P-3C	ARR	28A1	1456	1.6	0.0	87.6	<45	<45
AC-16	2	Jet Fighter	T & G	28T1	18612	0.4	0.0	85.3	<45	<45
AC-16	3	B-737-400*	ARR	28A1	1406	0.4	0.0	84.9	<45	<45
AC-16	4	E-2/C-2	FCLP	28F1	21956	29.2	3.4	60.8	<45	<45
AC-16	5	Jet Fighter	ARR	P28O1	2138	0.1	0.0	90.3	<45	<45
AC-16	6	E-2/C-2	Crew Swap	10SW	15043	2.5	0.3	70.7	<45	<45
AC-16	7	E-2/C-2	Crew Swap	28SW	7135	4.0	0.5	68.5	<45	<45
AC-16	8	E-2/C-2	FCLP	10F1	26147	17.9	2.1	60.3	<45	<45
AC-16	9	A-10A	ARR	28A1	1407	0.0	0.0	91.2	<45	<45
AC-16	10	Jet Fighter	T & G	10T1	23084	0.3	0.0	80.3	<45	<45
AC-16	11	Jet Fighter	DEP	P10D2	12242	0.0	0.0	87.6	<45	<45
AC-16	12	C-12	ARR	28A1	1422	0.2	0.0	79.9	<45	<45
AC-16	13	Jet Fighter	T & G	22T1	16596	0.3	0.0	78.7	<45	<45
AC-16	14	E-2/C-2	DEP	N10D2	12009	0.6	0.1	71.1	<45	<45
AC-16	15	Jet Fighter	DEP	P28D2	26733	0.1	0.0	82.9	<45	<45
AC-16	16	P-3C	DEP	10D3	11881	1.0	0.0	67.5	<45	<45
AC-16	17	E-2/C-2	ARR	N28O1	9436	1.0	0.1	63.2	<45	<45
AC-16	18	E-2/C-2	DEP	N10D2	12009	0.3	0.0	71.1	<45	<45
AC-16	19	E-2/C-2	DEP	N28D2	26733	1.0	0.1	62.0	<45	<45
AC-16	20	Jet Fighter	ARR	P22O1	16888	0.0	0.0	78.6	<45	<45
AC-17	1	P-3C	ARR	28A1	3066	1.6	0.0	79.0	<45	<45
AC-17	2	E-2/C-2	FCLP	28F1	18239	29.2	3.4	62.5	<45	<45
AC-17	3	Jet Fighter	T & G	28T1	14755	0.4	0.0	83.8	<45	<45
AC-17	4	E-2/C-2	Crew Swap	10SW	13046	2.5	0.3	72.3	<45	<45
AC-17	5	E-2/C-2	Crew Swap	28SW	6617	4.0	0.5	69.6	<45	<45
AC-17	6	E-2/C-2	FCLP	10F1	23158	17.9	2.1	61.8	<45	<45
AC-17	7	Jet Fighter	DEP	P10D2	10377	0.0	0.0	89.9	<45	<45
AC-17	8	Jet Fighter	ARR	P28O1	3281	0.1	0.0	87.5	<45	<45
AC-17	9	Jet Fighter	T & G	22T1	13958	0.3	0.0	81.6	<45	<45
AC-17	10	B-737-400*	ARR	28A1	3046	0.4	0.0	78.8	<45	<45
AC-17	11	Jet Fighter	T & G	10T1	20271	0.3	0.0	80.6	<45	<45
AC-17	12	E-2/C-2	DEP	N10D2	10180	0.6	0.1	73.5	<45	<45
AC-17	13	Jet Fighter	DEP	P28D2	23389	0.1	0.0	84.3	<45	<45
AC-17	14	P-3C	DEP	10D3	10034	1.0	0.0	69.8	<45	<45
AC-17	15	E-2/C-2	ARR	N28O1	7923	1.0	0.1	66.3	<45	<45

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-17	16	E-2/C-2	DEP	N10D2	10180	0.3	0.0	73.5	<45	<45
AC-17	17	C-12	ARR	28A1	3055	0.2	0.0	75.0	<45	<45
AC-17	18	Jet Fighter	ARR	P22O1	14130	0.0	0.0	81.5	<45	<45
AC-17	19	P-3C	DEP	22D3	22943	1.0	0.0	67.4	<45	<45
AC-17	20	E-2/C-2	T & G	28T1	14757	1.9	0.0	64.2	<45	<45
AC-18	1	Jet Fighter	T & G	28T1	21250	0.4	0.0	82.4	<45	<45
AC-18	2	E-2/C-2	FCLP	28F1	24833	29.2	3.4	59.1	<45	<45
AC-18	3	E-2/C-2	Crew Swap	28SW	13061	4.0	0.5	65.4	<45	<45
AC-18	4	E-2/C-2	FCLP	10F1	30119	17.9	2.1	58.9	<45	<45
AC-18	5	E-2/C-2	Crew Swap	10SW	20037	2.5	0.3	67.0	<45	<45
AC-18	6	P-3C	ARR	28A1	5853	1.6	0.0	70.4	<45	<45
AC-18	7	Jet Fighter	ARR	P28O1	6151	0.1	0.0	82.5	<45	<45
AC-18	8	Jet Fighter	T & G	10T1	27279	0.3	0.0	76.5	<45	<45
AC-18	9	E-2/C-2	DEP	N10D2	17062	0.6	0.1	68.0	<45	<45
AC-18	10	Jet Fighter	DEP	P10D2	17181	0.0	0.0	82.6	<45	<45
AC-18	11	Jet Fighter	DEP	P28D2	30218	0.1	0.0	79.8	<45	<45
AC-18	12	Jet Fighter	T & G	22T1	21003	0.3	0.0	73.5	<45	<45
AC-18	13	B-737-400*	ARR	28A1	5840	0.4	0.0	70.8	<45	<45
AC-18	14	E-2/C-2	ARR	N28O1	14777	1.0	0.1	61.4	<45	<45
AC-18	15	E-2/C-2	DEP	N28D2	30219	1.0	0.1	61.3	<45	<45
AC-18	16	P-3C	DEP	10D3	16965	1.0	0.0	64.3	<45	<45
AC-18	17	E-2/C-2	DEP	N10D2	17062	0.3	0.0	68.0	<45	<45
AC-18	18	E-2/C-2	T & G	28T1	21252	1.9	0.0	59.9	<45	<45
AC-18	19	C-12	ARR	28A1	5843	0.2	0.0	68.4	<45	<45
AC-18	20	E-2/C-2	T & G	10T1	27267	1.3	0.0	60.3	<45	<45
AC-19	1	E-2/C-2	FCLP	28F1	14206	29.2	3.4	64.3	<45	<45
AC-19	2	Jet Fighter	T & G	28T1	10794	0.4	0.0	85.8	<45	<45
AC-19	3	E-2/C-2	FCLP	10F1	21481	17.9	2.1	62.5	<45	<45
AC-19	4	E-2/C-2	Crew Swap	28SW	14208	4.0	0.5	68.8	<45	<45
AC-19	5	Jet Fighter	T & G	22T1	12655	0.3	0.0	83.8	<45	<45
AC-19	6	E-2/C-2	Crew Swap	10SW	16778	2.5	0.3	70.1	<45	<45
AC-19	7	Jet Fighter	ARR	P28O1	11319	0.1	0.0	87.5	<45	<45
AC-19	8	E-2/C-2	DEP	N10D2	15165	0.6	0.1	70.0	<45	<45
AC-19	9	Jet Fighter	DEP	P10D2	15218	0.0	0.0	84.1	<45	<45
AC-19	10	Jet Fighter	T & G	10T1	19756	0.3	0.0	75.5	<45	<45
AC-19	11	Jet Fighter	DEP	P28D2	20735	0.1	0.0	80.8	<45	<45
AC-19	12	E-2/C-2	T & G	28T1	10785	1.9	0.0	66.4	<45	<45

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-19	13	Jet Fighter	T & G	04T1	20517	0.1	0.0	78.1	<45	<45
AC-19	14	E-2/C-2	T & G	22T1	12630	1.2	0.0	68.1	<45	<45
AC-19	15	Jet Fighter	ARR	P22O1	12655	0.0	0.0	82.4	<45	<45
AC-19	16	E-2/C-2	ARR	N28O1	14214	1.0	0.1	65.0	<45	<45
AC-19	17	B-737-400*	DEP	28D3	20735	0.4	0.0	71.6	<45	<45
AC-19	18	E-2/C-2	DEP	N28D2	20735	1.0	0.1	64.2	<45	<45
AC-19	19	P-3C	DEP	22D3	20516	1.0	0.0	67.5	<45	<45
AC-19	20	E-2/C-2	T & G	28T1	10796	1.3	0.0	65.9	<45	<45
AC-20	1	E-2/C-2	FCLP	28F1	31508	29.2	3.4	56.4	<45	<45
AC-20	2	E-2/C-2	FCLP	10F1	38223	17.9	2.1	55.0	<45	<45
AC-20	3	E-2/C-2	Crew Swap	28SW	25073	4.0	0.5	61.1	<45	<45
AC-20	4	Jet Fighter	T & G	28T1	27869	0.4	0.0	74.1	<45	<45
AC-20	5	E-2/C-2	Crew Swap	10SW	30724	2.5	0.3	60.8	<45	<45
AC-20	6	Jet Fighter	ARR	P28O1	19159	0.1	0.0	75.0	<45	<45
AC-20	7	E-2/C-2	DEP	N10D2	27757	0.6	0.1	61.8	<45	<45
AC-20	8	E-2/C-2	DEP	N28D2	37716	1.0	0.1	58.0	<45	<45
AC-20	9	Jet Fighter	T & G	22T1	30094	0.3	0.0	67.0	<45	<45
AC-20	10	Jet Fighter	DEP	P28D2	37716	0.1	0.0	72.1	<45	<45
AC-20	11	E-2/C-2	T & G	28T1	27868	1.9	0.0	57.6	<45	<45
AC-20	12	Jet Fighter	T & G	10T1	35915	0.3	0.0	65.8	<45	<45
AC-20	13	Jet Fighter	DEP	P10D2	27833	0.0	0.0	73.5	<45	<45
AC-20	14	E-2/C-2	ARR	N28O1	26069	1.0	0.1	56.7	<45	<45
AC-20	15	E-2/C-2	T & G	28T1	27870	1.3	0.0	58.0	<45	<45
AC-20	16	E-2/C-2	T & G	22T1	30083	1.2	0.0	57.7	<45	<45
AC-20	17	P-3C	DEP	10D3	27723	1.0	0.0	57.7	<45	<45
AC-20	18	P-3C	DEP	22D3	37975	1.0	0.0	57.8	<45	<45
AC-20	19	P-3C	DEP	28D3	37716	1.6	0.0	55.7	<45	<45
AC-20	20	E-2/C-2	DEP	N10D2	27757	0.3	0.0	61.8	<45	<45
AC-21	1	E-2/C-2	FCLP	28F1	27454	29.2	3.4	57.7	<45	<45
AC-21	2	Jet Fighter	T & G	22T1	22652	0.3	0.0	79.7	<45	<45
AC-21	3	E-2/C-2	FCLP	10F1	33525	17.9	2.1	56.0	<45	<45
AC-21	4	E-2/C-2	Crew Swap	28SW	27445	4.0	0.5	62.2	<45	<45
AC-21	5	Jet Fighter	DEP	P22D2	19394	0.0	0.0	83.1	<45	<45
AC-21	6	E-2/C-2	Crew Swap	10SW	33524	2.5	0.3	61.4	<45	<45
AC-21	7	Jet Fighter	T & G	04T1	22691	0.1	0.0	76.3	<45	<45
AC-21	8	Jet Fighter	T & G	28T1	25644	0.4	0.0	69.8	<45	<45
AC-21	9	Jet Fighter	ARR	P22O1	22633	0.0	0.0	77.6	<45	<45

Wallops Island: Alt 2C										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-21	10	E-2/C-2	DEP	N28D2	33524	1.0	0.1	59.7	<45	<45
AC-21	11	P-3C	DEP	22D3	19270	1.0	0.0	62.9	<45	<45
AC-21	12	E-2/C-2	T & G	22T1	22638	1.2	0.0	61.7	<45	<45
AC-21	13	E-2/C-2	T & G	28T1	25632	1.9	0.0	59.5	<45	<45
AC-21	14	E-2/C-2	DEP	N22D2	19303	0.3	0.0	66.6	<45	<45
AC-21	15	E-2/C-2	DEP	N10D2	33524	0.6	0.1	59.5	<45	<45
AC-21	16	E-2/C-2	T & G	22T1	22652	0.8	0.0	61.0	<45	<45
AC-21	17	E-2/C-2	T & G	28T1	25644	1.3	0.0	58.8	<45	<45
AC-21	18	Jet Fighter	DEP	P04D2	27771	0.0	0.0	76.7	<45	<45
AC-21	19	P-3C	DEP	28D3	33523	1.6	0.0	57.5	<45	<45
AC-21	20	Jet Fighter	T & G	10T1	33528	0.3	0.0	64.8	<45	<45
AC-22	1	Jet Fighter	DEP	P28D2	5477	0.1	0.0	98.6	<45	<45
AC-22	2	E-2/C-2	DEP	N28D2	4256	1.0	0.1	78.3	<45	<45
AC-22	3	P-3C	ARR	10A1	2297	1.0	0.0	79.7	<45	<45
AC-22	4	E-2/C-2	Crew Swap	28SW	14782	4.0	0.5	70.0	<45	<45
AC-22	5	P-3C	DEP	28D3	3975	1.6	0.0	76.1	<45	<45
AC-22	6	B-737-400*	DEP	28D3	4099	0.4	0.0	80.8	<45	<45
AC-22	7	E-2/C-2	ARR	N10O1	1727	0.6	0.1	74.5	<45	<45
AC-22	8	E-2/C-2	DEP	N28D2	4256	0.5	0.0	78.3	<45	<45
AC-22	9	B-737-400*	ARR	10A1	2266	0.3	0.0	80.6	<45	<45
AC-22	10	Jet Fighter	ARR	P10O1	2166	0.0	0.0	88.0	<45	<45
AC-22	11	Jet Fighter	DEP	P22D2	11289	0.0	0.0	88.1	<45	<45
AC-22	12	E-2/C-2	Crew Swap	10SW	6736	2.5	0.3	67.0	<45	<45
AC-22	13	Jet Fighter	T & G	10T1	18371	0.3	0.0	78.7	<45	<45
AC-22	14	Jet Fighter	T & G	28T1	23151	0.4	0.0	75.0	<45	<45
AC-22	15	E-2/C-2	FCLP	10F1	21766	17.9	2.1	55.0	<45	<45
AC-22	16	E-2/C-2	ARR	N10O1	1727	0.3	0.0	74.5	<45	<45
AC-22	17	E-2/C-2	FCLP	28F1	26173	29.2	3.4	50.4	<45	<45
AC-22	18	Jet Fighter	DEP	P10D2	17102	0.0	0.0	81.7	<45	<45
AC-22	19	P-3C	DEP	22D3	8556	1.0	0.0	67.3	<45	<45
AC-22	20	A-10A	ARR	10A1	2266	0.0	0.0	83.9	<45	<45

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-1	1	E-2/C-2	Crew Swap	28SW	1971	3.9	0.5	87.4	47.3	47.3
AC-1	2	E-2/C-2	Crew Swap	10SW	4124	2.4	0.3	79.5	<45	47.7
AC-1	3	E-2/C-2	FCLP	28F2	13646	19.5	2.3	66.7	<45	47.8
AC-1	4	Jet Fighter	T & G	10T1	8777	0.3	0.0	87.0	<45	47.9
AC-1	5	E-2/C-2	FCLP	10F2	12148	11.9	1.4	63.8	<45	48.0
AC-1	6	E-2/C-2	DEP	N28D2	13506	1.2	0.1	71.5	<45	48.0
AC-1	7	Jet Fighter	ARR	P10O1	9278	0.0	0.0	88.9	<45	48.1
AC-1	8	E-2/C-2	FCLP	28F1	19451	9.7	1.1	61.6	<45	48.1
AC-1	9	Jet Fighter	DEP	P10D2	11460	0.0	0.0	88.1	<45	48.1
AC-1	10	Jet Fighter	DEP	P28D2	13597	0.1	0.0	85.7	<45	48.1
AC-1	11	E-2/C-2	FCLP	10F1	12147	6.0	0.7	63.0	<45	48.1
AC-1	12	Jet Fighter	T & G	28T1	17787	0.4	0.0	76.2	<45	48.2
AC-1	13	E-2/C-2	DEP	N10D2	10064	0.7	0.1	70.3	<45	48.2
AC-1	14	P-3C	DEP	10D3	5654	1.0	0.0	71.9	<45	48.2
AC-1	15	E-2/C-2	ARR	N28O1	4601	1.2	0.1	67.0	<45	48.2
AC-1	16	P-3C	DEP	28D3	12683	1.6	0.0	68.3	<45	48.2
AC-1	17	Jet Fighter	DEP	P04D2	12312	0.0	0.0	87.2	<45	48.2
AC-1	18	E-2/C-2	DEP	N28D2	13506	0.5	0.0	71.5	<45	48.2
AC-1	19	B-737-400*	DEP	10D3	7434	0.3	0.0	73.5	<45	48.2
AC-1	20	Jet Fighter	T & G	04T1	16808	0.1	0.0	76.7	<45	48.2
AC-2	1	E-2/C-2	FCLP	28F2	3881	19.5	2.3	78.7	45.6	45.6
AC-2	2	Jet Fighter	DEP	P28D2	3181	0.1	0.0	105.6	<45	48.2
AC-2	3	Jet Fighter	ARR	P10O1	1303	0.0	0.0	105.4	<45	49.3
AC-2	4	E-2/C-2	DEP	N28D2	2480	1.2	0.1	87.1	<45	50.0
AC-2	5	E-2/C-2	Crew Swap	28SW	4934	3.9	0.5	81.4	<45	50.5
AC-2	6	P-3C	DEP	28D3	1710	1.6	0.0	87.4	<45	50.9
AC-2	7	P-3C	ARR	10A1	865	1.0	0.0	88.8	<45	51.2
AC-2	8	E-2/C-2	Crew Swap	10SW	1528	2.4	0.3	78.0	<45	51.3
AC-2	9	E-2/C-2	DEP	N28D2	2480	0.5	0.0	87.1	<45	51.4
AC-2	10	B-737-400*	ARR	10A1	824	0.3	0.0	89.1	<45	51.5
AC-2	11	B-737-400*	DEP	28D3	2257	0.4	0.0	86.8	<45	51.6
AC-2	12	Jet Fighter	T & G	10T1	7671	0.3	0.0	88.3	<45	51.6
AC-2	13	E-2/C-2	ARR	N10O1	1284	0.7	0.1	78.3	<45	51.7
AC-2	14	Jet Fighter	T & G	28T1	12579	0.4	0.0	83.6	<45	51.7
AC-2	15	E-2/C-2	FCLP	10F2	10942	11.9	1.4	64.9	<45	51.7
AC-2	16	A-10A	ARR	10A1	809	0.0	0.0	95.2	<45	51.8
AC-2	17	E-2/C-2	FCLP	28F1	15455	9.7	1.1	63.7	<45	51.8
AC-2	18	E-2/C-2	FCLP	10F1	10941	6.0	0.7	64.4	<45	51.8

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-2	19	E-2/C-2	ARR	N10O1	1284	0.3	0.0	78.3	<45	51.8
AC-2	20	Jet Fighter	DEP	P10D2	15779	0.0	0.0	86.7	<45	51.8
AC-3	1	E-2/C-2	FCLP	28F2	6109	19.5	2.3	74.3	<45	<45
AC-3	2	Jet Fighter	DEP	P28D2	7378	0.1	0.0	95.3	<45	<45
AC-3	3	E-2/C-2	Crew Swap	28SW	12044	3.9	0.5	73.1	<45	<45
AC-3	4	Jet Fighter	T & G	28T1	14817	0.4	0.0	86.0	<45	<45
AC-3	5	E-2/C-2	DEP	N28D2	6980	1.2	0.1	77.4	<45	<45
AC-3	6	Jet Fighter	DEP	P22D2	7745	0.0	0.0	93.8	<45	<45
AC-3	7	E-2/C-2	Crew Swap	10SW	7523	2.4	0.3	68.4	<45	<45
AC-3	8	E-2/C-2	DEP	N28D2	6980	0.5	0.0	77.4	<45	<45
AC-3	9	P-3C	DEP	28D3	8116	1.6	0.0	72.6	<45	<45
AC-3	10	E-2/C-2	FCLP	28F1	18109	9.7	1.1	61.2	<45	<45
AC-3	11	E-2/C-2	FCLP	10F2	16087	11.9	1.4	59.3	<45	<45
AC-3	12	Jet Fighter	T & G	10T1	13489	0.3	0.0	78.4	<45	<45
AC-3	13	P-3C	DEP	22D3	5524	1.0	0.0	72.3	<45	<45
AC-3	14	B-737-400*	DEP	22D3	5749	0.3	0.0	76.8	<45	<45
AC-3	15	Jet Fighter	ARR	P10O1	6490	0.0	0.0	84.3	<45	<45
AC-3	16	Jet Fighter	T & G	04T1	13046	0.1	0.0	80.3	<45	<45
AC-3	17	B-737-400*	DEP	28D3	8271	0.4	0.0	74.4	<45	<45
AC-3	18	E-2/C-2	ARR	N10O1	6495	0.7	0.1	68.1	<45	<45
AC-3	19	E-2/C-2	FCLP	10F1	16086	6.0	0.7	58.5	<45	<45
AC-3	20	E-2/C-2	DEP	N22D2	6604	0.3	0.0	74.5	<45	<45
AC-4	1	E-2/C-2	FCLP	28F2	14294	19.5	2.3	66.0	<45	<45
AC-4	2	Jet Fighter	DEP	P22D2	8419	0.0	0.0	92.8	<45	<45
AC-4	3	E-2/C-2	Crew Swap	28SW	21689	3.9	0.5	65.8	<45	<45
AC-4	4	Jet Fighter	T & G	28T1	19341	0.4	0.0	77.4	<45	<45
AC-4	5	E-2/C-2	DEP	N28D2	18494	1.2	0.1	67.1	<45	<45
AC-4	6	P-3C	DEP	22D3	7019	1.0	0.0	70.6	<45	<45
AC-4	7	Jet Fighter	T & G	04T1	15883	0.1	0.0	79.0	<45	<45
AC-4	8	B-737-400*	DEP	22D3	7086	0.3	0.0	74.9	<45	<45
AC-4	9	E-2/C-2	DEP	N22D2	7509	0.3	0.0	74.1	<45	<45
AC-4	10	Jet Fighter	DEP	P28D2	18643	0.1	0.0	79.8	<45	<45
AC-4	11	E-2/C-2	Crew Swap	10SW	18898	2.4	0.3	59.7	<45	<45
AC-4	12	Jet Fighter	ARR	P04O1	12523	0.0	0.0	82.3	<45	<45
AC-4	13	E-2/C-2	FCLP	28F1	22611	9.7	1.1	51.6	<45	<45
AC-4	14	P-3C	DEP	28D3	19551	1.6	0.0	62.5	<45	<45
AC-4	15	E-2/C-2	DEP	N28D2	18494	0.5	0.0	67.1	<45	<45

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-4	16	Jet Fighter	T & G	22T1	24486	0.3	0.0	68.9	<45	<45
AC-4	17	E-2/C-2	FCLP	10F2	23839	11.9	1.4	48.5	<45	<45
AC-4	18	E-2/C-2	ARR	N04O1	2756	0.1	0.0	70.9	<45	<45
AC-4	19	E-2/C-2	T & G	28T1	19341	1.3	0.0	60.8	<45	<45
AC-4	20	Jet Fighter	ARR	P28O1	19313	0.1	0.0	72.8	<45	<45
AC-5	1	E-2/C-2	Crew Swap	28SW	1431	3.9	0.5	83.4	<45	<45
AC-5	2	E-2/C-2	Crew Swap	10SW	3213	2.4	0.3	83.8	<45	45.5
AC-5	3	P-3C	ARR	22A1	1054	1.0	0.0	86.0	<45	46.0
AC-5	4	Jet Fighter	DEP	P04D2	4058	0.0	0.0	101.8	<45	46.4
AC-5	5	Jet Fighter	ARR	P22O1	1188	0.0	0.0	98.3	<45	46.7
AC-5	6	E-2/C-2	FCLP	10F2	11425	11.9	1.4	69.5	<45	47.0
AC-5	7	B-737-400*	ARR	22A1	1009	0.3	0.0	86.5	<45	47.1
AC-5	8	Jet Fighter	DEP	P10D2	8124	0.0	0.0	93.0	<45	47.2
AC-5	9	P-3C	DEP	04D3	2562	0.4	0.0	81.8	<45	47.2
AC-5	10	Jet Fighter	T & G	22T1	10538	0.3	0.0	83.9	<45	47.3
AC-5	11	Jet Fighter	T & G	10T1	12991	0.3	0.0	82.8	<45	47.3
AC-5	12	E-2/C-2	DEP	N10D2	7179	0.7	0.1	74.0	<45	47.4
AC-5	13	E-2/C-2	FCLP	28F2	19058	19.5	2.3	59.2	<45	47.4
AC-5	14	A-10A	ARR	22A1	1002	0.0	0.0	92.3	<45	47.4
AC-5	15	E-2/C-2	FCLP	10F1	16024	6.0	0.7	63.2	<45	47.5
AC-5	16	B-737-400*	DEP	04D3	3066	0.1	0.0	83.2	<45	47.5
AC-5	17	E-2/C-2	DEP	N04D2	3391	0.1	0.0	82.2	<45	47.5
AC-5	18	E-2/C-2	FCLP	28F1	19057	9.7	1.1	58.3	<45	47.5
AC-5	19	Jet Fighter	T & G	04T1	15566	0.1	0.0	80.5	<45	47.5
AC-5	20	P-3C	DEP	10D3	6359	1.0	0.0	70.8	<45	47.5
AC-6	1	Jet Fighter	T & G	10T1	2121	0.3	0.0	106.2	51.2	51.2
AC-6	2	E-2/C-2	FCLP	10F2	3756	11.9	1.4	79.5	<45	52.0
AC-6	3	Jet Fighter	T & G	04T1	3004	0.1	0.0	101.4	<45	52.5
AC-6	4	Jet Fighter	ARR	P10O1	2121	0.0	0.0	105.2	<45	52.9
AC-6	5	E-2/C-2	FCLP	10F1	3790	6.0	0.7	78.1	<45	53.1
AC-6	6	E-2/C-2	FCLP	28F2	9791	19.5	2.3	71.5	<45	53.3
AC-6	7	E-2/C-2	Crew Swap	10SW	3798	2.4	0.3	80.1	<45	53.4
AC-6	8	E-2/C-2	Crew Swap	28SW	8457	3.9	0.5	77.4	<45	53.5
AC-6	9	Jet Fighter	T & G	22T1	6426	0.3	0.0	90.6	<45	53.6
AC-6	10	E-2/C-2	FCLP	28F1	9791	9.7	1.1	70.9	<45	53.6
AC-6	11	E-2/C-2	T & G	10T1	1973	1.3	0.0	83.1	<45	53.7
AC-6	12	E-2/C-2	T & G	10T1	2121	0.8	0.0	82.9	<45	53.7

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-6	13	Jet Fighter	T & G	28T1	9794	0.4	0.0	84.9	<45	53.7
AC-6	14	Jet Fighter	DEP	P10D2	8690	0.0	0.0	93.8	<45	53.8
AC-6	15	Jet Fighter	DEP	P04D2	6438	0.0	0.0	96.3	<45	53.8
AC-6	16	E-2/C-2	DEP	N10D2	6954	0.7	0.1	77.0	<45	53.8
AC-6	17	Jet Fighter	ARR	P22O1	6429	0.0	0.0	91.7	<45	53.8
AC-6	18	Jet Fighter	DEP	P28D2	9799	0.1	0.0	89.5	<45	53.8
AC-6	19	E-2/C-2	T & G	04T1	2901	0.5	0.0	80.7	<45	53.8
AC-6	20	E-2/C-2	DEP	N28D2	9791	1.2	0.1	73.5	<45	53.8
AC-7	1	Jet Fighter	T & G	22T1	674	0.3	0.0	115.8	60.5	60.5
AC-7	2	Jet Fighter	ARR	P22O1	695	0.0	0.0	116.0	52.9	61.2
AC-7	3	Jet Fighter	T & G	10T1	2181	0.3	0.0	107.4	52.5	61.8
AC-7	4	E-2/C-2	FCLP	10F2	1457	11.9	1.4	87.3	52.1	62.2
AC-7	5	Jet Fighter	T & G	04T1	1525	0.1	0.0	108.7	50.0	62.5
AC-7	6	E-2/C-2	FCLP	10F1	1551	6.0	0.7	85.8	47.5	62.6
AC-7	7	Jet Fighter	DEP	P04D2	876	0.0	0.0	112.7	46.2	62.7
AC-7	8	E-2/C-2	Crew Swap	10SW	1575	2.4	0.3	87.0	<45	62.8
AC-7	9	Jet Fighter	T & G	28T1	4737	0.4	0.0	96.5	<45	62.8
AC-7	10	E-2/C-2	Crew Swap	28SW	2620	3.9	0.5	83.4	<45	62.9
AC-7	11	E-2/C-2	FCLP	28F2	4739	19.5	2.3	76.2	<45	62.9
AC-7	12	E-2/C-2	FCLP	28F1	4739	9.7	1.1	76.0	<45	62.9
AC-7	13	P-3C	DEP	04D3	975	0.4	0.0	92.8	<45	62.9
AC-7	14	P-3C	ARR	22A1	689	1.0	0.0	89.1	<45	63.0
AC-7	15	Jet Fighter	DEP	P22D2	3252	0.0	0.0	102.0	<45	63.0
AC-7	16	E-2/C-2	T & G	10T1	2034	1.3	0.0	86.0	<45	63.0
AC-7	17	E-2/C-2	T & G	22T1	674	1.2	0.0	85.7	<45	63.0
AC-7	18	Jet Fighter	DEP	P10D2	4771	0.0	0.0	99.6	<45	63.0
AC-7	19	Jet Fighter	DEP	P28D2	5079	0.1	0.0	97.8	<45	63.0
AC-7	20	A-10A	T & G	22T1	691	0.1	0.0	95.3	<45	63.0
AC-8	1	Jet Fighter	T & G	04T1	1400	0.1	0.0	110.4	51.7	51.7
AC-8	2	E-2/C-2	FCLP	28F2	2905	19.5	2.3	82.9	49.8	53.9
AC-8	3	Jet Fighter	T & G	10T1	2848	0.3	0.0	104.0	49.1	55.1
AC-8	4	Jet Fighter	T & G	28T1	3082	0.4	0.0	102.1	48.9	56.0
AC-8	5	E-2/C-2	Crew Swap	28SW	1793	3.9	0.5	88.6	48.5	56.7
AC-8	6	E-2/C-2	FCLP	10F2	2850	11.9	1.4	81.6	46.3	57.1
AC-8	7	E-2/C-2	Crew Swap	10SW	2171	2.4	0.3	86.4	<45	57.3
AC-8	8	E-2/C-2	FCLP	28F1	3779	9.7	1.1	80.1	<45	57.5
AC-8	9	Jet Fighter	ARR	P04O1	1400	0.0	0.0	110.1	<45	57.7

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-8	10	E-2/C-2	FCLP	10F1	2850	6.0	0.7	81.5	<45	57.9
AC-8	11	Jet Fighter	DEP	P28D2	2905	0.1	0.0	103.0	<45	58.0
AC-8	12	E-2/C-2	DEP	N28D2	2925	1.2	0.1	87.0	<45	58.1
AC-8	13	Jet Fighter	DEP	P10D2	3026	0.0	0.0	104.2	<45	58.2
AC-8	14	Jet Fighter	ARR	P10O1	2848	0.0	0.0	103.4	<45	58.2
AC-8	15	P-3C	DEP	28D3	2887	1.6	0.0	84.3	<45	58.3
AC-8	16	E-2/C-2	T & G	04T1	1156	0.5	0.0	87.2	<45	58.3
AC-8	17	E-2/C-2	T & G	28T1	2980	1.9	0.0	81.6	<45	58.3
AC-8	18	E-2/C-2	DEP	N28D2	2925	0.5	0.0	87.0	<45	58.3
AC-8	19	E-2/C-2	ARR	N10O1	2850	0.7	0.1	82.2	<45	58.4
AC-8	20	P-3C	DEP	10D3	3026	1.0	0.0	83.6	<45	58.4
AC-9	1	Jet Fighter	T & G	28T1	1027	0.4	0.0	112.6	59.4	59.4
AC-9	2	Jet Fighter	T & G	04T1	1032	0.1	0.0	112.6	53.9	60.5
AC-9	3	E-2/C-2	FCLP	28F2	2862	19.5	2.3	84.2	51.1	61.0
AC-9	4	E-2/C-2	Crew Swap	28SW	3388	3.9	0.5	86.6	46.4	61.1
AC-9	5	Jet Fighter	ARR	P04O1	1032	0.0	0.0	112.7	46.3	61.3
AC-9	6	E-2/C-2	T & G	28T1	665	1.9	0.0	92.4	45.7	61.4
AC-9	7	Jet Fighter	T & G	10T1	3273	0.3	0.0	100.3	45.4	61.5
AC-9	8	E-2/C-2	FCLP	28F1	3380	9.7	1.1	79.5	<45	61.5
AC-9	9	Jet Fighter	DEP	P28D2	3318	0.1	0.0	102.6	<45	61.6
AC-9	10	E-2/C-2	T & G	28T1	1027	1.3	0.0	89.5	<45	61.6
AC-9	11	A-10A	T & G	28T1	958	0.2	0.0	97.9	<45	61.7
AC-9	12	E-2/C-2	DEP	N28D2	3406	1.2	0.1	85.7	<45	61.7
AC-9	13	E-2/C-2	FCLP	10F2	3631	11.9	1.4	75.4	<45	61.7
AC-9	14	Jet Fighter	ARR	P10O1	3283	0.0	0.0	101.1	<45	61.8
AC-9	15	E-2/C-2	Crew Swap	10SW	3427	2.4	0.3	79.2	<45	61.8
AC-9	16	E-2/C-2	FCLP	10F1	3631	6.0	0.7	75.2	<45	61.8
AC-9	17	P-3C	DEP	28D3	3348	1.6	0.0	82.7	<45	61.8
AC-9	18	Jet Fighter	ARR	P28O1	977	0.1	0.0	96.1	<45	61.8
AC-9	19	E-2/C-2	T & G	04T1	672	0.5	0.0	86.3	<45	61.8
AC-9	20	Jet Fighter	DEP	P10D2	5218	0.0	0.0	96.8	<45	61.8
AC-10	1	Jet Fighter	DEP	P22D2	3592	0.0	0.0	104.2	<45	<45
AC-10	2	E-2/C-2	FCLP	28F2	8372	19.5	2.3	72.5	<45	<45
AC-10	3	Jet Fighter	T & G	04T1	3974	0.1	0.0	96.4	<45	<45
AC-10	4	Jet Fighter	T & G	28T1	7964	0.4	0.0	89.3	<45	45.0
AC-10	5	P-3C	DEP	22D3	2607	1.0	0.0	83.8	<45	45.3
AC-10	6	E-2/C-2	DEP	N22D2	2919	0.3	0.0	86.3	<45	45.5

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-10	7	E-2/C-2	Crew Swap	28SW	10790	3.9	0.5	72.1	<45	45.7
AC-10	8	Jet Fighter	ARR	P04O1	3746	0.0	0.0	97.6	<45	45.9
AC-10	9	E-2/C-2	FCLP	28F1	10801	9.7	1.1	67.0	<45	46.0
AC-10	10	B-737-400*	DEP	22D3	2977	0.3	0.0	84.7	<45	46.1
AC-10	11	Jet Fighter	T & G	22T1	11315	0.3	0.0	84.4	<45	46.2
AC-10	12	E-2/C-2	FCLP	10F2	14804	11.9	1.4	61.5	<45	46.2
AC-10	13	E-2/C-2	Crew Swap	10SW	14461	2.4	0.3	68.4	<45	46.3
AC-10	14	E-2/C-2	DEP	N28D2	14471	1.2	0.1	70.8	<45	46.3
AC-10	15	E-2/C-2	T & G	28T1	7926	1.9	0.0	70.8	<45	46.3
AC-10	16	Jet Fighter	ARR	P28O1	7965	0.1	0.0	84.9	<45	46.4
AC-10	17	E-2/C-2	T & G	28T1	7964	1.3	0.0	71.2	<45	46.4
AC-10	18	Jet Fighter	DEP	P28D2	14454	0.1	0.0	83.5	<45	46.4
AC-10	19	E-2/C-2	FCLP	10F1	14804	6.0	0.7	60.6	<45	46.4
AC-10	20	Jet Fighter	T & G	10T1	14462	0.3	0.0	75.1	<45	46.4
AC-11	1	Jet Fighter	DEP	P22D2	9883	0.0	0.0	89.4	<45	<45
AC-11	2	P-3C	ARR	04A1	2346	0.4	0.0	78.0	<45	<45
AC-11	3	E-2/C-2	FCLP	28F2	18956	19.5	2.3	57.9	<45	<45
AC-11	4	E-2/C-2	Crew Swap	28SW	22237	3.9	0.5	62.2	<45	<45
AC-11	5	Jet Fighter	ARR	P04O1	2596	0.0	0.0	88.1	<45	<45
AC-11	6	B-737-400*	ARR	04A1	2320	0.1	0.0	79.4	<45	<45
AC-11	7	Jet Fighter	T & G	28T1	19482	0.4	0.0	73.4	<45	<45
AC-11	8	P-3C	DEP	22D3	9410	1.0	0.0	69.0	<45	<45
AC-11	9	Jet Fighter	T & G	22T1	21445	0.3	0.0	74.5	<45	<45
AC-11	10	E-2/C-2	DEP	N22D2	9563	0.3	0.0	73.0	<45	<45
AC-11	11	Jet Fighter	T & G	04T1	15505	0.1	0.0	77.3	<45	<45
AC-11	12	E-2/C-2	DEP	N28D2	25075	1.2	0.1	62.2	<45	<45
AC-11	13	B-737-400*	DEP	22D3	9558	0.3	0.0	71.0	<45	<45
AC-11	14	E-2/C-2	Crew Swap	10SW	25045	2.4	0.3	57.7	<45	<45
AC-11	15	E-2/C-2	FCLP	28F1	22248	9.7	1.1	50.4	<45	<45
AC-11	16	E-2/C-2	T & G	28T1	19482	1.3	0.0	60.0	<45	<45
AC-11	17	A-10A	ARR	04A1	2319	0.0	0.0	82.1	<45	<45
AC-11	18	C-12	ARR	04A1	2330	0.1	0.0	73.0	<45	<45
AC-11	19	Jet Fighter	DEP	P28D2	25092	0.1	0.0	72.2	<45	<45
AC-11	20	P-3C	DEP	28D3	25054	1.6	0.0	58.4	<45	<45
AC-12	1	E-2/C-2	FCLP	28F2	3028	19.5	2.3	85.0	51.9	51.9
AC-12	2	E-2/C-2	FCLP	28F1	1684	9.7	1.1	88.0	51.8	54.9
AC-12	3	Jet Fighter	T & G	28T1	3216	0.4	0.0	104.1	51.0	56.4

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-12	4	E-2/C-2	Crew Swap	28SW	1728	3.9	0.5	89.1	49.0	57.1
AC-12	5	Jet Fighter	T & G	10T1	3099	0.3	0.0	102.4	47.5	57.5
AC-12	6	E-2/C-2	FCLP	10F2	3099	11.9	1.4	82.4	47.2	57.9
AC-12	7	E-2/C-2	FCLP	10F1	3099	6.0	0.7	82.3	<45	58.1
AC-12	8	Jet Fighter	DEP	P28D2	3149	0.1	0.0	104.4	<45	58.2
AC-12	9	Jet Fighter	T & G	04T1	3850	0.1	0.0	102.0	<45	58.4
AC-12	10	Jet Fighter	T & G	22T1	4279	0.3	0.0	98.5	<45	58.5
AC-12	11	Jet Fighter	DEP	P10D2	3104	0.0	0.0	105.8	<45	58.6
AC-12	12	E-2/C-2	Crew Swap	10SW	3099	2.4	0.3	85.1	<45	58.7
AC-12	13	E-2/C-2	DEP	N28D2	3134	1.2	0.1	86.4	<45	58.8
AC-12	14	Jet Fighter	DEP	P22D2	4205	0.0	0.0	100.6	<45	58.9
AC-12	15	E-2/C-2	T & G	28T1	3149	1.9	0.0	83.8	<45	58.9
AC-12	16	P-3C	DEP	28D3	3114	1.6	0.0	84.0	<45	58.9
AC-12	17	Jet Fighter	ARR	P10O1	3214	0.0	0.0	99.0	<45	58.9
AC-12	18	Jet Fighter	ARR	P28O1	3244	0.1	0.0	97.1	<45	59.0
AC-12	19	Jet Fighter	DEP	P04D2	4168	0.0	0.0	101.9	<45	59.0
AC-12	20	E-2/C-2	T & G	28T1	3244	1.3	0.0	83.8	<45	59.0
AC-13	1	Jet Fighter	T & G	22T1	1188	0.3	0.0	113.3	58.0	58.0
AC-13	2	Jet Fighter	T & G	28T1	1570	0.4	0.0	109.8	56.6	60.4
AC-13	3	Jet Fighter	DEP	P22D2	1248	0.0	0.0	117.2	54.1	61.3
AC-13	4	Jet Fighter	T & G	10T1	1848	0.3	0.0	108.6	53.6	62.0
AC-13	5	Jet Fighter	T & G	04T1	1313	0.1	0.0	111.9	53.2	62.5
AC-13	6	E-2/C-2	FCLP	10F2	1674	11.9	1.4	87.1	51.8	62.9
AC-13	7	E-2/C-2	FCLP	28F2	1571	19.5	2.3	84.6	51.5	63.2
AC-13	8	E-2/C-2	Crew Swap	10SW	1660	2.4	0.3	93.2	50.9	63.4
AC-13	9	Jet Fighter	DEP	P28D2	1570	0.1	0.0	111.1	50.1	63.6
AC-13	10	Jet Fighter	DEP	P04D2	1248	0.0	0.0	115.8	49.3	63.8
AC-13	11	E-2/C-2	Crew Swap	28SW	1563	3.9	0.5	89.3	49.1	63.9
AC-13	12	E-2/C-2	FCLP	28F1	1571	9.7	1.1	84.6	48.5	64.1
AC-13	13	Jet Fighter	ARR	P28O1	1570	0.1	0.0	107.3	46.3	64.1
AC-13	14	E-2/C-2	FCLP	10F1	2203	6.0	0.7	84.4	46.1	64.2
AC-13	15	Jet Fighter	DEP	P10D2	1674	0.0	0.0	108.4	45.7	64.3
AC-13	16	E-2/C-2	DEP	N10D2	1671	0.7	0.1	92.4	45.0	64.3
AC-13	17	E-2/C-2	T & G	22T1	1154	1.2	0.0	93.7	45.0	64.4
AC-13	18	E-2/C-2	T & G	22T1	1240	0.8	0.0	93.2	<45	64.4
AC-13	19	P-3C	DEP	10D3	1619	1.0	0.0	90.5	<45	64.4
AC-13	20	P-3C	DEP	22D3	1104	1.0	0.0	90.9	<45	64.4

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-14	1	Jet Fighter	T & G	28T1	1250	0.4	0.0	111.9	58.7	58.7
AC-14	2	Jet Fighter	T & G	22T1	1261	0.3	0.0	110.9	55.6	60.4
AC-14	3	Jet Fighter	T & G	04T1	899	0.1	0.0	113.4	54.8	61.5
AC-14	4	Jet Fighter	ARR	P28O1	1250	0.1	0.0	111.8	50.8	61.8
AC-14	5	E-2/C-2	FCLP	28F2	2673	19.5	2.3	81.9	48.8	62.0
AC-14	6	Jet Fighter	DEP	P22D2	1058	0.0	0.0	110.6	47.6	62.2
AC-14	7	Jet Fighter	ARR	P04O1	912	0.0	0.0	113.7	47.3	62.3
AC-14	8	E-2/C-2	FCLP	28F1	2673	9.7	1.1	81.5	45.4	62.4
AC-14	9	P-3C	DEP	22D3	1126	1.0	0.0	92.2	<45	62.5
AC-14	10	E-2/C-2	T & G	28T1	973	1.9	0.0	88.8	<45	62.5
AC-14	11	E-2/C-2	Crew Swap	28SW	2664	3.9	0.5	82.1	<45	62.5
AC-14	12	E-2/C-2	T & G	22T1	988	1.2	0.0	89.6	<45	62.6
AC-14	13	E-2/C-2	DEP	N22D2	1215	0.3	0.0	93.6	<45	62.6
AC-14	14	E-2/C-2	FCLP	10F2	8690	11.9	1.4	74.2	<45	62.6
AC-14	15	E-2/C-2	T & G	28T1	1250	1.3	0.0	87.2	<45	62.6
AC-14	16	A-10A	T & G	22T1	1040	0.1	0.0	96.9	<45	62.6
AC-14	17	B-737-400*	DEP	22D3	1282	0.3	0.0	92.9	<45	62.7
AC-14	18	E-2/C-2	T & G	22T1	1261	0.8	0.0	88.0	<45	62.7
AC-14	19	Jet Fighter	DEP	P04D2	3034	0.0	0.0	102.6	<45	62.7
AC-14	20	E-2/C-2	Crew Swap	10SW	8689	2.4	0.3	78.1	<45	62.7
AC-15	1	E-2/C-2	FCLP	28F2	13795	19.5	2.3	68.1	<45	<45
AC-15	2	Jet Fighter	T & G	22T1	8782	0.3	0.0	88.9	<45	<45
AC-15	3	Jet Fighter	T & G	28T1	12002	0.4	0.0	84.6	<45	<45
AC-15	4	E-2/C-2	FCLP	28F1	13795	9.7	1.1	66.2	<45	<45
AC-15	5	E-2/C-2	FCLP	10F2	19867	11.9	1.4	65.3	<45	<45
AC-15	6	E-2/C-2	Crew Swap	28SW	13787	3.9	0.5	69.6	<45	<45
AC-15	7	Jet Fighter	T & G	04T1	11567	0.1	0.0	86.3	<45	<45
AC-15	8	E-2/C-2	Crew Swap	10SW	19867	2.4	0.3	69.0	<45	<45
AC-15	9	Jet Fighter	DEP	P22D2	10746	0.0	0.0	89.4	<45	<45
AC-15	10	E-2/C-2	FCLP	10F1	19960	6.0	0.7	63.2	<45	<45
AC-15	11	Jet Fighter	ARR	P22O1	8751	0.0	0.0	87.0	<45	<45
AC-15	12	Jet Fighter	ARR	P28O1	12002	0.1	0.0	84.4	<45	<45
AC-15	13	P-3C	DEP	22D3	10645	1.0	0.0	72.6	<45	<45
AC-15	14	E-2/C-2	T & G	22T1	8746	1.2	0.0	71.3	<45	<45
AC-15	15	E-2/C-2	T & G	28T1	11975	1.9	0.0	68.5	<45	<45
AC-15	16	E-2/C-2	DEP	N22D2	10683	0.3	0.0	75.8	<45	<45
AC-15	17	E-2/C-2	T & G	22T1	8782	0.8	0.0	71.6	<45	<45
AC-15	18	E-2/C-2	DEP	N28D2	19858	1.2	0.1	65.7	<45	<45

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-15	19	Jet Fighter	T & G	10T1	19882	0.3	0.0	75.0	<45	<45
AC-15	20	E-2/C-2	DEP	N10D2	19866	0.7	0.1	67.3	<45	<45
AC-16	1	P-3C	ARR	28A1	1456	1.6	0.0	87.6	<45	<45
AC-16	2	Jet Fighter	T & G	28T1	18612	0.4	0.0	85.3	<45	<45
AC-16	3	B-737-400*	ARR	28A1	1406	0.4	0.0	84.9	<45	<45
AC-16	4	E-2/C-2	FCLP	10F2	13863	11.9	1.4	65.5	<45	<45
AC-16	5	Jet Fighter	ARR	P28O1	2138	0.1	0.0	90.3	<45	<45
AC-16	6	E-2/C-2	FCLP	28F2	21957	19.5	2.3	62.3	<45	<45
AC-16	7	E-2/C-2	Crew Swap	10SW	15043	2.4	0.3	70.7	<45	<45
AC-16	8	E-2/C-2	Crew Swap	28SW	7135	3.9	0.5	68.5	<45	<45
AC-16	9	A-10A	ARR	28A1	1407	0.0	0.0	91.2	<45	<45
AC-16	10	Jet Fighter	T & G	10T1	23084	0.3	0.0	80.3	<45	<45
AC-16	11	Jet Fighter	DEP	P10D2	12242	0.0	0.0	87.6	<45	<45
AC-16	12	E-2/C-2	FCLP	28F1	21956	9.7	1.1	60.8	<45	<45
AC-16	13	C-12	ARR	28A1	1422	0.2	0.0	79.9	<45	<45
AC-16	14	E-2/C-2	DEP	N10D2	12009	0.7	0.1	71.1	<45	<45
AC-16	15	Jet Fighter	T & G	22T1	16596	0.3	0.0	78.7	<45	<45
AC-16	16	E-2/C-2	FCLP	10F1	26147	6.0	0.7	60.3	<45	<45
AC-16	17	Jet Fighter	DEP	P28D2	26733	0.1	0.0	82.9	<45	<45
AC-16	18	P-3C	DEP	10D3	11881	1.0	0.0	67.5	<45	<45
AC-16	19	E-2/C-2	ARR	N28O1	9436	1.2	0.1	63.2	<45	<45
AC-16	20	E-2/C-2	DEP	N10D2	12009	0.3	0.0	71.1	<45	<45
AC-17	1	E-2/C-2	FCLP	10F2	11344	11.9	1.4	69.2	<45	<45
AC-17	2	P-3C	ARR	28A1	3066	1.6	0.0	79.0	<45	<45
AC-17	3	Jet Fighter	T & G	28T1	14755	0.4	0.0	83.8	<45	<45
AC-17	4	E-2/C-2	FCLP	28F2	18240	19.5	2.3	63.7	<45	<45
AC-17	5	E-2/C-2	Crew Swap	10SW	13046	2.4	0.3	72.3	<45	<45
AC-17	6	E-2/C-2	Crew Swap	28SW	6617	3.9	0.5	69.6	<45	<45
AC-17	7	Jet Fighter	DEP	P10D2	10377	0.0	0.0	89.9	<45	<45
AC-17	8	Jet Fighter	ARR	P28O1	3281	0.1	0.0	87.5	<45	<45
AC-17	9	E-2/C-2	FCLP	28F1	18239	9.7	1.1	62.5	<45	<45
AC-17	10	Jet Fighter	T & G	22T1	13958	0.3	0.0	81.6	<45	<45
AC-17	11	E-2/C-2	DEP	N10D2	10180	0.7	0.1	73.5	<45	<45
AC-17	12	B-737-400*	ARR	28A1	3046	0.4	0.0	78.8	<45	<45
AC-17	13	Jet Fighter	T & G	10T1	20271	0.3	0.0	80.6	<45	<45
AC-17	14	E-2/C-2	FCLP	10F1	23158	6.0	0.7	61.8	<45	<45
AC-17	15	Jet Fighter	DEP	P28D2	23389	0.1	0.0	84.3	<45	<45

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-17	16	E-2/C-2	ARR	N28O1	7923	1.2	0.1	66.3	<45	<45
AC-17	17	P-3C	DEP	10D3	10034	1.0	0.0	69.8	<45	<45
AC-17	18	E-2/C-2	DEP	N10D2	10180	0.3	0.0	73.5	<45	<45
AC-17	19	C-12	ARR	28A1	3055	0.2	0.0	75.0	<45	<45
AC-17	20	Jet Fighter	ARR	P22O1	14130	0.0	0.0	81.5	<45	<45
AC-18	1	E-2/C-2	FCLP	10F2	18400	11.9	1.4	65.4	<45	<45
AC-18	2	Jet Fighter	T & G	28T1	21250	0.4	0.0	82.4	<45	<45
AC-18	3	E-2/C-2	FCLP	28F2	24834	19.5	2.3	60.5	<45	<45
AC-18	4	E-2/C-2	Crew Swap	28SW	13061	3.9	0.5	65.4	<45	<45
AC-18	5	E-2/C-2	Crew Swap	10SW	20037	2.4	0.3	67.0	<45	<45
AC-18	6	E-2/C-2	FCLP	28F1	24833	9.7	1.1	59.1	<45	<45
AC-18	7	P-3C	ARR	28A1	5853	1.6	0.0	70.4	<45	<45
AC-18	8	Jet Fighter	ARR	P28O1	6151	0.1	0.0	82.5	<45	<45
AC-18	9	Jet Fighter	T & G	10T1	27279	0.3	0.0	76.5	<45	<45
AC-18	10	E-2/C-2	FCLP	10F1	30119	6.0	0.7	58.9	<45	<45
AC-18	11	E-2/C-2	DEP	N10D2	17062	0.7	0.1	68.0	<45	<45
AC-18	12	Jet Fighter	DEP	P10D2	17181	0.0	0.0	82.6	<45	<45
AC-18	13	Jet Fighter	DEP	P28D2	30218	0.1	0.0	79.8	<45	<45
AC-18	14	Jet Fighter	T & G	22T1	21003	0.3	0.0	73.5	<45	<45
AC-18	15	B-737-400*	ARR	28A1	5840	0.4	0.0	70.8	<45	<45
AC-18	16	E-2/C-2	ARR	N28O1	14777	1.2	0.1	61.4	<45	<45
AC-18	17	E-2/C-2	DEP	N28D2	30219	1.2	0.1	61.3	<45	<45
AC-18	18	P-3C	DEP	10D3	16965	1.0	0.0	64.3	<45	<45
AC-18	19	E-2/C-2	DEP	N10D2	17062	0.3	0.0	68.0	<45	<45
AC-18	20	E-2/C-2	T & G	28T1	21252	1.9	0.0	59.9	<45	<45
AC-19	1	E-2/C-2	FCLP	28F2	14207	19.5	2.3	65.8	<45	<45
AC-19	2	Jet Fighter	T & G	28T1	10794	0.4	0.0	85.8	<45	<45
AC-19	3	E-2/C-2	FCLP	10F2	15138	11.9	1.4	67.4	<45	<45
AC-19	4	E-2/C-2	Crew Swap	28SW	14208	3.9	0.5	68.8	<45	<45
AC-19	5	Jet Fighter	T & G	22T1	12655	0.3	0.0	83.8	<45	<45
AC-19	6	E-2/C-2	FCLP	28F1	14206	9.7	1.1	64.3	<45	<45
AC-19	7	E-2/C-2	Crew Swap	10SW	16778	2.4	0.3	70.1	<45	<45
AC-19	8	Jet Fighter	ARR	P28O1	11319	0.1	0.0	87.5	<45	<45
AC-19	9	E-2/C-2	FCLP	10F1	21481	6.0	0.7	62.5	<45	<45
AC-19	10	E-2/C-2	DEP	N10D2	15165	0.7	0.1	70.0	<45	<45
AC-19	11	Jet Fighter	DEP	P10D2	15218	0.0	0.0	84.1	<45	<45
AC-19	12	Jet Fighter	T & G	10T1	19756	0.3	0.0	75.5	<45	<45

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-19	13	Jet Fighter	DEP	P28D2	20735	0.1	0.0	80.8	<45	<45
AC-19	14	E-2/C-2	T & G	28T1	10785	1.9	0.0	66.4	<45	<45
AC-19	15	E-2/C-2	ARR	N28O1	14214	1.2	0.1	65.0	<45	<45
AC-19	16	Jet Fighter	T & G	04T1	20517	0.1	0.0	78.1	<45	<45
AC-19	17	E-2/C-2	T & G	22T1	12630	1.2	0.0	68.1	<45	<45
AC-19	18	Jet Fighter	ARR	P22O1	12655	0.0	0.0	82.4	<45	<45
AC-19	19	E-2/C-2	DEP	N28D2	20735	1.2	0.1	64.2	<45	<45
AC-19	20	B-737-400*	DEP	28D3	20735	0.4	0.0	71.6	<45	<45
AC-20	1	E-2/C-2	FCLP	28F2	31509	19.5	2.3	58.5	<45	<45
AC-20	2	E-2/C-2	FCLP	10F2	28438	11.9	1.4	58.9	<45	<45
AC-20	3	E-2/C-2	Crew Swap	28SW	25073	3.9	0.5	61.1	<45	<45
AC-20	4	Jet Fighter	T & G	28T1	27869	0.4	0.0	74.1	<45	<45
AC-20	5	E-2/C-2	FCLP	28F1	31508	9.7	1.1	56.4	<45	<45
AC-20	6	E-2/C-2	Crew Swap	10SW	30724	2.4	0.3	60.8	<45	<45
AC-20	7	E-2/C-2	FCLP	10F1	38223	6.0	0.7	55.0	<45	<45
AC-20	8	E-2/C-2	DEP	N10D2	27757	0.7	0.1	61.8	<45	<45
AC-20	9	Jet Fighter	ARR	P28O1	19159	0.1	0.0	75.0	<45	<45
AC-20	10	E-2/C-2	DEP	N28D2	37716	1.2	0.1	58.0	<45	<45
AC-20	11	Jet Fighter	T & G	22T1	30094	0.3	0.0	67.0	<45	<45
AC-20	12	E-2/C-2	ARR	N28O1	26069	1.2	0.1	56.7	<45	<45
AC-20	13	Jet Fighter	DEP	P28D2	37716	0.1	0.0	72.1	<45	<45
AC-20	14	E-2/C-2	T & G	28T1	27868	1.9	0.0	57.6	<45	<45
AC-20	15	Jet Fighter	T & G	10T1	35915	0.3	0.0	65.8	<45	<45
AC-20	16	Jet Fighter	DEP	P10D2	27833	0.0	0.0	73.5	<45	<45
AC-20	17	E-2/C-2	T & G	28T1	27870	1.3	0.0	58.0	<45	<45
AC-20	18	E-2/C-2	T & G	22T1	30083	1.2	0.0	57.7	<45	<45
AC-20	19	P-3C	DEP	10D3	27723	1.0	0.0	57.7	<45	<45
AC-20	20	P-3C	DEP	22D3	37975	1.0	0.0	57.8	<45	<45
AC-21	1	E-2/C-2	FCLP	28F2	27454	19.5	2.3	60.0	<45	<45
AC-21	2	Jet Fighter	T & G	22T1	22652	0.3	0.0	79.7	<45	<45
AC-21	3	E-2/C-2	FCLP	10F2	33525	11.9	1.4	57.7	<45	<45
AC-21	4	E-2/C-2	Crew Swap	28SW	27445	3.9	0.5	62.2	<45	<45
AC-21	5	E-2/C-2	FCLP	28F1	27454	9.7	1.1	57.7	<45	<45
AC-21	6	Jet Fighter	DEP	P22D2	19394	0.0	0.0	83.1	<45	<45
AC-21	7	E-2/C-2	Crew Swap	10SW	33524	2.4	0.3	61.4	<45	<45
AC-21	8	E-2/C-2	FCLP	10F1	33525	6.0	0.7	56.0	<45	<45
AC-21	9	Jet Fighter	T & G	04T1	22691	0.1	0.0	76.3	<45	<45

Wallops Island: Alt 2D										
POINT ID	**RANK**	**AIRCRAFT NAME**	**TRACK TYPE**	**TRACK ID**	**SLANT (ft)**	**DAY TIME**	**NIGHT TIME**	**SEL (dB)**	**DNL (dB)**	**CUMU (dB)**
AC-21	10	Jet Fighter	T & G	28T1	25644	0.4	0.0	69.8	<45	<45
AC-21	11	Jet Fighter	ARR	P22O1	22633	0.0	0.0	77.6	<45	<45
AC-21	12	E-2/C-2	DEP	N28D2	33524	1.2	0.1	59.7	<45	<45
AC-21	13	P-3C	DEP	22D3	19270	1.0	0.0	62.9	<45	<45
AC-21	14	E-2/C-2	T & G	22T1	22638	1.2	0.0	61.7	<45	<45
AC-21	15	E-2/C-2	T & G	28T1	25632	1.9	0.0	59.5	<45	<45
AC-21	16	E-2/C-2	DEP	N22D2	19303	0.3	0.0	66.6	<45	<45
AC-21	17	E-2/C-2	DEP	N10D2	33524	0.7	0.1	59.5	<45	<45
AC-21	18	E-2/C-2	T & G	22T1	22652	0.8	0.0	61.0	<45	<45
AC-21	19	E-2/C-2	T & G	28T1	25644	1.3	0.0	58.8	<45	<45
AC-21	20	Jet Fighter	DEP	P04D2	27771	0.0	0.0	76.7	<45	<45
AC-22	1	Jet Fighter	DEP	P28D2	5477	0.1	0.0	98.6	<45	<45
AC-22	2	E-2/C-2	DEP	N28D2	4256	1.2	0.1	78.3	<45	<45
AC-22	3	P-3C	ARR	10A1	2297	1.0	0.0	79.7	<45	<45
AC-22	4	E-2/C-2	Crew Swap	28SW	14782	3.9	0.5	70.0	<45	<45
AC-22	5	E-2/C-2	FCLP	28F2	13967	19.5	2.3	62.5	<45	<45
AC-22	6	P-3C	DEP	28D3	3975	1.6	0.0	76.1	<45	<45
AC-22	7	B-737-400*	DEP	28D3	4099	0.4	0.0	80.8	<45	<45
AC-22	8	E-2/C-2	ARR	N10O1	1727	0.7	0.1	74.5	<45	<45
AC-22	9	E-2/C-2	DEP	N28D2	4256	0.5	0.0	78.3	<45	<45
AC-22	10	B-737-400*	ARR	10A1	2266	0.3	0.0	80.6	<45	<45
AC-22	11	Jet Fighter	ARR	P10O1	2166	0.0	0.0	88.0	<45	<45
AC-22	12	Jet Fighter	DEP	P22D2	11289	0.0	0.0	88.1	<45	<45
AC-22	13	E-2/C-2	Crew Swap	10SW	6736	2.4	0.3	67.0	<45	<45
AC-22	14	Jet Fighter	T & G	10T1	18371	0.3	0.0	78.7	<45	<45
AC-22	15	Jet Fighter	T & G	28T1	23151	0.4	0.0	75.0	<45	<45
AC-22	16	E-2/C-2	FCLP	10F2	21767	11.9	1.4	56.0	<45	<45
AC-22	17	E-2/C-2	ARR	N10O1	1727	0.3	0.0	74.5	<45	<45
AC-22	18	Jet Fighter	DEP	P10D2	17102	0.0	0.0	81.7	<45	<45
AC-22	19	P-3C	DEP	22D3	8556	1.0	0.0	67.3	<45	<45
AC-22	20	E-2/C-2	DEP	N10D2	15026	0.7	0.1	65.0	<45	<45

C Air Quality Calculations

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EMISSION INDEX TABLES AND EMISSION FACTORS: C-2A Aircraft

Aircraft: C-2A. LTO Operations — Engine(s): T56-A-425 (2) — APU Type: GTCP 36-201C

Flight Operation and Flight Mode		Engine Power Setting[1]	No. of Engines in Use[1]	Time-in-Mode per Engine (min)[1]	Fuel Flow Rate per Engine (lb/hr)[2,3]	Fuel Used (lbs)[3]	Emission Indexes[2] (pounds per 1,000 pounds fuel)					Emissions from Single Flight Operation[4] (lb/ op)				
							EI CO	EI NO_x	EI HC	EI SO_2	EI PM_{10}	CO	NO_x	HC	SO_2	PM_{10}
Departure																
	APU Use	On	1	5	197	16	2	6.25	0.25	0.4	0.22	0.033	0.103	0.004	0.007	0.004
	Start/Warm up	L/S G Idle	2	12	599	240	30.11	3.53	22.32	0.4	3.97	7.214	0.846	5.348	0.096	0.951
	Taxi Out	H/S G Idle	2	5	756	126	5.65	6.35	1.42	0.4	3.97	0.712	0.8	0.179	0.05	0.5
	Engine Run-up	62% SHP	2	0.5	1,600	27	1.12	9.47	0.25	0.4	3.97	0.03	0.253	0.007	0.011	0.106
	Takeoff[5]	Military	2	0.5	2,219	37	0.65	10.45	0.16	0.4	3.97	0.024	0.386	0.006	0.015	0.147
	Climbout[6]	Military	2	2	2,219	148	0.65	10.45	0.16	0.4	3.97	0.096	1.546	0.024	0.059	0.587
Single Departure Totals						**594**						**8.11**	**3.93**	**5.57**	**0.24**	**2.3**
Arrival straight in																
	Approach	30% SHP	2	5	1,100	183	2.16	8.06	0.49	0.4	3.97	0.396	1.478	0.09	0.073	0.728
	On runway (WoW)	Flight Idle	2	1	836	28	4.54	6.52	1.1	0.4	3.97	0.127	0.182	0.031	0.011	0.111
	Taxi to Fuel Pit	H/S G Idle	2	2	756	50	5.65	6.35	1.42	0.4	3.97	0.285	0.32	0.072	0.02	0.2
	Hot Refuel	L/S G Idle	1	15	599	150	30.11	3.53	22.32	0.4	3.97	4.509	0.529	3.342	0.06	0.595
	Taxi to Squadron	H/S G Idle	1	3	756	38	5.65	6.35	1.42	0.4	3.97	0.214	0.24	0.054	0.015	0.15
	Shut Down	L/S G Idle	1	1	599	10	30.11	3.53	22.32	0.4	3.97	0.301	0.035	0.223	0.004	0.04
Single Straight in Arrival Totals						**459**						**5.83**	**2.78**	**3.81**	**0.18**	**1.82**
Single C-2 LTO with Straight In Arrival						**1,053**						**13.94**	**6.72**	**9.38**	**0.42**	**4.12**
Single C-2 LTO without Start up, taxi, Shut down, hot refuel[7]						**396**						**0.64**	**3.59**	**0.15**	**0.16**	**1.57**
Single C-2 LTO with hot refuel, but without Start up, taxi to squadron, and shut down[8]						**749**						**6.18**	**5.49**	**3.75**	**0.30**	**2.97**

Source: AESO Memorandum Report No. 9919, Revision B, April 2003

Aircraft: E-2C, E-2C+. Mission Operations — Engine(s): T56-A-425, -427 (2) — APU Type: None

Flight Operation and Flight Mode	Engine Power Setting[1]	No. of Engines in Use[1]	Time-in-Mode per Engine (min)[1]	Fuel Flow Rate per Engine (lb/hr)[2]	Fuel Used (lbs)[3]	Emission Indexes[2] (pounds per 1,000 pounds fuel)					Emissions from Single Mission Operation[4] (lb/ op)				
						EI CO	EI NO_x	EI HC	EI SO_2	EI PM_{10}	CO	NO_x	HC	SO_2	PM_{10}
Touch-and-Go (T&G)															
Approach	30% SHP	2	1	1,100	36.7	2.16	8.06	0.49	0.4	3.97	0.079	0.296	0.018	0.015	0.146
Climbout	88% SHP	2	2	2,025	135.0	0.8	10.15	0.18	0.4	3.97	0.108	1.370	0.024	0.054	0.536
Circle	30% SHP	2	4	1,100	146.7	2.16	8.06	0.49	0.4	3.97	0.317	1.182	0.072	0.059	0.582
Single Touch-and-Go Totals					**318.3**						**0.50**	**2.85**	**0.11**	**0.13**	**1.26**

Source: AESO Memorandum Report No. 9936, Revision B, April 2000

Notes:

1) Estimated from 1998 pilot interviews, which are on file at AESO.

2) No Data available for these engines. Fuel flow and emission indexes are for the T56-GE-16 from: *T56-GE-16 Engine Fuel Flow and Emission Indexes* -DRAFT-; Aircraft Environmental Support Office; San Diego, Ca., March 2000; AESO Memorandum Report No. 9908, Revision B.

3) Fuel used = fuel flow x time-in-mode / 60 x no. of engines in use.

4) Emissions = fuel used / 1,000 x emission index

5) Takeoff is from ground level to 500 feet above ground level

6) Climbout is from 500 feet above ground level to 3,000 feet above ground level

7) Only Take Off, Climb out, Approach, and On Runway are included for LTOs that do not originate from the station and do not hot refuel. For example, total CO = 0.024 (Take off) + 0.096 (Climb out) + 0.396(Approach) + 0.127 (On Runway) = 0.64 lbs CO/op.

8) For LTOs that do not originate from the station but do hot refuel. All steps except start up and return to squadron are included. For example, total CO = 13.94 (Total LTO) - 0.033(APU use) - 7.214 (Start/Warm Up) - 0.214 (Taxi to Squadron) - 0.301 (Shut down) = 6.18 lbs CO/op.

Additional Annual Operations and Emissions: Emporia Airport

	Departures	Arrivals	Pattern	Annual Operations	Pounds per Operation[1] Fuel Use	CO	NO_x	HC	SO_2	PM_{10}	Fuel use (tons)	Emissions (TPY) CO	NO_x	HC	SO_2	PM_{10}
Military																
E-2D/C-2D LTO	703	703		703	396.00	0.64	3.59	0.15	0.16	1.57	139.19	0.23	1.26	0.05	0.06	0.55
E-2D/C-2D Pattern			43,594	43,594	318.33	0.50	2.85	0.11	0.13	1.26	6938.71	10.99	62.08	2.49	2.78	27.55
Total E-2D/C-2D Operations				**44,297**							**7077.91**	**11.21**	**63.34**	**2.54**	**2.83**	**28.10**

1 See previous emission index tables for references. Assumes no hot refuel.

Additional Annual Operations and Emissions: Wallops Flight Facility

	Departures	Arrivals	Pattern	Annual Operations	Pounds per Operation[1] Fuel Use	CO	NO_x	HC	SO_2	PM_{10}	Fuel use (tons)	Emissions (TPY) CO	NO_x	HC	SO_2	PM_{10}
Military																
E-2D/C-2D LTO	703	703		703	749	6.18	5.49	3.75	0.30	2.97	263.27	2.17	1.93	1.32	0.11	1.05
E-2D/C-2D Pattern			43,594	43,594	318	0.50	2.85	0.11	0.13	1.26	6,938.71	10.99	62.08	2.49	2.78	27.55
Total E-2D/C-2D Operations				**44,297**							**7,201.99**	**13.16**	**64.01**	**3.81**	**2.88**	**28.59**

1 See previous emission index tables for references. Assumes hot refuel for LTOs.

Construction Information

Proposed Airfield Construction: Emporia-Greensville Regional Airport, Virginia

Alternative	Number	Length(ft)	Width(ft)	Total Sq Ft	Acres
Alternative 1					
Fresnel Lens Optical Landing System (IFLOLS) Pads(Concrete)	2	20	12	480	0.01
Manually Operated Visual Landing Aid System (MOVLAS) Pads (Concrete)	2	6	6	72	0.00
Landing Signal Officer (LSO) workstation Pads (Concrete)	2	14	14	392	0.01
Storage area paving(Asphalt)	2	30	60	3,600	0.08
Access(Asphalt)	2	10	200	4,000	0.09
Total Concrete Area				944	0.02
Total Asphalt Area				7,600	0.17
Total graded space				**8,544**	0.20

	Total Sq Ft	Thickness (Ft)	Volume (cubic yard)	Cubic Yards per Truckload	Total # Loads
Concrete Delivered	944	0.5	17	20	1
Other Deliveries					1
Total			**17**		**2**

	# workers	Average commute (miles)	Total # of Trips	Total Vehicle miles traveled(VMT)
Worker Commute	20	25	5,000	125,000

a. Analysis assumes all construction would occur in one year.
b. 250 workdays/year at 8 hours/day.

Construction Information

Proposed Airfield Construction: Wallops Flight Facility, Virginia

Alternative	Number	Length(ft)	Width(ft)	Total Sq Ft	Acres
Alternative 2					
Fresnel Lens Optical Landing System (IFLOLS) Pads(Concrete)	2	20	12	480	0.01
Manually Operated Visual Landing Aid System (MOVLAS) Pads (Concrete)	2	6	6	72	0.00
Landing Signal Officer (LSO) workstation Pads (Concrete)	2	14	14	392	0.01
Storage area paving(Asphalt)	2	30	60	3,600	0.08
Access(Asphalt)	2	10	200	4,000	0.09
Total Concrete Area				944	0.02
Total Asphalt Area				7,600	0.17
Total graded space				**8,544**	0.20

	Total Sq Ft	Thickness (Ft)	Volume (cubic yard)	Cubic Yards per Truckload	Total # Loads
Concrete Delivered	944	0.5	17	20	1
Other Deliveries					1
Total			**17**		**2**

	# workers	Average commute (miles)	Total # of Trips	Total Vehicle miles traveled(VMT)
Worker Commute	20	25	5,000	125,000

a. Analysis assumes all construction would occur in one year.
b. 250 workdays/year at 8 hours/day.

Nonroad Construction Equipment Exhaust Emission Factors

Equipment Type	Fuel Type	SCC	Avg Size[1] (hp)	Load[2]	Engine Size Range	Emission Factor[3] (g/hp-hr)						Equipment Emission Rate[4] (lbs/hr)					
						VOC	CO	NO_x	SO_2	PM_{10}	CO_2	VOC	CO	NO_x	SO_2	PM_{10}	CO_2
Asphalt Paving Machine	Diesel	2270002003	91	0.59	75<hp≤100	0.269	2.827	2.633	0.006	0.375	595.313	0.032	0.335	0.312	0.001	0.044	70.464
Vibratory Compactor	Diesel	2270002009	8	0.43	6<hp≤11	0.681	4.490	4.952	0.007	0.501	588.218	0.005	0.034	0.038	0.000	0.004	4.461
Generators	Diesel	2270006005	22	0.43	16<hp≤25	0.738	3.026	5.360	0.007	0.488	588.051	0.015	0.063	0.112	0.000	0.010	12.264
Air Compressors	Diesel	2270006015	37	0.43	25<hp≤40	0.250	1.278	4.283	0.007	0.228	588.575	0.009	0.045	0.150	0.000	0.008	20.644
Tractors/Loaders/Backhoes	Diesel	2270002066	77	0.21	75<hp≤100	1.033	6.128	5.138	0.008	0.912	692.767	0.037	0.218	0.183	0.000	0.033	24.696
Aerial Lifts (Cherry Pickers)	Diesel	2270003010	43	0.21	40<hp≤50	1.810	6.781	5.879	0.008	0.978	690.333	0.036	0.135	0.117	0.000	0.019	13.743
Crawler Tractor/Dozers	Diesel	2270002069	157	0.59	100<hp≤175	0.206	1.000	2.435	0.006	0.241	536.182	0.042	0.204	0.497	0.001	0.049	109.494
Off-Highway Trucks	Diesel	2270002051	489	0.59	300<hp≤600	0.152	0.783	1.971	0.006	0.130	536.345	0.097	0.498	1.254	0.004	0.083	341.140

Notes:

1. Avg hp from "Nonroad Engine and Vehicle Emissions Study Report" EPA 460/3-91-02. Nov 1991.
2. Load from "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling" EPA420-P-04-005. April 2004.
3. Emission factors from EPA's NONROAD model (Year 2014).
4. Equipment Emission Rate = Average HP x Load x Emission Factor / 453.6 g/lb.

Mobile Equipment Exhaust Emissions, Construction and Demolition Equipment Use On Site

Activity -- Alt 1	Equipment List	Eqpt qty	Days Used	Emission Factors (lb/day/unit)[1]						Emissions (TPY)					
				VOC	CO	NO_X	SO_2	PM_{10}	CO_2	VOC	CO	NO_X	SO_2	PM_{10}	CO_2
Demolition	Loader	0	0	0.29	1.75	1.47	0.002	0.26	197.57	0.00	0.00	0.00	0.000	0.00	0.00
	Haul Truck	0	0	0.77	3.98	10.03	0.031	0.66	2729.12	0.00	0.00	0.00	0.000	0.00	0.00
Excavation	Backhoe Loader	0	0	0.29	1.75	1.47	0.002	0.26	197.57	0.00	0.00	0.00	0.000	0.00	0.00
	Haul Truck	0	0	0.77	3.98	10.03	0.031	0.66	2729.12	0.00	0.00	0.00	0.000	0.00	0.00
Cut and fill	Scraper	1	30	0.34	1.63	3.98	0.010	0.39	875.95	0.01	0.02	0.06	0.000	0.01	13.14
	Bulldozer	1	30	0.34	1.63	3.98	0.010	0.39	875.95	0.01	0.02	0.06	0.000	0.01	13.14
	Water Truck	1	30	0.77	3.98	10.03	0.031	0.66	2729.12	0.01	0.06	0.15	0.000	0.01	40.94
Trenching	Trencher	1	60	0.29	1.75	1.47	0.002	0.26	197.57	0.01	0.05	0.04	0.000	0.01	5.93
	Track loader	1	60	0.29	1.75	1.47	0.002	0.26	197.57	0.01	0.05	0.04	0.000	0.01	5.93
Grading	Grader	1	30	0.34	1.63	3.98	0.010	0.39	875.95	0.01	0.02	0.06	0.000	0.01	13.14
	Bulldozer	1	30	0.34	1.63	3.98	0.010	0.39	875.95	0.01	0.02	0.06	0.000	0.01	13.14
	Water Truck	1	30	0.77	3.98	10.03	0.031	0.66	2729.12	0.01	0.06	0.15	0.000	0.01	40.94
Concrete Slab pouring	Cement Truck	1	30	0.77	3.98	10.03	0.031	0.66	2729.12	0.01	0.06	0.15	0.000	0.01	40.94
	Compactor	1	30	0.04	0.27	0.30	0.000	0.03	35.69	0.00	0.00	0.00	0.000	0.00	0.54
Portable Equipment	Generator	2	125	0.12	0.50	0.89	0.001	0.08	98.11	0.02	0.06	0.11	0.000	0.01	12.26
	Air Compressor	2	125	0.07	0.36	1.20	0.002	0.06	165.15	0.01	0.04	0.15	0.000	0.01	20.64
Paving	Paving Machine Roller	1	30	0.25	2.68	2.49	0.006	0.36	563.71	0.00	0.04	0.04	0.000	0.01	8.46
	Haul Truck	1	30	0.77	3.98	10.03	0.031	0.66	2729.12	0.01	0.06	0.15	0.000	0.01	40.94
Architectural Coatings	Air Compressor	1	30	0.07	0.36	1.20	0.002	0.06	165.15	0.00	0.01	0.02	0.000	0.00	2.48
	Emissions (TPY)									**0.11**	**0.60**	**1.25**	**0.003**	**0.104**	**272.5**

[1] Calculated using EPA NONROAD equipment emission rates (see Table 'Off Road Emission Factors'), assuming operation for 8 hours per day.

Particulate (PM_{10}) Emissions, Site Preparation and Grading Activities

Activity	Acres	Topsoil Removal (lbs)	Earthmoving (lbs)	Vehicles (lbs)	Emissions (lbs/yr)	Emissions (tons/yr)
Emporia	0.20	25	5	12	42	0.02
Wallops	0.20	25	5	12	42	0.02

Notes:

Emission factors obtained from EPA-450/2-92-004 Fugitive Dust document (U.S. Environmental Protection Agency September 1992)

Factors for	Topsoil Removal	5.70 kg/VKT
	Earth Moving	1.20 kg/VKT
	Vehicles	2.80 kg/VKT

Assume vehicle kilometers traveled (VKT) per acre:

Alternative 1	10	km

VOC Emissions from Paving

Activity	Acres Paved	Emission Factor (lbs/acre)[1]	EMISSIONS LBS/YR	EMISSIONS TPY
Emporia	0.17	2.62	114	0.06
Wallops	0.17	2.62	114	0.06

[1]El Dorado County APCD-- CEQA Guide, February, 2002

Onroad Construction Vehicle Exhaust Emission Factors

Equipment Type	Fuel Type	Exhaust Emission Factor[a,b,c] (g/VMT)							Road Dust Emission Factor[d] (g/VMT)		Total PM Emission Factor[e] (g/VMT)	
		VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Cars and Light Trucks	Gasoline	1.49	14.05	1.09	0.0127	0.0059	0.0055	440	3.13	0.341	3.13	0.347
Delivery Vehicles	Diesel	0.28	1.10	8.06	0.158	0.17	0.17	1,400	3.13	0.341	3.30	0.511

Notes:

a. Emission factors for gasoline worker vehicles from "Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks (EPA420-F-05-22, EPA 2005). It was assumed that the vehicle make-up included 50% cars and 50% light-duty trucks/SUVs. SO2 emission factor calculated from gasoline consumption rate and a sulfur content of 80 ppm.

b. Emission factors for diesel worker and delivery vehicles (except SO2 and CO2) from "Assessing the Effects of Freight Movement on Air Quality at the National and Regional Level- Final Report" (U.S. Federal Highway Administration 2005).

c. CO_2 and SO_2 emission factors for diesel worker and delivery vehicles from "Greenhouse Gas Protocol - Corporate Accounting and Reporting Standard / Mobile Guide" (World Resources Institute/World Business Council for Sustainable Development 2005). SO2 emission factor calculated from diesel consumption rate and a sulfur content of 348 ppm.

d. See emission factor derivation table below.

e. Sum of exhaust and road dust emission factors.

Paved Roads - Emission Factor Derivation Table

$E = (k(sL/2)^{0.65}(W/3)^{1.5}-C)$ AP-42 Section 13.2.1 (11/06 version)

where:

E = particulate emission factor (lb/VMT)

k = particle size multiplier

sL = road surface silt loading (g/m^2)

W = average vehicle weight (tons)

C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	tons	3	3	Assumption
k factor	g/VMT	7.3	1.1	Table 13.2-1.1
Silt Loading, sL	g/m^2	0.6	0.6	Table 13.2.1-3
Emission factor, C	g/VMT	0.2119	0.1617	Table 13.2.1-2
Emission factor, E	g/VMT	3.13	0.341	Table 13.2.1-3

Ground Transportation Vehicle Emissions for Construction/Demolition Waste Removal and Construction Fill Delivery

Source	# of Trips[2]	Avg Daily mileage per trip[3]	Total Annual Miles	Emission Factors (lbs/mi)[1]						Emissions (tpy)					
				VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Concrete/Fill and other Delivery	2	50	94	0.0006	0.0024	0.0178	0.0003	0.0073	0.0011	0.00	0.00	0.00	0.000	0.00	0.00
Worker commute	5,000	30	150,000	0.0033	0.0310	0.0024	0.0000	0.0069	0.0008	0.25	2.32	0.18	0.002	0.52	0.06
								Total Ground Vehicle Emissions		**0.25**	**2.32**	**0.18**	**0.00**	**0.52**	**0.06**

[1] Refer to table 'Onroad Construction Vehicle Exhaust Emission Factors' in this appendix

[2] Refer to Construction Activities Tables of this appendix.

[3] Assumes the use of local landfills for wastes and local sources for construction fill.

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FAA Environmental Desk Reference for Airport Actions

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ENVIRONMENTAL DESK REFERENCE FOR AIRPORT ACTIONS

FEDERAL AVIATION ADMINISTRATION
OFFICE OF AIRPORTS
OFFICE OF AIRPORT PLANNING AND PROGRAMMING
AIRPORTS PLANNING AND ENVIRONMENTAL DIVISION, APP-400

OCTOBER 2007

INTRODUCTION

BACKGROUND. Before issuing decisions approving new and amended airport layout plans, airport sponsor applications for Airport Improvement Program (AIP) or Passenger Facility Charge (PFC) funding, or other Federal actions to support airport development projects,[1] the Office of Airports (ARP) must complete various environmental analyses. ARP must do so to satisfy the requirements of the National Environmental Policy Act (NEPA) and "special purpose laws" that apply to those Federal actions.

In April 2006, ARP published FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. That Order supplements *FAA Order 1050.1E, Environmental Impacts: Policies and Procedures*. While Order 1050.1E provides instructions for implementing NEPA to all FAA Lines of Business, Order 5050.4B focuses on airport actions under ARP's scope.

Order 5050.4B refers to Federal environmental requirements outside NEPA as "special purpose laws." The Order states that, besides NEPA, FAA must comply with those laws before FAA may approve a proposed Federal action. Paragraph 9.t of the Order defines the term "special purpose laws" as:

> "[The] Federal laws, regulations, executive orders, or departmental orders that are outside NEPA. FAA must often address special purpose law requirements in completing its environmental analyses of major Federal actions involving airports. For example, before deciding if an action qualifies as a categorical exclusion, the responsible FAA official must examine extraordinary circumstances, which are often based on these laws, regulations, or orders. FAA Order 1050.1E, Appendix A, provides more information on these items and how to address their requirements for all FAA organizations...." [2]

THE DESK REFERENCE'S PURPOSE. As a compendium, the Desk Reference summarizes applicable special purpose laws in one location for convenience and quick reference. Its function is to help FAA integrate the compliance of NEPA and applicable special purpose laws to the fullest extent possible. This integration should ensure that all environmental review procedures applicable to an airport action run concurrently rather than consecutively.

The Desk Reference includes information addressing ways to evaluate potential environmental impacts due to a proposed airport action, and when appropriate, its reasonable alternatives. It also provides information on mitigation measures. If a conflict between a special purpose law and this Desk Reference occurs, the special purpose law takes precedence and should be relied upon. When citing a legal requirement, the responsible FAA official or other user should cite the law, order, or

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[1] See FAA Order 5050.4B, paragraph 9.g.

[2] The preamble to Order 5050.4B, published in the Federal Register on May 18, 2006, instructs Order 5050.4B users to follow instructions in FAA Order 1050.1E, Appendix A, to comply with the special purpose laws until FAA issues the Desk Reference. Doing so allowed FAA to approve airport actions while ARP prepared the Desk Reference.

regulation specifying the requirement, not the summary or description in the Desk Reference.

ARP issues this Desk Reference to be more responsive to changes in the array of special purpose laws that are amended more often than NEPA and the CEQ regulations implementing NEPA. ARP believes the Desk Reference is the most flexible and quickest way to provide updated information in this changing legal and regulatory environment. To ensure rapid distribution, ARP has placed the Desk Reference on its web site.[3] ARP will use this web site to distribute future changes to this Desk Reference as needed.

Environmental assessments (EAs) that airport sponsors (or their consultants) prepare for FAA and the environmental impact statements (EISs) that FAA prepares are key parts of ARP's decision making process for airport actions. Therefore, responsible FAA officials must meet the requirements of Order 5050.4B when preparing those documents. In addition, ARP recommends that responsible FAA officials and other users refer to this Desk Reference for guidance to help integrate applicable special purpose laws with NEPA.

DESK REFERENCE ORGANIZATION.

ARP has organized each chapter of the Desk Reference in the same manner to provide consistency in the presentation of material. Each chapter is arranged according to the following headings:

1. INTRODUCTION AND DEFINITIONS.
2. APPLICABLE STATUTES AND IMPLEMENTING LAWS OR REGULATIONS.
3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.
4. PERMITS, CERTIFICATIONS, AND APPROVALS.
5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.
6. DETERMINING IMPACTS.
7. DETERMINING IMPACT SIGNIFICANCE.
8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

Sections 1 through 7 of each chapter apply to EAs and EISs as they relate to applicable special purpose laws and, as needed, the analysis of extraordinary circumstance related to categorical exclusions. Section 8 applies solely to EISs.

The Desk Reference addresses the 23 environmental impact categories listed in the following table.

[3] http://www.faa.gov/airports_airtraffic/

ENVIRONMENTAL IMPACT CATEGORY	CHAPTER
Air Quality	1
Biotic Resources	2
Coastal Barriers	3
Coastal Zone Management	4
Compatible Land Use	5
Construction	6
Section 4(f)	7
Federally-listed Endangered and Threatened Species	8
Energy Supplies, Natural Resources, and Sustainable Design	9
Environmental Justice	10
Farmlands	11
Floodplains	12
Hazardous Materials	13
Historic and Archeological	14
Induced Socioeconomic	15
Light Emissions and Visual Effects	16
Noise	17
Social Impacts	18
Solid Waste	19
Water Quality	20
Wetlands	21
Wild and Scenic Rivers	22
Cumulative Impacts	23

Besides other important information on a resource category, each chapter contains the significant threshold for that category, if FAA established one in FAA Order 1050.1E, Appendix A. The Desk Reference does not include a significance threshold for an environmental category if Order 1050.1E does not include one.

Often, the Desk Reference contains more information on how to evaluate an environmental category than Appendix A of Order 1050.1E does. ARP includes that added information because airport actions often disturb more physical area and involve more environmental categories than other FAA actions. ARP includes this information as a valuable aid to those who conduct comprehensive environmental analyses for airport actions. ARP also included that information because its staff has found the information helpful (Order 5050.4A, *Airports Environmental Handbook,* paragraph 47.e, contained much of that information). In other instances, analytical procedures or methods that have been developed since FAA published Order 5050.4A in 1985 may be helpful.

FAA Order 1050.1E, Appendix A, provides information on 18 impact categories, while the Desk Reference provides information on 23 categories noted in the table above. This is because the Desk Reference includes a specific chapter for each of these environmental categories:

- Biotic resources;
- Coastal barrier resources;
- Cumulative impacts;

- Environmental justice; and
- Federally-listed endangered and threatened species.

USING THE DESK REFERENCE.

The Desk Reference should assist responsible FAA officials and other users in meeting the requirements of the special purpose laws applicable to the No Action alternative, the proposed action, and, as fitting, reasonable alternatives. Conducting the analyses the special purpose laws require is a critical part in completing the interdisciplinary analyses NEPA requires for airport actions.

If there are instances where ARP staff or another user requires more information or has a question about a specific FAA policy, they should contact the lead environmental specialist in the Regional Airports Division office responsible for the proposed airport action. As needed, that specialist may contact Regional Counsel, the Office of Airports, Planning and Environmental Division (APP-400), or the Office of the Chief Counsel, Airports Environmental Law Division (AGC-600) for more information.

TABLE OF CONTENTS

CHAPTER 1. AIR QUALITY

1. INTRODUCTION AND DEFINITIONS.

a. General. This chapter discusses requirements to conduct air quality analyses for airport development projects under the NEPA and Clean Air Act. Generally, detailed analysis is needed for a project that, due to its size, scope, or location has the potential to affect the attainment and maintenance of established air quality standards. Those standards are known as "National Ambient Air Quality Standards" and are present for six criteria pollutants. Although the requirements under NEPA and the Clean Air Act differ in certain respects, generally the same analysis fulfills requirements under both. NEPA is more rigorous in that it may require detailed analysis where it is not needed under the Clean Air Act's (CAA) general conformity provisions.

b. National Ambient Air Quality Standards. Pursuant to the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six "criteria" air pollutants: carbon monoxide (CO); lead (Pb);[1] nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) for both PM_{10} and $PM_{2.5}$, and sulfur dioxide (SO_2). Compliance with the NAAQS means the ambient outdoor levels of these air pollutants are safe for human health, the public welfare, and the environment. States are responsible for designating areas that are attainment, nonattainment, or maintenance for each of the criteria pollutants. States are required to develop EPA-approved plans, called State Implementation Plans (SIPs), to achieve or maintain the NAAQS within timeframes set under the Clean Air Act.

c. Attainment area. An attainment area is a geographical area where the levels of all criteria air pollutants meet the NAAQS.

(1) General conformity regulations do *not* apply to a Federal action located in an area that is designated attainment for all six criteria pollutants.

(2) depending upon the size of the airport and the nature of the project, it may still be necessary to conduct an air quality analysis for NEPA purposes. The NEPA analysis is needed to determine whether project emissions would potentially cause significant air quality effects (e.g. cause levels of pollution that would exceed the NAAQS).

d. Nonattainment area. A nonattainment area is a geographic area where the concentration of one or more of the criteria air pollutants is higher than the NAAQS. It is not uncommon for an area to have acceptable levels of five criteria pollutants but an unacceptable level for another. For example, the Washington, D.C.,

[1] Evaluation of criteria air pollutants extends to their regulated precursors: volatile organic compounds (VOCs) and nitrogen oxides (NOx) for ozone and SO_2, NOx, VOCs, and ammonia (ammonia is a precursor only when the state and/or EPA determines a need to analyze ammonia) for $PM_{2.5}$.

metropolitan area is simultaneously designated attainment for CO but nonattainment for 8-hour ozone.

(1) General conformity regulations *do* apply to a Federal action located in an area that is designated nonattainment for any of the six criteria pollutants.

(2) depending upon the size of the airport and the nature of the project, it is normally necessary to conduct an air quality analysis for NEPA purposes. The NEPA analysis is needed to determine whether project emissions would potentially cause significant air quality effects (e.g. cause levels of pollution that would exceed the NAAQS).

e. Maintenance area. This is an area previously designated "nonattainment" but re-designated as a "maintenance area"[under the CAA, States, not EPA designate area and EPA "promulgates" these designations 42 USC 7407(d)] because air pollution levels have improved above levels that would place the area in nonattainment status. An area may remain in maintenance status for up to 20 years before the re-designates the area as attainment.

(1) General conformity regulations *do* apply to a Federal action located in an area that is designated maintenance for any of the six criteria pollutants.

(2) Depending upon the size of the airport and the nature of the project, it is normally necessary to conduct an air quality analysis for NEPA purposes. The NEPA analysis is needed to determine whether project emissions would potentially cause significant air quality effects (e.g. cause levels of pollution that would exceed the NAAQS).

f. Direct emissions. Direct emissions are emissions caused by the Federal action that occur at the same time and place as the Federal action. They include emissions from temporary construction activities as well as emissions caused by operation of airport facilities and aircraft. Construction emissions may represent a high proportion of the total emissions a project causes and may trigger general conformity requirements in areas designated as severe nonattainment or maintenance areas for pollutants such as O_3 and serious nonattainment for PM_{10}. To report a proposed action's "total direct emissions" (see section 1.k. of this chapter), assess construction emissions separately as a category and in combination with other categories of operational emissions (e.g., aircraft, ground support equipment, on-airport access traffic) the proposed action would cause.

g. Indirect emissions. Indirect emissions are emissions caused by a proposed Federal action that occur later in time and/or at a distance from the proposed action. For General Conformity purposes (40 CFR Part 93, Subpart B) under the Clean Air Act (42 USC Sections 7409, 7410, 7502-7514 and 7571-7574), FAA must assess project-related emissions that are:

(1) reasonably foreseeable at the time of the General Conformity evaluation; and

(2) that FAA can practicably control through a continuing program responsibility.

(See *Air Quality Procedures for Civilian Airports and Air Force Bases*,[2] pg. 14, Section 2.1.5). Indirect emissions are added to direct emissions to determine the total direct and indirect emissions for the project.

h. Total direct and indirect emissions. This is the total level of emissions due to combining total direct emissions with total indirect emissions.

i. General Conformity. General Conformity refers to the requirements under Section 176(c) of the Clean Air Act (CAA) for federal agencies (other than FHWA and FTA) to show that their actions conform to the purpose of the applicable SIP. [3] Section 176(c) of the CAA states:

> "No department, agency, or instrumentality of the Federal government must engage in, support in any way or provide financial aid for, license or permit, or approve, any activity which does not conform to an approved State Implementation Plan (SIP)."

As a result, Federal agencies cannot fund or approve activities that do not conform to the SIP established for a nonattainment or maintenance area. Therefore, a Federal action in nonattainment or maintenance area must not:

(1) cause or contribute to NAAQS new violations;

(2) increase the frequency or severity of any existing NAAQS; or

(3) delay the timely attainment of a NAAQS, interim emissions decreases, or other milestones.

Note: EPA adopted regulations to implement this requirement at 40 CFR Parts 6, 51, Subpart W, and 93, Subpart B. Title 40 CFR Part 93, Subpart B is commonly known as the General Conformity Rule.

j. State Implementation Plan (SIP). This is a state's detailed description of the regulations, programs, and measures to be used in that state to reduce air pollution and fulfill its responsibilities under the Clean Air Act, as amended (CAA) to attain the NAAQS for all criteria pollutants within the legally required timeframes. The CAA requires each State to prepare and submit a SIP to EPA for approval. EPA's review process for SIPs includes opportunities for public comment.

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[2] http://www.faa.gov/regulations_policies/policy_guidance/envir_policy/airquality_handbook/media/Handbook.pdf

[3] Section 176(c) of the CAA requires that EPA adopt regulations to ensure that projects sponsored by Federal agencies do not interfere with a State's ability to meet or maintain the NAAQS. To fulfill the CAA requirements, EPA promulgated the Transportation Conformity Regulations on November 24, 1993, and the General Conformity Regulations on November 30, 1993. The Transportation Conformity Regulations address transportation plans, programs, and projects funded under Title 23 USC or the Transit Act. The General Conformity Regulations are applicable to all other Federal projects and actions, including FAA actions for airport development.

k. Total net emissions. For purposes of general conformity, total direct and indirect emissions due to a proposed action's construction and operation in the future must be compared with the total direct and indirect emissions associated with the future no action/no build alternative to calculate the total net emissions of each criteria air pollutant and its precursors that a proposed action will cause. The total net emissions are then compared to the *de minimis* thresholds to determine whether a general conformity analysis and determination are needed.

Example: Total net emissions for CO in 2012 = (Future (2012) No Action CO emissions - Future (2012) CO emissions with the proposed airport action).

l. Regionally significant actions. If a proposed airport action's total direct and indirect emissions exceed 10 percent of a nonattainment or maintenance area's total emissions inventory for a particular criteria pollutant, it is a "regionally significant action." In such cases, FAA must prepare a General Conformity Determination even though the project's total net emissions are below *de minimis*. EPA designed the regional significance provision to address locating a large new project in a rural area having good air quality. Although no FAA project to date has qualified as regionally significant, project documentation for actions presumed to conform must include analysis to address this requirement.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
The National Environmental Policy Act, [42 USC Sections 4321-4347].	The Act establishes a national environmental policy and the Council on Environmental Quality (CEQ) to oversee the Act's implementation. The national policy encourages citizens to maintain productive and enjoyable relations between activities and the environment; to promote efforts preventing or removing damage to the environment and biosphere; to stimulate the health and welfare of man; and to enrich our understanding of the Nation's ecological systems and natural resources. Under NEPA FAA may have to prepare detailed air quality analysis for proposed projects and reasonable alternatives whose air quality emissions have the potential to cause violations of the National Ambient Air Quality Standards for the six criteria pollutants. The screening techniques and methodologies applicable to air quality assessments for airport projects are discussed in Chapter 2 of *Air Quality Procedures For Civilian Airports & Air Force Bases*, April 1997 (footnote 2 for web site.)	Council on Environmental Quality (CEQ)

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Clean Air Act (CAA), as amended [42 USC) Sections 7409, 7410, and 7502-7514	The Act requires establishing National Ambient Air Quality Standards (NAAQS) and designating attainment or nonattainment areas based on those NAAQS within a state. It also requires preparation of State Implementation Plans (SIPs) for EPA approval. In addition, the Act requires compliance with General and Transportation Conformity rules.	U.S. Environmental Protection Agency (EPA)
Section 176 (c) of the Clean Air Act, 42 USC 7571-7574; Determining Conformity of General Federal Actions to State or Federal Implementation Plans [40 CFR Part 93, Subpart B].	Procedures and criteria for determining if a proposed Federal action conforms to State (or Federal) air quality implementation plans. FAA is only required to demonstrate general conformity for the proposed airport action/preferred alternative.	EPA
Federal Presumed to Conform Actions Under General Conformity, 72 Federal Register 41565, dated July 30, 2007.[4]	List of FAA actions presumed to conform under 40 CFR Section 93.153(f)	FAA

b. Analytical guidance sources. We provide the following guidance sources to help FAA staff better understand how to plan, conduct, and use various air quality analyses and procedures.

GUIDANCE SOURCE	SUMMARY DESCRIPTION	ISSUING AGENCY
General Conformity Guidance: Questions and Answers, July 13, 1994 (with limited revisions of May 5, 2006)	This document provides 50 questions and answers to clarify how the General Conformity Rule should be applied.	EPA
General Conformity Guidance for Airports: Questions and Answers, September 25, 2002	This document provides answers to 39 questions to clarify the application of the General Conformity Rule to Federal actions involving airport development.	EPA and FAA

[4]http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/pdf/07-3695.pdf

GUIDANCE SOURCE	SUMMARY DESCRIPTION	ISSUING AGENCY
Air Quality Procedures for Civilian Airports and Air Force Bases (and Addendum of September 2004)	Commonly called the *FAA Air Quality Handbook*, this report provides technical information and recommended FAA guidelines and practices for conducting aviation-related air quality analyses in compliance with NEPA and the Clean Air Act. Figure 1 shows analysis thresholds for airport activity and whether a proposed airport action has the potential to cause air quality effects at various levels.	FAA/US Air Force

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. General. At airports, air pollutants and precursors of most concern include CO, NO_x, $PM_{10,}$ $PM_{2.5}$, HC, and sometimes, SO_x.[5] Since Federal actions to support airport development projects could increase levels or concentrations of the above pollutants, air quality impacts are often issues of concern in airport environmental documents.

(1) NEPA. Many airport actions are too small to require detailed air quality analysis. Whether an air quality assessment is required depends upon the nature of the project, the size of the airport and project, and the project area's air quality classification. See, section 6 of this chapter for more details about the screening criteria used to determine if an airport development project needs an air quality analysis. As noted in Figure 1 of the FAA/USAF *Air Quality Handbook*, such an assessment may be required under NEPA even in areas designated attainment for the pollutant(s) of concern. The protocol for air quality analysis for major airport development projects should be developed in close coordination with US EPA and State and local air quality agencies.

(2) CAA General Conformity. An airport action is subject to General Conformity requirements *only* if it would occur in a nonattainment or maintenance area. The first step is to determine if the proposed project is within a nonattainment or maintenance area. Next, FAA determines whether the proposed project is exempt or on the Presumed to Conform List. (See below). If the proposed project is not exempt or presumed to conform, FAA undertakes an "applicability analysis" for the proposed airport action. The analysis uses an "emissions inventory" of a *proposed airport action's* or a *preferred alternative's* future direct and indirect emissions and those of the future no action/no build alternative. FAA uses the analysis to determine if the net emissions caused by a proposed airport action or preferred alternative in a nonattainment or maintenance area exceed the applicable *de*

[5] Pollutant lead (Pb) is not normally a concern for airport projects, unless the chief source of Pb at the airport is the combustion of leaded aviation fuel used in piston-engine aircraft. See *Air Quality Procedures for Civilian Airports and Air Force Bases*, dated April 1997, pg. 11.

minimis thresholds. If so, then FAA must follow the procedures to demonstrate conformity and issue a "Conformity Determination" for that action. The following sections summarize how to determine whether General Conformity requirements apply to a proposed airport development action.

(a) Exempted actions. EPA identified the following Federal actions (Included here if they relate to airport actions) as exempt under the General Conformity Rule. EPA also provided illustrative examples of exempt actions in the preamble to the General Conformity Rule, noting that the exemptions were too numerous to list in the Rule. The actions are not subject to General Conformity requirements under 40 CFR Sections 93.153(c), (d), (e), and (f) because EPA determined that they have minimal (i.e., *de minimis*) emission levels. The actions are:

(1) Actions covered by the Transportation Conformity regulations (40 CFR Section 93.153(a));

(2) Actions having net total direct and indirect emissions below the *de minimis* levels specified for each criteria pollutant (40 CFR Section 93.153(c)(1));

(3) Air traffic control activities and adopting approach, departure, and enroute procedures for air operations. 58 FR 63214, 63229.

(4) Routine installation and operation of aviation navigational aids. 58 FR 63214, 63229.

(5) Actions included on an agency "presumed to conform" list (40 CFR Section 93.153(f));

(6) Actions specifically listed in the rule as exempt, including:

(a) routine maintenance and repair activities (40 CFR Section 93.153(c)(2));

(b) transfers of ownership of interests, land facilities, and real property (40 CFR Section 93.153(c)(2)(xiv));

(c) emissions from remedial or removal actions authorized under the Comprehensive Environmental Resource Compensation and Liability Act (CERCLA) (40 CFR Section 93.153(d)(5));

(d) actions responding to natural disasters or emergencies (40 CFR Section 93.153(d)(2));

(e) demonstrations improving air quality research or having no harmful environmental effects (40 CFR Section 93.153(d)(3); or:

(f) administrative, planning, enforcement, and inspection activities (40 CFR Sections 93.153(c)(6), 93.153(c)(xii), and inspection under 93.153(c)(v), respectively.

(b) Presumed to Conform actions. For General Conformity purposes, EPA regulations allow Federal agencies to develop a list of actions whose emissions are typically below the *de minimis* thresholds for the various criteria pollutants. These actions are known as "presumed to conform actions." This provision provides Federal agencies with another way to reduce unnecessary paperwork for actions that cause hardly any emissions. FAA has published a list of actions presumed to conform. See *Federal Presumed to Conform Actions Under General Conformity,* 72 *Federal Register* 41565, July 30, 2007. Federal agencies must demonstrate that presumed to conform actions are not regionally significant. See paragraph 1 (l) above.

b. Airport actions typically requiring an air quality assessment under NEPA or general conformity applicability analysis. For NEPA purposes, most major airport development projects (e.g., new airport, new runway, major runway extension) will require an air quality assessment if pollutant levels are likely to exceed the NAAQS. To help determine if it is necessary to examine NAAQS in these situations, discuss the issue with State or regional air quality staff (e.g., during scoping and other consultation). Sections 6.b((1) and (2) of this chapter discuss screening criteria that are helpful in determining if an assessment is needed.

c. Advisory determinations and planning activities not requiring an air quality or General Conformity analysis. The following actions would not alter air quality or they are advisory in nature (e.g., an airspace determination) and do not require an air quality analysis under NEPA or the CAA.

(1) FAA determinations in response to proposals submitted on Form 7460 (*Notices of Proposed Construction or Alteration* in an airport vicinity or Form 7480 (*Notices of Landing Area Proposal*)

(2) FAA approvals of noise compatibility programs under 14 CFR Part 150;[6]

(3) conditional approvals of airport layout plans.[7]

4. PERMITS, CERTIFICATIONS, AND APPROVALS. Airport projects, particularly those that involve stationary air pollutant sources, may be subject to permitting, certification, or approval under other provisions of the Clean Air Act or state or local law.

[6] Airport sponsors may not implement measures in an approved NCP until FAA complies with applicable environmental requirements.

[7] A conditional approval does not authorize an airport sponsor to build the project.

Note: Emissions from projects that require a NSR or PSD are not included in the calculation of total direct and indirect emissions under general conformity 93.153(d)(1).

a. New Source Review (NSR). Generally managed by State air quality agencies, the NSR program (Title I of the CAA at Parts C and D) is a means to control air emissions from new or modified stationary sources (e.g., boiler plant, electrical generating facility). New and modified stationary sources at airports such as airport power plants and painting and maintenance facilities are sometimes subject to requirements NSR Programs and Permitting. The NSR Program requires pre-construction reviews of air quality emissions and using air pollution control technology or other emission reduction strategies. The NSR Program is comprised of three permitting programs:

(1) minor sources located in attainment, unclassified, or designated nonattainment areas (minor source NSR);

(2) major stationary sources located in designated nonattainment areas (nonattainment NSR); and

(3) major sources located in attainment or unclassified areas (Prevention of Significant Deterioration or PSD).

In nonattainment areas, the NSR Permit Program applies only to construction projects that will cause potential emissions exceeding certain thresholds. For new sources the potential emissions must exceed the pollutant levels that make it a "major" source. "Major" source thresholds vary by pollutant and by the degree of nonattainment for the area in which the source is located (i.e., based on the sources potential to emit from 100 tons per year down to 10 tons per year). For modifications to existing major sources (a physical change to an airport or a change in its operations), the modification must cause a "significant" net increase in emissions to trigger the NSR requirements. Under this Program, the owner or operator of a new or modified major stationary source must install control technology that can provide the lowest, achievable emission rate and offset emission increases that are above baseline emission levels.

b. Prevention of Significant Deterioration (PSD). The PSD Program applies to new or modified major stationary sources located in areas meeting the NAAQS for at least one criteria pollutant. Maintenance areas are included in the Program. The PSD Program also applies to new or modified major sources of non-criteria pollutants regulated under the CAA, but it doesn't apply to hazardous air pollutants listed and regulated under Section 112 of the CAA. Under the PSD Program, a source is considered major if it is:

(1) in one of the 28 named source categories;

(2) emits or has the potential to emit 100 tons of a criteria pollutant yearly; or

(3) not in the named categories or has the potential to emit 250 tons per year of a PSD-regulated pollutant.

c. Indirect Source Review (ISR). An ISR is a process used to study and reduce emissions from new or modified facilities or structures serving mobile sources and emitting a primary pollutant listed earlier (see section 1.a of this chapter). These facilities include airport parking lots or garages or commercial or industrial developments. Nine states have ISR regulations (see FAA's *Air Quality Procedures for Civilian Airports & Air Force Bases*, Appendix J). When needed, the responsible FAA official must ensure airport environmental reviews include ISRs for the states and facilities noted in that Appendix. Consult AEE and APP-400 for methods and models addressing non-aviation air emission sources.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. Consultation with Federal, State, and local air quality and planning agencies. The U.S. EPA and State and local Air Quality and planning agencies have various duties and responsibilities in overseeing regional air quality, developing and managing SIPs, and enforcing the NAAQS. Regional, county, and municipal air quality agencies regulate and manage many activities in their respective areas. Metropolitan planning organizations (MPOs) and county and municipal planning and environmental agencies often work with these agencies to develop and revise the SIP. MPOs are a source of current population data for purposes of air quality analysis. These parties also work to develop construction and operational SIP budgets for aviation and surface transportation actions or other activities affecting local or regional air quality.

b. Early coordination with agencies is critical. FAA and the airport sponsor should coordinate a proposed air quality analysis with Federal, State and local agencies early in the environmental review process. That coordination helps to:

(1) identify the types of issues, required permits, and available information relevant to the project;

(2) obtain accurate air quality information and data on conditions in the project area that may address:

(a) air monitoring and meteorological data;

(b) the current and projected attainment, nonattainment, or maintenance status of the project study area.

(c) information on any non-Federal permitting requirements; or

(d) SIP-related information such as emissions budgets, prescribed emission reduction measures, and attainment time frames; and

(3) resolve air quality issues throughout the environmental review process.

c. Public participation. FAA must afford appropriate opportunities for public participation under NEPA. In addition, if a General Conformity Determination is required, FAA must issue a notice in the local media stating that a draft General Conformity Determination is available for review and comments. Later, FAA must notify the public when it issues its final General Conformity Determination.

6.. DETERMINING IMPACTS.

a. General. an airport action's air quality assessment predicts and examines additional emissions that airport construction and/or operation would cause. The assessment examines increased emissions from airport-related vehicular traffic, new facility construction, and/or expansion of an airport's power plant. FAA and the airport sponsor use the results of the assessment to determine the *net* air quality impacts[8] due to the proposed airport action and, when appropriate for NEPA, its reasonable alternatives. FAA's *Air Quality Handbook*, Appendix B, provides a useful project review checklist.

b. Applicability analysis and exempt and presumed to conform actions. FAA must determine if a proposed FAA action supporting airport development projects in designated nonattainment or maintenance areas will achieve the purpose of the applicable SIP.[9] To achieve that purpose, the action must meet and maintain the NAAQS.

(1) The first step in the analysis is to determine if the proposed action is located within a nonattainment or maintenance area. Next, determine whether the proposed action is specifically exempt or an action that FAA has determined is presumed to conform. If it is, no further air quality analysis is needed; except to demonstrate that an action presumed to conform is not regionally significant (see section 1.l. of this chapter).[10]

Note: FAA is the only agency to date to establish a presumed to conform list. *Federal Presumed to Conform Actions Under General Conformity,* 72 *Federal. Register* 41565, dated July 30, 2007.

(2) If the action is not exempt or presumed to conform, conduct an applicability analysis. That analysis allows FAA to determine if an action's total net emissions equal or exceed the established screening criteria emission rates known

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[8] Total Net emissions = (Future No Action emissions - Future proposed airport action emissions)

[9] The same requirements apply to a Federal Implementation Plan (FIP), which may be developed in the event that the State is unable to complete an approved SIP.

[10] 40 CFR Section 93.153(b).

as the *de minimis* thresholds. If the action's net emissions exceed the *de minimis* thresholds, a General Conformity Determination must be conducted.

c. General Conformity analysis and Determination. The General Conformity Rule is designed to prevent Federal agencies from taking actions that increase emissions that would violate the SIP. The conformity regulations provide detailed guidance concerning how conformity may be demonstrated for the various criteria pollutants. The Rule also identifies methods available to demonstrate conformity for the various criteria pollutants.

(1) when the total net direct and indirect emissions of an action located in an area designated nonattainment or maintenance exceed *de minimis* levels for one or more criteria pollutants, FAA must make a General Conformity Determination that may include more detailed air quality analysis;

(2) FAA uses that analysis to demonstrate how the action will conform with the purpose of the SIP (or FIP, if one exists) as part of a General Conformity Determination; and

(3) when a General Conformity Determination is needed, FAA must make that determination *before* the approving FAA official makes a decision on an action.

d. When to conduct an air quality analysis for NEPA purposes. For purposes of the NEPA analysis, the guidelines presented in Figure 1 of the FAA *Air Quality Handbook* are an important reference. Figure 1 shows analysis thresholds for airport activity.

(1) Actions at general aviation airports. If the proposed airport action would occur at an airport having a total of 180,000 general aviation and air taxi annual operations, an air quality analysis is required.

(2) Actions at commercial service airports. If the proposed airport action would occur at an airport having more than 1.3 million enplanements (2.6 million passengers) or more than 180,000 general aviation and air taxi annual operations, an air quality analysis is required.

(3) Actions serving a combination of operations and passengers. The *Air Quality Handbook* also includes a formula that combines operations and enplanements (see sections 6.d(1) and (2) of this chapter, respectively) to determine if an air quality analysis is needed.

(4) Actions that increase traffic coming to the airport and increase congestion at off-airport highway intersections. Section 2.1.5 and Figure 3, "Air Quality Analysis Guidelines and Thresholds," in the *Air Quality Handbook* address a special analysis for roadway intersections. The Section indicates that special intersection analysis and dispersion modeling for CO emission should be considered if the Level of Service (LOS) at the affected intersections is D, E, or F. Actions at these LOSs may cause carbon monoxide (CO) emissions that exceed the NAAQS.

e. Model for determining air quality impacts for CAA and NEPA purposes. The Emissions Dispersion Modeling System (EDMS) is the model FAA r*equires* for all airport-related air quality analyses. Sections 6.e.(1)-(3) of this chapter provide important information on the version of the model to use. Section 6.e(4) and (5) provide information on the two major elements of an air quality.

(1) Data and model version. The data and model version used should be the latest and most currently available when begining preparation of the air quality analysis for a proposed action;

(2) When FAA issues a new model version. if FAA issues a new version of EDMS after a project's air quality analysis has begun, the updated version may be used to provide additional disclosure concerning air quality, but use of the new model is not required.

(3) Major revision or addition to the analysis. Use of the new model should be considered carefully when there is a major revision or addition to the analysis (e.g. if baseline and/or forecast years are updated, thereby creating the potential for different impacts. [11]

(4) Emissions Dispersion Modeling System (EDMS). FAA *requires* the use of this model for assessing aviation-related air quality impacts except hazardous air pollutants.[12] The EDMS contains emission factors for aircraft engines, ground service equipment (GSE), motor vehicles, and other sources of emissions common to airports. To comply with FAA requirements, analysts *must* use the most current version of the model when preparing airport emission inventories and performing a dispersion analysis.

(5) Emissions inventory. Typically reported in *tons per year* or *kilograms per day*, an emissions inventory provides a gross sum of total emissions for the future no action and proposed action alternatives (or reasonable alternatives if needed). An inventory may include emissions of all criteria air pollutants, except for ozone (O_3). This is because ozone is a "secondary" pollutant (i.e., it forms in the atmosphere, usually on hot summer days and has two major precursors (volatile organic compound (VOCs) and nitrous oxide (NO_x)). Levels of those compounds are used to estimate ozone levels. Analysts use the inventory results to compare the alternative's total emissions to future no action emissions (see Question 20 of the *General Conformity Guidance for Airports, Questions and Answers*, dated Sept. 25, 2002).

(a) Actions requiring an emissions inventory. If a proposed airport action in a nonattainment or maintenance area is not exempt from CAA requirements nor presumed to conform (see sections 3.a.(2)(a) and (b) of this chapter), the responsible FAA official must ensure that FAA's environmental process includes an

[11] 63 Federal Register 18068, dated April 13, 1998.
[12] The current EDMS version (Version 5.0) is not capable of predicting hazardous air pollutants, but future versions are expected to provide that capability.

emissions inventory to assess potential effects for general conformity purposes. This inventory will allow FAA to conduct an applicability analysis to determine if the total net emissions a proposed airport action or preferred alternative would cause are above or below the applicable *de minimis* levels, (expressed annually, in "tons per year (tpy))."

(b) When the emissions inventory shows total net emissions are below *de minimis* levels. If total net emissions of the proposed airport action or alternative analyzed are below *de minimis thresholds*, and is determined not regionally significant, no further air quality analysis is needed. Therefore, the responsible FAA official may conclude the following:

(1) For NEPA purposes, The action and/or alternatives (if alternatives are evaluated) will not cause a significant air quality impact, since it is unlikely the pollutant concentration analyzed would exceed a NAAQS (See FAA *Air Quality Handbook*, pg. 14, Section 2.1.5)); and/or

(2) For General Conformity purposes. FAA need not conduct additional analysis or make a General Conformity Determination.

(c) When the emissions inventory shows total net emissions are above *de minimis* levels. The General Conformity Rule is designed to prevent Federal agencies from taking actions that increase emissions that would violate the SIP. The Rule also identifies methods available to demonstrate conformity for the various criteria pollutants. Consistent with the guidelines in the *Air Quality Handbook*, responsible FAA officials may use the analysis prepared for general conformity purposes to fulfill NEPA requirements. Doing so enables the officials to take a hard look at and disclose potential air quality impacts and identify alternative mitigation measures. If the total net emissions due to the proposed airport action exceed the *de minimis* thresholds or SIP emission budgets, FAA may demonstrate conformity by, among other things, conducting a dispersion analysis to determine if the action or alternative would violate any NAAQS.

(1) For CAA purposes. If the *proposed airport action* would occur in a nonattainment or maintenance area and its total net emissions exceed the applicable *de minimis* threshold(s) or SIP emission budgets, FAA may, among other things, conduct a dispersion analysis for general conformity purposes.

(2) For NEPA purposes. A dispersion analysis will also disclose whether the action has the potential to violate the NAAQS and cause a significant air quality impact under NEPA. Note that this analysis may be required depending upon the airport and the nature of the project, even if general conformity does not apply. See, the *Air Quality Handbook* and sections 6.d(1) and (2) of this chapter. The air quality impacts analysis under NEPA is broader than that required under general conformity, as it may include reasonable alternatives and cumulative impacts from actions FAA and other entities have or will undertake.

(3) Dispersion analysis. A dispersion analysis uses the emission inventory results combined with meteorological and other real world conditions to simulate the proposed airport action's pollutant concentration(s) over time and space. The results, expressed as *parts per million or milligrams/cubic meter,* are useful to identify potential air quality "hot-spots" and areas where NAAQS violations are likely to occur. A dispersion analysis is most commonly done for CO, but it is also suitable for other "local pollutants," including PM_{10}, NO_x, SO_2, and VOCs. Since the NAAQS are expressed as concentration levels, a dispersion analysis provides a direct means to determine if project-related emissions in the future have the potential to violate the NAAQS.

d. Integration of General Conformity and NEPA compliance. The release of NEPA and general conformity applicability analyses and documents should be synchronized to the fullest extent possible. 40 CFR Section 1500.2(c) states:

> "Federal agencies shall to the fullest extent possible:...(c) Integrate the requirements of NEPA with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively."

Although not required, the synchronized release of the draft General Conformity Determination and draft NEPA document helps make the environmental review process more efficient, facilitates public review and comment, and minimizes the risk of public confusion. Where a draft General Conformity Determination is not needed, the draft NEPA document should summarize and disclose the inventory and applicability analysis.

(1) Draft documentation. Under the General Conformity Rule, if requested, FAA must make its draft General Conformity Determination available for public review. FAA must place a prominent advertisement in a daily newspaper having general circulation and serving the project area. The advertisement must tell the public of the draft Conformity Determination's availability. It must also state FAA is providing the public 30 days to review the draft Determination and submit written comments on it. FAA must respond to all comments received on the draft Determination. If requested, FAA must make these comments publicly available within 30 days of the date FAA issues its final General Conformity Determination.

(2) Final documentation. FAA must make its final General Conformity Determination available to the public. Therefore, FAA should try to complete this Determination so that it can make it publicly available when FAA issues its Final EIS. FAA must publish a notice advertising the Final Determination's availability to the public in a daily newspaper of general circulation serving the project area. FAA must ensure the advertisement appears within 30 days of the date it issues its final General Conformity Determination. FAA must issue this final Determination *before* it approves the project (i.e., before issuing a ROD or other document signaling Federal approval for the airport sponsor to proceed with project construction).

e. Airport-related hazardous air pollutants (HAPs). EPA has identified roughly 25 individual HAPs that are associated with emissions from aircraft and airport

ground service equipment (GSE). However, EPA does not specify aircraft and airports in the definitions and categories of HAP sources in Section 112 of the CAA ("Hazardous Air Pollutants").[13] Nor has EPA established standards for HAPs. When compared with existing urban backgrounds, air quality monitoring studies near several large airports have not shown that increased HAP levels occur near those facilities. In fact, only a small percentage of an urban area's overall air pollution is attributable to airport emissions.[14] Nevertheless, due to the emission levels of unburned hydrocarbons and particulates near airports, EPA's National Air Toxic Program notes that airports are complex facilities that emit HAPs. Therefore, to comply with NEPA's disclosure requirements, FAA reports HAPs emissions in its environmental documents for information purposes only. FAA does not use that information to assess human health risks. The responsible FAA official should consider whether 40 CFR Section 1502.22, which addresses incomplete and unavailable information, applies to HAPS emissions for major airport development projects.

(1) For major projects normally requiring an EIS (e.g., new airport, new runway, major runway extension), the responsible FAA official should decide, in consultation with Federal, State, and local air quality agencies whether it is appropriate to conduct a HAPs emission inventory. This is, especially so when the action would occur in areas that are classified as nonattainment or maintenance for O_3 or particulate matter (PM).

(2) As needed, consult APP-400 to determine the HAPs FAA will analyze and the methodology FAA will use to conduct that analysis.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. The responsible FAA official should consider the following factors in consultation with agencies having jurisdiction or special expertise about air quality in the airport-affected area. FAA's *Air Quality Handbook*, Appendix B, provides a project Review checklist to help guide air quality analysts.

[13] Section 213 of the CAA "Aircraft Emission Standards" addresses aircraft emissions.

[14] GAO (2003) estimates about 0.5 percent, 2003.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
When a project or action exceeds one or more of the National Ambient Air Quality Standards (NAAQS).	The responsible FAA must determine if the air quality impacts of a proposed airport action (or if needed, its reasonable alternatives) would exceed a NAAQS for the timeframes used for the NEPA analysis. FAA's Air Quality Handbook (pg. 14) states: "In the action is in a nonattainment or maintenance area [and for this Desk Reference, an attainment area] it is assumed that a NAAQS assessment [i.e., emissions dispersion analysis] is not required for an airport or air base action, since it is unlikely the action's pollutant concentrations would exceed the NAAQS."

Adapted from: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, agencies having jurisdiction or special use expertise about air quality normally provide letters addressing air quality effects. Often, those letters include recommended measures to mitigate those effects under NEPA beyond those required to comply with applicable substantive requirements under the Clean Air Act. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the key information in those letters and cross-reference the appendix for further information. If FAA or the airport sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted. If feasible, provide an estimated schedule for undertaking required mitigation measures.

c. Reporting air quality findings. The environmental document should contain enough information, materials, and evidence to fulfill applicable NEPA, state or local regulations, and/or CAA requirements. FAA's *Air Quality Handbook*, Appendix B, provides a "Project Reviewer's Checklist" to help guide the developers and reviewers of an air quality analysis. If the proposed airport action requires or involves air quality mitigation measures as a condition of FAA approval or to mitigate the project's potential air quality impacts below the threshold of significance, the environmental assessment and Finding of No Significant Impact (FONSI) must identify those measures. Air quality environmental documentation should include:

(1) Evidence of agency coordination. The environmental document must contain evidence that interagency consultation with the proper air quality agencies has occurred.

(2) NEPA impact determination. Where detailed air quality analysis was conducted, the environmental document must contain a conclusion about potential

project-related impacts on air quality based on the results of an emissions inventory or a dispersion analysis, whichever is appropriate. If the emissions inventory indicates the proposed airport action or, if appropriate, a reasonable alternative's total net emissions are below *de minimis* levels, and there are no other unusual circumstances, the responsible FAA official may assume the proposed airport action or alternative would not cause a significant air quality effect (see FAA's *Air Quality Handbook*, section 2.1.5, pg. 14).

(3) General Conformity Determination. When issuing a draft or final General Conformity Determination, FAA must notify the appropriate EPA Region, State and local air quality agencies, the Metropolitan Planning Organization (MPO), the public, and, when applicable, Federal land management agencies. The environmental document for the proposed airport action should report the status of the Determination and include it as an appendix. The appendix should also include letters from the above agencies. The Determination will state the proposed airport action or the preferred alternative would not:

(a) cause or contribute to new violations of a NAAQS;

(b) increase the frequency or severity of an existing NAAQS violation; or

(c) delay the timely attainment of a NAAQS or any required interim emission decreases or milestones.

(4) Achieving General Conformity. Ways to achieve compliance with the General Conformity Rule include:

(a) documenting that planned emission increases are included in the existing SIP;

(b) persuading the State to include the emission increases in the SIP; or

(c) offsetting or mitigating emission increases from the project, provided the offsets are for the *entire* action, not just an incremental amount to attain levels below *de minimis* standards.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. After completing the applicable air quality analyses, use the following information, criteria, and guidelines as appropriate to determine the degree of the alternative's air quality impacts. For major airport development projects, it may also be appropriate to prepare a HAPs emission inventory and disclose the results in the EIS.

(1) If a dispersion analysis shows a criteria pollutant will exceed a NAAQS, a significant impact may occur.

(2) FAA must prepare an EIS if the responsible FAA official has information signaling significant air quality effects may occur and mitigation would not reduce impacts below the NAAQS. Further consultation with representatives from State or regional air quality officials, the MPO, and/or regional EPA air quality offices during EIS scoping will likely be needed. The responsible FAA official may wish to consider inviting some of those agencies to participate as cooperating agencies in preparing the EIS due to their expertise on air quality issues (e.g., analyses, alternatives to consider, or mitigation). As fitting, the EIS must contain information required under other parts of this chapter and the following:

(a) the results of interagency consultation completed to more precisely define unresolved issues and the necessary steps, analyses, or actions required to address them;

(b) the results of emission inventories or dispersion analysis;

(c) a description of necessary air quality mitigation measures;

(d) mitigation benefits or emission decreases;

(e) time frames for adopting the mitigation, and

(f) sponsor or State agency commitments to carry out the mitigation.

b. Mitigation. The EIS should describe any mitigation measures agencies with air quality expertise recommend. The EIS, Record of Decision (ROD) and/or General Conformity Determination must identify the air quality mitigation measures FAA requires as part of its project approval or to lessen the project's potential air quality impacts in accordance with the CAA. Mitigation measures required to fulfill General Conformity Rule requirements generally should also fulfill requirements applicable to major airport development projects. That assures all reasonable steps have been taken to minimize significant adverse air quality impacts under 49 USC Section 47106(c)(1)(B). FAA must analyze mitigation measures that Federal, State, and local air quality agencies recommend beyond those required under the CAA to assure FAA has fairly evaluated the potential environmental consequences to fulfill NEPA requirements.

The EIS and ROD should summarize the measures, emission reduction benefits, and the process for administering, monitoring, and enforcing the proposed mitigation. If feasible the EIS and/or ROD should include a schedule that lists clear timelines for implementing the mitigation.

CHAPTER 2. BIOTIC RESOURCES

1. INTRODUCTION AND DEFINITIONS.

a. Biotic Resources. For purposes of this desk reference, the term "biotic resources" means various types of flora (plants) and fauna (fish, birds, reptiles, amphibians, marine mammals, coral reefs, etc.) in a particular area. The term also means rivers, lakes, wetlands, forests, upland communities, and other habitat types supporting flora and aquatic and avian fauna.

b. National Environmental Policy Act (NEPA). A NEPA document's Biotic Resources chapter must address the effects on biotic resources due to a proposed action and its reasonable alternatives. The chapter must also address action-related effects and consequences on the affected area's *state-listed* rare or unique species or their habitats. However, the Biotic Resources chapter should not discuss action effects on *Federally-listed* endangered and threatened species. Instead, place that information in a separate chapter specifically addressing Federally-protected species (see Chapter 8 of this Desk Reference.)

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

When a Federal action would affect water resources, Section 662(a) of the Fish and Wildlife Coordination Act (FWCA), as amended (16 USC Section 662(a)) specifically requires consideration of biotic resources. To comply with that section, FAA must coordinate with the U.S. Fish and Wildlife Service (FWS) to assess the effects of proposed FAA actions on aquatic areas. Consultation with the National Marine Fisheries Service (NMFS) is needed for actions affecting anadromous fish species and marine mammals. Also, FAA or the airport sponsor, as appropriate, must consult with state wildlife agencies having jurisdiction over affected biotic resources.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
16 USC Section 662(a), Fish and Wildlife Coordination Act	When a Federally approved or financed action would affect a stream or water body, the responsible Federal agency must consult with the FWS.	FWS
Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federally Landscaped Grounds, 60 Federal Register (FR) 40837 or 60 FR 40837	Provides guidance for interpreting and applying the Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federally Landscaped Grounds.	U.S. Environmental Protection Agency (EPA) (Office of the Federal Environmental Executive)
Executive Order 13112, *Invasive Species*, 64 FR 6183.	Paragraph 3f of attachment 2; U.S. Department of Transportation (DOT) Order 5610.1C.	Departments of the Interior (DOI), Commerce, Agriculture (USDA), and Transportation (DOT)
49 USC Section 47106(c)(1)(B)	When review of an application for an airport development action involving a new airport, a new runway, or a major runway extension indicates the action would have significant	FAA

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
	adverse effects on natural resources including fish and wildlife (among other environmental resources), the Secretary of Transportation may approve that application, but only after finding that no possible and prudent alternative exists and that every reasonable step has been taken to minimize the adverse effects.	
Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended by the Sustainable Fisheries Act, 16 USC Section 1855(b)(2) *et seq*.). See 50 CFR Part 600 for regulations implementing this Act	Prohibits actions that may affect "essential fish habitat" (EFH). Fisheries Councils throughout the country identify and describe fishery management plans to protect certain anadromous fish species. If an action would affect an EFH, an impact assessment on the affected EFH is needed. The assessment and any mitigation are done in consultation with NMFS.	NMFS
Migratory Bird Treaty Act of 1918, as amended, 16 USC Sections 703-711. See 50 CFR Part 10 for regulations implementing this Act	Actions that may take a migratory bird species are prohibited. If an action may take a migratory bird or affect its breeding habitat, consultation with the FWS is needed. If it is determined there are no feasible alternatives to taking the migratory bird or its nest, FWS must issue a permit for the taking. The permit will likely require mitigation.	FWS
Marine Mammal Protection Act of 1972, as amended, 16 USC Sections 1361-1421. See 50 CFR Part 18 for regulations implementing this Act	Actions that may take a marine mammal are prohibited. If an action may take a marine mammal, consultation with the NMFS must occur. Mitigation actions to minimize or avoid the potential take must be implemented.	NMFS
Executive Order 13089, *Coral Reef Protection*, 63 FR 32701.	Orders Federal agencies to preserve and protect the health, heritage, social, and economic value of the country's coral reef ecosystem and the marine environment	National Oceanic and Atmospheric Administration (NOAA)

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS. FAA must evaluate any airport development action subject to FAA approval or funded under the Airport Improvement Program (AIP). In those instances, FAA must determine if the proposed action or its reasonable alternatives would significantly affect biotic resources. Typical airside actions that may cause those impacts include: new or expanded terminals or hangar facilities; building new or extended runways or taxiways; installing navigational aids (NAVAIDS) or expanding those facilities. Landside actions may include new or relocated access roadways, on-airport remote parking facilities or rental car lots.

4. PERMITS, CERTIFICATIONS, AND APPROVALS. Permits do not cover all airport actions affecting biotic resources. However, those actions that could affect migratory birds, fish,

marine mammals, or sea turtles[1] may require special permits. FAA or the airport sponsor, as fitting, must consult the FWS or NMFS to determine if permits issued under the Migratory Bird Treaty Act or the Marine Mammal Protection Act, respectively, are needed. Also, a U.S. Army Corps of Engineers (Corps) Clean Water Act Section 404 permit is required if proposed airport development would require dredging or filling navigable waters or wetlands, collectively known as "waters of the United States." (See Chapters 20 and 21 of this Desk Reference for information on how to analyze impacts to water quality and wetlands, respectively.)

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS. As noted earlier, under the FWCA, FAA must consult with the FWS when FAA is considering an airport action that would impound, divert, deepen, control, modify, pollute, dredge, or fill any watercourse, water body, or wetland. FAA also coordinates with FWS and state agencies about action impacts on potentially affected biotic resources that do not occupy those waters. If an action would affect tidally influenced waters, Essential Fish Habitat, marine and anadromous fishes, marine mammals or sea turtles, coordination with NMFS should occur. This interagency coordination provides multidisciplinary input critical to FAA's evaluation of action impacts. In addition, this consultation helps FAA determine the adequacy of potential mitigation measures.

6. DETERMINING IMPACTS. As needed, the environmental document contains an evaluation of action-related biotic resources impacts. Impact analyses at the population or community level may be necessary. Consult with FWS and other expertise agencies to determine the proper analyses.

a. Levels of analyses. If the proposed action or its reasonable alternatives would affect only previously disturbed airport property, populated areas, or farmland, the analyses would normally be minimal and straightforward. Impacts on undisturbed wildlife habitats require more analyses than that needed for already disturbed areas. Develop the analyses for the undisturbed areas in consultation with FWS and other agencies having expertise on the affected biotic resources and their habitats. Include construction impacts to ensure the NEPA document properly addresses temporary, constructed-related impacts on these resources.

b. State-listed species. The responsible FAA official must ensure the environmental document's Biotic Resources chapter addresses action impacts on ***state-listed*** endangered and threatened resources. However, if those species are also Federally-protected, the Biotic Resources chapter of the NEPA document should report that fact and refer the reader to the document chapter addressing Federally-listed endangered or threatened species (see Chapter 8 for information on those species).

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[1] See 50 CFR Section 10.13 for migratory species; Section 224.101(a) for anadromous fish species; Section 224.101(b) for marine mammal species; and Section 224.101(c) for sea turtles.

c. Evaluating impacts. To evaluate impacts to biotic resources, the environmental document must provide the following information:

(1) names and locations of water bodies or watercourses the action would affect. and

(2) an analysis of impacts and their consequences on common and unique biotic resources the no action, the proposed action, and any reasonable alternatives would cause.

Note: If the action would affect publicly-owned wildlife or waterfowl refuges of local, state, or national significance, refer to Chapter 7 of this Desk Reference for instructions on complying with Section 4(f). If the action may affect Federally-listed endangered and threatened species, refer to Chapter 8 for details.

d. Minor permanent habitat change determinations. The environmental document should provide the basis for determining the severity of permanent, minor habitat changes. Here, the environmental document should address each of the following criterion the no action, the proposed action and the reasonable alternatives (collectively called "alternatives") would cause.

(1) Does the affected habitat represent a small percentage of a particular habitat type commonly found in the affected area? Consult FWS and state wildlife personnel to help quantify the term "small percentage." or

(2) Does the habitat affected support a limited number of biotic resources commonly occurring in the affected area?

e. Major permanent habitat change determinations. Major permanent habitat change determinations are needed when an alternative would remove or disturb small tracts of sensitive, important habitat. Consultation with the proper resource agency is important here. The environmental document should address each of the following criterion for each alternative.

(1) Is the affected habitat critical to the area's ecological stability?

(2) Does the affected habitat support species or populations not commonly found in the affected or surrounding area?

(3) Does the affected habitat comprise a large percentage of a particular habitat type occurring in the affected or surrounding area? Consult FWS and state wildlife personnel to help quantify the term "large percentage." or

(4) Will the action permanently remove the affected area's biotic community from a portion of the habitat it currently uses or will the community leave the affected habitat for a long-term (i.e., 8-10 years)?

f. Actions involving coral reefs. If an FAA action would affect a part of a coral reef ecosystem, FAA should fund a study (subject to funding availability) to determine how the sponsor should carry out measures to monitor, manage, and restore the coral reef the

action would affect. This includes measures that would reduce impacts from action-related pollution or sedimentation.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. After completing the consultation and analyses discussed above, use the significance thresholds in column 1 of the following table. Consider factors in column 2 when determining if the action meets a threshold. The responsible FAA official should consider the following factors in consultation with agencies having jurisdiction or special expertise about the protection or management of the affected species. The official should complete added analysis for each reasonable alternative that would cause long-term habitat impacts (see section 6.e(4) of this chapter).

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
Consider scientific literature addressing the affected species and information from agencies having expertise addressing those species. Also review information on: • Action effects on population dynamics. • Action effects on sustainability and reproduction rates. • Natural and artificial mortality (aircraft strikes). • The minimum population size needed to maintain the affected populations.	• Consult the proper agency(ies) to determine if an area sufficient to sustain species **commonly** found in the affected area would remain if the alternative were implemented. • Determine if the action would affect habitat supporting floral or faunal species **not commonly** occurring in the affected area. If the action affects such habitat, consult the correct agency(ies) to determine if the action would affect a small tract of sensitive habitat needed for the survival or well-being of the affected biotic resource. Consider the locations of other nesting or breeding grounds relative to the affected area and if resource agencies suggest those areas could sustain the disturbed species.

From: Table 7-1, FAA Order 5050.4B.

b. Potential mitigation measures.

(1) Agency recommendations. During the environmental review process, FWS and other resource agencies normally provide letters addressing biotic resource impacts. Often, those letters include recommended measures to mitigate impacts. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the sponsor or FAA does not adopt any recommended mitigation, the environmental document should explain clearly why the mitigation was not adopted.

(2) Possible mitigation. After the impacts to biotic resources have been determined, consider the following mitigation measures to reduce those impacts:

(a) erosion controls to protect bordering biotic resources;

(b) phasing various construction activities to avoid breeding, nesting, flowering, or pollination seasons;

(c) providing escape routes for mobile species;

(d) using landscape rehabilitation to restore or enhance existing, degraded habitat, or to create new habitat;

(e) changing design to minimize impacts on sensitive resources;

(f) buying adjoining habitat to create a preserve for displaced wildlife or to create a buffer zone; or

(g) adopting mitigation measures FWS or other resource agencies recommend and justify.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. When a significant impact to biotic resources would occur, FAA must prepare an EIS if mitigation will not reduce impacts below the significance threshold. The EIS should contain the information noted below as well as the applicable information discussed throughout this chapter.

b. Photographs. Aerial photographs and field survey(s) to help further define the extent or distribution of the affected biotic resources.

c. Resource importance. A description of the significance of affected biotic resources. As fitting, this should address the following issues:

(1) the species or communities the action would destroy or displace;

(2) the importance of affected species or communities to the impacted area;

(3) the species' range; and

(4) the locations of sites significant to those resources (e.g., breeding or nesting areas) relative to the location of the alternatives considered.

d. Other information. Refer the reader to other chapters discussing impacts to other resources (e.g., water quality, noise, and induced development, etc.) that could also affect the action area's biotic resources.

e. Mitigation. Describe proposed mitigation when FWS or other consulted agencies provide such recommendations. FAA should fully consider those measures and balance their benefits against those of the proposed action. Explain why FAA or the sponsor did not adopt any recommended measure. If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 3. COASTAL BARRIERS

1. INTRODUCTION AND DEFINITION. Barrier islands are geologically unstable formations and cannot support development. Yet, they protect the mainland by buffering storm or hurricane-driven winds or waves. As a result, these islands protect fish, wildlife, human life, and property along coasts and shorelines.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
The Coastal Barrier Resources Act of 1982 (CBRA), as amended by the Coastal Barrier Improvement Act of 1990, 16 USC Sections 3501-3510.	Section 5 of this Act bans Federal agencies from providing financial support for almost all actions occurring on any unit of the Coastal Barrier Resource System. Section 6 provides minimal exceptions (48 Federal Register 37036). CBRA Advisory Guidelines provide more information (48 FR 45664 and 57 FR 52730).	U.S. Fish and Wildlife Service (FWS) or Federal Emergency Management Agency (FEMA)

Adapted from FAA Order 1050.1E, Appendix A, Section 3. For information about coral reefs, see Chapter 2 of this Desk Reference addressing biotic resources.

b. The Coastal Barrier Resource System (CBRS). The Department of the Interior (DOI), through the FWS and the National Park Service (NPS), develops and maintains maps entitled "Coastal Barrier Resource System." Barrier islands occur along all coastlines of the United States, but the longest, best defined chains occur along the coasts of the Atlantic Ocean, the Gulf of Mexico, and the Great Lakes. Contact regional FWS offices for maps dated October 24, 1990 (or later if the DOI Secretary revises them). FEMA regional office "Flood Insurance Maps" also show CBRS elements.

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. An action involving the CBRA. Facilities built in the CBRS harm barrier island geology and ecology. They are prone to storm or hurricane damage. In passing the CBRA, Congress minimized the loss of human life by discouraging development in storm-prone, high-risk areas. In doing so, it also prevented impacts to ecologically fragile coastal barriers comprising the CBRS and stopped wasteful Federal funding for actions occurring on the islands comprising the CBRS.

(1) Banned actions. FWS identified examples of Federal program expenses and financial support not allowed within the CBRS. Financial assistance, including Federal expenditure and financial assistance for development within the CBRS, includes FAA grants for airport planning and development (48 FR 45664). Similarly, without specifically mentioning the FAA, financial assistance that is prohibited includes grants (57 FR 52730).

Banned actions further include approving Federal money to buy any road or airport (among other facilities) within the CBRS. Banned actions do not include financial support for environmental studies, planning, or assessments that FAA requires to comply with other requirements.

(2) Excepted actions. As noted in Section 2 of this chapter, Section 6 of the CBRA provides for exceptions to that Act. Section 6 allows Federal agencies to provide funding for navigational equipment (among other actions), but the expenditure must be consistent with the CBRA. Therefore, FAA may provide financial support to set up, operate, or maintain navigational aids and devices that are parts of the nation's air navigation system. Excepted actions include access to those aids or devices. FAA may also provide financial support for environmental studies or planning for those aids or devices to comply with FAA Orders 1050.1E or 5050.4B.

(3) Required consultation. As needed, the airport sponsor or responsible FAA official should review CBRS maps to determine if an action under consideration would occur within the CBRS. Consultation with FWS to determine if the action would involve the CBRS is prudent. However, before approving a request for a grant financing an excepted action, the responsible FAA official must ensure consultation with FWS or FEMA has occurred. Those agencies must be provided the opportunity to comment on the action before FAA makes a decision on the action. FWS will determine if the action is consistent with the CBRA.

(4) Actions not involving Federal financial support. The CBRA addresses Federal expenditures only. It does not appear to address Federal actions that do not involve expenditures. However, if a sponsor requests a Federal action that would not include Federal funding (e.g., Airport Layout Plan (ALP) approvals), ARP urges sponsors and responsible FAA officials to meet the requirements of this chapter. ARP recommends this approach to meet the spirit of the CBRA and promote environmental stewardship.

4. PERMITS, CERTIFICATIONS, AND APPROVALS. None required. If a sponsor proposes an action that would involve an element of the CBRS, the sponsor must provide proof of consultation with FWS.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES – ENVIRONMENTAL ANALYSIS. To complete the analysis, the environmental document should contain the following information listed below.

a. Unit identification. Identify the CBRS unit where the excepted action would occur.

b. Describe the action. Describe the action and any alternatives so the reviewer understands clearly the proposed action and why it qualifies as an excepted action.

c. Funding. Provide the dollar amount and source of Federal funding for the proposed action.

d. Risks. Evaluate risks to coastal resources and human safety or property associated with the excepted action. Do this by providing the following information:

(1) Risks to human safety. Describe the risks to human safety that would result if a severe storm or hurricane struck the barrier island.

(2) Risks to facilities. Describe the storm or hurricane-induced damage risks to the facility that would be maintained, replaced, rebuilt, or repaired.

e. Proof of consultation. FAA environmental documents should contain information verifying that consultation with FWS or FEMA has occurred. The document should include FWS or FEMA recommendations that would prevent or reduce an excepted action's effects on the barrier island's ecology or measures needed to protect human life or property. The document should also contain a sponsor's commitment to carry out that mitigation.

6. DETERMINING IMPACTS.

To avoid repeating information on impacts to coastal biotic life or historic, cultural, or recreational resources, refer the reader to those chapters of the environmental document that discuss the affected coastal resources in detail. Preparers should place a note in the environmental assessment's (EA) Coastal Barrier chapter telling the reader to review the chapters in the EA discussing the affected resources found on the coastal barrier.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. After consulting the appropriate FWS or FEMA office and completing the analyses discussed above, the responsible FAA official should use the significance threshold in column 1 of the following table. Consider factors in column 2 when determining if an action meets a threshold. The responsible FAA official should consider those factors in consultation with FWS or FEMA.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
None.	FAA Order 1050.1E, Appendix A, Section 3, does not provide a threshold. However, after consulting with the jurisdictional FWS or FEMA office, the responsible FAA official should determine if the proposed action would cause either of the following conditions: • An unacceptable risk to human safety or property. • Adverse effects to the barrier's environmental resources that cannot be satisfactorily mitigated.

From: Table 7-1, FAA Order 5050.4B.

b. Agency recommendations. During the environmental review process, FWS or FEMA will likely provide letters on coastal barrier impacts. Those letters may include recommended measures to mitigate those impacts. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the sponsor or FAA does not adopt any recommended mitigation, the environmental document should explain clearly why the mitigation was not adopted.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. When a significant impact to coastal barrier resources would occur, FAA must prepare an EIS if mitigation will not reduce impacts below the significance threshold. The EIS should contain the information noted below as well as the applicable information discussed throughout this chapter. That information should address funding exceptions and consultation with FWS or FEMA. The EIS's Coastal Barrier section should refer the reader to any significant impacts reported in other EIS sections specifically addressing affected resources found on the coastal barrier.

b. Mitigation. Describe proposed mitigation when FWS or FEMA provide that information. FAA should fully consider the mitigation and balance its benefits against those of the proposed action. Explain why the sponsor or FAA did not adopt any mitigation FWS or FEMA recommends. If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 4. COASTAL ZONE MANAGEMENT

1. INTRODUCTION AND DEFINITIONS.

a. Actions in coastal zones. Under most circumstances, all airport actions that would occur in or that would affect a coastal zone of a state having an approved state coastal zone management program must comply with that program to meet the requirements of the Coastal Zone Management Act of 1972, as amended (CZMA). This includes those actions FAA directly undertakes (e.g., installing a radar lighting system for a proposed runway), as well as sponsor-proposed airport development actions (e.g, building or extending a runway or an access road).

b. Coastal zones. Coastal zones are those waters and their bordering areas in states along the coastlines of the Atlantic and Pacific Oceans and the Gulf of Mexico and the shorelines of the Great Lakes. These zones include islands, beaches, transitional and intertidal areas, and salt marshes. Note the CZMA applies to a project that would directly affect coastal resources, even if it is not within a state's designated coastal zone.

c. Coastal Zone Management Program (CZMP). Coastal zone management plan consistency provisions apply only to states having a CZMP the National Oceanic and Atmospheric Administration (NOAA) has approved. Approved CZMPs contain a coastal state's objectives, policies, and standards to minimize direct effects on its coastal or shoreline resources and information the CZM agency needs to assess an action's consistency with the CZMP. This information often addresses recreational, historical, cultural, or aesthetic values. CZMPs also identify coastal or shoreline segments to which the CZMP applies. If an airport activity is proposed in a state not having an approved CZMP, this chapter does not apply.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

This chart provides information on the law and regulations for proposed actions in states having approved CZMPs.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Coastal Zone Management Act (CZMA) as amended, 16 USC Sections 1451-1464.	When a proposed action would occur in a coastal zone or affect coastal zone resources of a state having an approved CZMP, the Act applies to a Federal agency or a non-Federal entity who seeks a Federal license or permit or Federal funding. The Act requires the action's proponent to certify the proposed activity would be consistent with the policies of the state's CZMP. The responsible Federal agency may not approve the	State CZM Agency, NOAA's Office of Coastal Zone Management

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
	proposed activity, unless: • the State agency managing the CZMP agrees with the Federal agency or project proponent's certification the action is consistent with the applicable CZMP; • State concurrence is conclusively presumed; or • The Secretary of Commerce determines the activity is either consistent with the objectives of the CZMA or it is needed for national security.	
NOAA regulations on Federal coastal zone consistency are: 15 CFR, Part 930, Subpart C - Consistency for Federal Activities. 15 CFR, Part 930, Subpart D – Consistency for Activities Requiring a Federal License or Permit. 15 CFR, Part 930, Subpart F – Consistency for Federal Support to State and Local Governments.	Complying with this subpart assures that FAA activities (or those a party undertakes on FAA's behalf) that occur in or are reasonably foreseeable to affect coastal zones are consistent with the state's approved CZMP. These activities include rulemaking, planning, physical alteration, and exclusion of uses. Complying with this subpart assures that Federally licensed, permitted, or approved activities that occur in or that affect a state's coastal zone resources are consistent with the state's approved CZMP. It also includes any lease to a non-federal entity or approving use of Federal property for a non-Federal activity. Complying with this subpart assures that Federal agencies may approve Federal support (i.e., grants) to applicant agencies for actions that are consistent with a state's approved CZMP. Applicant agencies include any unit of state or local government, or a special purpose district.	State CZM Agency and NOAA's Office of Coastal Zone Management

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. Listed or unlisted actions outside a designated coastal zone. The CZM agency may determine that a listed or unlisted action would affect coastal resources. It is important to note that agency may make this determination for an action that would occur outside the

geographical bounds of a state's designated coastal zone area. Therefore, consultation with the CZM agency is highly recommended. When a CZM agency determines an action would occur in or affect coastal resources, FAA must assure compliance with this chapter.

Note: An action proposed for any coastal zone along the Atlantic Ocean, the Gulf of Mexico, or the Great Lakes shorelines may also be subject to the requirements of the Coastal Zone Resources Act (CZRA) protecting coastal barriers. Refer to Chapter 3 of this Desk Reference for information on the CZRA.

b. Listed activities in or affecting a State's coastal zone. To comply with 15 CFR Sections 930.53(b) and 930.95(a), states having approved CZMPs develop a list of activities that are likely to affect a coastal zone or its resources. The responsible FAA official or the airport sponsor should review that list to determine if the following airport activities or any others under the scope of the Office of Airports are likely to affect a state's coastal zone or its resources. The official or sponsor must do so to meet 15 CFR Section 930.53. Direct questions addressing CZMA applicability to the CZM agency in the state where the proposed action would occur. Examples of airport-related activities that may be listed include:

(1) actions funded under the Airport Improvement Program (AIP) or Passenger Facility Charge (PFC) Program; or

(2) airport development actions the AIP or PFC do not fund, but that require Office of Airports approval.

c. Unlisted activities in or affecting a State's coastal zone. Executive Order 12372, *Intergovernmental Review of Federal Programs*, sets up an intergovernmental review process for EAs and EISs. This process allows CZM agencies to review pending actions to determine if an unlisted Federal action would occur in or affect the coastal zone or its resources. When the CZM agency decides an unlisted action might cause coastal zone impacts, that agency has the right to require compliance with the state CZMP (15 CFR Section 930.53(a)). CZMP compliance for unlisted actions is contingent on the CZM agency notifying the sponsor, FAA, and NOAA's Office of Coastal Resource Management the action would occur in a coastal zone or affect its resources. The CZM agency must notify them within 30 days of receiving notice of the proposed action. If the CZM agency fails to do so, it waives the right to review the unlisted activity.

d. Categorically excluded actions. The intergovernmental review noted above does not occur for actions FAA normally categorically excludes (CATEX). As a result, the CZM agency does not have the opportunity to review a proposed CATEX, nor does the sponsor or FAA know if the CZM agency wishes to review the proposed action. FAA cannot categorically exclude an action that is not consistent with any Federal requirement. As a result, *to avoid environmental processing delays*, the airport sponsor or FAA, as fitting, should consult the CZM agency about any proposed categorically excluded action that is in the coastal zone or that could affect coastal resources. If the CZM agency does not wish to review the action, FAA may categorically exclude it, provided no other extraordinary circumstance applies. If

the CZM agency issues a consistency concurrence, the responsible FAA official may categorically exclude the proposed categorically excluded action. If the CZM agency will not issue its concurrence for the proposed categorically excluded action, FAA will require an EA or EIS.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

a. Documents needed for unlisted actions. The CZM agency has the authority to require activities not listed in a state's CZMP to comply with the CZMA (unlisted activities). When this occurs, the environmental document should include the following information:

(1) The CZM agency's notice to the sponsor and FAA that the CZM agency wishes to review the proposed, unlisted activity. The CZM agency must provide this notice within 30 days after learning of the proposed activity.

(2) If FAA or the sponsor contests the CZM agency's determination to review the action, either party must file comments with the NOAA Assistant Administrator within 15 days after receiving the CZM agency's notice of that determination. The environmental document should include the notice and FAA or sponsor-prepared comments.

(3) The NOAA Assistant Administrator must issue a decision on the CZM agency's determination to review the proposed action. That decision must occur within 30 days from the date of the CZM agency's notice of determination noted above. The sponsor, the CZM agency, and FAA must receive written notice of NOAA's decision. The environmental document should include the decision.

Note: The sponsor or FAA has the right to appeal a CZM agency's decision to review an unlisted action. Either party may file an appeal with the NOAA Assistant Administrator. But to avoid delays in the environmental review process, ARP recommends seeking the CZM agency's consistency concurrence rather than filing the appeal.

b. The sponsor's consistency certification. After finding the proposed action complies with the applicable State CZMP, the airport sponsor must make the following written certification to the CZM agency in the state where the action will occur (15 CFR Section 930.57(b)). The responsible FAA official must include a copy of the sponsor's certification in an appendix to FAA's environmental document.

> "The proposed activity complies with the enforceable policies of (enter State's name) approved management program and will be conducted in a manner consistent with such program."

The airport sponsor should include the following data and information with that certification (15 CFR Section 930.58):

(1) A detailed description of the proposed action and its associated facilities (e.g, access road, support buildings, etc). The information must be sufficient to allow an evaluation of effects on coastal resources;

(2) Data and information in the CZMP the CZM agency will need to assess the action's consistency with the CZMP; and

(3) A brief assessment noting the coastal zone effects the proposed action and its associated facilities would have on relevant CZMP elements.

Note: An airport sponsor should provide the CZM agency confidential information, only if: 1) the agency clearly explains why it needs that information to make a reasoned decision on the proposal's consistency, and 2) the sponsor is satisfied that acceptable protection against public disclosure exists (15 CFR Section 930.58(c)).

c. CZM agency concurrence with the sponsor's consistency certification. CZMA section 307(c)(3)(A) (16 USC Section 1456(c)(3)(A) and 15 CFR Section 930.63(a)) require the responsible CZM agency to notify FAA and the airport sponsor of its concurrence or objection to the sponsor's consistency certification. The CZM agency must make this finding within 6 months following start of its review. The environmental document must contain proof that:

(1) The CZM agency agrees with the sponsor's consistency certification; or

(2) The state's concurrence is presumed. In this case, include a copy of the sponsor's dated consistency certification to demonstrate the CZM agency's 6-month review period requirement has been met.

d. CZM agency objection to sponsor consistency certification. If the CZM agency objects to the sponsor's consistency certification, that agency must notify the sponsor and FAA of its objection. As noted above, the State agency must do so within 6 months after beginning its review of the sponsor's certification and the information the CZM agency needs to assess that certification. To comply with 15 CFR Section 930.64, once FAA receives a State agency objection to a consistency certification, FAA shall not issue a Federal license or permit (in FAA's case, an unconditional ALP approval or AIP funding), except under certain specific circumstances.

As set forth in 15 CFR Section 930.63, the CZM agency objections based on insufficient information may contain the following information:

(1) reason(s) why the action is inconsistent with specific elements of the CZMP;

(2) an alternative measure (if one exists) that, if the airport sponsor adopts it, may allow the action to occur in a manner consistent with the enforceable policies of the CZM program;

(3) a description of the information needed and why the agency needs that information to determine if the action would comply with the CZM program; and

(4) a statement from the agency telling the sponsor the sponsor has the right to appeal to NOAA about the objection (see section 4.e. of this chapter).

e. The sponsor's appeal of a CZM agency's objection. If more information or informal discussions do not enable the sponsor and CZM agency to resolve the agency's objection to the sponsor's consistency certification, the sponsor may appeal the CZM agency's objection to the NOAA Assistant Administrator for Coastal Management (Assistant Administrator). The sponsor must file the appeal with the Assistant Administrator within 30 days of the date the CZM agency notifies the sponsor of its objection. When the sponsor files an appeal, the approving FAA Official *cannot* approve the action, unless the Assistant Administrator determines the action is consistent with the purposes of the CZMA. The environmental document prepared for this situation should contain the following information:

(1) a copy of the sponsor's intent to file an appeal under 15 CFR, Subpart H (the sponsor should tell the responsible FAA official that it intends to file an appeal);

(2) a copy of the NOAA Assistant Administrator's finding that the action is permissible because it is: "...consistent with the objectives or purposes of the Act", if it satisfies each of the following three requirements. Per 15 CFR Section 930.121, the finding will cite all of the following reasons as the basis for the NOAA Assistant Administrator's decision:

(a) the action significantly or substantially promotes the national interest, as defined in the CZMA;

(b) the action's contribution to the national interest outweighs adverse coastal zone impacts, separately or cumulatively; and

(c) there is no reasonable alternative. and

(3) a copy of the NOAA Assistant Administrator's concurrence with the CZM agency's objection;

Note: 15 CFR, Subpart G, Sections 930.110-930.116 describe mediation procedures Federal and CZM agencies may use to resolve disagreements about the state's administration of CZMP requirements. Refer to that Subpart as necessary. The NOAA Assistant Administrator will try to issue a decision within the 90-day period following public notice of the sponsor's appeal request.

f. FAA action when the CZM agency objects to a sponsor's consistency certification. The approving FAA Official *cannot* approve or finance any airport action after the CZM agency tells FAA it objects to the sponsor's consistency certification. Here, FAA may approve the proposed action only if the NOAA Assistant Administrator finds the action consistent with the purposes of the CZMA. If, during its review of an action, FAA decides it will not approve

or finance a proposed action, the responsible FAA official must immediately notify the sponsor and the CZM agency of that decision.

g. FAA's consistency certification. When FAA itself will build a facility connected to a proposed airport project (e.g., installing NAVAIDS for a proposed runway), the FAA Line of Business (LOB) responsible for the connected facility must make its own consistency certification. The LOB should do so as soon as practicable after finding its proposed action complies with the applicable state CZMP (15 CFR Section 930.36(b)). The text of the environmental document must tell the reader about FAA's certification and refer the reader to the appendix of that document that includes a copy of that certification. That certification should briefly state that the proposed action would/would not be consistent to the maximum extent practicable with the CZMP (15 CFR 930.39). The certification should also include this information:

(1) A detailed description of the proposed action and its associated facilities (e.g, access roads, support buildings, etc.) and their coastal zone effects; and

(2) Information sufficient to support FAA's consistency statement. The statement should infer the proposed action and its facilities are consistent with the CZMP. In making this finding, the airport sponsor must show consistency with the management program to the maximum extent practicable. There is no need to make findings for policies the CZMP does not address.

h. State agency response to a Federal consistency determination. A state CZM agency must tell FAA of its agreement or disagreement with FAA's consistency determination as early as practical after providing for public participation (15 CFR Section 930.41(a)). If the CZM agency does not issue a decision on FAA's determination within the 45-day period following receipt of FAA's determination, it must tell FAA about the status of the matter and why there is a delay (15 CFR Section 930.41(a)). In no case may FAA approve the action or any connected action sooner than 90 days from the date FAA issued its consistency determination, unless FAA and the CZM agency agree to an alternative period as discussed in 15 CFR Section 930.34(c)).

i. CZM agency objection to FAA's consistency determination. If the CZM agency objects to FAA's consistency determination, the CZM agency must provide the reasons for its objection (15 CFR Section 930.43). That agency must describe why FAA's action is inconsistent with the CZMP and which alternatives, if adopted, would make the action consistent with the CZMP. If, as grounds for objecting, the state CZM agency maintains that FAA did not provide enough information, the CZM agency must describe the nature of the missing information and why it is needed.

j. Conflict with existing law. If the CZM agency objects to FAA's consistency determination, FAA and that agency should try to resolve their differences during the remainder of the 90-day period mentioned above. If they do not resolve the differences

within that period, FAA should consider delaying the final action until it and the CZM agency resolve their issues. However, at the end of the 90-day period, FAA may proceed with its action, even if the CZM agency has not withdrawn its objection. FAA may do so because an existing requirement particular to FAA (i.e., aviation laws or safety standards) may prohibit consistency with the CZMP. In this case, FAA must provide the CZM agency or local agency with a written statement citing the statutory provisions or legal authority limiting FAA's discretion to comply with the CZMP.

i. **Mediating an objection.** Either FAA or the CZM agency may request that the Secretary of Commerce mediate an objection (15 CFR Section 930.44). Procedures to do so are in 15 CFR Part 930, Subpart G.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES – ENVIRONMENTAL ANALYSIS.

a. Required consultation. Consultation with NOAA or the state CZM agency is necessary to verify coastal zone management areas near the proposed action. If coastal zone effects would occur, the environmental document must record needed consultation with the State agency or NOAA.

(1) Project description. Refer the reader to that portion of the environmental document describing the proposed action. If a written description is not enough, include maps, diagrams, or other relevant material.

(2) Consistency findings. The sponsor or the responsible FAA LOB, as proper, should review the terms of the CZMP (i.e., air, water, erosion, beach access, etc.), briefly describe the proposed action's effects on those terms, assess those effects, and explain why the project is consistent with the CZMP.

6. DETERMINING IMPACTS. Use the information prepared to meet the requirements noted earlier in this chapter. The environmental document's Coastal Zone Management chapter should use that information to determine the severity of impacts on coastal resources by using the information discussed in section 7 of this chapter.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. Due to their locations, some airport development actions are in or affect coastal zones. The responsible FAA official should consider the following factors in consultation with the airport sponsor, an allied FAA LOB, and the CZM agency. For airport development actions, use the following information to determine the level of a proposed action's impacts on coastal zone resources.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
None.	FAA Order 1050.1E, Appendix A, Section 3, does not provide a threshold for these resources. Because of the number of airports in coastal areas or that could affect coastal resources, ARP recommends the responsible FAA official consider the following factors when addressing effects on coastal zone resources. • Does the CZM agency object to the sponsor's consistency certification? • If yes, has the sponsor changed the project so it is consistent with the applicable coastal zone management plan(s)? • If not, has the sponsor successfully appealed the CZM agency's consistency objection to the NOAA Assistant Administrator? • If the airport action includes facilities FAA will install, did the responsible FAA organization provide proof that it will install the necessary aviation facilities in a manner consistent with the approved coastal zone management plan to the maximum extent practicable? • Did the CZM agency agree or disagree with FAA's finding? • If not, has FAA changed the proposed installation to meet the CZM plan? If not, explain why.

From: Table 7-1, Order 5050.4B

b. Mitigation. During the environmental review process, the CZM agency provides information on the approved CZMP, if requested. That information may include recommended measures to promote consistency with the CZMP. An appendix to the environmental document should include the recommendations. The environmental document should summarize the most important information and accurately cross-reference the appendix and pages in that appendix to aid the reader. If the sponsor or FAA rejects any recommended mitigation, the environmental document should explain clearly why the recommendation was rejected.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. Focus EIS scoping and content on any issues impeding the State agency's consistency concurrence. The EIS must include any information that agency determines necessary, unless the information is protected from public disclosure (see 15 CFR Section 930.58(c)). The responsible FAA official should consider inviting the state CZM agency to be a cooperating agency during the EIS process.

b. Cooperating agency. If consultation with the CZM agency signals that agency will object to a consistency certification, the Approving FAA Official cannot approve the proposed

action (15 CFR Sections 930.64 and 930.90). To address this, FAA should consider inviting the CZM agency to engage as a cooperating agency during environmental document preparation. The environmental document should contain the applicable information discussed in this chapter and any information the State agency determines necessary to make the action consistent with its CZM plan. The Approving FAA Official may approve the proposed action only when the CZM agency determines the proposed action is consistent with that plan.

c. **Mitigation.** The EIS should describe proposed mitigation or CZM agency changes to the proposed action. The approving FAA official cannot authorize the action, unless the CZM agency agrees the action, as proposed or adjusted, will be consistent with the CZMP (15 CFR Sections 930.64 and 930.90). The airport sponsor and FAA should consider fully the mitigation or changes and balance their benefits against those of the proposed action. If needed, the EIS should explain why the sponsor or FAA did not adopt any mitigation or changes the CZM agency recommended. If feasible, provide and a schedule for undertaking accepted mitigation.

CHAPTER 5. COMPATIBLE LAND USE

1. INTRODUCTION AND DEFINITIONS.

a. General. The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Activities that may alter aviation-related noise impacts and affect land uses subjected to those impacts typically involve:

(1) airport development actions to accommodate fleet mix changes or the number of aircraft operations;

(2) air traffic changes; or

(3) new approaches to the airport made possible by new navigational aids.

b. Land use compatibility and noise. If the noise analysis described in Chapter 17 of this Desk Reference concludes that there is no significant noise impact, a similar conclusion usually may be made about compatible land uses. Also, if the action would cause noise impacts that affect land uses such as social or induced socioeconomic effects (e.g., community disruption, relocation impacts, etc.), analyze those effects in the context of the affected resource(s). Therefore, describe those impacts in the appropriate chapter of the environmental document that addresses those resources. To avoid duplicating that information, the document's Compatible Land Use chapter should cross-reference the pages in those chapters containing that information.

Note: Chapters 15 and 18 discuss induced socioeconomic and social impacts, respectively.

c. Land use compatibility not related to noise. Besides the effects of noise on land use compatibility, FAA should also assess the compatibility of land uses in the vicinity of an airport to ensure those uses do not adversely affect safe aircraft operations. Examples of such land uses that may adversely affect those operations include municipal landfills and wetland mitigation that attract wildlife species hazardous to aviation.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
49 USC Section 47106(a)(1) (Airport Improvement – Project grant application approval conditioned on satisfying project requirements)	Under this section, the Secretary of Transportation (the Secretary) may approve an application for a project grant. The Secretary may do so only if the project is consistent with the plans (existing when FAA approves the project) of public agencies authorized by the state to plan for development of the area surrounding the airport.	FAA

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
49 USC Section 47107(a)(10) (Airport Improvement – Project grant application approval conditioned on assurances on airport operations)	For airport actions, the Compatible Land Use chapter of the environmental document must include documentation to support the required airport sponsor's assurance under this section. That assurance must state that appropriate action, including adopting zoning laws, has been or will be taken to the extent reasonable. Such actions are needed to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft. The assurance must be related to existing and planned land uses.	FAA
49 USC Sections. 47501 to 47510. (Noise Abatement) 14 CFR Part 150	These sections require the Secretary to: • establish a single system showing a highly reliable relationship between projected noise and surveyed reactions of individuals to noise; • establish a single system to determine the reaction of individuals (at or near airports) to noise resulting from airport operations; and • identify land uses that are normally compatible with various exposures of individuals to noise levels. Regulations at 14 Code of Federal Regulations (CFR) Part 150 provide this information.	FAA
49 USC Section 44718, Subsection (d) (Limitation on Landfill Construction)	Birds attracted to municipal solid waste landfill facilities (MSWLF) near airports pose aviation hazards. MSWLFs built after Congress enacted Public Law 106-181 (April 5, 2000) cannot be located within 6 miles of a public airport: • receiving Airport Improvement Program (AIP) grants; • chiefly serving general aviation aircraft; and • chiefly having regularly scheduled flights of aircraft with 60 seats or less. Note: The State of Alaska is exempt from this requirement.	FAA

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
40 CFR Section 258.10 (Criteria for Municipal Solid Waste Landfills; Airport Safety)	The Environmental Protection Agency (EPA) recognizes that MSWLFs often attract large numbers of birds because these facilities provide food and cover. As a result, birds using MSWLFs could cause potential threats to aircraft safety. This regulation requires the following minimum separations between the airport and MSWLF: • 5,000 feet for airports serving piston-powered aircraft; or • 10,000 feet for airports serving turbine-powered aircraft. In addition, the owner/operator of a new MSWLF within a 5-statute mile radius of any airport runway serving either aircraft type has certain duties. The owner/operator must: • notify the airport and FAA of the proposal; and • show and have proof in its operating manual that the MSWLF's design and use will not pose aviation hazards.	FAA
Interagency Memorandum of Agreement (MOA) of July 2003 addressing wildlife hazards and airports.	FAA, the U.S. Air Force (USAF), U.S Army Corps of Engineers (Corps), EPA, U.S. Fish and Wildlife Service (FWS), and the Department of Agriculture Wildlife Services (WS) signed this MOA. The MOA provides guidelines to these agencies on how they will cooperatively address wildlife habitats near public use airports	FAA, USAF, Corps, EPA, FWS, and WS

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS. Airport development actions funded under the AIP and other airport actions subject to FAA approval, such as Airport Layout Plan (ALP) changes and Passenger Facility Charges (PFCs), have the potential to cause off-airport land use impacts. Typical actions causing such impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots; significant changes in aircraft operations; and significant construction activity.

4. PERMITS, CERTIFICATES, AND APPROVALS. None. However, an airport sponsor filing a project grant application for airport development must provide the following assurances to FAA.

a. Consistency with local land use planning. The sponsor must provide a letter from the public agency authorized by the state to plan for the area surrounding the airport. To comply with 49 USC Section 47106(a)(1) (see the table in section 2 of this chapter), the letter should state that the proposed action is consistent with land use plans existing at the time FAA approves the project. An appendix to the environmental document must include the letter. If the state has not designated an agency, consult the Airport Planning and Environmental Division, APP-400, Regional Counsel or the Airports Environmental Law Division, AGC-600.

b. Land uses in the airport area. The sponsor must provide a written assurance verifying action has been or will be taken to restrict land uses next to or near the airport as discussed in 49 USC Section 47107(a)(10)), described in the table in section 2 of this chapter. An appendix to the environmental document must include evidence that the sponsor has provided the requisite assurance for the proposed action. This evidence may be a letter.

FAA must ensure information regarding the necessary assurances appears in an appendix to the environmental document.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES–ENVIRONMENTAL ANALYSIS.

a. General. When reviewing environmental documents, the responsible FAA official should ensure the land use compatibility issues noted below are addressed where appropriate.

b. Airport sponsor efforts to ensure compatible land uses. FAA recognizes that not all airport sponsors have land use control authority. FAA officials should contact the appropriate state and local planning organizations to encourage the development of appropriate compatible land use controls early in the project planning stage. Even airport

sponsors lacking jurisdictional control in the affairs of the community where the proposed airport action would occur are required, at a minimum, to use their best efforts to promote airport compatible land uses and zoning measures in airport-affected areas. These efforts focus on developing existing and future land uses next to or in the immediate vicinity of the airport that are compatible with airport operations. To do so, airport sponsors should work with land use authorities and review FAA's Airport Noise Compatibility Planning Toolkit for helpful information (e.g., buying land in fee or using its best effort to persuade local jurisdictions to impose airport-compatible zoning near the airport). It is FAA's responsibility to ensure that the assurances given by the airport sponsor regarding compatible land uses are reasonable.

(1) Land use assurances. The land use section of the environmental document should include documentation to support the required airport sponsor assurances noted in section 4.a. of this chapter.

(2) Landfills and other wildlife attractants. Due to aviation safety concerns, information regarding land uses that may attract wildlife is critical in FAA decision making. According to FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports*, these land uses often include:

(a) solid waste landfills;

(b) existing or proposed dredge spoil containment areas;

(c) wastewater treatment facilities;

(d) wetlands, wildlife refuges; or

(e) other land uses that attract wildlife that is hazardous to aviation.

Information regarding potential wildlife attractants is helpful in determining if incompatible land uses other than those related to noise are or would be near the proposed action. The environmental document's Compatible Land Use chapter should disclose the presence of any of these land uses within the distances referenced by FAA AC 150/5200-33B:

- 5,000 feet of an airport serving piston-powered aircraft;

- 10,000 feet of an airport serving turbine-powered aircraft; and/or

- 5 statute miles of a runway end and a landfill that could cause hazardous bird species to fly across the airport's approach or departure airspace.

6. DETERMINING IMPACTS.

a. Noise impacts on common land uses. Table 1 in 14 CFR Part 150, *Airport Noise Compatibility Planning*, and FAA's Airport Noise Compatibility Planning Toolkit, depict compatible land use guidelines for several land uses as a function of day-night average sound level (DNL) values (see Chapter 17, section 1.b for more information). The ranges of DNL values in Table 1 at the end of this chapter reflect the statistical variability of the responses of large groups of people to noise. However, note that a particular DNL level may not accurately assess an *individual's* perception of an actual noise environment. Compatible or noncompatible land use is determined by comparing the predicted or measured DNL values at a site to the values listed in Table 1.

b. Areas where the DNL 65 standard may not apply. Part 150 guidelines may be relied upon where the land uses specified in Table 1 are relevant to the value, significance, and enjoyment of the lands in question. However, FAA also recognizes that the guidelines do not adequately address the effects of noise on visitors to areas within a historic site, national park, or wildlife refuge protected under Section 4(f) of the DOT Act *and* where non-aircraft noise is very low and a quiet setting is a generally recognized feature or attribute of the site's significance (see Chapter 7 of this Desk Reference). Specifically, Part 150 land use categories:

(1) are not sufficient to determine the noise compatibility of areas within a national park or national wildlife refuge where noise is very low and a quiet setting is a generally recognized purpose and attribute, or to address noise effects on wildlife.

(2) may not be relevant to a wildlife refuge used for bird-watching; or

(3) bear little relevance to a historic village preserved specifically to evoke the atmosphere of rural life in an earlier era.

Note: See FAA Order 1050.1E, Appendix A, paragraphs 4.2c, 6.2h, 6.2i, 14.3, and 14.4b, and Chapter 17 of this Desk Reference for more information.

c. Noise impacts on wildlife habitat. Some airport projects could affect areas supporting wildlife or farm animals (e.g., refuges, farms, or ranches). Do not use Part 150 guidelines. They are based on human reactions to noise. As a result, guidelines should not be used to determine impacts on wildlife. Research shows aircraft noise causes inconsistent reactions and effects on various species according to the different life history stages of a species. For projects where aircraft noise impacts could affect wildlife or farm animals, review published studies addressing noise effects on the species of concern. If FAA expects the proposed activity would cause noise impacts on wildlife, the environmental document should cross-reference the environmental document's chapters discussing noise and/or biotic resources. This avoids repeating noise impact descriptions, their causes, the analyses used to determine impacts, the impacts, and their consequences.

d. Land use changes because of physical disturbances. Besides noise, physical land disturbances may alter existing land uses. For example, building a proposed runway may disrupt a community by taking or moving a highway or altering a wetland or biotic community. To avoid repeating information presented elsewhere in the environmental document, the document's Compatible Land Use chapter should simply state airport-related physical disturbance would change existing land uses (i.e., filling a wetland to develop a taxiway) and refer readers to those pages of the document addressing the affected resources.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. The noise analysis completed per Chapter 17 of this Desk Reference provides information related to an action's projected noise impacts. To avoid duplication, the environmental document's Compatible Land Use chapter should cross-reference (or summarize) the information in the document's Noise chapter addressing an alternative's effects on compatible land uses. In addition, the Compatible Land Use chapter should discuss any land uses not related to noise as discussed in section 1.c of this chapter.

ORDER.1050.1E THRESHOLD	FACTORS TO CONSIDER
See significance threshold for noise	The responsible FAA official determines if any alternative would have land use consequences such as: • community disruption; • business relocations; • induced socioeconomic impacts; • wetland or floodplain impacts; or • critical habitat alterations. Use the information from the factors addressing these specific issues to determine the severity of compatible land use effects.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, the public agency authorized by the state to plan for the areas surrounding the airport normally provide a letter addressing land use effects. The letter may include recommended measures to mitigate those effects. An appendix to the environmental document should include a copy of the letter. The environmental document should summarize the most important information in that letter, accurately cross-reference the appendix and pages in that appendix for further information, and the status of any recommended mitigation measures.

If the airport sponsor or FAA determines that some or all of the recommended mitigation measures are not reasonable under the circumstances, the environmental document should clearly explain the sponsor's or FAA's rationale for not adopting the mitigation.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. When the noise analysis completed per instructions in Chapter 17 of this Desk Reference indicates that a significant noise impact, pursuant to NEPA, would occur over noise sensitive land uses within the DNL 65 dB contour, the analysis in an EIS should include a discussion of noise impacts on those areas. Review information in sections 6.b. and c. of this chapter for information on situations where the DNL 65 dB standard may not apply.

b. Mitigation. Any mitigation measures to be taken in addition to those associated with other land use controls should be discussed. FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, presents guidance for airport operators and planners to help achieve compatibility between airports and their surrounding areas. The EIS should describe proposed mitigation when the public agency the state authorized to plan for the areas surrounding the airport normally provides that information. FAA or the sponsor should fully consider the mitigation and balance its benefits against those of the proposed action.

NEPA requires a Federal agency preparing an EIS to discuss mitigation in sufficient detail to disclose that environmental consequences have been fairly evaluated (*Robertson vs. Methow Valley*, 490 U.S. 332 (1989)). In addition, under 49 USC Section 47106(c)(1)(B), FAA may not approve Federal funding for major airport development projects unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension. For more information about the mitigation required, see FAA Order 5050.4B, paragraph 1203.(b)(4). In accordance with NEPA and 49 USC Section 47106(c)(1)(B), an EIS must discuss and adopt reasonable mitigation measures recommended by the public planning agency or agencies having jurisdiction for the area surrounding the airport. If feasible, provide an estimated schedule for undertaking accepted mitigation.

TABLE 1. LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS

Land Use	Yearly Day-Night Average Sound Level (L_{dn}) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	YES	NO (1)	NO (1)	NO	NO	NO
Mobile home parks	YES	NO	NO	NO	NO	NO
Transient lodgings	YES	NO (1)	NO (1)	NO (1)	NO	NO
Public Use						
Schools	YES	NO (1)	NO (1)	NO	NO	NO
Hospitals and nursing homes	YES	25	30	NO	NO	NO
Churches, auditoriums, and concert halls	YES	25	30	NO	NO	NO
Government services	YES	YES	25	30	NO	NO
Transportation	YES	YES	YES (2)	YES (3)	YES (4)	YES (4)
Parking	YES	YES	YES (2)	YES (3)	YES (4)	NO
Commercial Use						
Offices, business and professional	YES	YES	25	30	NO	NO
Wholesale and retail- building materials, hardware and farm equipment	YES	YES	YES (2)	YES (3)	YES (4)	NO
Retail trade-general	YES	YES	25	30	NO	NO
Utilities	YES	YES	YES (2)	YES (3)	YES (4)	NO
Communication	YES	YES	25	30	NO	NO
Manufacturing and Production						
Manufacturing, general	YES	YES	YES (2)	YES (3)	YES (4)	NO
Photographic and optical	YES	YES	25	30	NO	NO
Agriculture (except livestock) and forestry	YES	YES (6)	YES (7)	YES (8)	YES (8)	YES (8)
Livestock farming and breeding	YES	YES (6)	YES (7)	NO	NO	NO
Mining and fishing, resource production and extraction	YES	YES	YES	YES	YES	YES
Recreational						
Outdoor sports arenas and spectator sports	YES	YES (5)	YES (5)	NO	NO	NO
Outdoor music shells, amphitheaters	YES	NO	NO	NO	NO	NO
Nature exhibits and zoos	YES	YES	NO	NO	NO	NO
Amusements, parks, resorts, and camps	YES	YES	YES	NO	NO	NO
Golf courses, riding stables and water recreation	YES	YES	25	30	NO	NO

Numbers in parenthesis refer to notes; see continuation of Table 1 for notes and key.
NOTE: The designations in this table do not constitute a Federal determination that any use of land is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with local land use authorities. FAA determinations under Part 150 are guidelines and are not intended to substitute for land uses determined to be suitable by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

TABLE 1. LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS

Key to Table 1	
YES	Land Use and related structures compatible without restrictions.
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 1	
(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 of 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 of 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 noise 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.
(End of Table 1)	

CHAPTER 6. CONSTRUCTION IMPACTS

1. INTRODUCTION.

Airport construction may cause various environmental effects primarily due to dust, aircraft and heavy equipment emissions, storm water runoff containing sediment and/or spilled or leaking petroleum products and noise. In most cases, these effects are subject to Federal, State, or local ordinances or regulations. While the long-term impacts of the proposed action are usually greater than construction impacts, sometimes construction may also cause significant short-term impacts. Descriptions of the many construction impacts associated with airport actions are often covered in the descriptions of other environmental impact categories. Therefore, to avoid repeating information in chapters of an environmental assessment (EA) or environmental impact statement (EIS) that address a specific environmental resource, a document's construction impacts chapter, if one is prepared, should describe the general types and natures of construction-related impacts and the measures proposed to minimize potential, construction-induced adverse effects.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

At the Federal level, construction impacts often concern water and air quality effects and, to a lesser extent, noise. The National Pollutant Discharge Elimination System (NPDES) permitting program contained in 40 Code of Federal Regulations (CFR) Part 122 addresses construction disturbances of 1 acre or more. General Conformity regulations in 40 CFR Part 93, Subpart B, address construction effects in nonattainment or maintenance areas. See Chapters 1 and 20 of this Desk Reference for more information on evaluating project effects on air quality and water quality, respectively. For other resources, analyses done to meet Federal laws, regulations, and guidelines would govern how to assess construction effects on those resources.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
40 CFR, Part 122, NPDES	Part 122.26(a)(9) requires an NPDES permit for storm water discharges due to "small construction activity" (*i.e.*, disturbing 1 acre, but less than 5 acres). Part 122.26(a)(1)(ii) requires an NDPES permit for storm water discharges due to construction activities disturbing at least 5 acres of land. In both instances, the discharge must be covered under an NPDES industrial storm water permit, unless another individual or general NPDES permit already covers the construction discharge.	U.S. Environmental Protection Agency (EPA) or a state to which EPA has delegated NPDES authority.

Clean Air Act Section 176(c), 49 USC, Section 7401 *et. seq*., as amended	Include construction-related air quality emissions when a sponsor proposes an action in a nonattainment or maintenance area.	Federal Aviation Administration (FAA)
The National Environmental Policy Act (NEPA), 42 USC, Sections 4321-4347	NEPA's purposes are: • to declare a national policy which will encourage productive and enjoyable harmony between man and his environment; • to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; • to enrich the understanding of the ecological systems and natural resources important to the Nation; and • to establish a Council on Environmental Quality.	Council on Environmental Quality (CEQ)

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

Building new airport facilities may cause temporary impacts to wildlife and fisheries habitats, water and air quality, ambient noise levels, historic resources, and local traffic patterns. Typical airport actions causing construction impacts include: airside activities (e.g., new or expanded terminal and hangar facilities, new airports or extended runways and taxiways, navigational aids [NAVAIDS], etc.) and landside activities (e.g., new or relocated access roadways and remote parking facilities and rental car lots).

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

a. General. Construction equipment can increase off-site, ambient noise levels. In addition, exhaust from equipment, dust, or burning debris can degrade local air quality. The air quality analyses undertaken to comply with the disclosure requirements of the National Environmental Policy Act and substantive requirements of the Clean Air Act General Conformity regulations ***must*** include air quality emissions the project's construction activities would cause (refer to Chapter 1, Air Quality, for more information). Off-site local traffic patterns could be disrupted and cause air quality impacts as well. Erosion may degrade water quality. As a result, FAA should consider the concerns of agencies responsible for protecting local air or water quality or maintaining traffic flow. Environmental documents prepared for airport actions involving construction should

contain information on the status of the airport sponsor's efforts in getting any necessary permits.

b. NPDES storm water permit for construction. EPA notes excavating 1 acre or more often requires the operation of equipment (i.e., bulldozers, cranes, dump trucks, etc.) disturbing or removing trees or ground cover or filling or leveling land. According to EPA, these disturbances cause sediment runoff rates typically 10 to 20 times those of agricultural areas and 1,000 to 2,000 times the rates of forested areas.[1] As a result, substantial adverse water quality impacts could occur when airport construction disturbs 1 acre or more. The storm water regulation (found at 40 CFR Section 122.26) has two provisions regarding construction activity. One provision addresses a construction activity that would disturb 5 or more acres. Another provision addresses a "small construction activity," that is, a project disturbing 1 acre or more but less than 5 acres.

(1) In either instance, an airport sponsor must obtain an NPDES storm water discharge permit as outlined in 40 CFR Section 122.26(c).

(2) For a "small construction activity," compliance with NPDES requirements is not necessary if:

(a) the rainfall erosivity factor[2] is less than 5 during the period of construction activity; or

(b) stormwater controls are not needed based on an EPA approved "total maximum daily load" or an equivalent analysis that determines that such allocations are not needed to protect water quality. *See* 40 CFR Sections 122.26(b)(15)(i)(A) and (B).

(3) FAA does not require an airport sponsor to have an NPDES permit when it approves a project, when it accepts a sponsor's EA, or when it completes an EIS. However, if the sponsor receives the permit before the EA or EIS is finished, the EA or EIS should include a copy of the permit. In all cases, EAs and EISs should explain what the airport sponsor has done to obtain the permit and the status of the sponsor's NPDES storm water permit application. Provide letters from the permitting agency that indicate if there are any pending issues regarding permitting.

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[1] EPA Stormwater Phase 2 Final Rule, Construction Site Runoff Control, Minimum Control Measure, EPA Fact Sheet 2.6, January 2000; http://rvcog.org/pdf/rainstorming/subsection1.1.5.pdf

[2] Erosivity factor ("R" in the Revised Universal Soil Loss Equation): The rainfall erosivity factor is determined per Chapter 2 of *Agriculture Handbook Number 703, Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE),* pages 21–64, dated January 1997.

c. Air quality issues. Construction activity emissions due to the proposed or preferred alternative must be included as part of any analysis when calculating "direct emissions.

d. Agency letters. To determine the information needs of agencies concerned with construction-related impacts, contact the agencies listed in each of the chapters addressing those resources the proposed construction activities would affect. For example, when construction could degrade nearby water quality, consult with the resource agencies listed in Chapter 20, Water Quality.

5. REGULATORY COMPLIANCE PROCEDURES – ENVIRONMENTAL ANALYSIS.

Environmental documents should refer the reader to other chapters in an EA or EIS that address air quality or water quality in detail. The document's respective construction impact section should include proof that needed consultation has occurred. In particular, the section on construction impacts should include consultation with EPA or the appropriate State agency (when EPA has an approved NPDES program).

6. DETERMINING IMPACTS.

a. General. To avoid repeating discussions and to reduce the bulk of an EA or EIS, the construction section of those documents should refer the reader to the chapters addressing the resources construction would affect (e.g., chapters on noise, air quality, water quality, biotic communities, etc.). The construction chapter, if one is prepared, should present only a general description of impacts that the EA or EIS does not discuss elsewhere. Generally, this would be a summary of specific construction-related impacts, and their expected durations and consequences (i.e., sedimentation increases would/would not smother fish eggs).

b. Mitigation. This construction chapter of the environmental document should discuss the measures the sponsor will take to minimize the impact of construction (e.g., proper muffling of equipment noise, dust control, detention basins, detours, etc.). At a minimum, the environmental document should discuss the specifications described in Item 156 of Advisory Circular (AC) 150/5370-10A, *Standards for Specifying Construction of Airports*.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. Significant construction impacts would most likely occur when unusual circumstances exist (e.g., excavating ecologically sensitive areas, construction-induced traffic congestion that would substantially degrade air quality). After completing the above analyses, use the findings and the significance threshold for the resource(s) construction would affect to determine the degree of construction impacts. A significant impact would

occur when the severity of construction impacts cannot be mitigated below FAA's threshold levels for the affected resource.

b. Mitigation. During the environmental review process, agencies having jurisdiction or special expertise about affected resources normally provide letters addressing impacts on those resources. Often, those letters include recommended measures to mitigate those effects. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in the appendix for further information.

(1) If the FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted. If feasible, provide an estimated schedule for undertaking accepted construction mitigation.

(2) All on-site construction activities must be conducted in accordance with FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*, and by using best management practices (BMPs). These measures must be considered throughout the preparation of plans and specifications for each construction project. The construction contractor should meet the adopted plans and specifications throughout the project construction period. Implementing these measures will prevent or minimize most potential construction-related impacts to the environment and surrounding community. FAA AC 150/5370-10, Item P-156, provides further information on potential mitigation measures.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. Sometimes, construction impacts alone due to airport construction may cause a significant impact identified and the impacts cannot be avoided or mitigated below the applicable significance threshold(s) for the affected resource. In those cases, FAA must prepare an EIS addressing the impacts. Where appropriate the EIS should contain a discussion of the concerns resource agencies identified and the reasons why impacts cannot be mitigated below an applicable threshold (e.g., where the Fish and Wildlife Service has prepared a Jeopardy Biological Opinion).

b. Mitigation. The EIS should describe proposed mitigation when expertise agencies provide that information. FAA should fully consider the mitigation and balance its benefits against those of the proposed action. If feasible, the EIS should also provide an estimated schedule for undertaking accepted mitigation and explain why the sponsor or FAA does not adopt any mitigation a resource agency recommends.

CHAPTER 7. SECTION 4(f) RESOURCES

1. INTRODUCTION.

a. 49 USC Section 303(c). Section 4(f) of the Department of Transportation Act of 1966 is currently codified as 49 USC Section 303(c). Consistent with FAA Order 1050.1E, Appendix 1, paragraph 6.1a, this Desk Reference refers to Section 303(c) as "Section 4(f)."

b. Section 4(f) requirements. Section 4(f) states that, subject to exceptions for *de minimis* impacts, the Secretary of Transportation (Secretary) may approve a transportation program or project requiring the use of publicly-owned land of a park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance as determined by the official having jurisdiction over those resources only if:

(1) there is no prudent and feasible alternative that would avoid using those resources, and

(2) the program or project includes all possible planning to minimize harm resulting from the use.

c. *De minimis* requirements relating to Section 4(f).[1] Section 4(f) is considered satisfied with respect to historic sites and parks, recreation areas, and wildlife and waterfowl refuges if the Secretary makes a *de minimis* impact finding. These requirements apply only to actual physical impacts, *not* constructive use.

(1) *De minimis findings* for historic sites. FAA may make this finding on behalf of the Secretary if:

(a) under Section 106 of the National Historic Preservation Act (NHPA), it has determined the project will not adversely affect *or* not affect historic properties;

(b) the Section 106 finding has received written concurrences from the State Historic Preservation Officer (SHPO) or the Tribal Historic Preservation Officer (THPO) (and the Advisory Council on Historic Preservation (ACHP), if the ACHP is participating); and

(c) the Section 106 finding was developed in consultation with parties consulting in the Section 106 process.

(2) *De minimis* findings for parks, recreation areas, and wildlife or waterfowl refuges. FAA may make this finding on behalf of the Secretary if:

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[1] http://www.fhwa.dot.gov/HEP/qasdeminimus.htm

(a) it has determined, after public notice and opportunity for public review and comment, that the project will not adversely affect the activities, features, and attributes of the eligible Section 4(f) property; and

(b) the officials with jurisdiction over the Section 4(f) property have concurred with FAA's determination.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

a. The chart provides information on the law and regulations pertaining to Section 4(f) resources.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
DOT Act of 1966 [Title 49, USC Section 1653 (f); amended and recodified in 49 USC Section 303]	Describes Congress' intent to preserve publicly-owned parks and recreation lands, wildlife and waterfowl refuges of national, state, or local significance, or any historic site of national, state, or local significance. The section defines the conditions needed for the DOT Secretary to approve use of these resources for transportation projects.	DOT and FAA
DOT Order 5610.1C, Attachment 2, paragraph 4. FAA also uses as guidance the FHWA/FTA 4(f) procedures for determining constructive use under 23 CFR 771.135. FAA similarly intends to use the final FHWA/FTA procedures for granting approvals and determining use under Section 4(f) that will be included in 23 CFR Parts 771 and 774. See, 71 Federal Register (FR) 42611, dated July 27, 2006.	Provide Departmental procedures for meeting Section 4(f) requirements and FHWA/FTA Section 4(f) Regulations Implementing Section 4(f).	DOT and FAA
Section 6(f) of the Land and Water Conservation Fund Act (L&WCFA) [16 USC, Section 4601 *et. seq.*); 36 Code of Federal Regulations (CFR) Part 59.	Section 6(f) provides funds for buying or developing public use recreational lands through grants to local and state governments. Section 6(f)(3) prevents conversion of lands purchased or developed with L&CWFA funds to non-recreation uses, unless the Secretary of the Department of the Interior (DOI), through the National Park Service (NPS), approves the conversion. Conversion may only be approved if the conversion is consistent with the	Department of the Interior (DOI) and National Park Service (NPS)

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
	comprehensive statewide outdoor recreation plan in force when the approval occurs, and the converted property is replaced with other recreation property of reasonably equivalent usefulness and location and at least equal fair market value.	

b. Section 4(f) policies and procedures. DOT and FAA policies and procedures for preparing Section 4(f) evaluations and determinations and for consulting with other agencies are stated in DOT Order 5610.1C, Attachment 2, paragraph 4, and in Section 4(b)(1), below. As noted in the chart above, FAA uses Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) Section 4(f) regulations as guidance to the extent relevant to FAA programs. FAA also uses FHWA's Section 4(f) Policy Paper of March 1, 2005, as an aid in implementing Section 4(f).

c. Section 6(f) of the Land and Water Conservation Fund Act (L&WCFA). Replacement satisfactory to the Secretary of the Interior is specifically required as a measure to minimize harm to recreational areas and facilities purchased or developed using funds under the L&WCFA. To meet Section 6(f) requirements, FAA must:

(1) comply with Section 4(f);

(2) provide the information DOI requires to make findings required under 36 CFR Part 59 (see chart in section 2.a. of this chapter); and

(3) coordinate with NPS and the State agency responsible for the Section 6(f) resource.

d. Housing and Urban Development funded lands. Federal grant money may be used to buy the land the proposed airport action would involve (for example, open space under Housing and Urban Development (HUD) conservation programs). Therefore, if appropriate, FAA's environmental document should include evidence of or reference to consultation with HUD.

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. General. As a modal administration within the U.S. DOT, FAA is responsible for Section 4(f) determinations for airport actions. When FAA is considering an action described in section 3.b. of this chapter, the responsible FAA official must ensure the environmental analysis discusses the potential use of Section 4(f) resources. If the action also involves

Section 6(f) L&WCFA resources, the responsible FAA official must ensure the analysis also addresses applicable requirements under that statute (see section 2.c. of this chapter).

b. Actions. Typical airport actions that may cause Section 4(f) and/or Section 6(f) impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots; significant amounts of construction or demolition activity; and a significant change in aircraft operations that results in new or changed flight tracks and accompanying noise impacts.

c. Presumption of Significance. Section 4(f) resources are presumed to be significant, unless the official having jurisdiction over the site concludes that the *entire* site is not significant. FAA must review any statement of insignificance.

d. Multi-use areas. Where Federal lands are managed for multiple uses, the Federal official having jurisdiction over the lands shall determine whether the subject lands are being used for park, recreational, wildlife or waterfowl refuge, or historic purposes. FAA considers a national wilderness area providing purposes similar to a park, refuge, or historic site to be subject to Section 4(f), unless the controlling agency specifically determines the area is not being used for Section 4(f) purposes.

e. Temporary lease or agreement permitting interim use of airport property for Section 4(f) purposes. Through a lease or other agreement, an airport sponsor owning property designated for transportation purposes may allow an entity to temporarily use the property as a park or recreation area on an interim basis during the period the property is not needed for transportation purposes (i.e., a temporary Section 4(f) resource). However, when making such arrangements, the airport sponsor should exercise caution. The sponsor should ensure the lease or agreement includes specific terms clarifying that the use of the property for Section 4(f) purposes is temporary. Although Federal Highway Administration (FHWA), Federal Transit (FTA) and FAA policies indicate that a Section 4(f) determination is not ordinarily required in such circumstances, at least one Federal circuit court has reached a contrary conclusion. See, 71 Federal Register (FR) 42611, dated July 27, 2006.[2]

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[2] In *Stewart Park & Reserve Coalition v. Slater*, 352 F.3d 545 (2nd Cir. 2003), the court held that Section 4(f) does not require the permanent designation of a public parkland for the parkland to receive protection under Section 4(f). The court ruled that Section 4(f) applied to the temporary parkland, even though the public lands a proposed highway project would use were originally acquired for transportation purposes (airport expansion and access). The court determined that although the land was never permanently designated as a parkland, it was available and used as a public park and recreational area for almost 30 years. The court stated that 30 years of uninterrupted use could not be "characterized as interim." See Appendix A, question 18 of FHWA's Section 4(f) guidance dated March 1, 2005, for additional information.

f. Deliberate change in Section 4(f) classification. Section 4(f) will apply when a State or local agency changes the use of a property from a Section 4(f)-type use to a transportation use in anticipation of a request for FAA approval. In this case, Section 4(f) will apply, even though the change in use may have occurred before a sponsor requested FAA approval. This is especially true where the change in use appears to have occurred to avoid Section 4(f) requirements.

g. Determining if an action would use a Section 4(f) resource. The responsible FAA official must decide if an action FAA is considering would physically or constructively use 4(f) resources.

(1) Physical use. When a project would require the physical taking of lands being used for park or other Section 4(f) purposes, there is generally no latitude for judgment regarding Section 4(f) applicability, unless the *de minimis* provisions of 49 USC Section 303(d) apply. This is because a physical use would eliminate or substantially hinder the intended use of the Section 4(f) property. A physical use would occur:

(a) when the proposed project or a reasonable alternative would physically occupy a portion of or all of a Section 4(f) resource;

(b) when the proposed project permanently incorporates the resource for project purposes through acquisition or easement;

(c) if alteration of structures or facilities located on Section 4(f) properties is necessary, even though the action does not require buying the property; or

(d) if temporary occupancy meets one of the following conditions:

(1) the duration of project occupancy is greater than the duration needed to build a project and there is a change in ownership of the land;

(2) the project's work scope is major in the nature and magnitude of changes to the Section 4(f) resource;

(3) anticipated permanent adverse physical impacts would occur and a temporary or permanent interference with Section 4(f) activities or purposes would occur;

Although this case involved an unusual circumstance (i.e., an interim 4(f) use exceeding 30 years), the responsible FAA official should use caution when evaluating a project involving a temporary 4(f) resource. The official should contact Regional Counsel, the Office of the Chief Counsel, Airports and Environmental Law Division, AGC-600, or the Airport Planning and Environmental Division, APP-400.

(4) the land use is not fully restored (i.e., it is not returned to a condition that is at least as good as that existing before the project); or

(5) there is no documented agreement with the appropriate Federal, state, or local official having jurisdiction over the resources with regard to the conditions noted in section 3.g.1(d)(1)-(4) of this chapter.

2. Constructive use. Unlike physical use, a constructive use does not physically occupy or require purchase of the Section 4(f) resource. A constructive use would occur when an action would substantially impair that resource. Substantial impairment occurs only when the activities, features, or attributes of the resource that *contribute* to the resource's significance or enjoyment are substantially diminished. Potential causes of constructive use include shifts in user population because of direct use of bordering properties, and/or non-physical intrusions such as noise, air pollution, or other effects that would substantially impair the resource's use. For example, noise from new nighttime cargo operations could cause sleep disturbance and substantially impair a park campground's use as an overnight camping area.

(a) Constructive use and the use of Part 150 guidelines. FAA experience shows that noise impacts are most often the major cause of airport-related constructive use of Section 4(f) resources.

(1) Analysts may rely upon land use compatibility guidelines in 14 CFR Part 150 to determine if a project would constructively use a Section 4(f) resource, where land uses specified in Part 150 guidelines are relevant to the value, significance, and enjoyment of the Section 4(f) resources in question. As a result, these guidelines apply in evaluating noise impacts on lands used for traditional recreational activities. Reliance on the day-night average sound level (DNL) is appropriate because DNL is the best measure of significant impact on the quality of the human environment.

Note: DNL is the only noise metric with a substantial body of scientific data on the reaction of people to noise, and has been systematically related to Federal land use compatibility guidelines (see Chapter 5 of this Desk Reference for more information).

(2) Historic sites. FAA may also rely on Part 150 guidelines when evaluating effects on historic properties used as residences. However, as noted above, those guidelines may not be appropriate for nationally-significant historic resources where a quiet setting is a generally recognized purpose and attribute. An example is a historic village preserved specifically to convey a rural life atmosphere of an earlier era or a Native American traditional cultural property (See Chapter 14). Responsible FAA officials should note that if a historic neighborhood is historically significant due to architectural characteristics, then project-related noise increases would not constitute a constructive use. Such noise increases would not substantially impair the characteristics that make the

neighborhood eligible for the National Register of Historic Places. See section 3.k. of this chapter for more information.

(3) Section 4(f) resources when a quiet setting is a recognized feature or attribute. When evaluating use of Section 4(f) resources in this situation, analysts should carefully evaluate how the uses of the 4(f) resources compare to the land use categories under 14 CFR Part 150 guidelines. The Part 150 Land Use Compatibility Table may be used as a guideline to the extent the normal activities and aesthetic values associated with land uses specified in the Table are comparable and relevant to the Section 4(f) resource's value, significance, and enjoyment. For example, the Table does not adequately address the effects of increased aircraft noise on expectations and purposes of those who visit a wildlife refuge to watch birds.

k. Applicability and coordination between Section 4(f) and Section 106 of the National Historic Preservation Act (NHPA). Section 4(f) applies to all historic sites of national state, or local significance, whether or not these sites are publicly owned or open to the public. However, except in unusual circumstances (see note below), Section 4(f) protects *only* historic or archeological properties on or eligible for inclusion on the National Register of Historic Places (NRHP). Therefore, the responsible FAA official should review the following information to ensure proper coordination between these laws when necessary.

Note: For purposes of Section 4(f), an historic site is significant only if it is on or eligible for the National Register, unless FAA determines that the application of Section 4(f) is appropriate. For example, if a historic site is determined not to be NRHP-listed or eligible, but an official (such as the Mayor, President of the local historic society, etc.) formally provides information to indicate that the historic site is locally significant, the responsible FAA official may determine it is appropriate to apply Section 4(f). If the FAA official finds Section 4(f) does not apply, the environmental document should include the basis for not applying Section 4(f). That basis may include the reasons why the historic site was not eligible for the NRHP. See FHWA Policy Paper dated March 1, 2005, **3. Historic Sites** for more information.

(1) Effects on NRHP-listed or eligible properties. When determining Section 4(f) applicability to an action's effects on historic properties, the responsible FAA official should complete the process and analysis Section 106 of the NHPA requires (see Chapter 14 of this Desk Reference). Using the results of the Section 106 process, the official should consider the following information when deciding if DOT Section 4(f) would apply to historic properties.

(a) Projects incorporating or occupying a historic site. If a project would permanently incorporate or occupy land of an historic site, Section 4(f) would apply. Section 4(f) applicability does not depend on FAA's finding of No Properties Affected, No Adverse Effect, or Adverse Effect.

(b) Projects not incorporating or occupying a historic site. If a project would not permanently incorporate or occupy land of an historic site, Section 4(f) may still apply. To determine if Section 4(f) applies, examine the proximity of impacts in terms of

constructive use. Do so in consultation with the State Historic Preservation Officer (SHPO), or Tribal Historic Preservation Officer (THPO) when appropriate.

(1) if project impacts would substantially impair the features or attributes that contribute to the property's National Register eligibility or listing, Section 4(f) would apply.

(2) if the impacts would not substantially impair the features or attributes that contribute to the property's National Register eligibility or listing, Section 4(f) would not apply.

(2) **Effects on NRHP-listed or eligible archeological properties**. When assessing project effects on archeological resources on or eligible for the NRHP, including discoveries that occur during construction, consider the following information after consulting with the SHPO, or THPO when appropriate:

(a) **Resources warranting preservation in place.** If a project would physically occupy a location containing archeological resources and those resources warrant preservation *in place*, Section 4(f) would apply.

(b) **Resources warranting data recovery**. If a project would physically occupy a location containing archeological resources but consultation with the SHPO (or THPO, when appropriate) determines the archeological resources are important chiefly for data recovery and *not* warrant preservation in place, Section 4(f) would not apply.

Note: FAA is responsible for complying with Section 106 of the NHPA regardless of how it addresses Section 4(f) requirements.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

a. Permits. With one exception, there are no permits, certifications, or approvals required to use resources protected under DOT Section 4(f). NPS approval is required to convert Section 4(f) resources acquired or developed using funds under Section 6(f) of the L&WCFA.

b. Information and reviews from other agencies. Section 2 of this chapter lists information other agencies may provide.

(1) **Section 4(f) resources.** As noted above, input from agencies having jurisdiction over affected Section 4(f) resources plays an important part in FAA Section 4(f)

evaluations and determinations. As a matter of policy, DOT agencies provide the DOI 45 days to review all Section 4(f) evaluations.[3]

(a) Send the Section 4(f) evaluations to:

Director, Office of Environmental Policy and Compliance
Department of the Interior
Main Building, MS 2342
1849 C Street, S.W.
Washington, DC 20240.

(b) Do not send copies of the Section 4(f) Evaluation and Determination to any office within DOI. The Director will send copies to the appropriate DOI agency for review. The responsible FAA official should provide copies of FAA's Evaluation and Determination as noted here:

- (i) Alaska: provide 16 copies;

- (ii) For projects in the Eastern U.S., including Arkansas, Iowa, Louisiana, Minnesota, and Missouri: provide 12 copies; or

- (iii) For projects in the Western U.S., (e.g., areas west of the western boundaries of the states listed in section 4.b(1)(b)(ii)), provide 18 copies.

(2) Section 6(f) resources. If a proposed airport project would cause a use of a Section 6(f) resource, then FAA must ensure the project sponsor fulfills the Section 6(f) requirements for conversion to another use. According to 36 CFR Section 59.3, the airport sponsor must submit the request for conversion of the 6(f) resource to the State Liaison Officer. That Officer submits the request to the Regional Director of the National Park Service. The Regional Director must approve the conversion. The environmental document should include proof the applicable requirements of 36 CFR Part 59 have been met.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. General. FAA environmental documents must thoroughly discuss Section 4(f) issues. If FAA finds no prudent and feasible alternative to avoid use of the 4(f) resource exists, the documents must provide FAA's rationale for that conclusion.[4] The documents

[3]Letter from the Dept. of the Interior, Office of the Secretary, dated December 12, 2002, discussing the environmental review process.

[4] FAA Order 5050.4B, paragraph 1007.e(5)(a) provides information on factors used in determining the prudence of an alternative.

must also describe measures needed to minimize unavoidable use of Section 4(f) resources.

(1) When a proposed action involves Section 6(f) resources, FAA's environmental document should include evidence of consultation with the L&WCFA sponsor and any other State or local officials having jurisdiction over the Section 6(f) land;

(2) The document should also include NPS approval of a L&WCFA State Liaison Officer's request to convert Section 6(f) land to uses other than recreational; and

(3) The documents should also include evidence of concurrence or efforts to obtain concurrence of appropriate officials having jurisdiction over Section 4(f) lands addressing actions proposed to minimize harm. Whether or not Federal agency lands are involved, the documentation shall reflect consultation with DOI and, as pertinent, HUD or USDA.

b. Preparing a Section 4(f) evaluation. The responsible FAA official must prepare this evaluation after determining an action would involve a Section 4(f) resource. The evaluation may be issued along with the project's NEPA document or issued separately in a document called a "Section 4(f) Statement."

(1) If FAA presents the evaluation in the NEPA document, clearly list the pages of the document including the evaluation and all pertinent information.

(2) If FAA presents the evaluation in a separate document, clearly label the document as "Section 4(f) Statement" and include a brief project description to inform reviewers who may not examine the EA or EIS prepared for the project.

(3) In either case, the document should include all agency letters on significance of the 4(f) resource and any other correspondence from appropriate jurisdictional agencies.

(4) When appropriate, include Section 6(f) information in the NEPA document or the Section 4(f) Statement.

c. Section 4(f) evaluation content. The responsible FAA official must ensure the Section 4(f) evaluation contains the following information:

(1) Owner. The name of the owner and type of Section 4(f) property. Include information on property ownership, such as leases, easements, covenants, or restrictions;

(2) Size. Provide the acreage and location of the affected Section 4(f) property and any of its unique or irreplaceable qualities;

(3) Visual information. Provide detailed maps or drawings of sufficient scale to identify the relationship of the action to the Section 4(f) property;

(4) Uses. Describe briefly the Section 4(f) resource's activities, features, or attributes that qualify the resource for protection. Note if the action would result in physical or constructive use of the resource;

(5) Access. Describe access to the Section 4(f) property. Note if the project would limit or prohibit that access. Describe patronage and provide an estimate of the number of users or visitors;

(6) Associated areas. Describe any relationship the affected resource has to other similarly used, nearby lands;

(7) Prudent and feasible alternatives. Determine if a prudent or feasible alternative that avoids the Section 4(f) resource exists. If such an alternative exists and it would meet the project purpose and need, FAA may not select an alternative that would use the Section 4(f) resource. If no such alternative exists, thoroughly explain how the responsible FAA official determined this. For example, explain why a rejected alternative poses unique technical problems requiring extraordinary amounts of money to implement or why innovative engineering or construction techniques are not possible or prudent; and

Note: If needed, see Order 5050.4B, paragraph 1007.e.(5), and 71 Federal Register 42611, dated July 27, 2006, for more information on feasible and prudent alternatives.

(8) Mitigation. When no prudent and feasible alternative exists, "all possible planning to minimize harm" to the Section 4(f) resource is required. Consultation with the agency owning or administering the resource or the SHPO (or THPO, when appropriate) for historic resources is recommended. In addition, the DOI and other Federal, State, or local agencies having jurisdiction over the affected resource is important. These efforts help to inform FAA's judgment concerning potential impacts and possible measures to minimize harm due to use of Section 4(f) resources. The responsible FAA official must carefully evaluate comments from such agencies and explain why any recommended mitigation was not adopted. Include evidence of concurrence or efforts to obtain concurrence from appropriate officials having jurisdiction over Section 4(f) resources regarding measures proposed to minimize harm. Whether or not Federal agency lands are involved, the documentation shall reflect consultation with DOI and, as needed, HUD or USDA.

d. Section 6(f) evaluation. As noted in 36 CFR Section 59.3, the State Liaison Officer submits a written request on behalf of the airport sponsor to convert Section 6(f) land to non-recreational use. The evaluation must contain the following information. The responsible FAA official should ensure the environmental document prepared for an action involving a Section 6(f) resource includes this information:

(1) NPS Statement. A statement from the Regional NPS Director authorizing the State agency having responsibility over the Section 6(f) resource to convert the resource to non-recreational uses.

(2) Correspondence. Letters or other information to or from the airport sponsor, FAA, or the responsible State agency addressing the conversion.

(3) Analysis. Requests for conversion submitted to the Regional NPS Director must contain the following information under 36 CFR Part 59.

(a) Boundaries. Provide the boundaries of the property to be converted. Boundaries are depicted or otherwise described on the Section 6(f)(3) boundary map and/or as described in other project documentation DOI approved in establishing the Section 6(f) property (36 CFR Section 59.1). Include boundaries of the replacement property (36 CFR Section 59.3(c)). Often, the area of analysis is outside the boundaries of the Section 6(f) tract because more land may be needed to protect the recreational area's integrity. The airport sponsor should work closely with the State agency responsible for the Section 6(f) property. This ensures the analysis includes the tracts not funded under the L&WCFA but essential to the recreational area's function.

(b) Alternatives. Thoroughly analyze all practical alternatives that would avoid converting the Section 6(f) resource to aeronautical use. Typically, the analysis of prudent and feasible alternatives done for Section 4(f) purposes is sufficient here.

(c) Replacement area. Replacement of the Section 6(f) resource that will be converted is required to satisfy Section 6(f) requirements. Provide the following information to ensure needed information is available.

(i) Describe the replacement property. Replacement property use and location characteristics must be reasonably equivalent to those of the converted area or facility, but it need not provide the same recreational experiences (36 CFR Section 59.3(b)(3)).

(ii) Provide the replacement's fair market value. Provide proof that the fair market value of the replacement area is at least equal to that of the converted property. The value must be based on an approved appraisal, prepared according to uniform Federal appraisal standards. The fair market value excludes the value of structures or facilities that will not serve a recreation purpose (36 CFR Section 59.3(b)(2)).

(iii) Political jurisdiction over the replacement area. Generally, the same political jurisdiction that purchased or developed the property to be converted should administer the replacement property. Provide information addressing this issue (36 CFR Section 59.3(b)(3)).

(iv) Partial conversion. Some actions require only partial conversion of a Section 6(f) property. In this instance, assess the effects of the converted area on the remaining unconverted area. If the Regional NPS Director approves the partial conversion,

the unconverted area or facility must remain recreationally viable, or it must be replaced (36 CFR 59.3(b)(5)).

(v) Coordination. Provide proof that all necessary coordination has occurred. This includes compliance with Section 4(f) requirements (36 CFR 59.3(b)(6)).

(vi) Interagency review. Provide proof that intergovernmental clearinghouse review has occurred for actions involving conversion and substitution significantly changing the original L&WCFA project (36 CFR 59.3(b)(8)).

(vii) Comprehensive plans. Provide proof the proposed conversion and substitution will be according to the Statewide Comprehensive Outdoor Recreation Plan and/or an equivalent recreation plan(s) (36 CFR 59.3(b)(9)).

d. When NPS denies a conversion request. If the Regional NPS Director denies a conversion request, the responsible FAA official must ensure the evaluation contains the Regional NPS Director's reasons for the denial. Here, FAA must work closely with the state agency responsible for the Section 6(f) property and the regional NPS office to resolve issues preventing the conversion.

6. DETERMINING IMPACTS. To determine impacts on Section 4(f) resources, the responsible FAA official should use the information obtained in completing other sections in this chapter. The environmental document or Section 4(f) Statement should present that information along with the following information.

a. Would a use occur? Based on the analysis completed to satisfy the various sections of this chapter, the responsible FAA official should state whether the project would use a Section 4(f) property.

b. How would project use of a Section 4(f) resource affect that resource? If a project would physically or constructively use a Section 4(f) resource because no prudent and feasible alternative exists, describe:

(1) the uses that the proposed project would eliminate or impair; and

(2) the effects on the Section 4(f) resource due to that use.

c. Does the project include all possible measures to minimize harm? Describe all possible mitigation needed to reduce impacts and harm on the Section 4(f) resource due to project use. Include evidence of concurrence or efforts to obtain concurrence of appropriate officials having jurisdiction over Section 4(f) lands regarding the measures proposed to minimize harm. If FAA or the airport sponsor does not adopt a recommended measure, explain why (e.g., mitigation would attract wildlife hazardous to mitigation).

d. Section 4(f) Determination. The approving FAA official must sign and date the Section 4(f) Statement or the Section 4(f) evaluation included in the NEPA document.

> "Based on the enclosed Section 4(f) analysis, I have determined there is no prudent and feasible alternative that would avoid using (name the area the action would use), a Section 4(f) protected resources. The project includes all possible planning to minimize harm to this resource. FAA will condition its approval of this project to fulfill its Section 4(f) responsibilities."

Any Section 6(f) documentation should be included as an appendix to the Section 4(f) evaluation included in the NEPA document or Section 4(f) Statement.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. To determine the degree of project-related Section 4(f) impact, the responsible FAA official should consider the following factors in consultation with pertinent agencies having jurisdiction or special expertise:

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
When the proposed action involves a physical use that would be more than minimal or a constructive use would occur. In either case, mitigation is not enough to sustain the resource's designated use.	Determine if the proposed action or a reasonable alternative would eliminate or severely degrade the intended use of the Section 4(f) resource. That is, would the proposed action or alternative physically or constructively use (i.e., substantially impair the use of) that resource? The responsible FAA official should determine if mitigation is satisfactory to the agency having jurisdiction over the protected resource, (e.g. by replacement in kind of a neighborhood park). No objection by affected agencies may be construed as agreement for this purpose. If an agency having jurisdiction advises that proposed mitigation is unsatisfactory and will not avoid significant impacts, more detailed impact analysis is likely needed as part of an EIS.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, the public agency having jurisdiction over the Section 4(f) resource normally provides a letter addressing the project's effects on the resource. The letter may include recommended measures to mitigate those effects. An appendix to the environmental document should include a copy of the letter. The environmental document should summarize the most important information in that letter and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA of the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted. Examples of mitigation to minimize harm to the Section 4(f) resource may include:

(1) changing project design to lessen the impact on the Section 4(f) resource;

(2) replacing lands or facilities to provide lost uses or provide uses the jurisdictional agency supports;

(3) providing monetary compensation to enhance the remaining segments of the affected Section 4(f) resource;

(4) building noise walls or setting up visual or vegetative buffers to lessen adverse visual affects; or

(5) enhancing project access the jurisdictional agency supports (i.e., handicapped access ramps).

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. FAA must prepare an EIS if mitigation will not reduce impacts below the significance threshold in section 7 of this chapter. The EIS must contain evidence of consultation and concurrence as described in section 5.a. of this chapter. Besides the information discussed in prior sections, the EIS should contain the following information:

(1) a thorough explanation of why no prudent and feasible alternatives that would avoid the use of the Section 4(f) resource exist; and

(2) a detailed discussion of all possible mitigation or planning to minimize harm caused by the use of the Section 4(f) resource included in the project.

CHAPTER 8. FEDERALLY-LISTED ENDANGERED OR THREATENED SPECIES

1. INTRODUCTION AND DEFINITIONS.

a. General. The Biotic Resources chapter in Appendix A of Order 1050.1E combines information on Federally-listed endangered and threatened species and species not protected under the Endangered Species Act (16 USC Section 1531, *et. seq* (ESA)). However, this Desk Reference separates information on these species. The Office of Airports (ARP) has done that to highlight the specificity of the regulations implementing the ESA. Readers seeking information on species not protected under the ESA should review Chapter 2 of this Desk Reference.

b. The Endangered Species Act. To satisfy the Endangered Species Act of 1973, the Federal Aviation Administration (FAA) must determine if a proposed action under its purview would affect a Federally-listed species or habitat critical to that species (critical habitat). For purposes of this Chapter, the following definitions apply:

(1) Major construction activity. Under the ESA, a "major construction activity" is a construction project (or undertaking with similar physical impacts), which is, in NEPA terms, a major Federal action significantly affecting the quality of the human environment (50 CFR Section 402.02).

(2) Endangered species. Any species that either the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) designates in danger of extinction throughout all or a significant portion of the species' range (16 USC Section 1532(6)).

(3) Threatened species. Any species that either FWS or NMFS states is likely to become an endangered species within the foreseeable future throughout all or a significant portion of the species' range (16 USC Section 1532(20)).

(4) Candidate species. Any species that either FWS or NMFS is considering for listing as "endangered" or "threatened", but has not yet been the subject of a proposed rule. These species have no legal status and do not have protection under the ESA. However, their inclusion is intended to alert Federal agencies of potential proposals or listings (50 CFR Section 402.12(d)).

Note: Candidate species are called "proposed species" throughout 50 CFR Part 402 *et seq*, except at 50 CFR Section 402.12(d). There, Section 402 refers to proposed species as "candidate species." However, due to years of familiarity within the Office of Airports with the term "candidate species," this Desk Reference uses the term "candidate species" as a synonym for "proposed species."

(5) Critical habitat. This is a designated area having physical and biological features essential to a listed species' survival. Examples include nesting grounds, migration

routes, wintering grounds, or other areas needed to support a life history stage. A species need not occupy an area for it to be critical habitat. When analyzing impacts that would affect areas within critical habitat boundaries, FAA (or the airport sponsor, or consultant, if FAA designates a non-Federal representative as noted below in section 1.b.(7) of this chapter) will informally consult with either FWS or NMFS. This allows FAA to focus on those areas within those boundaries the species specifically needs to sustain itself (16 USC Section 1532(5)(A)).

(6) Service Director. This is the FWS Regional Director or Field Supervisor, or the NMFS Service Director to whom the Secretary of the Interior or the Secretary of Commerce, respectively, has delegated the authority to protect Federally-listed endangered or threatened species (50 CFR Section 402.02).

Note: Consultation with the NMFS is required when the action may affect anadromous or marine fish species, marine mammals, or critical marine habitat.

(7) Designated non-Federal representative. A person or consultant a Federal agency designates to act as its representative and on its behalf during informal consultation. The person or consultant may also prepare a biological assessment (BA) on the agency's behalf, but the Federal agency remains responsible for the BA's content and effects finding (50 CFR Section 402.02).

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
The Endangered Species Act, 16 USC Section 1531-1544	Protects Federally-listed endangered or threatened species and their critical habitats.	FWS or NMFS
16 USC Section 1536(a)(2), also known as Section 7(a)(2)	Requires Federal agencies to consult with either the Secretary of the Interior or the Secretary of Commerce (Secretary), as appropriate, through their respective authorized designees.	FWS or NMFS
16 USC Section 1536(a)(3) and (4), also known as Sections 7(a)(3) and (4)	Requires Federal agencies to consult with the Secretary on any actions likely to adversely affect or jeopardize a Federally-listed species or its critical habitat.	FWS or NMFS

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
16 USC Section 1536(b), also known as Section 7(b)	Requires the Secretary to issue a written biological Opinion (Opinion) describing how the proposed Federal action would affect a Federally-listed species or critical habitat. The Secretary issues this Opinion after reviewing a BA and consulting as the Federal agency on the proposed action's impacts on the species. If the Secretary issues a Jeopardy Opinion, FAA cannot approve the action. In such cases, FAA can do so only if the airport sponsor changes the action enough to allow the Secretary to issue a No Jeopardy/Adverse Modification Opinion or obtains an exemption from the Endangered Species Committee.	FWS or NMFS
16 USC Section 1536(c), also known as Section 7(c)	Requires Federal agencies to request information from the Secretary on the presence of any Federally-protected species or critical habitat that may be near the proposed action.	FWS or NMFS
16 USC Section 1536(d), also known as Section 7(d)	Prevents a Federal agency or applicant seeking Federal approval from irreversibly or irretrievably committing resources that would effectively foreclose using reasonable and prudent alternatives. Such alternatives would avoid jeopardizing the continued existence of Federally-listed species or adversely modifying their critical habitats.	FWS or NMFS
50 CFR Part 402, Interagency Cooperation	Provides the procedures for agency coordination under Section 7 of the ESA, as amended.	FWS or NMFS

Note: FWS or NMFS critical habitat designations do not create wilderness areas, wildlife preserves, or wildlife refuges for purposes of 49 USC Section 303 (Section 4(f) of the U.S. Department of Transportation [DOT] Act) nor close the area to human access. Under the ESA, FAA approved or financed actions may occur in those habitats, provided the actions do not jeopardize the protected species' existence or the Secretary issues an exemption under 50 CFR Section 453.

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. Airport actions needing ESA compliance. The activities discussed below require FAA approval of an Airport Layout Plan (ALP) or a change to an ALP, or approval of financing for airport development. Compliance with the ESA is needed for these actions if the

responsible FAA official or Service Director determines the actions may affect Federally-listed endangered or threatened species or their critical habitats.

(1) Applying the ESA to a proposed action. To determine if the project's affected area contains any Federally-listed species or critical habitat, the responsible FAA official or FAA's non-Federal designee should review the list of Federally-designated endangered and threatened species it compiles or that the FWS or the NMFS, as appropriate, provides.

(2) Major construction actions causing direct impacts. Section 1.b.(1) of this chapter defines the types of activities the ESA would address. For airport actions, these activities normally include: airside development such as a new airport, a new or expanded terminal or hangar, a new or extended runway or taxiway, or installing navigational aids (NAVAIDS) Landside activities include building a new access road or moving one, a remote parking facility, or rental car lots.

(3) No species or critical habitat present. If a careful review suggests a project-affected area would not involve a Federally-listed species or its critical habitat, the environmental document should state that fact. Further consultation with either FWS or NMFS under the ESA is not needed, but consultation may be required for Biotic Resources the ESA does not protect (See Chapter 2 of this Desk Reference).

b. State-listed endangered or threatened species. Some airport actions do not affect Federally-listed species or their critical habitats, but they may affect state-listed endangered or threatened species. Although the ESA does not protect state-protected species or habitats, the responsible FAA official must ensure the environmental documents prepared for such airport actions address effects on state-protected resources. Chapter 2 of this Desk Reference provides more information.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

a. Sponsor-prepared correspondence. If an airport sponsor believes its proposed action may affect a Federally-listed species or critical habitat, the airport sponsor may request that FAA start early consultation with the Service Director. In this instance, the airport sponsor must certify in writing to FAA that it:

(1) has a definitive proposal outlining the action and its effects; and

(2) intends to implement its proposal, if authorized. (50 CFR Section 402.11(b)).

b. FAA-prepared correspondence. Usually, FAA must prepare the documents discussed below. This Desk Reference also provides information below and in sections 4.b.(4) and (5) of this chapter to help the responsible FAA official prepare the documents that are not normally needed, but that ESA regulations require for specific situations. The

responsible FAA official should review the following information to determine if it applies to the proposed action.

(1) Letter seeking the start of early consultation. The airport sponsor may request early consultation when it has reason to believe the action may affect Federally-listed species or critical habitat (see section 5.a.(1) of this chapter). To start this process, the responsible FAA official must prepare a letter to the Service Director seeking the start of early consultation. The letter must contain the information noted in section 4.a. of this chapter (50 CFR Sections 402.11(b) and (c)).

(2) Letter requesting information on Federally-listed or candidate species or critical habitat. This letter helps to determine if Federally-listed or candidate species or their critical or proposed habitats are in the project's affected area. FAA, or its non-Federal designee, must prepare the letter to the Service Director seeking the above information (50 CFR Section 402.12(c); see section 4.b.(4)) of this chapter).

(3) Letter requesting the start of formal consultation. FAA must prepare this letter to the Service Director requesting the start of formal consultation. FAA sends this letter after the BA is prepared and the FAA itself, or in consultation with the Service Director, determines whether the action would likely affect a Federally-listed species or alter critical habitat (50 CFR Section 402.14(c)). The letter must provide the following information pursuant to 50 CFR Sections 402.14(c)(1)-(6):

(a) a description of the major construction action FAA will consider;

(b) a description of the specific area the action may affect;

(c) a description of any Federally-listed species or critical habitat the action may affect;

(d) a description of the manner in which the action may affect any Federally-listed species or critical habitat and an analysis of any cumulative effects;

(e) any existing, relevant reports, including environmental impact statements, environmental assessments, or BAs or other information sources on the species; and

(f) any other relevant available information on the action, the affected listed species, or critical habitat.

(4) Letter notifying the Service Director of a non-Federal designee. If FAA decides to use a non-Federal designee to conduct *informal* consultation or to prepare the BA, FAA must prepare a letter to the Service Director giving notice of that decision. The letter must identify the non-Federal designee. If the airport sponsor is not the designee, FAA and the airport sponsor will select a consultant. When a designee will prepare a BA, the responsible FAA official must:

(a) provide guidance and supervision in preparing the BA;

(b) independently review and evaluate the BA's scope and content; and

(c) accept responsibility for compliance with Section 7 of the ESA (50 CFR Section 402.08).

(5) Letter notifying either FWS or NMFS of lead agency designation. When a proposed action involves more than one Federal agency, a designated lead agency may fulfill the required consultation or conference requirements. In this case, FAA and the other Federal agency(ies) will designate the agency that will meet those requirements. When FAA is the designated agency responsible for complying with the ESA, it must provide written notice to the Service Director. The notice must state that FAA is the designated lead agency for ESA purposes. In making this decision, FAA and the other Federal agency(ies) must consider the time sequence of agency involvement in the action, the magnitude of the agency's involvement, and the agency's relative expertise with respect to the action's environmental effects (50 CFR Section 402.07).

(6) FAA comments on the Service Director's draft biological Opinion. If FAA chooses to comment on the Service Director's draft Opinion, it may do so by filing a written request with the Service Director. The filing must occur at least 10 days before the end of the 45-day period the Service Director has to prepare the Opinion (see section 4.c.(4) of this chapter). Although FAA may review the entire Opinion, it may file comments addressing only the reasonable and prudent alternatives the Service Director proposes in the draft Opinion. If FAA submits comments on the draft Opinion within 10 days of the deadline, the Service Director is automatically entitled to a 10-day extension to the 45-day period the Service Director has to prepare the draft Opinion (50 CFR Section 402.14(g)(5)).

(7) Notifying the Service Director of FAA's final decision on an action. If the Service Director's Opinion states an action would jeopardize the continued existence of a Federally-listed species or adversely modify critical habitat, FAA must notify the Service Director of its final decision on an action. However, before making that decision, the airport sponsor and FAA should review the Opinion. This review is needed to determine if the airport sponsor will accept those requirements the Service Director deems necessary to avoid jeopardizing the affected Federally-listed species or critical habitat. If, after consulting with FWS or NMFS and FAA, the airport sponsor determines it cannot meet the requirements, FAA may notify the Service Director of the airport sponsor's desire to apply for an exemption under 50 CFR Part 453 (50 CFR Section 402.15).

c. Service Director documents. The Service Director must prepare certain documents in addition to those the airport sponsor or FAA prepares. The responsible FAA official must ensure the environmental document prepared for an action contains the appropriate correspondence record.

(1) Letter addressing the presence of Federally-listed or candidate species or critical habitats. The Service Director must send a letter to FAA or its non-Federal designee in reply to a request for information on Federally-listed or candidate species or designated or critical habitat that may be in the project area. The Service Director must respond within 30 days after receiving the notification of, or the request for, a species list (50 CFR Section 402.12(d)). When FAA or the airport sponsor provides a list, the Service Director shall either concur with or revise the list. When no list has been provided, the Service Director must provide written information to FAA or its non-Federal designee stating if species or critical habitats are present in the project area. In deciding if the species or habitats are present, the Service Director will use the best scientific and commercial data available (50 CFR Section 402.12(d)).

(2) Letter discussing the presence of candidate species. The ESA does not protect candidate species, but the Service Director often provides information on them. The Service Director does this to alert FAA and the airport sponsor that there is a chance the candidate species may be listed before the airport sponsor finishes the proposed project. It also tells FAA and the airport sponsor that FAA's continued oversight of the project requires FAA to meet ESA requirements if the candidate species is later listed as a Federally-protected species (50 CFR Section 402.10(d)).

(3) Service Director comments on a BA. The Service Director will provide written concurrence or non-concurrence with the findings presented in the BA. The Service Director must do so within 30 days after receiving the BA from FAA (50 CFR Section 402.12(j)).

(4) The biological Opinion. Based on information in the BA and other sources, the Service Director issues this Opinion. It provides the Service Director's findings regarding the severity of project-induced impacts on a Federally-listed species or critical habitat.

(a) The Service Director will issue a No Jeopardy Opinion or a Jeopardy Opinion within 45 days after the 90-day formal consultation period ends. The Opinion will:

(1) summarize the information on which the Service Director bases the Opinion;

(2) provide a detailed discussion of the action's impacts on Federally-listed species or critical habitat; and

(3) clearly state if the action is likely to jeopardize the continued existence of a Federally-listed species or destroy or adversely modify any critical habitat (50 CFR Sections 402.14(g)(5) and (h)).

(b) The 45-day Opinion preparation period may not be extended, unless FAA obtains the written consent of the airport sponsor to do so, or FAA or the airport sponsor submits written comments on the draft Opinion. When comments are submitted, a 10-day

extension period automatically occurs. FWS or NMFS may not issue its Opinion during the period FAA or the airport sponsor are reviewing the draft Opinion (50 CFR Section 402(g)(5)).

(c) The airport sponsor may request a copy of the draft Opinion from FAA, and submit its comments on the draft Opinion through FAA.

d. No Jeopardy Opinion. This Opinion means the Service Director determined that the action would not likely jeopardize the continued existence of a listed species or destroy or adverse modify critical habitat. Issuance of this Opinion ends the ESA process. The action may proceed, provided it would not cause an incidental take of protected species (50 CFR Section 402.14(h)(3); see section 4.f. of this Chapter).

e. Jeopardy Opinion. FWS or NMFS issues this Opinion if an action would jeopardize a Federally-listed species (50 CFR Section 402.14(h)(3)). "Jeopardizing a species" means the action would directly or indirectly reduce the likelihood of a species' survival and recovery (i.e., reduces the species' reproductive success, numbers, or distribution).

(1) In addition to the information noted in sections 4.c(4)(a)(1)-(3) of this chapter, the Jeopardy Opinion will contain conservation recommendations to help reduce or eliminate the proposed action's effects on a listed species or critical habitat. The Opinion will also contain recommended reasonable and prudent alternatives. These alternatives will consider:

(a) changes in project design;

(b) changes in construction schedules to avoid animal breeding seasons; and/or

(c) extra research or other measures to minimize adverse impacts on the Federally-protected species or habitat.

(2) In evaluating these alternatives, FWS or NMFS will consult FAA or the airport sponsor. If requested, FWS or NMFS will make the Opinion available to FAA so it may analyze the reasonable and prudent alternatives. If, after this review, no alternative is available, the Service Director will state to the best of his or her knowledge no reasonable and prudent alternative is known.

f. Incidental Take Statement (Statement). The ESA does not ban a taking if an airport sponsor complies with the Statement's conditions. Therefore, the Service Director issues this Statement when unintentional takings would not jeopardize the species' existence (50 CFR Section 402.14(i)). To ensure the incidental take does not jeopardize the species, the Service Director will issue this Statement with an Opinion. If the Service Director issues an Incidental Take Statement allowing unintentional taking or accidental killing, the airport sponsor *must* adhere to the Statement's terms and conditions. FAA must

include the Statement's conditions in any approvals or grants. The Service Director will include conditions in the Statement specifying:

(1) the allowable amount or extent of such incidental take of the species;

(2) those reasonable and prudent measures the Service Director considers necessary or appropriate to minimize the impact of that taking;

(3) the terms and conditions the airport sponsor must follow, including, but not limited to reporting requirements needed to implement the measures mentioned in section 4.f.(2) of this chapter; and

(4) the procedures that will be used to handle or dispose of any individuals of a species taken (50 CFR Section 402.14(i)).

5. REGULATORY COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. Types of consultation. FWS or NMFS, FAA, and/or the airport sponsor or its consultant (as non-Federal representatives) participate in the consultation. The following sections describe the various types of consultation and who is responsible for completing each. The consultation depends on the status of the affected species or habitat and the severity of impacts.

(1) Early consultation. This is an optional process an airport sponsor may choose when it has information indicating an action may affect Federally-listed species or critical habitat (50 CFR Section 402.11(b)). Here, the airport sponsor must:

(a) provide FAA with written certification that the airport sponsor intends to carry out the proposed action;

(b) provide an outline of the action and its effects on the protected species or habitat; and

(c) request that FAA begin early consultation with either the FWS or the NMFS.

FAA must make a written request to either FWS or NMFS seeking this consultation. That request must include the above information and a BA when the airport sponsor proposes a major construction action. Then, FAA would begin consulting with the Service Director to address the proposed action's potential effects on Federally-listed species or their critical habitat (50 CFR Section 402.11 (c)).

(2) Informal consultation. Informal consultation is another optional process. It includes all discussions, correspondence, or other information between the Service Director, FAA, or a non-Federal designee. Informal consultation is designed to help FAA determine if

formal consultation or a conference is needed. The informal consultation also provides an opportunity for the Service Director to recommend changes or modifications to the action that FAA and the airport sponsor could implement to avoid the likelihood of adverse effects to the Federally-listed species or critical habitat (50 CFR Section 402.13). Informal consultation may end if either of the following occurs:

(a) If the responsible FAA official determines the action is unlikely to adversely affect Federally-listed species or critical habitat. If the Service Director concurs, no further FAA responsibilities under the ESA are required (50 CFR Section 402.13(a)). At this stage, the Service Director may also suggest modifications to the action that an applicant could implement to avoid the likelihood of adverse effects to listed species or critical habitat (50 CFR Section 402.13(b)).

(b) If, during this consultation or the review of the BA, the responsible FAA official or the Service Director determines the action may affect Federally-listed species or designated critical habitat, formal consultation is necessary (50 CFR Section 402.14(b)(1)).

(3) Formal consultation. An action that may affect a Federally-listed species or adversely modify critical habitat triggers formal consultation. Therefore, FAA must review its actions at the earliest possible time. If the responsible FAA official determines an action may affect a protected species or critical habitat, FAA may begin formal consultation without first completing informal consultation. During formal consultation, the Service Director determines if an action's effects would jeopardize the Federally-listed species' continued existence or adversely change its critical habitat. To do so, the Service Director, FAA, and the airport sponsor work cooperatively to determine if any reasonable and prudent alternatives would allow the action to occur without jeopardizing the species' existence or adversely changing critical habitat (50 CFR Sections 402.14(a) and (b)). Within 45 days after concluding formal consultation, the Service Director will deliver a biological Opinion to FAA and the airport sponsor.

(a) When formal consultation is not needed. Formal consultation is not needed if either of the following conditions occurs:

(1) FAA determines, and the Service Director provides written concurrence, that informal consultation or the BA indicates the proposed action is not likely to adversely affect any Federally-listed species or critical habitat (50 CFR Section 402.14(b)(1)); or

(2) a preliminary biological Opinion issued after early consultation is confirmed as the final biological Opinion (50 CFR Section 402.14(b)(2)).

(b) Starting formal consultation. To begin this 90-day process, FAA must make a written request to the Service Director. For major construction actions, FAA may not file this request until it has reviewed the completed BA and sent it to the Service Director.

Note the Service Director may require formal consultation when no consultation has occurred for actions that may affect a Federally-listed species or critical habitat. In this case, the Service Director must file a written request with FAA explaining why formal consultation is necessary (50 CFR Sections 402.14(b)(2) and (c)).

(c) Extending formal consultation. Normally, formal consultation concludes within a 90-day period. However, that 90-day period may be extended for various reasons, including a Service Director's determination that more data would provide a better basis for preparing the biological Opinion.

(1) Actions involving only FAA and the FWS or the NMFS. Here, FAA and the Service Director may mutually agree to extend the consultation for a specified period.

(2) Actions involving an airport sponsor, FAA, and the FWS or the NMFS. In these instances formal consultation cannot be extended more than 60 days without the airport sponsor's consent. The Service Director will provide the airport sponsor a written statement describing the:

(a) reasons why a longer period is required;

(b) information that is required to complete the consultation; and

(c) the estimated date on which the consultation will be completed.

Note: If more information is needed, but FAA and the Service Director cannot agree on the duration of an extended period needed to obtain the data, the Service Director will develop a biological Opinion based on the best scientific and commercial data available at the time the Service Director prepares the Opinion.

(d) Terminating formal consultation. Usually, formal consultation ends when the Service Director issues the biological Opinion (i.e., typically within 45 days after FAA and the Service Director conclude formal consultation). However, FAA may end formal consultation if it determines:

(1) the proposed action is unlikely to occur; or

(2) the proposed action is unlikely to adversely affect a Federally-listed species or critical habitat, and the Service Director concurs with that determination.

In either case, FAA must provide written notice to the Service Director that it wishes to terminate formal consultation (50 CFR Section 402.14(l)).

(e) Re-initiating formal consultation. Re-initiating formal consultation is *required* and will be requested by FAA or the Service Director where FAA retains discretionary involvement over the action, or where it is authorized by law to do so if:

(1) the airport sponsor exceeds the amount or extent of the taking specified in the Incidental Take Statement;

(2) new information reveals an action's impacts may affect a Federally-listed species or critical habitat in a manner or to an extent not previously considered;

(3) the identified action is subsequently modified in a manner that causes an effect to the Federally-listed species or critical habitat that was not considered in the biological Opinion; or

(4) the identified action may affect a newly-listed species or newly-designated critical habitat (50 CFR Section 402.16).

b. Consultation requirements for actions involving candidate species or proposed critical habitat. If the Service Director informs FAA that only candidate species or proposed critical habitat may be present in the project area, a BA is not needed. Still, there may be a need to confer with the Service Director. This informal conference helps the Service Director, FAA, and the airport sponsor identify potential conflicts between the action and a candidate species or proposed critical habitat early in project planning. The conference gives the Service Director an opportunity to make advisory recommendations. These may help to minimize or avoid adverse effects that, if not mitigated, could jeopardize the candidate species' continued existence or destroy or adversely modify proposed critical habitat (50 CFR Sections 402.10 and 402.12(d)(1)).

Note: Describe impacts to candidate species in the environmental document's Biotic Resources chapter, not in the chapter on Federally-listed endangered and threatened species. Document preparers should include a note in the document's Federally-listed Endangered and Threatened Species chapter that the Biotic Resources chapter contains information on candidate species or proposed critical habitat. See Chapter 2 of this Desk Reference.

(1) Determining the need for a conference. To decide if an action warrants a conference, the responsible FAA official must decide if the proposed action would likely jeopardize the continued existence of any candidate species or cause the destruction or adverse modification of the proposed critical habitat.

(a) If the official determines the action is unlikely to jeopardize a candidate species or its habitat, FAA must notify the Service Director of that determination. In this instance, a conference is not needed, unless the Service Director requests one after reviewing FAA's decision and other available information.

(b) If the official determines the action is likely to jeopardize the candidate species or adversely modify proposed critical habitat, FAA should begin a conference with the Service Director. Sponsors should be involved in these conferences to the greatest extent practicable (50 CFR Section 402.10(c)).

(2) **Consultation requirements if a candidate species is later Federally-listed.** Sometimes, before an airport sponsor completes an action, FWS or NMFS lists a candidate species as a Federal endangered or threatened species or determines its habitat is designated critical habitat. In either instance, FAA *must* review the action to determine if formal consultation is needed (see section 5.a.(3) of this chapter).

6. DETERMINING IMPACTS. If information indicates that a major construction activity may affect Federally-listed endangered or threatened species or critical habitat, the responsible FAA official must ensure that a BA is prepared and completed before a construction contract is signed and construction begins (50 CFR Section 402.12(b)(2)).

a. The BA. FAA and the Service Director use the BA:

(1) to discuss the species present in the area of a major construction activity, the severity of the activity's impacts on the species or critical habitat, and measures that may be needed to protect the species or habitat; and

(2) to determine if formal consultation is needed.

b. When a BA is unnecessary. No BA is needed when a major construction activity involves any of the following:

(1) The Service Director tells FAA or the non-Federal designee that no known Federally-listed species or critical habitat occurs in the action's impact area;

(2) A Federally-listed species or critical habitat is in the action's impact area, but the action would not disturb land or water;

(3) The Service Director tells FAA or the non-Federal designee that only candidate species or proposed critical habitat occur in the action's impact area; or

(4) If conditions (1) or (3) occur, consultation with the Service Director may be needed. The consultation keeps FAA aware of the status of species or critical habitat. It also ensures that the FAA fulfills its responsibilities regarding Federally-listed species or critical habitat, should the candidate species or habitat be listed or designated during an action's environmental review process (50 CFR Section 402.12(d)(1)).

c. Preparing the BA. The BA must provide the Service Director with the best scientific and commercial data available during the consultation period. The information may include results of FAA, airport sponsor, or consultant conducted studies.

(1) To prevent delays in completing an action's overall environmental review process and ESA Section 7 compliance, the BA should be completed while the NEPA document is being prepared. This allows FAA to use the information in the BA during the NEPA process to determine if a major construction activity would significantly affect a

protected species or its critical habitat. It also helps to streamline the overall environmental review process.

(2) If a non-Federal designee prepares the BA, FAA must provide guidance and supervise the document's preparation because FAA is responsible for BA content (50 CFR Section 402.08). Therefore, the responsible FAA official must independently review the completed version.

(3) The BA should include information on candidate species *only* if they are found with Federally-listed species (50 CFR Section 402.12).

d. BA contents. The responsible FAA official may use discretion to determine the BA's content. For example, the official must consider the nature of the proposed action and any concerns the Service Director has noted. As appropriate, the FAA official should include some or all of the following information in the BA:

(1) the results of an on-site inspection of the project-affected area to determine the presence (including seasonal occupancy or use) of Federally-listed species or critical habitat;

(2) the views of recognized experts regarding the species of concern;

(3) a review of the literature and other information regarding the species of concern;

(4) an analysis of the action's effects on the species or habitat of concern, including consideration of cumulative effects, and the results of any related studies; and

(5) an analysis of alternate actions the FAA considered for the proposed action (50 CFR Section 402.12.(f)).

e. BA completion date. FAA or the designated non-Federal representative must complete the BA within 180 days after preparation of that document begins (i.e., receipt of or concurrence with the species list), unless the Service Director and FAA agree to a different period of time. FAA and the Service Director may extend this 180-day period, but before doing so, FAA must provide the airport sponsor a written statement. The statement must specify the proposed extension's estimated length and the reasons why the extension is needed. FAA must provide this letter to the airport sponsor before the 180-day period ends (50 CFR Section 402.12(i)).

f. Sending the BA to the Service Director. FAA must submit the BA to the Service Director for review. The Service Director will respond to FAA in writing within 30 days. That response will note if the Service Director concurs with the findings of the BA. FAA has the option of starting formal consultation concurrently with the submission of the BA (50 CFR Section 402.12(j)).

g. How FAA uses the BA. The responsible FAA official uses the BA to determine the degree to which a proposed major construction activity may affect a Federally-listed species or critical habitat. Based on that information, the official will determine whether formal consultation or a conference is required under 50 CFR Sections 402.14 or 402.10, respectively. Note that the Service Director must subsequently concur with the responsible FAA official's opinion about the need for formal consultation.

(1) No species listed or critical habitat. If a BA indicates there are no listed species or critical habitat present in the area, or it is unlikely that major construction activity would cause adverse effects, the responsible FAA official may recommend to the Service Director that no formal consultation is needed.

(2) No adverse effects. If a BA suggests that it is unlikely that the activity would cause adverse effects on a Federally-listed species or designated critical habitat, the responsible FAA official may recommend to the Service Director that no formal consultation is needed.

(3) Jeopardizing a candidate species. If a BA suggests the activity would not adversely affect a Federally-listed species or designated critical habitat, but it is likely to jeopardize candidate species or habitat important to that species, the responsible FAA official may recommend to the Service Director that no formal consultation is required. However, a conference may be needed to discuss project effects on candidate species.

g. How the FWS or NMFS uses the BA. The Service Director uses the BA:

(1) to determine if FAA should start formal consultation;

(2) as the basis for a biological Opinion; or

(3) as a basis for a preliminary biological Opinion (50 CFR Section 402.12.(k)(2)).

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. After completing the BA and the consultation process discussed earlier in this chapter, the responsible FAA official should consider the following factors in consultation with FWS or NMFS personnel to determine the degree of impact on Federally-listed species or their critical habitats.

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When the FWS or NMFS determines a proposed action would likely jeopardize a species' continued existence or destroy or modify a species' critical habitat.	The responsible FAA official should consider the information in the biological assessment prepared for the action and all of the information gleaned during the Section 7 consultation process discussed in this chapter. Based on that information, the official should consider the following factors: • *Critical habitat area*: Would sufficient critical habitat area remain in the project area to sustain the protected species? • *Reasonable and prudent alternatives:* Determine if any reasonable and prudent alternative exists that would then reduce adverse effects on the protected species or critical habitat. • *Agency input:* Use the expertise of FWS or NMFS personnel to help determine impact severity.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. FWS or NMFS normally provide letters addressing effects on Federally-protected species or critical habitat. To meet ESA requirements efficiently and effectively during the environmental review process, FAA would use input from the appropriate Service Director to develop mitigation for impacts on protected species. An appendix to the environmental document should include copies of the FWS or the NMFS letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If FAA or the sponsor does not adopt any recommended reasonable or prudent alternative or mitigation, the environmental document should clearly explain why the recommendation was not adopted. Based on the level of effect, determine those measure(s) or action(s) that would lessen harm to the species or critical habitat. Note that each affected Federally-listed species or critical habitat may require a separate strategy. Examples of measures that may be considered include the following, provided they do not promote increases in populations of species hazardous to aviation:

(1) improving existing habitat;

(2) creating new habitat;

(3) buying private lands for preservation and management; and

(4) moving the protected species.

If feasible, provide an estimated schedule for undertaking accepted mitigation.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. When the responsible FAA official determines that the project effects meet or exceed the significant impact threshold and mitigation would not reduce those effects below the threshold, FAA must prepare an EIS to address these effects. In this instance, FAA may wish to request that the FWS or the NMFS, as appropriate, participate as a cooperating agency due to their respective expertise and jurisdiction regarding Federally-listed endangered or threatened species and critical habitats. Besides the information the BA contains, the EIS must provide the following material, as appropriate.

b. Added or expanded studies. These include results of any additional biological studies that would provide more information to enable the Service Director to modify his/her biological Opinion. The environmental document may incorporate a biological assessment by reference for an action that is very similar to the proposed action (50 Section 402.12(g)). When doing so, the responsible FAA official should provide a written certification that:

(1) the proposed action involves similar impacts to the same species and the same geographic area;

(2) No new species have been listed or proposed or no new critical habitat designated or proposed for the action area; and

(3) FAA has supplemented the biological assessment with relevant changes in information.

c. Mitigation. The EIS should describe proposed mitigation FWS or NMFS provide. FAA and the airport sponsor should fully consider the mitigation and balance its benefits against those of the proposed action. The EIS should include any project changes, reasonable and prudent alternatives, or mitigation measures not previously considered that would reduce adverse impacts and prevent jeopardizing the Federally-listed species or destroying or modifying critical habitat. It should explain why the sponsor or FAA did not adopt any mitigation FWS or NMFS recommends. If feasible, the EIS should provide an estimated schedule for completing accepted mitigation.

d. Exemption. If the airport sponsor wishes to use this provision, the EIS should include a statement from the airport sponsor (or FAA on the airport sponsor's behalf). The statement should indicate that the sponsor will request an exemption to Section 7(g) of the ESA. See 50 CFR Part 451 for more information on this rarely used provision.

CHAPTER 9. ENERGY SUPPLY, NATURAL RESOURCES, AND SUSTAINABLE DESIGN

1. INTRODUCTION. Airport development actions have the potential to change energy requirements or use consumable natural resources. To comply with the Council on Environmental Quality (CEQ) regulations mentioned in Section 2 of this chapter, Federal Aviation Administration (FAA) environmental documents must evaluate potential impacts on supplies of energy and natural resources needed to build and maintain airports. FAA policy supports developments displaying environmental sustainability.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
40 Code of Federal Regulations (CFR) 1502.16(e) and (f)	When reviewing the environmental effects of a proposed action and its reasonable alternatives assess each alternative's energy requirements, energy conservation, and the use of natural or consumable resources. Mitigation must also address needed mitigation measures.	CEQ
Executive Order 13123, *Greening the Government Through Efficient Energy Management* (64 Federal Register 30851, dated June 8, 1999)	Encourages each Federal agency to expand the use of renewable energy in its facilities and for its actions.	FAA

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. FAA must evaluate any airport development action subject to FAA approval or funding under the Airport Improvement Program (AIP) to determine if the proposed action would cause significant impacts on energy supplies or natural resources. Typical actions that could cause such impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, airfield lighting, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or moved access roadways, remote parking facilities and rental car lots; significant changes in air traffic and airfield operations; and significant construction activity.

b. FAA should study how the action sponsor proposes to conserve resources, use pollution prevention, minimize aesthetic effects, and address public (both local and traveling) sensitivity to these concerns. This approach satisfies National Environmental Policy Act of 1969, as amended (NEPA). NEPA requires agencies to…"use a systematic interdisciplinary approach, which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making."

4. PERMITS, CERTIFICATIONS, AND APPROVALS. FAA does not require permits or certifications for these resources. However, FAA environmental documents should contain letters or other documents from local public utilities and suppliers addressing their capacities to provide energy and resources to build and operate the action.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS. Typically, local agencies or businesses may have information on available energy supplies and consumable natural resources. When preparing an environmental document, consultation with the following entities may be helpful:

a. Local utility companies may be sources of information on available and planned electrical, natural gas, water, and sewage capacities.

b. If unusual, fuel-consuming construction or operational circumstances are expected, local suppliers of consumable construction materials and aircraft or ground vehicle fuels may be valuable sources for information concerning the materials or fuels.

c. State or local agencies responsible for enforcing local rules, ordinances, or guidelines may have information on sustainability measures.

6. DETERMINING IMPACTS.

a. General. To determine action-related impacts on energy supplies and consumable natural resources, the environmental document should contain the following information, as needed:

(1) Utility impacts. Proposed major changes in stationary facilities may require large demands on local existing or planned utilities. Examples utility impacts include projected airport or terminal lighting or heating demands or water supply for terminal-related water usage and sewage disposal.

(2) Consumable materials. If scarce or unusual materials are needed to build the proposed action or a reasonable alternative, estimate the volumes of consumable construction material and their availability from local suppliers.

(3) Aircraft fuel consumption. The environmental document should discuss how proposed changes would affect existing aircraft fuel use.

(a) Would ground movement or run-up times for aircraft increase substantially without matching increases in operational efficiency? If yes, estimate increased aircraft fuel consumption.

(b) If flight changes incorporated for action-induce noise abatement purposes noticeably increase flight times, provide estimates of increased aircraft fuel consumption.

(c) If the action would substantially increase aircraft operations, (i.e. siting a new hub operation or a new air carrier or air cargo service) provide estimates of increased fuel consumption for operations related to the action.

(d) If the action would substantially increase the number of on-airport service vehicles or substantially alter the time needed for the existing service fleet to arrive at gates, provide estimates of increased fuel consumption these vehicles would cause.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. After completing the consultation and analyses discussed above, use the significance threshold in column 1 of the following table. Consider factors in column 2 when determining if an action meets a threshold. The responsible FAA official should consider the following factors in consultation with agencies having special expertise on energy or natural resources, or sustainability.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
When an action's construction, operation, or maintenance would cause demands that would exceed available or future (project year) natural resource or energy supplies.	• The action would cause a substantial demand on available energy or natural resource supplies. • When compared to future no action conditions, changes in aircraft movements or ground vehicle use would cause a statistically significant increase in fuel consumption. • Consumable natural resources necessary for construction are rare. • The action would not be consistent with smart growth requirements of the agency having jurisdiction over the area where the airport is located.

From Table 7-1, FAA Order 5050.4B.

b. Potential mitigation measures. During the environmental review process, local agencies or businesses may provide letters or information on energy or natural resource supplies or sustainability measures. Those letters may include recommendations to mitigate impacts. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the sponsor or FAA does not adopt any recommended

mitigation, the environmental document should explain clearly why the recommendation was not adopted. Examples of mitigation measures may include:

(1) airfield design improvements that provide efficient aircraft operations;

(2) ground access improvements;

(3) energy and resource conservation designs;

(4) electric ground support equipment (GSE); or

(5) sustainability measures (skylights, energy conservation plans, solar heating or electricity, or using drought-resistant landscaping that will not attract wildlife hazardous to aviation (see FAA Advisory Circular 150/5200-33A, *Hazardous Wildlife Attractants on and near Airports)*.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. If the action's impacts exceed the significance threshold for this resource category, FAA may need to prepare an EIS. If it does, FAA should invite the Department of Energy (DOE) to become a cooperating agency during the NEPA process due to DOE's expertise on energy and consumable natural resources. DOE can aid FAA in determining if any added analyses are needed or determining the severity of action-induced energy or consumable resource impacts.

b. Information. Besides the information discussed previously, the EIS should contain the following as appropriate:

(1) any additional information needed to fully explain impact severity;

(2) information verifying coordination with DOE and other interested parties occurred; or

(3) a discussion of measures the sponsor will use to mitigate impacts (e.g., more efficient airfield design and operations, improved ground access, using renewable resources, etc.) not previously considered.

c. Mitigation. The EIS should describe proposed mitigation when agencies having expertise in energy, natural resource supply, or sustainable design issues provide that information. FAA or the sponsor should fully consider the mitigation and balance its benefits against those of the proposed action.

NEPA requires a Federal agency preparing an EIS to discuss mitigation in sufficient detail to disclose that environmental consequences have been fairly evaluated (*Robertson vs. Methow Valley*, 490 U.S. 332 (1989)). In addition, under 49 USC Section 47106 (c)(1)(B),

FAA may not approve a Federal funding for major airport development projects, unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension. For more information about the mitigation required, see FAA Order 5050.4B, paragraph 1203(b)(4). The EIS must discuss and adopt mitigation measures recommended by agencies having expertise in energy, natural resource supply, or sustainable design sciences in accordance with NEPA and 49 USC Section 47106(c)(1)(B). If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 10. ENVIRONMENTAL JUSTICE

1. INTRODUCTION AND DEFINITIONS.

a. General. Environmental justice analysis considers the potential of Federal actions to cause disproportionate and adverse effects on low-income or minority populations. Environmental justice ensures no low-income or minority population bears a disproportionate burden of effects resulting from Federal actions. Since the late 1980s, Federal agencies have used various definitions for environmental justice issues. To help describe environmental justice, this Desk Reference incorporates the following definition from the U.S. Environmental Protection Agency's (EPA) Office of Environmental Justice:

> "The fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental effects resulting from industrial, municipal, and commercial operations or the execution of Federal, State, local, and tribal programs and policies."

b. Low-income. According to DOT Order 5610.2, *Environmental Justice in Minority and Low-Income Populations*, Appendix 1.a, this is a person having a median household income at or below the Department of Health and Human Services' (HHS) poverty guidelines. Although DOT Order 5610.2 directs DOT agencies to HHS poverty guidelines, guidance from the Council on Environmental Quality (CEQ) and the EPA uses the Census Bureau's annual statistical poverty thresholds on income and poverty (Series P-60) to define low income. Normally, HHS and Census Bureau data differ. As a result, the responsible FAA official may use either HHS or Census Bureau data.

c. Low-income population. A low-income population is any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed program, policy, or activity.

d. Minority. DOT Order 5610.2 Appendix 1.c defines this term as a person who is:

(1) *Black* (a person having origins in any of the black racial groups of Africa);

(2) *Hispanic* (a person of Mexican, Puerto Rican, Cuban, Central or South American, or Spanish culture or origin, regardless of race);

(3) *Asian American* (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or

(4) *American Indian and Alaskan Native* (a person having origins in any of the original peoples of North America and who preserves cultural identification through tribal affiliation or community recognition).

e. Minority population. This population is one the action would affect. It is comprised of Black, Hispanic, Asian-American, or American Indian and Alaskan Native individuals. Each, several, or all of these ethnic groups may live in geographic proximity to one another or may be geographically scattered or transient (e.g., migrant workers) who will be similarly affected by a proposed program, policy, or activity. When examining a population living in geographic proximity, analysts should consider areas within a governing body's jurisdiction, a neighborhood, a census tract, or other similar limit. This reduces the potential for artificially diluting or inflating the minority population(s) analyzed.

Note: CEQ's definition of minority population states that: 1) the minority population of an affected area exceeds 50 percent; or 2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate geographic analysis. In addition, a minority population also exists if there is more than one minority group present and the minority percentage, when calculated by aggregating all minority persons, meets one of the above thresholds. FAA recognizes this definition, but for purposes of this Desk Reference will use the definition in DOT Order 5610.2 to comply with DOT policy.

f. General population. This is the population that an action affects, but that is not a low-income or minority population.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629, February 11, 1994)	Requires Federal agencies to provide public involvement for low-income or minority populations. This includes demographic analysis identifying and addressing potential action impacts on low-income or minority populations that may experience a disproportionately high and adverse effect.	CEQ, EPA
U.S. Department of Transportation (DOT) Order 5610.2, *Environmental Justice in Minority and Low-Income Populations*, April 15, 1997	Outlines the DOT's commitment to the principles of environmental justice and presents a program for department-wide implementation.	DOT
Environmental Justice: Guidance Under the National Environmental Policy Act, December 10, 1997	Presents CEQ's guidance on addressing environmental justice issues under the National Environmental Policy Act of 1969, as amended (NEPA).	CEQ
Final Guidance for Consideration of Environmental Justice in Clean Air Act 309 Reviews, July 1999	Provides EPA guidance and answers often-asked questions about environmental justice.	EPA

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. Any airport development action funded under the Airport Improvement Program (AIP) or any airport action subject to Federal Aviation Administration (FAA) approval may cause environmental justice impacts. Typical actions that may involve environmental justice issues are: a new airport; airfield/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or moved access roadways, remote parking

facilities, and rental car lots; significant changes in aircraft operations; and significant amounts of construction activity.

b. To properly apply environmental justice requirements, it is important to determine if a low-income or minority population occurs in the area the action or its reasonable alternatives would affect. It is also important to know if a low-income or minority population uses a particular action-affected resource or if an affected resource is important to that population. Impacts due to aircraft noise, air quality degradation, direct and induced socioeconomic effects, degraded water quality, and effects to cultural or community cohesion, traffic, and history often affect low-income or minority populations. However, other impacts may be of concern. As noted in section 5 of this chapter, timely consultation with human resource agencies regarding locations of low-income or minority populations relative to an action's impact areas is important.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

No legal or regulatory requirements for formal permits or certificates exist for environmental justice issues. However, to comply with Executive Order 12898 and DOT Order 5610.2, FAA environmental documents must demonstrate that FAA has considered carefully and properly the goals of those Orders.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. Required consultation. Compliance with Executive Order 12898, the Presidential Memorandum on environmental justice, and Order 5610.2, requires FAA to analyze impacts on low-income and minority populations. FAA must discuss those impacts after considering demographic data on populations exposed to or who use the resources a Federal action would affect. This allows FAA to identify adverse (i.e., unfavorable in a meaningful or unique way) effects that may disproportionately affect low-income or minority populations.

b. Timely consultation is critical. Timely consultation with State and local human resource agencies very early in the NEPA process is critical because it:

(1) ensures identification of resources the action would adversely affect;

(2) helps determine if a low-income or minority population sustains the identified effect or if the affected resource is important to that population;

(3) helps determine if mitigation or offsetting benefits would avoid or reduce disproportionate effects on an affected low-income or minority population.

c. The importance of public outreach. CEQ notes it is important to recognize that the cultural, historic, or social concerns of a low-income or minority population amplify that population's perceptions of an action's effects.[1] Consequently, reaching out to local community leaders, tribal elders, or other suitable spokespeople early in the environmental process is a very important step in completing efficiently and effectively an environmental justice analysis. Often, that contact is the best way to collect information essential to addressing an affected population's culturally important concerns and needs (e.g.,

[1] CEQ. 1997. *Environmental Justice Guidance Under the National Environmental Policy Act*, page 9.

subsistence consumption of fish, vegetation, and wildlife; unique ceremonial lands; or water bodies, landforms, buildings, or vistas important to a population's culture). In some instances, outreach efforts scheduled for certain times and places may be the only way to gather that information.

d. Non-English speaking populations. The responsible FAA official should consider providing *summaries* of important issues in languages other than English. This helps ensure that affected minority populations whose primary language is not English are aware of the action's most critical aspects.

e. Information sources for environmental analyses. As needed, review DOT Order 5610.2 to ensure the NEPA document contains information on environmental justice. To aid in preparing the environmental justice analysis, use the following information sources for demographic information:

(1) The U.S. Census Bureau provides geographic data and Series P-60 reports that provide information on income and poverty.

(2) HHS provides poverty data used to define "low-income populations" per DOT Order 5610.2.

(3) EPA's *Environmental Justice Query Mapper* provides information on EPA-permitted facilities and their surrounding communities and access to other databases (superfund, toxics release inventories, safe drinking water information system, etc.).

(4) State, county, regional, and local planning agencies.

(5) State and local tax and employment agencies or other agencies that may collect economic indicator data.

(6) Chambers of Commerce, civic groups, trade associations, and other commercial organizations.

(7) Standard demographic surveys identifying ethnic "pockets" and living patterns within an affected community.

(8) Community associations or groups (churches, sports clubs, social groups outreach groups, community leaders, and economic departments of colleges or universities) may provide information on how community members depend on or use natural resources for subsistence or cultural reasons.

6. DETERMINING IMPACTS.

a. Examples of environmental justice concerns. The following information highlights some environmental areas to consider when assessing environmental justice impacts. This is a partial list. Contact local, regional, State, and Federal agencies to help complete this analysis if needed.

(1) **Human health.** After determining that mitigation or offsetting benefits would not reduce adverse impacts, consider the following to determine the action's human health effects as needed.

(a) A health-related environmental justice issue would result if either of these occurs:

(1) The risk to any low-income or minority population is greater than the general community would experience.

(2) The risk to low-income or minority populations is unacceptable when compared to the norms set for the affected area's general population. If all affected population segments experience an unacceptable level of risk, no environmental justice issue would occur. This is because the action would not cause disproportionately high and adverse effects on minority or low income populations.

(b) Describe how a population's ethnic, racial, or social segments use the affected resource.

(c) Analyze the affected community's dose-response to the identified hazard.

(2) **Historic or cultural resources.** When assessing an action's adverse impacts to a historic site on or eligible for the National Register of Historic Places (NRHP), determine if affected resources are important to the history or culture of low-income or minority populations. When compared to the general population, determine if these populations would experience the effects of the adverse impact more than the general population would experience (i.e., a disproportionately high level of adverse effect).

(3) **Community disruptions.** Determine if a proposed action would disrupt the continuity of a low-income or minority neighborhood and if suitable relocation is available for displaced residents or businesses. Determine if the disruption would adversely affect the ability of a low-income or minority population to efficiently use public and private community services or substantially alter traffic patterns. Determine if any of these disruptions are disproportionately more adverse than those the generally affected public would experience.

(4) **Cumulative effects.** This part of the analysis should focus on identified adverse cumulative impacts. Determine if any low-income or minority populations experience a disproportionately high level of cumulative effects. As needed, consult planning authorities for support.

b. **Determining environmental justice impacts.** The following information provides an outline on how the responsible FAA official may determine if an action would cause environmental justice impacts.

(1) Identify those resources the action would affect.

(2) Using information from Step (1), identify the populations:

(a) that would experience the impact;

(b) that would use the affected resources; or

(c) to whom the affected resources are important for subsistence or cultural reasons.

(3) Would the effects identified in Step (1) be adverse (unfavorable in a meaningful or unique way)? The following information should guide the analysis:

(a) Examine each effect to decide if the effect meets a significance threshold.

(b) To do so, use the significance threshold for that resource as defined in FAA Order 1050.1E Appendix A. A conclusion that an effect is significant indicates the effect's potential to cause a disproportionately high and adverse effect to a minority or low-income population.

(c) Note that not all "adverse impacts" within the meaning of DOT Order 5610.2 will meet or exceed a significance threshold. Some adverse impacts are not significant impacts as defined in FAA Order 1050.1E Appendix A, yet they may be unfavorable in a meaningful or unique way. As a result, the responsible official must undertake a case-by-case analysis of an action's unique facts. The official does this to determine if impacts not rising to a level of significance for NEPA purposes nonetheless represent a disproportionately high and adverse effect for environmental justice analysis purposes.[2]

(4) If examination of these considerations reveals that the effects identified in Step 1 are not adverse, stop the analysis. If effects are found to be adverse, continue the analysis as indicated below.

(5) Are any of the populations identified in Step (2), low-income or minority populations?

(a) If no, stop this analysis.

(b) If yes, continue to Step (6).

(6) Calculate the percentage of low-income or minority people the action would adversely affect by using the following equation. [3] To do so, divide the number of low-income

[2] The following is one example of an unfavorable, but not significant impact that must be considered for environmental justice concerns: An airport action requires residential relocations that do not, standing alone, represent a significant impact under the criteria set forth in FAA Order 1050.1E Appendix A. However, the relocations fall exclusively on low-income households. Further, there is insufficient relocation housing for persons of limited means. In this instance, although the relocations alone are not a significant impact, the relocation of only low-income households may nonetheless be a disproportionately high and adverse effect.

or minority people identified in Step 5 by the number of people in the general population (see section 1.f of this chapter).

(7) Does the percentage derived in Step 6 exceed 50%? If yes, a disproportionately high and adverse effect on low-income or minority populations may occur. Note that in some cases the percentage derived in Step (6) may not be an appropriate way to determine if a disproportionately high and adverse effect to minority populations would occur. This is especially so when the action does not disproportionately affect any population segment (i.e., the percentage in Step (6) is less than or equal to 50), but the low-income or minority populations experience a more severe impact because they have a unique relationship to the affected resource.[4]

(8) Would mitigation or offsetting benefits counterbalance or prevent the disproportionate effects identified in Step (7)? An example of an offsetting benefit would be an action that creates a shift of the 65 DNL contour that results in removal of a minority population, or a portion of a minority population, from that contour

(a) If no, you have identified an environmental justice impact. Consult regional counsel or APP-400 if needed and review information in section 8 of this chapter.

(b) If yes, you have identified an environmental justice impact that has been properly mitigated or offset. No further environmental analysis is needed.

c. Displaying or reporting environmental justice impacts. To aid in presenting information regarding environmental justice effects, consider using a spatial display or Geographic Information Systems (GISs). These displays are effective aids in presenting information. GIS is especially effective because it visually integrates the relationship among the biological, physical, cultural, social, and demographic concerns of the affected population(s). The environmental justice discussion in an environmental document should cross-reference information addressing effects determinations presented in the other parts of the document's Environmental Consequences section. This reduces the repeating of information found elsewhere in that document.

d. Mitigation. Normally, environmental justice mitigation would relate to measures reducing a particular adverse effect on a particular resource. After consulting with the parties noted in section 5 of this chapter, mitigation measures or offsetting benefits that reduce the impact to the affected low-income or minority communities must be identified in

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[3] For example, FAA may need to determine if a proposed action would significantly affect water quality, making a river segment unsuitable to support a coho salmon population a Tribe consumes or sells to sustain itself.

[4] An example would be when an action adversely affects a salmon population important to all affected populations, but a tribe is more severely affected because it relies on the salmon for subsistence living or cultural ceremonies. To determine if this is the case, the responsible FAA official or analyst should consult the leaders of affected groups. This consultation is often helpful in determining if the affected community depends on the affected resource for subsistence or cultural reasons.

the EA or EIS pursuant to Order 5610.2, Section.8.c. If no mitigation or offsets can be identified, or if such measures or offsets are not practicable, the environmental document must explain this conclusion and its basis. This is because Order 5610.2, paragraph 8.c explicitly requires that actions involving disproportionately high and adverse effects to EJ communities will only be carried out if further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effects are not practicable.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. The responsible FAA official should consider the information obtained from the process in section 6 of this chapter. The official may wish to consult representatives of the affected low-income or minority population(s) when deciding if a disproportionate effect would occur as discussed in section 6

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
A significant impact may occur when an action would cause disproportionately high and adverse human health or environmental effects on low-income or minority populations.	None.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, entities noted in section 5 of this chapter may send letters that include recommended measures to mitigate or offset those effects. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA or the sponsor rejects any recommended mitigation or offsetting benefits, the environmental document should clearly explain why the recommendation was rejected.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. DOT Order 5610.2 requires FAA to attempt to resolve significant environmental justice impacts before the responsible FAA official can approve the preferred alternative. The EIS's environmental justice analysis should describe efforts to achieve final resolution for impacts affecting low-income or minority populations. Environmental justice impacts and mitigation usually involve substantial coordination among the affected population, FAA, the airport sponsor, and local jurisdictional agencies and municipalities. The resolution may involve intense negotiations among these parties to clearly identify issues concerning FAA or the affected population. Negotiations assist in developing reasonable guidelines to design measures that satisfy both parties and meet FAA eligibility criteria. The goal of negotiating is to develop measures satisfactory to all parties involved. This would allow the preferred alternative to serve its intended purpose, while protecting the health, environmental, cultural, ethnic, and social context of the affected population group.

b. Assessing further mitigation and practicable alternatives. Section 6.d of this chapter addresses mitigation. The EIS should explain any limits on mitigation involving regulatory or safety impacts such as major noise or access restrictions. If FAA concludes a

preferred alternative would cause a disproportionately high and adverse effect to a low-income or minority population, DOT Order 5610.2 requires FAA to determine if any mitigation or practicable alternatives that reduce or avoid environmental justice impacts exist. This is accomplished by consulting the entities mentioned in section 5 of this chapter and considering the following factors:

(1) Do further mitigation measures exist that would avoid or reduce the disproportionately high and adverse effects of the preferred alternative? If so, does such mitigation of the preferred alternative's impacts require extraordinary costs of a social, economic or environmental nature (are the measures practicable)?

(2) Does an alternative that would avoid or reduce the disproportionately high and adverse effects exist? If such an alternative exists, does the totality of its impacts in all resource categories exceed those of the preferred alternative or does the alternative entail extraordinary social, economic or environmental costs when compared to the preferred alternative (is the alternative practicable)?

c. Mitigation and Title VI of the Civil Rights Act. If the preferred alternative will have a disproportionately high and adverse effect on populations protected by Title VI (minority populations) and FAA determines no practicable alternative exists after completing Step 8.c, FAA must demonstrate that:

(a) based on overall public interest, there is a great need for the preferred alternative; and

(b) another alternative that would have less adverse effect on the protected population (and still meet purpose and need) would cause social, economic, environmental or human health effects more severe than the preferred alternative or would entail extraordinary costs.

d. Further mitigation. The EIS should describe proposed mitigation when agencies provide that information. FAA or the sponsor should fully consider the mitigation and balance its benefits against those of the proposed action.

NEPA requires a Federal agency preparing an EIS to discuss mitigation in sufficient detail to disclose that environmental consequences have been fairly evaluated (*Robertson vs. Methow Valley*, 490 U.S. 332 (1989)). In addition, under 49 USC Section 47106 (c)(1)(B), FAA may not approve a Federal funding for major airport development projects, unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension. The EIS should discuss and adopt mitigation measures to address environmental justice issues in accordance with NEPA and 49 USC Section 47106(c)(1)(B).

If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 11. FARMLANDS

1. INTRODUCTION AND DEFINITIONS.

a. General. Important farmlands include all pasturelands, croplands, and forests (even if zoned for development) considered to be prime, unique, or statewide or locally important lands as defined below:

(1) Prime farmland. This is land having the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimal use of fuel, fertilizer, pesticides, or products.

(2) Unique farmland. This is land used for producing high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture necessary to produce high quality crops or high yields of them economically.

(3) Statewide and locally important farmland. This is land that has been designated as "important" by either a state government (State Secretary of Agriculture or higher office) or by county commissioners or an equivalent elected body. The State Conservationist representing the Natural Resource Conservation Service (NRCS)[1] must agree with the designation.

b. Important farmland designations. NRCS has the final authority for designating important farmlands and keeps lists of important farmlands for each state. Usually, the lands are defined by their soil types, but sometimes, the designations are made independent of soil types. Instead they are mapped according to existing ground cover and use.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

The Farmland Protection Policy Act (FPPA) of 1984 (7 USC Sections 4201-4209) as amended, provides the statutory framework for considering important farmlands in Federal decisions.).

APPLICABLE STATUTE AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Farmland Protection Policy Act (FPPA), 7 USC 4201-4209 as amended by section 1255 of the Food Security Act of 1985, 16 USC 3801-3862	The FPPA regulates actions with the potential to convert existing important farmlands to non-agricultural uses.	NRCS
7 CFR Part 657, Prime and Unique Farmlands	Defines the purpose, general policy, and applicability of FPPA and provides guidelines for identifying important farmlands.	NRCS
7 CFR Part 658, Farmland Protection Policy	Provides guidelines for using FPPA criteria; lists the criteria and identifies how Federal agencies can seek NRCS assistance through	NRCS

[1] NRCS is an agency in the U.S. Department of Agriculture (USDA).

	formal consultation.	

APPLICABLE STATUTE AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Council on Environmental Quality's (CEQ) Memorandum on Analysis of impacts on Prime and Unique Agricultural Lands in Implementing the National Environmental Policy Act (NEPA). See 45 Federal Register 59189	CEQ sought information on existing and proposed regulations or directives the agency would use to preserve or mitigate effects of agency actions on prime and unique farmlands. CEQ also requested information on actions that would likely have significant impacts on these farmlands. Lastly, CEQ requested the names of officials responsible for carrying out an agency's agricultural land policies.	NRCS

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS. Any airport development action funded under the Airport Improvement Program (AIP) or subject to FAA approval that would permanently convert an existing designated important farmland to a non-agricultural use is subject to FPPA coordination. Typical actions, which could involve such coordination include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, airfield lighting, navigational aids, NAVAIDS, etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots, and any other actions that would result in important farmland conversion. FPPA does not apply to land already committed to "urban development or water storage" (i.e., airport developed areas), regardless of its importance as defined by NRCS. Therefore, when evaluating potential impacts on farmlands, evaluate only those areas designated as important and that are in active agricultural use or not yet developed.

4. PERMITS, CERTIFICATIONS, AND APPROVALS. Evidence of proper compliance under FPPA requires receiving a completed Farmland Conversion Impact Rating Form (AD-1006) or a completed Land Evaluation Site Assessment (LESA), if applicable. Either document must provide the numerical score of the proposed action as determined by an appropriate representative of the NRCS or state government. Sections 6 and 7 of this chapter provide more information on this form and its score.

5. ENVIRONMENTAL COMPLIANCE PROCEURES - ENVIRONMENTAL ANALYSIS. Airport development projects that would convert important farmland must be coordinated with the local NRCS field office. Consultation procedures involve the sponsors' preparation of appropriate portions of a USDA Farmland Conversion Impact Rating Form AD-1006 and submission to the NRCS field office for completion. Form AD-1006 contains a scoring system to determine the significance of potential project impacts. Scoring information should be supplied for each project alternative, if the alternative would involve important farmland.

6. DETERMINING IMPACTS.

a. Completing Form AD 1006. The sponsor, acting on FAA's behalf, should complete the section of Form AD 1006 labeled, "To be completed by the Federal Agency." Besides completing Parts I and III, include a location map. The map should show the proposed action and/or any reasonable alternative involving important farmland. Include information about the proposed action in Part III under "Site A." As necessary, place information about reasonable alternatives under "Site B," "Site C," etc. The sponsor should send the Form to the appropriate NRCS office.

b. NRCS Input. After receiving the sponsor's input to Form AD 1006, NRCS will provide "relative value" scores for sites under consideration. Scores range from 0 to 100 and represent the site's value for agricultural production. NRCS will complete Parts IV and V of the form. NRCS must respond to the sponsor within 10 days of receiving the Form, unless NRCS decides to visit the site. In that instance, NRCS will respond in 30 working days If NRCS determines the FPPA does not apply to the site, further analysis of project impacts on farmland is unnecessary. If NRCS fails to respond within the designated review periods, or if further delay would interfere with construction activities, the sponsor should inform FAA of that fact and continue as though the site were not farmland.

c. Further Sponsor input. On receiving NRCS's input, the sponsor will perform more analysis. Using the site assessment criteria in 7 CFR Section 658.5(b), the sponsor, on FAA's behalf, will calculate the "site assessment" score to determine each site's fitness for protection as farmland.

Note: Many states and local governments have developed LESA systems to evaluate land productivity and suitability for conversion to non-agricultural uses. As a result, these governments may have evaluated a site's agricultural fitness by using criteria similar to those in 7 CFR Section 658.5(b). Contact the appropriate state agricultural agency to determine if the LESA may be substituted for the score that would be derived via the "site assessment" criteria in Form AD 1006. When NRCS points out a local LESA is available, the sponsor must evaluate the site using local criteria to complete Part VI of Form AD 1006 instead of Federal criteria in 7 CFR Section 658.5(b).

d. Environmental document information. If the action requires completion of Form AD 1006, include a copy of the completed Form in an appendix to the environmental document.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. The responsible FAA official should consider the following information in consultation with NRCS or the state agency having jurisdiction over important farmland potentially affected. Total the NRCS's "relative value" score (i.e., 0 - 100) and the sponsor's "site assessment" score (i.e., 0-160). Use this sum (Form AD 1006, Part VI) to determine the severity of the expected farmland impacts. Impact severity increases as the total, combined score approaches 260 points. Total, combined scores below 160 do not require further analysis. Total, combined scores between 161 and 200 may have the potential to adversely affect important farmlands. They require considering alternatives or measures, such as reducing the acreage of important farmland converted, or finding land having lower relative value, to avoid converting the farmland.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
When the total combined score on Form AD 1006 ranges between 200 and 260, a significant impact would likely occur. Try to find practical factors, methods, or alternatives to lower the score. Total scores continuing to range between 200 and 260 are significant impacts.	None.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, agencies having jurisdiction or special use expertise about important farmland normally provide letters addressing this resource. Often, those letters include recommended measures to mitigate project effects. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA or the sponsor did not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. FAA must prepare an EIS if mitigation will not reduce impacts below the significance threshold noted in section 7 of this chapter. When the responsible FAA official determines that a significant impact is likely, FAA must prepare an EIS addressing project-induced farmland conversion impacts. The EIS must contain the following information as well as a copy of Form AD 1006 and the information discussed in preceding sections of this chapter.

(1) Impacts. An assessment of the action's impacts on the area's agricultural production;

(2) Compatibility. An analysis of the action's compatibility with state, local, and private farmland protection programs and policies;

(3) Disruption. A description of any disruption of the farming community that directly results when the proposed action changes farmland to non-agricultural use;

(4) Support services. An evaluation of how the farmland conversion will affect the viability of farm support activities.

b. Mitigation. The EIS should describe proposed mitigation when land use agencies provide that information. FAA should fully consider the mitigation and balance its benefits against those of the proposed action. Provide an estimated schedule for undertaking accepted mitigation. Explain why the sponsor or FAA did not adopt any mitigation measures agencies recommend. Those measures may include reducing the area of land removed from production, keeping as much land as possible for agricultural use by incorporating it into airport compatible land use plans, or similar efforts.

CHAPTER 12. FLOODPLAINS

1. INTRODUCTION AND DEFINITIONS.

a. Actions in floodplains. To meet Executive Order 11988, *Floodplains*, and the U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, all airport development actions must avoid the floodplain, if a practicable alternative exists. If no practicable alternative exists, actions in a floodplain must be designed to minimize adverse impact to the floodplain's natural and beneficial values. The design must also minimize the potential risks for flood-related property loss and impacts on human safety, health, and welfare.

b. Floodplains or base floodplains. The Executive Order applies to "floodplains", while DOT's Order applies to "base floodplains." Review of the definitions for these terms suggests they are essentially the same. That is, floodplains or base floodplains are the lowlands and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, at a minimum, that are prone to the 100-year flood. To determine if an action encroaches on the base floodplain, use the applicable FEMA-developed Flood Insurance Rate Map (FIRM) or draft FIRM as the primary information source. FEMA publication No. 258, *How to Use a Flood Map to Determine Flood Risk for a Property*, provides information on interpreting FIRMs. If a FIRM is not available, use a Flood Hazard Boundary Map (FHBM) or contact the U.S. Army Corps of Engineers (Corps), the Tennessee Valley Authority (TVA), the National Resources Conservation Service (NRCS), the U.S. Geological Survey (USGS), or State or local floodplain management agencies for help in determining floodplain involvement.

c. The 100-year flood. This is a flood having a 1 percent chance of occurring in any given year. Zones A and V of a Flood Insurance Rate Map (FIRM) encompass the area comprising the 100-year floodplain.

d. Encroachment. This is an action within the limits of the base floodplain.

e. Significant encroachment. Based on DOT policy, a significant encroachment would occur when the encroachment would result in one or more of the following impacts:

(1) a high likelihood of loss of human life;

(2) substantial encroachment-associated costs or damage, including adversely affecting safe airport operations or interrupting aircraft services (e.g., interrupting runway or taxiway use, placing another facility such as a NAVAID out of service, placing utilities out of service, etc.); or

(3) a notable adverse impact on the floodplain's natural and beneficial floodplain values.

f. Practicable alternative. This is an alternative that is capable of being built within natural, social, and economic constraints (DOT Order 5650.2, paragraph 4.m.). Selection of this alternative is the Federal agency's responsibility. Note that the practicable alternative outside a floodplain must be selected if it is practicable, but that decision must be made after considering other factors (see 5.f. of this chapter). Note that a practicable alternative may include conducting a proposed action outside the floodplain, using other means to accomplish the same purpose as the action, or doing nothing. If no alternatives exist outside the floodplain, other sites within the floodplain may be more desirable due to lesser impacts. The agency shall explain why the action must be in the floodplain.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Executive Order 11988, *Floodplain Management*, May 24, 1977 (42 Federal Register (FR) 26951)	The objective of this Order is to preserve and restore the natural and beneficial values floodplains provide. The Order directs Federal agencies to take actions to reduce the risk of flood loss, minimize flood impacts on human safety, health, and welfare and restore and preserve floodplain natural and beneficial values. To do this, the Order bans approving activities in a floodplain unless: • no practicable alternative exists; and • measures to minimize unavoidable short-term and long-term impacts are included.	Federal Emergency Management Agency (FEMA) and FAA
DOT Order 5650.2, *Floodplain Management and Protection*	Contains DOT policies and procedures for carrying out Executive Order 11988.	DOT/ FAA
Federal Emergency Management Agency (FEMA) *Protecting Floodplain Resources: A Guidebook for Communities,* 1996	Provides guidance on how communities can avoid and minimize impacts to floodplains.	FEMA
Floodplain Management, Guidelines for Implementing Executive Order 11988, dated February 10, 1978 (43 FR 6030)	Provides guidance adopted by the Water Resources Council to assist agencies in preparing their regulations and procedures for implementing the Executive Order.	FEMA and the Interagency Task Force on Floodplain Management.

Federal Emergency Management Agency (FEMA), *Further Advice on Executive Order 11988 Floodplain Management*[1] [Note: Much of the information in this chapter is from this document. We include it as an aid in understanding the requirements of Executive Order 11988]	Provides guidance to Federal agencies by discussing specific and commonly occurring issues related to Executive Order 11988. It provides broad guidance in interpreting and using the Order.	FEMA and the Interagency Task Force on Floodplain Management.
State and local construction statutes	Provides area-specific regulations governing floodplain protection.	State and local agencies

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS. FEMA notes the more fiscal control an agency has over the disbursement of grants and loans the greater its responsibilities and involvement are in meeting the requirements of the Executive Order. In fact, strictest protection measures are often warranted for actions located directly in floodplains.[2] As a result, the environmental analysis of a proposed airport development action must include discussions of potential floodplain impacts if they would occur in the base floodplain. Typical airport actions which could result in floodplain impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities and rental car lots; and significant amounts of construction/demolition activity.

a. Applicability. Among other things, improperly designed or constructed facilities in floodplains can increase upstream flood elevations, increase downstream peak flood flow volumes, or increase flood flow velocities. All of these increases have the potential to adversely affect people, their properties, and the environment. Therefore, FAA must meet the requirements of Executive Order 11988 and DOT Order 5650.2 when an action it approves or funds would occur within or affect the base floodplain. FAA must also comply

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[1] http://www.gsa.gov/gsa/cm_attachments/GSA_BASIC/FEDERAL_EMERGENCY_MANAGEMENT_AGENCY_R2F-a8-k_0Z5RDZ-i34K-pR.pdf

[2] Further Advice on Executive Order 11988 Floodplain Management, pg. 26

with these Orders when it approves a lease to a non-Federal entity for a facility either located in the floodplain or one that directly or indirectly affects that floodplain. Environmental documents prepared for those actions must contain the information this chapter requires.

Compliance with this chapter is not required if:

(1) The action and its reasonable alternatives would not occur in the base floodplain, or if applicable, its buffer areas;

(2) The action and its reasonable alternatives would not directly or indirectly support floodplain development; or

(3) The only part of the transportation action or a reasonable alternative involves relocating people to existing housing located in the base floodplain. Before moving people in these cases, FAA must inform the relocated people that the replacement housing is in the base floodplain and offer them alternative, comparable housing outside the base floodplain to anyone seeking it.

Based on one or more of these factors, the environmental document should contain a Statement that the action and its reasonable alternatives will not be in the base floodplain. As a result, no further floodplain analysis is needed (per FAA Order 1050.1E, Appx. A, paragraph 9.2b).

b. Land leases to a non-Federal entity. Paragraph 12.d of DOT Order 5650.2 requires FAA to meet certain terms when it leases or disposes of land located in a base floodplain to a non-Federal entity. As appropriate, the responsible FAA official should:

(1) ensure the conveyance document identifies the uses that Federal, State, or local floodplain regulations restrict;

(2) attach other restrictions to the conveyance document addressing the non-Federal party's and any successors' proposed property uses to ensure those uses are consistent with the DOT Order, except as prohibited by law; and

(3) withhold the transfer of the property.

c. Applying Executive Order 11988 to major improvements or existing structures located in the base floodplain. Sometimes, an airport sponsor may wish to undertake major airport improvements or repair airport structures or facilities located in the floodplain that have sustained damage due to flood, fire, or other hazards. To meet applicable requirements of the Executive Order, the airport sponsor and responsible FAA official should coordinate early in project planning. In meeting the responsibility to apply the Order's requirements to existing structures, the approving FAA official should consider the following factors when deciding if it is prudent to undertake the proposed improvements or repairs:

(1) would the proposed action increase the useful life of the damaged facility?

(2) would the proposed action maintain the investment at risk or increase the exposure of lives to flood hazard? and

(3) would the proposed action remove an opportunity to restore the natural and beneficial floodplain values?

4. PERMITS, CERTIFICATIONS, AND APPROVALS. Actions within a base floodplain (see 1.d. of this chapter) may require authorizations from the Corps, FEMA, and State or local agencies. Consultation with these agencies may be needed. These agencies are especially helpful in providing maps or other information delineating a floodplain of concern.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. General. As noted above, early consultation among FAA, the airport sponsor, FEMA and State and local governmental floodplain management agencies is important. It is often the most effective and efficient way to address floodplain issues or conflicts and develop ways to resolve them. The environmental document must identify the agencies responsible for floodplain protection, any Statements they make regarding an action's compliance with those regulations, and solutions developed to address floodplain issues.

b. Map sources. FIRMs, FHBMs, and Flood Insurance Studies are available from FEMA's Map Service Center. If FIRMs or FHBMs are not available, contact one of the other agencies identified in section 5.a. for flood hazard data.

c. When a sponsor selects a practicable alternative outside the floodplain after finding an encroachment would occur. Occasionally, an airport sponsor selects a location outside the floodplain after realizing the original location would encroach on the base floodplain. Here, the responsible FAA official must be sure the environmental document States the sponsor is no longer considering the original location because it encroached on the floodplain. In addition, the document should address the following information, as appropriate:

(1) the action would not adversely affect a floodplain's natural and beneficial values, property, or human life; and

(2) the action would not indirectly support floodplain development.

d. Factors to consider when evaluating practicable alternatives that avoid the floodplain. The responsible FAA official must ensure the practicable alternatives outside the base floodplain, including the No-Action Alternative, are evaluated. The policy in the DOT Order is to avoid, where practicable, encroachments by FAA actions. In considering site practicability, the responsible FAA official should address the following factors identified in

Section 3.A[3] of *Floodplain Management, Guidelines for Implementing Executive Order 11988*:

(1) compatibility for airport purposes (topography, wildlife habitat, aviation hazards, etc.);

(2) social considerations, including aesthetics, historical or cultural importance, and land use patterns;

(3) economic aspects, including the costs for buying the alternative site, the cost to complete the action there, and any associated relocation necessary for the action to proceed; and

(4) legal requirements (e.g., deeds, leases, and other legal documents).

e. Factors to consider when there is no practicable alternative outside the floodplain. When, after re-evaluating all impacts, factors, and public comments, the official determines that alternatives outside the base floodplain are not practicable, the environmental document must contain a discussion about the alternatives the official considered in reaching that determination. The discussion should State that FAA analyzed other alternatives and explain why locating the action in the floodplain is the only practicable alternative. The explanation should include how FAA balanced the environmental, social, economic and engineering factors when selecting the practicable alternative. When making this evaluation, the official may wish to use following information and include a discussion in the environmental document's floodplain section:

(1) important factors FAA considered when selecting the proposed action as the practicable alternative;

(2) reasons FAA intends to fund or approve an action in the base floodplain or in an area that would affect the floodplain;

(3) each alternative considered and important factors that may make the alternative impractical;

(4) how the proposed action would affect the floodplain's natural values and proposed measures to minimize potential floodplain harm; and

(5) if National Flood Insurance Program (NFIP) criteria (44 CFR Part 60.3.) are applicable to the action.

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[3] 43 FR at 6044.

f. Early public review of a finding of encroachment. Section 2(a)(4) of Executive Order 11988 and paragraph 7 of DOT Order 5650.2 require agencies to provide the public an opportunity for early public review of *any* plan or proposal that would encroach on the base floodplain. This ensures the public has an early opportunity to review a proposal in the base floodplain, even if the proposal does not require an environmental impact statement (EIS). The following sections summarize how to provide information to the public.

(1) an action encroaching on the base floodplain. FAA or the sponsor should tell the public the proposed action includes an encroachment by identifying the encroachment in a public hearing presentation (see section 1.d. of this chapter);

(2) an action significantly encroaching on the base floodplain. If a proposed action or a reasonable alternative includes a significant floodplain encroachment (see section 1.e. of this chapter), any public notices, notices of opportunity for a public hearing, public hearing notices, or notices of environmental document availability shall tell the public the proposed alternative includes a significant floodplain encroachment.

(3) Notice content. FEMA suggests that any notice contain the following information:[4]

(a) the proposed action's purpose;

(b) a description of the proposed action;

(c) a Statement that the airport sponsor is seeking FAA funding or approval of an action occurring in the base floodplain or an action that would affect that floodplain;

(d) the location of the proposed action (a map or another descriptor adequately defining the location is helpful);

(e) if hazards to aircraft safety exist, describe the type and extent of the hazard the action would involve;

(f) describe the affected floodplain's existing natural and beneficial values; and

(g) provide the name and telephone number of the responsible FAA official from whom the public may obtain information about the encroachment or to whom the public may send comments.

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[4] *Further Advice on Executive Order 11988 Floodplain Management*, pg. 9

g. Public notice of an agency's intent to authorize an action in the base floodplain. Paragraph 7(b) of the DOT Order requires that public notices identify significant encroachments. FEMA suggests that any final notice of an agency's intent to authorize an action in a floodplain (which could be the EIS, FONSI or ROD) include the following information[5]:

(1) a statement of the action;

(2) a statement about why the agency decided to fund or approve the action in the floodplain or in an area affecting the floodplain;

(3) a description of the important facts considered in arriving at the decision and the alternatives considered;

(4) a statement about how the action would affect or be affected due to its location in the floodplain;

(5) a list of measures that will be taken to minimize harm to the floodplain; and

(6) a statement that the action would be taken in compliance with State and local flood protection standards; and

(7) a map showing where the action would be located and where the map is available for review.

h. Floodplain finding. The FAA shall not select or approve a preferred alternative involving a significant encroachment, unless the responsible FAA official can make a written finding that the proposed significant encroachment is the only practicable alternative. The official should use his or her discretion when determining the practicability of an action that would significantly encroach on the base floodplain. This requires a careful balancing and application of environmental, social, economic, and engineering considerations. However, the official should give special weight to floodplain management concerns. The environmental document must include the following information or present it as an attachment:

(1) A description of why the proposed action must be located in the floodplain, including a discussion of reasonable alternatives and why they were not practicable; and

(2) A Statement indicating that the action conforms to applicable State and/or local floodplain standards.

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[5] *Further Advice on Executive Order 11988 Floodplain Management*, pg. 10

FAA must provide the above finding, within or together with a final EIS prepared for the proposed action, to State and area wide clearinghouses and other interested parties.

i. Using NEPA documents to meet public notice requirements for an action encroaching on a floodplain. FAA may use the NEPA process to meet the public notification requirements for an action encroaching on a floodplain.

(1) An actions involving a Finding of No Significant Impact (FONSI). The Notice of the FONSI's Availability (see Order 5050.4B, paragraph 807) as well as notification meeting the requirements described in sections 5.f.(1) & (2) of this chapter will meet the DOT Order's public notice requirements. The Notice should appear in a local newspaper of general circulation.

(a) A FONSI for an action involving an encroachment. The Notice should note the action involves an encroachment.

(b) A FONSI for an action involving a significant encroachment. The Notice should state the action involves an encroachment and contain the information noted in 5.f.(3)(a)-(g) of this chapter.

(2) An action requiring an Environmental Impact Statement. An EIS as well as notification meeting the requirements described in sections 5.f(1) & (2) of this chapter will meet the public notice requirements. For significant encroachments, the EIS should contain the information noted in sections 5.f.(3)(a)-(g) of this chapter.

6. DETERMINING IMPACTS.

a. General. When an airport action would occur in a base floodplain because there is no practicable alternative, the environmental document prepared for that action must address practicable alternatives considered, the action's direct and indirect floodplain impacts, and the action's potential to cumulatively affect the floodplain. The document must also name the State and/or local agencies having jurisdiction over the affected floodplain, summarize applicable local floodplain requirements, and briefly explain how the action would meet those requirements. The following sections consolidate information from DOT Order 5650.2 and provide information on how to assess floodplain effects. The environmental document must contain the appropriate information.

(1) Determining if a significant encroachment would occur. After determining the action must occur in the floodplain because there is no practicable alternative, determine the intensity of the encroachment and its impacts on the floodplain's natural and beneficial values. See section 1.e. of this chapter for more information about significant encroachments.

(2) Assessing impacts on human life and transportation facilities. Part of the significant encroachment definition in DOT Order 5650.2 includes impacts on human life and substantial encroachment-related costs or damage. This includes interruption of service on or loss of a vital transportation facility (e.g., runway, taxiway, NAVAID damage, etc.). Although these factors are parts of the definition, their involvement alone does not trigger a significant impact for NEPA purposes. Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.14 State that "…economic or social effects, are not intended by themselves [emphasis added] to require preparation of an environmental impact Statement." As a result, FAA need not prepare an EIS for any action significantly encroaching on a floodplain but that does not have significant *environmental* effects. When a significant encroachment involves only a high likelihood of loss of human life or substantial encroachment-related costs or damage (see section 1.e.(2) of this chapter for examples), the responsible FAA official should ensure the environmental evaluation includes specific information addressing the proposed action's floodplain aspects. The document should include information showing that the approving FAA official has thoroughly considered the effects on human life and substantial encroachment-related costs and damage that would occur due to the action's floodplain location. The document should answer the following questions:

(a) Would flooding affect airport access roads thereby preventing passenger, visitor, or airport personnel from entering or exiting the airport?

(b) Would flooding affect aviation safety and the airport's use? To make this determination, address the loss or temporary shutdown of an airport facility (e.g., lighting, hangars, runways, taxiways, etc.). This discussion might address flood effects on the airport's ability to serve regional or national aviation demands, and the economic well-being of aviation-related businesses. For example, flood-induced closing of or damage to a runway at a major hub could disrupt regional passenger or cargo movements and adversely affect the area's economy.

(c) Would flooding cause flood-induced spills of hazardous material stored at the airport and their effects on human populations?

(3) Impacts to a floodplain's natural and beneficial values. Floodplains often support important ecological values benefiting the human and natural environment. Examples include a floodplain's capacity to: carry and store floodwaters; sustain agriculture, aquaculture, or aquatic or terrestrial organisms; provide for groundwater recharge; provide recreation opportunities; or maintain water quality. Note that secondary action-induced impacts on floodplains could also substantially reduce the floodplain's capacity to sustain these values.

(4) Factors to consider when assessing action impacts on a floodplain's natural and beneficial values. The responsible FAA official should use the following information in conjunction with other information in the environmental document addressing specific

resources when determining the intensity of impacts. Review section 7.a. of this chapter to decide the intensity of impacts.

(a) Agricultural activities. Floodplains are often valued due to their level topography and their fertile substrates. Would the proposed action or a reasonable alternative erode or contaminate floodplain substrate, thereby reducing the floodplain's agricultural value?

(b) Aquacultural activities. Due to their need for constant water supplies and specific water quality requirements, aquacultural activities often occur in or near floodplains. Would the proposed action or a reasonable alternative disrupt any of these activities?

(c) Aquatic or terrestrial organisms. Numerous aquatic and terrestrial species occupy floodplains due to their food, cover, and water. Would the proposed action or a reasonable alternative disrupt the floodplain's ability to provide needed food, cover, or water requirements needed to sustain the organisms?

(d) Flood control. Due to their expanse and obstructions, floodplains often slow flows or retain water, thereby lessening the probability of upstream or downstream flooding. Would the proposed action or a reasonable alternative cause flow alterations that result in unacceptable upstream or downstream flooding?

(e) Groundwater recharge. Waters flowing through floodplains often flow more slowly allowing water to seep through surface cracks and recharge aquifers. Would the proposed action or a reasonable alternative adversely affect aquifer recharge capabilities?

(f) Water quality. The natural flow of water over rough surfaces, through vegetation, and the natural biological and chemical processes found in floodplains reduce pollutant loads helping to maintain water quality. Would the proposed action or a reasonable alternative disrupt the floodplain's capacity to maintain desired water quality standards?

(5) Airport actions outside the base floodplain. Airport actions outside the base floodplain may adversely affect the floodplain's natural and beneficial values. As a result, FAA needs to assess those impacts as well. For example, action-related water quality impacts due to increased runoff from impermeable surfaces or changes in hydrologic patterns outside the floodplain may still affect aquatic or terrestrial populations using the floodplain. Review other chapters in the NEPA document to determine if an airport action outside a base floodplain would affect the floodplain's resources.

b. Floodplain protection standards. The environmental document should identify any State or local floodplain regulations and standards that must be met. This step is needed to provide information regarding whether the proposed action would conform to

applicable State or local floodplain regulations and standards. Identify the State and local agencies having jurisdiction. This is done normally via letters from FEMA, the Corps, or State or local agencies having jurisdiction for floodplain issues.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. After completing the analysis discussed in this chapter, use the findings to determine the degree of action-related, floodplain impacts. The responsible FAA official should consider the following factors in consultation with agencies having jurisdiction or special expertise about land use in the affected area.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
When notable adverse impacts on natural and beneficial floodplain values would occur.	For **NEPA** purposes, a significant impact would occur **only** when an action would cause notable adverse effects on the affected floodplain's natural and beneficial values (see last bullet below and section 6.a.(4) of this chapter). For transportation purposes, the responsible FAA official must decide if a significant encroachment would occur to comply with DOT Order 5650.2, paragraphs 7.b and 9. To do so, the official must decide if the action would cause: • a considerable probability of the loss of human life; • future, extensive damage or costs, including damage that would interrupt airport service or use of the proposed runway or other proposed airport facility; or • a notable, adverse effect on the affected floodplain's natural and beneficial values. Note: When a significant impact would not occur under NEPA, the responsible FAA official must ensure the environmental document discloses action-induced effects on human life, NAVAIDS, and transportation facilities. The official should ensure the document clearly states that those effects do not trigger a significant impact under NEPA.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. If no practicable alternative outside the base floodplain exists, Executive Order 11988 and DOT Order 5650.2 require FAA to minimize action-induced impacts on the base floodplain and, where practicable, to restore and preserve natural and beneficial floodplain values that are adversely affected by the action. A FONSI or EIS prepared for an action that would encroach on the base floodplain should contain measures that would minimize the action's impacts on floodplains. During the environmental review process, agencies having floodplain jurisdiction or expertise normally provide letters addressing floodplain effects. Often, those letters include recommended measures to mitigate those effects. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in the appendix for further information. If the FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly provide reasons why the mitigation was not adopted. In most cases, conceptual design as opposed to detailed engineering will be sufficient to help establish the adequacy of mitigation measures.

(1) Mitigation, in general. Mitigation measures may include:

(a) construction controls to minimize erosion and sedimentation;

(b) designing the facility to allow adequate flow circulation and preserve free, natural drainage;

(c) using pervious surfaces where practicable;

(d) controlling runoff;

(e) controlling waste and spoils disposal to prevent contaminating ground and surface water (e.g., control the use of pesticides, herbicides; maintain vegetative buffers to reduce sedimentation and delivery of chemical pollutants to the water body);

(f) employing land use controls (Executive Order 11988 directs Federal agencies to take floodplain management into account in evaluating land use plans and to require land and water resource use appropriate to the degree of hazard involved.).

Note: Any selected mitigation should not pose a wildlife hazard, see FAA Advisory Circular 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports*.

(2) Mitigation for human safety and substantial encroachment-related damages and costs. Mitigation measures should be developed to minimize impacts on human safety and minimize future damages or costs, including damages or costs to equipment, facilities, or structures. For example, if a proposed runway's elevation is below or at the 100-year flood elevation, consider raising the runway's elevation above the 100-year flood elevation to allow runway use during flooding.

(a) When building in the base floodplain, National Flood Insurance Program rules and regulations must be followed. This protects structures or facilities from flooding. It also minimizes changes in flood elevations that could harm the existing floodplain or upstream development. Measures such as building structures on piers are discussed in 44 CFR Section 60.3.

(b) When building in the base floodplain or repairing a facility already there, try to minimize flood damage to the proposed or existing facility. Include measures to protect the facilities or utilities from flood damage or to lessen potential flood damage. Design sufficient drainage to prevent flooding upstream or downstream structures and facilities.

(3) Mitigation for impacts to natural and beneficial floodplain values. Developing mitigation for such impacts requires understanding natural floodplain values and systems. Consulting with expertise agencies may be helpful. Here are a few examples of natural floodplain values and related mitigation.

(a) Agriculture. Reduce soil erosion in cultivated floodplains. Control herbicide, pesticide, or petroleum runoff from the airport.

(b) Aquaculture. Avoid planting non-native species that could compete with existing natural floodplain vegetation or attract wildlife hazardous to aviation. See FAA Advisory Circular 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports*.

(c) Aquatic or terrestrial organisms. To reduce effects on organisms using the floodplain, minimize disturbing floodplain vegetation or design floodgates to allow natural tide changes or natural stream flows.

(d) Flood control. Reduce fill volumes in floodplains. Design structures to preserve existing flows and water surface elevations. Minimize soil compaction. Restore natural contour elevations provided they do not raise existing water surface elevations.

(e) Groundwater recharge. Use porous surface material where possible. Remove loose soil and waste material to avoid contaminating ground or surface waters that may feed recharge areas.

(f) **Water quality.** Preserve floodplain or wetland buffers. Reduce fertilizer or pesticide runoff. Control discharges from pipes or sheet flow. Use erosion control measures, including construction control measures to minimize erosion.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. FAA must prepare an EIS if mitigation will not reduce impacts below the significance threshold noted in section 7 of this chapter. FAA's EIS must analyze any action-induced significant impacts on a floodplain's natural and beneficial values. When FAA prepares an EIS to address significant floodplain impacts, the responsible FAA official should consider inviting Federal, State, or local agencies having floodplain expertise or jurisdiction to be a cooperating agency. As needed, the EIS should contain the information in items 8.b–d as well as that already discussed in this chapter.

b. Other impact areas. Normally, when a significant floodplain impact would occur, impacts to the floodplain's natural and beneficial values and induced development are involved. To avoid repeating information presented in other EIS chapters, the floodplain chapter should summarize those impacts and refer the reader to the specific pages of the EIS addressing the affected resources that provide more detail on the impact. Accurate cross-referencing is a must. For example, the floodplain chapter would note how changes to a wetland affects the wetland's flood storage capacity. As a result, water the wetland would normally retain for a given period would move more quickly to the floodplain. The EIS would note that action-induced changes to the wetland's flood storage would cause downstream flooding.

c. Practicability of alternatives. Discuss other considerations about the practicability of alternatives, if any were considered.

d. Mitigation. Include measures to minimize harm to the floodplain and, where practicable, to restore or preserve affected natural and beneficial floodplain values not previously considered. Include sponsor commitments to comply with special flood-related design criteria or protective conditions FAA, resource, or floodplain agencies determine necessary.

e. Floodplain finding. See section 5.h. of this chapter.

CHAPTER 13. HAZARDOUS MATERIALS

1. INTRODUCTION AND DEFINITIONS.

a. General. Federal, State, and local laws regulate hazardous materials use, storage, transport, or disposal. These laws may extend to past and future landowners of properties containing these materials. In addition, disrupting sites containing hazardous materials or contaminates may cause significant impacts to soil, surface water, groundwater, air quality and the organisms using these resources. Therefore, airport sponsors purchasing or developing land for airport purposes may encounter hazardous materials contamination. The environmental document should disclose and analyze information about hazardous materials.

b. Terms and definitions. Generally, the terms "hazardous materials," "hazardous waste," and "hazardous substances" are associated with industrial wastes, petroleum products, dangerous goods or other contaminates. But these terms have very precise and technical meanings that are used for consistency and legal purposes

(1) Hazardous wastes. Regulations developed pursuant to the Resource Conservation and Recovery Act (RCRA) at 40 CFR Part 261, Subpart C, define this term. Hazardous wastes are solid wastes that are ignitable, corrosive, reactive, or toxic (sometimes called “characteristic wastes”). In addition, Subpart D contains a list of specific types of solid wastes that the EPA has deemed hazardous (sometimes called “listed wastes”).

(2) Hazardous substances. Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601(14)) defines this term broadly. It includes hazardous waste, hazardous air pollutants, hazardous substances designated as such pursuant to the Clean Water Act and the Toxic Substances Control Act and elements, compounds, mixtures, solutions, or substances listed in 40 CFR Part 302 that pose substantial harm to human health or environmental resources. It should be noted that, pursuant to CERCLA, hazardous substances do *not* include any petroleum or natural gas substances and materials.

(3) Hazardous materials. According to 49 CFR Part 172, Table 172.101, these are any substances or materials commercially transported that pose unreasonable risk to public health, safety, and property. They include hazardous wastes and hazardous substances as well as petroleum and natural gas substances and materials. As a result, the term "hazardous materials" represents hazardous wastes and substances in this Desk Reference.

c. Environmental Due Diligence Audit (EDDA). An EDDA is a systematic investigation of real property to determine if activities involving hazardous materials have occurred at a site or resulted in environmental contamination. An EDDA is also a form of pre-acquisition protection against CERCLA/RCRA liability and a defense in lawsuits addressing contaminated lands. If the Phase I EDDA indicates that the land is, was, or has the potential for such activities or occurrences, a Phase II EDDA attempts to verify and identify the existence of the materials. If necessary, a Phase III EDDA will delineate the amounts or

limits of hazardous materials or contamination and provide preliminary clean-up plans and cost estimates, if applicable. Personnel specializing in performing EDDAs should conduct the investigations due to the potential liabilities and risks associated with these assessments. FAA Order 1050.19, *Environmental Due Diligence Audits in the Conduct of FAA Real Property Transactions*, provides more information on EDDAs. .

2. APPLICABLE STATUTES AND IMPLEMENTENTING REGULATIONS.

The statutory framework related to hazardous materials in Federal Aviation Administration (FAA) actions, projects, and decisions is mainly contained in the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), and the Community Environmental Response Facilitation Act (CERFA). This table summarizes these laws.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
CERCLA, 42 USC Section 9601, *et. seq.* In particular, see Sections 101, 102, 103, 105, 107, 120.	Defines hazardous substances. Requires notifying the public about hazardous substance releases exceeding reportable quantities. Establishes criteria for recovery, clean-up, and response plans. Defines individual and joint liabilities of potentially responsible parties. Limits liability under the "innocent landowner" and "due diligence" provisions if a landowner: • has not contributed to the contamination of a property; • uses the property in accordance with good commercial or customary practices; and • has conducted all appropriate inquiry into the previous ownership. Requires Federal agencies to comply with CERCLA at facilities they own.	U.S. Environmental Protection Agency (EPA)
CERFA [P.L. 102-426](amended portions of CERCLA)	As conditions of a sale, release, or transfer of Federal lands or facilities used to store hazardous materials or where a release or disposal of hazardous materials has occurred, Federal agencies must: • identify those lands or facilities; and • complete waste or contaminate clean-up of these lands or facilities.	FAA
Oil Pollution Act of 1990, 33 USC, Section 2701 *et seq.*	Provides for recoupment of removal costs and damages for discharges of oil and other petroleum products.	EPA
RCRA, 42 USC Section 6901 *et seq*., [P.L. 94-580] Sections 3001, 3010	Defines hazardous wastes. Establishes procedures hazardous materials manufacturers must follow regarding hazardous material production, use, and disposal. These are called the "cradle to grave" provisions.	EPA
Toxic Substances Control Act (TSCA) [15 USC, Sections 2601-2692]	The Act regulates the introduction of new chemicals or those that already exist. Subchapters 2 through 4 address asbestos, indoor radon, and lead exposure. 15 USC Section 2605 addresses polychlorinated biphenyls (PCBs)	EPA

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
40 CFR Part 761	This CFR section addresses the use and disposal of PCB products and items containing that chemical.	EPA

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. General. Federal actions funded under the Airport Improvement Program (AIP) or any airport project subject to FAA approval has the potential to involve or affect hazardous materials. Typical actions which could incur impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots; and significant changes in aircraft operations or construction activity.

b. RCRA and CERCLA. The passage of RCRA and CERCLA generally focused attention on the use, storage, and disposal of hazardous materials and the environmental threats caused by mishandling these materials. At times, hazardous materials may be used or stored on an airport. As a result, an airport may be included in the universe of facilities to which RCRA and CERCLA apply. However, for environmental analysis purposes, the primary objectives are to identify and evaluate sites, facilities, or properties where hazardous materials (including environmental contamination) could hinder or affect an airport project. Doing so allows FAA to disclose compliance with RCRA, CERCLA, and other related laws and regulations.

c. Airport sponsor responsibilities. An airport sponsor should, to the extent possible, avoid hazardous waste sites and environmentally contaminated property. If avoidance isn't possible, the sponsor should minimize the use of contaminated property as much as possible. Doing so avoids or lessens the potentially excessive clean-up costs and legal liabilities. To help protect the sponsor from the costs or the liability associated with hazardous materials or contamination, the sponsor should hire a competent specialist to complete an EDDA *before* acquiring any land for airport purposes. FAA Advisory Circular (AC) 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*, and FAA Order 1050.19, *Environmental Due Diligence Audits in the Conduct of FAA Real Property Transactions,* provide FAA guidance on this.

d. FAA responsibilities. Before authorizing any airport development action involving land disturbance or land ownership changes, FAA should ensure the airport sponsor has completed the appropriate level EDDA or other similar investigation. This helps to verify if the action would involve a hazardous waste site or contaminated property. Operators at FAA facilities must also comply with all applicable regulations pertaining to the use, storage and disposal of hazardous materials as outlined in FAA Order 1050.10B, *Prevention, Control and Abatement of Environmental Pollution at FAA Facilities*; 1050.14A, *Polychlorinated Biphenyls (PCB) in the National Airspace System*; Order 1050.15A, *Underground Storage Tanks at FAA Facilities*; Order 1050.18, *Chlorofluorocarbons and Halon Use at FAA Facilities*; and AC 150/5320-15, *Management of Airport Industrial Wastes*.

4. PERMITS, CERTIFICATIONS, AND APPROVALS. The environmental document prepared for an airport project should disclose required CERCLA or RCRA permits, certifications, or regulatory approvals as appropriate. This information helps to inform the decision maker and public about possible construction concerns, the extent of analyses needed, or the types of necessary mitigation. Examples of that information include all or some of the following items:

a. Requirements. A description of the applicable requirements and a summary of the regulatory processes applicable to the project.

b. Conflicts. Issues that may cause potential conflicts or that may delay the regulatory processes noted in section 4.a. of this chapter.

c. Timeframes for obtaining approvals needed to develop sites containing hazardous materials or contamination. These times should include authorizations, prerequisites, and permits for disturbing, transporting, or processing hazardous materials and other regulated substances.

d. Commitment. A statement from the sponsor verifying that it commits to addressing hazardous material issues in accordance with applicable Federal and state requirements.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES – ENVIRONMENTAL ANALYSIS.

a. Required consultation. A number of Federal and state agencies is involved in regulating hazardous materials and contamination. Early consultation with these agencies during the NEPA process aids in collecting necessary data and promotes compliance with applicable laws.

(1) EPA. Regional EPA offices have information on hazardous substances. EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) is a computer database. It identifies sites on the National Priority List (NPL) and other areas used to, store, transport, or dispose hazardous materials. Other EPA-managed databases include the Resource Conservation and Recovery Information System (RCRIS) and the Emergency Response Notification System (ERNS).

(2) United States Coast Guard (USCG). The USCG operates the National Response Center (NRC) to help in or conduct hazardous spill clean-ups throughout the United States. In being the nation's single reporting point for all spills, the NRC maintains a comprehensive list of those mishaps.

(3) United States Geological Survey (USGS). The USGS has aerial photographs that may be helpful in determining past land uses that occurred at a particular site.

(4) United States Department of Agriculture (USDA). The USDA has extensively mapped and gathered data on the nation’s regional geological features and soil types. This information is useful in determining soil types, soil characteristics, or past land uses.

(5) State agencies. RCRA encourages individual states to manage hazardous wastes within their borders. To promote this, EPA has delegated hazardous waste-related management responsibilities to EPA-certified state and local governments. FAA urges airport sponsors and operators planning land purchases or transfers to contact the appropriate state agency early in the planning process to determine the extent of state requirements that must be met regarding hazardous materials and/or environmental contamination.

(6) Local government agencies. Information at the local level is valuable when tracing past uses of real property. Local soil conservation offices may provide historical photographs and information on soil types at a desired site. Local fire departments or fire districts often have data on hazardous materials that have been used at a specific location.

6. DETERMINING IMPACTS.

a. General. The environmental evaluation should include the level of analysis needed to disclose the likely use of hazardous materials or contamination associated with the action. This information is useful in evaluating potential conflicts between the proposed airport action and these laws. In this way, applicable permits, certifications, and approvals are identified, the necessary clean-up and remediation measures are noted, and unresolved problems or issues are disclosed.

Determining an impact can be done by using information contained in available FAA publications, collected by trained and experienced personnel following standard investigatory procedures, or revealed in EDDAs and similar examinations of the project site.

b. FAA publications and materials. FAA has issued useful information to help airport sponsors and others address hazardous materials issues.

(1) To identify and characterize airport projects likely to involve the use of hazardous materials and other regulated substances see:

(a) FAA Order 1050.10B, *Prevention, Control and Abatement of Environmental Pollution at FAA Facilities*; or

(b) FAA Advisory Circular (AC) 150/5320-15, *Management of Airport Industrial Wastes*.

(2) To assess real property for signs of hazardous materials and contamination see:

(a) FAA Order 1050.19, *Environmental Due Diligence Audits in the Conduct of FAA Real Property Transactions*; or

(b) FAA AC 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*.

c. Site investigation. Due to dangers of exposure, liability issues, and other factors, personnel trained and experienced in evaluating hazardous material or contaminated sites

should conduct this investigation. These specialists can determine if hazardous materials or contamination exists or has existed on the proposed site. At a minimum, these evaluations should consist of a review of the following information sources concerning a property's current and previous uses:

(1) a detailed search of Federal, State, and local records addressing the use, storage, disposal, or discharge of hazardous materials, petroleum products, or other regulated substances on the property or any adjacent properties;

(2) aerial photographs, maps, and other current or historic documents that could reveal earlier uses on the subject property or adjacent facilities;

(3) visual, on-site inspections of the property, including any buildings, structures, or equipment and a similar visual inspection of adjacent properties;

(4) interviews of owners, employees, tenants, and other individuals knowledgeable about the current and former uses of the property;

(5) reviews and evaluations of contamination assessments, remedial action plans, sampling and test results of physical or environmental media (i.e., soil, surface water, ground water, building materials), and any other environmental investigations that the owners, operators, or regulatory agencies have conducted.

d. Contents of environmental documents. NEPA documents prepared for an airport action requiring FAA approval and/or AIP funding and that would occupy hazardous sites or use hazardous materials and generate hazardous wastes should include the following information. The amount of emphasis placed on each topic should be commensurate with the proposed action's scope.

(1) If a contaminated site is adjacent to or on the proposed airport site. Identify known, suspected, or potential contaminated sites on or adjacent to the proposed action.

(a) provide the name, location, and owner/operator of the site or facility;

(b) provide the type and extent of contamination at the location(s);

(c) provide the distance and direction of the contaminated site from the proposed action;

(d) provide the regulatory status of the project site including the contamination assessment process and clean-up activities; or

(e) if the planned airport action would occupy a contaminated site, describe the impact and the resolution of the problem or conflict. Indicate how the corrective actions comply with applicable Federal, State, and local regulations.

(2) If a proposed project would involve hazardous materials. Airport sponsors and their contractors are responsible for the appropriate management and use of hazardous

materials and wastes. Environmental documents that involve airport actions that may use these materials should include the following sponsor provisions:

(a) users and those who handle hazardous materials will do so according to applicable regulations; and

(b) the person or entity responsible for handling the hazardous material will take immediate corrective action, including notifying the National Response Center, if there is an accidental release or other incident that can endanger people or environmental resources.

(3) Dealing with potential spills. If the proposed action would involve hazardous materials, briefly describe the methods that would be used to ensure compliance with RCRA, CERCLA, and other applicable Federal and State regulations. If needed, describe the methods that would be employed to control spills and other unauthorized releases of hazardous materials during construction and operational of the proposed action. As necessary, see FAA AC 150/5320-15, *Management of Airport Industrial Wastes* for detailed information on dealing with hazardous wastes and industrial chemicals typically used on airports.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. After completing the investigations, evaluations, and analyses noted earlier, and after considering the use of hazardous materials or contamination associated with the project, use the following guidelines to determine the level and significance of impact.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
The action involves a property on or eligible for the National Priority List (NPL).	Not all property within an NPL site is contaminated. Therefore, there may be areas within the NPL's boundaries that are "clean."
The sponsor would have difficulty meeting applicable local, state, or Federal laws and regulations on hazardous materials.	The project requires extraordinary measures (i.e., connection to new water supplies, relocation of residents, etc.) to mitigate project-related disturbances of contaminates that would endanger the health and/or safety of citizens or their air and/or water supply(ies).
There is an unresolved issue regarding hazardous materials.	The action would affect a site known or suspected to be contaminated. Consequently, the impacts of that contamination may not be fully revealed and necessary corrective actions may be needed.

From: Table 7-1, FAA Order 5050.4B

b. Mitigation. During the environmental review process, agencies having special expertise on hazardous materials in the airport-affected area may provide letters addressing those materials or their effects. Often, those letters include recommended measures to mitigate the effects. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted. If feasible, the environmental document should include an estimated schedule for undertaking accepted mitigation.

(1) The EA or EIS should describe the measures, the benefits and requirements, the responsible parties, the process for implementing and enforcing required measures, and a schedule for carrying out those measures. Those measures may include spill response plans, clean-up and remedial actions, pollution prevention initiatives, and any other activities that are intended or designed to meet the requirements of Federal and state laws.

(2) The environmental document should include a provision that all necessary corrective actions and reporting requirements will be fulfilled if previously unknown contaminants are discovered during construction or a spill occurs during construction.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. Section 7 of this chapter describes the conditions and criteria by which an airport development action involving hazardous materials or environmental contamination may cause a significant impact. When FAA determines that a significant impact is likely, it must prepare an EIS further addressing the potential impacts associated with the proposed action.

b. EIS content. The EIS should contain the following information in addition to the materials developed and presented in other sections of this Chapter:

(1) the results of interagency consultations undertaken to more precisely define any unresolved issues and the necessary steps, analyses, and/or actions required to address them.

(2) the results of additional investigations, clean-up, or remedial actions or other initiatives required to insure that the action is implemented, constructed, and/or operated in compliance with Federal and state regulations.

(3) evidence verifying the airport sponsor has undertaken all necessary actions and precautions needed to obtain regulatory approval of the action; and

(4) evidence that the airport sponsor commits to implement all necessary actions and precautions noted in section 8.b.(3) of this chapter.

c. Mitigation. Any mitigation measures agencies having special expertise on hazardous materials in the airport-affected area should be discussed. FAA or the sponsor

should fully consider the mitigation and balance its benefits against those of the proposed action.

NEPA requires a Federal agency preparing an EIS to discuss mitigation in sufficient detail to disclose that environmental consequences have been fairly evaluated (*Robertson vs. Methow Valley*, 490 U.S. 332 (1989)). In addition, under 49 USC Section 47106(c)(1)(B), FAA may not approve a Federal funding for major airport development projects, unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension. For more information about the mitigation required, see FAA Order 5050.4B, paragraph 1203(b)(4). In accordance with NEPA and 49 USC Section 47106(c)(1)(B), an EIS must discuss and adopt mitigation measures recommended by agencies having special expertise on hazardous materials in the airport-affected area.

If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 14. HISTORIC PROPERTIES

1. INTRODUCTION AND DEFINITIONS.

a. General. This chapter summarizes the requirements of Section 106 of the National Historic Preservation Act (NHPA) for ease of reference. In case of doubt concerning the proper interpretation of Section 106 as implemented by 36 CFR Part 800, the responsible FAA official should contact the Planning and Environmental Division, APP-400, the Airports & Environmental Law Division in the Office of Chief Counsel (AGC-600), or Regional Counsel.[1]

b. Historic property. A historic property is, "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior" (36 CFR Section 800.16(l)). Properties or sites having traditional religious or cultural importance to Native American Tribes and Hawaiian organizations may qualify. To qualify, a property must meet the criteria for eligibility under 36 CFR Section 60.4.

c. Consultation. Section 106 of the NHPA, as implemented through 36 CFR Part 800, is intended to require Federal agencies to consider the effects of their undertakings on historic properties. In doing so, FAA must consult with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) if one exists.[2] The regulations protecting historic and cultural properties also require consultation and information exchanges with interested parties. As a result, the identification of historic resources, analysis of potential effects, and consultation is often a "critical path" element in managing the environmental review project. Starting consultation early in the environmental review process is a best management practice for an airport action that may affect historic properties.

d. Undertaking. This is a project or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency (36 CFR Section 800.16(y)). An undertaking is an activity that:

(1) the agency carries out;

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[1] Notably, the regulations have been amended three times in the past several years (1999, 2001, and 2004), with the current regulations having taken effect on August 5, 2004. The Advisory Council on Historic Preservation (ACHP) amended the regulations due to both changes in the underlying law (1992) and court challenges to the validity of the regulations. For instance, in *National Mining Ass'n v. Slater*, 167 F. Supp. 2d (D.D.C. 2001), the role of the ACHP was challenged. This resulted in a determination that ACHP's role is only advisory. The current regulations reflect the court's decision; however, there may be other new provisions that require legal interpretation. For more information on Section 106 case law, please see the *Federal Historic Preservation Case Law, 1966-2000* at www.achp.gov/pubs-caselaw.html.

[2] A THPO is the tribal officer who assumes the responsibility of the SHPO for purposes of Section 106 compliance on tribal lands per Section 101(d)(2) of the NHPA. The THPO is appointed by the tribe's chief governing authority or is designated by tribal ordinance or preservation program.

(2) is carried out by or on behalf of a Federal agency;

(3) is carried out with Federal assistance; or

(4) requires a Federal permit, license, or approval.

For purposes of the Airports program, an undertaking is an action that constitutes a Federal action for purposes of NEPA as defined in FAA Order 5050.4B, paragraph 9.g. These actions include, but are not limited to, any airport development project funded under the Airport Improvement Program (AIP) or Passenger Facility Charge Program (PFC) or subject to unconditional FAA approval to be depicted on an airport layout plan (ALP).

e. Integrating the Section 106 and NEPA processes. Title 36 CFR Section 800.8 encourages Federal agencies to integrate the Section 106 and NEPA processes. This integration is intended to streamline these "procedurally rich" processes, reduce paperwork, avoid repeating information, and coordinate public input. Section 7 of this chapter provides more information on this.

.2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

a. General. The primary Federal law protecting nationally important historic properties is the National Historic Preservation Act of 1966, as amended (NHPA). NHPA establishes the Advisory Council on Historic Preservation (ACHP) and the NRHP. Sections 106 and 110 are two sections of this law having the greatest bearing on airport actions. The following table outlines these sections and other laws and regulations that apply to historic or archeological resources.

Note: Paragraphs 3.b.(1) and (2) of this chapter provide more information on Sections 106 and 110 of the NHPA. The chapter does not discuss other sections of the NHRP because airport actions do not normally involve those sections.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Section 106 of the NHPA	Requires Federal agencies having direct or indirect jurisdiction over proposed undertakings to consider the undertakings' effects on properties listed in or eligible for listing in the NRHP. The agencies must consult with the SHPO or THPO when deciding if an undertaking has the potential to affect NRHP resources. If an undertaking has the potential to do so, further consultation is needed to determine if the effects would be adverse. When a Federal agency determines an undertaking has the potential to adversely affect NRHP resources, the agency must notify the ACHP of that finding. For Federal airport actions, FAA is responsible for meeting the requirements of Section 106 and 36 CFR, Part 800. The project sponsor or an environmental contractor acting on FAA's behalf may aid FAA during the Section 106 review process, but	ACHP

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
	FAA is responsible for meeting Section 106 and the regulations implementing it.	
36 CFR, Part 800 implementing Section 106	The regulations implementing Section 106 are at 36 CFR, Part 800. Among other things, these regulations describe the procedures for consulting, analyzing effects, and documenting those effects.	ACHP
Sections 110(f) and 110(k) of the NHPA	**Section 110(f):** This section requires that Federal agencies plan and impose measures necessary to minimize the direct or indirect effects of undertakings on National Historic Landmarks (NHLs). NHLs are buildings, sites, districts, or structures that the Secretary of the Interior designates as historically significant.[3] When undertakings would adversely affect NHLs, agencies shall invite the ACHP to participate in consultation. **Section 110(k):** Some applicants seeking Federal approval or funding have intentionally caused adverse effects on NHRP-listed or eligible properties to avoid Section 106 requirements in the past. Section 110(k) prevents Federal agencies from issuing grants or approving undertakings to parties who have intentionally harmed protected resources. Agencies facing such situations may approve or fund actions involving parties causing the damage *only* if the agencies, after consulting with the ACHP, determine circumstances justify the destructive actions.	ACHP
Archaeological Resources Protection Act of 1979 (ARPA)	This Act requires Federal agencies to obtain a special permit to excavate or remove any archaeological resources that are located on U.S.-owned public lands or lands that Federally-recognized Native American tribes control. This Act protects all archaeological resources, including those that are not historic properties.	Individual Federal land management agencies
Archeological and Historic Preservation Act of 1974 (AHPA)	This Act requires the survey, recovery, and preservation of significant archaeological, historical, and scientific data when a Federally-approved or Federally-funded action may destroy or cause irreparable loss of such data.	Individual Federal land management agencies
Native American Graves Protection and Repatriation Act (NAGPRA)	The discovery of human remains or cultural items on Federal or tribal lands triggers this Act. The Act provides for the inventory, protection, and return of cultural items to affiliated Native American groups.	National Park Service (NPS)

[3] There are over 2500 NHLs in the nation. More than half are privately owned. See http://www.cr.nps.gov/nhl/ and 36 CFR Part 65 for more information.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
	Note that NAGPRA applies only to Native American human remains and cultural materials on Federal or Native American lands.	
49 U.S.C, Section 303.c, formerly Section 4(f) of the U.S. Department of Transportation Act.	Though not a historic preservation law, Section 4(f) of the DOT Act (recodified as 49 USC Sections 303.c and d) may apply to FAA actions adversely affecting NRHP-listed or eligible properties. Section 4(f) does not allow the approving FAA official to approve a transportation program or project that would use a historic site of national, state, or local significance, unless: • the official finds there is no prudent or feasible alternative that avoids using the historic site; and • the project includes all possible planning to minimize harm to the site resulting from the use. (Chapter 7 of this Desk Reference provides information on Section 4(f)).	FAA

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. General. Typical airside actions that could affect NRHP-listed or eligible resources include building or expanding terminal and hangar facilities, runways and taxiways, and installing navigational aids (NAVAIDS). Landside actions that may affect these resources include building or moving access roadways, remote parking facilities, and rental car lots, or other types of activities requiring any other construction.

b. Timing. The responsible FAA official should start the Section 106 process as early as possible in the environmental review for major airport development projects. An *early* start of the 106 process is usually needed to effectively and efficiently complete Section 106's procedures, consultation, and analyses. Early knowledge about the presence of historic properties in an undertaking's area of potential effect (APE) (see paragraph 5.d of this chapter) and prompt consultation are critical. Doing so helps the sponsor and FAA identify and consider the widest range of alternatives or measures to avoid or lessen the undertaking's possible adverse effects on NRHP-listed or eligible properties. Most importantly, the responsible FAA official must ensure FAA has started and is well into completing the requirements of 36 CFR Part 800 when it issues a draft EA or EIS. The official must do so to ensure the final EA or EIS proves FAA has met Section 106 requirements.

(1) Grant awards or ALP approvals. FAA cannot award a grant for an airport action or unconditionally approve an ALP or an ALP revision until it *completes* the Section 106 process. However, FAA may authorize or issue funds for non-destructive planning activities related to an undertaking before completing the Section 106 process.

(2) Leasing airport property. Before an airport sponsor may convert land dedicated to airport use (i.e. aeronautical activities and airline services) to non-aeronautical, revenue producing use (e.g., concessions, providing public shelter, ground transportation,

food, or personal service businesses) under a long-term lease, the sponsor must obtain ARP approval. In addition, ARP must release the sponsor from its federal grant assurance obligations addressing the uses of the land. FAA may not approve leases for airport properties to a non-Federal party until FAA completes the Section 106 review process. This ensures leases protect or preserve historic properties that may be present on the property to be leased.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

a. Section 106. This section does not require formal permits, certifications, or approvals. However, FAA documentation should demonstrate it has completed all of the following requirements.

(1) FAA has consulted with the parties noted in 36 CFR Section 800.2;

(2) FAA has notified or provided ACHP the opportunity to participate in consultation as appropriate under 36 CFR Part 800;[4] and

(3) FAA has conducted the process in a reasonable and good faith manner.

b. Archaeological concerns on Federal or Native American lands. The Archaeological Resources Protection Act (16 USC Sections 470aa – 470mm) requires that a person wishing to exhume or remove archeological resources from Federal or Native American lands must first obtain a permit from the relevant land management agency or tribe. Therefore, a sponsor whose project requires removing buried archeological resources from units of the national park system, the national wildlife refuge system, or the national forest system must obtain a permit before removing or excavating those resources. See 43 CFR Part 7 for more details.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. Starting the process. The first step in the Section 106 process requires the responsible FAA official to determine if the proposed action is an "undertaking" as defined in 36 CFR Section 800.16(y) (see Section 1.d. of this chapter). If the official determines the action is not an undertaking, then Section 106 does not apply. If the official determines an undertaking exists and that it may affect properties on or eligible for inclusion in the NRHP, the responsible FAA official must determine if an undertaking:

(1) does not have the potential to affect protected historic properties;

(2) would not adversely affect NRHP-listed or eligible historic properties; or

(3) would adversely affect NRHP-listed or eligible historic properties.

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[4] The criteria ACHP uses to determine if it will become involved address undertakings that: a) have substantial impacts on important historic properties; b) present important questions of policy or interpretation; c) have the potential for presenting procedural problems; or d) present issues of concern to Indian tribes or organizations or Native Hawaiian organizations.

b. Section 106 consultation. If the responsible FAA official determines the undertaking has the potential to affect an NRHP-listed or eligible property, the official must begin consulting with various parties having critical roles in the Section 106 process. Agency consultation must include:

(1) the State Historic Preservation Officer (SHPO);

(2) Native Americans or Native Hawaiian organizations if resources important to them may be in the project area. Contact with a Tribal Historic Preservation Officer (THPO) may be needed;

(3) the airport sponsor;

(4) representatives of local governments having jurisdiction over the area involved in the undertaking;

(5) individuals and organizations having legal or economic interests in the historic properties the undertaking may affect; or

(6) the public in the APE having an interest in historic properties (see section 5.d. of this chapter).

Section 106 requires the FAA to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on undertakings (36 CFR Section 800.1). FAA must take into account ACHP's opinions in reaching a final decision. Although FAA must present evidence that it considered ACHP's opinion, FAA is not bound to that opinion and may or may not revise its initial finding.

c. Area of potential effect (APE). If an undertaking has the potential to affect NRHP-listed or eligible historic properties, then FAA, in consultation with the SHPO (or THPO when appropriate), identifies the APE. The APE is the geographic area or areas in which an undertaking may directly or indirectly affect the character of historic resources. Note that it is *not* necessary to know if any historic properties occur in the APE to describe it.

d. Identifying properties. After defining the APE, FAA reviews the NRHP to determine if properties already listed in the NRHP occur in the APE. FAA must also determine if the APE contains any properties that may be eligible for NRHP listing. Historical research, archaeological or historic architectural surveys, and consultation with the SHPO, tribes, other traditional communities, and local historic groups are methods used to identify NRHP-eligible properties. Once FAA through this consultation identifies these properties, the responsible FAA official, through more consultation with the SHPO (or THPO when appropriate), evaluates the eligibility of properties using NRHP's criteria at 36 CFR Section 60.4. If any property meets one or more of these criteria, the responsible FAA official, in consultation with the SHPO (or THPO when appropriate), determines if the property is eligible for listing in the NRHP. If the SHPO or THPO do not concur with FAA's eligibility determination, FAA must seek a formal eligibility determination from the Keeper of the NRHP at the NPS. NPS Bulletin 15, *How to Apply National Register Eligibility Criteria,*

and 36 CFR Section 800.4(c) provide more guidance on how agency personnel evaluate NRHP eligibility.

e. Tribal and Hawaiian consultation. FAA must make a reasonable and good faith effort to consult with Native American tribes and Native Hawaiian organizations when defining the APE and identifying properties within it. This helps to identify historic properties in areas located off tribal lands that may have religious and cultural significance to tribal members. Due to the sovereignty of Federally-recognized tribes,[5] consultation with these tribes must occur in a "government-to-government" manner. That consultation is needed to comply with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, and FAA Order 1210.20, *American Indian and Alaska Native Tribal Consultation Policy and Procedures*. FAA Order 5050.4B, paragraph 303, provides more information on this issue.

(1) The APE. The responsible FAA official must consult tribal or Hawaiian officials to determine if the APE contains resources important to Native American tribes or Native Hawaiian organizations. This is a critical step because an APE may contain religious or cultural resources important to these peoples, even if they do not live within APE.

(2) Traditional Cultural Properties (TCPs). TCPs are import to a community's history, cultural practices, and beliefs and help maintain the continual cultural identity of Native American tribes, Hawaiian organizations, and other traditional communities. TCPs are normally, but not always, eligible for inclusion in the NRHP. NPS Bulletin 38, *Identifying Traditional Cultural Places*, provides guidance on NRHP criteria to determine if a TCP qualifies as a Section 106-protected TCP. FAA must consider an undertaking's effects on NRHP-eligible or listed TCPs.

f. No Properties Affected determination. FAA is responsible for determining if the undertaking would or would not affect any historic properties. An effect would occur when an undertaking would change the characteristics qualifying a historic resource for inclusion in or its eligibility for the NRHP. To make a No Properties Affected Determination, the responsible FAA official, in consultation with the SHPO (or THPO, when appropriate), must determine the undertaking would not affect NRHP-listed or eligible historic resources properties in the APE. Here, FAA must notify the SHPO (or THPO, when appropriate) of that finding. To do so, the responsible FAA official must send to the SHPO (or THPO, when appropriate) the following documentation noted in 36 CFR Section 800.11 (d) and provided here for convenience.

- A description of the undertaking. Specify the Federal involvement and its APE. As necessary, include photographs, maps and drawings;
- a description of the steps taken to identify historic properties, including efforts to seek information as discussed in 36 CFR Section 800.4(b); and

[5] See *Federal Register* Vol. 67, No. 134, pgs. 46327 – 46333, dated July 12, 2002 for a list of Federally-recognized tribes. The Bureau of Indian Affairs is responsible for revising the list.

- the basis for determining that there are no properties present or affected.

Note: National Park Service Bulletin 44, *Guidelines for Evaluating and Documenting Historic Aviation Properties*, may be helpful in assessing impacts on historic aviation facilities.

(1) When the SHPO (or THPO) agrees with the finding. If the responsible FAA official finds "no historic properties affected", the official must send the documentation noted above to the SHPO (or THPO, when appropriate). FAA must notify other consulting parties of the finding, including Native American tribes and Native Hawaiian organizations, when appropriate. The responsible FAA official must make the documentation it sent to the SHPO/THPO on the finding available to the public. The SHPO (or THPO, when appropriate) has 30 days to review the finding, provided FAA has provided the required documentation to them. If the SHPO (or THPO) does not object, or does not respond, FAA has fulfilled its Section 106 responsibilities. The environmental document prepared for the undertaking should contain the finding, proof of consultation, and the documentation supporting this finding.

(2) When the SHPO (or THPO) objects to the finding. If the SHPO (or THPO, when appropriate) objects to FAA's finding within 30 days of receiving it, FAA will consult with the SHPO (or THPO, when appropriate) to resolve the disagreement or send the finding's documentation (see 36 Section 800.11(d)) to the ACHP for its review and comment. The ACHP must respond within 30 days of receiving the documentation. If ACHP does not respond in 30 days after receiving the documentation, FAA has fulfilled its Section 106 responsibilities.

(a) If ACHP objects to FAA's finding, but FAA and the sponsor alter the undertaking to address ACHP's concerns, FAA has met its Section 106 responsibilities.

(b) If FAA does not alter its original finding, FAA can proceed with the project but *only* after sending the ACHP, the SHPO (or THPO) and the consulting parties documentation on FAA's final decision. This documentation shows how FAA considered the ACHP's opinion.

(3) To the fullest extent possible draft environmental assessments and impact statements should summarize the FAA's NHPA Section 106 finding and cross-reference the pages of the appendix containing the supporting evidence and documentation reflecting consultation. See 40 CFR section 1502.25.

g. Assessing adverse effects. The responsible FAA official applies the adverse effect criteria in 36 CFR Section 800.5 to the historic properties in the project's APE. The official must do this in consultation with the SHPO (or THPO) and other consulting parties, including Native American tribes and Native Hawaiian organizations, as appropriate. If FAA finds an undertaking would affect an NRHP-listed or eligible property, the responsible FAA official must notify the consulting parties.

(1) Criteria of adverse effect. An undertaking would adversely affect a property if it changes the characteristics of the historic property that qualify the property for inclusion in the NRHP. Diminishing the integrity of the historic property's location, setting, design,

workmanship, feeling, or association could cause these effects. Per 36 CFR Sections 800.5(a)(1) and (2), an undertaking causing any of the following would adversely affect a historic property.

(a) Physical destruction or damage to all or part of the property;

(b) Alteration of a property in ways that is not consistent with the Secretary of the Interior's standards for treating historic properties (see 36 CFR Part 68). This criterion applies to activities:

(1) involving restoring, rehabilitating, repairing, maintaining, or stabilizing the property;

(2) providing handicap access to the property; or

(3) remediating hazardous materials;

(c) isolating the property from its surrounding settings or altering the characteristics of those settings, when those characteristics contribute to qualifying the property for the NRHP;

(d) moving a property from its historic location;

(e) introducing visual, audio, or atmospheric elements that are out of character with the property or that would diminish the integrity of the property's setting when the setting contributes to the property's historical significance.

Note: For noise-related impacts, a *quiet setting* (i.e., DNL below 60 dB) must be one of the **recognized** characteristics making the property eligible for or listed on the NRHP.

(f) neglecting property to a level that destroys the property or allows it to deteriorate; or

(g) approving the transfer, lease, or sale of a property without including contract assurances to preserve the property's historically significant features.

(2) Results of applying the criteria of adverse effect. After applying the criteria of adverse effect, the responsible FAA official, in consultation with the SHPO (or THPO, when appropriate) makes one of these determinations.

(a) No Adverse Effect determination. The responsible FAA official makes this determination when the analysis shows the undertaking would not trigger any of the adverse effect criterion noted in Sections 5.g(1)(a)–(g) of this chapter. The official may also determine that imposing certain conditions on the undertaking would avoid those effects.

(1) SHPO/THPO agrees with the finding. The responsible FAA official must send documentation on the determination as described in 36 CFR Section 800.11(e)) (presented here for convenience) to the SHPO (or THPO, when appropriate). The official

must also send the information to consulting parties, unless the information must remain confidential (see Section 5.h of this chapter).

- a description of the undertaking by specifying the Federal undertaking. Include the APE and photographs, maps, and drawings as necessary;

- a description of steps taken to identify historic properties;

- a description of the affected historic properties, including information on the properties' characteristics that make them eligible for the NRHP;

- a description of the undertaking's effects on historic properties;

- an explanation of why the criteria of adverse effect did not apply to the undertaking, including any conditions or future actions to avoid, minimize, or mitigate adverse effects; and

- copies of summaries of views that the public and consulting parties provided.

(2) Distributing the information to the SHPO (or THPO) and consulting parties. These entities have 30 days from the date they receive the documentation to review FAA's determination. After the 30-day review period, FAA can proceed with the project if the SHPO (or THPO, when appropriate) agrees with the Determination or if no consulting party has objected to it.

(3) When the SHPO (or THPO) or a consulting party object to a No Adverse Effect Determination. If the SHPO (or THPO, when appropriate) or a consulting party disagrees with FAA's determination within the allotted period, FAA must either consult with the party to resolve the disagreement or ask the ACHP to review the finding. The ACHP has 15 days to respond. During this period ACHP may issue an opinion to FAA. That opinion is advisory in nature. FAA must consider the opinion and determine if it will include the opinion in the undertaking. If the ACHP does not respond within the 15-day review period, then FAA has fulfilled its Section 106 responsibilities.

(4) To the fullest extent possible, draft environmental documents should summarize the NHPA Section 106 finding and cross-reference supporting materials and evidence contained in an appendix to the environmental document. See 40 CFR Section 1502.25.

(b) Adverse Effect Determination. The responsible FAA official would make this Determination if information and consultation suggest the undertaking would trigger one of the adverse effect criterion in Sections 5.g(1)(a)–(g) of this chapter.

(1) Notifying the SHPO/THPO and consulting parties. The responsible FAA official must notify the SHPO/THPO and consulting parties of an Adverse Effect Determination. To do so, the official must send information described in 36 CFR

Section 800.11(e) (presented in Section 5.g(2)(a)(1)of this chapter for convenience) to those entities unless the information must remain confidential (see paragraph 5.h of this chapter).

(2) Notifying the ACHP. FAA must also notify the ACHP of an Adverse Effect Determination. To do so FAA must send documentation described in 36 CFR Section 800.11(e) to the ACHP (see Section 5.g(2)(a)(1) of this chapter). Failure to do so is a *serious procedural flaw* because it denies the ACHP an opportunity to take part in the resolution of adverse effects and forecloses ACHP participation in consultation (36 CFR Section 800.16(j)). Failure to complete this step may provide ACHP with good cause to annul the Memorandum of Agreement addressing the adverse effects.

(3) Inviting or requesting ACHP consultation. Besides providing the documentation 36 CFR Section 800.11(e) requires, the responsible FAA official must invite the ACHP to participate in the 106 process in the following circumstances (36 CFR Section 800.6(1):

(a) when the agency official wishes the Council to participate (36 CFR Section 800.6(a)(1)(i)(A));.

(b) when an undertaking would adversely affect a National Historic Landmark (36 CFR Section 800.6(a)(1)(i)(B));

(c) when FAA will prepare a Programmatic Agreement (36 CFR Section 800.6(a)(1)(i)(C)); or

Note: If any of the above scenarios occur, ACHP must tell FAA if it will take part in the 106 process within 15 days of receiving the FAA's documentation and invitation to participate (36 CFR Section 800.6(a)(1)(iii)).

(d) if the responsible FAA official and SHPO/THPO cannot agree on how to resolve adverse effects, the responsible FAA official shall request the ACHP to join the consultation (36 CFR Section 800.6(b)(v)). In this case, the responsible FAA official must provide the information noted in 36 CFR Section 800.11(g).

(4) ACHP decision to enter consultation. As noted above, the ACHP may choose to enter the consultation process. When the ACHP decides to do so, it must notify the responsible FAA official or the FAA Administrator, and consulting parties. Appendix A of 36 CFR Part 800 has more information about the ACHP's participation in the consultation process.

(5) If FAA and the SHPO (or THPO), and/or ACHP fail to resolve adverse effects. FAA, the SHPO (or THPO, when appropriate), and/or ACHP may decide further consultation will not be productive. In this case, consultation may be terminated (36 CFR Section 800.7(a)). This Desk Reference does not provide information on this rare situation. If termination is seriously being considered, the responsible FAA official should review carefully 36 CFR Section 800.7 for specific instructions. The official should also *immediately* notify APP-400 and Regional Counsel if the approving FAA official is considering this procedure.

h. Confidentiality. Section 304 of the NHPA, as amended, allows the FAA Administrator to withhold information from the public, if the Secretary of the Interior and the Administrator decide disclosing the information would cause any of the following events. Review 36 CFR Section 800.11(c) for more details on this special procedure.

(1) cause a significant invasion of privacy.

(2) risk harm to the historic resource. or

(3) impede use of a traditional religious site.

i. Memorandum of Agreement (MOA). If FAA and the SHPO (or THPO, when appropriate) agree on how to resolve adverse effects, FAA and SHPO (or THPO, when appropriate) will prepare and sign an MOA. The MOA clearly specifies the conditions that will allow the proposed action to proceed. The MOA describes ways to avoid, minimize, or mitigate the undertaking's adverse effects on NRHP properties (Table 1 of this chapter provides helpful information on MOA content). The MOA becomes effective when the signatories discussed below sign it. However, the sponsor (or another party listed in the MOA) who is responsible for implementing any of the measures in the MOA need not begin carrying out those measures until the approving FAA official issues a decision on the undertaking. This is because FAA cannot unconditionally approve an ALP depicting an undertaking or approve a grant to construct the undertaking until FAA completes the Section 106 process (36 CFR 800.1(c)).[6] It is only then that the sponsor has received FAA authorization to begin the undertaking the ALP depicts. Per FAA Order 5050.4B, paragraph 202.c(2), the sponsor may begin the project after those approvals occur. The sponsor may not begin any undertaking that would adversely affect historic resources until FAA unconditionally approves a new or revised ALP or it approves a grant to construct the undertaking.

Note: Table 1 of this chapter provides information on preparing the MOA.

(1) Signatories. As signatories, FAA, the SHPO (or THPO, when appropriate), and ACHP (when it participates) have sole authority to execute, amend, or terminate an MOA (36 CFR Section 800.6(c)(1)).

(a) The approving FAA official and the SHPO (or THPO) must sign the MOA for the MOA to meet 106 requirements;

(b) If a SHPO terminates consultation, ACHP may enter into an MOA with FAA (36 CFR 800.7(a)(2));

(c) If the undertaking is on tribal land, the THPO must sign the MOA in lieu of the SHPO. However the SHPO will sign the MOA if a tribe does not have a THPO and the undertaking would affect tribal land; and/or

[6] FAA may issue those approvals only after it completes the environmental review process (issuing an EA and its Finding of No Significant Impact or an EIS and its Record of Decision).

(d) ACHP, if it is participating in the process.

(2) Invited signatories. The approving FAA official may invite other parties to sign the MOA. Typically, these parties would be representatives of Native American tribes or Native Hawaiian organization who attach religious or cultural significance to the affected historic resources off tribal lands. An invited signatory may also be a party having a role in carrying out the MOA's terms and conditions (i.e., airport sponsor). Invited signatories have the same rights as the signatories (may amend or terminate the MOA). However, their refusal to sign the MOA does not prevent the MOA from being finalized (36 CFR Section 800.6(c)(2)(iv)).

(3) Concurring parties. The approving FAA official may invite any of the consulting parties to sign the MOA. These parties do not have any of the signatories' rights, and their refusal to sign the MOA does not prevent the MOA from being finalized.

j. ACHP must receive a copy of the MOA or final EIS. FAA *must* send to the ACHP a copy of the signed MOA or final EIS, if FAA is using the procedures in 36 CFR Section 800.8 (see Section 7 of this chapter). It must also send any substantive changes or additions to the documentation noted in 36 CFR Section 800.11(e) if needed. FAA must do so *before* it approves a proposed undertaking having an adverse effect on historic properties (36 CFR Section 800.6(b)(1)(iv)). *Failure to do so could prompt the ACHP to determine FAA has foreclosed ACHP's opportunity to comment on an undertaking.* A determination that foreclosure has occurred is significant because that signifies the ACHP has concluded the agency failed to comply with Section 106 (36 CFR Section 800.16(j)).

k. Programmatic Agreement (PA). A PA is a special type of agreement. It presents the terms and condition FAA and the ACHP have agreed upon to resolve adverse effects due to complex situations or multiple undertakings. Sections 5.k(1)(a)-(c) of this chapter identify situations where a PA may be useful.[7]

(1) Consider using a PA when:

(a) an undertaking's effects would be similar and repetitive;

(b) an undertaking is complex, wide in scope, and FAA is unable to fully determine an undertaking's effects before approving it; or

(c) other circumstances warrant a departure from the normal Section 106 process.

(2) Preparing the PA. For airport undertakings having characteristics noted in Sections 5.k(1)(a)–(c) of this chapter, FAA may develop and negotiate a PA with the ACHP (36 CFR Section 800.4(b)). When preparing the PA, the responsible FAA official must consult with the SHPO (or THPO, when appropriate), responsible for protecting historic

[7] Other situations not associated with typical airport actions may be suitable for a PA. See 36 CFR 800.14(b)(iii) or (iv)

resources in the state where the undertaking would occur. FAA and the ACHP may agree to invite other parties to be consulting parties because a PA uses the same consultation process noted earlier for an MOA. Those parties may sign the PA as consulting parties. If an agency cannot develop a PA for complex or multiple undertakings, follow the provisions in 36 CFR Part 800 subpart B for each individual undertaking.[8]

l. FAA's post-approval Section 106 responsibilities. An MOA is a legally binding document. It commits an agency by statute and regulation to carry out an undertaking according to the terms and conditions set forth in the MOA (36 CFR Section 800.6(c)). Therefore, FAA must ensure the airport sponsor (or any other party the MOA or PA specifically names) fulfills the measures in the MOA (36 CFR 800.6(c)). Failure to do so means FAA has not met its Section 106 responsibilities for the undertaking.

m. Phasing the Section 106 process. FAA may phase the identification of historic properties in some instances. Normally, phasing would occur when a project includes reasonable alternatives encompassing large land areas or where property access is restricted (see 36 CFR Part 800.4(b)(2)). FAA may also phase identification of historic properties if it does not have adequate information to evaluate the potential effects of project alternatives on historic properties.

(1) Undertakings encompassing large areas. Here, the responsible FAA official evaluates each reasonable alternative's potential to affect NRHP-listed or eligible properties. The official does this based on background research, consultation with the SHPO/THPO and other parties, or results of field investigations. FAA must identify NRHP-listed or eligible properties, evaluate the proposed project's effects on them, and resolve any adverse effects on those properties. FAA should complete this part of the Section 106 review process *before* issuing an EA and its Finding of No Significant Impact, or an EIS and its Record of Decision.

(2) Undertakings involving restricted access. Sometimes, owners of land where project-affected resources occur deny access to their land. In this instance, FAA may delay final identification of historic properties and project effects on them until after the EA or EIS is completed. In these cases, the MOA or PA must clearly stipulate the delay in final identification and impact evaluation. The MOA or PA must describe how FAA will complete its identification of NRHP properties and how it will evaluate project effects on those properties. FAA or the SHPO/THPO must sign the MOA (or PA), *before* issuing a Finding of No Significant Impact or a Record of Decision.

6. DETERMINING IMPACT SIGNIFICANCE. After considering the analysis of effects on historic properties, including intensity and context, FAA will determine if an EIS is appropriate. Advice from the SHPO (or THPO, when appropriate) and ACHP may help the

[8] This Desk Reference does not discuss preparing PAs for national or regional agency programs because airport projects rarely involve these programs. Consultation for national or regional agency programs involves the National Conference of State Historic Preservation Officers, Indian tribes, or Hawaiian organizations. See 36 CFR Section 800.14(b)(2) for more information.

responsible FAA official make this determination, but the ultimate decision to prepare an EIS is FAA's responsibility.

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Regulations at 36 CFR Section 800.8(a) state that an adverse effect determination does not automatically trigger a finding of significant impact. Therefore, an EIS is not always required.	When an action adversely affects a protected property, the responsible FAA official should consult with and seek more input from the SHPO (or THPO). Consider alternatives that would avoid adverse effects on NRHP listed or eligible property. Also, consider mitigation that will lessen the adverse effects.

From: Table 7-1, FAA Order 5050.4B.

7. INTEGRATING SECTION 106 and NEPA. Title 36 CFR Section 800.8 encourages Federal agencies to integrate Section 106 and NEPA. This is intended to: streamline requirements; reduce paperwork; avoid redundant information; and coordinate public input. To integrate the processes, the responsible FAA official *must closely follow* the instructions at 36 CFR Section 800.8. In addition, FAA consultation with the SHPO, (or THPO, when appropriate), consulting parties, the public, and perhaps the ACHP is critical. The steps below summarize the steps for integrating Section 106 and NEPA.

a. Environmental assessment content. An EA prepared for an undertaking must contain specific information to verify that FAA has completed the Section 106 process. Depending on the level of effect, the EA must contain the documentation noted in Sections 5.f, 5.g(2)(a)(1), and 5.g(2)(b) of this chapter. Besides that documentation, the EA must contain the following information, as appropriate. If needed, follow the steps in 36 CFR Sections 800.8(c)(2) and (3) addressing review of the EA and resolution of objections, if any.

(1) Correspondence showing the responsible FAA official consulted with the SHPO (or THPO when appropriate) to define the APE. The EA must include information showing that FAA conferred with consulting parties or members of the public having knowledge of resources in the APE or concerns about the undertaking's effects.

(2) Correspondence from the SHPO (or THPO when appropriate) addressing FAA's finding that no properties are in the APE, or the undertaking would not affect existing properties in the APE. Include proof that FAA notified the consulting parties of this finding.

(3) Correspondence from the SHPO (or THPO when appropriate) and other consulting parties on the FAA's No Effect or No Adverse Effect Determination. Provide input from consulting parties and ACHP, if it is participating.

(4) Correspondence from the SHPO, (or THPO when appropriate), other consulting parties, and the ACHP, if it is taking part in project consultation, showing their concurrence on FAA's efforts to resolve the undertaking's adverse effects on historic properties.

(5) A copy of the signed MOA or PA clearly describing how FAA will resolve the adverse effects on historic properties.

b. Finding of No Significant Impact (FONSI) content for Section 106 purposes. The FONSI prepared for the undertaking should include the MOA or PA as an attachment. The FONSI should summarize the measures noted in the MOA or PA to avoid, minimize, or mitigate the effects.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT. FAA makes the final decision to prepare an EIS for airport actions. When FAA prepares an EIS to address significant impacts on historic properties, the responsible FAA official should consider inviting ACHP to be a cooperating agency. Information developed for and during the Section 106 consultation process should be sufficient for EIS purposes. During the EIS process, FAA may determine the undertaking would adversely affect Section 106-protected properties. After consulting the SHPO (or THPO when appropriate) and agreeing on ways to resolve the adverse effects, FAA may or may not need to prepare an MOA (see sections 8.a and b of this chapter). In addition, follow the steps in 36 CFR Sections 800.8(c)(2) and (3) addressing review of draft or final EISs and resolution of objections, if any.

a. An MOA is needed. If FAA is *not* using the NEPA process as described in 36 CFR Section 800.8, the final EIS should contain a copy of the signed MOA to meet Section 106 requirements.

b. An MOA is not needed. If FAA *is* using the process described in 36 CFR Section 800.8, FAA's EIS and its Record of Decision must contain measures to avoid, minimize or mitigate the adverse effects the undertaking would cause. FAA need not prepare a MOA (36 CFR Section 800.8.c.(4)(i)(A) in this case.

TABLE 1. SOME USEFUL INFORMATION FOR PREPARING AN MOA.

1.	Think ahead to ensure the MOA addresses all of the undertaking's foreseeable impacts.
2.	Describe the undertaking's physical location and clearly state where it will physically disturb existing conditions. Make sure the MOA addresses the entire undertaking.
3.	A resource's noise or visual setting may be one of the *recognized* characteristics making the resource eligible for the NRHP. An undertaking may alter that setting. Therefore, when appropriate, the Area of Potential Effect may extend beyond an undertaking's area of physical disturbance.
4.	For most airport projects, identify FAA as the lead agency responsible for ensuring the MOA's provisions are met.
5.	Assign duties to signatories and invited signatories.
6.	Use active voice. Passive voice does not clearly convey the party responsible for completing the MOA's requirements.

7.	Include provisions to which the signatories have agreed.
8.	Structure the MOA logically.
9.	Write the MOA so any reader may understand it.
10.	Provide complete citations for all laws, regulations or references. Include all statutory authorities.
11.	Use consistent terminology. Use terms consistent with statutory or regulatory definitions. Define terms specific to the undertaking that the applicable statutes or regulations do not define.
12.	Provide the date the MOA would become effective.

Adapted from the Advisory Council on Historic Preservation and the Univ. of Nevada, Reno, *Introduction to Section 106, Participants Handbook,* March 2001, page. 67.

CHAPTER 15. INDUCED SOCIOECONOMIC IMPACTS

1. INTRODUCTION AND DEFINITIONS.

a. General. FAA must evaluate a proposed airport project to determine the project's potential to cause induced or secondary socioeconomic impacts on surrounding communities. When FAA determines a potential for such impacts exists, the environmental document should describe how the proposed project would affect communities by addressing the following factors, as needed.

(1) shifts in patterns of population movement and growth;

(2) public service demands;

(3) changes in business and economic activities; or

(4) other factors identified by the public.

b. Examples of the induced socioeconomic impacts due to airport development. Certain airport development projects could have impacts on an affected area's socioeconomic characteristics. Socioeconomic impacts are linked to impacts to other resource categories through cause-and-effect relationships. Induced socioeconomic impacts can be significant when significant impacts in resource categories linked to socioeconomic impacts occur. For example, airport projects causing noise changes or requiring more land could cause local land use changes. As a result, the changes in the distribution of residents and their housing requirements could occur. These changes could, in turn, cause impacts that alter demands on fire and police protection, educational or utility services, businesses, and job opportunities in the airport area and other areas to which the residents relocate.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Council on Environmental Quality (CEQ) Regulations Implementing NEPA, 40 CFR Part 1500 *et seq.*	Section 1508.27(b) requires Federal agencies to consider a proposed action's impact significance by considering the impact's intensity and context. Section 1508.8 addresses indirect impacts (effects), which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water	CEQ

	and other natural systems, including ecosystems.	

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS. Typical airport actions which could cause direct or indirect social and economic impacts include: airside/landside expansion such as new or expanded terminal and hangar facilities; new or extended runways and taxiways; navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use; new or relocated access roadways; remote parking facilities; rental car lots; a significant increase or change in aircraft operations; and significant amounts of construction/demolition activity.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

This impact category does not require Federal permits, certifications, or approvals. But the environmental document should contain evidence of coordination with potentially-affected jurisdictions and other interested parties located in the affected area. The evidence should provide information, substantive comments, or opinions concerning the existing and projected socioeconomic environment in the affected area. It should provide meaningful data on existing local population distributions, infrastructure, utilities, and economic factors that will form the basis for analysis.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES – ENVIRONMENTAL ANALYSIS. When preparing an environmental document for an airport project having the potential to cause social and economic effects, the following entities often provide important information that facilitates socioeconomic evaluations.

a. Local planning commission's housing departments and business organizations. Examples include the Chamber of Commerce and Economic Development Agency.

b. Public service utilities or local departments responsible for maintaining water, gas, and electrical supplies and infrastructure improvements.

6. DETERMINING IMPACTS.

a. General. Airport projects may require the acquisition of land or cause effects that alter existing land uses. For example, noise effects may cause the relocation of housing or other noncompatible land uses. Effects due to that relocation may cause substantial changes in the area's tax base and the relocation of businesses due to reduced sales levels. In addition, increases in utility demands may occur in the areas to which the displaced families move.

b. Document content. If needed, the environmental assessment should contain a chapter addressing induced socioeconomic impacts. It should focus on project-induced shifts in population movement patterns, public service demands, and business and

economic activities. Often, impacts discussed in chapters addressing noise impacts, changes in land uses, and social impacts lead to induced socioeconomic impacts. As a result, the induced socioeconomic impacts chapter should summarize information in chapters on other resource categories linked to socioeconomic impacts. The socioeconomic chapter should also summarize information from the entities noted in sections 5.a. and b. of this chapter and contain an appendix providing the correspondence from them. Determining project-induced secondary impacts will typically require the following steps:

(a) identifying effects due to changed land use, noise levels, and direct social impacts (see Chapters 5, 17, and 18, respectively, of this Desk Reference);

(b) setting up the geographic scope and time frame for the analysis;

(c) identifying and characterizing project-induced effects and affected people, businesses, or other entities (i.e. neighborhoods, services, businesses and other economic activities).

(d) defining a baseline condition for those affected.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. Environmental document chapters addressing noise, land use, and social impacts are useful in determining the severity of induced socioeconomic impacts. If those chapters identify significant impacts, significant induced socioeconomic impacts could also occur. Determining the significance of induced impacts will typically require the following steps:

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
None.	Induced impacts will normally not be significant, except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts. In such instances an EIS may be needed.

From Table 7-1, Order 5050.4B

b. Potential mitigation measures. During the environmental review process, Federal, state, or local agencies may provide letters recommending measures to mitigate induced socioeconomic impacts. Potential mitigation may include:

(1) working with local officials to promote the economic vitality of the area;

(2) assisting local businesses with relocations; or

(3) helping to meet changed public service demands.

FAA and the sponsor should fully consider mitigation recommendations and balance their benefits against those of the proposed action. If FAA or the sponsor does not adopt any mitigation recommended, the environmental assessment (EA) should explain why the recommendation was not adopted. If feasible, the EA should provide an estimated schedule for undertaking accepted mitigation.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. Refer to the information analyzed in completing other sections of this chapter. In addition, evaluate the respective chapters dealing with noise, land use, social impacts, or other impacts causing induced socioeconomic effects. If a significant impact in one or more of these areas occurs, discuss how these impacts would affect the project area's economic and social characteristics. For example, if airport operations would cause noise impacts requiring the relocation of residential areas, describe how changes in the neighborhood would affect local businesses, public services and taxes in the area where people now live and the area(s) to which they will move.

b. Mitigation. The EIS should describe proposed mitigation when agencies provide that information. FAA and the sponsor should fully consider the mitigation and balance its benefits against those of the proposed action. If FAA or the sponsor does not adopt any mitigation recommended, the EIS should explain why the recommendation was not adopted. If feasible, provide an estimated schedule for undertaking accepted mitigation.

NEPA requires a Federal agency preparing an EIS to discuss mitigation in sufficient detail to disclose that environmental consequences have been fairly evaluated (*Robertson vs. Methow Valley*, 490 U.S. 332 (1989)). In addition, under 49 USC Section 47106 (c)(1)(B), FAA may not approve a Federal funding for major airport development projects, unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension. For more information about the mitigation required, see FAA Order 5050.4B, paragraph 1203(b)(4). The EIS must discuss and adopt mitigation measures agencies recommend in accordance with NEPA and 49 USC Section 47106(c)(1)(B). If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 16. LIGHT EMISSIONS AND VISUAL EFFECTS

1. INTRODUCTION AND DEFINITIONS.

a. Light emissions. Airport-related lighting facilities and activities could visually affect surrounding residents and other nearby light-sensitive areas such as homes, parks or recreational areas. If there is a potential for airport lighting to disturb these sensitive land uses, the responsible FAA official should ensure the environmental document examines those effects. If potential light emissions or visual effects exist, the official should evaluate measures to lessen those as well. This helps promote a "good-neighbor" policy while protecting the resource.

b. Visual effects. Visual, or aesthetic, effects are inherently more difficult to define and assess because they involve subjectivity. Visual effects deal broadly with the extent to which airport development contrasts with the existing environment, architecture, historic or cultural setting, or land use planning. It is important to determine if a community or a jurisdictional agency considers visual effects from the proposed action objectionable.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
There are no Federal statutory or regulatory requirements for adverse effects. State, regional, or local requirements may apply to airport-related light emissions or visual effects.	No Federal regulations govern light emissions or visual intrusions. However, FAA will consider potential effects to properties, and people's use of properties, covered by Section 4(f) of the U.S. Department of Transportation (DOT) Act, Section 6(f) of the Land and Water Conservation Fund Act (LWCF), and Section 106 of the National Historic Preservation Act (NHPA). See Chapters 7 and 14 of this Desk Reference, respectively, for more information.	None

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. Light emissions. Airport facilities and operations cause light emissions that can affect visually sensitive land uses in an airport area. The characteristics of many runway lighting systems create potential sources of annoyance to nearby residents in the airport vicinity if light is directed towards light-sensitive land uses. Disturbing emissions may emanate from the following sources associated with a proposed action: airfield and apron lighting, visual navigational aids (NAVAIDS), terminal lighting, employee/customer parking lighting, both airborne and ground-based aircraft operations, and roadway lighting.

b. Visual effects. The appearance and other visual qualities of airport development projects are largely related to an action's purpose or size, and locations of needed facilities or equipment on the airfield. Consistency with FAA and other relevant design standards and compatibility with existing structures are also important factors.

4. PERMITS, CERTIFICATIONS, AND APPROVALS. No permits, certifications, or approvals from Federal agencies are needed for light emissions or visual effects. However, State, regional, local agency and Tribe approvals may be needed. If this is the case, the environmental document should identify the necessary approvals and summarize any issues that may delay or bar any approval.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES – ENVIRONMENTAL ANALYSIS.

a. Light emissions. When potential lighting effects exist, airport sponsors should consult local residents and the owners or operators of potential light-sensitive sites. As part of these discussions, airport operators should discuss possible lighting effects and ways to minimize these effects without risking aviation safety or efficiency. The environmental document should contain records of all relevant communications with consulted parties.

b. Visual effects. Early consultation with State, regional, or local art or architecture councils, tribes, or other organizations having an interest in airport-associated visual effects may be helpful. For example, the visual sighting of aircraft or aircraft lights at night, particularly at a distance that is not normally intrusive, may cause an adverse visual effect. The environmental document should contain records of all relevant communications with consulted parties.

6. DETERMINING IMPACTS.

a. General. General and specialized lighting systems are essential parts of airport operations. General lighting is needed for safe ground movement of aircraft and vehicles. Special lighting systems, like lead-in lights, beacons, approach lights, and omni-directional lights, are needed for safe, efficient aircraft navigation and operations. The responsible FAA official should give special consideration to light emissions and visual effects to historic properties, national or state parks, recreation areas or other visually sensitive areas. To the extent light emissions and visual effects are relevant to other resource categories covered by DOT Section 4(f), the LWCF Section 6(f), and NHPA Section 106 (see chapters 7 and 14, respectively), those effects should be discussed in the relevant sections of an EA or EIS.

b. Information needs to determine lighting and visual effects. If there is a potential for airport-related lighting or visual effects on nearby residents or other light sensitive areas, the environmental document should evaluate those effects. This assessment should provide the following information as necessary.

(1) Light emissions.

(a) A brief description of proposed airport-related lighting. Include the purpose of the lighting, installation method (pole or ground-mounted), beam angle, intensity, flashing sequence, color of lighting, and any other important information.

(b) A map showing the locations of homes or other light-sensitive sites in the airport vicinity relative to the proposed lighting system.

(c) A description of lighting system effects on residents and light-sensitive sites in the airport area. The responsible FAA official should give attention to lighting systems emitting flashing, “white” light such as strobes. These systems often cause the greatest annoyance to surrounding residents and other light-sensitive areas.

(d) Any measures proposed to minimize light intrusion on nearby residents and light-sensitive sites. Measures include shielding, baffles, making angular adjustments, or other fixes.

(2) Visual effects. FAA encourages airport sponsors to consider design arts in a project's preliminary design stage. The environmental document should contain this information to the extent it is available. As practical, highlight design factors that will complement and support establishing functional, efficient, and safe airport operations while meeting local, cultural, and architectural heritage considerations. Examples of design art and architecture at airports include the following measures.

(a) Design considerations that would reduce the adverse effects of visual encroachments into residential or recreational areas or that disrupt scenic vistas. Architectural treatments of facilities that reflect light so the light blends in with nearby architectural styles. Painting or shielding structures, such as landing aid supports, reduce visual impact.

(b) Actions involving extensive earthmoving may visually disrupt the landscape. Standard design and engineering principles often lessen erosion or provides acceptable drainage or prevents other landscape effects. Extra care in slope design and plantings (that do not attract hazardous wildlife) would help minimize adverse visual and other environmental effects.

(c) Moving streams or other waters into channels designed to reflect the natural characteristics of the existing stream. This is often more aesthetically pleasing and less costly than installing concrete sluiceways. Bank stabilization with plantings that do not attract hazardous wildlife may improve the appearance of disturbed areas and control erosion.

(d) New facilities or major terminal expansion may provide excellent ways to recognize and reflect an area’s notable architectural, cultural, or ethnic assets. Consider

these assets when developing outside designs, landscaping, or architectural treatments for facilities or terminals

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. In some airport actions, airport lighting or visual effects may disturb natural resources or add unwanted aesthetic effects on man-made, historic, or cultural resources. After completing the analysis discussed in earlier sections of this chapter, apply the following information to determine the degree of effect on nearby residents or other light-sensitive areas or habitats. The visual impact discussion will normally address design, art, architecture, or landscape architecture to mitigate adverse visual effects or encourage enhancement of the environment. Consultation with expertise agencies is important when determining the level of light-related or visual effects. The environmental document should contain a record of any relevant communications.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
None established.	**For light emissions:** When an action's light emissions create annoyance to or interfere with normal activities. **For visual effects:** When consultation with Federal, State, or local agencies, tribes, or the public shows these effects contrast with existing environments and the agencies state the effect is objectionable.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, agencies having jurisdiction or special use expertise on various light-sensitive resources (i.e., natural, man-made, historic, or cultural resources, parklands, etc.) may provide letters addressing lighting or visual effects on those resources. Those letters may include recommended measures to mitigate those effects. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted. If feasible, provide an estimated schedule for undertaking accepted mitigation.

c. Examples of mitigation measures. In addition to the recommendations agencies make, the following mitigation measures may be useful.

(1) Light emissions. Potential mitigation may include the following measures to lessen light emissions on surrounding light-sensitive land uses:

(a) shielding lighting fixtures with top visors;

(b) angling fixtures toward the base of the mounting poles;

(c) Directional lighting; or;

(d) using minimal pole heights or reduced wattage bulbs.

(2) Visual effects. FAA encourages airport sponsors to use the principles of good design, art, and architectural treatment to blend airport facilities with surrounding areas. FAA Order 5100.38C, *Airport Improvement Program Handbook*, paragraph 304, provides guidelines for treating and promoting design, art, and architectural objectives in airport aid projects.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. FAA must prepare an EIS if mitigation will not reduce light emissions or visual effects to levels that do not significantly affect man-made, historic, or cultural resources. Further agency consideration may focus on previously unconsidered mitigation measures and alternatives. To avoid repeating information that another section of the EIS provides on light emissions, the EIS Light Emissions section should refer the reader to the chapter(s), if those chapters discuss lighting or visual intrusions on a on a particular resource. If those chapters do not address those lighting or visual effects, that information must appear in the EIS's Light Emissions chapter.

b. Light emissions. It is possible the responsible FAA official will decide that a special lighting study is necessary. The study may be appropriate in locales where high intensity strobe lights shine directly into homes or other sensitive areas or habitats. Those studies should assess lighting systems, alternative light locations, or mitigation measures not considered previously.

c. Visual effects. This impact discussion will normally address the use of design, art, architecture, or landscape architecture principles. These principles help lessen project-induced visual effects or enhance the visual environment. The responsible FAA official may encourage, but not require, an airport sponsor to use design, art, or architectural principles to reduce project-related visual effects. Because FAA cannot force the sponsor to do so, the FAA official must discuss the need for more information with the sponsor, when appropriate. The sponsor must agree that more analysis is needed. The responsible FAA official should note extensive, detailed design concepts are not usually developed until the EA or EIS is completed.

d. Mitigation. The EIS should describe proposed mitigation when expertise agencies provide that information. FAA and the airport sponsor should fully consider the mitigation and balance its benefits against those of the proposed action.

NEPA requires a Federal agency preparing an EIS to discuss mitigation in sufficient detail to disclose that environmental consequences have been fairly evaluated (*Robertson vs. Methow Valley*, 490 U.S. 332 (1989)). In addition, under 49 USC Section 47106 (c)(1)(B), FAA may not approve a Federal funding for major airport development projects, unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension. For more information about the mitigation required, see FAA Order 5050.4B, paragraph 1203(b)(4). The EIS must discuss and adopt mitigation measures recommended by agencies having expertise in accordance with NEPA and 49 USC Section 47106(c)(1)(B).

If needed, the EIS should explain why the sponsor or FAA did not adopt any mitigation the public agency authorized by the state to plan for the areas surrounding the airport land use agencies recommend. If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 17. NOISE

1. INTRODUCTION AND DEFINITIONS.

a. Airport noise. When evaluating proposed airport projects, airport noise is often the most controversial environmental impact FAA examines. Airport development actions that change airport runway configurations, aircraft operations and/or movements, aircraft types using the airport, or aircraft flight characteristics may affect existing and future noise levels. FAA's noise analysis primarily focuses on how proposed airport actions would change the cumulative noise exposure of individuals to aircraft noise in areas surrounding the airport.

Besides using noise levels to determine compatible land use, airport noise may be a concern when determining potential effects on several other environmental resources as well. As noted later in this chapter, these resources may include, but are not limited to, Section 4(f)-protected resources and historic and cultural sites. Therefore, the supplemental noise analysis may be appropriate on a case-by-case basis depending upon resource affected. Use the noise results from this chapter, and instructions in the chapter specifically addressing a particular resource to determine the severity of noise impacts on the resource of concern.

b. Day Night Average Sound Level (DNL). DNL is the standard Federal metric for determining cumulative exposure of individuals to noise. In 1981, FAA formally adopted DNL as its primary metric to evaluate cumulative noise effects on people due to aviation activities.

(1) Past and present research by the Federal Interagency Committee on Noise (FICON) verified that the DNL metric provides an excellent correlation between the noise level an aircraft generates and community annoyance to that noise level;[1]

(2) DNL is the 24-hour average sound level in decibels (dB). This average is derived from all aircraft operations during a 24-hour period that represents an airport's average annual operational day;

(3) It is important to note that due to the logarithmic nature of noise, the *loudest* noise levels control the 24-hour average; and

(4) DNL adds a 10 dB noise penalty to *each* aircraft operation occurring during nighttime hours (10 p.m. to 7 a.m.). DNL includes that penalty to compensate for people's

[1] *Federal Interagency Review of Selected Airport Noise Analysis Issues*, 1992, page 3-1.

heightened sensitivity to noise during this period.[2] This penalty contributes heavily to an airport's overall noise profile.

c. Community Noise Equivalent Level (CNEL). While DNL is the primary metric FAA uses to determine noise impacts. FAA accepts the CNEL when a state requires that metric to assess noise effects.

(1) Only California requires use of CNEL;

(2) Like DNL, CNEL adds a 10 dB penalty to each aircraft operation between 10:00 p.m. and 7:00 a.m.; and

(3) CNEL adds a 5 dB penalty for each aircraft operation during evening hours (7:00 p.m. to 10:00 p.m.). This evening noise penalty accounts for people's sensitivity to noise during evening hours when they may be outside and fewer noise producing activities occur.

d. The Schultz Curve. The Schultz Curve relates specific DNL levels to the percent of people in a community whom those noise levels highly annoy. The Curve provides a widely-accepted dose-response relationship between cumulative environmental noise and a health and welfare parameter, annoyance (Federal Interagency Committee on Noise FICON, 1992). Like other Federal agencies that have established Federal land use guidelines for noise, FAA used the Schultz curve, when it designated the DNL 65 dB contour as the cumulative noise exposure level above which residential land uses are not compatible.

e. Supplemental metrics. FAA uses supplemental metrics chiefly in EISs to help describe noise impacts for specific noise sensitive locations or situations. Section 8.d. of this chapter describes supplemental metrics.

f. 14 CFR Part 150 land use compatibility guidelines. FAA established land use compatibility guidelines relative to certain DNL noise levels in 14 Code of Federal Regulations (CFR) Part 150. Chapter 5, Table 1 of this Desk Reference provides a copy of the Part 150 Land Use Compatibility guidelines.

(1) Different local land use compatibility standards. Although residential land uses are considered compatible with noise exposure levels below DNL 65 dB under 14 CFR Part 150:

> "The responsibility for determining the acceptable and permissible land uses …rests with the local authorities...Part 150 is not intended to substitute federally determined land uses for

[2] The 10 dB penalty in the Integrated Noise Model means that noise from 1 aircraft operating between 10:00 p.m. and 7:00 a.m. counts as 10 operations.

> those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses. " -14 CFR Part 150, Table 1.

As a result, environmental documents may include noise contours below DNL 65 dB in addition to the required contours of DNL 65, 70, and 75 dB resulting from aircraft operations. Lower noise contours may be included for purposes of identifying proposed mitigation measures, provided the local land use planning jurisdiction has adopted a land use compatibility standard less than DNL 65 dB. (An airport sponsor's action to adopt such standards is sufficient where the sponsor has land use control jurisdiction). Absent a local standard, these contours may be included in the environmental document for informational/disclosure purposes, if the airport sponsor desires.

(2) Additional analysis under 1992 Federal Interagency Committee on noise recommendations. Where an airport development project has a potentially significant impact on noise sensitive areas in the DNL 65 dB and greater noise contours, the EIS noise analysis must also consider the DNL 60 dB contour. Further analysis is required in these circumstances to evaluate potential increases of DNL 3 dB and greater over noise sensitive areas between DNL 65 and 60 dB and potential mitigation measures. See, paragraph 8(b)(2), below for more details.

(3) Use of supplemental noise analysis. When planning and conducting the noise analysis for an airport development action, environmental specialists must consider the full context in which the airport action is occurring. Environmental specialists must be cognizant that Part 150 guidelines are not relevant and supplemental noise analysis is appropriate in the following circumstances.

(a) Areas within a historic site or national park or wildlife refuge where non-aircraft noise is very low and a quiet setting is a generally recognized feature or attribute of the site's significance. The DNL 65 dB level at which residential land uses are compatible does not adequately address noise impacts on visitors to unique areas characterized by low ambient noise levels and where quiet settings are a generally recognized feature and attribute of their significance. As a result, supplemental noise analysis is appropriate in certain circumstances. For example, environmental specialists must be cognizant that Part 150 guidelines do not adequately address the effects of noise on visitors to areas within a historic site or national park or wildlife refuge protected under Section 4(f) of the DOT Act where non-aircraft noise is very low and a quiet setting is a generally recognized feature or attribute of the site's significance. See Chapter 7 of this Desk Reference for information on Section 4(f), recodified as 49 USC Section 303.

(b) Aviation effects on wildlife. The responsible FAA officials should not use Part 150 guidelines to determine aviation noise impacts on wildlife. This is because those guidelines focus on human responses to noise. Instead, the officials, whenever possible, should use available, published information that addresses the effects of noise on the species of concern.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATION	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
49 USC Section 44715, Controlling Aircraft Noise and Sonic Boom	Authorizes FAA, after consulting with the U.S. Environmental Protection Agency (EPA), to prescribe standards and regulations to measure, control, and reduce aircraft noise.	FAA and EPA
49 USC Sections 47101 (a)(2), (c) and (h), Airport Improvement Policies.	Establishes a national policy to minimize current and projected noise impacts on nearby communities resulting from building and operating aviation facilities. This section also states it is in the public interest to recognize the effects of airport capacity expansion projects on aircraft noise and to reduce noncompatible land uses around airports. This section also requires the Secretary of Transportation to consult with the Secretary of the Interior and the EPA Administrator about projects involving new airports, new runways or major runway extensions that may cause significant environmental impacts.	FAA
49 USC Sections 47501-47510, Noise Abatement	Requires the Secretary of Transportation to issue regulations establishing a system for measuring and assessing noise impacts on individuals near airports. The regulations must also identify land uses normally compatible with various exposures of individuals to noise. FAA published these regulations at 14 CFR Part 150.	FAA

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS. A proposed airport development action's environmental analysis normally addresses potential noise impacts. Typical airport actions that could cause noise impacts include: new or extended runways and taxiways; navigational aid (NAVAID) installation; land purchases for airport-related uses; substantial amounts of airport construction or demolition activities; and substantial changes in aircraft operations involving numbers of aircraft, aircraft types, new or revised approach or departure profiles or tracks; or new or relocated airport access roadways.

a. Applicability. Research has shown aircraft noise may exceed levels that make certain noise sensitive land uses noncompatible with airport operations (e.g., residences, schools, churches, hospitals, etc.; (see FAA Order 5050.4B, paragraph 9.n)). As a result, FAA assesses the effects of airport development that has the potential to cause aircraft noise outside an airport's boundaries. For most actions, FAA need not do a noise analysis for airport actions whose DNL 65 dB contour lies entirely within airport boundaries. However, as noted above, context should be considered in determining what type of noise

analysis is appropriate. In these instances, the responsible FAA Official should contact the Planning and Environmental Division (APP-400) for further guidance.

b. Airport actions FAA must assess. FAA must conduct a noise analysis for the airport actions listed below.[3]

(1) General aviation-related actions. Projects that would involve more than:

(a) 90,000 annual (247 average daily operations) piston-powered aircraft operations in Approach Categories A through D (i.e., landing speed < 166 knots); or

(b) 700 annual jet-powered aircraft operations (about 2 average daily operations) during the period the environmental document covers.

Note: These levels of piston-powered or jet-powered general aviation operations have been shown to produce a DNL 60 dB contour less than 1.1 square miles in area and extending no more than 12,500 feet from the start of takeoff roll. The resulting maximum DNL 65 dB contour would be 0.5 square mile and would not extend more than 10,000 feet from the start of takeoff roll. The Cessna Citation 500 and other jet aircraft producing noise levels less than or equal to the Beech Baron 58P may be counted as propeller aircraft, not jets.

(2) Actions involving a new airport location, a new runway, a major runway extension, or runway strengthening. A noise analysis is needed for these projects when they would:

(a) serve Airplane Design Groups I and II, if forecast operations exceed those noted in section 3.b(1) of this chapter;

(b) serve Airplane Design Groups III through VI;

(c) be highly controversial because of noise; or

(d) would serve special aircraft (e.g., helicopters) and those aircraft would fly over noise sensitive areas.

(3) Actions at existing heliports or airports. A noise analysis is needed at these facilities when forecasted helicopter operations for the period the analysis covers would exceed 10 operations per day (annual basis) and hover times exceed 2 minutes.

Note: Helicopter operations typically cause a DNL 60 dB contour having an area less than 0.10 square mile and not extending more than 1,000 feet from the helicopter pad. This finding applies to Sikorsky S-70 models having a maximum gross takeoff weight of 20,244 pounds, or any other helicopter of less weight or causing equal or lower noise levels.

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[3] FAA Order 1050.1E, Appendix A, paragraph 14.6a

4. PERMITS, CERTIFICATES, AND APPROVALS. No permits, certificates, or approvals are needed.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES – ENVIRONMENTAL ANALYSIS.

a. Required consultation. As needed, the responsible FAA official should ensure consultation with the entities noted below occurs. An appendix to the environmental document should include proof of that coordination.

(1) Federal or state agencies, Federally-recognized tribes or Native Hawaiian organizations that have expressed noise concerns;

(2) local governments having jurisdiction over land uses and having concerns about project-related noise.

(3) aviation entities (e.g., airport users, pilots, owners of on-airport businesses, etc.) who have expressed concerns about noise due to project-related changes in airport operations or flight procedures;

(4) citizen groups having an interest in aircraft noise issues and who have expressed concerns about airport development (see *Community Involvement Manual*, FAA-AEE-90-03, August 1990, if needed); or

(5) the National Park Service (NPS), U.S. Fish and Wildlife Service (FWS), and the Bureau of Land Management (BLM), as needed, to coordinate the issue of project-related noise over resources these agencies manage.

6. DETERMINING IMPACTS. The responsible FAA official needs to consider how airport actions may change future operations and the levels of aircraft noise affecting communities in areas surrounding the airport. The official must also consider noise from non-aviation sources for purposes of cumulative impacts analyses. Those noise sources include, but are not limited to, project-related construction activities and/or surface transportation, other projects in the area. To determine surface transportation impacts, the Federal Highway Administration's (FHWA) *Procedures for Abatement of Highway Traffic Noise and Construction* Noise (23 CFR Part 772) or a method a state transportation agency recommends may be used.

a. Aircraft noise. FAA has established a standard process to evaluate aircraft noise impacts. The responsible FAA official must use that process to assess an airport action meeting one of the criterion in section 3.b.(1)-(3) of this chapter. This process includes noise models, land use compatibility, noise impact thresholds, and supplemental noise analysis. The following sections discuss those issues.

b. Noise screening models. FAA has identified the following two noise screening models to help determine if a detailed noise analysis using the Integrated Noise Model

(INM) is needed to properly assess a proposed action's noise effects (see section 6.c of this chapter).

(1) Area Equivalent Method (AEM). The AEM is a mathematical process that estimates changes in the area of the existing DNL 65 dB contour. It is a screening tool used to determine if further analysis using the more detailed INM is needed. Review the following information to determine if using the AEM is appropriate for a proposed action.

(a) The AEM may be used for proposed actions that would change the *area*, but not the *shape* of the DNL 65 dB contour. Such actions typically include those that would not require:

(1) a change in existing air traffic ground tracks or flight profiles;

(2) an increase numbers of daily operations;

(3) changes in fleet mix; or

(4) changes in operation times.

(b) Do not use the AEM for actions that would change the *shape* of the noise contour that would result from changes to *existing* air traffic flight tracks or flight profiles.

(c) If the AEM is appropriate for use, the AEM analysis should compare the future condition without the proposed action (i.e., no action/no build alternatives) to the future condition with the proposed action and reasonable alternatives.

(d) If the AEM calculation shows an increase of *17 percent or more* in the area within the DNL 65 dB contour, or if the proposed action or reasonable alternative is not suitable for AEM, then the proposed action or reasonable alternative must be analyzed using the INM to determine if significant noise impacts would result.

(2) Air Traffic Noise Screening Model (ATNS). When the AEM is not appropriate, the ATNS may be a usable screening tool to quantify project-related changes in noise exposure that air traffic changes above 3,000 feet above ground level (AGL) would cause. Air traffic changes above this altitude are normally categorically excluded, but when they occur over noise sensitive areas they may be highly controversial on environmental grounds. That controversy may constitute an extraordinary circumstance requiring FAA to prepare an environmental assessment (EA). ATNS results showing noise sensitive areas receiving a 5 dB change due to a proposed action or reasonable alternative are helpful in determining the magnitude of change over those areas when use of the AEM is not allowed. Contact the Office of Environment and Energy (AEE) for ATNS software and user manuals.

c. The Integrated Noise Model, the model for detailed noise analysis. FAA requires the use of the Integrated Noise Model (INM) for airport development actions requiring a detailed noise analysis. INM is an average-value-model designed to estimate long-term average effects using average annual input conditions. It also provides information on other, pre-defined supplemental noise metrics (see sections 8.d.(1)-(4) of this chapter).

(1) INM input. INM model input data vary by project. Airport-specific data are needed to accurately represent factors that are critical to a proposed action's noise analysis (i.e., project-specific flight tracks, aircraft fleet mix, standard and user defined aircraft profiles, and terrain characteristics). AEE manages the INM. Therefore, AEE *must* provide written approval for requested changes to INM input files, procedures, aircraft substitutes, any standard, or default data (see footnote 6 for further information).

(2) INM, the required model. INM is FAA's *required* noise model for assessing airport development] projects when:

(a) the AEM or ATNS shows more detailed information is needed; or

(b) based on experience, the responsible FAA official knows that a particular airport project requires a detailed noise analysis (i.e., new airport, new runway, changed runway configurations, highly controversial).

(3) Model version. The INM is the model FAA requires for all noise analysis. The data and model version used should be the latest and most currently available when the responsible FAA official begins preparing the analysis for a proposed action. If FAA issues a new version of INM after a project's noise analysis has begun, the updated version may be used to provide additional disclosure concerning noise, but use of the new model version is not required. However, the official should carefully consider using the new version when there is a major revision or addition to the analysis or project (e.g., if baseline and/or forecast years are updated, thereby creating the potential for different impacts).

(4) INM output. The INM produces noise contours used to prepare noise graphics for NEPA analyses.[4] The INM program includes tools for comparing contours and commercial Geographic Information Systems (GIS) to show various land uses relative to current, future no action, and future project noise levels.

(5) Grid points. INM calculates project-induced noise changes at a specific site or "grid point." Grid points help the responsible FAA official determine if project noise at a specific location would occur over noise sensitive land uses (e.g., hospitals, schools,

[4] INM is also used to generate noise exposure maps for Noise Compatibility Programs under 49 USC Section 47503, which addresses those maps.

churches, etc.) and the level of that noise impact. Such information is often helpful in designing mitigation or improving the public's understanding of a project's noise effect.

Note: The Noise Integrated Routing System (NIRS) is a model that provides information to evaluate aviation noise changes over large areas that result from *regional air traffic changes*. Those changes affect expansive areas and are not normally due to an airport project. Do ***not*** use NIRS for airport projects.

f. Noise analysis. The responsible FAA official should determine the data needed to accurately predict a project's noise impacts. The following sections address the information needed to accurately estimate those impacts.

(1) Study years. FAA should coordinate appropriate timeframes for the noise study with the airport sponsor before the noise analysis begins. The study years must be consistent with the timeframes FAA will examine for other environmental impact categories in the NEPA study. Sometimes those study years may be the same as those used in available a Noise Compatibility study conducted under Part 150 or in the airport sponsor's planning document (e.g., Master Plan). Normally, time frames assessed in NEPA documents include:

(a) The existing condition (normally the last 12 consecutive months of available data);

(b) Future year without the proposed project (i.e., no action/no build alternative);

(c) The future year of anticipated project implementation (project opening year);

(d) Another future year, normally, 5 to 10 years beyond the projected year of project implementation. In some cases, this may be the outer year of an airport sponsor's Master Plan. Additional timeframes may be desirable for a particular project.

(2) Noise contours analyzed. Use the INM to develop the DNL 65, 70, and 75- dB noise contours. Normally, the following noise contour sets are needed as discussed below:

(a) the existing DNL 65, 70, and 75 dB contours;

(b) the future DNL 65, 70, and 75 dB contours without the proposed action (i.e., the no action/no build alternative);

(c) the future DNL 65, 70, and 75 dB contours for the proposed action; and

(d) the future DNL 65, 70, and 75 dB contours for each reasonable alternative.

Note: In some circumstances, additional contours may be shown

(3) Noise compatibility evaluation. The noise contours developed should be compared to land use information and population data. This provides information on potential noise levels people in the affected area would experience. Normally, the following information should be quantified for each set of contours described above. The contours should be depicted on maps to show noise sensitive areas and other land uses within the action's noise impact area.

(a) The number of residences or people living within each noise contour at or above DNL 65 dB. Per FICON, in some circumstances, an evaluation of the 60 DNL may be needed as discussed in section 6.f.(4) of this chapter. This includes the net increase or decrease in the number of residences or people exposed to that noise level.

(b) The locations and numbers of noise-sensitive land uses (e.g., schools, churches, hospitals, and parks) within each contour at or above DNL 65 dB.

(c) The area (square miles or acres) of general land use classifications within each of the above noise contours (optional).

(d) Mitigation measures in effect or proposed and their relationship to the alternatives analyzed.

g. Noise monitoring. Noise monitoring data may be included in an EA or EIS at the discretion of the responsible FAA official for information or disclosure purposes only. Noise monitoring is *not* required for FAA NEPA noise evaluations. FAA does *not* use monitoring data to calibrate the INM.

h. Surface transportation noise. Some airport development has the potential to cause surface transportation noise impacts. Those impacts may result from:

(1) new, expanded, or re-aligned airport access roads;

(2) increased airport automobile or truck activity;

(3) increased vehicle speeds; or

(4) other surface-transportation related actions.

Therefore, a proposed action's surface transportation plan should be reviewed to determine if it would change traffic noise in the affected area. If any of surface transportation impacts potentially exist, conduct a noise analysis using accepted highway noise methodologies (i.e., FHWA's *Procedures for Abatement of Highway Traffic Noise and Construction* Noise (23 CFR Part 772)).

i. Construction noise. Review the proposed airport development to determine if potential construction noise impacts would occur. Activities that may cause construction noise impacts include blasting, demolition, construction equipment operation, use of

temporary haul routes, and temporary re-routing of vehicles. If a construction noise analysis is needed, the FHWA method noted in paragraph 6.h. of this chapter may be appropriate.

j. Environmental document information. The environmental document must contain information to enable reviewers to understand the basic assumptions and results of the noise analysis. Use tables and figures to help summarize information. Place the details about the analysis (model input detailed assumptions, etc.) in an appendix to the EA or EIS. Generally, the environmental document's text should include the following information:

(1) Forecast activity data. Airport sponsors provide these data. They address forecast aircraft activity, for the alternatives being analyzed.

(a) The data must be for the periods noted in section 6.f.(1)(a)-(d) of this chapter;

(b) The sponsor's forecast must be consistent with the Terminal Area Forecast (TAF). To be consistent with the TAF, the sponsor's 5-year forecast should be within 10% of the TAF. A 10-year forecast should be within 15% of the TAF (per FAA Order 5050.4B, paragraph 706.b.(3)); and

(c) FAA must approve the forecasts.

(2) Base maps. These maps show the existing airport, the proposed airport development's runway alignments and designations, and the area near the airport. Usually, the Airport Layout Plan (ALP) is sufficient, but a 7.5-minute "quadrangle map" overlain with the airport's facilities provides a useful base map. This information should also include a noise and land use inventory that satisfies the FAA guidelines in Program Guidance Letter 03-02, *Determining Justification of Projects for the Noise Set-Aside Based on Currency of Noise Exposure Maps*.[5]

(3) Flight track maps. These maps show generalized arrival and departure tracks on noise contour maps. They depict aircraft positions relative to land uses or other features in the airport vicinity.

(4) Noise exposure maps. These maps show DNL contours superimposed on land uses in the airport vicinity. The maps must clearly and prominently show noise sensitive land uses such as residences, schools, hospitals, churches, etc., relative to the DNL 65, 70, and 75 dB contours. The environmental documents should provide separate maps for each of the following airport layouts:

(a) the existing airport;

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[5] http://www.faa.gov/airports_airtraffic/airports/aip/guidance_letters/media/PGL_03-02.doc

(b) the future airport without the proposed action;

(c) the future airport with the proposed action; and

(d) the future airport for each reasonable alternative.

ARP recommends using data that are no more than 3 years old to ensure model input data accurately reflect conditions at the airport. The responsible FAA official must independently and periodically review these files during the environmental review process to verify they accurately reflect the airport's current and forecast: activity, aircraft fleet mix, runway use, and flight track use. Sensitivity analyses may be necessary to assure the accuracy and validity of the data used.

(5) Noise exposure data tables. These tables describe land uses and provide the number of noise sensitive land uses in each contour (DNL 65, 70, and 75 dB) for the scenarios mentioned in sections 6.j.(4)(a)–(d) of this chapter. The responsible FAA official uses these data and data concerning the level of projected noise increase to determine if any alternative would cause a significant noise increase (DNL 1.5 dB or greater) over noise sensitive land uses.

Note: Due to the physics of sound energy, a clearly perceptible noise change normally occurs when a DNL 3 dB increase occurs within the DNL 60 to 65 dB contour or a DNL 5 dB increase occurs in the DNL 45–60 dB contour.

k. Noise analysis duties of the responsible FAA official. The responsible FAA official must complete the following duties to provide an acceptable noise analysis:

(1) Ensure AEE approves changes to INM input data files or changes in flight profiles for noise abatement departure procedures (NADPs). The environmental document must include a copy of AEE's approval if the sponsor proposes use of modifications to the INM.[6] If noise abatement take-off procedures are proposed, the two recognized noise abatement departure profiles (NADPs) are the "Close-in Community NADP" and "Distant Community NADP." FAA Advisory Circular 91-53A, *Noise Abatement Departure Profiles*, provides information on these NADPs.

(2) Ensure the administrative record includes an electronic copy of model input files and input documentation.

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[6] INM users should review Appendix B of the INM Users Guide for detailed instructions on submitting requests to modify INM input files, flight profiles, or other factors. Users should send their requests to the responsible FAA official in the regional Airports Division Office or the Airports Planning and Programming Division, APP-400. The official or APP-400 will forward the request to AEE. AEE will send its response to the FAA office (the regional Airports office or APP-400) that sent the request. This ensures proper coordination occurs between the model user and FAA.

7. DETERMINING IMPACT SIGNIFICANCE.

a. Significant impact. Use the information obtained during the analysis completed to meet other sections of this chapter and the thresholds in the following table to determine if an action would cause a significant effect. Local land use compatibility standards do not alter this threshold for NEPA purposes.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
- **For most areas:** When an action, compared to the no action alternative for the same timeframe, would cause noise sensitive areas located at or above DNL 65 dB to experience a noise increase of at least DNL 1.5 dB. An increase from DNL 63.5 dB to DNL 65 dB over a noise sensitive area is a significant impact.	ARP reminds the responsible FAA official that for NEPA purposes, DNL 3 dB impacts over residential areas between the DNL 60 and 65 dB contours do not cause significant adverse noise impacts. However, the potential for mitigating noise in those areas should be weighed, including consideration of the same range of mitigation options available at DNL 65 dB and higher and eligibility for Federal funding.
- For national parks, national wildlife refuges and historic sites, including traditional cultural properties where a quiet setting is a generally recognized feature: The DNL 65 dB level at which residential land uses are compatible does not adequately address noise impacts on visitors to these areas. As a result, relevant and/or supplemental noise analysis is appropriate in certain circumstances. Responsible FAA officials must be cognizant that Part 150 guidelines do not adequately address the effects of noise on visitors to areas within a historic site or national park or wildlife refuge protected under Section 4(f) of the DOT Act (see Chapter 7 of this Desk Reference for information on Section 4(f), recodified as 49 USC Section 303) and where non-aircraft noise is very low and a quiet setting is a generally recognized feature or attribute of the site's significance.	

From: Table 7-1, FAA Order 5050.4B

b. Mitigated Finding of No Significant Impact (FONSI). If sufficient mitigation that would reduce all potentially significant noise impacts below threshold levels measures is included as part of a project and the sponsor has made binding commitments to carry out those measures within its authority, then an EIS is not necessary (absent significant impacts in other categories). In such cases, FAA may conclude the action by issuing a FONSI. The FONSI or FONSI/Record of Decision (ROD) must list the measures FAA has made a condition

of project approval, including those the sponsor will be required to carry out through grant assurances or other means.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. A potentially significant noise impact often has corresponding impacts on land uses. FAA must prepare an EIS, if mitigation will not reduce impacts below the noise thresholds in section 7 of this chapter. Preparers should avoid repeating information presented in the EIS's Compatible Land Use chapter. As appropriate, preparers should refer the reader to either the EIS's Noise chapter or the Compatible Land Use chapter, depending on how the preparers have addressed noise and compatible land use issues.

b. Information needed when FAA determines a significant noise impact. The EIS should include information discussed in earlier sections of this chapter in the EIS. It should also include the following information as needed.

(1) Refined information. If the sponsor prepared an EA, revise the text and graphics as needed to meet EIS requirements. The EIS must thoroughly explain significant noise impacts. Sometimes, a more complete description of the noise events contributing to the DNL contours with added tables charts, aerial photographs, maps, or metrics is sufficient. In other cases, supplemental analyses may include using metrics other than DNL (see section 8.d of this chapter for supplemental analysis information).

(2) The DNL 60 dB contour. Where an airport development project has a potentially significant impact on noise sensitive areas (i.e., a DNL 1.5 dB or more noise increase within the DNL 65 dB noise contour), the EIS noise analysis must depict the DNL 60 dB contour as well. Further analysis is required in this circumstance to evaluate potential increases of DNL 3 dB and greater between DNL 65 and 60 dB and potential mitigation measures.

This information helps to further disclose potential project-related noise changes in the airport area.[7] Additional contours are optional, as discussed in paragraph 1f, above. Provide figures showing noise sensitive land uses within the DNL 60 dB contour and the DNL exposure level for each of the following scenarios.

[7] FAA has adopted the recommendation of FICON to examine DNL 3 dB or greater noise increases within the DNL 60-65 dB contour where a project has significant impacts. A DNL 3 dB increase in this contour causes a 3 percent increase in the percentage of people highly annoyed (FICON, 1992, Technical Report, Section 3, pg. 3-17.

(a) the future no action alternative;

(b) the proposed action; and

(c) each reasonable alternative.

Information on addressing the following items for each of the scenarios noted above is helpful.

(1) The locations and numbers of other noise-sensitive land uses such as homes, schools, churches, hospitals, or public parks in the DNL 60 to 65 dB contour where a DNL 3 dB noise increase could occur. [Also include the number of residences or people living within the DNL 60-65 dB contour where the project would cause a DNL 3 dB increase.

(2) To the extent appropriate and practicable FAA should consider the same range of mitigation options that are potentially available at DNL 65 dB, including eligibility for federal funding for mitigation. Where possible, FAA and the airport sponsor should consider operational noise abatement measures. The environmental document should describe the operational noise abatement measures and their benefits. An airport sponsor's or FAA's consideration of measures to mitigate impacts within the DNL 60 to 65 dB contour does not mean either party is committing to carrying out that mitigation.

(3) **Impacts on people.** As needed, discuss designated land uses that might contribute noise impacts higher than airport-related noise, on the affected population.

(a) include information on climate and how it affects the types of housing construction in the affected area and how that construction affects the housings' sound insulation capabilities;

(b) include information on lifestyles of affected populations and how projected airport-induced noise would affect their indoor and outdoor activities (i.e., would noise interfere with speech or sleep).

(c) include information on background or ambient noise levels that may be helpful when addressing noise in rural areas.

(4) **Non-aviation noise.** Include an analysis of non-aviation noise sources such as project-related construction or roadway noise. Give special attention to construction noise near noise sensitive areas.

c. **Supplemental noise analysis.** FICON (1992) noted that supplemental metrics are useful in addressing various public concerns and to help the public better understand noise impacts. As a result, FAA sometimes uses supplemental noise information to describe aircraft noise impacts for specific noise-sensitive locations or situations. The responsible FAA official should consider the following factors when developing a supplemental noise

analysis. However, *before* making a decision about the supplemental metrics or the analysis, the responsible FAA official *must* consult the Office of Environment and Energy (AEE) and obtain AEE's approval on the appropriate supplemental noise analysis.

(1) Community concerns. When designing a supplemental noise analysis, consider community concerns and the types and nature of community activities potentially affected. Tailor the analysis to enhance reader understanding of important facts concerning noise affecting populations. The analysis designed depends on the circumstances for each project. No single supplemental analysis is preferred. Based on prior analyses, the following issues may concern a community.

(a) Sleep disturbance. FICON's 1992 report focused on a dose-response relationship the U.S. Air Force's Armstrong Laboratories developed. The following equation provides an estimated percentage of people awakened at a particular SEL.[8]

$$\% \text{ awakening} = 0.0087 \times (\text{SEL} - 30)^{1.79}$$

Note: SEL is the sound exposure level. See section 8.d.(1) of this chapter for more information.

(b) Speech interference. FICON recommends using a cumulative A-weighted metric limited to the affected time period (L_{eq}) or time-above (TA) (see section 8.d.(2) of this chapter). FICON also provides a table addressing noise levels and speech interference (see FICON, 1992, Technical Appendix, Section 3, pg. 3-9).

(c) Parks, wildlife refuges, and historic properties. The responsible FAA official should, in consultation with appropriate land management agencies, consider using a supplemental noise analysis for locations within a proposed action's study area. Such locations may include segments of or entire reaches of a national park, a national wildlife refuge, and a historic property (including traditional cultural properties) that is characterized by a low noise setting and where a quiet setting is a generally recognized purpose and attribute of the resource of concern.

(2) Data to use. The INM provides supplemental metric data. When the responsible FAA official determines supplemental analyses are needed, use the same database and INM model version used to develop DNL contours.

d. Supplemental noise metrics. FAA uses supplemental metrics chiefly in EISs to help further describe aircraft noise impacts for specific noise-sensitive locations or situations experiencing a significant noise effect. The metrics are also helpful in developing

[8] Federal Interagency Committee on Aviation Noise (FICAN). 1997. *Effects of Aviation Noise on Sleep Disturbance.*

mitigation for that effect. FAA also uses supplemental metrics to aid the public's understanding of significant noise impacts. The following metrics may be used to provide more information to help the public understand project noise on issues of community concern (see section 8.c.(a)-(c) of this chapter). Review Table 17.1 at the end of this chapter for guidance on the metric to use when evaluating the activity or response of concern.

(1) SEL (sound exposure level). This is a measure of a noise event's physical energy. It takes into account the noise's level and duration and is referenced to a standard duration of one second.

(2) TA (Time Above). This is a single event metric. It provides the number of minutes an aircraft's noise level is louder than another noise level during a given period, Examples include the duration an aircraft is louder than the ambient noise or louder than the level above which speech interference may occur. TA may include information ranging from time above a specific noise level at a specific point, to the time above multiple levels (in 10 dB increments) throughout an area at specified grid points.

(3) L_{max} (maximum sound level). This is the loudest sound measured at a location during an aircraft's operation. It is useful for determining detectable noise changes. A 3 dB increase in L_{max} is "barely perceptible," while a 5dB increase in L_{max} is "clearly perceptible." L_{max} may also be used to assess noise on animals.[9]

(4) L_{eq} (equivalent sound level). This is the average noise level during a designated period (normally less than 24 hours). For example, L_{eq8} is used to determine the level of total noise during an 8-hour school day. It is helpful in determining if aircraft noise would or would not disturb classroom instruction, and, consequently, a need to include noise level reduction measures as project mitigation.

(5) Audibility. This is a time-based metric developed the National Park Service developed to evaluate effects of aircraft noise on natural quiet in Grand Canyon National Park and other units of the National Park System. The Integrated Noise Model now has the capability to model audibility.

b. Mitigation. Any mitigation measures to be taken in addition to those associated with other land use controls should be discussed. FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, presents guidance for airport operators and planners to help achieve compatibility between airports and their surrounding areas. The EIS should describe proposed mitigation when land management agencies provide that

[9] Federal Interagency Committee on Noise (FICON), 1992, *Federal Agency Review of Selected Airport Noise Analysis Issues*, Technical Appendix B, page B-10.

information. FAA or the sponsor should fully consider the mitigation and balance its benefits against those of the proposed action.

NEPA requires a Federal agency preparing an EIS to discuss mitigation in sufficient detail to disclose that that the agency has fairly evaluated environmental consequences (*Robertson vs. Methow Valley*, 490 U.S. 332 (1989)). In addition, under 49 USC Section 47106(c)(1)(B), FAA may not approve Federal funding for major airport development projects, unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension. For more information about the mitigation required, see FAA Order 5050.4B, paragraph 1203(b)(4). In accordance with NEPA and 49 USC Section 47106(c)(1)(B), an EIS must discuss and adopt mitigation measures recommended by the agencies that a State authorizes to plan for the area surrounding the airport. Sections 8.b(1)-(3) of this chapter provide examples of noise mitigation measures for a proposed airport action. If feasible, provide an estimated schedule for undertaking accepted mitigation. Where there is a DNL 1.5 dB or more increase in noise over noise sensitive areas within the DNL 65 dB or greater noise level, there should be further analysis. This analysis is needed to determine whether there noise increase of DNL 3 dB or higher over noise sensitive areas within the DNL 60–65 dB noise contour. Measures to mitigate these impacts should be considered for purposes of NEPA, including:

(1) Operational measures. Some common operational mitigation measures include:

(a) changes in flight tracks or runway usage;

Note: New or revised flight procedure changes at less than 3,000 feet AGL may route air traffic over noise-sensitive areas not previously overflown. These procedures must be examined, even if they affect fewer people than the no action. This analysis is needed to determine if the proposed procedures would cause a significant impact to the newly affected community. Mitigation to the area newly affected should be included where appropriate. Be sure to assess impacts due to the mitigation. This analysis is needed to ensure mitigation does cause more severe impacts than unmitigated impacts.

(b) voluntary noise abatement procedures; or

(c) changes in airport operations acceptable to airport users that do not interfere with interstate commerce.

(2) Land-use related measures. Some common land use mitigation measures include:

(a) Buying land or land interests such as air rights, easements, and development rights. These measures establish airport-compatible uses of the affected properties;

(b) Building noise barriers or acoustic shielding that does not attract wildlife hazardous to aviation. (See FAA Advisory Circular 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports;* or.

(c) Sound insulating affected structures having noise sensitive uses (i.e., private residences, hospitals, churches, public buildings, or other structures accommodating those uses)

(3) **Construction measures.** Common construction mitigation measures include:

(a) limiting the time of day when machinery may operate, blasting may occur, or trucks operate on streets traversing noise sensitive areas; or

(b) recommending the use of muffled heavy equipment.

TABLE 17.1 Suggested Metrics to Determine or Describe Noise Impacts. This table is intended to guide analysts who evaluate a project's noise effects. In addition to DNL, the table provides information on other metrics that may further disclose and explain those effects.

POSSIBLE HUMAN RESPONSE	CORRESPONDING AVERAGE, CUMULATIVE NOISE METRIC	CORRESPONDING SINGLE EVENT METRIC	TIME AIRCRAFT HEARD ABOVE A PARTICULAR NOISE LEVEL	THE NUMBER OF EVENTS THAT WILL OCCUR ABOVE PARTICULAR NOISE METRIC
Community annoyance – How people psychologically respond to a given noise.	**DNL** - Average Day-Night Sound Level. ***L_{eq}** - Equivalent Sound Level.	***Lmax** – Maximum Sound Level. ***SEL** - Single Exposure Level.	***Time Above** - Typically, 60 or 65 dB. Above these levels, noise would interfere with normal conversational levels.	***N_x –** Numbers of events specified at each sound level.
Sleep disturbance - Sound levels causing sleep arousal.	***Nighttime L_{eq}** (10:00 p.m. - 7:00 a.m.= typical sleeping hours)	***SEL -** (Federal Interagency Committee on Aviation Noise (FICAN), 1997, uses SEL to predict the percentage of people an SEL would awaken.		
Speech interference - Intruding noise levels that may mask normal conversational speech levels and reduces listener understanding.	***L_{eq} daytime** (7:00 a.m. to 10:00 p.m. = typical activity hours)	***L_{max} or SEL**		
School learning –Noise level and that could adversely affect classroom activities. This information is used to determine the level of noise level reduction needed to reduce or	***School hour L_{eq}** (vary) ***L_{eq}** - 45 dB interior sound level goal.	***SEL** used to determine the interior noise level reduction (NLR). The minimum standard is 5 dB SEL. SEL is favored for analytical		

eliminate that interference.	goal.	purposes over Preferred Speech Interference Level[2]		
Park visitor annoyance – Noise level that would interfere with visitor enjoyment and appreciation of natural quiet. May vary by season or time of day.	***L_{eq}** (based on of park operation or visitor hours. (varies)	**Lmax**	**TAA** - Time Above Ambient sound levels.[3]	

* = Supplemental metrics used to further explain and disclose noise impacts. See section 8.d. of this chapter for more information.

[1] No required supplemental metrics. Selecting supplemental metrics is done case-by-case

[2] PSIL is arithmetic average sound pressure levels for the 500, 1,000, and 2,000-hertz octave bands.

[3] Often, local ambient (background) measurements are helpful.

CHAPTER 18. SOCIAL IMPACTS

1. INTRODUCTION AND DEFINITIONS.

a. General. FAA must evaluate proposed airport development actions to determine if they would cause social impacts. This evaluation should include effects on health and safety risks to children, and socioeconomic impacts. Those impacts include moving homes or businesses; dividing or disrupting established communities; changing surface transportation patterns; disrupting orderly, planned development; or creating a notable change in employment.

b. The "human environment." CEQ regulations at 40 CFR 1508.14 state that the "human environment" addresses the relationship of people with their natural and physical environments. Since changes to either of those environments typically do not occur without affecting people, Section 1508.14 requires that environmental documents prepared for Federal actions address social impacts.

c. Children's Environmental Health Risks and Safety Risks. Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, defines the risks to children's safety that are attributable to products or substances that the child is likely to touch or ingest. Examples include the air we breathe, the food we eat, the water we drink or use for recreation, and the soil we use to grow food. Environmental documents should assess project-related impacts with the potential to have a disproportionate effect on children's environmental health or safety.

d. Socioeconomic impacts. The principal impacts to consider are associated with relocating or disrupting a residential or business community, transportation capability, planned development, or employment. Environmental documents should provide information on:

(1) The individuals and families (e.g., numbers and characteristics) an action would displace.

(2) The effects of that displacement on the neighborhood and housing to which the displaced people are likely to move, including information on the capability of the neighborhood to provide adequate relocation housing for the families the action would displace. If needed, the environmental document should describe any special relocation advisory services available for interpreting benefits or other assistance available for affected non-English speaking minorities.

(3) The businesses an action would displace.

(4) The effects of moving the businesses to other areas. Include information on the areas' abilities to provide replacement or new buildings or other features associated

with the affected businesses. If needed, the environmental document should describe any special relocation advisory services available for interpreting benefits or other assistance available for affected non-English speaking minorities.

Note: Chapter 10 presents information on Environmental Justice impacts.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Council on Environmental Quality (CEQ) Regulations Implementing NEPA (40 CFR Section 1500 *et. seq.)*	Section 1502.1 states that the Federal government must fully and fairly discuss significant environmental impacts and the reasonable alternatives that avoid or minimize those effects on the human environment. Section 1508.27 requires Federal agencies to consider the significance of the impacts from a proposed action by considering the intensity and context of the impacts	CEQ
Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 USC Section 4601, *et. seq.*) (PL 91-646 amended by the Surface Transportation and Uniform Relocation Act Amendments of 1987, Title IV of PL 100-17, and PL 105-117) and 49 CFR Part 24 (Implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970)	FAA must meet 49 CFR Part 24 requirements if an airport action involving FAA approval or funding would require purchasing real property or displacing people or businesses.	FAA
Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*	Children may suffer disproportionately from health risks and safety risks. As a result, consistent with their missions and as practicable, Federal agencies must make child protection a high priority. To do so, they must assess project-related impacts disproportionately affecting children's environmental health or safety. The Secretary of Transportation is a member of the Task Force responsible for carrying out this Executive Order. This group provides the President with strategies and recommendations to protect child health and safety.	Task Force on Health Risks and Safety to Children

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. Airport actions. The environmental analysis of a proposed airport projects must include discussions of potential social impacts. Typical airport actions that could cause social impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities and rental car lots; a significant increase or change in aircraft operations; and significant amounts of construction/demolition activity.

4. PERMITS, CERTIFICATES, AND APPROVALS.

a. Coordination evidence. Typically, FAA needs no formal Federal permits, certifications, or approvals when social impacts occur. The environmental document should contain evidence showing the airport sponsor has coordinated with affected municipal jurisdictions or appropriate social and/or transportation agencies located in the affected area.

b. Documented information. The environmental document should provide the following information and any substantive comments or opinions addressing these issues as needed:

(1) the availability of comparable replacement housing;

(2) the proposed action's consistency with local land-use and transportation planning objectives;

(3) the capacities of existing public service providers, infrastructure, utilities, and local economics sustaining an affected area's quality of life; or

(4) project-related impacts having the potential to have a disproportionate effect on children's environmental health or safety.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. Required consultation. Consultation with the following entities, as necessary, is often important when addressing an affected community's concerns about children's environmental health and safety and other socioeconomic effects.

(1) Local governments with jurisdiction over lands the action would physically or audibly affect. FAA's current 14 Code of Federal Regulations Part 150 criteria are helpful in determining land uses compatible with project-related noise levels.

(2) Local planning commissions and housing departments.

(3) Local business organizations and agencies such as the Chamber of Commerce or Economic Development Agency.

(4) Local agencies responsible for administering employment programs.

(5) Local transportation agencies. Contact these agencies when an airport action has the potential to affect the Level of Service (LOS) rating of local roads.

(6) Aviation groups, fixed base operators, and other on-airport businesses the proposed action would displace.

(7) Citizen groups having an interest in airport development (see FAA Advisory Circular 150/5050-4, *Citizen Participation in Airport Planning*). or

(8) Local public health agencies with jurisdiction over the affected area.

b. **More information.** The following Federal offices may also provide information.

(1) the U.S. Department of Housing and Urban Development's (HUD) Office of Community Planning Development provides information on local or regional social resources;

(2) the Sustainable Community Task Force provides information to local organizations on sustainable community development.

(3) the Task Force on Health and Safety Risks to Children provides recommendations to protect child health.

6. DETERMINING IMPACTS.

a. **General.** The environmental document should evaluate the proposed development's effects on the social and economic characteristics of affected communities. Focus on evaluating shifts in population, public service demands, roadway capacity, businesses, and economics. The environmental document should include information in sections 8.b-e of this chapter, as appropriate.

b. **Housing.** If the action would affect residential areas, include the following information.

(1) Provide the estimated number of households the action would displace. Include information such as owner/tenant status, estimated housing values, and rental rates of properties to be acquired.

(2) Provide the characteristics of the displaced households. As fitting, report the number of residents per household, the number of elderly or disabled people affected, family income levels, and race.

(3) Describe special relocation advisory services that will be provided to help elderly, disabled, minority, and/or low-income populations.

(4) Describe the physical and social impacts on the neighborhood(s) abandoned because of the proposed action and the reasonable alternatives.

(5) Include a survey addressing the estimated number of comparable replacement housing units in the area where displaced people would move. The information would provide data on the comparable replacement housing needed for the families the action would displace. Include the following information as necessary.

(a) Available price ranges and rental rates. This information is helpful in determining if affordable housing prices exist in area to which displaced residents would likely move.

(b) Identify the lack of available, acceptable replacement housing. If adequate supplies of comparable replacement housing are not available, consider starting "housing of last resort" procedures.

(d) Clearly state if the sponsor has the authority and is prepared to implement any necessary "last resort housing" provisions.

(6) In areas that would provide comparable replacement housing, describe the effects of project-related relocation residential influxes on the areas' neighborhoods. Also, discuss the abilities of those neighborhoods to meet increased service demands the proposed action would cause. Examples include the abilities to meet demands due to increased school populations, increased utility use, or demand placed on fire or police departments.

(7) Describe the benefits and services to which the displaced residents are entitled under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 49 CFR Part 24. See FAA Order 5100.37A *Land Acquisition and Relocation Assistance for Airport Projects* (or subsequent revisions),

(8) Estimate the cost and time required to relocate displaced residents in an orderly, humane manner.

(9) Include information on social issues obtained during public hearings conducted for the proposed action.

(10) Estimate changes in residential real estate taxes due to changes in the make up of neighborhoods in the areas residents leave and to which they move.

c. **Business effects.** If an action would affect businesses, include the following information as needed.

(1) Estimate the numbers, types, and sizes of businesses, farms, or non-profit organizations the proposed airport action would displace. Estimate the number of jobs and the income levels lost due to relocating or permanently closing those businesses.

(2) Identify the relocation's effects on the local economy and neighborhoods supporting the relocated or closed businesses. A survey and evaluation of the availability of replacement commercial or industrial sites able to accommodate the displaced businesses or organizations would be helpful. Identify those businesses or organizations occupying property that would remain adjacent to the real property acquired for the project. Determine if the businesses or organizations would experience substantial economic injury due to relocating or closing other businesses.

(3) Discuss the ability of local agencies and the sponsor to provide adequate relocation services for displaced businesses. As needed, describe special services that the agencies or sponsor would provide to aid relocated business owners. Also, if FAA determines the remaining business owners would suffer economic injury because of project-related acquisition of adjacent real property, discuss the airport sponsor's intent to provide services to businesses that are not displaced.

(4) Estimate expected costs and the time frames needed to relocate displaced businesses.

(5) Describe the benefits and services to which the displaced residents are entitled under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. See 49 CFR Part 24 and FAA Order 5100.37A (or subsequent revisions).

d. Transportation effects. Project-related changes to the local transportation system may cause social impacts. Provide information on the action's potential to reduce the LOS of airport access roads or of roads in the areas immediately surrounding the airport. Discuss any unacceptable changes in roadway LOS. Contact local, state, and Federal transportation management agencies for information on LOS.

(1) Estimate the number of daily vehicular trips that would occur on primary roads serving the airport.

(2) Describe the ability of the existing road network to meet estimated traffic demand. Describe changes to the system needed to accommodate traffic demands the action would cause. Include traffic re-routing, changes to street configurations or dimensions, and changes to land use patterns resulting from effects on traffic systems.

(3) Provide substantive comments from local, state, or Federal traffic management agencies. Summarize objections or concerns the agencies provide and describe how the sponsor will address those concerns.

(4) If project-related traffic patterns would cause air quality effects, refer the reader to the environmental document's Air Quality chapter addressing those patterns.

e. Children's health and safety risks. Environmental documents should identify and assess environmental health and safety risks that could disproportionately affect children.

(1) The Environmental Protection Agency's website provides information on the President's Task Force on Environmental Health Risks and Safety to Children.[1] The website includes information on asthma, unintentional injuries, lead-based developmental disorders, childhood cancer, and building and retrofitting schools. The Task Force has produced the *National Children's Study*, which examines the influence of environmental factors on children's health and development. Consult these sources as needed.

(2) Identify risks to child health or to safety that are attributable to products or substances that a child is likely to touch or ingest (e.g., air, food, drinking water, recreational waters, soil, or products they might use or to which they may be exposed).

(3) Provide substantive comments from local public health agencies about those risks or other substantive objections or concerns social agencies provide. Describe how the sponsor will address those concerns.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. The responsible FAA official should consider the following factors in consultation with agencies having jurisdiction or special expertise about land use in the airport-affected area.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
For **socioeconomic issues**: When an action would cause: • Extensive relocation, but sufficient replacement housing is unavailable. • Extensive relocation of community businesses that would cause severe economic hardship for affected communities.	A significant impact would not occur when controversy exists because property or business owner are dissatisfied with the amount of money an owner would receive due to relocation.

[1] http://yosemite.epa.gov/ochp/ochpweb.nsf/content/whatwe_tf_proj.htm#1

• Disruption of local traffic patterns that substantially reduce the Levels of Service of roads serving the airport and its surrounding communities. • A substantial loss in community tax base. For **Children's Health & Safety Risks:** An action causing disproportionate health and safety risks to children may indicate a significant impact.	

From: Table 7-1, FAA Order 5050.4B.

b. Potential mitigation measures. The environmental assessment (EA) should describe proposed mitigation when state and/or local agencies provide that information to address social impacts. FAA and the sponsor should fully consider the mitigation and balance its benefits against those of the proposed action. If FAA or the sponsor does not adopt any mitigation recommended, the EA should explain why. If feasible, provide an estimated schedule for undertaking accepted mitigation.

(1) Relocation impacts. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended), and 49 CFR Part 24 provide guidance on mitigation.

(2) Surface transportation. Surface transportation mitigation often includes roadway design changes to provide adequate LOS and roadway connections. FAA and the sponsor should work with appropriate traffic management agencies to develop the means to maintain acceptable LOS on those roadways that the project would affect.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. The U.S. Supreme Court has ruled that a Federal agency need not prepare an EIS when a proposed action does not affect the physical environment, but causes only social or socioeconomic impacts.[2] However, when FAA must prepare an EIS to assess impacts on the physical environmental, the EIS prepared for that action must address social impacts. The EIS should contain the following information in addition to that discussed in other sections of this chapter.

b. Housing impacts. Fragmenting neighborhoods or communities is likely to cause stress to affected people. As noted above, the EIS should mention this, while pointing out that such stress is not considered a significant impact for NEPA purposes. If sufficient

[2] *Metropolitan Edison Company v. PANE, People Against Nuclear Energy*; 460 U.S. 766 (1983).

decent, safe, and sanitary housing is not available, provide an analysis of efforts made to address this issue. If needed, include "housing of last resort" provisions required in Section 206(a) of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. If relocation would substantially disrupt a community, provide reasons why the project cannot avoid the disruption.

c. Business impacts. For business relocations causing substantial economic hardships, explain these effects and the reasons why the project cannot avoid them. When business relocation causes a loss of local jobs, explain the effects on the local economy resulting from job losses. Explain why those losses cannot be avoided.

d. Controversy. Disclose controversy arising because of inadequate replacement housing.

e. Secondary effects. Refer the reader to the EIS chapter on Induced Socioeconomic Effects (see Chapter 15) for detailed analysis of any secondary or induced effects the project would cause.

f. Environmental Justice. Refer the reader to the EIS Chapter on Environmental Justice for discussions on this topic (see Chapter 10).

g. Potential mitigation measures. The EIS should describe proposed mitigation when State or local agencies provide that information to address social impacts. The EIS should describe proposed mitigation when land management agencies provide that information. FAA or the sponsor should fully consider the mitigation and balance its benefits against those of the proposed action.

NEPA requires a Federal agency preparing an EIS to discuss mitigation in sufficient detail to disclose that environmental consequences have been fairly evaluated (*Robertson vs. Methow Valley*, 490 U.S. 332 (1989)). In addition, under 49 USC Section 47106(c)(1)(B), FAA may not approve a Federal funding for major airport development projects, unless the agency determines that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect. Major airport development projects are those that involve the location of a runway, new airport, or major runway extension. For more information about the mitigation required, see FAA Order 5050.4B, paragraph 1203(b)(4). In accordance with NEPA and 49 USC Section 47106(c)(1)(B), an EIS must discuss and adopt mitigation measures recommended by State or local agencies. If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 19. SOLID WASTE

1. INTRODUCTION AND DEFINITIONS.

a. General. Construction, renovation, or demolition of most airside projects produces debris (e.g., dirt, concrete, asphalt) that must be properly disposed. In addition, new or renovated terminal, cargo, or maintenance facilities may involve construction, renovation, or demolition that produces other types of solid waste (bricks, steel, wood, gypsum, glass). Therefore, airport sponsors should follow Federal, state, or local regulations that address solid waste. Doing so reduces the environmental effects of airport-related construction or operation. This chapter provides information on how alternatives under consideration could increase solid waste in an area. It also discusses how to address the effects of any increased waste volume and ways to mitigate those effects.

b. Solid waste defined. The Solid Waste Disposal Act notes the term "solid waste" includes garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or an air pollution control facility (42 USC Section 6903(27)). According to that Act, solid waste also includes solid, liquid, semisolid or contained gaseous material resulting from industrial, commercial, mining, agricultural, or community activities. See 42 USC Section 6903 for more detailed information. When using this Desk Reference, notice the term, "solid waste" does not include hazardous waste. Please see Chapter 13 of this Desk Reference for information on addressing hazardous waste or materials.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
The Solid Waste Disposal Act (SWDA) of 1965 (42 USC Sections 6901 *et Seq.*) (now stated in subtitle D of the Resource Conservation and Recovery Act (RCRA))	Section 6901(b)(2) states the disposal of solid waste in or on the land without careful planning and management can present a danger to human health and to the environment. The Act provides safeguards to reduce that danger.	State or local agencies responsible for managing solid waste.
40 CFR, Part 258.10, Solid Wastes - Airport Safety	Addresses restrictions on municipal solid waste landfills (MSWLF) relative to airports.	EPA
FAA AC 150/5200-33, *Hazardous Wildlife Attractants on or near Airports*	Declares that a sanitary landfill located within 10,000 feet of a runway serving turbo-powered aircraft or within 5,000 feet of a runway serving piston-powered aircraft is incompatible with airports.	FAA

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS. Airside development (e.g., building or rehabilitating runways, taxiways, and their associated items) typically produces construction debris. Terminal development often produces similar streams. Refuse can also result from construction workers, passengers, and airport workers using the terminal building. Personnel and activities in air cargo facilities may produce solid waste as well. In addition, solid waste may also occur during construction and operations of access roadways, parking facilities, rental car lots, or because of other on-airport activities. Activities needed to maintain airside and landside facilities produce yet other sources of waste. As a result, when a proposed airport project would cause or change a solid waste stream, the environmental analysis section of the Environmental Assessment (EA) or Environmental Impact Statement (EIS) should discuss how the potential, associated solid waste would be handled and disposed properly to minimize environmental effects. This analysis should also determine whether local disposal facilities have the capacities to hold solid waste volumes the proposed airport facilities would produce during their construction or operation.

4. PERMITS, CERTIFICATIONS, AND APPROVALS. State and local agencies are often responsible for and have the most knowledge about solid waste issues in an airport area. The airport sponsor should consult those officials for information on potential impacts the solid waste would cause and how to handle waste to minimize those impacts. Those agencies also provide valuable information on how to handle and dispose of airport-generated solid waste in an environmentally-safe manner. The agencies would also indicate if the alternatives under consideration would produce material that municipal solid waste landfills (MSWLF) would not accept or if the waste volume would exceed the capacities of planned or existing disposal facilities that are being considered for use. The sponsor should provide assurances that it will meet applicable solid waste disposal requirements. Environmental documents should contain records of all relevant communications with the consulted agencies.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. Environmental documents prepared for airport actions involving airfield, terminal, or cargo facility development may require consideration of solid waste resulting from building or operating the facilities. As appropriate, analysts should consider the following factors for each reasonable alternative and include the information in the environmental document. This information helps the decision maker determine if local disposal facilities will accept the potential types or volumes of solid waste the alternatives under consideration would produce.

b. Quantity. As needed, the environmental document should:

(1) Provide estimated quantities of solid waste each reasonable alternative would likely cause during its construction or operation. Base those quantities on existing design plans. Be aware that some airport projects produce more solid waste during construction than during operation or maintenance activities.

(2) Summarize disposal methods that will be used to handle the reported volumes of solid waste products. and

(3) Disclose if airfield or landside construction or terminal construction or operation would overload receiving solid waste facilities.

c. Compliance. As needed, the environmental document should

(1) describe how the sponsor would control project-related solid waste to comply with applicable regulations;

(2) summarize how the sponsor would transport, contain, and control project-related solid waste; or

(3) indicate if the disposal of solid waste from any reasonable alternative would violate any local, state, or Federal regulations.

d. Other. As needed, the environmental document should summarize critical information gleaned from consulting with responsible solid waste agencies. For example, the environmental document should note if current, available MSWLF capacity is lacking. If it is, point out whether planned MSWLF expansion or construction would be timely and provide the needed capacity to handle solid waste the alternatives under consideration would generate.

6. DETERMINING IMPACTS. After completing the consultation and analysis discussed above, use the information to determine the potential level of solid waste impacts the alternatives under consideration would cause.

7. DETERMINING IMPACT SIGNIFICANCE. Use the following information to determine if a significant impact could occur. Consider the factors in the right-hand column when determining if an action would cause a condition calling for more information or analysis as part of an environmental document.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
None.	The responsible FAA official should determine if an alternative under consideration would cause any of the following conditions: • Project-generated solid waste would exceed available landfill (MSWLF) or incineration capacities or require extraordinary effort to meet applicable solid waste permit conditions or regulations. • Local, State, or Federal agencies determine that substantial unresolved waste disposal issues exist and may require more analyses.

From: Table 7-1, FAA Order 5050.4B.

a. Indirect effects. If solid waste would adversely affect another resource, refer the reader to the section of the environmental document discussing the affected resource. For example, solid waste disposal could contaminate water quality. The environmental document's water quality section would discuss that impact in detail.

b. Potential mitigation measures. During the environmental review process, agencies having responsibility for solid waste disposal in the affected area may provide letters addressing the project's effects on waste disposal. Often, those letters include recommended measures to mitigate those effects. The mitigation should focus on measures that would most effectively reduce demands on existing or proposed waste storage facilities. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted.

Potential mitigation measures may include the sponsor working with on-airport businesses and waste handlers to develop and complete the following measures to reduce project-related solid waste demand on MSWLF receiving that waste:

(1) source reduction strategies such as recovering, recycling, or composting;

(2) building or modifying source recovery facilities; or

(3) finding markets for recovered, recycled, or composted products or other wastes that are usable for producing energy or other activities.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. In rare instances, FAA may need to prepare an EIS to address significant solid waste impacts. Generally, more information or analysis is needed as part of an EIS only if problems are anticipated with respect to meeting the applicable local, State, Tribal, or Federal laws and regulations on solid waste management. The decision to do so would occur after FAA and the airport sponsor consult with the agencies responsible for managing solid waste in the affected area and evaluating project-induced environmental impacts (using information from section 6 of this chapter). In addition to the information presented about other affected resources, the EIS should include:

(1) information that may result from extra consultation with the responsible solid waste management agencies;

(2) extra measures that would minimize solid waste impacts and enable solid waste agencies to give their approval to the project; or

(3) the sponsor's agreement with or acceptance of required mitigation measures to show resolution of conflict involving solid waste.

b. Mitigation. FAA and the airport sponsor should fully consider mitigation agencies recommend and balance its benefits against those of the proposed action and explain why the sponsor or FAA does not adopt any recommended mitigation. If feasible, the EIS should also provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 20. WATER QUALITY

1. INTRODUCTION AND DEFINITIONS.

a. General. Many of the nation's airports are located near waterways. This is because years ago when many airports were built, the cheapest, flattest, and most desirable lands suitable for airports were located near waterways. As a consequence, today's airport activities may cause water quality impacts due to their proximity to waterways. In particular, construction activities or seasonal airport anti-icing/deicing activities are major concerns.

Construction often causes sediment-laden runoff to enter waterways. Biological and chemical breakdown of deicing chemicals in airport runoff can cause severe dissolved oxygen demands on receiving waters. Operations or maintenance are other activities that may affect water quality. Airport-related water quality impacts can occur from both point and non-point sources at airports. If not properly controlled, the resultant water quality impacts may adversely affect animal, plant, or human populations. Therefore, FAA must evaluate project-related discharges, especially those having the potential to affect navigable waterways, municipal drinking water supplies, important sole-source aquifers, or protected groundwater supplies.

b. Point sources. These are stormwater or other types of discharges from wastewater treatment plants, sanitary sewer systems, collection basins, or other water collection devices that flow through a conveyance (pipe) and discharge to a waterway. The states and the U.S. Environmental Protection Agency (EPA) issue National Pollutant Discharge Elimination System (NPDES) permits authorizing point source discharges into navigable waters of the United States under Section 402 of the Clean Water Act (CWA) (33 USC Section 1342).

c. Non-point sources. These include stormwater runoff from runways, taxiways, aprons, outdoor storage areas, or construction areas that do not flow through conveyance systems. Federal permits are not necessary for non-point source discharges.

d. Runoff pollutants. Point source and non-point source runoff may contain pollutants such as metals, oils, greases, hazardous materials, solids, hydrocarbons, pesticides, and herbicides. During dry weather, pollutants can accumulate on impermeable surfaces, but during storms they are washed into creeks, streams, lakes, or other waters causing potential water quality impacts.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

a. General. The principal statutory framework for considering water quality in Federal decisions is contained in the CWA. The following chart provides information on this and other important laws that protect surface water, groundwater, and aquatic systems:

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Federal Water Pollution Control Act, as amended by the Clean Water Floodplains and Floodways Act of 1977 (CWA), 33 USC Chapter 26	Chapter 26 provides Congress' mandate for developing comprehensive solutions to prevent, reduce, or remove pollution in waters of the United States. Section 401 of the Clean Water Act, 33 USC Section 1341, addresses state issuance of water quality certificates. Section 402 of the Clean Water Act, 33 USC Section 1342, addresses issuance of NDPES permits, while Section 404 of the Act, 33 USC Section 1344, focuses on dredge and fill permits in navigable waterways including wetlands.	EPA or State or tribal water quality agencies
CWA, Section 311, as amended by the Oil Pollution Act of 1990, 33 USC Section 1252 *et seq*.	Requires owners or operators of above ground facilities storing oil or oil-based products to prepare spill response plans.	EPA
Safe Drinking Water Act, as amended (SDWA), 42 USC Section 300.f, *et seq.,* also known as the Public Health Service Act	Prohibits Federal agencies from funding actions that would contaminate a sole source aquifer or its recharge area.	EPA
40 CFR Parts 142 and 149	Part 142 provides regulations addressing national primary drinking water supplies. Part 149 provides regulations addressing sole source aquifers.	EPA
Fish and Wildlife Coordination Act of 1980, 16 USC Section 661, *et seq*.	Requires Federal agencies to consult with the Fish and Wildlife Service (FWS) for any action that would alter (impound, divert, drain, or control) a stream or other body of water.	FWS

3. APPLICABILITY TO AIRPORT DEVELOPMENT PROJECTS. Building airport facilities may temporarily or permanently affect surface waters, groundwater, or drinking water supplies. As a result, when an airport sponsor requests FAA action to support an airport development project, FAA must evaluate the proposed project's potential water quality impacts. Examples of airside airfield development projects that may cause water quality impacts include building or expanding terminals or hangars, building new or extended runways and taxiways, and installing navigational aids (NAVAIDS). Landside development that may alter water quality includes building or moving airport access roads, remote parking facilities, and rental car lots.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

a. General. There are various water quality permits, certifications, and approvals that may be required to build and operate airport projects. The responsible FAA official must ensure the water quality chapter of the environmental document discloses any known problems in obtaining them.

b. Water quality certificates (WQC). Airport sponsors needing the authorizations or permits noted in subsections 4.b(1) and (2) below must obtain a water quality certificate (WQC). The responsible FAA official must ensure the environmental document prepared for any action involving those authorizations or permits contains information about the status of, and any known problems in obtaining, the WQC. That information is an indicator of potential concerns about WQC issuance that may require further airport sponsor and/or FAA effort to mitigate adverse water quality effects to obtain the certificate. A WQC is required for:

(1) An airport sponsor seeking an NPDES permit from the EPA or a state under Section 402 of the CWA; and

(2) An airport sponsor seeking a permit under Section 404 of the CWA from the U.S. Army Corps of Engineers (Corps) or a state authorized to issue this permit for filling or dredging navigable waters, including jurisdictional wetlands (See Chapter 21 of this Desk Reference.

c. NPDES permits. The environmental document prepared for <u>any</u> proposed airport action having a point source discharge to a navigable waterway or that would disturb at least 1 acre should include information on the status of the NPDES permit needed for that action, as described above in section 4.a of this chapter. It should also include any comments the permit-issuing agency provides. A copy of the NPDES permit is not needed for FAA's approval of an airport layout plan or grant, but the environmental document prepared for the action should discuss any difficulties the issuing agency may have noted about permit issuance. An appendix to the environmental document should contain a copy of the letter from the permit agency or a copy of the permit, if the permit is issued before the document is completed.

Note: 40 CFR Sections 122 through 124 provide more details on NPDES stormwater permits. See Chapter 6, of this Desk Reference (Construction Impacts) for a discussion on stormwater permits and construction activity.

d. Agency opinions on safe drinking water supplies. An airport action has the potential to affect a public drinking water supply, a sole source aquifer, or a Comprehensive State Groundwater Protection Program (CSGWPP). To comply with Section 1424(e) of the Safe Drinking Water Act, the approving FAA official may not approve funds for any action if the EPA Administrator determines the action would contaminate a sole source aquifer. As a result, the environmental document should summarize important opinions from EPA and the state, local, or tribal water quality agencies regarding these impacts and cross-reference the appendix containing the correspondence the agencies or tribe provide.

e. Oil response plan. Environmental documents addressing airport actions having above ground facilities to store or handle oil or oil-based products should include information on the status of an oil recovery response plan. See Section 112(a)(2) of the Oil Pollution Act) for more information, if needed.

f. Other information. The environmental document should contain information from agencies having expertise on water quality issues. This includes comments on the adequacy of proposed mitigation measures, best available technologies (BATs), and best management practices (BMPs). The environmental document should summarize important information these letters contain and cross-reference the appendix and pages where the letters discussing the particular information may be found.

Note: BATs and BMPs typically are parts of the NPDES permit process. BATs refer to the best technology available to minimize water quality impacts resulting from point source discharges. Bacterial decomposition of glycol in stormwater runoff is an example of a BAT. BMPs are schedules of activities, maintenance procedures, and management practices implemented to minimize point source discharge impacts. Examples include using good housekeeping procedures, training personnel in the proper use and handling of chemicals, or using high-pressure water to remove paint from an aircraft instead of solvent-based paint removers.

5. PROCEDURES FOR COMPLIANCE WITH STATUTORY, REGULATORY AND OTHER REQUIREMENTS - ENVIRONMENTAL ANALYSIS.

a. Required consultation. Congress has delegated to each state the primary responsibility for protecting and managing water quality within a state's legal boundaries. Early consultation concerning the topics noted below will improve FAA's evaluation of an action's water quality impacts and identify any additional information necessary to make judgments about the significance of impacts. It will also ensure the environmental document addresses agency concerns and avoid delays due to the lack of that information. The environmental document's water quality chapter shall reflect the results of consultation with regulating and permitting agencies and with agencies that must review permit applications, such as the FWS, which may have specific concerns. It should also summarize and appropriately address agency concerns or comments and cross reference pertinent material in the appendix.

(1) Water quality standard concerns. Contact the state agency having the authority to enforce water quality standards and/or issue WQCs.

(2) NPDES permit concerns. When an airport action would involve a point source discharge, a point source stormwater discharge, or disturb at least 1 acre, contact the state agency or EPA regional office responsible for issuing NPDES permits.

(3) Groundwater protection. When an action may affect a sole source aquifer, contact the state, tribal and local government agencies responsible for developing and managing a Comprehensive State Groundwater Protection Program (CSGWPP) and the EPA regional office responsible for reviewing that program.

(4) Aquatic populations or communities. When an action would affect fish, shellfish, or wildlife populations, contact the FWS and the respective state fishery or wildlife agency.

Note: Consult the National Marine Fisheries Service (NMFS) regional office for actions that may affect anadromous fish or marine mammals. Anadromous fish are fish that live in the ocean but spawn in freshwater (e.g., salmon, shad).

6. DETERMINING IMPACTS.

a. General. Determine if building, operating, or maintaining the proposed airport development action would affect project area surface water, groundwater, or drinking water sources. The responsible FAA official should pay particular attention to potential physical (e.g., temperature changes, siltation, and turbidity) and chemical (e.g., changes in oxygen or nitrogen levels, pH, etc.) impacts associated with the proposed action.

b. Potential impacts. Actions, such as aircraft and runway deicing/anti-icing, storage tank operation, or firefighting training activities have the potential to chemically affect the project area's water quality. As needed, describe impacts addressing the following issues:

(1) violations of conditions or terms contained in an existing WQC or existing NPDES permit;

(2) adverse effects on the water quality of sensitive aquatic habitats, including but not limited to, wetlands or critical habitats for Federally or state-protected species;

(3) threats to the integrity of public drinking water supplies; and

(4) other areas of concern that water quality agencies identify.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. After completing the analysis discussed in earlier paragraphs, use the findings to determine the proposed action's degree of impact. For most airport actions, significant impacts can be avoided by design considerations, controls during construction, and other mitigation measures. When the environmental document and appropriate consultation demonstrate that water quality standards can be met, no special water quality problem exists, and no difficulty is anticipated in obtaining permits, it may be assumed that there would be no significant impact on water quality. The responsible FAA official should consider the following factors in consultation with agencies having jurisdiction or special expertise on water quality effects.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
When an action has the potential to exceed water quality standards, there are water quality problems that cannot be avoided or satisfactorily mitigated, or there would be difficulty in obtaining a permit or authorization, there may be a significant impact.	The responsible FAA official should also consider if a proposed action or a reasonable alternative would adversely affect a public drinking water supply, sole source aquifer, or waters of national significance (e.g., wild and scenic rivers, national refuges, etc.).

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, Federal, state, tribal, or local agencies having permitting or regulatory authority over water quality issues sometimes provide letters addressing those issues. Those letters include measures recommended to mitigate water quality effects for purposes of NEPA that are not required for the certificate or permit. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA of the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why. In addition, the environmental document should clearly describe the measures the sponsor will carry out to:

(1) meet WQC terms or the conditions of any applicable NPDES permits;

(2) protect public drinking water supplies or comply with applicable CSGWPPs;

(3) develop oil response plans designed to contain any potential spills of oil or oil-based products associated with the proposed action;

(4) meet any other substantial water quality concerns that water quality agencies identify; or

(5) use BMPs or BATs.

Note: 40 CFR Section 112 and 40 CFR Section 112.20(h) present regulations for oil pollution prevention and the contents of a facility response plan, respectively.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. FAA must prepare an EIS if mitigation will not reduce water quality impacts below the significance impact threshold in paragraph 7 above. In addition to the information discussed above, to the extent possible the EIS should contain the following information.

(1) The results of added, project-specific, water quality studies FAA and Federal, state, or local water quality agencies agree on during EIS scoping or during the EIS process.

(2) A Memorandum of Agreement (MOA) between the Department of Transportation (DOT) and the Department of the Army (Army) contains a provision for elevating disputes concerning dredge and fill permit applications ("Section 404 permit applications") with the Army. Use of this provision typically occurs when an Army District Engineer is considering denial of a Section 404 permit or requiring conditions that would cause substantial, unacceptable conditions to DOT agencies (e.g., habitat attractive to wildlife hazardous to aviation). Therefore, if an airport action involves a Section 404 permit process that requires the responsible FAA official to elevate permit decisions to Army headquarters, contact the Airport Planning and Environmental Division (APP-400). APP-400 will help the responsible FAA official comply with the provisions of the MOA. APP-400 will also provide the follow-up actions that may be needed at the Washington, D.C., headquarters level to resolve differences. The EIS should contain the results of any dispute resolution process.

b. Mitigation. The EIS should identify and describe any mitigation measures that Federal, state, tribal, or local agencies having permitting or regulatory authority over water quality issues recommend for purposes of NEPA in addition to those required as a condition on any water quality permit or license. FAA and the airport sponsor should fully consider the recommended mitigation and balance its benefits against those of the proposed action. The document should explain why the sponsor or FAA has not adopted any mitigation agencies have recommended. If feasible, the EIS should include an estimated schedule for the airport sponsor to undertake accepted mitigation.

CHAPTER 21. WETLANDS

1. INTRODUCTION AND DEFINITIONS.

a. Nonjurisdictional wetlands. Nonjurisdictional wetlands do not involve navigable waters because they are not connected to or adjacent to navigable waters of the United States (U.S.). Dredge and fill activities in these wetlands do not require U.S. Army Corps of Engineers (Corps) approvals, but these wetlands are natural resources FAA must assess under NEPA. In addition, two other documents provide direction and instruction on assessing impacts of Federal actions on these nonjurisdictional wetlands. Executive Order 11990, *Protection of Wetlands*, sets the standard for a Federal agency action involving any wetland. The U.S. Department of Transportation (DOT) developed and issued DOT Order 5660.1A, *Preservation of the Nation's Wetlands* to provide more guidance to DOT agencies regarding their actions in wetlands. The DOT Order governs the Federal Aviation Administration's (FAA's) actions. The Order defines wetlands as:

> "Lowlands covered with shallow and sometimes temporary or intermittent waters. This includes, but is not limited to, swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, tidal overflows, estuarine areas, and shallow lakes and ponds with emergent vegetation. Areas covered with water for such a short time that there is no effect on moist-soil vegetation are not included in the definition, nor are the permanent waters of streams, reservoirs, and deep lakes. The wetlands ecosystem includes those areas which affect or are affected by the wetland area itself; e.g., adjacent uplands or regions up and down stream. An activity may affect the wetlands indirectly by impacting regions up or down stream from the wetland or by disturbing the water table of the area in which the wetland lies. "

b. Jurisdictional wetlands. Section 404 of the Clean Water Act (CWA) governs the dredging and filling of navigable waters of the U.S. The term, "navigable waters of the U.S." includes wetlands connected or adjacent to navigable waters of the U.S. Navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce (see 33 CFR Section 329.4). In carrying out Section 404, the Corps uses 33 CFR Parts 320 through 330 to define wetlands under its jurisdiction. To conduct dredge or fill activities in these wetlands, the Corps must issue a permit authorizing those activities. Wetlands under the Corps' jurisdiction are:

> "[A]reas that surface or groundwater inundate or saturate at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas."

c. Wetland delineation standards. The definitions presented above include three basic elements: hydrology, vegetation, and soil type. A qualified wetland delineation specialist should evaluate the proposed site's characteristics to determine if an airport development action affects an area meeting either of the above definitions. The delineation must follow the *Corps of Engineers Wetland Delineation Manual* (Technical Report Y-87-1). The Corps, the U.S. Environmental Protection Agency (EPA) and other Federal agencies use this manual to standardize wetland delineations and to govern the procedures for Federal actions affecting those ecosystems.

d. Practicable alternative. Executive Order 11990, *Protection of Wetlands*, and DOT Order 5660.1A, *Preservation of Wetlands*, requires Federal agencies to avoid wetlands when a practicable alternative avoiding a wetland exists (See section 2 of this chapter). A practicable alternative is an alternative that is possible (i.e., feasible), after considering the alternative's:

(1) safety aspects;

(2) ability to meet the action's transportation objectives; and

(3) ability to meet accepted design, engineering, environmental, economic, or any other applicable factors.

Note: Some additional cost alone does not necessarily make an alternative [or minimization measure] impractical, since such cost may be recognized as necessary and justified to meet national wetlands policy objectives.

e. New construction. This term includes any draining, dredging, channelizing, filling, diking, impounding, and related activities, any structures or facilities. According to DOT Order 5660.1A, *Preservation of the Nation's Wetlands*, paragraph 4.b, this term does not include routine repairs and maintenance of existing facilities. For new construction in wetlands, FAA should provide the public and agencies with special interest in wetlands appropriate opportunity for early review of the proposal.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
Executive Order 11990 - *Protection of Wetlands*, (42 FR 26961, 1977)	Requires Federal agencies to "avoid to the extent possible the long-term and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative."	DOT
DOT Order 5660.1A - *Preservation of the Nation's Wetlands*, dated August 24, 1978	Provides DOT agencies with instructions on how to carry out Executive Order 11990.	DOT
Clean Water Act (Federal Water Pollution Control Act, as amended, 33 USC 1251, *et seq*. (P.L. 92-500)). See 40 CFR Parts 110-112, 116, 117, 122, 125, 129, 130, 131, 136, and 403 for regulations implementing this Act	Maintains and restores the physical, biological, and chemical integrity of the nation's waters.	EPA/Corps
CWA Section 404, 33 USC 1344. See 33 CFR Parts 320-330 for Corps regulations implementing the Act. See 40 CFR Part 230 for Environmental Protection Agency's (EPA)	States the Corps or those states delegated authority to run the Section 404 permit program are responsible for regulating placing dredged or fill material in U.S. waters, including jurisdictional wetlands.	Corps/State Environmental Agencies

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
404(b)(1) guidelines.		
Rivers and Harbors Act of 1899, 33 USC 401, et seq., 30 Stat. 1151	This law protects the navigability of waters used for commerce.	Corps
Rivers and Harbors Act of 1899, Section 10, 33 USC 403	Regulates building any obstacle (i.e., jetty, breakwater, wharf pier, boom, bulkhead, etc.) in any port, harbor, canal, navigable water, or other U.S. waters located outside fixed harbor lines or in areas where no harbor line exists.	Corps
Fish and Wildlife Coordination Act, as amended, 16 USC 661, *et seq*.	When processing requests for Federal approval of or financing actions in wetlands or waterways, this Act requires Federal agencies to consider U.S. Fish and Wildlife Service (FWS) and state wildlife agency comments on action impacts on wildlife. For purposes of the Act, the term "wildlife" includes birds, fish, mammals, etc. and vegetation on which they depend.	FWS/State Wildlife Agencies

Note: Regulations for Section 404 permitting are at 33 CFR Part 323. Regulations on dams and dikes in navigable waters are at 33 CFR Part 321. Regulations for other work affecting navigable waters are at 33 CFR Part 322. Regulations addressing seaplane operations are at 33 CFR Section 322.5(j).

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. General. If a proposed airport development action involves wetlands, the environmental document prepared for that action must include discussions of potential wetland impacts. Examples of airport actions that could cause wetland impacts include: airside development associated with new or expanded terminal and hangar facilities; new or extended runways and taxiways; and installing navigational aids (NAVAIDS). Examples of landside activities include new or relocated airport access roadways or on-airport remote parking or rental car facilities.

b. Actions affecting wetlands. An airport action affects a wetland if it:

(1) requires building a structure, facility, or other development in a wetland;

(2) requires dredging, filling, draining, channelizing, diking, impounding, or other direct effects on a wetland;

(3) requires disturbing the water table of an area in which a wetland is located; or

(4) indirectly affects a wetland because it impacts areas upstream or downstream of the wetland or it introduces secondary development that would affect a wetland.

Note: Contact the Corps, FWS, or State or local natural resource agency if uncertainty exists about whether an area is a wetland.

c. Actions not affecting wetlands. If an action would not involve wetlands, the environmental document need not meet the requirements of this chapter. The document should simply state the action would not affect a wetland.

d. FAA alternatives analysis. To comply with Section 404 guidelines, Executive Order 11990, and DOT Order 5660.1A, the responsible FAA official must consider practicable alternatives that would avoid affecting wetlands. If the sponsor proposes an action in a wetland, but later the sponsor decides to select an alternative that avoids the wetland or FAA will approve a location that avoids the wetland, the environmental document should explain how the location achieves the purpose and need while avoiding wetland impacts.

e. Determining if FAA may categorically exclude an airport action involving a wetland. If an airport action that is normally categorically excluded (Order 5050.4B, Tables 6-1 and 6-2) involves wetland dredging or filling, the responsible FAA official must determine if an action affects a nonjurisdictional or jurisdictional wetland. If the action involves a *nonjurisdictional* wetland, the action's design must meet the design standards defined in a General Permit (General Permits include Nationwide Permits (NWP), Regional General Permits and State Program General Permits) that would have applied had the action involved a jurisdictional wetland. If the action involves a *jurisdictional* wetland, the action's design must meet the design standards that would qualify the action for a General Permit. Whether the action involves a nonjurisdictional or jurisdictional wetland, the responsible FAA official must determine if the action involves an extraordinary circumstance (see Paragraph 304 of FAA Order 1050.1E or Table 6-3 of FAA Order 5050.4B). The official must then decide if the action still qualifies as a categorical exclusion. If the action qualifies for a categorical exclusion, an EA or EIS is not needed.

Note: In some areas, such as FAA's Great Lakes Region, state agencies have assumed some of the Corps' general permit program responsibilities. Contact the appropriate Corps office for information about similar state programs to ensure the sponsor completes the applicable permit process.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

a. Sponsor's statement. To satisfy the Orders protecting wetlands, the responsible FAA official should ensure there are no practicable alternatives that would avoid placing the airport action in a wetland (see section 1.d of this chapter). For example, many airport development actions require construction of a facility at a specific location to ensure safe, efficient airport or aircraft operations. In other instances, airport design criteria such as runway wind coverage are essential for safe aircraft operations. In both cases, avoiding a wetland may not be practicable. As a result, when a sponsor proposes an action that would unavoidably involve a wetland, the sponsor should provide the FAA with an analysis explaining why the wetland is the only practicable location for the proposed action. FAA will consider this information in its independent evaluation of alternatives (see 40 CFR Section 1506.5).

b. Sponsor's assurance. When the sponsor determines the action must occur in a wetland, it should also provide FAA information on how the action's design would include all practicable measures to minimize unavoidable wetland impacts. FAA will consider this information in its independent evaluation of the measures that will be used to minimize harm to wetlands (See 40 CFR Section 1506.5).

c. Clean Water Act, Section 404 permit. Issuance of this permit is not needed to complete the environmental document, but the environmental document must contain information on the status of the sponsor's Section 404 permit application. To approve an airport action in wetlands or waterways that does not qualify for a General Permit, the responsible FAA official must have reasonable assurance from the Corps verifying that the requirements can be met. The reasonable assurance could be made via a statement, memo, letter, or other correspondence. The environmental document should contain information verifying the sponsor has started consulting with the Corps. The NEPA document must report the status of the Section 404 permit application process. FAA's approval of the action does not remove a sponsor's need to get a Section 404 permit.

Note: Some states require the sponsor to get state permits authorizing work in wetlands. Permit issuance is not needed to complete the environmental document, but that document must contain information on the status of the sponsor's state wetland permit application. FAA approval does not remove a sponsor's need to get a state permit from the proper state agency.

d. Agency letters. An appendix to the environmental document should contain any correspondence containing Federal or State agency opinions on action-related wetland impacts. Correspondence often can identify potential issues the environmental document should address.

(1) The responsible FAA official or sponsor should forward to the Corps copies of comments about wetland impacts received during the NEPA process.

(2) As part of the NEPA and 404 processes, the responsible FAA official should ensure that any comments about 404 permit issues are addressed during consultations with the Corps District Engineer responsible for the affected wetland.

(3) As part of the NEPA process addressing wetland impacts, the responsible FAA official should ensure the environmental document includes the concerns of the state agency responsible for permitting actions affecting wetlands and a discussion on how the sponsor will address those concerns.

Note: See Chapter 2 of this Desk Reference for Fish and Wildlife Coordination Act requirements (16 USC Section 662(a)) when an action affects water resources, which include wetlands.

e. Wetland banking. If the sponsor, FAA, and the permitting agency agree that wetland banking is suitable mitigation for unavoidable wetland impacts, the environmental document should contain a copy of any agreement on the use of a wetland bank. To comply with FAA's Wetland Banking Strategy of July 1996, this agreement should verify the following facts about the specific number of credits bought in the bank:

(1) the bank will meet defined wetland success criteria;

(2) a specific number of credits will be withdrawn from the bank's total credit allotment to compensate for action-related impacts;

(3) the sponsor's purchase of these credits satisfies some or all of its wetland mitigation requirements for the proposed action; and

(4) the mitigation will not create or worsen wildlife hazards to aviation.

Note: For further information about mitigation banking, see the *Federal Guidance for the Establishment, Use and Operation of Mitigation Banks,* 60 FR 58605 (November. 28, 1995).

g. FAA's finding under Executive Order 11990 and DOT Order 5660.1A. For new construction actions located in wetlands, the approving FAA official should make a written finding in an EA, its FONSI, the Final EIS, or the ROD. In summary, the environmental document should contain information verifying the following facts:

(1) There is no practicable alternative to the construction; and

(2) The action includes all practicable measures to minimize harm to wetlands that construction would cause. In considering practicable measures, FAA may take into account economic, environmental, transportation, and other pertinent factors.

Note: See section 6.e of this chapter for information on the extent of mitigation the NEPA document should contain.

5. ENVIRONMENT COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. Required consultation. Early consultation with the agencies listed below during the environmental review process may provide the sponsor with an opportunity to consider other locations that do not involve wetlands or waterways. This effort also alerts the sponsor and FAA to problems the consulted agencies may have regarding a proposed action's design. If there is no practicable alternative to avoiding an action affecting a wetland, consultation allows the sponsor to:

(1) notify the agencies of that fact and explain why other alternatives are not practicable;

(2) try to resolve issues about the action's use of the wetland; and

(3) include ways to minimize the proposed action's unavoidable impacts.

Failing to address and resolve these issues may alter the start of the action and its completion because the necessary permits could be either denied or delayed. As noted earlier, NEPA documents for airport actions requiring wetland dredging or filling should provide reasonable assurances that the sponsor consulted with Federal and state agencies responsible for permitting actions affecting wetlands. These reasonable assurances should be included in an appendix to the environmental document as a memo, letter, or other correspondence.

Note: See Chapter 2 of this Desk Reference for Fish and Wildlife Coordination Act requirements (16 USC Section 662(a)) when an action affects water resources, which include wetlands. Often agencies having concerns for aquatic organisms in wetlands will provide comments. If another section of the environmental document addresses impacts on a resource occurring in the affected wetland, the environmental document's wetlands chapter should summarize those effects and provide the page numbers of the document or the appendices where the reader would find the detailed information on the affected resource.

b. Roles of various agencies and the public during wetland consultation. Besides the Corps, various agencies often have jurisdiction over wetlands. The following information identifies different entities and their areas of concern:

(1) The U. S. Fish and Wildlife Service (FWS). As noted earlier, compliance with the Fish and Wildlife Coordination Act requires consultation with FWS when an action would affect a wetland or water body. This consultation focuses on how the action would affect habitats and the corresponding environmental consequences to wildlife. See Chapter 2 of this Desk Reference for more information.

(2) The National Marine Fisheries Service (NMFS). NMFS is responsible for protecting wetlands or waters that sustain marine mammal and marine fish communities. Contact NMFS when an action would affect tidal wetlands, estuaries, or marine ecosystems. Chapter 2 of this Desk Reference presents information on the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended (16 USC Section 1801, *et seq*.).

(3) The Natural Resource Conservation Service (NRCS). NRCS (formerly the Soil Conservation Service) delineates agricultural wetlands. The Food Security Act Manual is to be used to delineate agricultural wetlands whereas delineation of non-agricultural wetlands follows the Corps of Engineers Wetland Delineation Manual. Contact NRCS for actions that would affect agricultural wetlands.

(4) EPA. Under Section 404(b) of the CWA, EPA may object to the Corps' issuance of a 404 permit. Consultation with EPA is important to ensure the sponsor's proposal addresses EPA's concerns.

(5) Other Federal agencies. Besides the agencies noted above, contact with other agencies may be needed. Ask the agencies discussed above if they know of other Federal agencies that may have an interest in a proposed action's effect on wetlands.

(6) State wetland agencies and State wildlife agencies. Besides complying with Federal wetland laws and regulations, compliance with state wetland requirements is often necessary to get state approval of a proposed action. In addition, under the Fish and Wildlife Coordination Act, FAA needs to consult with the state agency having administration over the wildlife resources. Contact the state agency having jurisdiction over the affected wetlands and the agency having administration over the state's affected wildlife. Use the procedures in Executive Order 12372 (this replaces A-95 Clearinghouse instructions) if you need information about contacting appropriate state agencies.

(7) Public involvement. Public involvement helps FAA recognize the issues concerning the public and resource agencies. Such involvement promotes efficient environmental review processes and avoids delays in completing the processes that would occur when those processes omit evaluating wetland impacts or other information needed for wetland-related approvals or permits. If FAA is not preparing an EIS for an action involving a wetland, the responsible FAA official should ensure the public has an early opportunity to review the action (Executive Order 11990, section 2(b)).

c. Timely permit issuance. The Corps, EPA, FWS, NRCS, and NMFS are Federal agencies that might have wetlands concerns. In addition, most states have at least one agency responsible for protecting wetlands. There are local natural resource agencies that may have responsibility or concern for protecting wetlands. Also, the public may have concerns. These interested parties often have conflicting missions or differing ideas on how to minimize wetland impacts. Addressing any concerns early in the planning and environmental processes may avoid delays in action approval or construction. Experience shows that substantial interaction among sponsors and these agencies facilitates permitting or approval processes.

d. Integrating Section 404 permitting and NEPA. Integrating Section 404 permitting and NEPA increases the likelihood that one NEPA document will contain the information and findings needed for Corps and FAA decisions (40 CFR Section 1500.5(h)). It also strengthens efficient and consistent consideration of public concerns. In addition, integrating these processes increases the likelihood the agencies will make their respective decisions on the proposed action at similar times. To properly integrate the 404 and NEPA processes, it is essential the sponsor meet early with the Corps FAA, and other parties interested in the action's effects on wetlands.

Note: For guidance on integrating these processes, review the following as needed: 33 CFR Part 320, General Regulatory Policies; 33 CFR Part 25, Appendix B, the NEPA implementing procedures for the regulatory program; Corps Pamphlet EP 1145-2-1, dated May 1985, and 40 CFR Part 1500.

e. Actions involving leases, easements, right-of-ways, or disposal. When Federally-owned wetlands or portions of them are proposed for lease, easement, right-of-way, or disposal to a non-Federal public or private party, FAA should do the following to comply with DOT Order 5660.1A, paragraph 7.e and FAA Order 1050.1E, Appx. A, paragraph 18.4c:

(1) ensure the conveyance references those uses restricted by relevant Federal, State, or local wetland regulations;

(2) attach other appropriate restrictions on how the grantee or property purchaser and any successor may use the properties, except where prohibited by law; or

(3) withhold the properties from disposal.

6. DETERMINING IMPACTS.

a. General. After determining there are no practicable alternatives that avoid a wetland, unavoidable wetland impacts should be analyzed. Various wetland models have been developed to assess effects on wetland hydrology, vegetation, or soil. Analysts use the results of these models as aids in determining an action's impacts on wetland functions and values. Consult the local Corps district office to determine the methods to assess wetland functions and values.

b. Information needed to determine wetland effects. If the proposed action would affect a wetland, and no practicable alternative that avoids the wetland exists, the environmental document must provide the following information.

(1) A description of the location, types, and extent of wetlands the action and its alternatives would affect. Contact the FWS, Corps, or State or local agencies responsible for wetlands in the affected area for information, if needed.

(2) A description of potential impacts on the following wetland resources as appropriate.

(a) water quality;

(b) effects on water supply and the capability to recharge that supply;

(c) interference with surface or subsurface water flows;

(d) the levels of siltation or sedimentation the action would cause;

(e) the disruption of the affected wetland's biotic community; or

(f) the effects of storm hazards, floods, or the ability to store storm runoff or storm flows.

Note: If another section of the environmental document addresses impacts on a resource occurring in the affected wetland (for example, secondary or induced impacts, construction, etc.), the wetlands chapter should summarize those effects and provide the page numbers of the document or the appendices where the reader would find the detailed information on the affected resource.

c. A wetland in coastal zones. A wetland in or adjacent to a coastal area may be subject to state coastal zone management program. Therefore, if this situation applies to the proposed action or a reasonable alternative, the environmental document's wetlands chapter should summarize information about coastal wetland resources and refer the reader to the coastal zone resources chapter for more details. See Chapter 4 of this Desk Reference for information on assessing impacts on coastal zone resources.

d. Section 4(f) Applicability to wetlands. Section 4(f) of the DOT Act may apply if wetlands are publicly owned lands. See Chapter 7 of this Desk Reference for information on assessing impacts to Section 4(f) resources.

e. Mitigation. The environmental document should include a description of conceptual measures the sponsor proposes to mitigate unavoidable wetland impacts. A comprehensive, completed mitigation plan is not necessary for FAA's purposes. However, sponsors should note that, as the Section 404 permitee, it will likely be required to develop a detailed plan satisfactory to the Corps to comply with the applicable Section 404 permit including both individual and General Permits. Mitigation may include some of the following measures:

(1) changes to action design, construction, or operation;

(2) pavement runoff collection to prevent direct discharges to sensitive wetland areas;

(3) provisions to treat waste;

(4) special construction controls; or

(5) compatible land use development.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. The responsible FAA official should consider the following thresholds and factors in consultation with agencies having jurisdiction or special expertise on wetlands.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
When an action would: • Adversely affect a wetland's function to protect the quality or quantity of a municipal water supply, including sole source aquifers and a potable water aquifer. • Substantially alter the hydrology needed to sustain the affected wetland's values and functions or those of a wetland to which it is connected. • Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare. The last term includes cultural, recreational, and scientific public resources or property important to the public. • Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands. • Promote development of secondary activities or services that would affect the above functions. Be inconsistent with applicable State wetland strategies.	None.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, agencies having jurisdiction of or expertise on wetlands normally provide letters addressing an action's effects on those resources. Often, those letters include recommended measures to mitigate those effects. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters

and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the mitigation was not adopted.

(1) The NEPA document should include a description of conceptual measures the sponsor proposes to mitigate unavoidable wetland impacts. A comprehensive, completed mitigation plan is not necessary for FAA's purposes. However, sponsors should note that, as the Section 404 permitee, they will likely be required to develop a detailed plan satisfactory to the Corps to comply with a Section 404 permit or the applicable NWP.

(2) The responsible FAA official, in cooperation with Airports Certification Officers and Wildlife Services staff, should review the mitigation plan to ensure it does not create or worsen wildlife hazards to aviation. See Advisory Circular (AC) 150/5200-33A, *Wildlife Hazards on and near Airports*, for more information about this important safety concern.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. When FAA prepares an EIS addressing significant wetland impacts, the responsible FAA official should consider inviting the Corps and State wetland agency as cooperating agencies due to their permitting authority and expertise on wetlands. In addition, the responsible FAA official should ensure the EIS contains the information in this section (Section 8).b-e as well as the information discussed in other sections of this chapter.

b. Review the practicability of alternatives. Review all alternatives to ensure there is no practicable alternative that avoids the wetland.

c. Further considerations. Review the information the NEPA document provides to address the issues noted in other parts of this chapter. As needed, include new information specific to the proposed action that FAA and the appropriate resource agency or agencies determine necessary to correct any deficiencies in the EIS section addressing wetland impacts. Some of that new information may include the following, if it applies to the proposed action:

(1) Added information. As appropriate, the information may address some or all of the following factors listed in Executive Order 11990:

(a) Public health, safety, and welfare. This may include: water supply, water quality, and water supply recharge (surface and/or aquifer) and discharge; pollution control; flood and storm water control; or sediment and erosion control.

(b) Natural system maintenance. This may include conservation measures needed to sustain: long-term productivity of existing wetland fauna (fish, wildlife, birds) and flora (timber, food and fiber resources); species and habitat diversity; species and habitat stability; or hydrologic utility.

(c) Other public interest wetland uses. These uses may include recreational, scientific, or cultural wetland use.

(2) Input from expertise agencies. Include input of wetland agencies addressing the survival and quality of the action-affected wetland resources.

(3) Other Considerations. Include information addressing aeronautical safety, transportation objectives, economics and other factors that may affect or are related to the action.

d. Wildlife hazard information. Include information to determine if the proposed mitigation would make existing habitats attractive or more attractive to wildlife that would be hazardous to aviation. Review FAA Advisory Circular (AC) 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports*, for more information about this.

e. Mitigation. The EIS should describe proposed practicable, conceptual mitigation. This includes mitigation that agencies with jurisdiction or expertise on wetlands recommend. FAA should evaluate the mitigation and balance its benefits against those of the proposed action, including the mitigation's effects on aviation safety. Include sponsor commitments to carry out the mitigation. Explain why the sponsor or FAA rejected any mitigation or land uses the agencies recommend. Provide an estimated schedule for undertaking accepted mitigation.

g. Finding under Executive Order 11990 and DOT Order 5660.1A. When an EIS addresses a new construction action located in a wetland, the approving FAA official should make a written finding to comply with Executive Order 11990 and DOT Order 5660.1A. The EIS or its accompanying Record of Decision should contain information verifying the facts listed in sections 4.g.(1) and (2) of this chapter.

CHAPTER 22. WILD AND SCENIC RIVERS

1. INTRODUCTION AND DEFINITIONS.

a. General. "Wild and scenic rivers" are those rivers having remarkable scenic, recreational, geologic, fish, wildlife, historic, or cultural values. Federal land management agencies in the Departments of the Interior and Agriculture manage the Wild and Scenic Rivers Act (Act).[1] The National Park Service (NPS) has the primary role in maintaining the National Rivers Inventory discussed in section 1.b. of this chapter. The Wild and Scenic Rivers "program" is more commonly referred to as the "National Wild and Scenic Rivers System" (WSRS).

b. The National Wild and Scenic Rivers System (WSRS). This is a list of rivers the Secretaries of the Interior or Agriculture have determined have the special values mentioned above. The primary purpose of the WSRS is to protect the rivers' free-flowing characteristics. Toward that end, the Federal Energy Regulatory Commission cannot license activities that affect the free-flowing nature of these rivers. Further, other Federal agencies, like FAA, may not assist, by loan, grant, or license or other authorizations, a water resources action that would have a direct or adverse effect on the values for which the river was designed. As a result, FAA must analyze the adverse effects a proposed water resources action may have on the free-flowing nature of these rivers or their natural, cultural, or recreational values. This chapter discusses how to examine an action's potential impacts on river segments designated or eligible to be included in the WSRS.

c. The National Rivers Inventory (NRI). The NRI lists more than 3,400 free-flowing river segments having at least one outstanding scenic, natural or cultural feature. It also provides information on statewide river assessments or Federal agencies involved in those assessments. Listing on the NRI means the Federal government is protecting these rivers and streams while agencies are considering the river for designation to the WSRS. The NPS, through The Rivers and Trails Conservation Assistance Program, maintains the NRI.

d. Water resource action. This definition includes construction or development that would affect the free-flowing characteristics of a Wild and Scenic River or a Study River.

e. Study river area. This is a river and the bordering area (located within a ¼-mile-area of the ordinary high watermark on each side of the river) designated for study or

[1] The Department of the Interior agencies are: the National Park Service, the Bureau of Land Management, and the U.S. Fish and Wildlife Service. The Department of Agriculture agency is the U.S. Forest Service. This chapter refers to these agencies as "managing agencies."

potential addition to the WSRS.[2] The corridor is established to protect the free-flowing nature, water quality, and outstandingly remarkable values of a river.[3] Evaluation of the study area is needed to determine if the river has the characteristics that qualify it for inclusion in the WSRS.

Note: The corridor could be wider if needed to protect the resource.

f. Free-flowing characteristics. These are the existing or natural flowing conditions of a river in the WSRS or NRI. Typically, these natural flows exist because no diversions, impoundments, or rip-rap have been installed nor has man altered the waterway's natural course.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS.

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
The Wild and Scenic Rivers Act of 1968, 16 USC 1271-1287	This Act: • selects certain rivers of the nation having remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values; • preserves the rivers' free-flowing conditions and protects the areas in their immediate areas; and • strives to balance river development with permanent protection of the country's most outstanding free-flowing rivers.	Department of the Interior (National Park Service (NPS); U.S. Fish and Wildlife Service (FWS); or Bureau of Land Management (BLM) and The Department of Agriculture (U.S. Forest Service (USFS).
36 CFR, Part 297, Subpart A, Water Resources Actions	Regulations here apply to Federal assistance used in building water resources actions that affect the Wild and Scenic Rivers System or Study Rivers the Secretary of Agriculture manages in whole or in part.	NPS, FWS, BLM, and USFS

[2] Title 16 USC, Section 1275.(d). As a policy matter, we have decided to use the ¼-mile standard noted in Section 1275.(d) for study rivers as the limit of our impact analysis for both WSRS and NRI rivers. This will ensure we properly assess potential impacts on these important river reaches.

[3] Source: 36 CFR Part 297.3(c) and the Interagency Wild & Scenic Rivers Council.

Presidential Memorandum to the Heads of Departments and Agencies on National Rivers Inventory, dated August 2, 1979	Underscores the need to strengthen the WSRS by directing Federal agencies to set an example of sound management for State, local and private landowners. To do so, Federal agencies are to take an aggressive role in protecting Wild and Scenic Rivers flowing through public lands. These agency efforts include all rivers and segments listed in the NRI.	FAA
Wild and Scenic River Guidelines for Eligibility, Classification and Management of River Areas, dated 47 Federal Register (FR) 39454, dated September 7, 1982	This document provides information on determining if a stream or river has the characteristics that would qualify it for designation.	Departments of the Interior and Agriculture
CEQ *Procedures for Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers of the Nationwide Inventory*, dated, 45 FR 59190, dated September 8, 1980	CEQ issued this guidance because development outpaces the Federal government's ability to protect rivers having characteristics qualifying them for the WSRS. Failure to assess and avoid effects could foreclose a river's eligibility for that System. Therefore, Federal agencies must: • determine if their actions would adversely affect the characteristics of an NRI river that would qualify it for the System; and. • study and develop reasonable alternatives that would avoid or mitigate impacts.	CEQ

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS. The environmental analysis of a proposed airport action that involves a water resource action (see section 1.d of this chapter) that may affect a WSRS or NRI river must include discussions of potential impacts to the river. Typical airport actions that could result in impacts to these rivers include: airfield/landside expansion into a river (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or relocated access roadways, remote parking facilities, and rental car lots; or a significant increase or change in aircraft operations.

4. PERMITS, CERTIFICATIONS, AND APPROVALS.

a. Notifying the appropriate agency. Before approving a water resource action on or adjacent to a WSRS river and a river that Congress designated for study, the responsible FAA official must ensure the sponsor obtains a Section 7 Consent Determination (see section 4.b of this chapter). No less than 60 days before FAA makes a decision on a water resources action, the responsible FAA official must send a notice to the Secretary of Agriculture about

FAA's intent to approve the proposed action. FAA's notice must contain the following information per 36 CFR Section 297.4:

(1) action name and location;

(2) name of the affected river;

(3) the nature of FAA's authorization (e.g., an unconditional ALP approval);

(4) a description of the proposed action; and

(5) any relevant information such as plans, maps, and environmental analyses.

b. Section 7 Consent Determination. When a water resources action involves a WSRS river, the responsible FAA official must ensure the airport sponsor obtains a Section 7 Determination from the Secretary of Agriculture (36 CFR Section 297.5). The Secretary will not consent to the proposed water resources action, if that action would:

(1) directly or adversely affect the values for which a Wild and Scenic River or Study River was designated when any part of the water resource action is within the river's boundaries;

(2) invade or unreasonably diminish the scenic, recreational, and fish or wildlife values of the Wild and Scenic River if any portion of the water resource action is located above, below, or outside this water body; or

(3) invade or diminish the scenic, recreational, and fish and wildlife values of a Study River if the water resource is located above, below, or outside the Study River during the study period.

c. Denial of a Section 7 Consent Determination. FAA may not approve the water resource action if the Secretary of Agriculture denies the Consent Determination. However, the Secretary may recommend measures to eliminate the adverse effects. FAA may encourage the airport sponsor to file revised plans based on those recommendations for further consideration.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. General. The Airport sponsor or responsible FAA official must determine if their proposed water resource action would occur near a designated WSRS River or Study River. The sponsor should consult the NPS, USFS, USFWS, or BLM. If this consultation indicates that the action is within ¼-mile from the ordinary high water mark on each side of a WSRS or NRI river (¼-mile boundary) the sponsor should notify the responsible FAA official. This ensures the FAA official or the sponsor completes the steps needed to comply with the Wild and Scenic Rivers Act in a timely manner. Although not required, FAA also recommends

considering impacts to rivers that may be eligible for a state program comparable to the Federal Wild and Scenic Rivers System. This helps to ensure the environmental process addresses water resource action impacts on those protected rivers.

b. Wild and Scenic and Congressionally-designated rivers. EAs or EISs prepared for proposed water resource actions that involve WSRS or Congressionally-designated rivers must summarize measures needed to avoid or reduce unavoidable, adverse effects on the river. Analyses should address water resource action impacts to the river or the corridor extending ¼-mile from the ordinary high water mark on each side of the affected river.

c. NRI rivers. EAs or EISs prepared that involve these rivers must address effects on these rivers as well. If an agency noted in section 5.a. determines the proposed water resource action could affect an NRI river, refer to CEQ's August 1980 *Procedures for Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the National Inventory* and its attached *Guide for Identifying Potential Adverse Effects* for guidance. That publication states Federal agencies should study, develop, and describe reasonable alternatives before making a decision on a water resource action that could alter the characteristics that may qualify the river for the WSRS. Analyses should address water resource action impacts to the river or within its ¼-mile boundary.

Agencies must do so to avoid and mitigate adverse effects on those characteristics. The responsible FAA official should ensure consultation with the agency managing the river (i.e., USFS, FWS, NPS, or BLM) has occurred. The responsible FAA official should also ensure the managing agency receives the environmental document for review and comment. The EA or EIS should summarize important comments form the managing agency. It should cross-reference the appendix containing documentation of consultation and agency comment letters summarized in the body of the EA or EIS. A proposed water resource action on NRI rivers does not require a Section 7 Determination (see section 4.b. of this chapter).

6. DETERMINING IMPACTS.

a. General. As described in section 4.b. of this chapter, different levels of impact analysis must be conducted for Designated or Study rivers, depending on the proposed water resource action's location. If the proposed water resource action is within the ¼-mile boundaries of a WSRS or NRI river, an evaluation of action effects on the river is needed. The evaluation must determine if the action would directly or adversely affect the values cited for designation or study or that no part of the proposed water resource action is within the river or its ¼-mile boundaries. If the action is located within these boundaries an analysis is needed. That analysis must determine whether the water resource action would not invade or diminish the scenic, recreational, and fish or wildlife values of the Wild and Scenic river or a Study river.

b. The evaluation. As noted earlier, the EA or EIS must include documentation of agency coordination. That coordination may be needed to determine if any designated or

Study or NRI river is within the ¼-mile boundary noted in section 6.a of this chapter. If coordination suggests that a designated or eligible river is within that zone, the airport sponsor or responsible FAA official, as appropriate, should conduct an evaluation to determine if the proposed water resource action would adversely affect the river by:

(1) destroying or altering the river's free-flowing nature;

(2) introducing a visual, audible, or other type of intrusion that is out of character with the river or that would alter outstanding features of the river's setting;

(3) causing the river's water quality to deteriorate; or

(4) allowing the transfer or sale of property interests without restrictions needed to protect the river or its ¼-mile-wide boundaries.

7. DETERMINING IMPACT SIGNIFICANCE.

a. General. After completing the consultation and analyses discussed in other sections of this chapter, use the information in the following table to determine the severity of water resource action impacts on a protected river.

ORDER 1050.1E THRESHOLD	FACTORS TO CONSIDER
None.	None for determining a significant impact, since FAA does not have a threshold for this resource. Use information in section 6.b. of this chapter when determining if a water resource action would cause an adverse effect.

From: Table 7-1, FAA Order 5050.4B.

b. Mitigation. During the environmental review process, NPS, BLM, FWS, or USFS would normally provide letters addressing action effects on the affected river. Often, those letters include recommended measures to mitigate those effects. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. For Wild and Scenic or Study rivers. When consultation with NPS, BLM, USFWS, or USFS leads FAA to determine that water resource action would preclude the inclusion of a Study river in the WSRS, the responsible FAA official should invite one or more of those

agencies to be a cooperating agency. The Record of Decision must adopt suitable avoidance and mitigation measures and a monitoring and enforcement program.

b. For NRI rivers. If a water resource action requiring an EIS would adversely affect an NRI river, the responsible FAA official should request the agency managing the river be a cooperating agency. If that agency does not respond to such requests for support within 30 days, FAA may proceed, but is should use care to avoid or minimize significant effects on the NRI river.

c. Mitigation. The EIS should describe proposed mitigation when NPS, BLM, USFWS, or USFS provide that information. FAA should fully consider the mitigation and balance its benefits against those of the proposed water resource action. Explain why the sponsor or FAA did not adopt any mitigation agencies recommend. If feasible, provide an estimated schedule for undertaking accepted mitigation.

CHAPTER 23. CUMULATIVE EFFECTS

1. INTRODUCTION AND DEFINITIONS.

a. General. This chapter discusses how to consider a proposed action's cumulative impacts. It supplements the information in Chapters 4 and 5 of Order 1050.1E. Cumulative impacts are impacts the proposed action would have on a particular resource when added to impacts on that resource due to past, present, and reasonably foreseeable actions within a defined time and geographical area. Note that this range of actions includes actions FAA itself undertakes as well as those for which any other public or private entity is responsible. According to the Council on Environmental Quality (CEQ), cumulative impacts represent the:

> "…impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time."

b. Past actions. When determining how a cumulative impact analysis will assess past activities, the availability of data will determine how to analyze past FAA and non-FAA actions. Due to poor recordkeeping or simply the scarcity of information going back in time, the analysis of some actions may be more qualitative than quantitative. Scoping or consultation is useful in determining the extent of past actions for a cumulative analysis. Information on past actions (i.e., within the past 3 to 5 year) may be available from agencies, tribes, and developers responsible for those actions, but obtaining these data may require close coordination among agencies and other parties.

c. Present actions. The cumulative impact analysis should include information on FAA and non-FAA actions within the geographic area and time frame that affect environmental resources the proposed action would affect. Scoping or consultation is useful in determining the extent of present actions for a cumulative analysis. Information on present actions is available from agencies, tribes, and developers responsible for those actions, but obtaining these data may require close coordination among agencies and other parties.

d. Reasonably foreseeable actions.[1] These are actions that occur on or off-airport. They have been developed with enough specificity to provide useful information to a decision maker and the interested public. Use the following table to help determine if an action is reasonably foreseeable.

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[1] From FAA Order 5050.4B, paragraph 9.q.

OFF-AIRPORT ACTION.	ON-AIRPORT ACTION.
The proponent has committed to completing the proposed action. As a result, the action is or will be the subject of a NEPA document, or a Federal, State, local, or Tribal government permit application or approval and would occur within the same time frames as those evaluated for the proposed airport action.	The action is included on an unconditionally approved ALP and the proponent has: • committed to complete the proposed action depicted on the unconditionally approved ALP; and/or • developed preliminary design plans for an action in an Airport Capital Improvement Plan and those plans are available for review by interested parties.
Would affect all, some, or one of the environmental resources the proposed action would affect.	Would affect all, some, or one of the environmental resources that the proposed action would affect.
Would occur within the same time frames as the time frames analyzed for the proposed airport action.	Would occur within the same time frames as the time frames analyzed for the proposed airport action.

2. APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS. The National Environmental Policy Act of 1969 (NEPA), as amended contains the statutory framework for consideration of cumulative effects in Federal decisions. The CEQ regulations implementing NEPA's cumulative effects requirements are at 40 CFR Sections 1508.7 and 1508.25(a)(2) and (3).

APPLICABLE STATUTES AND IMPLEMENTING REGULATIONS	SUMMARY DESCRIPTION	OVERSIGHT AGENCY
40 CFR Section 1508.7	Defines cumulative effects. These effects are the incremental adding of a proposed action's effects on an environmental resource to impacts on the same resource due to past, present, and reasonably foreseeable actions, regardless of the agency or entity undertaking those actions. Individually minor impacts due to actions occurring over time may cause significant impacts when those impacts are collectively evaluated.	CEQ

40 CFR Section 1508.25(a)(2)	This section requires Federal environmental documents to address cumulative actions which, when viewed with other proposed actions, have cumulatively significant impacts. Therefore, those actions and their impacts should be discussed in the same EIS.	CEQ
CEQ's *Considering Cumulative Effects*, January 1997[2]	This document provides CEQ guidance specifically addressing cumulative impacts and the regulations at 40 CFR 1500 *et seq*.	CEQ
CEQ's *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis*, dated June 24, 2005.[3]	Based on scoping, agencies have the discretion to determine whether and to what extent information about specific past actions is useful when conducting a cumulative impact analysis. The guidance discusses how to determine the past actions needed for agency decision making. Among other things, the guidance notes that agencies may focus on the current *aggregate* effects of past actions. Agencies need not delve into *each* individual past action's historical details.	FAA

3. APPLICABILITY TO AIRPORT DEVELOPMENT ACTIONS.

a. General. FAA must evaluate any airport development action funded under the Airport Improvement Program (AIP) or subject to FAA approval under NEPA (See Order 5050.4B, paragraph 9.g.(1)-(11)). Part of that evaluation requires FAA to assess a proposed action's direct and indirect impacts on a particular resource. The other part of the NEPA evaluation requires FAA to consider those effects in *combination* with the effects on the same resource due to past, present, and reasonably foreseeable actions. NEPA requires this to determine if a proposed action would cause any significant cumulative effects. Actions that could cause such impacts include: airside/landside expansion (new or expanded terminal and hangar facilities, new or extended runways and taxiways, navigational aids [NAVAIDS], etc.); land acquisition for aviation-related use, new or relocated

[2] http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm

[3] http://ceq.eh.doe.gov/nepa/regs/Guidance_on_CE.pdf

access roadways, remote parking facilities and rental car lots; significant changes in aircraft operations; and significant amounts of construction activity.

b. Applicability. A cumulative impact analysis is an integral part of an EA or EIS.[4] This analysis provides FAA officials with information on impacts resulting from other actions that have occurred or that will occur within a defined time and geographic area. The responsible FAA official uses this information to decide if a proposed airport project's impact to a specific resource would cause a significant impact on that resource when added to past, present, and reasonably foreseeable actions within a specific geographic area or designated time frame. Applications for permits and licenses under the scopes of other Federal, State, or local agencies are excellent sources of information for defining the scope of past, present, and reasonably foreseeable actions.

(1) Where? This is a "specific geographic area." It is that geographical area containing environmental resources the proposed action would affect. Consultation with resource agencies in the affected area is important when defining this area.

(2) When? This is a "designated time period." Typically, it is the cycle during which the project is expected to affect a resource, ecosystem, or human community. FAA or the sponsor should determine this time period after consulting with agencies having knowledge of other actions in the area the proposed action would affect. See section 6.b. of this chapter

(3) What? These are the actions considered in a proposed project's cumulative impact analysis. They include the proposed FAA action and past, present, and reasonably foreseeable future actions of FAA *and/or* other entities or individuals. See sections 1.b.-1.d. of this chapter.

4. PERMITS, CERTIFICATIONS, AND APPROVALS. No specific permits, certifications, or approvals are required.

5. ENVIRONMENTAL COMPLIANCE PROCEDURES - ENVIRONMENTAL ANALYSIS.

a. General. A cumulative impact analysis is resource specific and generally addresses environmental resources the proposed action would affect (40 CFR Section 1508.7).

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[4]FAA must also consider cumulative impacts to determine whether there are extraordinary circumstances surrounding a normally categorically excluded action. If such circumstances would occur, FAA must determine if they warrant preparation of an environmental assessment. See FAA Order 5050.4B, Table 6-3; FAA Order 1050.1E, paragraph 304k, and 40 CFR section 1508.7

b. Consultation and cooperation are useful tools when developing a cumulative impact analysis. As already noted, information on past, present, and reasonably foreseeable future actions of other agencies and persons is necessary to properly evaluate cumulative impacts. Gathering this information is critical. Yet, it can be difficult because it typically involves checking with a host of sources. In addition, defining the geographic and temporal boundaries of a cumulative impact analysis adds more difficulty to this effort. If either boundary is too narrow, significant impacts may be missed. If they are too wide, the cumulative impact analysis can be unwieldy and the uncertainty and remoteness of the impacts will be of little benefit to the analysis. Consultation and cooperation are useful tools in completing this step.

(1) Federal, State, or local agencies, tribes, private developers, and citizen organizations are excellent sources for information vital in establishing these boundaries.

(2) They often provide information on pending permit applications or other documents prepared for actions. Because those applications or documents contain information on past, present, or reasonably foreseeable projects, they are often excellent sources of information necessary for use in the cumulative effects analysis.

(3) Therefore, the geographical reach, timing, and information critical to the cumulative analysis should be developed based on information gleaned through consultation and cooperation. Often, scoping or scoping principles are excellent ways to accomplish these tasks.

6. DETERMINING CUMULATIVE IMPACTS.

a. General. As noted earlier, cumulative effects may occur when the impacts of an FAA action are considered with the actions of other agencies, tribes, private developers, or FAA. The key question is:

> "Do the effects of FAA's proposed action on a particular environmental resource, when added to the effects on the same resource due to FAA and non-FAA actions, adversely impact that resource?"

Therefore, the cumulative analysis should focus on meaningful impacts, not inconsequential or irrelevant ones. Doing this allows the analysis to focus only on those environmental resources the proposed action (40 CFR Section 1508.7) would affect and the impacts it would cause.

b. Affected environment. In addition to characterizing the resources and human communities, defining the affected environment also requires describing the baseline conditions of project-affected resources. Consultation, cooperation, and scoping, once again, play vital roles here. This is because data used to describe the defined affected

environment depend on information from other governmental or non-governmental sources. Note that the geographic and temporal boundaries for a cumulative analysis are larger than those defined for the project alone.

(1) Setting the baseline. The historical context of commonly affected resources included in a cumulative analysis' geographic area or time frame are critical in setting the baseline for a cumulative analysis. This is because baseline conditions provide the context for evaluating those impacts.

(2) Setting geographic boundaries. To set geographic boundaries, the agency must first determine the area that the proposed action would affect. Then, based upon the resources in the project area and the geographic areas the affected resources occupy, the cumulative impact analysis' geographic boundaries are expanded beyond the proposed project's impact area. Examples of geographic boundaries include airsheds, river basins, regional boundaries (e.g., forest or ecological classification), or socioeconomic zones.

(3) Setting the time frame. The time frame is the time period during which the project is expected to affect a resource, ecosystem, or human community. The time frame for cumulative effects is not necessarily the life of the project because it includes reasonably foreseeable actions. For example, a cumulative impact analysis focusing on sedimentation impacts during an airport project's 2-year construction period would address the effects of sedimentation on affected water quality and fish populations. Therefore, the analysis would examine sedimentation effects:

(a) due to past actions, proposed actions, and any reasonably foreseeable within the 2-year period; and

(b) any other reasonably foreseeable action that would occur *beyond* that 2-year period, if that action would affect the same waters and fish populations the proposed action would affect.

Again, consultation with resource agencies is critically important in obtaining information to determine the range of actions the cumulative analysis should include.

(4) Tools. In addition to the geographic boundaries and time frame, there are other useful aids when defining the affected environment. Examples include the Nature Conservancy's Natural Heritage and Conservation Data Programs, the U.S. Geological Survey's (USGS) Biological Resources Division's, National Biodiversity Information Infrastructure, or the U.S. Environmental Protection Agency's (EPA) Environmental Monitoring and Assessment Program.

(a) The Nature Conservancy's Natural Heritage and Conservation Data Programs provide current, comprehensive data on the abundance and distribution of rare species and communities.

(b) USGS' Biological Resources Division consolidates and distributes biological research, inventory, and monitoring data that seven Department of Interior (DOI) agencies collect. The data are used to support management of the nation's resources. Its National Biodiversity Information Infrastructure provides a source of comprehensive biological data.

(c) The Environmental Monitoring and Assessment Program identifies the extent and size of regional and national environmental problems. It is useful in identifying the effectiveness or success of various environmental programs and policies.

e. Determining environmental effects in the cumulative impact analysis. The complex nature of cumulative impacts means there may be different methods for conducting the analysis. As noted often in this chapter, analysts should broaden their thinking beyond project-specific impacts. "Cause and effect" relationship tools are generally useful in determining the extent of effects resulting from actions included in this analysis.

(1) Broaden the scope. When determining cumulative effects, the agency must go beyond a project's specific effects on a resource. For example, the cumulative impact analysis of an airport expansion project's effect on roadway traffic would consider the increase in passengers, extending roadways that provide terminal access, and other actions planned in the area that add traffic or that would require roadway work. If the associated roadways would reduce a wetland whose primary function is retaining floodwaters, the individual resource analysis would focus on direct impacts to that wetland. The cumulative wetland analysis would assess how project-caused wetland losses added to past, present, and reasonably foreseeable wetland losses would affect flooding potential within the geographic boundaries set for the cumulative impact analysis.

(2) Additive effects. The cumulative impact analysis addresses the additive or synergistic effects on resources, ecosystems, or human communities resulting from the proposed actions and other actions included in that analysis.

(3) Sustainability. Consider if the cumulative effects would adversely affect the sustainability of the resources, ecosystems, or human communities. In this instance, a qualitative presentation is likely more useful because quantitative data may not be available or difficult to obtain.

7. DETERMINING THE SIGNIFICANCE OF CUMULATIVE EFFECTS.

a. General. The significance threshold for cumulative impacts varies according to the affected resource. However, after completing the cumulative effects analysis, compare the cumulative impacts against the applicable significance threshold for the resource analyzed. The responsible FAA official should determine if project impacts *added* to those of past, present, and reasonably foreseeable future actions trigger the significance threshold for the resource analyzed.

b. Potential mitigation measures. The Environmental Consequences analysis should address the cumulative effects causing the greatest impact to the affected resources within the time frame and geographical area established for the cumulative impact analysis.

c. Mitigation. During the environmental review process, agencies having jurisdiction or special expertise about project-affected resources may provide letters addressing the effects. Often, those letters include recommended measures to mitigate effects. The mitigation should focus on measures that would most effectively reduce cumulative impacts to affected resources. An appendix to the environmental document should include copies of those letters. The environmental document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If the FAA or the sponsor does not adopt any recommended mitigation, the environmental document should clearly explain why the recommendation was not adopted.

8. ENVIRONMENTAL IMPACT STATEMENT CONTENT.

a. General. Preparers may present cumulative analysis information in a separate chapter addressing cumulative effects. Logically, that chapter would follow those chapters discussing environmental consequences, because information in those chapters focuses on resources the project alone would affect. As an alternative, preparers may include a cumulative impact analysis in the document's Environmental Consequences section discussing each project-affected environmental resource. That analysis should be in a clearly marked "Cumulative Analysis" subsection at the end of the discussion on a particular resource.

b. Mitigation. Describe proposed mitigation when FWS or other consulted agencies provide such recommendations. FAA should fully consider those measures and balance their benefits against those of the proposed action. Explain why FAA or the sponsor did not adopt any recommended measure. If feasible, provide an estimated schedule for undertaking accepted mitigation.

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FAA Order 1050.1E, Environmental Impacts: Policies and Procedures

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U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

National Policy

ORDER 1050.1E, CHG 1

Effective Date:
March 20, 2006

SUBJ: Environmental Impacts: Policies and Procedures

This order updates the FAA agency-wide policies and procedures for compliance with the National Environmental Policy Act (NEPA) and implementing regulations issued by the Council on Environmental Quality (40 CFR parts 1500-1508). The provisions of this order and the CEQ regulations apply to actions directly undertaken by the FAA and where the FAA has sufficient control and responsibility to condition the license or project approval of a non-Federal entity. The requirements in this order apply to, but are not limited to, the following: all grants, loans, contracts, leases, construction, research activities, rulemaking and regulatory actions, certifications, licensing, permits, plans submitted to the FAA by state and local agencies which require FAA approval, and legislation proposed by the FAA. The order was last revised in 2004.

The draft order was published in the Federal Register for public comment. The final order incorporates changes resulting from comments received from the public and during the internal FAA clearance procedure. The changes are annotated in the text with a bold line to the left of the paragraph containg the changed language. The change page can be found at the end of this document. The final order was published in the Federal Register and is available on the Internet at http://www.faa.gov/regulations_policies/orders_notices/.

Marion C. Blakey
Administrator
Federal Aviation Administration

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CHAPTER 1. GENERAL

1. PURPOSE. This order provides Federal Aviation Administration (FAA) policy and procedures to ensure agency compliance with the requirements set forth in the Council on Environmental Quality (CEQ) regulations for implementing the provisions of the National Environmental Policy Act of 1969 (NEPA), 40 Code of Federal Regulations (CFR) parts 1500-1508; Department of Transportation Order DOT 5610.1C, Procedures for Considering Environmental Impacts; and other related statutes and directives.

2. DISTRIBUTION. Notice of promulgation and availability of this order is distributed to the assistant/associate administrators and their office and service directors, the Chief Operating Officer and vice-presidents of the Air Traffic Organization, and the Chairs of the Environmental Network. The order should be forwarded to all division managers, facility managers, and NEPA practitioners. The order is available in electronic form only. The order will be initially located for viewing and downloading at http://www.aee.faa.gov. If the public does not have access to the internet, they may obtain a computer disk containing the order by contacting the Office of Environment & Energy, 800 Independence Avenue S.W., Washington D.C. 20591. If the public is not able to use an electronic version, they may obtain a photocopy of the order, for a fee, by contacting the FAA's rulemaking docket at Federal Aviation Administration, Office of the Chief Council, Attn: Rules Docket (AGC-200) - Docket No. 29797, 800 Independence Avenue SW, Washington DC 20591.

3. CANCELLATION. Order 1050.1D, Policies and Procedures for Considering Environmental Impacts, dated December 5, 1986, is cancelled.

4. BACKGROUND. NEPA and its implementing regulations, promulgated by CEQ in accordance with Executive Order (E.O.) 11514, Protection and Enhancement of Environmental Quality, March 5, 1970, as amended by E.O. 11991 (sections 2(g) and 3(h)), May 24, 1977, establish a broad national policy to protect and enhance the quality of the human environment, and develop programs and measures to meet national environmental goals. Section 101 of NEPA sets forth Federal policies and goals to encourage productive harmony between people and their environment. Section 102(2) provides specific direction to Federal agencies, sometimes called “action-forcing” provisions (40 CFR 1500.1(a), 1500.3, and 1507) on how to implement the goals of NEPA. The major provisions include the requirement to use a systematic, interdisciplinary approach (section 102(2)(A)) and develop implementing methods and procedures (section 102(2)(B)). Section 102(2)(C) requires detailed analysis for proposed major Federal actions significantly affecting the quality of the human environment, providing authority to prepare environmental impact statements (EIS).

5. SYNOPSIS OF MAJOR CHANGES. This revision:

5a. Reorganizes to consolidate all categorical exclusions, including new and modified categorical exclusions for all FAA programs, into chapter 3 while eliminating the separate appendices and their respective categorical exclusions for each program.

5b. Reorganizes to place the types of actions that normally require preparation of EA's and EIS's for all programs into Chapters 4 and 5, respectively. Appendix 6 (Airports) of Order 1050.1D (which references FAA Order 5050.4A, Airport Environmental Handbook, October 8, 1985) is now incorporated under paragraph 214 of this order. Except for the procedures for internal FAA coordination and review of environmental documents in FAA Order 5050.4A (paragraphs 63, 64, and 95), if there is a conflict between Order 1050.1E and supplemental program guidance, Order 1050.1E takes precedence.

5c. Adds Tribes to the list of government agencies consulted in extraordinary circumstances determinations when actions are likely to be highly controversial on environmental grounds based on concerns raised by a Federal, State, or local government agency, Tribe, or by a substantial number of the persons affected by the action (see paragraph 304i); likely to violate Tribal water quality standards under the Clean Water Act and Safe Drinking Water Act (see paragraph 304h), or air quality standards established under the Clean Air Act Amendments of 1990 (see paragraph 304g); or likely to be inconsistent with any Tribal law relating to environmental aspects of the proposed action or Federal responsibilities toward Tribal trust resources. Includes new guidance on government-to-government consultation with Tribes, in accordance with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, dated November 6, 2000 (65 FR 67249, November 9, 2000), and Presidential Memorandum on Government-to-Government Relations with Native American Tribal Governments, dated April 29, 1994 (59 FR 22951, May 4, 1994) (see paragraph 213). Incorporates references to tribal consultation into Appendix A, section 11 on cultural resources, in accordance with regulations governing section 106 consultation under the National Historic Preservation Act (36 CFR part 800) and compliance with the Native American Graves Protection and Repatriation Act (43 CFR part 10), the American Indian Religious Freedom Act of 1978 (P.L. 95-341), and E.O. 13007, Indian Sacred Sites (61 FR 26771, May 29, 1996).

5d. Provides guidance on intergovernmental review of agency actions that may affect State and local governments, in accordance with E.O. 12372, Intergovernmental Review of Federal programs (July 14, 1982), and 49 CFR part 17, Intergovernmental Review of DOT Programs and Activities (see paragraph 213).

5e. Deletes from the characteristics for extraordinary circumstances those actions that are likely to be highly controversial with respect to availability of adequate relocation housing.

5f. Provides guidance for the option of documenting that a project qualifies for categorical exclusion (see paragraph 305).

5g. Adds new categorical exclusions and revises existing categorical exclusions to accommodate actions that do not significantly affect the environment. The new and revised categorical exclusions are the result of the accumulated environmental experience of the FAA's actions subsequent to the original issuance of FAA's categorical exclusions between 1973 and 1986. The new categorical exclusions are: paragraphs 307c, 307e, 307f, 307h, 307p, 307u, 310c, 310d, 310u, 310w, 310z, 311c, 311d, 311e, 311g, 311k, 311m, 311n and 312b. Categorical exclusions that were substantively amended are: paragraphs 307i, 307k, 307m, 307o, 309a, 309d, 309e, 310a, 310b, 310h, 310i, 310k, and 310p. Some of the amended categorical exclusions are

formed by combining two or more categorical exclusions from Order 1050.1D. Applicable actions of the Associate Administrator for Commercial Space Transportation were added to the categorical exclusions under paragraphs 308b, 309c, 309d, 309g, 309h, 310h, 310l, 310q, 310t and 311n. Previous categorical exclusions from Order 1050.1D that were determined to be no longer relevant (outdated; redundant) were not carried forward into Order 1050.1E. The deleted categorical exclusions were (as identified in Order 1050.1D): Appendix 1, paragraphs 5i, 5o, and 5s; Appendix 3, paragraphs 4b and 4h; Appendix 4, paragraph 4e and 4m; Appendix 5, paragraphs 4a, 4b, 4c, 4e and 4f; and Appendix 7, paragraph 4b. Two previously-listed categorical exclusions, one in Order 1050.1D (Appendix 3, paragraph 4a) and the other in Order 5050.4A (paragraph 23b(9)), were determined to be "advisory actions." These are removed from the list of categorical exclusions but are now properly identified as advisory actions in paragraph 301.

5h. Provides formal procedures for adopting draft and final EA's prepared by other agencies (see paragraph 404d), as recommended by CEQ in its Memorandum: Guidance Regarding NEPA Regulations (48 FR 34263, July 28, 1983).

5i. Provides a new optional procedure for preparing records of decision that meet the requirements of NEPA and constitute final agency orders subject to judicial review pursuant to 49 U.S.C. 46110. (see paragraph 408).

5j. Provides a new optional procedure for preparing scoping documents (see paragraph 505).

5k. Provides a new optional procedure for publishing records of decisions (ROD's) in the Federal Register (see paragraph 512e).

5l. Adds a requirement, pursuant to EPA filing guidance, to notify the EPA if the FAA adopts an EIS prepared by another agency (see paragraph 518h).

5m. Adds a new Appendix A, Analyses of Environmental Impact Categories. Appendix A contains an overview of procedures for implementing other applicable environmental laws, regulations, and executive orders in the course of NEPA compliance. Appendix A incorporates and updates Attachment 2 of Change 4 to Order 1050.1D, and amends each impact category to include a significant threshold paragraph where thresholds have been established.

5n. Adds a new subject, "Supplemental Noise Guidance." to the Noise section of Appendix A (see section 14). Supplemental noise analyses are most often used to describe aircraft noise impacts for specific noise-sensitive locations or situations and to assist in the public’s understanding of the noise impact. Accordingly, the description should be tailored to enhance understanding of the pertinent facts surrounding the changes. The FAA’s selection of supplemental analyses will depend upon the circumstances of each particular case. In some cases, this may be accomplished with a more complete narrative description of the noise events contributing to the yearly day/night average sound level (DNL) contours with additional tables, charts, maps, or metrics. In other cases, supplemental analyses may include the use of metrics other than DNL. Use of supplemental metrics selected should fit the circumstances. There is no

single supplemental methodology that is preferable for all situations and these metrics often do not reflect the magnitude, duration, or frequency of the noise events under study.

5o. Adds a reference to the use of demographic information of the geographic area of potentially significant impacts for purposes of anticipating and responding to public concerns about environmental justice and children in accordance with applicable Executive Orders, directives, and guidance issued by the CEQ and EPA. (see section 16 of Appendix A)

5p. Provides a new procedure for integrating Clean Water Act section 404 permitting requirements and NEPA (see section 18, Appendix A, Analysis of Environmental Impact Categories).

5q. Adds a new Appendix B, FAA Guidance on Third-Party Contracting, with a brief cross-reference in paragraph 204d. This appendix provides guidance on the use of third-party contractors in the preparation of NEPA documents consistent with 40 CFR 1506.5(c). Third-party contracting refers to the preparation of an EIS by a contractor selected by the FAA and under contract to, and paid for by, an applicant. Adds a new Appendix C providing an annotated list of generally applicable executive orders, DOT and FAA orders, memoranda of agreement or understanding, and related CEQ and FAA guidance.

5r. Adds a new Appendix D that describes Environmental Stewardship and Streamlining pursuant to provisions in "Vision100 - Century of Aviation Reauthorization Act" that give review priority to certain projects, require the establishment and management of review timelines, improve and expedite interagency coordination, reduce undue delays, emphasize accountability, and otherwise assist in facilitating environmental reviews. Adds a new Appendix E providing a list of acronyms.

5s. Adds guidance that gives special consideration to the evaluation of the significance of noise impacts on noise-sensitive areas within national parks, national wildlife refuges, and historic sites including traditional cultural properties, and states that Part 150 land use guidelines and the DNL 65 dB threshold of significance for noise do not adequately address the effects of noise on visitors to areas within a national park or national wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute.

6. POLICY.

6a. The FAA is responsible for complying with both the procedures and policies of NEPA and other related environmental laws, regulations, and orders applicable to FAA actions. The FAA decisionmaking process shall support public understanding and scrutiny, consider the effect of a proposed action and its alternatives on the quality of the human environment, avoid or minimize adverse effects of the proposed action, and restore and enhance resources and environmental quality. The FAA will integrate NEPA and other environmental reviews and consultations into agency planning processes as early as possible.

6b. The environmental review process outlined in this order will assure that NEPA and other environmental considerations are taken into account. (See Appendix A for these considerations.)

EIS's/ROD's and EA's/FONSI's document FAA compliance with these considerations and reflect a thorough review of all relevant environmental issues, using a systematic, interdisciplinary approach.

6c. Funding requirements will be justified and requested in accordance with existing budgetary and fiscal policies. Each FAA program office is responsible for seeking sufficient funds through the budget process to implement provisions of this order.

6d. The new and amended categorical exclusions, and paragraph 211 on reducing paperwork and paragraph 212 on reducing delays are consistent with the FAA's initiative to streamline the NEPA process that was announced by the Administrator in January 2001.

6e. For projects subject to environmental streamlining, the FAA will comply with all environmental protection requirements outlined in this order, will maintain the integrity of the environmental process, and will respect the environmental responsibilities of other agencies. Environmental streamlining will be used to give review priority to certain projects, manage timelines during the review process, improve and expedite interagency coordination, reduce undue delays, and emphasize accountability.

7. EXPLANATORY GUIDANCE.

7a. This order sets forth policy and procedures for implementing NEPA. All FAA offices that have issued supplemental explanatory guidance for implementing NEPA within their programs must update their orders, policy and guidance, as appropriate, to be consistent with this revised order.

7b. A FAA program office may develop explanatory guidance to implement 40 CFR 1507.3 and this order.

(1) Development of Explanatory Guidance. The program office shall consult with AEE and AGC (Airports and Environmental Law Division, AGC-600) in developing explanatory guidance related to this order. Program offices are encouraged to publish notice of availability for comment of its proposed explanatory guidance in the *Federal Register*, and take other steps to seek public input during the development of its explanatory guidance.

(2) Review. The program office shall submit its proposed explanatory guidance to the Office of Environment and Energy (AEE) and the Office of the Chief Counsel (AGC) for a 60-day review period. If the Director of the Office of Environment and Energy (AEE-1) finds the explanatory guidance to be consistent with this order, after joint consultation with the AGC for legal sufficiency, AEE shall notify the program office and the program office may adopt these as its final explanatory guidance.

(3) Notice. If a program office chooses to publish its explanatory guidance in the *Federal Register*, that office shall notify the parties with whom it has consulted and publish availability of that guidance in the *Federal Register*.

8. SCOPE.

The NEPA process addresses impacts of Federal actions on the human environment, including noise, socioeconomic, land uses, air quality, and water quality. Chapter 2 of this order presents an overview of the NEPA process. Depending upon the context and potential impacts, NEPA procedures can differ. Chapter 3 of this order addresses those types of FAA actions that do not normally require preparation of an EA or EIS, called categorical exclusions (see paragraphs 303 and 307-312) absent extraordinary circumstances (see paragraph 304). Chapters 4 and 5 of this order outline the processes for preparing EA's and EIS's. These procedures apply to classes of FAA actions that have or may have a significant impact on the human environment. Appendix A, Analysis of Environmental Impact Categories, presents, for each environmental impact category, brief descriptions of statutory and regulatory requirements and a list of agencies with specialized expertise or legal jurisdiction. Appendix B provides additional FAA guidance on third-party contracting. Appendix C provides an annotated list of generally applicable executive orders, DOT and FAA orders, memoranda of agreement or understanding, and related CEQ and FAA guidance. Appendix D provides a summary of the FAA Reauthorization Act, "Vision 100 -- Century of Aviation Reauthorization Act," signed December 12, 2003. Appendix E provides a list of acronyms.

9. RELATION TO CEQ REGULATIONS. This order implements the mandate of NEPA, as defined and discussed in the CEQ regulations, within the programs of the FAA. The order is not a substitute for the regulations promulgated by CEQ, rather, it supplements the CEQ regulations by applying them to FAA programs. Therefore, all program offices and administration offices shall comply with both the CEQ regulations and the provisions of this order.

10. AUTHORITY AND PROCEDURE FOR ISSUING CHANGES TO THIS ORDER.

10a. When the Administrator has not specifically reserved authority to make changes or revisions, the Director of the Office of Environment and Energy (AEE-1) may issue changes or revisions to this order. When a change or revision may affect an office or offices, AEE must formally coordinate with that office to afford it an opportunity to review and discuss the proposed change.

(1) When a change or revision is substantial AEE must, in addition to the formal clearance procedures prescribed in Order 1320.1D, formally coordinate with the Office of the Chief Counsel (AGC), the Office of the Assistant Secretary for Transportation Policy (P-1) and the Office of the General Counsel (C-1), consult with CEQ and then publish the proposed change or revision in the *Federal Register* for public comment. After receiving all required FAA and DOT concurrences and after a finding of conformity is made by CEQ in accordance with 40 CFR 1507.3(a), the final change or revision may be published in the *Federal Register* and implemented.

10b. Each program office may submit to AEE proposed changes or revisions to this order. The Associate or Assistant Administrator for the requesting program office must provide AEE with a memorandum describing the proposed change, a detailed justification for the change, and comments from other program offices if the proposed changes or revisions affect them. AEE, in

cooperation with the requesting office, will process the proposed change or revision in accordance with the procedure prescribed in paragraph 10a.

11. DEFINITIONS.

11a. The terminology used in the CEQ regulations (see 40 CFR part 1508) and Title 49 of the United States Code is applicable.

11b. In addition, this paragraph defines basic terms used throughout this order, as follows:

(1) Applicant. A person, entity, organization, or government agency seeking FAA approval of a major Federal action. Examples include, but are not limited to, airport sponsors, airlines, or commercial launch license applicants.

(2) Approving Official. The FAA official with authority to approve findings of no significant impact (FONSI's) or environmental impact statements (EIS's) (see FAA Order 1100.154A, Delegation of Authority, which provides delegation of authority to agency officials to sign environmental documents).

(3) Decisionmaker. The FAA official with authority to approve a record of decision (ROD) or other types of formal decision documents for the agency (see FAA Order 1100.154A, Delegation of Authority, which provides delegation of authority to agency officials to sign environmental documents).

(4) Environmental Due Diligence Audit (EDDA). A systematic program for conducting environmental investigations of real property transfers. The purpose of the EDDA program is to help minimize environmental liabilities associated with such transfers. An EDDA is prepared using historical record searches, photographic interpretation, and site inspections to determine the likelihood of environmental contamination prior to real property transfers (acquisition by, or transfer to or from, the FAA). Where an EDDA has been determined necessary by the FAA, it will be incorporated by reference (see FAA Order 1050.19a, Environmental Due Diligence Audits in the Conduct of FAA Real Property Transactions, for further information on EDDA's).

(5) Environmental Studies. The investigation of potential environmental impacts to assist in determining the type of environmental review (see, e.g., 23 CFR 7.107(a)).

(6) Human Environment. The natural and physical environment and the relationship of people with that environment (see 40 CFR 1508.14).

(7) Launch Facility. The location on Earth from which a launch takes place, as defined in the terms and conditions of a license issued by the Secretary of Transportation, or designee, and the necessary facilities at that location to support the launch of commercial space launch vehicles.

(8) Noise Sensitive Area. An area where noise interferes with normal activities associated with its use. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas (including areas with wilderness characteristics), wildlife refuges, and cultural and historical sites. For example, in the context of noise from airplanes and helicopters, noise sensitive areas include such areas within the Day Night Level (DNL) 65 noise contour. Individual, isolated, residential structures may be considered compatible within the 65 DNL noise contour where the primary use of land is agricultural and adequate noise attenuation is provided. Also, transient residential use such as motels should be considered compatible within the 65 DNL noise contour where adequate noise attenuation is provided. A site that is unacceptable for outside use may be compatible for use inside of a structure, provided adequate noise attenuation features are built into that structure. (See table 1 on land use in section 4 of Appendix A of this order; section 14 on noise in Appendix A; and 14 CFR part 150, Airport Noise Planning, Land Use Compatibility Guidelines). The FAA recognizes that there are settings where the 65 DNL standard may not apply. In these areas, the responsible FAA official will determine the appropriate noise assessment criteria based on specific uses in that area. (See also section 6.2i of Appendix A of this order for further guidance.) In the context of launch vehicle operations, noise sensitive areas may include such sites within approximately 40 miles of the launch site for launches of very large rockets, whereas noise sensitive areas may include such sites within approximately 2 miles of the launch site for launches of small rockets. In the context of facilities and equipment, such as emergency generators or explosives firing ranges, but not including aircraft, noise sensitive areas may include such sites in the immediate vicinity of operations, pursuant to the Noise Control Act of 1972, (See State and local ordinances, which may be used as guidelines for evaluating noise impacts from operation of such facilities and equipment.)

(9) Responsible FAA Official. The FAA employee designated with overall responsibility to furnish guidance and participate in the preparation of NEPA documents, to evaluate the documents, and to take responsibility for the scope and content of the documents (see FAA Order 1100.154A, Delegation of Authority which provides delegation of authority to agency officials to sign environmental documents).

(10) Tribe. An American Indian or Alaska Native Tribe, Band, Nation, Pueblo, Village, or Community the Secretary of the Interior recognizes as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. A Federally Recognized Tribe is eligible for the programs, services, and other government-to-government relationships established by the United States for Indians because of their status as Indians and tribes. Under the Federally Recognized Indian Tribe List Act, the Department of the Interior, Bureau of Indian Affairs, annually publishes a list of Federally Recognized Tribes in the Federal Register and maintains this list on its web site. The term “tribe” may also refer to State-recognized tribes under specific authorities for certain DOT programs, especially related to surface transportation that may be associated with a particular FAA project.

12. APPLICABILITY. The provisions of this order and the CEQ regulations apply to actions directly undertaken by the FAA and where the FAA has sufficient control and responsibility to condition the license or project approval of a non-Federal entity. The requirements in this order apply to, but are not limited to, the following: all grants, loans, contracts, leases, construction,

research activities, rulemaking and regulatory actions, certifications, licensing, permits, plans submitted to the FAA by state and local agencies which require FAA approval, and legislation proposed by the FAA. Exceptions to these requirements are listed in chapter 2. The procedures in this order shall apply to the fullest extent practicable to ongoing activities and environmental documents begun before the effective date, except that this order does not apply to decisions made and final environmental documents issued prior to the effective date of this order.

13.-199. RESERVED

CHAPTER 2. NEPA PLANNING AND INTEGRATION

200. INTRODUCTION.

200a. This chapter guides the responsible FAA official, approving official, and decisionmaker in the NEPA process by determining the following:

(1) Whether an action is advisory (not subject to NEPA procedures), categorically excluded, or whether it requires an EA or an EIS.

(2) Whether the FAA is the lead Federal agency for the NEPA process.

(3) Which FAA office is responsible for NEPA compliance, including preparing environmental analyses and documents, ensuring public involvement, and completing interagency and intergovernmental coordination and consultation.

200b. FAA's primary mission is to assure aviation safety, security, and efficiency. NEPA compliance and other environmental responsibilities are integral components of that mission. NEPA assures informed decisionmaking. NEPA provides a means for assuring that environmental concerns and interests of the public, Federal, State, or local agencies, and Tribes are appropriately considered as part of the decisionmaking process. NEPA also provides a means for efficiently complying with related statutes, orders, and regulations. Effective, efficient, and timely environmental analyses, public involvement, and interagency and intergovernmental coordination depend upon determining the appropriate level of review early in planning, budgeting, and scheduling.

200c. In accordance with NEPA, environmental issues shall be identified and considered early in an action’s planning process. Agencies shall use a systematic, interdisciplinary approach. As appropriate, agencies shall also involve local communities and coordinate with agencies and governmental organizations. Environmental permits and other forms of approval, concurrence, or consultation may be required, often from other agencies. Awareness of any applicable permit application and other review process requirements should be included in the planning process to ensure that necessary information is collected and provided to the permitting or reviewing agencies in a timely manner. This is especially true if applicable laws, regulations, or executive orders specify timeframes for these processes. Project proponents should prepare a list noting all obvious environmental resources the sponsor's proposed action and alternatives it proposes would affect, include specially protected resources. Proponents should complete these tasks at the earliest possible time during project planning to ensure full consideration of all environmental resources and facilitate FAA's NEPA process.

200d. The responsible FAA official can use the NEPA process most effectively as an umbrella or vehicle for giving appropriate consideration to specific environmental concerns by:

(1) Describing the agency's underlying purpose and need for taking action;

(2) Identifying reasonable alternatives to the proposed action (must include the no action alternative);

(3) Rigorously analyzing the reasonably foreseeable direct, indirect, and cumulative environmental impacts of the proposed action and alternatives

(4) Providing for public disclosure and comment and a mechanism for responding to public comments;

(5) Providing the basis for informed selection of the preferred alternative.

(6) Identifying and evaluating measures to mitigate adverse effects of the preferred alternative and ensuring that appropriate measures are implemented.

(7) Facilitating compliance with applicable environmental laws, regulations, and executive orders.

200e. Applicability of NEPA Procedures to FAA Actions.

(1) Advisory Actions. Some Federal actions are of an advisory nature. Actions of this type are not considered major Federal actions under NEPA, and categorical exclusions, EA's or EIS's are not required as a condition for taking the action. See paragraph 301 for further information on advisory action.

(2) Emergency Actions (other than those that fall under paragraph 307a). Section 1506.11 of Title 40 of the CFR allows CEQ to grant alternative arrangements for, but not eliminate, NEPA compliance where a national emergency, disaster, or similar great urgency makes it necessary to take actions with significant environmental impacts without observing other provisions of CEQ regulations. See paragraph 302 for further information on emergency actions.

(3) FAA Actions Subject to NEPA Review (categorical exclusions; environmental assessments; environmental impact statements). Unless otherwise excepted by CEQ regulations, all formal actions taken by FAA officials are subject to NEPA review unless statutory law applicable to the FAA's operations expressly prohibits or makes compliance impossible. Actions covered by NEPA review include grants, loans, contracts, leases, construction, research activities, rulemaking and regulatory actions, certifications, licensing, permits, plans submitted to the FAA which require FAA approval, and legislation proposed by the FAA.

(4) FAA Actions Not Subject to NEPA Review.

(a) judicial or administrative civil enforcement actions (i.e., Investigative and Enforcement Procedures under 14 CFR part 13, and other administrative actions pursuant to: 14 CFR part 14, Rules Implementing the Equal Access to Justice Act of 1980; 14 CFR part 15, Administrative Claims Under Federal Tort Claims Act; 14 CFR part 16, Rules of Practice for

Federally-assisted Airport Enforcement Proceedings; and 14 CFR part 17, Procedures for Protests and Contracts Disputes)

(b) administrative actions pursuant to the application of a categorical exclusion to, or development and approval of an EA, FONSI, EIS, or ROD for, any FAA action subject to NEPA review. Also, NEPA review (categorical exclusions; EA's or EIS's) is not required for the promulgation of this Order, or similar orders, issued by the Administrator or organizational elements as authorized by the Administrator, that provide supplemental instructions for agency compliance with NEPA procedures.

201. THE THREE MAJOR LEVELS OF NEPA REVIEW. The three major levels of NEPA review are categorical exclusions, environmental assessments (EA), and environmental impact statements (EIS).

201a. If an action is included in one of the categories of categorical exclusions (see paragraphs 307-312), and no extraordinary circumstances (see paragraph 304) apply to the proposed action, the FAA can take action without further environmental review. (See Appendix A for associated findings and determinations that may need to be made, and, in certain situations, in consultation with relevant oversight agencies, under special purpose statutes, regulations, and executive orders.)

201b. For proposed actions subject to NEPA that do not qualify for categorical exclusion, an EA or an EIS is required. The purpose of an EA is to determine whether a proposed action or its alternatives has the potential to significantly affect the environment. If the FAA has decided to prepare an EIS, it does not need to prepare an EA. If the EA on the proposed action indicates that the action will not result in significant impacts, the responsible FAA official prepares a FONSI. The FONSI documents the basis or bases for FAA's determination that the action lacks potentially significant environmental impacts. It does not represent the agency's decision to implement the proposed action. A formal decision document after a FONSI, called a Record of Decision or FONSI/ROD, is optional because the agency's decision to act may be evidenced by other documents such as rules, licenses, or approvals. If FAA decides a FONSI/ROD is needed, it should incorporate the FONSI, along with other required findings. The FONSI and other findings must be documented in the project file.

201c. When proposed actions incorporate mitigation measures to avoid, eliminate, or reduce anticipated harm, a FONSI may be prepared and must include appropriate mitigation measures (see paragraph 404g).

201d. If the EA indicates the proposed action's impacts would meet or exceed a significance threshold(s) for the affected resource(s), or that mitigation would not reduce the significant impact(s) below the applicable threshold(s), FAA must prepare an EIS. An EIS provides additional, detailed evaluations of the proposed action and its alternatives, including the No Action alternative. Where the FAA anticipates that significant effects would result, a decision can be made to prepare an EIS without first developing an EA. No sooner than 30 days after notice of the final EIS has been published by EPA in the *Federal Register*, the FAA may issue a

ROD. The ROD presents the agency's official decision on the proposed action and identifies any mitigation and monitoring measures.

201e. When an application or request is received that requires FAA approval or implementation, environmental analysis may be required. The responsible FAA official may require the applicant or other interested parties to provide sufficient environmental information or analysis to ensure the environmental analysis meets the requirements of this order. In such cases, the responsible FAA official will recommend deferring final action pending receipt of the necessary information or environmental studies from the applicant. Upon receipt of the additional information or environmental studies, the responsible FAA official will determine if the information is sufficient to proceed. FAA may request that the applicant prepare the EA.

202. INITIAL IDENTIFICATION OF ISSUES AND CONCERNS.

202a. The responsible FAA official should initially review whether the proposed action:

(1) Could significantly affect the quality of the human environment, for example, with respect to noise, land, air, water, wildlife, energy supply and natural resources, or cultural, historic or archeological resources;

(2) Would be located in wetlands, floodplains, coastal zones, prime or important farmlands, habitat of Federally listed endangered, threatened, or other protected species, wild and scenic river areas, areas protected under section 4(f) of the DOT Act, or in or adjacent to minority or low income populations; or

(3) Would be highly controversial on environmental grounds (40 CFR 1508.27(b)(4)).

202b. Based on the initial environmental review, the responsible FAA official shall identify issues and problems having potentially significant environmental impacts. Further, the responsible FAA official shall determine whether such issues and problems, as they pertain to the proposed action, have been previously addressed in a broad system, program, or regional assessment (see paragraphs 409 and 513).

203. RESPONSIBILITIES OF THE FAA AND APPLICANTS

203a. Where actions are directly undertaken by FAA, the FAA may prepare EA's and EIS's, or use contractors in accordance with paragraph 204a.

203b. Where the FAA must evaluate applications and has sufficient control to conditionally approve the license or project, applicants may prepare EA's, but not EIS's. If the applicant prepares an EA, then the FAA must advise and assist the applicant during its preparation. The FAA must independently evaluate and take responsibility for the assessment. This ensures that an applicant’s potential conflict of interest does not impair the objectivity of the document. The FAA may ask the applicant to correct any deficiencies and re-submit the assessment if the FAA is not satisfied. Based on the final review, the FAA decides whether to prepare an EIS or issue a FONSI. Applicants may fund the preparation of EIS's through third-party contracting (see

paragraph 204 and Appendix B). In such cases, the role of the applicant is limited to providing, as appropriate, planning information, environmental studies (including studies to obtain incomplete information that the FAA finds to be required under the standards of 40 CFR 1502.22), other FAA-requested information, and financing for the EIS consultants costs.

203c. For projects directly undertaken by Federal agencies and requiring an EIS, the EIS shall be prepared at the feasibility analysis (go - no go) stage, and may be supplemented at a later stage. For applications to the FAA requiring an EA or EIS, preparation of the EA or EIS shall begin no later than immediately after the FAA receives the application or proposal.

204. USE OF CONTRACTORS.

204a. Contracted consulting services may be used to prepare essential environmental documents or information. Contractors also may be used to prepare background or supplemental material and otherwise assist in preparing draft or final environmental documents for which the FAA takes responsibility. When contractors prepare EA's and EIS's for the FAA or an EA for a non-FAA party seeking FAA approval or funding, the contractor must comply with the provisions of this order.

204b. In some circumstances, consultant services may be needed by FAA to perform environmental assessments for direct Federal actions. Under FAA Acquisition Management System policy, procurements may not be awarded to contractors who have unacceptable actual or potential organizational conflicts of interest. Organizational conflicts of interest result when, because of activities or relationships with other persons a person is unable or potentially unable to render impartial assistance to the agency or the person’s objectivity in performing the contract work is or might be impaired, or the person has an unfair competitive advantage (as used herein, the term "person" includes any legal entity including a partnership, corporation, or association). For example, a contractor selected to prepare an environmental assessment would have a potential conflict of interest if also selected to conduct final design work when the final design work is part of the construction contract. "Final design work" means a bid-ready site-specific design package containing drawings, design data handbook and construction cost estimate. The FAA may select a contractor to prepare both an EA and preliminary design work provided the design work is conceptual in nature. "Preliminary design work" means design to local criteria based on a national facility design. When an actual or potential conflict of interest is identified by either the contractor or the agency official, the agency official must consult with AGC or Regional Counsel to determine whether there is a conflict and, if so, whether the conflict can be avoided or mitigated or waived at the FAA’s discretion. Such determinations are made on a case-by-case basis. FAA Acquisition Management System June 1997, Section 3.1.7.

204c. When an EIS is required, the lead Federal agency is required to select the contractor, who will assist the lead agency in preparing the EIS. (See 40 CFR 1506.5(c) and Appendix B, FAA Guidance on Third-Party Contracting). It is advisable to follow these procedures when preparing an EA, as the EA may result in a decision to prepare an EIS. Further, delays in preparing an EIS might be avoided by selecting the contractor in accordance with this paragraph and Appendix B.

204d. When a contractor prepares an EIS, the FAA requires the contractor to execute a disclosure statement prepared by the lead agency, or when appropriate, by the cooperating agency (for its portion of the EIS, as delegated by the FAA pursuant to 40 CFR 1501.6(b)(3)), specifying that the contractor has no financial or other interest in the outcome of the action (see 40 CFR 1506.5(c)).

205. EFFECTIVE DATE. This order is effective immediately upon signature.

206. SPECIAL INSTRUCTIONS. The responsible FAA official should not take any action or make any irretrievable and irreversible commitments of resources which would have an adverse environmental impact or limit the choice of reasonable alternatives until any required EIS has been completed that meets the requirements of this order (see 40 CFR 1506.1).

206a. Requirements that apply to EIS's may also be used for the preparation of EA's.

206b. Land acquisition and facility construction.

(1) The transfer of title or other interests in real property, including land, is not a major Federal action significantly impacting the environment or an irretrievable commitment of resources under NEPA, unless the acquisition of land is inextricable to the proposed project or effectively limits the choice of reasonable alternatives. The acquisition of land is inextricable to the proposed project where the acquisition is part of one continuous project leading inevitably to the proposed Federal action.

(2) If the FAA action requires acquisition of property and the action is not categorically excluded under Chapter 3 of this order, no formal contact with the property owner for the purpose of acquiring these interests, including any offer, should be made prior to filing of an EIS or issuance of a FONSI, except for:

(a) Emergency situations;

(b) Obtaining rights-of-way for such purposes as preparation for site testing, obtaining data, property surveys, etc.; and

(c) Those cases where the NEPA review process indicates that the proposed site warrants further engineering study and requires an EIS. It assures the availability of the property pending and filing the EIS. In this event, the DEIS should state that the FAA has entered into an option and the reason for the option; that alternative sites are being considered through the EIS process; and that a decision to exercise the option will not be made until completion of the review and filing of the EIS.

(3) The responsible FAA official will review a proposed action by an applicant that has acquired land or constructed a facility for operation by FAA, but without prior approval by FAA, to determine whether the action was consistent with the policies of this order and has not limited full and objective consideration of alternatives.

206c. The responsible FAA official will give particular attention to its responsibilities under section 4(f) of the DOT Act to insure that a special effort is made to preserve the natural beauty of countryside, public parks, and recreation lands, wildlife and waterfowl refuges, wild and scenic rivers or study rivers, and historic sites. FAA will not approve actions requiring the use of properties under section 4(f) of the DOT Act unless there is no feasible and prudent alternative to the use and the program includes all possible planning to minimize harm from the use.

206d. The responsible FAA official also will give particular attention to actions involving properties included in or eligible for inclusion in the National Register of Historic Places and the provisions of Title VI of the Civil Rights Act of 1964 and the Uniform Relocation Assistance and Real Properties Acquisition Policies Act of 1970.

207. ROLE OF LEAD AND COOPERATING AGENCIES. Section 1501.5 of the CEQ regulations describes the role of the lead agency in preparing EIS's when more than one agency is involved in a proposed action. Section 1501.6 describes the relationship of the lead agency with cooperating agencies. Sections 1501.7 and 1501.8 describe the role of the lead agency in the scoping process and in setting time limits.

207a. Lead agencies may ask Federal agencies with special expertise or jurisdiction by law to be cooperating agencies.

207b. The definition of a cooperating agency in 40 CFR 1508.5 also includes any "State or local agency of similar qualifications [i.e., with jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal] or, when the effects are on a reservation, a Tribe, may by agreement with the lead agency become a cooperating agency." For further guidance, see CEQ Memorandum on Designation of Non-Federal Agencies to be Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act (July 28, 1999) and the CEQ Memorandum for Heads of Federal Agencies: Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act (January 30, 2002).

208. PUBLIC INVOLVEMENT

208a. NEPA and the CEQ regulations, in describing the public involvement process, require Federal agencies to: consider environmental information in their decision making process; obtain information from the public regarding environmental concerns surrounding an agency's proposed action; fully assess and disclose potential environmental impacts resulting from the proposed action and alternatives; and provide the public with this information and allow it to comment on these findings. Public involvement is also required when FAA revises its rules, or when it proposes substantial changes to its NEPA implementing instructions. FAA's "Community Involvement Policy Statement" (dated April 17, 1995) affirms FAA's commitment to make complete, open and effective public participation an essential part of its actions, programs, and decisions.

208b. At the earliest appropriate stage of the action and early in the process of preparing NEPA documentation, the responsible FAA official, or when applicable, the project proponent, must provide pertinent information to the affected community and agencies and consider the affected communities' opinions(40 CFR 1501.2). The extent of early coordination will depend on the complexity, sensitivity, degree of Federal involvement, and anticipated environmental impacts of the proposed action. Comments received during early coordination on environmental impacts of proposed actions shall be considered, as appropriate, in determining whether an EA or EIS is required.

208c. Public input is important in defining the scope of FAA NEPA documents. Public involvement is required when the FAA prepares an EIS (40 CFR 1501.4(d)). Public involvement must be provided for, to the extent practicable, while an EA is being drafted (40 CFR 1501.4(b)). Although there is no standard approach to public scoping, it is important that FAA facilitate public participation in that process as well. Therefore, the FAA should tailor public scoping processes to match the complexity of the proposal.

208d. FAA must provide the public with an opportunity to review and comment on draft EIS's and must formally respond to those public comments in final EIS's (40 CFR 1506.6 and 1503.4). Although the FAA need not formally respond to public comments concerning EA's, EA's should reflect the FAA’s consideration of public concerns. Further information about public involvement during the EA or EIS process is contained in chapters 4 and 5, respectively.

208e. NEPA also serves as “a framework” statute for completing the public notice and participation requirements specified in many other applicable environmental laws and regulations, e.g., section 106 of the National Historic Preservation Act, Executive Order 12898 and Order DOT 5610.2, addressing environmental justice. Responsible FAA officials and project proponents must involve, and are encouraged to work cooperatively with, other agencies during the NEPA process and meet the public involvement needs specified in all the environmental laws, regulations and executive orders applicable to a proposed FAA action.

208f. When another Federal agency disposing of land is the lead agency pursuant to NEPA, the FAA shall defer to the public involvement requirements of the agency having jurisdiction over those lands. For example, when FAA actions involve the transfer of military installations, FAA should work with DOD to satisfy DOD public involvement needs and incorporate NEPA with the requirements of the Base Closure and Realignment Acts.

208g. The FAA must prepare draft EIS's for rulemaking activities that could cause significant environmental impacts. As needed, the responsible FAA official should consult with the Office of Rulemaking (ARM) and the Office of the Chief Counsel (AGC) to coordinate public involvement in these instances.

209. PUBLIC HEARINGS, WORKSHOPS AND MEETINGS.

209a. Strategic planning is needed to successfully integrate public involvement and NEPA. Failure to complete public participation can delay the process and, therefore, the proposed action. In many instances, hearings, workshops, or meetings provide timely opportunities to discover potentially controversial issues. Some factors that are helpful in deciding if a hearing, workshop, or meeting is needed include:

(1) the proposed action's magnitude in terms of environmental impact, environmental controversy, cost and/or extent of the affected geographical area;

(2) the degree of interest that Federal, State, Tribal, or local authorities or the public exhibit;

(3) the complexity of issues; and

209b. A scoping meeting may be appropriate when the impacts of a particular action are confined to specific sites. See chapter 5, paragraph 505.

209c. If the FAA conducts a public hearing, meeting, or workshop for the purpose of obtaining public comment on a draft EIS or EA, the FAA should ensure that the draft EIS or EA is available for public review at least 30 days before the event occurs. Notice of a public hearing, meeting, or workshop should appear in local, general circulation newspapers. Notice of actions having national implications should be published in the *Federal Register* and mailed to national organizations having an interest in the matter. The notice should provide the:

(1) date, time, and place, and a time period during which written comments will be accepted;

(2) description of the proposed action;

(3) location and availability of the NEPA document; and

(4) name and phone number of the responsible FAA official for information purposes.

209d. FAA must, at the earliest stages of project planning, make every effort practicable to notify potentially affected minority populations and low-income populations of proposed actions. This may be done through the convening of public hearings, meetings, or workshops on NEPA documents. Direct contact shall be made with minority and low-income community groups, organizations and/or leaders in communities affected by the activity. Many public involvement techniques exist. As appropriate, provisions should be made to accommodate the needs of the elderly, handicapped, non-English speaking, minority and low-income populations. FAA's Community Involvement Manual" (FAA-EE-90-3, dated August 1990) and chapter 2 of DOT's "Public Involvement Techniques for Transportation Decisionmaking" provide additional guidance on hearings, meetings, and workshops. The inclusion of public comments and FAA responses to those comments in EA's and EIS's is addressed in paragraph 208. When dealing

with classified information, consult FAA Order 1600.2D, "Safeguarding Controls and Procedures for Classified National Security Information and Sensitive Unclassified Information (Aug. 29, 1997), specifically chapter 7.

210. PLAIN LANGUAGE AND GEOGRAPHIC INFORMATION. 40 CFR 1500.4(d), 1502.1, 1502.2(c), and 1502.8, Order DOT 5610.1C, paragraph 14, and the executive orders on environmental justice and intergovernmental consultation encourage the availability of information to the public in a manner that will facilitate public involvement in decisions affecting the human environment. The following executive orders also apply:

210a. Executive Order 12906, Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure, April 11, 1994 (59 FR 17671, April 13, 1994), requires studies and geospatial data collected in the course of preparing an EA or EIS to conform to quality standards established through the intergovernmental coordinating mechanism provided for in the executive order, and chaired by the Federal Geographic Data Committee. For additional information, contact the Office of Environment and Energy.

210b. Executive Order 12866, Regulatory Planning Review, and the Presidential Memorandum on Plain Language in Government Writing, dated June 10, 1998 (63 FR 31885, June 10, 1998), requires all Federal agencies to use plain language in all proposed and final rulemaking documents published in the Federal Register and in government documents generally. FAA documents intended for public distribution must also comply with the DOT Information Quality Guidelines prepared pursuant to the OMB guidelines (P.L. 106-554) regarding the objectivity, utility, and integrity of the information disseminated. The public comment and participation process for a draft EIS satisfies the process for requesting correction of information. Any corrections deemed appropriate will be included in the Final EIS. A request for corrections to a Final EIS or for reconsideration of a request for corrections may be handled as though it were a request for a Supplemental EIS.

211. REDUCING PAPERWORK. The CEQ regulations (40 CFR 1500.4) encourage the reduction of paperwork while still demonstrating in the administrative record that the agency has met the requirements of NEPA and other applicable environmental laws, regulations, and executive orders.

211a. The responsible FAA official should integrate NEPA requirements and other applicable environmental reviews and consultation requirements (40 CFR 1500.4(k)).

211b. The responsible FAA official should refer to Appendixes A and C of this order for an overview of analyses required under other applicable environmental laws, regulations, and executive orders.

211c. CEQ regulations also encourage joint preparation of NEPA documents so that each agency may adopt appropriate documents prepared by another agency (40 CFR 1506.3).

211d. Relevant information may be incorporated by reference (including the use of hyperlinks to documents that are stored and maintained electronically) and the FAA is

encouraged to do so if the effect will be to reduce bulk without hindering agency and public review. The information must be briefly described, properly cited, and reasonably available for inspection by potentially interested persons within the time allowed for comment. (See 40 CFR 1502.21).

212. REDUCING DELAY. CEQ regulations encourage the reduction of delay while allowing for public involvement and interagency and intergovernmental consultation.

212a. To reduce delay, the responsible FAA official should integrate NEPA requirements, and those of associated permitting and review processes, with the agency's planning and decisionmaking process for the project as early as possible.

212b. The responsible FAA official should, where appropriate, use tiering for EA's and EIS's (40 CFR 1502.20):

(1) A broad or programmatic impact statement may be used to consider similar actions.

(2) A phased approach may be used to focus on issues ripe for decision at each level of environmental review, while summarizing previously discussed issues and disclosing reasonably foreseeable actions.

212c. The responsible FAA official should refer to Appendixes A and C for an overview of requirements under other applicable environmental laws, regulations, and executive orders, identify the information and time required by the oversight agencies to complete their review and, where applicable, jointly prepare or adopt the FAA's EA or EIS to meet their own NEPA requirements (see 40 CFR 1500.5(g) and (h) and 1506.2)).

212d. The responsible FAA official should identify any need for additional studies or documentation.

213. INTERGOVERNMENTAL AND INTERAGENCY COORDINATION AND CONSULTATION.

213a. The responsible FAA official, or when appropriate, the project proponent, should consult affected local units of government, Federal and State agencies, and Tribes early in the NEPA process. Comments on the environmental impacts of the proposed action shall be considered, as appropriate, in determining whether the proposed action requires an EA/FONSI or EIS and in preparing the EA/FONSI or EIS. See specific requirements for coordination and consultation, which may apply under other environmental laws, regulations, and executive orders (see Appendix A). Environmental permits and other forms of approval, concurrence, or consultation may be required from other agencies. Pertinent permit application and other review processes should be included in the planning process to ensure that the necessary supporting information is collected and provided to the permitting or reviewing agencies in a timely manner, especially if the applicable laws, regulations, or executive orders specify timeframes for these processes.

213b. The following executive orders also apply generally:

(1) State and local governments. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, dated July 14, 1982 (as supplemented by Executive Order 13132, Federalism, dated August 4, 1999 (64 FR 43255, August 10, 1999)), and 49 CFR part 17, Intergovernmental Review of DOT Programs and Activities, the responsible FAA official shall provide the opportunity for State and local officials to review and comment on Federal actions for Federal assistance or actions affecting them. A few States have established a point of contact, often within the governor's office, to coordinate comments by State agencies. Otherwise, the responsible FAA official should contact appropriate State agencies directly. See also specific requirements for consultation with State and local governments in Appendix A, Analysis of Environmental Impact Categories.

(2) Tribes. In accordance with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, November 6, 2000 (65 FR 67249, November 9, 2000), the Federal Government continues to work with Tribes on a government-to-government basis to address issues concerning Tribal self government, trust resources, and Tribal treaty and other rights. For regulations, legislative comments, or proposed legislation, and other policy statements or actions that have substantial direct effects on Federally Recognized Tribes, the appropriate FAA official should initiate consultation with the recognized leader of the Tribe and seek advice on how to proceed based on the Tribal culture and the Tribal organization as discussed in FAA Order 1210.20, "American Indian and Alaska Native Tribal Consultation Policy and Procedures" (January 28, 2004). (See also specific requirements for consultation with Tribes in Appendix A.) Sources of information for addresses to contact Tribes include, for example, State Historic Preservation Offices, the Bureau of Indian Affairs, FAA's Federal Historic Preservation Officer, and FAA's National or Regional Tribal Consultation Officials..

(3) Foreign governments. In accordance with Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, dated January 4, 1979 (44 FR 1957, January 9, 1979), specific treaties, and DOT Order 5610.1C, paragraph 16, the responsible FAA official should consult with the appropriate headquarters line of business office. The line of business will notify AEE and then consult with the Assistant Secretary for Transportation Policy (P-1), to initiate consultation with foreign governments for proposed actions outside the United States, its territories, and possessions that have the potential to significantly affect the global commons or the environment of other nations.

213c. The responsible FAA official should refer to relevant interagency memoranda of agreement and understanding. (See also Appendix A, Analysis of Environmental Impact Categories; Appendix C, Related Executive Orders, DOT & FAA Orders, and Memoranda/Guidance; and contact the Environment, Energy and Employee Safety Division (AEE-200) or the Office of Chief Counsel (AGC-600) for information on the status of this and other interagency memoranda).

213d. Various laws, regulations, executive orders, and departmental orders establish interagency coordinating mechanisms, e.g., related to invasive species, coral reefs, and children's environmental health risks. The responsible FAA official should review Appendix A,

Analysis of Environmental Impact Categories, and contact the Environment, Energy and Employee Safety Division (AEE-200) or the Office of Chief Counsel (AGC-600) for more specific information.

213e. In accordance with 40 CFR 1503.1 and 1503.2, the FAA must be invited to comment, and the FAA must comment, on draft EIS's prepared by other Federal agencies if the FAA has jurisdiction by law or special expertise with respect to any environmental impact involved or is authorized to develop and enforce environmental standards (e.g., 14 CFR part 36). The responsible FAA official may, if appropriate, reply that the FAA has no comment. Further, if the FAA is acting as a cooperating agency, the responsible FAA official shall, if satisfied that FAA's views are adequately reflected in the environmental document, reply that the FAA has no comment. If the responsible FAA official or the Office of Environment and Energy prepares comments that request additional information, the request should be as timely and specific as possible, indicating what additional information the FAA needs to fulfill other applicable environmental reviews or consultation requirements. If the responsible FAA official or the Office of Environment and Energy objects or expresses a reservation about the proposed action based on potential environmental impacts, the FAA reply must specify what mitigation measures it considers necessary to allow the program office to grant or approve applicable permit, license, or related requirements or concurrences.

214. ROLES AND RESPONSIBILITIES. The Associate and Assistant Administrators of the various FAA organizations shall define the roles and responsibilities of their respective offices, services, regions, and centers for complying with this order. Responsibilities may be delegated in accordance with appropriate FAA orders, such as Order 1100.154A, Delegations of Authority.

214a. The Assistant Administrator for Region and Center Operations (ARC) is responsible for overseeing Regional Administrators and the Director of the Mike Monroney Aeronautical Center. They are responsible for coordinating cross-divisional and cross-regional environmental matters and for overseeing those regional environmental activities not otherwise straight-lined to headquarters. Additionally, the Director of the Mike Monroney Aeronautical Center is responsible for overseeing center environmental activities, including NEPA compliance.

214b. The Associate Administrator for Airports (ARP) is responsible for considering the environmental impacts of proposed FAA approvals of FAA-funded airport actions, airport layout plans (even if the proposal does not require FAA funding), and assuring compliance with NEPA requirements and other Federal and Departmental environmental laws, regulations, and orders. Airports personnel shall comply with the NEPA requirements in this order, supplemented by the most current version of FAA Order 5050.4A (or subsequent revisions to it). ARP's Office of Airport Planning and Programming, Community and Environmental Needs Division, APP-600, provides guidance to Regional and District Airports personnel concerning Federal, Departmental, and agency environmental policy regarding airport development actions.

214c. The Assistant Administrator for Aviation Policy, Planning, and Environment (AEP) is responsible for providing policy guidance to the agency on implementing a wide range of environmental laws and regulations. The Office of Environment and Energy (AEE) provides policy oversight on FAA environmental actions; issues regulations for aircraft noise and

emissions under 14 CFR parts 34 and 36; provides assistance as necessary in developing guidelines and procedures for FAA program areas; serves as the designated FAA NEPA liaison in accordance with 40 CFR 1507.2 “to be responsible for overall review of agency NEPA compliance” and Federal Preservation Officer in accordance with section 110 of the National Historic Preservation Act; interprets policies established in this order; provides assistance with computerized environmental tools, such as the “Integrated Noise Modeling” (INM) for aircraft noise and the “Emissions Dispersion Modeling System” (EDMS) for air quality; and provides advice to and supplements NEPA training programs in cooperation with the Office of Learning and Development and other applicable organizational elements.

214d. The Office of the Chief Counsel (AGC) is responsible for providing legal advice on NEPA compliance and legal requirements. AGC reviews actions subject to section 4(f) of the DOT; counsels and assists headquarters staff and regional offices in accomplishing FAA environmental review, and advises on the legal sufficiency of environmental documents. Regional Counsel and Center Counsel are responsible for providing legal counsel, assistance, and review in the conduct of regional actions and environmental activities and in advising on the legal sufficiency of regional and center environmental documents.

214e. The Air Traffic Organization is responsible for evaluating the environmental impacts for all actions arising out of Air Traffic Organization responsibilities that require compliance with NEPA and all other Federal and Departmental environmental laws, regulations and orders. Air Traffic Organization personnel shall comply with the NEPA requirements of this order.

214f. The Associate Administrator for Commercial Space Transportation (AST) is responsible for assessing the environmental impacts of commercial launch activities. The FAA is authorized to regulate and license U.S. commercial launch and re-entry activities and as such, AST is responsible for ensuring that launch services provided by private enterprises are consistent with national security and foreign policy interests of the United States and do not jeopardize public safety and the safety of property. AST's authority extends to licensing of commercial launch vehicles (LV's) and is considered to be a major Federal action subject to NEPA requirements. Launch and re-entry licenses also identify the requirement for the proper oversight and control of launch activities. AST issues launch and re-entry specific and launch and re-entry site operators licenses.

214g. The Associate Administrator for Regulation and Certification (AVR) is responsible for considering the environmental impacts for all actions arising out of AVR initiatives that require NEPA compliance and other Federal and Departmental environmental laws, regulations, and orders. AVR personnel shall comply with requirements as delegated to the Flight Standards Service, Aircraft Certification Service, Regional Flight Standards Service Division Managers, and Aircraft Certification Directorate Managers.

214h. The Assistant Administrator for International Aviation (API) is responsible for considering the environmental impacts for all actions arising out of API initiatives that require NEPA compliance and other Federal and Departmental environmental laws, regulations, and orders. API personnel shall comply with requirements as delegated to the Office of International Aviation.

214i. The Assistant Administrator for Financial Services (ABA) is responsible for assuring that adequate funding is requested for NEPA activities in the budget outyears. ABA assures that services, regions, centers, and offices factor in NEPA activities in their budget submittals in the annual call for estimates. The Office of Budget (ABU) also uses this order as the basis for supporting the annual call for estimates related to additional costs required for environmental activities.

214j. The Assistant Administrator for Human Resource Management (AHR) is responsible for incorporating training requirements in the individual development plans for appropriate personnel. Within AHR, the Office of Learning and Development (AHT) assures that FAA training is updated to include instruction on NEPA for appropriate personnel, in cooperation with the Center for Management Development (AHM), the FAA Academy (AMA), at the Mike Monroney Aeronautical Center (AMC), the Office of Environment and Energy (AEE) within the Associate Administrator for Policy, Planning, and Environment (AEP), and the Environmental Law Branch of the Office of Chief Counsel (AGC), and training staff within the program offices.

214k. The Office of Civil Rights (ACR) is responsible for determining whether projects receiving Federal financial assistance from the FAA comply with the appropriate civil rights laws and regulations, and executive orders, including those requirements under the E.O. 12898 and the accompanying Presidential Memorandum concerning environmental justice and Order DOT 5610 on environmental justice in the context of Title VI of the Civil Rights Act of 1964, as amended.

214l. The Assistant Administrator for Security and Hazardous Materials (ASH) is responsible for considering the environmental impacts for all actions arising out of ASH initiatives that require NEPA compliance and other Federal and Departmental environmental laws, regulations, and orders.

215. ENVIRONMENTAL STEWARDSHIP AND STREAMLINING. Certain airport capacity projects, aviation safety projects, and aviation security projects may be subject to special designation and treatment in accordance with provisions of “Vision 100 -- Century of Aviation Reauthorization Act” as described in Appendix D of this order. Airport infrastructure projects may also be selected for review under Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Reviews. It is the responsibility of the FAA office that has the primary responsibility for a proposed action and that is leading the environmental review to assure that applicable special review provisions are effectively applied.

216.-299. RESERVED.

CHAPTER 3. ADVISORY AND EMERGENCY ACTIONS AND CATEGORICAL EXCLUSIONS

300. INTRODUCTION. This chapter explains how to address advisory actions and emergency actions. It also provides guidance on FAA actions that are categorically excluded, and as a result, do not require an EA or EIS.

301. ADVISORY ACTIONS. Some Federal actions are of an advisory nature. Actions of this type are not considered major Federal actions under NEPA, and categorical exclusions, EA's or EIS's are not required as a condition for taking the action. If it is known or anticipated that some subsequent Federal action would be subject to NEPA, the FAA shall so indicate in the advisory action. Examples of advisory actions include:

301a. Determinations under 14 CFR part 77, Objects Affecting Navigable Airspace; and

301b. Determinations under 14 CFR part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, and Marking and Lighting Recommendations. Determinations under 14 CFR part 157 apply to airports, helipads, and heliports.

301c. Designation of alert areas and warning areas under FAA Order 7400.2, Procedures for Handling Airspace Matters.

302. EMERGENCY ACTIONS THAT REQUIRE AN ENVIRONMENTAL IMPACT STATEMENT. Section 1506.11 of Title 40 of the CFR allows CEQ to grant alternative arrangements for, but not eliminate, NEPA compliance where a national emergency, disaster, or similar great urgency makes it necessary to take actions that merit an environmental impact statement without observing other provisions of CEQ regulations. The processing times may be reduced or, if the emergency situation warrants, preparation and processing of environmental impact statements may be abbreviated. A request for alternative arrangements must be made by, or on the behalf of, the Administrator of the FAA. The responsible FAA official should consult with AEE (Environment, Energy and Employee Safety Division, AEE-200) and AGC (AGC-600) for evaluation to assure national consistency. The responsible FAA official shall then consult CEQ about alternative arrangements for complying with NEPA.

303. CATEGORICAL EXCLUSIONS: GENERAL.

303a. Categorical exclusions are those types of Federal actions that meet the criteria contained in 40 CFR 1508.4. They represent actions that the FAA has found, based on past experience with similar actions, do not normally require an EA or EIS because they do not individually or cumulatively have a significant effect on the human environment, with the exception of extraordinary circumstances as set forth in paragraph 304. Categorical exclusions are identified by functional group and are presented in paragraphs 307 through 312. All offices should examine the categorical exclusions provided to determine whether an action is categorically excluded. For reference, the office(s) that would most commonly use a categorical exclusion are provided in parentheses following the type of action. However, any office may use

a given categorical exclusion if it is applicable to their particular action. Where qualifications identifying an extraordinary circumstance are included in a given categorical exclusion, they are intended for emphasis only, and are not intended to imply that such qualifications should not be considered for other categorical exclusions, where applicable.

303b. The categorical exclusion list is classified by the following functions:

(1) Administrative/General: Actions that are administrative or general in nature.

(2) Certification: Actions concerning issuance of certificates or compliance with certification programs.

(3) Equipment and Instrumentation: Actions involving installation, repair, or upgrade of equipment or instruments necessary for operations and safety.

(4) Facility Siting, Construction, and Maintenance: Actions involving acquisition, repair, replacement, maintenance, or upgrading of grounds, infrastructure, buildings, structures, or facilities that generally are minor in nature.

(5) Procedural: Actions involving establishment, modification, or application of airspace and air traffic procedures.

(6) Regulatory: Actions involving compliance with, or exemptions to, regulatory programs or requirements.

303c. The responsible FAA official must first determine whether a proposed action is within one of the categorical exclusions listed in paragraphs 307 through 312. If it is not, an EA or EIS must be prepared. An action on the categorically excluded list is not automatically exempted from environmental review under NEPA. The responsible FAA official must also review paragraph 304, Extraordinary Circumstances, before finalizing a determination that a proposed action qualifies for categorical exclusion. If it is uncertain whether an extraordinary circumstance applies to the proposed action, the responsible FAA official shall consult with appropriate offices for guidance. Figure 3-1, Categorical Exclusion Process, summarizes the categorical exclusion process. The following paragraphs provide more information on the categorical exclusion process.

303d. Some of the categorical exclusions listed in paragraphs 307-312 are actions for which there is no reasonable expectation of a change in use and thus should not cause environmental impacts. Such actions are identified by reference to this paragraph.

Figure 3-1. Categorical Exclusion Determination Process

Step 1	Step 2	Step 3	Optional Step 4	Step 5
Responsible FAA official or project proponent defines proposed action.	Responsible FAA official compares proposed action to list of categorical exclusions.	Responsible FAA official reviews proposed action for extraordinary circumstances.	Responsible FAA official has an option to issue and file a categorical exclusion determination if extraordinary circumstances are not involved.	Approving FAA official proceeds with action.

304. EXTRAORDINARY CIRCUMSTANCES. Some actions that would normally be categorically excluded could require additional environmental analysis to determine the appropriate NEPA documentation. A determination of whether a proposed action that is normally categorically excluded requires an EA or EIS depends on whether the proposed action involves extraordinary circumstances. Extraordinary circumstances exist when the proposed action (1) involves any of the following circumstances, and (2) may have a significant effect (40 CFR 1508.4). The presence of one or more of the following circumstance(s) in connection with a proposed action is not necessarily a reason to prepare an EA or EIS. The determination of whether a proposed action may have a significant environmental effect is made by considering any requirements applicable to the specific resource (see Appendix A). The circumstances are as follows:

304a. An adverse effect on cultural resources protected under the National Historic Preservation Act of 1966, as amended.

304b. An impact on properties protected under section 4(f) of the Department of Transportation Act.

304c. An impact on natural, ecological (e.g., invasive species), or scenic resources of Federal, Tribal, State, or local significance (for example: Federally listed or proposed endangered, threatened, or candidate species or designated or proposed critical habitat under the Endangered Species Act), resources protected by the Fish and Wildlife Coordination Act; wetlands; floodplains; coastal zones; prime, unique, State or locally important farmlands; energy supply and natural resources; and wild and scenic rivers, including study or eligible river segments and solid waste management.

304d. Cause a division or disruption of an established community, or a disruption of orderly, planned development, or an inconsistency with plans or goals that have been adopted by the community in which the project is located.

304e. Cause an increase in congestion from surface transportation (by causing decrease in Level of Service below acceptable level determined by appropriate transportation agency, such as a highway agency).

304f. An impact on noise levels of noise-sensitive areas.

304g. An impact on air quality or violate local, State, Tribal, or Federal air quality standards under the Clean Air Act Amendments of 1990.

304h. An impact on water quality, sole source aquifers, a public water supply system, or State or Tribal water quality standards established under the Clean Water Act and the Safe Drinking Water Act.

304i. Effects on the quality of the human environment that are likely to be highly controversial on environmental grounds. The term "controversial" means a substantial dispute exists as to the size, nature, or effect of a proposed Federal action. The effects of an action are considered highly controversial when reasonable disagreement exists over the project's risks of causing environmental harm. Opposition on environmental grounds by a Federal, State, or local government agency or by a Tribe or by a substantial number of the persons affected by the action should be considered in determining whether or not reasonable disagreement regarding the effects of a proposed action exists. If in doubt about whether a proposed action is highly controversial, consult the program office's headquarters environmental division, AEE (Environment and Energy Team, AEE-200), regional counsel, or AGC (AGC-600) for assistance.

304j. Likelihood to be inconsistent with any Federal, State, Tribal, or local law relating to the environmental aspects of the proposed action.

304k. Likely to directly, indirectly, or cumulatively create a significant impact on the human environment, including, but not limited to, actions likely to cause a significant lighting impact on residential areas or commercial use of business properties, likely to cause a significant impact on the visual nature of surrounding land uses (see sections 11 and 12, Appendix A for additional information), likely to be contaminated with hazardous materials based on Phase I or Phase II Environmental Due Diligence Audit (EDDA's) , or likely to cause such contamination (see section 10, Appendix A for additional references and discussion).

305. OPTIONAL CATEGORICAL EXCLUSION DOCUMENTATION. Categorical exclusions are allowed under CEQ regulations to reduce delay and paperwork. Once categorical exclusions are promulgated, with notice and public procedure, by the FAA, CEQ guidance allows FAA not to repeatedly document that an activity is within a listed categorical exclusion and no extraordinary circumstances exist. The decision that a proposed action is within a categorical exclusion and that no extraordinary circumstances exist shall not be considered deficient if it is not supported by documentation verifying that the proposed action is categorically excluded (see, however, paragraph 306 and Appendix A for information about specific findings or determinations and associated public notice and comment requirements under other applicable environmental laws, regulations, and executive orders.). Unique situations may occur where the responsible FAA official may decide, for record-keeping purposes or in anticipation of litigation, to informally document the agency's categorical

exclusion determination. Examples of such unique situations may include: (1) when there is controversy or public opposition (but not "effects on the quality of the human environment likely to be highly controversial on environmental grounds" as defined in paragraph 304i); (2) when the applicability of a categorical exclusion is not intuitively clear; (3) when litigation is anticipated; or (4) when the project is perceived by the public as having the potential for adverse environmental effects. There is no prescribed format for any documentation that the responsible FAA official decides to include in the record to support a categorical exclusion. The responsible FAA official should use reasonable judgment on the appropriate type and amount of information.

306. OTHER ENVIRONMENTAL LAWS AND REQUIREMENTS. Paragraph 304 identifies categories of environmental impacts that are subject to laws, regulations, or executive orders in addition to NEPA and which must be complied with before a Federal action is approved. The responsible FAA official must assure, to the fullest extent possible, that compliance with all applicable environmental requirements is done in addition to making the appropriate determination to apply a categorical exclusion. Compliance with these laws, regulations or executive orders, including any required consultations, findings or determinations, should be documented. Additional information on other environmental laws, regulations, and executive orders is provided in Appendixes A and C.

307. CATEGORICAL EXCLUSIONS FOR ADMINISTRATIVE/GENERAL ACTIONS. This paragraph provides the list of categorical exclusions for FAA actions that are administrative or general in nature. *An action on the categorically excluded list is <u>not</u> automatically exempted from environmental review under NEPA. The responsible FAA official must also review paragraph 304, Extraordinary Circumstances, before deciding to categorically exclude a proposed action.* Those categorical exclusions that refer to those actions for which there is no reasonable expectation of a change in use and thus should not cause environmental impacts are identified by reference to paragraph 303d. The categorical exclusions for administrative and general actions are:

307a. Implementation of measures to respond to emergency air or ground safety needs, accidents, or natural events with no reasonably foreseeable significant long-term adverse effects (All)

307b. Release of an airport sponsor from Federal obligations incurred when the sponsor accepted: (1) an Airport Improvement Grant; or (2) Federal surplus property for airport purposes. FAA consent to long term leases (i.e., those exceeding 20 years) converting airport-dedicated property to non-aeronautical, revenue-producing purposes (e.g., convenience concessions such as food or personal services) has the same effect as a release and is part of this categorical exclusion provided that the proposed any reasonably foreseeable uses of the property do not trigger extraordinary circumstances as described in paragraph 304. (APP)

307c. A FAA action responding to a request for conveying Federally-owned land, including surplus Federal property and/or joint-use facilities, provided the proposed use of the conveyed land is either unchanged or for a use that is categorically excluded. (APP, ATO)

307d. Federal funding and approval of amendments to airport layout plans (ALP) to depict projects to carry out FAA-approved noise compatibility programs (NCP) pursuant to 14 CFR part 150. (APP)

307e. Issuance of Notices to Airmen (NOTAMS), which notify pilots and other interested parties of interim or temporary conditions. (AFS, AVN, ATO)

307f. Mandatory actions required under implementing regulation for any treaty or international agreement to which the United States is a party, or required by the decisions of international organizations or authorities in which the United States is a member or participant except when the United States has discretion over implementation of such requirements. (AGC, AIA, API, APP, AEE, ATO, AST, AFS)

307g. Issuance of airport policy and planning documents including the National Plan of Integrated Airport Systems (NPIAS), Airport Improvement Program (AIP) priority system, and advisory circulars on planning, design, and development which are issued as administrative and technical guidance. (APP) (see paragraph 303d)

307h. Approval of an airport sponsor's request solely to impose Passenger Facility Charges (PFC) or approval to impose and use Passenger Facility Charges for planning studies. (ARP) (see paragraph 303d)

307i. Actions that are tentative, conditional, and clearly taken as a preliminary action to establish eligibility under an FAA program, including, for example, Airport Improvement Program (AIP) actions that are tentative and conditional and clearly taken as a preliminary action to establish an airport sponsor's eligibility under the AIP. (All) (see paragraph 303d)

307j. Administrative and agency operating actions, such as procurement documentation, organizational changes, personnel actions, and legislative proposals not originating in the FAA. (All) (see paragraph 303d)

307k. Agreements with foreign governments, foreign civil aviation authorities, international organizations, or U.S. Government departments calling for cooperative activities or the provision of technical assistance, advice, equipment, or services to those parties, and the implementation of such agreements; negotiations and agreements to establish and define bilateral aviation safety relationships with foreign governments, and the implementation of such agreements; attendance at international conferences and the meetings of international organizations, including participation in votes and other similar actions. (All) (see paragraph 303d)

307l. All delegations of authority to designated examiners, designated engineering representatives (DER), or airmen under section 314 of the FAA Act (49 U.S.C. 44702(d) and 45303). (AFS, AIR) (see paragraph 303d)

307m. FAA administrative actions associated with transfer of ownership or operation of an existing airport, by acquisition or long-term lease, as long as the transfer is limited to ownership, right of possession, and/or operating responsibility. (APP) (see paragraph 303d)

307n. Issuance of grants to prepare noise exposure maps and noise compatibility programs (NCP) under 49 U.S.C. 47503(2) and 47504 and, under 14 CFR part 150, FAA determinations to accept noise exposure maps and approve noise compatibility programs. (APP) (see paragraph 303d)

307o. Issuance of planning grants which do not imply a project commitment, such as airport planning grants and grants to states participating in the state block grant program. (APP) (see paragraph 303d)

307p. Conditional approval of an Airport Layout Plan (ALP). (APP) (see paragraph 303d)

307q. Planning and development of training, personnel efficiency, and performance projects and programs. (All) (see paragraph 303d)

307r. Issuance of policy and planning documents and legislative proposals not intended for, or which do not cause direct implementation of, project or system actions. (All) (see paragraph 303d)

307s. Project amendments (for example, increases in costs) that do not alter the environmental impact of the action. (All) (see paragraph 303d)

307t. Actions related to the retirement of the principal of bond or other indebtedness for terminal development. (APP) (see paragraph 303d)

307u. Approval under 14 CFR part 161 of a restriction on the operations of Stage 3 aircraft that does not have the potential to significantly increase noise at the airport submitting the restriction proposal or at other airports to which restricted aircraft may divert. (APP)

308. CATEGORICAL EXCLUSIONS FOR CERTIFICATION ACTIONS: This paragraph provides the list of categorical exclusions for FAA actions concerning issuance of certificates or compliance with certification programs. *An action on the categorically excluded list is <u>not</u> automatically exempted from environmental review under NEPA. The responsible FAA official must also review paragraph 304, Extraordinary Circumstances, before deciding to categorically exclude a proposed action.* Those categorical exclusions that refer to those actions for which there is no reasonable expectation of a change in use and thus should not cause environmental impacts are identified by reference to paragraph 303d. The categorical exclusions for certification actions are:

308a. Approvals and findings pursuant to 14 CFR part 36, Noise Certification: Aircraft and Airworthiness Certification and acoustical change provisions under 14 CFR 21.93. (AFS, AIR)

308b. Approvals of aircraft, launch vehicles, and engine repairs, parts, and alterations not affecting noise, emissions, or wastes. (All)

308c. Issuance of certificates such as: (1) new, amended, or supplemental aircraft types that meet environmental regulations; (2) new, amended, or supplemental engine types that meet emission regulations; (3) new, amended, or supplemental engine types that have been excluded by the EPA (14 CFR 34.7); (4) medical, airmen, export, manned free balloon type, glider type, propeller type, supplemental type certificates not affecting noise, emission, or waste; and (5) mechanic schools, agricultural aircraft operations, repair stations, and other air agency ratings. (AFS, AIR)

308d. Operating specifications and amendments that do not significantly change the operating environment of the airport. "That do not significantly change the operating environment of the airport" refers to minor operational changes at an airport that do not significantly increase noise, air quality, or other environmental impacts. These would include, but are not limited to, authorizing use of an alternate airport, administrative revisions to operations specifications, or use of an airport on a one-time basis. The use of an airport on a one-time basis means the operator will not have scheduled operations at the airport, or will not use the aircraft for which the operator requests an amended operations specification, on a scheduled basis. (AFS)

308e. Issuance of certificates and related actions under the Airport Certification Program (14 CFR part 139). (APP) (see paragraph 303d)

308f. Issuance of Airworthiness Directives (AD's) to ensure aircraft safety. (AFS, AIR) (see paragraph 303d)

309. CATEGORICAL EXCLUSIONS FOR EQUIPMENT AND INSTRUMENTATION: This paragraph provides the list of categorical exclusions for FAA actions involving installation, repair, or upgrade of equipment or instruments necessary for operations and safety. *An action on the categorically excluded list is not automatically exempted from environmental review under NEPA. The responsible FAA official must also review paragraph 304, Extraordinary Circumstances, before deciding to categorically exclude a proposed action.* The categorical exclusions for equipment and instrumentation actions are:

309a. Construction of Remote Communications Outlet (RCO), Remote Transmitter/Receiver (RTR), or Remote Center-Air Ground Communication Facility (RCAG), or essentially similar facilities or equipment identified in, and designed and constructed in accordance with, FAA Order 6580.3, "Remote Communications Facilities Installation Standards Handbook" on designated airport property or launch facility, or co-located with other FAA facilities, or co-located at a location currently used for similar facilities or equipment, or replacement with essentially similar facilities or equipment. These facilities are typically located within a 150 ft X 150 ft parcel, with antenna towers reaching approximately 40 ft in height. (ATO)

309b. Establishment, installation, upgrade, or relocation on designated airport or FAA property: airfield or approach lighting systems, visual approach aids, beacons, and electrical distribution systems as described in FAA Order 6850.2, "Visual Guidance Lighting Systems" and other related facilities. (ATO, APP)

309c. Federal financial assistance for, or ALP approval of, or FAA installation or upgrade of facilities and equipment, other than radars, on designated airport or FAA property or launch facility. Facilities and equipment means FAA communications, navigation, surveillance and weather systems. Weather systems include hygrothermometers, Automated Weather Observing System (AWOS), Automatic Surface Observation System (ASOS), Stand Alone Weather Sensors (SAWS), Runway Visual Range (RVR), other essentially similar facilities and equipment that provides for modernization or enhancement of the service provided by these facilities. Navigational aids include Very High Frequency Omnidirectional Range (VOR), VOR Test facility (VOT), co-located VOR's and Tactical Aircraft Control and Navigation (TACAN) (VORTAC), Low Power TACAN, Instrument Landing System (ILS) equipment or components of ILS equipment (establishment or relocation of an ILS is not included; an EA is normally required; see paragraph 401i), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), other essentially similar facilities and equipment, and equipment that provides for modernization or enhancement of the service provided by that facility, such as conversion of VOR to VORTAC or conversion to Doppler VOR (DVOR), or conversion of ILS to category II or III standards. FAA Order 6820.10 "VOR, VOR/DME, and TACAN Siting Criteria" governs the installation of VOR/VOT/VORTAC-type equipment. These facilities are typically located within a 150 ft X 150 ft parcel, with a total structure height reaching approximately 50-ft in height. (ATO, APP, AST)

309d. Federal financial assistance for, or ALP approval of, or FAA installation, repair, replacement, relocation, or upgrade of radar facilities and equipment, on designated airport or FAA property or launch facility, that conform to the current American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) guidelines for maximum permissible exposure to electromagnetic fields. Radar facilities and equipment include Terminal Doppler Weather Radar (TDWR), Next Generation Weather Radar (NEXRAD), Precision Runway Monitor (PRM), Airport Surface Detection Equipment (ASDE), Air Route Surveillance Radar (ARSR), Airport Surveillance Radar (ASR), Air Traffic Control Beacon Interrogator (ATCBI), and other essentially similar facilities and equipment. In addition, this includes equipment that provides for modernization or enhancement of the service provided by these facilities, such as Radar Bright Display Equipment (RBDE) with Plan View Displays (PVD), Direct Access Radar Channel (DARC), adding a beacon system onto an existing radar, and calibration equipment. (ATO, APP,)

309e. Federal financial assistance for, Airport Layout Plan (ALP) approval of, or FAA installation, repair, relocation, replacement, removal, or upgrade of minor miscellaneous items such as Low Level Wind Shear Alert System (LLWAS), wind indicators, wind measuring devices, landing directional equipment, segmented circles (visual indicators providing traffic pattern information at airports without airport traffic control towers), mobile Airport Traffic

Control Towers (ATCT), Mobile Emergency Radar Facilities (MERF), and associated fencing and calibration equipment. (APP, ATO)

309f. Installation or replacement of engine generators used in emergencies. (ATO, AST,)

309g. Replacement or upgrade of power and control cables for existing facilities and equipment, such as airfield or approach lighting systems (ALS), launch facility lighting systems, visual approach aids, beacons, and electrical distribution systems as described in FAA Order 6850.2, "Visual Guidance Lighting Systems," airport surveillance radar (ASR), launch facility surveillance radar, Instrument Landing System (ILS), and Runway Visual Range (RVR). (ATO)

309h. Acquisition of security equipment required by rule or regulation for the safety or security of personnel and property on the airport or launch facility (14 CFR part 107, Airport Security), safety equipment required by rule or regulation for certification of an airport (14 CFR part 139, Certification and Operation: Land Airports Serving Certain Air Carriers) or licensing of a launch facility, or snow removal equipment. (APP, AST)

310. CATEGORICAL EXCLUSIONS FOR FACILITY SITING, CONSTRUCTION AND MAINTENANCE. This paragraph provides the list of categorical exclusions for FAA actions involving acquisition, repair, replacement, maintenance, or upgrading of grounds, infrastructure, buildings, structures, or facilities that generally are minor in nature. *An action on the categorically excluded list is not automatically exempted from environmental review under NEPA. The responsible FAA official must also review paragraph 304, Extraordinary Circumstances, before finalizing a decision to categorically exclude a proposed action.* The categorical exclusions for facility siting and maintenance actions are:

310a. Access road construction and construction, relocation or repair of entrance and service roadways that do not reduce the Level of Service on local traffic systems below acceptable levels. (ATO, APP, AST)

310b. Acquisition of land and relocation associated with a categorically excluded action. (ATO, APP)

310c. Installation, modification or repair of radars at existing facilities that conform to the current American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE) guidelines for maximum permissible exposures to electromagnetic fields and do not significantly change the impact on the environment of the facility. (All)

310d. Federal financial assistance, Airport Layout Plan (ALP) approval, or FAA installation of de-icing/anti-icing facilities that comply with National Pollutant Discharge Elimination System (NPDES) permits or other permits protecting the quality of receiving waters, and for which related water detention or retention facilities are designed not to attract wildlife hazardous to aviation, as defined in FAA Advisory Circular 150-5200-33. (ATO, APP)

310e. Federal financial assistance, licensing, or Airport Layout Plan (ALP) approval for construction or repair of a runway that is existing or taxiway, apron, loading ramp, or safety runway area including extension, strengthening, reconstruction, resurfacing, marking, grooving, fillets and jet blast facilities, provided the action will not create environmental impacts outside of an airport or launch facility property. (APP, AST)

310f. Federal financial assistance, licensing, Airport Layout Plan (ALP) approval, or FAA construction or limited expansion of accessory on-site structures, including storage buildings, garages, small parking areas, signs, fences, and other essentially similar minor development items. (ATO, APP, AST)

310g. Construction of Remote Transmitter/Receiver (RT/R), or other essentially similar facilities and equipment, to supplement existing communications channels installed in the Airport Traffic Control Tower (ATCT) or Flight Service Station (FSS). (ATO)

310h. Federal financial assistance, licensing, or ALP approval for construction or expansion of facilities, such as terminal passenger handling and parking facilities or cargo buildings, at existing airports and launch facilities that do not substantially expand those facilities. (All)

310i. Demolition and removal of FAA buildings and structures, except those of historic, archaeological, or architectural significance as officially designated by Federal, State, or local government; and alteration of an existing FAA facility that does not alter or change environmental impacts of the existing facility or structure, provided no hazardous substances contamination is present on the site or contaminated equipment is present on the site. (ATO, AST)

310j. Removal or extension of water, sewage, electrical, gas, or other utilities of temporary duration to serve construction. (ATO, AST)

310k. Filling of earth into previously excavated land with material compatible with the natural features of the site, provided the land is not delineated as a wetland; or minor dredging or filling of wetlands or navigable waters for any categorically excluded action, provided the fill is of material compatible with the natural features of the site, and the dredging and filling qualifies for an U.S. Army Corps of Engineers nationwide or a regional general permit. (ATO, AST, APP)

310l. Federal financial assistance for, licensing of, or approval of the grading of land, the removal of obstructions to air navigation, or erosion control measures, provided those activities occur on and only affect airport property, a launch facility, or FAA-owned or leased property (ATO, APP, AST,)

310m. Lease of space in buildings or towers. (ATO)

310n. Minor expansion of facilities, including the addition of equipment, such as telecommunications equipment, on an existing facility where no additional land is required, or

when expansion is due to remodeling of space in current quarters or existing buildings. Additions may include antennas, concrete pad and minor trenching for cable. (ATO, AST)

310o. Minor trenching and backfilling where the surface is restored and the excavated material is protected against erosion and runoffs during the construction period. (ATO, APP, AST,)

310p. New gardening or landscaping, and maintenance of existing landscaping that do not cause or promote the introduction or spread of invasive species that would harm the native ecosystem; use landscape practices that reflect the recommendations in the Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds (60 FR 40837); and do not attract wildlife that is hazardous to aviation. (ATO, APP, AST)

310q. Construction and installation, on airports or launch facilities, of noise abatement measures, such as noise barriers to diminish aircraft and launch vehicle engine exhaust blast or noise, and installation of noise control materials. (All)

310r. Purchase**,** lease, or acquisition of three acres or less of land with associated easements and rights-of-way for new facilities. (ATO)

310s. Repairs and resurfacing of existing access to remote facilities and equipment, such as Air Route Surveillance Radar (ARSR), Remote Center Air/Ground Communications Facility (RCAG), Remote Communications Outlet (RCO), and VHF Omnidirectional Range (VOR) with Ultra-High Frequency Tactical Air Navigation Aid (VORTAC). (ATO)

310t. Federal financial assistance for, or Airport Layout Plan (ALP) approval of, a new heliport on an existing airport or launch facility that would not significantly increase noise over noise sensitive areas. (APP, AST)

310u. Repair or replacement of underground storage tanks (UST's) and aboveground storage tanks (AST's), or replacement of UST's with AST's at the same location. Closure, removal, or remediation of a fuel storage tank at a FAA facility in accordance with FAA Order 1050.15A, Fuel Storage Tanks at FAA Facilities and EPA regulations 40 CFR parts 280, 281, and 112. (ATO)

310v. Replacement or reconstruction of a terminal, structure, or facility with a new one of similar size and purpose, where location will be on the same site as the existing building or facility. (ATO, APP, AST)

310w. Repair and maintenance of existing roads, rights-of-way, trails, grounds, parking areas, and utilities, including, for example, snow removal, vegetation control, and erosion control work. (All)

310x. Routine facility decommissioning, exclusive of disposal. (ATO, AST)

310y. Take over of non-Federal facilities by the FAA. (ATO)

310z. Federal financial assistance, licensing, Airport Layout Plan (ALP) approval, or FAA action related to topping or trimming trees to meet 14 CFR part 77 (Objects Affecting Navigable Airspace) standards for removing obstructions which can adversely affect navigable airspace. (All)

310aa. Upgrading of building electrical systems or maintenance of existing facilities, such as painting, replacement of siding, roof rehabilitation, resurfacing, or reconstruction of paved areas, and replacement of underground facilities. (ATO, AST)

311. CATEGORICAL EXCLUSIONS FOR PROCEDURAL ACTIONS. This paragraph provides the list of categorical exclusions for FAA actions involving establishment, modification, or application of airspace and air traffic procedures. *An action on the categorically excluded list is not automatically exempted from environmental review under NEPA. The responsible FAA official must also review paragraph 304, Extraordinary Circumstances, before finalizing a decision to categorically exclude a proposed action.* The categorical exclusions for procedural actions are:

311a. Rulemaking actions that designate or modify classes of airspace areas, airways, routes, and reporting points (14 CFR part 71, “Designation of Class A, Class B, Class C, Class D, and Class E Airspace Areas; Airways; Routes; and Reporting Points”). (ATO)

311b. Actions regarding: establishment of Federal airways (14 CFR 71.75); operation of civil aircraft in a defense area, or to, within, or out of the United States through a designated Air Defense Identification Zone (ADIZ), (14 CFR part 99, "Security Control of Air Traffic"); authorizations for operation of moored balloons, moored kites, unmanned rockets, and unmanned free balloons (14 CFR part 101, "Moored Balloons, Kites, Unmanned Rockets and Unmanned Free Balloons”); and, authorizations of parachute jumping and inspection of parachute equipment, (14 CFR part 105, "Parachute Operations"). (ATO)

311c. Actions to return all or part of special use airspace (SUA) to the National Airspace System (NAS) (such as revocation of airspace or a decrease in dimensions or times of use). (ATO)

311d. Modification of the technical description of SUA that does not alter the dimensions, altitudes, or times of designation of the airspace (such as changes in designation of the controlling or using agency, or correction of typographical errors). (ATO)

311e. Designation of controlled firing areas. (ATO)

311f. (reserved)

311g. Establishment of Global Positioning System (GPS), Flight Management System (FMS), Radio Navigation System (RNAV), or essentially similar systems, that use overlay of existing procedures. (ATO, AFS, AVN, AST)

311h. Establishment of helicopter routes that channel helicopter activity over major thoroughfares. (ATO, AFS, AVN)

311i. Establishment of new or revised air traffic control procedures conducted at 3,000 feet or more above ground level (AGL); instrument procedures conducted below 3,000 feet (AGL) that do not cause traffic to be routinely routed over noise sensitive areas; modifications to currently approved instrument procedures conducted below 3,000 feet (AGL) that do not significantly increase noise over noise sensitive areas; and increases in minimum altitudes and landing minima. For Air Traffic modifications to procedures at or above 3,000 feet (AGL), the Air Traffic Noise Screening Procedure (ATNS) should be applied. (ATO, AFS, AVN)

311j. Implementation of procedures to respond to emergency air or ground safety needs, accidents, or natural events with no reasonably foreseeable long-term adverse effects. (ATO, AST)

311k. Publication of existing air traffic control procedures that do not essentially change existing tracks, create new tracks, change altitude, or change concentration of aircraft on these tracks. (ATO, AFS, AVN)

311l. Removal of a displaced runway threshold on an existing runway. (APP, AST)

311m. A short-term change in air traffic control procedures, not to exceed six months, conducted under 3,000 feet above ground level (AGL) to accommodate airport construction. (ATO)

311n. Tests of air traffic departure or arrival procedures conducted under 3,000 feet above ground level (AGL), provided that: (1) the duration of the test does not exceed six months; (2) the test is requested by an airport or launch operator in response to mitigating noise concerns, or initiated by the FAA for safety or efficiency of proposed procedures; and (3) test data collected will be used to assess operational and noise impacts of the test. (ATO)

311o. Procedural actions requested by users on a test basis to determine the effectiveness of new technology and measurement of possible impacts on the environment. (ATO)

311p. Establishment of new procedures that routinely route aircraft over non-noise sensitive areas. (ATO, AVN)

312. CATEGORICAL EXCLUSIONS FOR REGULATORY ACTIONS. This paragraph provides the list of categorical exclusions for FAA actions involving compliance with, or exemptions to, regulatory programs or requirements. *An action on the categorically excluded list is not automatically exempted from environmental review under NEPA. The responsible FAA official must also review paragraph 304, Extraordinary Circumstances, before finalizing a*

decision to categorically exclude a proposed action. The categorical exclusions for regulatory actions are:

312a. All FAA actions to ensure compliance with EPA aircraft emissions standards. (AEE)

312b. Authorizations and waivers for infrequent or one-time actions, such as an airshow or aviation-related exposition, to include an aerobatic practice box or aerobatic contest box per FAA Order 8700.1, Chapter 48, and parachuting or skydiving events, that may result in some temporary impacts that revert back to original conditions upon action completion. (ATO, AFS)

312c. Denials of routine petitions for: (1) exemption; (2) reconsideration of a denial of exemption; (3) rulemaking; (4) reconsideration of a denial of a petition for rulemaking; and (5) exemptions to technical standard orders (TSO's) . (AEE, AFS, AIR, AST, ATO)

312d. Issuance of regulatory documents (e.g., Notices of Proposed Rulemaking, and issuance of Final Rules) covering administrative or procedural requirements (Does not include Air Traffic procedures; specific Air Traffic procedures that are categorically excluded are identified under paragraph 311 of this order.). (AFS, AGC)

312e. Issuance of special flight authorizations controlled by operating limitations, specified in 14 CFR 21.199, 14 CFR 91.319, 14 CFR 91.611, and 14 CFR 91.859. (AFS, AIR, AEE)

312f. Regulations, standards, and exemptions (excluding those which if implemented may cause a significant impact on the human environment).

313-399 RESERVED

CHAPTER 4. ENVIRONMENTAL ASSESSMENTS AND FINDINGS OF NO SIGNIFICANT IMPACT

400. INTRODUCTION. This chapter summarizes and supplements CEQ requirements for environmental assessments (EA) and findings of no significant impact (FONSI). According to 40 CFR 1508.9 and Order DOT 5610.1C (July 13, 1982), an environmental assessment (EA) is a concise document used to describe a proposed action's anticipated environmental impacts. In 1978, the CEQ revised its regulations to allow agencies to prepare EA's in accordance with section 102(2)(E) and 40 CFR 1501.2c and 1507.2(d), when the following conditions apply or at any time to aid in agency planning and decisionmaking.

400a. When to prepare an EA. An EA, at a minimum, must be prepared for a proposed action when the initial review of the proposed action indicates that:

(1) It is not categorically excluded (see paragraphs 303 and 307-312);

(2) It is normally categorically excluded but, in this instance, involves at least one extraordinary circumstance that may significantly impact the human environment (see paragraph 304 and the applicable section in Appendix A that deals with the specific resource); or

(3) The action is not one known normally to require an EIS and is not categorically excluded.

400b. Actions not causing significant environmental effects. If, based on an EA, the responsible FAA official determines that the proposed action would not cause a significant environmental effect, the responsible FAA official shall prepare a FONSI for the signature of the approving official.

400c. Actions causing significant environmental effects. If, based on an EA, the responsible FAA official determines that the proposed action would cause a significant environmental effect, and mitigation would not reduce that effect below applicable significance thresholds, the responsible FAA official shall publish a notice of intent (NOI) to prepare an EIS in the *Federal Register* and begin the EIS process. Of course, if the responsible FAA official anticipates that significant effects may result, a decision can be made to prepare an EIS without first developing an EA.

401. ACTIONS NORMALLY REQUIRING AN ENVIRONMENTAL ASSESSMENT (EA). The following actions are examples of actions that normally require an EA. Some FAA projects involve actions by multiple FAA program offices. The overall significance of these actions, when viewed together, governs whether an EA or an EIS is required.

401a. Acquisition of land greater than three acres for, and the construction of, new office buildings and essentially similar FAA facilities.

401b. Issuance of aircraft type certificates for new, amended, or supplemental aircraft types for which environmental regulations have not been issued, or new, amended, or supplemental

engine types for which regulations have not been issued, or where an environmental analysis has not been prepared in connection with regulatory action.

401c. Evaluation for new, amended, or supplemental commercial launch license applications where an environmental analysis has not been prepared.

401d. Establishment of aircraft/avionics maintenance bases to be operated by the FAA.

401e. Authorization to exceed Mach 1 flight under 14 CFR 91.817.

401f. Establishment of FAA housing, sanitation systems, fuel storage and distribution systems, and power source and distribution systems.

401g. Establishment or relocation of facilities such as Air Route Traffic Control Centers (ARTCC), Airport Traffic Control Towers (ATCT), and off airport Air Route Surveillance Radars (ARSR), Air Traffic Control Beacons (ATCB), and Next Generation Radar (NEXRAD).

401h. Establishment, relocation, or construction of facilities used for communications (except as provided under paragraph 309a) and navigation that are not on airport property.

401i. Establishment or relocation of instrument landing systems

401j. Establishment or relocation of approach light systems (ALS) that are not on airport property.

401k. Federal financial participation in, or unconditional airport layout plan approval of, the following categories of airport actions:

(1) Airport location.

(2) New runway.

(3) Major runway extension.

(4) Runway strengthening having the potential to increase off-airport noise impacts by DNL 1.5 dB or greater over noise sensitive land uses within the day-night level (DNL) 65 dB noise contour.

(5) Construction or relocation of entrance or service road connections to public roads which substantially reduce the Level of Service rating of such public roads below the acceptable level determined by the appropriate transportation agency (i.e., a highway agency).

(6) Land acquisition associated with any of the items in paragraph 401k(1) through 401k(5).

401l. Issuance of an operating certificate, issuance of an air carrier operating certificate, or approval of operations specifications or amendments that may significantly change the character of the operational environment of an airport, including, but not limited to:

(1) Approval of operations specifications authorizing an operator to use turbojet aircraft for scheduled passenger or cargo service into an airport when that airport has not previously been served by any scheduled turbojet aircraft.

(2) Approval of operations specifications authorizing an operator to use the Concorde for any scheduled or nonscheduled service into an airport, unless environmental documentation for such service has been prepared previously and circumstances have not changed.

(3) Issuance of an air carrier operating certificate or approval of operations specification when a commuter upgrades to turbojet aircraft.

401m. New instrument approach procedures, departure procedures, en route procedures, and modifications to currently approved instrument procedures which routinely route aircraft over noise sensitive areas at less than 3,000 feet above ground level (AGL).

401n. New or revised air traffic control procedures which routinely route air traffic over noise sensitive areas at less than 3,000 feet AGL.

401o. Regulations (and exemptions and waivers to regulations) that may affect the human environment.

401p. Special Use Airspace (unless otherwise explicitly listed as an advisory action or categorically excluded under Chapter 3 of this Order). This airspace shall not be designated, established, or modified until:

(1) The notice (notice of proposed rulemaking (NPRM) or non-rule circular) contains a statement supplied by the requesting or using agency that they will serve as lead agency for purposes of compliance with NEPA, and in accordance with paragraph 207, Lead and Cooperating Agencies; (e.g., restricted airspace for military use in accordance with the Memorandum of Understanding (MOU) between the FAA and the Department of Defense (October 4, 2005 1998)).

(2) The notice contains the name and address, supplied by the requesting or using agency, of the office representing the agency to which comments on the environmental aspects can be addressed.

(3) The notice contains the name and address, supplied by the requesting or using agency, of the office representing the agency to which comments on any land use problems can be addressed (applicable only if Special Use Airspace extends to the surface).

(4) The rule, determination, or other publication of the airspace action contains a statement that the FAA has reviewed and adopted the EA prepared by the requesting agency in accordance with paragraph 404d.

(5) The provisions of p(1)-(4) of this paragraph are not applicable to special use airspace actions if minor adjustments are made such as raising the altitudes; if a change is made in the designation of the controlling or using agency; or if the special use airspace action is temporary in nature and does not exceed 90 days (i.e. temporary military operations area (MOA)).

402. TIME LIMITS FOR EA's. The time limits established for all FAA EA's are contained in this paragraph.

402a. A draft EA may be assumed valid for a period of three years. If the approving official has not issued an EA/FONSI within three years of receipt of the final draft EA, a written reevaluation of the draft (see paragraph 410) must be prepared by the responsible FAA official to determine whether the consideration of alternatives, impacts, existing environment, and mitigation measures set forth in the EA remain applicable, accurate, and valid. If there have been changes in these factors that would be significant in the consideration of the proposal, a supplement to the EA or a new EA must be prepared in accordance with the procedures of this chapter.

402b. For approved EA's, two sets of conditions have been established:

(1) If major steps toward implementation of the proposed action (such as the start of construction, substantial acquisition, or relocation activities) have not commenced within three years from the date of issuance of the FONSI, a written reevaluation (see paragraph 410) of the adequacy, accuracy, and validity of the EA will be prepared by the responsible FAA official. If there have been significant changes in the proposed action, the affected environment, anticipated impacts, or proposed mitigation measures, as appropriate, a new or supplemental EA will be prepared in accordance with the procedures of this chapter.

(2) If the proposed action is to be implemented in stages or requires successive Federal approvals, a written reevaluation (see paragraph 410) of the continued adequacy, accuracy, and validity of the EA will be made at each major approval point that occurs more than three years after issuance of the FONSI and a new or supplemental EA prepared, if necessary.

403. **IMPACT CATEGORIES.** Appendix A of this order identifies environmental impact categories that FAA examines for most of its actions. Appendix A provides references to current requirements; information about permits, certificates, or other forms of approval and review; an overview of specific responsibilities for gathering data, assessing impacts, consulting other agencies, and involving the public; and any established significant impact thresholds. The responsible FAA official should contact the reviewing or pertinent approving agencies for information regarding specific timeframes for applicable review or approval processes.

404. ENVIRONMENTAL ASSESSMENT PROCESS. When the responsible FAA official has determined that the proposed action cannot be categorically excluded the responsible FAA official will begin preparing an EA. An EA for an airport capacity project, an aviation safety project, or an aviation security project may quality and be appropriate for environmental streamlining under provisions of "Vision 100 -- Century of Aviation Reauthorization Act" (see Appendix D), although these provisions are more likely to be applicable to an EIS. Figure 4-1, Environmental Assessment Process, presents the EA review process for a typical action. The responsible FAA official does not need to prepare an EA if FAA has decided to prepare an EIS.

404a. The responsible FAA official or applicant gathers data, coordinates or consults with other agencies, and analyzes potential impacts. The responsible FAA official or applicant contacts appropriate Federal, Tribal, State, and local officials to obtain information concerning potential environmental impacts and maintain appropriate contact with these parties for the remainder of the NEPA process. The responsible FAA official or sponsor should involve the public, to the extent practicable, in preparing EA's (see paragraph 208 regarding public involvement for further guidance). Scoping, as described in 40 CFR 1501.7, is not required for an EA, but is optional at the discretion of the responsible FAA official. When the FAA circulates an EA for comment, comments should be responded to, to the extent practicable.

404b. Program offices must prepare concise EA documents with a level of analysis sufficient to:

(1) Understand the purpose and need for the proposed action, identify reasonable alternatives, including a no action alternative, and assess the proposed action’s potential environmental impacts.

(2) Determine if an EIS is needed because the proposed action’s potential environmental impacts will be significant.

(3) Determine if a FONSI can be issued because the proposed action will have no significant impacts.

(4) Determine if the responsible FAA official should recommend to the approving FAA official issuance of a FONSI listing: (a) proponent-proposed mitigation to avoid the proposed action's significant impacts; or (b) mitigation the FAA requires to reduce those impacts below applicable significant thresholds.

(5) Provide a comprehensive approach for identifying and satisfying applicable environmental laws, regulations, and executive orders in an efficient manner (see Appendix A). Although the NEPA process does not preclude separate compliance with these other laws, regulations, and executive orders, the responsible FAA official should integrate NEPA requirements with other planning and environmental reviews, interagency and intergovernmental consultation, as well as public involvement requirements to reduce paperwork and delay, in accordance with 40 CFR 1500.4(k) and 1500.5(g).

(6) Identify any permits, licenses, other approvals, or reviews that apply to the proposed action.

(7) Identify agencies, including cooperating agencies, consulted.

(8) Identify any public involvement activities (such as scoping or meetings).

Figure 4-1 Environmental Assessment Process for a Typical Action

Step 1	Responsible FAA official or applicant formulates proposed action and reasonable alternatives to achieve the project's purpose and need.
Step 2	Responsible FAA official or applicant collects background data.
Step 3	Responsible FAA official determines need for EA.
Step 4	Initiate optional scoping activities if appropriate and determine issues and alternatives to be addressed.
Step 5	Preparation of EA, including environmental analysis.
Step 6	Circulation and review of draft EA if the responsible FAA official determines the proposed action or other environmental impacts warrant these activities.
Step 7	Revise draft EA
Step 8	Circulate and review final EA
Step 9	Responsible FAA official determines significance of impacts
Step 9a	If impacts are NOT significant, responsible FAA official prepares and issues a FONSI, then proceeds to Step 10
Step 9b	If impacts ARE significant, responsible FAA official proceeds with an EIS (see chapter 5) rather than proceeding with Step 10.
Step 10	Responsible FAA official proceeds with action, and if applicable, mitigation and monitoring.

404c. The EA should present detailed analysis, commensurate with the level of impact of the proposed action and alternatives, to determine whether any impacts will be significant. If the proposed action and its alternatives will not cause impacts within specific categories of environmental impacts, a brief statement describing the factual basis for the conclusion that the action is not likely to cause environmental impacts within these impact categories is sufficient. If FAA has experience with an environmental management system (EMS) that includes monitoring of the implementation of actions similar to the proposed action and alternatives, the EMS may provide a factual basis for an assessment of the potential environmental impacts. The EA may also be tiered to cover broad or programmatic proposed actions, such as rulemaking, policy

decisions, and regional or national programs (see also paragraphs 409 and 513 regarding tiering and 40 CFR 1508.28).

404d. FAA may adopt, in whole or in part, draft or final EA's or the EA portion of another agency's EA/FONSI. When the FAA adopts an EA or the EA portion of another agency's EA/FONSI, the responsible FAA official must independently evaluate the information contained in the EA, take full responsibility for scope and content that addresses FAA actions, and issue its own FONSI. In the FONSI, the responsible FAA official may also summarize the adopted portion followed by a direct reference to the EA. If more than three years have elapsed since the FONSI was issued by another agency and the FAA has yet to issue its own FONSI, the responsible FAA official must prepare a written reevaluation of the other agency's EA in accordance with the procedures of paragraph 410. To ensure that the EA is both concise and clear about the bases for its conclusions, FAA may incorporate by reference other documents and analyses. An EA may incorporate by reference information or analysis that is reasonably available to the public, either in existing NEPA documents or in general background information, documents or studies prepared for other purposes.

404e. Internal review of the EA is conducted by potentially affected FAA program offices having an interest in the proposed action to assure that all FAA concerns have been addressed technically, and with AGC or Regional Counsel to assure that the EA is legally sufficient. For projects that originate in or are approved at FAA headquarters, the EA and FONSI shall be reviewed by AGC for legal sufficiency. For projects that originate in and are approved by the regions, the EA and FONSI shall be reviewed by regional counsel. The responsible FAA official should contact the program offices to determine appropriate levels of coordination. The responsible FAA official should consult with AEE (AEE-200) for general advice on compliance with NEPA and other applicable environmental laws, regulations, and executive orders, especially for actions of national importance or which are highly controversial.

404f. EA's should be coordinated with agencies outside of the FAA when an action involves resources protected by special purpose laws or administrative directives. Agencies with special expertise may also be consulted. Examples of these laws or directives include, but are not limited to actions involving: section 404 of the Clean Water Act; section 4(f) of the DOT Act; section 106 of the National Historic Preservation Act; Marine Mammal Protection Act, section 7 of the Endangered Species Act; section 307 of the Coastal Zone Management Act; and executive orders.

404g. Upon review of the completed EA, public comments, and applicable interagency and intergovernmental consultation (see paragraph 213), the responsible FAA official will determine whether any environmental impacts analyzed in the EA are significant. If the responsible FAA official determines that these impacts do not exceed applicable significance levels, or mitigation discussed in the EA and made an integral part of the project clearly will reduce identified impacts below significance levels, the responsible FAA official will prepare a FONSI. The approving official, who may also be the responsible FAA official, will then review and sign the FONSI. This FONSI can conclude that no significant impacts are expected. Alternatively the responsible FAA official may deem certain mitigations are necessary to prevent significant environmental

impacts, make the mitigation a condition of project approval, and then issue a FONSI. If the responsible FAA official determines that mitigation will not reduce significant environmental impacts below applicable significance thresholds, the responsible FAA official will publish a Notice of Intent (NOI) to prepare an EIS in the Federal Register to proceed.

404h. If the FAA, as a commenting or cooperating agency, does not accept an EA prepared by another agency, the responsible FAA official shall specify in his or her comments to that agency whether any additional information is needed or describe the mitigation measures the FAA considers necessary to grant or approve an applicable permit, license, or related requirements or concurrences. If the responsible FAA official comments on the action agency's predictive methodology, the responsible FAA official should describe the preferred alternative methodology and explain why the FAA prefers this methodology.

Figure 4-2. Environmental Assessment Content

PURPOSE	Assist agency planning and decision-making by summarizing environmental impacts to determine need for: • An EIS • Mitigation Measures
SCOPE	Addresses the proposed action's and reasonable alternatives' impacts on affected environmental resources.
CONTENT	Describes and identifies: • Purpose and need for the proposed action. • Proposed action. • Reasonable alternatives considered (including the no action alternative). • Affected environment (existing conditions). • Environmental consequences of the proposed action and alternatives. • Mitigation. • Agencies, organizations, and persons consulted.
PUBLIC PARTICIPATION	• Provide the opportunity to the extent practicable.

405. SAMPLE ENVIRONMENTAL ASSESSMENT FORMAT Figure 4-2, Environmental Assessment Content, presents an overview of the EA process, and the following text describes the contents and purpose of an EA. The CEQ regulations do not specify a required format for an EA (see 40 CFR 1508.9); however, following the sample format will facilitate preparation of an EA, or EIS if an EIS is needed, and integrate compliance with other environmental laws, regulations, and Executive Orders with NEPA review. The following sample format for an EA is optional for FAA program offices to use.

405a. Cover Page. This page, labeled "Environmental Assessment," identifies the proposed action and its geographic location. When EA's are prepared by an applicant or contractor for an applicant, the following notification would be located at the bottom: "This Environmental Assessment becomes a Federal document when evaluated and signed and dated by the responsible FAA official."

405b. Proposed Action. This discussion describes the proposed action with sufficient detail in terms that are understandable to individuals who are not familiar with aviation or commercial aerospace activities.

405c. Purpose and Need. This discussion identifies the problem facing the proponent (that is, the need for an action), the purpose of the action (that is, the proposed solution to the problem), and the proposed timeframe for implementing the action. The purpose and need for the proposed action must be clearly justified and stated in terms that are understandable to individuals who are not familiar with aviation or commercial aerospace activities. To provide context while keeping this section of the EA brief, FAA may incorporate any supporting data, inventories, assessments, analyses, or studies by reference.

405d. Alternatives (Including Proposed Action). The alternatives discussed in an EA will include those to be considered by the approving official. Section 102 (2)(E) requires only a brief discussion of alternatives that provides sufficient information for the decision maker to choose an option that meets the need for the proposal and demonstrates reasoned decision-making. There is no requirement for a specific number of alternatives or a specific range of alternatives to be included in an EA. An EA must consider the proposed action and a discussion of the consequences of taking no action, and may limit the range of alternatives to action and no action when there are no unresolved conflicts concerning alternative uses of available resources. Other reasonable alternatives are to be considered in preparing an EA to the degree commensurate with the nature of the proposed action and agency experience with the environmental issues involved. Generally, the greater the degree of impacts, the wider the range of alternatives that should be considered. For a proposal having greater impacts and a wider range of alternatives, the responsible official is encouraged to consider: (1) ways that the project purposes can be achieved with less harmful impacts on the environment; and (2) alternatives proposed by the public or another agency, provided that such alternatives are reasonable, feasible, and achieve the project's purpose. The extent of active participation in the NEPA process by the proponent of the alternative also bears on the extent to which a proffered alternative deserves consideration. Whether a proposed alternative is reasonable depends upon the extent to which it meets the purpose and need for the proposed action (see also paragraph 506e for more information on alternatives). The EA briefly presents the environmental impacts of the proposed action and the reasonable alternatives in comparative form to sharply define the issues and provide a clear basis for choice among options by the approving official. For alternatives considered but eliminated from further study, the EA will briefly explain why these were eliminated. The alternatives discussion of the EA includes:

(1) A list of alternatives considered, including the proposed action and the no action alternatives. For each alternative, any connected or cumulative actions should also be considered.

(2) A statement identifying the preferred alternative, if one has been identified.

(3) A concise statement explaining why any initial alternatives considered have been eliminated from further study, e.g., they are not reasonable because they fail to meet the purpose and need for the proposed action.

(4) A listing under each reasonable alternative of any other applicable laws, regulations, and executive orders and associated permits, licenses, approvals, and reviews.

(5) Charts, graphs, and figures, if appropriate, to aid in understanding the alternatives, for example, to depict alternative runway configurations.

405e. Affected Environment. This section shall succinctly describe existing environmental conditions of the potentially affected geographic area(s). This discussion may highlight important background material, such as previous and reasonably foreseeable development and actions, whether Federal or non-Federal. It also may include such information as actions taken or proposed by the community or citizen groups pertinent to the proposal, or any other unique factors associated with the action. However, data and analyses should be pertinent to the impact and commensurate with its importance. FAA may incorporate by reference such background data as necessary to support the analysis. The discussion of the affected environment in the EA may include the following, if appropriate:

(l) Location map, vicinity map, project layout plan, and photographs.

(2) Existing and planned land uses and zoning, including: industrial and commercial growth characteristics in the affected vicinity; affected residential areas, schools, places of outdoor assemblies of persons, churches, and hospitals; public parks, wildlife and waterfowl refuges; Federally listed or proposed candidate, threatened, or endangered species or Federally designated or proposed critical habitat; wetlands; National and State Forests; floodplains; farmlands; coastal zones, coastal barriers, or coral reefs; recreation areas; wilderness areas, eligible, study or designated wild and scenic rivers, Native American cultural sites, and historic and archeological sites eligible for or listed on the National Register of Historic Places.

(3) Political jurisdictions affected by the proposed action.

(4) Population estimates and other relevant demographic information for the affected environment, including a census map where appropriate.

(5) Past, present, and reasonably foreseeable future actions, whether Federal or non-Federal, including related or connected actions (40 CFR 1501.7(a), 1502.4(a), 1508.25(a)(1), and 1508.27(b)(7)), to show the cumulative effects (40 CFR 1508.7) of these actions on the affected

environment (see CEQ Guidance on Considering Cumulative Effects Under the National Environmental Policy Act (January 1997) and EPA Guidance on Consideration of Cumulative Impacts in EPA Review of NEPA Documents (May 1999)).

405f. Environmental Consequences.

(l) At a minimum, the EA must discuss the reasonably foreseeable environmental consequences of the proposed and no action alternatives in comparative form. The description of environmental impacts must respond to substantive issues and provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI. 40 CFR 1508.9(a)(1). The environmental effects section must include that analysis which the agency determines is necessary to address the significance factors of 40 CFR 1508.27. The focus of this analysis is upon resources that would be directly, indirectly and cumulatively affected by the proposed action. To avoid excessive length, the effects section may incorporate by reference such background data as necessary to support its effects analysis. Environmental impacts of other alternatives that are being considered in detail should also be discussed in the EA. Any adverse environmental effects that cannot be avoided if the proposed action is implemented and mitigation, if applicable, must be discussed. This section should not duplicate discussions in the Alternatives section. Instead, the environmental consequences section shall, for each alternative, include considerations of the following effects (40 CFR 1508.8):

(a) Direct effects and their significance (40 CFR 1508.8(a));

(b) Indirect effects and their significance (40 CFR 1508.8(b));

(c) Cumulative effects and their significance (Cumulative effects may result from individually minor but collectively significant actions taking place over a period of time. 40 CFR 1508.7. In determining whether a proposed action will have a significant impact, the EA shall include considerations of whether the action is related to other actions with individually insignificant but cumulatively significant impacts. 40 CFR 1508.27(b)(7). This analysis shall include identification and consideration of the cumulative impacts of ongoing, proposed, and reasonably foreseeable future actions and may include information garnered from FAA NEPA processes and, where available, environmental management systems. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts. For further discussion, see CEQ "Considering Cumulative Effects Under the National Environmental Policy Act," January 1997);

(d) Possible conflicts between the proposed action and the objectives of Federal, regional, State, local and Tribal land use plans, policies and controls for the area concerned (40 CFR 1502.16(c)); and

(e) Other unresolved conflicts (40 CFR 1501.2(c)).

(2) For those types of impacts that the proposed action and alternatives would have, directly or indirectly, the analysis required in the respective environmental impact categories

listed in Appendix A shall be discussed to the level of detail necessary to determine the significance of the impact.

(3) Appendix A, Analysis of Environmental Impact Categories, briefly describes the major laws, regulations, and executive orders in addition to NEPA that must be complied with for different impact areas before a proposed Federal action is approved. A proposed Federal action may fall within the purview of one or more of these requirements. The responsible FAA official must assure that proposed Federal actions comply with applicable requirements. To reduce paperwork and delay, and to assure that the necessary approvals and permits will be issued with or immediately following issuance of the EA and FONSI, the responsible FAA official should (1) identify the timeframes established for review by the oversight agency; (2) identify the information that the FAA will need to provide to the oversight agency to complete its review; and (3) integrate these into the EA process. An EA should include the information required to demonstrate compliance, as appropriate, with other applicable requirements.

405g. Mitigation. The EA may include reasonable mitigation measures. If mitigation is discussed, it shall be in sufficient detail to describe the benefits of the mitigation. Each impact category in Appendix A identifies conditions that normally indicate a threshold beyond which the impact is considered significant and an EIS is required for the action (see also paragraph 506h regarding mitigation). If the EA contains mitigation measures necessary to reduce potentially significant impacts below applicable significance thresholds, an EIS is not needed and the approving official may issue a FONSI provided that:

(1) The agency took a “hard look” at the problem.

(2) The agency identified the relevant areas of environmental concern.

(3) The EA supports the agency’s determination that the potential impacts will be insignificant.

(4) The agency has identified mitigation measures that will be sufficient to reduce potential impacts below applicable significance thresholds and has assured commitments to implement these measures.

Proposed changes in or deletion of a mitigation measure that was included as a condition of approval of the FONSI must be reviewed by the same FAA offices that reviewed the original FONSI and must be approved by the same approving official (see paragraph 407 for monitoring mitigation). If the changes in mitigation will result in significant impacts, the responsible FAA official must then initiate the EIS process by preparing an NOI to prepare an EIS.

405h. List of Preparers. When an EA is prepared by the FAA, the EA must include a list of the names and qualifications of personnel who prepared the EA. When EA's are prepared for the FAA, the EA must list the names and qualifications of the preparers of an EA. Contractors will be identified as having assisted in, or having prepared, the EA.

405i. List of Agencies and Persons Consulted. The EA must include a list of agencies and persons consulted.

405j. Appendixes. The EA may include the following appendixes, if applicable:

(l) Any documentation that supports statements and conclusions in the body of the EA, including methodologies and references used. Proper citations to reference materials should be provided.

(2) Evidence of coordination or required consultation with affected Federal, Tribal, State and local officials and copies or a summary of their comments or recommendations and the responses to such comments and recommendations.

(3) A summary of public involvement, including evidence of the opportunity for a public hearing, if required under applicable Federal laws (The Airport Act; 49 U.S.C. 47106c), regulations, and Executive Orders, and a summary of issues raised at any public hearing or public meeting as well as responses to substantive comments.

406. FINDING OF NO SIGNIFICANT IMPACT (FONSI).

406a. **Purpose**. The purpose of an EA is to document the FAA determination as to whether or not a proposed action has the potential for significant environmental impacts. If none of the potential impacts is likely to be significant, then the responsible FAA official shall prepare a finding of no significant impact (FONSI), which briefly presents, in writing, the reasons why an action, not otherwise categorically excluded, will not have a significant impact on the human environment, and the Approving Official may approve it. Issuance of a FONSI signifies that the FAA will not prepare an EIS and has completed the NEPA process for the proposed action. (The issuance of a FONSI does not mean that the agency has decided to act, only that it has found that the proposed action will not have a significant impact on the environment, see paragraph 408.) An overview of a FONSI is presented in
Figure 4-3, Findings of No Significant Impact Overview.

406b. Scope of Documentation. The CEQ regulations do not specify a format for FONSI's, but FONSI's must contain the information discussed in 40 CFR 1508.13.

(1) The FONSI may be attached to an EA, or the EA and FONSI may be combined into a single document. If the EA is not attached or combined with FONSI, the FONSI must include a summary of the EA and note any other environmental documents related to it. If the EA is attached or included with the FONSI, the FONSI does not need to repeat any of the discussion in the EA but may incorporate it by reference. However, the FONSI shall briefly describe the proposed action, its purpose and need, the alternatives considered, including the no action alternative, and assess and document all relevant matters necessary to support the conclusion that the action is not a major Federal action significantly affecting the quality of the human environment. The degree of attention given to different environmental factors will vary

according to the nature, scale, and location of the proposed action, and thus, depending on the complexity and degree of impact of a proposed action, a FONSI may range in content from a simple conclusion, supported with pertinent facts, that the action is not a major action significantly affecting the quality of the human environment, to an analysis involving the format and content necessary for EIS's.

(2) The FONSI shall determine the proposed action's consistency or inconsistency with community planning, and shall document the basis for the determination.

(3) The FONSI shall present any measures that must be taken to mitigate adverse impacts on the environment and which are a condition of project approval (see paragraph 406e). The FONSI should also reflect coordination of proposed mitigation commitments with, and consent and commitment from, those with the authority to implement specific mitigation measures committed to in the FONSI.

(4) The FONSI shall reflect compliance with all applicable environmental laws and requirements, including interagency and intergovernmental coordination and consultation, public involvement, and documentation requirements (see paragraph 403 and Appendix A). Findings and determinations required under special purpose environmental laws, regulations, and executive orders, if not made in the EA, must be included in the FONSI, which may be combined with a decision document, sometimes called a Record of Decision or FONSI/ROD.

Figure 4-3. Finding of No Significant Impact Overview

PURPOSE	Documents Finding of No Significant Impact (FONSI) and supporting mitigation measures that will be taken.
SCOPE	Explains why an action will not have a significant effect on the human environment.
CONTENT	A conclusion that an action will not have a significant effect on the environment. (See paragraph 406c(3).) Describes the proposed action, its purpose and need, and alternatives considered, including the no action alternative. Assesses information necessary to support findings and determinations. Describes applicable mitigation measures necessary to ensure that the preferred alternative will not significantly affect the environment and that are a condition of project approval. Describes changes that have been made in the proposed action to eliminate significant impacts. Includes statement of consistency or inconsistency with community planning from State and local governments, and Tribes, for impacts on a reservation. Attaches the EA or a summary of the EA for reference.
PUBLIC PARTICIPATION	Varies as appropriate (see 40 CFR 1501.4(e)(1) and 1506.6, and also CEQ's "40 Most Asked Questions," number 37). In certain cases (e.g., actions similar to those normally addressed in an EIS or where the nature of the proposed action is one without precedent), a 30-day public comment period is required before proceeding with action (see 40 CFR 1501.4(e)(2) and CEQ's "40 Most Asked Questions," number 38). Agencies also must allow a period of public review of the FONSI, for example, if the proposed action would be located in a floodplain or wetland (E.O. 11988, section 2(a)(4), and E.O. 11990, Sec. 2(b)).

406c. Internal Review Process and Approval.

(1) FONSI's originating in the regions. The responsible FAA official will coordinate the review of the FONSI and underlying EA with affected program divisions and Regional Counsel. The responsible FAA official should contact affected program offices to obtain guidance on program office procedures for coordination. This internal review is to ensure that related foreseeable agency actions by other FAA elements are properly covered in the statement

or finding and are coordinated with the appropriate action office so that commitments which are the responsibility of other divisions or offices will be carried out. Unless the proposed action is opposed on environmental grounds by a Federal or state government, Tribe, or local agency, a Division Manager may request a waiver of the Regional Counsel's legal sufficiency review. Requests must be made to AGC-600. Upon such request, only AGC-600 may waive Regional Counsel's review of the EA and FONSI for legal sufficiency. After appropriate coordination with interested program offices and review by Regional Counsel, the Division Manager or designee may approve the FONSI.

(2) FONSI's originating in the Washington, D.C. headquarters. The responsible FAA official will coordinate the review of the FONSI and underlying EA with affected program divisions, AEE, and AGC. The responsible FAA official should contact affected program offices to obtain guidance on program office procedures for coordination. Upon request from a Program or Office Director, AEE may waive its review. Upon such request, AGC-600 may also waive its review of the EA and FONSI for legal sufficiency unless the proposed Federal action is opposed on environmental grounds by a Federal, state, or local agency or Tribe. After appropriate coordination and review by AGC for legal sufficiency, the approving official may approve the FONSI.

(3) All FONSI's shall include the following approval statement:

After careful and thorough consideration of the facts contained herein, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in section 101 of the NEPA and other applicable environmental requirements and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to section 102(2)(C) of NEPA.

APPROVED:_____ DATE:_____

406d. Agency Distribution. A copy of the FONSI and EA shall be sent to reviewing agencies and organizations or individuals that made substantive comments or specifically requested copies. When a project involves a resource protected under a special purpose law or administrative directive (see paragraph 404f), the responsible FAA official should send a signed copy of the FONSI and the EA supporting it to the agency(ies) with whom FAA consulted to comply with the applicable law or directive and to any party requesting copies of those documents.

406e. Public Review in Special Circumstances. The responsible FAA official must determine whether any of the following circumstances apply, and if so, allow for the appropriate amount of public review.

(1) The CEQ regulations (40 CFR 1501.4(e)(2); see also CEQ's "40 Most Asked Questions," number 37b) provide that in certain limited circumstances the agency shall make the EA/FONSI available for public review for 30 days before the agency makes its final determination whether or not to prepare an EIS and before the action may begin. The 30-day

public review period may run concurrently with any other Federal review. These circumstances are:

(a) The proposed action is, or is closely similar to, one normally requiring the preparation of an EIS; or

(b) The nature of the proposed action is one without precedence.

(2) Certain special purpose environmental laws, regulations, or executive orders require public notice of specific findings or determinations apart from the FONSI made under NEPA. Examples include, but are not limited to, section 2(a)(4) of E.O. 11988, Floodplain Management, section 2(b) of E.O. 11990, Protection of Wetlands, section 7 of the Endangered Species Act, and section 106 of the National Historic Preservation Act.

406f. Internal Distribution. The FONSI and EA are filed in the office of the responsible FAA official. A copy of the FONSI and EA shall be sent to the affected program offices, if requested by those offices.

406g. Public Availability. The CEQ regulations state that Federal agencies shall make FONSI's available to interested or affected persons or agencies (see 40 CFR 1506.6). Methods of announcing the availability of a FONSI, such as publication in local newspaper or notice through local media, are described in 40 CFR 1506.6(b). The announcement will indicate locations at which the FONSI and its associated EA are available. Copies of FONSI's and associated EA's will be provided, on request, free of charge or at a fee commensurate with the cost of reproduction.

407. MONITORING MITIGATION. Mitigation and other conditions established in the EA and FONSI, or during their review, and included as a condition of the project approval or licensing shall be implemented by the lead agency or other appropriate consenting agency. The FAA shall take steps through grant agreements, licenses, contract specifications, operating specifications, directives, other project review or implementation procedures, or other appropriate mechanisms to monitor and enforce implementation of mitigation set forth in the approved EA/FONSI. Where available and applicable, an environmental management system may be used for tracking and monitoring mitigation commitments. Mitigation included as special conditions in the FONSI can be imposed as enforceable conditions of the final decision or of funding or grant agreements, contract specifications, preferential arrival and departure procedures, licenses, permits, directives, other project review or implementation procedures, or other appropriate follow-up actions to ensure that mitigation is implemented (see CEQ's "40 Most Asked Questions," number 39).

408. DECISION DOCUMENTS FOR FINDINGS OF NO SIGNIFICANT IMPACT.

408a. Immediately following the approval of a FONSI, except in the circumstances identified in paragraph 406e, the FAA decisionmaker may decide whether to take the proposed action. Mitigation measures that were made a condition of approval of the FONSI and the steps

taken to assure appropriate commitment and follow-up of mitigation measures shall be included in the FONSI and incorporated in the decision to implement the action. If the FAA decides to proceed with the proposed Federal action, then the decision may be included with the FONSI or in a separate decision document that accompanies the FONSI, called a FONSI/ROD. The FAA FONSI/ROD has the same general content and format as one that would be prepared following an EIS, including a paragraph that identifies the document as a decision/order that is, in most cases, subject to exclusive judicial review in the U.S. Circuit Courts of Appeals. This terminology assures consistent content in FAA ROD's and highlights the legal distinction between a finding of no significant impact and the agency decision to take action based upon the FONSI that forms the basis for judicial review. Preparation of a record of decision to proceed with an action for which a FONSI has been approved is optional. A record of decision is recommended in the circumstances described in paragraph 408b. If the responsible FAA official prepares a record of decision, it should include a description of the action, the location and timing of the action, the FONSI, any other required findings or determinations, and the signature, name, title, address, and telephone number of the approving FAA official.

408b. The responsible FAA official should prepare formal documentation of the decision to proceed (e.g., a record of decision (ROD) or FONSI/ROD) for:

(1) Actions which have been redefined to include mitigation measures necessary to reduce potentially significant impacts below applicable significant thresholds (see paragraph 405g).

(2) Actions that are highly controversial.

(3) Actions that are, or are closely similar to, those normally addressed in an EIS (see paragraph 406e).

(4) Actions that have no precedent (see paragraph 406e).

In cases of doubt, the responsible FAA official should consult the Office of the Chief Counsel (AGC-600) or Regional Counsel.

409. TIERING AND PROGRAMMATIC ENVIRONMENTAL ASSESSMENTS. The concept of tiering for EIS's may be used for preparing EA's. The responsible FAA official may tier off completed EA's and EIS's if the official finds that these are current and meet FAA requirements. Permitting and review agencies may have independent requirements for review of previously prepared documents (see paragraph 513).

410. WRITTEN RE-EVALUATION. (see paragraphs 402 and 404d)

410a. The preparation of a new FONSI is not necessary when it can be documented that the:

(1) Proposed action conforms to plans or projects for which a prior FONSI has been issued;

(2) Data and analyses contained in the previous EA and FONSI are still substantially valid; and

(3) Pertinent conditions and requirements (all) of the prior approval have, or will be, met in the current action.

410b. This evaluation, signed by the responsible FAA official, will either conclude the contents of previously prepared environmental documents remain valid or that significant changes require the preparation of a supplement or new EA.

410c. The written re-evaluation should be reviewed internally at the discretion of the responsible FAA official.

411. REVISED OR SUPPLEMENTAL ENVIRONMENTAL ASSESSMENTS OR FONSI's.

411a. The agency prepares supplements to an EA if the agency makes substantial changes in the proposed action that are relevant to environmental concerns, or there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Significant information is information that paints a dramatically different picture of impacts compared to the description of impacts in the EA. The agency also may prepare supplements when the purposes of NEPA will be furthered by doing so.

411b. The agency prepares, circulates, and issues as appropriate a supplement to a EA in accordance with the procedures of this chapter.

411c. The preparation of a new EA is not necessary if conditions in paragraph 410 are met. If a supplement changes a FONSI, a new FONSI must be issued.

412.-499. RESERVED.

CHAPTER 5. ENVIRONMENTAL IMPACT STATEMENTS AND RECORDS OF DECISION

500. INTRODUCTION.

500a. This chapter summarizes and supplements CEQ requirements for Environmental Impact Statements (EIS's) and Records of Decision (ROD's).

(1) EIS's are summarized as follows:

- An EIS is a clear, concise, and appropriately detailed document that provides the agency decisionmakers and the public with a full and fair discussion of significant environmental impacts of the proposed action and reasonable alternatives (40 CFR 1502.1) and implements the requirement in NEPA section 102(2)(C) for a detailed written statement.
- Using an interdisciplinary approach (40 CFR 1501.2(a)), an EIS describes the purpose and need of the proposed action (40 CFR 1502.13), the affected environment (40 CFR 1502.15), and, in a comparative form, the environmental effects of the alternatives, including the proposed action, the no action alternative, and other reasonable alternatives (including those not within the agency's jurisdiction and those that would avoid or minimize adverse impacts (40 CFR 1502.13 and 1502.14).
- An EIS discusses means to mitigate adverse environmental impacts if not covered in the discussion of alternatives (40 CFR 1502.14(f)) and identifies unavoidable impacts (40 CFR 1502.16).
- An EIS identifies possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal and local land use plans, policies, and controls for the area concerned (40 CFR 1502.16(c)), and the extent to which the agency would reconcile its proposed action with the plan or law (40 CFR 1506.2(d)).
- If reasonable alternatives are eliminated from detailed study, the EIS briefly discusses the reasons why these alternatives were eliminated (40 CFR 1502.14(a)).
- The EIS identifies the agency-preferred alternative or alternatives in the draft EIS if a preferred alternative exists and in the final EIS unless another law prohibits the selection of a preference (40 CFR 1502.14(e)).
- An EIS identifies methodologies and sources used (40 CFR 1502.24), identifies where information is incomplete or unavailable (40 CFR 1502.22), lists the preparers (40 CFR 1502.17), lists the agencies, organizations, and persons to whom copies of the EIS are sent (40 CFR 1502.10(i)), and summarizes the major conclusions, areas of controversy (including issues raised by agencies and the public), and issues to be resolved (40 CFR 1502.12)).
- The final EIS also includes the agency's response to comments (40 CFR 1502.9(b) and 1503).

(2) A ROD (40 CFR 1505.2) is concise public record of decision, which may be integrated into any other record prepared by the agency. The ROD states what the decision is, identifies all alternatives considered in reaching the agency's decision, and specifies which were environmentally preferable. The ROD discusses all other relevant factors considered, including any essential considerations of national policy, economic and technical considerations, and the agency's statutory mission. The ROD states whether all practicable means to avoid or minimize environmental harm from the selected alternative have been adopted, and if not, why not. Where applicable, the ROD may include a monitoring and enforcement program for mitigation. Grants, permits, or other approvals and decisions to fund agency actions shall include conditions described in the EIS that require implementation of mitigation adopted by the agency in making its decision (40 CFR 1505.3(a) through (b)).

500b. The depth of analysis and documentation of impacts will be in direct proportion to the potential significance of the impacts. EIS's should give greater emphasis to significant impacts and less emphasis to insignificant impacts. A significant impact is identified generally through the scoping process, through analysis of the direct, indirect, and cumulative effects of the proposed action, and in comparison with FAA's threshold of significance for each impact category. As in an EA, the discussion in an EIS of insignificant impacts is generally limited to an explanation of why further analysis of these impacts is not warranted with supporting documents incorporated by reference. See 40 CFR 1500.4(g) (Reducing paperwork), 1500.4(j) (Reference), 1501.1(d) (Purpose), and 1501.7 (Scoping).

500c. An EIS is required when impacts of the proposed action, including mitigation, remain significant. Cumulative impacts of the proposed action must also be considered in determining significance (see 40 CFR 1508.7, 1508.8, 1508.25, and 1508.27(b)(7) and CEQ guidance for Considering Cumulative Effects Under the National Environmental Policy Act, January 1997). A series of actions, when assessed on an individual basis, may each have a limited environmental impact. However, the same series of actions may have a significant cumulative impact when assessed with other Federal and non-Federal actions that are ongoing or are reasonably foreseeable (40 CFR 1508.7 and 1508.27(b)(7)).

(1) Connected actions should be considered in the same EIS. Connected actions are closely related actions that: (a) automatically trigger other actions which may require environmental impact statements; (b) cannot or will not proceed unless other actions are taken previously or simultaneously; or (c) are interdependent parts of a larger action and depend on the larger action for their justification (40 CFR 1508.25(a)(1)). Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts (40 CFR 1508.27(b)(7)). Proposed actions or parts of proposed actions which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement (40 CFR 1508.25(3)).

(2) Cumulative actions should also be discussed in the same EIS. A proposed action would contribute to cumulative impacts when its effects are added to those of past, present, and reasonably foreseeable future actions, whether Federal or non-Federal. If the proposed action causes the cumulative impacts of these non-project actions to exceed an applicable significant

threshold, then the proposed action would be one causing the significant impact (40 CFR 1508.25(a)(2)).

(3) Similar actions, such as those with common timing or geography, may be considered in the same EIS, when the best way to assess their combined impacts or reasonable alternatives to such actions is in a single document (40 CFR 1502.4(b) through (c) and 1508.25(a)(3)).

(4) CEQ regulations encourage "tiering" from broad EIS's (programmatic EIS's) to subsequent, site-specific EIS's or EA's. The regulations also allow EA or EIS preparers addressing the impacts from a proposed action's later stages to use the EIS or EA prepared for the action's earlier stages. The preparers would use the document addressing the earlier stages as a reference or supplement to the EIS or EA discussing the later stages (40 CFR 1502.4(c)(3) and 1508.28). See paragraph 513.

500d. In cases of doubt as to whether an EIS is necessary for a particular action, the responsible FAA official should consult with the AGC, Regional Counsel, or AEE. Airports personnel should contact APP-600.

500e. An EIS for an airport capacity project, an aviation safety project, or an aviation security project may qualify and be designated for environmental streamlining under the provisions of "Vision 100 -- Century of Aviation Reauthorization Act" (see Appendix D). An airport infrastructure project may also be selected for review under Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Reviews.

501. ACTIONS REQUIRING ENVIRONMENTAL IMPACT STATEMENTS (EIS). An EIS shall be prepared for major Federal actions significantly affecting the quality of the human environment. The term "major" reinforces but does not have a meaning independent of "significantly" (40 CFR 1508.18). Significance is defined in terms of context and intensity as follows:

501a. Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

501b. Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

(2) The degree to which the proposed action affects public health or safety.

(3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

(5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

(8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

(10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. (40 CFR 1508.27).

501c. Paragraphs 400 and 401 list actions normally requiring an EA. If the analysis in the EA of environmental impact categories discussed in Appendix A indicates that impacts will be significant, then the responsible FAA official would prepare an EIS and the EA may be used in the scoping process described below; however, if the responsible FAA official has decided to prepare an EIS, an EA need not be prepared.

501d. The addition of mitigation to reduce impacts below significance may avoid the requirement to prepare an EIS. If mitigation is integrated into the design of the proposed action, or if, through scoping or the EA process the proposed action is redefined to include mitigation, or if all potentially significant impacts are mitigated below thresholds of significance, then the responsible FAA official may rely on the mitigation measures in determining that the overall effects would not be significant and prepare an EA/FONSI. See chapter 4, paragraph 406e regarding public review of EA/FONSI in special circumstances.

501e. After an EA has been prepared, or if the responsible FAA official decides to omit the EA, an EIS shall be prepared if the FAA action:

(1) has a significant adverse effect on cultural resources pursuant to the National Historic Preservation Act of 1966, as amended.

(2) results in significant use on properties protected under section 4(f) of the Department of Transportation Act.

(3) is likely to have significant impact on natural, ecological (e.g., invasive species), or scenic resources of Federal, Tribal, State, or local significance (for example: Federally listed or proposed endangered, threatened, or candidate species, or designated or proposed critical habitat); resources protected by the Fish and Wildlife Coordination Act; wetlands; floodplains; coastal zones; prime, unique, State or locally important farmlands; energy supply and natural resources; and wild and scenic rivers, including study or eligible river segments and solid waste management.

(4) causes substantial division or disruption of an established community, or disrupts orderly, planned development, or is likely to be not reasonably consistent with plans or goals that have been adopted by the community in which the project is located.

(5) causes a significant increase in congestion from surface transportation (by causing decrease in Level of Service below acceptable level determined by appropriate transportation agency, such as a highway agency).

(6) has a significant impact on noise levels of noise-sensitive areas.

(7) has a significant impact on air quality or violates local, State, Tribal, or Federal air quality standards under the Clean Air Act Amendments of 1990.

(8) has a significant impact on water quality or sole source aquifers, or contaminates a public water supply system, or violates State or Tribal water quality standards established under the Clean Water Act and the Safe Drinking Water Act.

(9) is inconsistent with any Federal, State, Tribal, or local law relating to the environmental aspects of the proposed action.

(10) directly or indirectly creates a significant impact on the human environment, including, but not limited to, actions likely to cause a significant lighting impact on residential areas or commercial use of business properties, likely to cause a significant impact on the visual nature of surrounding land uses (see sections 11 and 12, Appendix A for additional information), is contaminated with hazardous materials based on Phase I or Phase II Environmental Due Diligence Audit (EDDA's) , or causes such contamination (see section 10, Appendix A for additional references and discussion).

502. IMPACT CATEGORIES. The responsible FAA official should review Appendix A to identify the level of analysis needed in the EIS for each applicable environmental impact category. The responsible FAA official should include in the EIS, under appropriate impact categories, all applicable permit or license requirements. The EIS also will report on the status of any special consultation required, such as consultation under the Endangered Species Act, the National Historic Preservation Act, the Fish and Wildlife Coordination Act, Archeological Resources Protection Act, or American Indian Religious Freedom Act. These reviews should occur concurrently with the NEPA process. The level of analysis for categories not significantly impacted should be similar to the level of analysis in an EA (i.e., enough to support a no significant impact determination; see paragraph 404c). These impacts will be discussed in as much detail as is necessary to support the comparisons of alternatives and agency decisionmaking. Many of the impact categories listed in Appendix A are interrelated, and, therefore, the responsible FAA official should first review the impact category of concern and then the remaining related categories for guidance.

503. ENVIRONMENTAL IMPACT STATEMENT PROCESS. When the determination has been made that the action does have potential significant impacts, the preparation of the EIS will begin. Figure 5-1, Environmental Impact Statement Process, presents an overview of the EIS process.

Figure 5-1. An Overview of the Environmental Impact Statement Process

Step 1	Responsible FAA official or applicant formulates proposed action and a preliminary range of alternatives.
Step 2	Responsible FAA official or applicant collects background data and analyzes information.
Step 3	Responsible FAA official determines need for EIS (anticipated significant impact).
Step 4	Notice of Intent (NOI) published in *Federal Register* and local press.
Step 5	Initiate scoping activities, inviting participation of affected agencies and interested persons and determining issues and alternatives to be addressed.
Step 6	Environmental Analysis.
Step 7	Write Draft EIS
Step 8	Make copies of Draft EIS available to public for review and comment.
Step 9	Publish Notice of Availability in *Federal Register* and file with EPA.
Step 10	Public comment period on draft EIS (45-day minimum required).
Step 11	Responsible FAA official receives and evaluates comments. Comment periods may be extended (see paragraph 507)
Step 12	Revise Draft EIS after consideration of public comments
Step 13	Make copies of Final EIS or Executive Summary available to public, to include all commentors.
Step 14	Publish Notice of Availability of FEIS in Federal Register and file with EPA.
Step 15	Responsible FAA official must wait a minimum of 30 days (see paragraph 507) to allow for review by EPA and possible referral to CEQ (see paragraph 517), or to allow for requests of reconsideration or technical corrections, or for appeals under a lead agency's formal administrative appeals process.
Step 16	Approving FAA official prepares and issues ROD
Step 17	Proceed with action, mitigation, and monitoring.

504. NOTICE OF INTENT. Once the decision is made to proceed with an EIS, the responsible FAA official publishes a Notice of Intent (NOI) in the *Federal Register*. The NOI is an announcement that an EIS will be prepared. Figure 5-2, Notice of Intent and Notice of Availability Overview, shows that a NOI will include an overview of the proposed action; the alternatives being considered (including the no action); and the name and address of a person within the agency who can answer questions about the proposed action and the EIS (see

40 CFR 1508.22). If a scoping meeting is being planned (see paragraph 505 regarding scoping) and sufficient information is available at the time, the NOI should also announce the meeting, including the time and place of the meeting, and any other appropriate information, such as the availability of a scoping document. Otherwise, the scoping meeting may be announced separately. If the responsible FAA official is using the NOI to satisfy public notice and comment requirements of other environmental laws, regulations, or executive orders in addition to NEPA, the NOI should include a statement to that effect with a reference to the specific law, regulation, or executive order. The responsible FAA official should consider also publishing the NOI, notices of scoping meetings, and other information in other formats pursuant to Order DOT 5610.1C, paragraph 14a and CEQ regulations section 1506.6.

504a. The responsible FAA official sends the NOI, the original and three copies, to the docket clerk in the Office of the Chief Counsel (AGC-200). All NOI's initiated in the regions should be reviewed by the Regional Counsel before being forwarded to AGC-200. The applicable division manager or designee may sign the NOI for the *Federal Register*.

504b. In addition to publishing the NOI, the responsible FAA official develops a strategy for assuring an interdisciplinary approach (40 CFR 1502.6 and 1507.2) and develops the EIS outline, schedule, and management framework.

Figure 5-2. Notice of Intent and Notice of Availability Overview

Purpose	• Notice of Intent (NOI) announces to the public that the EIS process has begun for a proposed FAA action. • If appropriate, the NOI announces the availability of a scoping document (document is optional). • The NOI announces the scoping meeting, if one is planned and the details of time and place are known; otherwise, if and when a scoping meeting is scheduled, a separate notice should be published at least 30 days in advance of the meeting. • Notice of Availability (NOA) announces the availability of a DEIS or an FEIS.
Content	Describes: • Proposed action and possible alternatives. • Proposed scoping process including whether, when, and where any scoping meeting will be conducted. • States an FAA point of contact for public inquiries. • Announces the availability of the DEIS and FEIS. • Provides information about where to review copies and send comments.
Public Participation	• The FAA publishes the NOI in *Federal Register* and local press. • A NOI or other notice of a scoping meeting should be published at least 30 days prior to the meeting. • EPA drafts and publishes the NOA in *Federal Register*. • FAA publishes NOA in local press.

505. SCOPING.

505a. Scoping is an early and open process for determining the scope of issues to be addressed in the EIS and identifying the significant issues related to a proposed action (40 CFR 1501.7). It is an important and required part of the EIS process. The purpose of scoping is to identify significant environmental issues to be analyzed in greater depth, identify and eliminate from detailed study issues that are insignificant or which have been covered by prior environmental review, and set the temporal and geographic boundaries of the EIS. Scoping also allows the responsible FAA official to identify available technical information and additional reasonable alternatives. Information obtained from scoping can be used to insure that planning and decisions reflect environmental values and that delays and conflicts are reduced later in the process. There are no requirements for a scoping meeting or for a specific number of meetings. Depending on the nature and complexity of the action, some or all of the information needed during the scoping process may be obtained by letter, telephone, or other means (see Appendix A, Analysis of Environmental Impact Categories, and Council on Environmental Quality Scoping Guidance). A scoping meeting may be appropriate when the impacts of a particular action are confined to specific sites. If an EA has been prepared, the responsible FAA official may use it as the vehicle for scoping. Alternatively, the responsible FAA official may prepare a scoping document. A scoping document is extremely useful if the scoping is done by mail or telephone, or the proposed action's location or locations are so remote, scattered, or widespread that affected agencies and other interested persons are unable to visit the site or sites.

505b. The responsible FAA official must take the lead in the scoping process, inviting the participation of affected Federal, State, and local agencies, any affected Tribe, the applicant of the action, and other interested persons (including those who might not be in accord with the action on environmental grounds), determining the issues to be analyzed in depth, identifying other environmental review and consultation requirements, and assigning responsibilities among lead and cooperating agencies for inputs to the EIS. If appropriate, a scoping meeting(s) can be held. Scoping meetings provide the opportunity to present additional background on the action and solicit input from those interested and affected parties in attendance to:

(1) Determine the scope of analysis required within the EIS;

(2) Identify and eliminate insignificant issues and those covered in previous environmental reviews;

(3) Identify alternatives; and

(4) Indicate any other EA's or EIS's that are being or will be prepared which are related to but not part of the scope of the EIS under consideration.

505c. Consultation with appropriate agencies is initiated at this point. Local units of governments, Federal and State agencies, and Tribes should be consulted early in the process of preparing an EIS. For example, where access, intermodal transfer, or other ground transportation

issues are involved, consultation with the appropriate metropolitan planning organization or State Department of Transportation and compliance with State Implementation Plans under the Clean Air Act (CAA) is important. Comments on the impacts of the proposed action will be considered, as appropriate, in preparing the EIS.

506. EIS FORMAT. The FAA's standard EIS format, which follows the format prescribed in CEQ regulations (40 CFR 1502.10), is outlined below. An overview is presented in Figure 5-3, Environmental Impact Statement Overview.

506a. Cover Page. This single page will include:

(1) A list of the responsible lead and cooperating agencies (identifying the lead agency);

(2) The title of the proposed action (together with the State(s) and county(ies) where the action is located);

(3) The name, address, and telephone number of the responsible FAA official;

(4) The designation of the statement as draft, final, or supplement;

(5) A one paragraph abstract of the EIS with a heading as follows: DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION; and

(6) For DEIS's, a statement that this EIS is submitted for review pursuant to the following public law requirements and list those that are applicable, such as section 102(2)(C) of the National Environmental Policy Act of 1969, and section 4(f) of the DOT Act.

506b. Executive Summary. An executive summary will be included to adequately and accurately summarize the EIS. The summary describes the proposed action, stresses the major conclusions, areas of controversy (including issues raised by agencies and the public), and the issues to be resolved (including the choice among alternatives). It also discusses major environmental considerations and how these have been addressed, summarizes the analysis of alternatives, and agency preferred and sponsor preferred alternatives. If the agency has identified an environmentally preferred alternative, it may also be included. It discusses mitigation measures, including planning and design to avoid or minimize impacts. It identifies interested agencies, lists permits, licenses, and other approvals that must be obtained, and reflects compliance with other applicable environmental laws, regulations, and executive orders.

506c. Table of Contents. The table of contents lists the chapters, figures, maps, tables, and exhibits presented throughout the EIS. It will also list the appendixes, if any, and the list of acronyms, glossary, references, and an index.

506d. Purpose and Need. This section briefly specifies the underlying purpose and need for the federal action. It presents the problem being addressed, how the alternatives would resolve the problem, and the benefits of the federal action. It distinguishes between the need for the

proposed action and the desires or preferences of the agency or applicant, and essentially provides the parameters for defining a reasonable range of alternatives to be considered.

506e. Alternatives, Including the Proposed Action. This section is the heart of the EIS (see 40 CFR 1502.14; see also 40 CFR 1502.10(e) and paragraph 405d for more information on alternatives). It presents a comparative analysis of the no action alternative, the proposed action, and other reasonable alternatives to fulfill the purpose and need for the action. Although CEQ encourages Federal agencies to identify the environmentally preferred alternatives in the EIS (see CEQ's "40 Most Asked Questions," number 6), CEQ regulations do not require that discussion until the ROD. Reasonable alternatives not within the jurisdiction of the lead agency should be considered. (see 40 CFR 1502.14(c)) The FAA may include alternatives proposed by the public or another agency. However, they must meet the basic criteria for any alternative: it must be reasonable, feasible, and achieve the project's purpose. The extent of active participation in the NEPA process by the proponent of the alternative also bears on the extent to which a proffered alternative deserves consideration. To provide a clear basis of choice among the alternatives, graphic or tabular presentation of the comparative impact is recommended. This section also presents a brief discussion of alternatives that were not considered reasonable due to their inadequacy in meeting the purpose and need for the proposed action. The FEIS must specifically and individually identify the preferred alternative. Criteria other than those included in the affected environment and environmental consequences section of the EIS may be applied to identify the preferred alternative.

506f. Affected Environment. This section describes the existing environmental conditions of the potentially affected geographic area or areas. The discussion of the affected environment will be no longer than is necessary to understand the effects of the alternatives; data and analyses should be presented in detail commensurate with the importance of the impact. To ensure that this section emphasizes the important aspects of the effects on the environment, the discussion should summarize and incorporate by reference information or analysis that is reasonably available to the public. This section describes other related activities (past, present or reasonably foreseeable future actions), their interrelationships, and cumulative impacts. It may include such items as action by the community or citizen groups pertinent to the proposed action, or any other unique factors associated with the action. (See paragraph 405e for other factors that may be included in the affected environment discussion.)

506g. Environmental Consequences.

(1) This section forms the scientific and analytical basis for comparing the proposed action and reasonable alternatives. The discussion of environmental consequences will include the environmental impacts of the alternatives including the proposed action; any adverse environmental effects which cannot be avoided should the proposed action be implemented; the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and any irreversible or irretrievable commitments of resources which would be involved in the proposed action should it be implemented. This

section should not duplicate discussions in the alternatives section. It shall include considerations of direct and indirect effects and their significance and possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local land use plans, policies and controls for the area concerned (see CEQ's "40 Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (40 CFR 1500-1508)," number 23, 46 FR 18026, March 23, 1981 and paragraph 405f).

(2) Specific environmental impact categories listed in Appendix A shall be discussed to the level of detail necessary to support the comparisons of effects each reasonable alternative would cause. Impacts shall be analyzed for each reasonable alternative, including the proposed action which is treated in detail in this section of the EIS. The section shall include, under appropriate impact categories, all applicable permit or license requirements and shall indicate any known problems with obtaining them. This section shall also provide the status of any interagency or intergovernmental consultation required, for example, under the National Historic Preservation Act, the Endangered Species Act, the Coastal Zone Management Act, the American Indian Religious Freedom Act, E.O. 13084, Government-to-Government Consultation with Indian Tribal Governments, the Wild and Scenic Rivers Act, and the Fish and Wildlife Coordination Act.

506h. Mitigation.

(1) An EIS describes mitigation measures considered or planned to minimize harm from the proposed action. The following types of mitigation measures will be considered: design and construction actions to avoid or reduce impacts; design measures that reduce impacts; management actions that reduce impacts during operation of the facility; and replacement, restoration (reuse, conservation, preservation, etc.), and compensation measures. If FAA has experience with an environmental management system (EMS) that was used to monitor the implementation of mitigation, that experience should be considered, where applicable, in the assessment of appropriate mitigation measures.

(2) An EIS specifies mitigation measures that the FAA has decided to include as part of the proposed action. Mitigation and other conditions established in the EIS, or during its review of the EIS, and committed to in the ROD, will be implemented by the lead agency or other appropriate consenting agency. The FAA ensures implementation of such mitigation measures through special conditions, funding agreements, contract specifications, directives, other review or implementation procedures, and other appropriate follow-up actions in accordance with 40 CFR 1505.3. Monitoring or other follow-up review should be described in the EIS, and should allow verification of the mitigation effectiveness. See paragraph 404g for additional information.

506i. List of Preparers. This list includes the names, and qualifications (e.g., expertise, experience, professional disciplines) of the FAA staff that were primarily responsible for preparing the EIS or significant background material, and contractors who assisted in preparing the EIS or associated environmental studies.

506j. List of Agencies, Organizations, and Persons to Whom Copies of the Statement are Sent. This list is included for reference and to demonstrate that the EIS is being circulated, and thus, that the public review process is being followed.

506k. Index. The index reflects the key terms used throughout the EIS for easy reference. The index includes page numbers for each reference.

506l. Appendices (if any). This section consists of material that substantiates any analysis that is fundamental to the EIS, but would substantially contribute to the length of the EIS or detract from the document readability, if included in the body of the EIS. This section should contain information about formal and informal consultation conducted, and related agreement documents prepared, pursuant to other applicable environmental laws, regulations, and executive orders.

506m. Comments. Comments received on the DEIS are assessed and responded to in the FEIS in any or all of the following ways:

(1) Written into the text of the FEIS.

(2) Stated in an errata sheet attached to the FEIS.

(3) Included or summarized and responded to in an attachment to the FEIS, and if voluminous, may be compiled in a separate supplemental volume for reference.

506n. Footnotes. Footnotes include title, author, date of document, page(s) relied upon, and footnote number used to identify where in the text, figures, and charts of the EIS the source is used.

Figure 5-3. Environmental Impact Statement Content

Purpose	• Provides an in-depth review of the environmental impacts for all major FAA actions before a decision is made. • Examines reasonable alternatives to the proposed action. • Discloses to the public and the decisionmaker the alternatives, impacts, and mitigations.
Scope	• Provides a comprehensive review of all impacts of the proposed action and alternatives, including the no action alternative.
Content	Includes the following: • Cover sheet • Executive Summary • Table of Contents • Purpose of and need for action • Alternatives considered, including proposed action • Affected environment (baseline conditions) • Environmental consequences of alternatives • Coordination—includes list of agencies, organizations and persons to whom copies of the EIS are sent • List of preparers • Index • Appendices • Summary of public comments on DEIS Exceptions are permitted if the responsible FAA official determines that there is a compelling reason to change the standard format.
Public Participation	• Provides for a 45-day public comment period on the DEIS. • If necessary, a public hearing on the DEIS should occur no sooner than 30 days after issuance. • Provides for a 30-day waiting period on the FEIS prior to issuance of the ROD.

507. TIMING OF ACTIONS.

507a. The required comment period for a DEIS is a minimum of 45 days (40 CFR 1506.10(c)). No final decision on the proposed action can be made or recorded in a ROD until 90 days after the filing of the DEIS (40 CFR 1506.10(b)(1)). There is a 30-day waiting period after the filing of a FEIS. However, if the FEIS is filed within the 90-day waiting period after the filing of the DEIS, a decision cannot be made until both the 30-day and 90-day requirements have been met. When the FAA is the lead Federal agency, EPA, upon a showing by another Federal agency of compelling reasons of national policy, may extend the 30-day and 45-day periods for up to 30 days, but no longer than 30 days without the permission of the FAA. However, the 90-day waiting period after filing the DEIS cannot be altered by EPA. As part of the EIS filing process, EPA publishes the official Federal Register notice of availability for an

EIS. FAA may also publish a more detailed availability notice in the *Federal Register*, but the FAA notice cannot be used on its own. Additionally, if FAA unilaterally approves an overall extension of its public comment period, EPA shall be notified so that EPA may modify its *Federal Register* notice accordingly. In the event of an emergency, the responsible FAA official must follow the procedures outlined in paragraph 302. For legislative proposals, refer to paragraph 519.

507b. Send five (printed) copies to:
U.S. Environmental Protection Agency, Office of Federal Activities,
EIS Filing Section, Ariel Rios Building (South Oval Lobby), Mail Code 2252-A, Room 7241,
1200 Pennsylvania Avenue, NW, Washington, D.C. 20460. (Special NOTE: For all deliveries by courier, including express delivery services other than the US Postal Service, use 20004 as the zip code.) The responsible FAA official should access the "NEPA" website of the EPA's Office of Federal Activities to verify that the filing instructions provided herein are current (http://www.epa/gov/compliance/nepa/).

508. DRAFT EIS. A DEIS is prepared using the format outlined in paragraph 506.

508a. Internal Review. The responsible FAA official should plan for internal review of DEIS's. For DEIS's originating in the regions, the preliminary DEIS or its relevant parts will be reviewed by affected regional program division service director or their designee and Regional Counsel before publication, distribution, and filing the DEIS with EPA for public review. For DEIS's originating in headquarters, have national interest, or involve 4(f) determinations, the preliminary DEIS will be reviewed by AGC. Internal review is to assure that DEIS's are technically and legally sufficient. Internal review is intended to assure that the concerns of other FAA offices and any related foreseeable agency actions by other FAA offices are properly discussed in the DEIS. Further, internal review is intended to assure that any commitments that are the responsibility of other FAA offices are coordinated with the appropriate action office so that these commitments will be implemented.

508b. Filing with EPA. The responsible FAA official files the DEIS with the EPA (40 CFR 1506.9). See paragraph 507.

508c. **Public Notice.** The responsible FAA official shall ensure that the FAA-prepared DEIS is sent to interested parties, libraries, and other public venues to provide the public the opportunity to review and comment on the DEIS (paragraphs 507a and b).

(1) Immediately following that distribution, the official shall file the five copies accompanied by a letter to EPA certifying that FAA has distributed the DEIS for public review and comment. EPA will normally publish notice of the DEIS's availability (NOA) in the *Federal Register* two weeks after receiving FAA's certification of distribution, but the official is encouraged to contact AGC-200 for the exact date that EPA will publish that NOA.

(2) To ensure that local notices of the DEIS's availability occur on the same date that EPA publishes the NOA in the *Federal Register*, the responsible FAA official shall send a press

release to local media and other appropriate media. The release should request the media to publish a notice of the DEIS's availability on the same date that EPA is expected to publish its notice. The local notice of availability of the DEIS shall provide the same due date for comments as that specified in the *Federal Register* notice.

(3) The official should use the following standard language in its certification to EPA and press releases announcing the DEIS's availability for comment and any public hearing(s) associated with the proposed project that will occur:

> FAA encourages all interested parties to provide comments concerning the scope and content of the Draft EIS. Comments should be as specific as possible and address the analysis of potential environmental impacts and the adequacy of the proposed action or merits of alternatives and the mitigation being considered. Reviewers should organize their participation so that it is meaningful and makes the agency aware of the viewer's interests and concerns using quotations and other specific references to the text of the Draft EIS and related documents. Matters that could have been raised with specificity during the comment period on the Draft EIS may not be considered if they are raised for the first time later in the decision process. This commenting procedure is intended to ensure that substantive comments and concerns are made available to the FAA in a timely manner so that the FAA has an opportunity to address them.

508d. Distribution and Coordination for Intergovernmental Review.

(1) According to CEQ regulations, comments on the DEIS shall be obtained from or requested of appropriate Federal, State, and local agencies, and Tribes (40 CFR 1501.2(d)(2) and 1501.7(a)(1)), and from Tribes when the effects may be on a reservation or affect Tribal interests (40 CFR 1502.16(c), 1503.1(a)(2)(ii), 1506.6(b)(3)(ii)). A Federal agency may include State or local governments, or Tribes which have assumed NEPA responsibilities under section 104(h) of the Housing and Community Development Act of 1974 (40 CFR 1508.12). All DEIS's will be coordinated with the appropriate regional offices of other Federal agencies having jurisdiction by law or special expertise. However, DEIS's that are coordinated with any component of the Department of the Interior (DOI), Department of Commerce (DOC), or Department of Energy (DOE) will be coordinated with the Washington, D.C., headquarters of those departments. Coordination with the DOE is necessary only for transportation proposals having major energy-related consequences. See paragraph 213 for additional information on interagency and intergovernmental review of EIS's.

(2) Copies of the DEIS will be sent to:

(a) Federal, State, and local agencies, and Tribes when the effects may be on a reservation.

(b) Washington, D.C., headquarters of the Department of Commerce (one copy) and Ecology and Conservation Division of the National Oceanographic and Atmospheric Administration (NOAA) (one copy)

(c) Washington, D.C., headquarters of the Department of Energy, if coordination is necessary (see paragraph 508d(1)) (one copy)

(d) Department of the Interior, Office of Environmental Policy and Compliance (12 to 18 copies of the DEIS depending on the proposed action's geographic location and scope)

(e) State and local agencies and Tribes (see paragraph 213 on intergovernmental and interagency coordination and consultation), including cooperating agencies, agencies that commented substantively on the Intergovernmental Review of Federal Programs, the Advisory Council on Historic Preservation for actions using 106 process, affected cities and counties, and others known to have an interest in the action (see paragraph 208 on public involvement). For example, various laws, regulations, and executive orders in addition to NEPA, may also require coordination with Tribes that are not Federally recognized, and with traditional cultural leaders. Consult with AEE, AGC, and the Office of Civil Rights (ACR) and see Appendix A, especially section 11 on cultural resources, for more information.

(f) EPA regional office of interest (one copy).

508e. Copies. Copies should be printed by the responsible FAA official in sufficient quantities to meet anticipated demand for the DEIS. A fee, not to exceed reproduction costs, may be charged for copies requested by the public if the original set of copies is exhausted. The DEIS should be available at local libraries or similar public depositories having extended office hours to facilitate accessibility. Material used in developing or referenced in the DEIS must be available for review at the appropriate FAA office(s) or at a designated location. The distribution may be supplemented as appropriate with copies in digital form (e.g., CDROM) and may be placed on the internet to facilitate public awareness and access to the DEIS.

508f. Comment Period. See paragraph 507.

508g. Comments. The responsible FAA official must take into consideration all comments received from the public and respond to the substantive comments in the FEIS, as discussed in paragraph 506m. Any comments on the DEIS from the public, including comments made during public hearings (see paragraph 209), will accompany the FEIS through the normal internal review process. In preparing the FEIS, the DEIS will be revised, as appropriate, to reflect comments received, issues raised through the community involvement and public hearing process, or other considerations. Copies of all substantive comment will be included in the FEIS or as a separate, accompanying appendix. If the number of comments is too voluminous to include, the comments may be summarized. Relevant environmental documents, comments, and responses

are part of the agency's public record and will be made available to the public through appropriate regional office procedures.

509. REVIEW AND APPROVAL OF FEIS. During the EIS process environmental issues are defined and mitigation determined. Any unresolved environmental issues and efforts to resolve them through further consultation will be identified and discussed in the FEIS. The FEIS will reflect that there has been compliance with the requirements of all applicable environmental laws, regulations, executive orders, and agency orders, such as section 4(f) of the DOT Act. If such compliance is not possible by the time of FEIS preparation, the FEIS will reflect consultation with the appropriate agencies and provide reasonable assurance that the requirements can be met. Required compliance must be completed by issuance of the ROD. CEQ regulations, however, strongly encourage early integration of these processes to provide for meaningful public comment and to streamline environmental review and permitting or approval processes.

509a. Internal review is coordinated as follows**:**

(1) FEIS's originating in headquarters. The office or service director shall send a copy of the FEIS to AGC to review for legal sufficiency and concurrence. The responsible office or service director will send a copy of the FEIS to AEE for information unless review and concurrence are specifically requested. After the office or service director approves the FEIS, the responsible FAA official will file it with EPA (see paragraphs 509a(6) and 512).

(2) FEIS's originating in the field, **and not subject to headquarters' concurrence.** The Regional Administrator or Center Director, or designee, shall approve and file the FEIS with EPA, following review for legal sufficiency by the Regional Counsel. (see paragraph 507)

(3) FEIS's originating in regions or centers, but when headquarters concurrence is requested. The Regional Administrator or Center Director, or designee, shall approve the FEIS and submit it to the appropriate service or office director. Following approval, the FEIS will be filed with EPA (see paragraph 507).

(4) FEIS's originating in regions or centers, but where authority to approve the FEIS is retained in headquarters. The applicable division manager or center shall send the proposed FEIS to the appropriate headquarters' office or service director. The office or service will provide the FEIS to AGC review. The office or service director will provide a copy of the FEIS to AEE for information unless review is specifically requested. Following approval, the FEIS will be filed with EPA. Presently, approval for these types of FEIS's is being delegated, if comments on the DEIS have been incorporated. (see paragraph 507)

(5) FEIS's involving mandatory findings involving section 4(f) of the DOT Act, wetlands, floodways or floodplains, air quality, historic and archeological resources protected by section 106, and Federally listed endangered and threatened species. These FEIS's are subject to legal review for legal sufficiency in headquarters or in the region where the environmental document is to be approved.

(6) Highly controversial FEIS's requiring headquarters' review and concurrence. The Office of the Assistant Secretary for Transportation Policy (P-1) and the DOT Office of General Counsel (C-1) will be notified that the FEIS is under review and be provided with a copy of the summary section contained in the FEIS. P-1 and C-1 also will be given at least two weeks notice before approval of the highly controversial FEIS.

509b. FEIS approval.

(1) The following declaration shall be added to the summary:

> After careful and thorough consideration of the facts contained herein and following consideration of the views of those Federal agencies having jurisdiction by law or special expertise with respect to the environmental impacts described, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in section 101(a) of the National Environmental Policy Act of 1969.

Other required environmental findings and conclusions must be included here, if not included in the body, or at the end of, the EIS.

(2) Signature and date blocks will be provided for the decisionmaker's approval and may also be provided for the concurrences of other appropriate offices.

510. NOTICE OF AVAILABILITY OF FEIS. The FAA can make a final decision to act no sooner than 30 days after the EPA notice of availability is published in the *Federal Register* (40 CFR 1506.10). When the FAA is the lead Federal agency, EPA, upon a showing by another Federal Agency of compelling reasons of national policy, may extend prescribed periods up to 30 days, but no longer than 30 days without the permission of the FAA. The responsible FAA official may also extend the waiting period or, with the approval of P-1, request EPA to reduce this period for compelling reasons of national policy (40 CFR 1506.10(d)). If FAA unilaterally approves an overall extension of the comment period, EPA shall be notified so that EPA may modify its *Federal Register* notice accordingly. The purpose for this waiting period is to provide for any pre-decision referral process for resolving interagency disagreements (40 CFR 1504.3). (see paragraph 517). The purpose is not for receiving and incorporating public comments. At the conclusion of the waiting period, the decisionmaker issues the final decision in a ROD (see paragraph 514) and may begin implementing the proposed action.

511. DISTRIBUTION OF APPROVED FEIS. The originating FAA region, center or service simultaneously distributes the approved FEIS as follows:

511a. Five copies to the appropriate regional office of EPA (one copy, if categorized by the EPA as "Lack of Objections" (LO-1)).

511b. One copy of the FEIS to each of the following: the originating FAA office director; Regional FAA Administrator; and AEE.

511c. One copy of the approved FEIS will be sent to the DOT Office of the Assistant Secretary for Transportation Policy, Office of Transportation Policy Development (P-100).

511d. A copy of the FEIS also will be sent to:

(1) Each Federal, State, and local agency, Tribe, and private organization that made substantive comments on the DEIS and to individuals who requested a copy of the FEIS or who made substantive comments on the DEIS;

(2) DOI (6 to 9 copies of the FEIS depending on the action's geographic location and scope) at the following address: Director, Office of Environmental Policy and Compliance; U.S. Department of the Interior; Main Interior Building, MS 2340; 1849 C Street, N.W.; Washington, D.C. 20240.

(3) For transportation proposals having major energy-related consequences, one copy will be sent to DOE headquarters.

511e. Adequate number of copies (varies by State) to the appropriate State-designated single point of contact (or specific agency contacts when States have not designated a single contact point), unless otherwise designated by the governor.

511f. Additional copies will be sent to accessible locations to be made available to the general public, including headquarters and regional offices; and State, metropolitan, and local public libraries to facilitate accessibility.

511g. FEIS's, comments received, and supporting documents will be made available to the public without charge to the fullest extent practical or at a reduced charge, which is not more than the actual cost of reproducing copies, at appropriate agency office(s) or at a designated location.

512. RECORD OF DECISION (ROD). Following the time periods described in 40 CFR 1506.10 (i.e., 90 days from DEIS Notice of Availability (NOA) issuance and 30 day waiting period for FEIS NOA issuance), the agency's decisionmaker may make a decision on the Federal action. The ROD presents the agency's decision on the actions, identifies all alternatives considered by the agency, specifying which alternatives were considered to be environmentally preferable, identifies applicable mitigation and monitoring actions required, and as necessary, can be used to clarify and respond to issues raised on the FEIS. The ROD may discuss preferences among alternatives based on relevant factors including economic and technical considerations and agency statutory missions. The ROD shall identify and discuss all factors including any essential considerations of national policies that were balanced by the agency in making its decision and state how those considerations entered into the decision. The ROD shall state whether all practicable means to avoid or minimize environmental harm from the alternatives selected have been adopted, and if not adopted, why they were not adopted. The draft ROD should accompany the proposed FEIS during the internal review prior to approval only when headquarters' concurrence is required. The decisionmaker must obtain concurrence before approving the ROD. After approving the

ROD, the decisionmaker may begin implementing the selected action. Figure 5-4, Record of Decision Overview, presents an overview of the components of a ROD.

Figure 5-4. Record of Decision Overview

Purpose	• Announces the FAA's decision regarding the proposed major action.
Scope	• States the FAA's decision and the basis for the decision. • Summarizes the FEIS analyses and selected mitigation measures.
Content	• States the FAA's preferred alternative. • Identifies all alternatives considered by the FAA. • States whether all practicable means to avoid or minimize harm to the environment were considered, and if not, explains why. • Explains, when appropriate, the mitigation implementation responsibilities. • Makes appropriate findings required by executive order, regulation, or law (e.g., 4(f), wetlands, etc.).
Public Participation	• No public participation; however, notice of the decision is provided to the public.

512a. Regional Administrators are responsible for signing ROD's where proposed actions cross regional or program lines. The lead regional operating division responsible for preparing and approving the FEIS will make this determination, obtain regional counsel review, and facilitate signature by the appropriate decisionmaker. Subject to program-specific procedures for NEPA compliance, the division manager is responsible for signing ROD's that do not cross regional or program lines.

512b. Any mitigation measure that was made a condition of the approval of the FEIS must be included in the ROD. ROD's can set forth the conditions for the action approval and state mitigation measures that will be taken. A monitoring and enforcement program shall be adopted and summarized where applicable for any such mitigation. Proposed changes in or deletions of mitigation measures that were a condition of approval of the FEIS must be reviewed by the same agency offices that reviewed the FEIS and must be approved by the FEIS approving official.

512c. The decisionmaker may choose to take an action that was included within the range of alternatives of an approved FEIS but was neither the environmentally preferred alternative(s) nor the agency's preferred alternative as identified in the FEIS. In these cases, the decisionmaker must circulate the revised draft ROD for internal coordination and concurrence with the same FAA offices that reviewed the FEIS. These offices may concur without comment, may concur on the condition that specific mitigation measures be incorporated in the ROD, may request that a supplement to the FEIS be prepared and circulated, or may non-concur. The decisionmaker cannot approve the Federal action over a non-concurrence.

512d. If the decisionmaker selects an alternative other than the preferred alternative in the FEIS that involves other environmental laws, regulations, or executive orders, such as those related to section 4(f) land, Federally listed endangered species, wetlands, or historic sites, the

agency must first complete any required evaluation and consultation not already completed and make the appropriate finding prior to taking the action. Supplements to FEIS's may be necessary and will be reviewed and approved in the same manner as the original document, and a new draft ROD should be prepared, circulated, and approved. A copy of the ROD should be forwarded with the FEIS to AEE-1 for their files.

512e. Although the CEQ regulations do not require publication of a notice of availability of the ROD in the Federal Register except for actions of national concern, the ROD must be made available to the public pursuant to 40 CFR 1506.6(b) (see question 34a of CEQ's "40 Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (40 CFR 1500-1508)," 46 FR 18026, March 23, 1981). The responsible FAA official may publish a notice of a ROD in the Federal Register for actions not of national concern. Additional information on public involvement may be found in paragraph 208, and by contacting AEE (Environment & Energy Team, AEE-200) and AGC-600.

513. TIERING AND PROGRAMMATIC EIS's. Program offices are encouraged to build upon prior, broad EA's or EIS's (see paragraph 500d(4)) and incorporate FAA experience in the assessment, implementation, and monitoring of NEPA decisions, where applicable. For example, long-term developmental EIS's and broad system, program, or regional EIS's may be incorporated by specific cross-references in support of project-specific EIS's. The purpose of tiering is to eliminate repetition and facilitate analysis of issues at the appropriate level of detail. Programmatic EIS's are tailored to particular program needs and, in practice, only need to be used to assist a program in environmental documentation vis-a-vis site- or action-specific documentation (see 40 CFR 1502.20 and 1508.28 and paragraph 409). Tiered and programmatic EIS's are prepared, circulated and filed using the same procedures for DEIS's and FEIS'sas specified in this chapter.

514. TIME LIMITS FOR EIS's. The time limits established for all FAA EIS's, except for programmatic EIS's, are contained in this paragraph.

514a. A DEIS may be assumed valid for a period of three years. If the proposed FEIS is not submitted to the approving official within three years from the date of the DEIS circulation, a written reevaluation of the draft will be prepared by the responsible FAA official to determine whether the consideration of alternatives, impacts, existing environment, and mitigation measures set forth in the DEIS remain applicable, accurate, and valid. If there have been changes in these factors that would be significant in the consideration of the proposal, a supplement to the DEIS or a new DEIS will be prepared and circulated.

514b. For approved FEIS's, two sets of conditions have been established:

(1) If major steps toward implementation of the proposed action (such as the start of construction, substantial acquisition, or relocation activities) have not commenced within three years from the date of approval of the FEIS, a written reevaluation of the adequacy, accuracy, and validity of the FEIS will be prepared by the responsible FAA official (unless EIS tiering is being used). If there have been significant changes in the proposed action, the affected environment,

anticipated impacts, or proposed mitigation measures, a new or supplemental FEIS will be prepared and circulated.

(2) If the proposed action is to be implemented in stages or requires successive Federal approvals, a written reevaluation of the continued adequacy, accuracy, and validity of the FEIS will be made at each major approval point that occurs more than three years after approval of the FEIS and a new or supplemental EIS prepared, if necessary.

515. WRITTEN REEVALUATION.

515a. The preparation of a new EIS is not necessary when it can be documented that the:

(1) Proposed action conforms to plans or projects for which a prior EIS has been filed and there are no substantial changes in the proposed action that are relevant to environmental concerns;

(2) Data and analyses contained in the previous EIS are still substantially valid and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts; and

(3) Pertinent conditions and requirements (all) of the prior approval have, or will be, met in the current action.

515b. This evaluation, signed by the responsible FAA official, will either conclude the contents of previously prepared environmental documents remain valid or that significant changes require the preparation of a supplement or new EIS.

515c. The written re-evaluation should be reviewed internally and may be made public at the discretion of the responsible FAA official.

516. REVISED OR SUPPLEMENTAL EIS's.

516a. The agency prepares supplements to either DEIS's or FEIS's if the agency makes substantial changes in the proposed action that are relevant to environmental concerns, or there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Significant information is information that paints a dramatically different picture of impacts compared to the description of impacts in the EIS. The agency also may prepare supplements when the purposes of NEPA will be furthered by doing so.

516b. The agency prepares, circulates, and files a supplement to a DEIS or FEIS in the same fashion as the original DEIS or FEIS, unless alternative procedures are approved by the CEQ. If, however, there are compelling reasons of national policy to shorten time periods, the agency must consult with EPA (see paragraph 510). Scoping should be considered, but is not required.

516c. The preparation of a new EIS is not necessary if conditions in paragraph 515 are met. If a supplement changes a ROD, a new ROD should be issued after the supplement has been reviewed for 30 days.

517. REFERRALS TO COUNCIL ON ENVIRONMENTAL QUALITY.

517a. The CEQ may serve as a mediator in interagency disagreements over proposed FAA actions that might cause unsatisfactory environmental effects. If a commenting agency determines that an proposed FAA action is environmentally unsatisfactory, the commenting agency may refer the matter to CEQ by delivering the referral to CEQ no later than 25 days after publication by EPA of notice that the final EIS is available (unless the FAA grants an extension of time under 14 CFR 1504.3(b)). Procedures for referrals and response to referrals are outlined in the CEQ regulations at 40 CFR 1504.3.

517b. When the responsible FAA official receives a notice of intended referral from the commenting agency, the responsible FAA official will provide P-1 (the Office of the Assistant Secretary for Transportation Policy) and AEE with a copy of the notice. (Airports personnel will alert APP-600 if a referral notice is received.)

517c. In the event of referral to CEQ by a commenting agency, the responsible FAA official forwards a proposed response to AEE within 10 days of referral. The response must address fully the issues raised in the referral and be supported by evidence. AEE will obtain P-1's concurrence on the proposed response. (APP-600 also will obtain P-1 concurrence for airports' actions). The response then will be sent to CEQ within 25 days of the referral.

518. REVIEW AND ADOPTION OF ENVIRONMENTAL IMPACT STATEMENTS PREPARED BY OTHER AGENCIES. Other Federal, State, or local agencies, or Tribe, may consult the FAA for assistance in analyzing environmental impacts that fall within FAA's functional area of responsibility. The FAA should provide its expertise on proposals affecting aviation and other FAA responsibilities as follows:

518a. Comments will be specific in nature and organized in a manner consistent with the structure of the draft EIS and may identify alternatives or modifications that might enhance environmental quality or avoid or minimize adverse environmental impacts, and will correct inaccuracies or omissions.

518b. Any agency project that is environmentally or functionally related to the proposed action in the EIS should be identified so that inter-relationships can be discussed in the EIS. In such cases, the agency should consider serving as a joint lead agency or cooperating agency.

518c. Environmental monitoring for which the agency has special expertise may be suggested and encouraged during construction, startup, or operation phases.

518d. Other agencies will generally be requested to forward their DEIS's directly to the appropriate FAA regional offices. The following types of matters, however, will be referred to

appropriate office or service in the Washington headquarters for comment: actions with national policy implications; proposed actions that involve natural, ecological, cultural, scenic, historic, or park or recreation resources of national significance; legislation; or regulations having national impacts, or national program proposals. DEIS's in these categories must also be referred to P-1 for preparation of DOT comments. In referring these matters to headquarters, the regional office is encouraged to prepare a proposed Departmental response.

518e. Regional offices review DEIS's that do not have national implications. Comments will be forwarded directly to the office that the originating agency designates for receipt of comments. If the FAA receiving office believes that another DOT office also has an interest or is in a better position to respond, the FAA office should transmit the DEIS to the appropriate DOT office in a timely fashion. If the FAA and other DOT administrations comment at the regional level, the Regional Administrator or designee may coordinate the comments.

518f. When appropriate, the FAA will coordinate a response with DOT offices having special expertise in the subject matter.

518g. Comments will be submitted within the time limits set forth in the request, unless the office responsible for submitting comments seeks and receives an extension of time. Comments must be concise and specify any changes desired either in the action proposed and/or in the environmental statement.

518h. FAA may adopt, in whole or in part, draft or final EIS's prepared by other agencies (see 40 CFR 1506.3). When the FAA adopts an EIS in whole or in part, the responsible FAA official must independently evaluate the information contained in the EIS, take full responsibility for scope and content that addresses FAA actions, issue its own ROD, and provide notification to EPA that FAA has adopted the EIS. In the ROD, the responsible FAA official may also summarize the adopted portions followed by a direct reference to the EIS. If more than three years have elapsed since the EIS was issued, the responsible FAA official should prepare a written re-evaluation of the EIS (see paragraph 515). Pursuant to 40 CFR 1503.3, if the responsible FAA official does not accept an EIS prepared by another agency, the responsible FAA official shall specify in its comments to that agency whether it (FAA) needs any additional information or describe the mitigation measures the FAA considers necessary to grant or approve an applicable permit, license, or related requirements or concurrences. If the responsible FAA official comments on the action agency's predictive methodology, the responsible FAA official should describe the preferred alternative methodology and explain why the FAA prefers this methodology.

519. LEGISLATIVE PROPOSALS. The FAA must, at minimum, prepare and circulate a draft legislative environmental impact statement (LEIS) for a legislative proposal that could cause significant environmental impacts (40 CFR 1506.8; also see 40 CFR 1508.17, 1508.18(a)). Unless a final LEIS is required under 40 CFR 15068(b)(2), the draft LEIS along with comments received from circulation of the draft LEIS are included in the formal transmittal of the legislative package to Congress. The draft LEIS (un-revised) and associated comments constitute the detailed statement required by statute for legislative proposals to Congress. The office

originating the legislation is responsible for preparing, circulating and filing the draft LEIS and, if required, the final LEIS. (see paragraph 508). The LEIS is prepared and processed in the same manner as an EIS except that scoping is not required (40 CFR 1506.8(b)(1)).

519a. The draft LEIS and any public comments received by the FAA, and the final LEIS if required, must be transmitted to Congress within 30 days after transmittal of the legislative proposal, or within sufficient time to allow review for associated hearings and debates on the proposed legislation. The responsible FAA office must clear the draft LEIS and associated comments, and the final LEIS if required, with P-1 and DOT Assistant General Counsel for Legislation (C-40). C-40 will submit the environmental documents to the Office of Management and Budget for circulation in the normal legislative clearance process.

519b. Questions concerning legislation should be directed to FAA's Office of Government and Industry (AGI).

520. REGULATIONS. For regulations subject to an EA or EIS, the DEIS, draft EA, or EA/FONSI shall be prepared and normally accompany the proposed rule. The EA shall be issued for public comment to the extent practicable (see 40 CFR 1501.4(b)). The Notice of Availability of the DEIS must be published at least 90 days or the Notice of Availability of the FEIS must be published at least 30 days, whichever is later, prior to publishing a final rule. The FAA may waive the 30 day period and publish a final rule concurrently with a NOA of the FEIS when engaged in rulemaking under the Administrative Procedure Act or other statute for the purpose of protecting public health or safety (see 40 CFR §1506.10(b)(2)). When the DEIS or EA is issued for public comment, copies will be made available for public review in Dockets (AGC-200). Dockets (AGC-200) will also have and make available copies of any EA/FONSI that is issued.

521. ENVIRONMENTAL EFFECTS OF MAJOR FAA ACTIONS ABROAD.

521a. In accordance with E.O. 12114, "Environmental Effects Abroad of Major Federal Actions" (44 FR 1957, January 4, 1979) responsible FAA officials should determine whether certain FAA actions may have a significant effect outside the United States, its territories and possessions. FAA officials should consider whether the federal action involves:

(1) Effects on the environment of the global commons outside the jurisdiction of any nation (e.g., the ocean or Antarctica).

(2) Effects on the environment of a foreign nation not participating with the United States and not otherwise involved in the action;

(3) Provision of certain products (or emissions/effluents) which in the United States are strictly prohibited or strictly regulated because their effects on the environment present a serious public health risk;

(4) A physical project which, in the U.S., would be prohibited or strictly regulated by Federal law to protect the environment against radioactive substances; or

(5) Effects on natural or ecological resources of global importance designated for protection by the President or resources protected by international agreement binding on the United States designated for protection by the Secretary of State.

521b. Before deciding to approve any action having potential effects in the categories described in 521a, the responsible FAA official shall determine whether the proposed action may have a significant environmental effect abroad.

521c. If the responsible FAA official determines that the action will not have a significant environmental effect abroad, he or she shall prepare a memorandum for the record which states the underlying reasons for the determination.

521d. If the responsible FAA official determines that the action may have a significant effect abroad, he or she shall determine what type of document must be prepared and considered in accordance with E.O. 12114. As determined by the agency, documents shall be taken into consideration in taking actions as follows:

(1) For major FAA actions significantly affecting the global commons -- an environmental impact statement (including generic, program, and specific statements);

(2) For major federal actions significantly affecting the environment of a foreign nation not participating with the United States and not otherwise involved in the action or major Federal actions significantly affecting the environment of a foreign nation which provide to that nation products or physical projects as described in 521a(3) or 521a(4):

(a) Bilateral or multilateral environmental studies, relevant or related to the proposed action, by the United States and one or more foreign nations, or by an international body or organization in which the United States is a member or participant; or

(b) A concise review of the environmental issues involved, including environmental assessments, summary environmental analyses, or other appropriate documents; and

(3) For major Federal actions outside the U.S., its territories and possessions which significantly affect natural or ecologically resources of global importance or protected by international agreements as set forth in 521a(5) -- an EIS, bilateral or multilateral environmental studies, or a concise review of environmental issues.

521e. An agency need not prepare a new document to comply with E.O. 12114 when a document described in 521d already exists.

521f. The responsible FAA official shall coordinate communications concerning environmental studies or documentation with the State Department through the DOT Office of Transportation Policy Development (P-100).

521g. With respect to requests for FAA action, after the State Department's notification, all FAA requests to a foreign applicant for information, which the FAA needs to prepare an environmental study or an EIS, should then be forwarded through the civil aviation authority of the applicant's government. Copies of the EIS and notices of any public hearings planned on the proposed action should be furnished to the:

(1) Applicant;

(2) Appropriate foreign civil aviation authority; and the

(3) Washington, D.C., embassy for the country where the applicant is located or the country that the proposed action would affect.

521h. Other environmental laws, regulations, and executive orders have specific requirements regarding consideration of potential effects of Federal actions overseas (see Appendix A). Important examples include, but are not limited to, the following:

(1) Under Executive Order 12088, Federal Compliance with Pollution Control Standards, the FAA must ensure that construction or operation of FAA facilities outside the United States complies with the environmental pollution control standards of general applicability in the host country or jurisdiction.

(2) Under section 402 of the National Historic Preservation Act (16 U.S.C. 470a-2), "[p]rior to the approval of any Federal undertaking outside the United States which may directly and adversely affect a property which is on the World Heritage List or on the applicable country's equivalent of the National Register [of Historic Places], the head of a Federal agency having direct or indirect jurisdiction over such undertaking shall take into account the effect of the undertaking on such property for purposes of avoiding or mitigating any adverse effect."

521i. Any substantial differences arising in the course of the EIS between the originating FAA organization and a foreign applicant or the affected foreign country should be referred to AEE (for proposed Airport actions, APP-600), which will consult with the Assistant Administrator for Environment and Policy (AEP) and the Assistant Administrator for International Aviation (API) to resolve any problems.

522. LIMITATION ON ACTIONS SUBJECT TO NEPA. For actions subject to an EIS the responsible FAA official shall not take any action or make any irretrievable and irreversible commitments of resources until appropriate environmental review has been completed under this order (see 40 CFR 1502.2(f) and 1502.4(c)(3)). CEQ regulations (see 40 CFR 1506.1) specifically require that:

522a For projects requiring an EIS, no action concerning the proposal shall be taken which would have an adverse environmental impact or limit the choice of reasonable alternatives, unless the action is justified independently of the program, is itself accompanied by an adequate EIS, and will not prejudice the ultimate decision on the program.

522b. Further, if the FAA is considering an application from a non-Federal entity, and FAA is aware that the applicant is about to take an action within the agency's jurisdiction that would have an adverse environmental impact or limit the choice of reasonable alternatives, the responsible FAA official shall promptly notify the applicant that the FAA will take appropriate action to insure that the objectives and procedures of NEPA are achieved. However, this does not preclude development by applicants of plans or designs or performance of other work necessary to support an application for federal, state, or local permits or assistance.

523.-599. RESERVED.

APPENDIX A. ANALYSIS OF ENVIRONMENTAL IMPACT CATEGORIES

SECTION 1. BACKGROUND AND HOW TO USE THIS APPENDIX

1.1 This appendix summarizes the requirements and procedures to be used in environmental impact analysis according to resource impact category. Executive Orders, FAA and DOT Orders, and Memoranda & Guidance documents described in Appendix C may also contain requirements that apply.

1.2 The potential impact categories, presented in sections, are as follows:

1.3 To effectively use this appendix, first become familiar with the material contained in each impact area. Within each impact area, the overview box highlights major applicable Federal statute(s), regulations, executive orders, and guidance and the oversight agencies. Executive Order (E.O.) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, is addressed in this appendix in section 16 and in Appendix C. Since environmental justice is defined as any disproportionately high and adverse impact on minority populations and low-income populations, this E.O. applies to other impact categories where appropriate. Similarly, Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, is addressed in this appendix in section 16 and applies to other impact categories where appropriate. Executive Order 13148 of April 21, 2000

"Greening the Government Through Leadership in Environmental Management" requires Federal agencies to use an EMS approach for improving environmental performance. Where EMS's have been implemented, they may assist in the evaluation of environmental impacts. In those cases, the NEPA and EMS processes should be complementary.

1.4 The information, however, should guide the responsible Federal Aviation Administration (FAA) official to appropriate resources and applicable requirements to be addressed as part of the National Environmental Policy Act (NEPA) process. To assist in this effort, the majority of the impact categories are divided into the following three discussion areas (paragraphs): Requirements; FAA Responsibilities, and Analysis of Significant Impacts. Following the discussion of FAA responsibilities, some impact categories will also have an additional discussion area, Significant Impact Thresholds, if quantitative thresholds have been established by the FAA or appropriate oversight agencies.

1.5 Should a proposed Federal action have a potential air quality impact, for example, review the Air Quality section of this appendix (section 2) to identify the legal references for air quality impacts. These requirements are summarized for ease of use; however, if further information is required, the statute, associated implementing regulations, and FAA policy should be reviewed with the staff of the Office of the Chief Counsel and/or regional counsel support and through coordination with appropriate Federal and State agency personnel.

1.6 Once the standards and relationship of the requirements to the project are understood, the thresholds for significant adverse effect should be reviewed. This section summarizes the impact threshold used by the FAA to determine significance of the effects of the proposed action where such thresholds have been established. For example, the FAA has issued guidance in determining the scope and context of potential noise impacts, and thus, whether noise increases are significant and require preparation of an EIS.

1.7 The final section, the analysis of impacts, provides guidance on the types and levels of evaluation when the impact is determined to be significant. It includes further information on consultations, studies, and identification of mitigation alternatives and monitoring actions.

1.8 Within each applicable impact category, alternative mitigation measures are identified.

SECTION 2. AIR QUALITY

Statute	Regulation	Oversight Agency
Clean Air Act (CAA), as amended [42 United States Code (U.S.C.) 7401-7671] [Public Law (PL) 91-604, PL 101-549]	Title 40 Code of Federal Regulations (CFR) parts 9, 50-53, 60, 61, 66, 67, 81, 82, and 93 (which includes General Conformity)	Environmental Protection Agency

2.1 Requirements.

2.1a. Two primary laws apply to air quality: NEPA, and the Clean Air Act (CAA). As a Federal agency, the FAA is required under NEPA to prepare an environmental document (e.g., environmental impact statement (EIS) or environmental assessment (EA)) for major Federal

actions that have the potential to affect the quality including air quality of the human environment. An air quality assessment prepared for inclusion in a NEPA environmental document should include an analysis and conclusions of a proposed action's impacts on air quality.

2.1b. The CAA established National Ambient Air Quality Standards (NAAQS) for six pollutants, termed "criteria pollutants." The six pollutants are: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM-10 and PM-2.5), and sulfur dioxide (SO_2). The CAA requires each State to adopt a plan to achieve the NAAQS for each pollutant within timeframes established under the CAA. These air quality plans, known as State implementation plans (SIP), are subject to Environmental Protection Agency (EPA) approval. In default of an approved SIP, the EPA is required to promulgate a Federal implementation plan (FIP).

2.1c. When a NEPA analysis is needed, the proposed action's impact on air quality is assessed by evaluating the impact of the proposed action on the NAAQS. The proposed action's "build" and "no-build" emissions are inventoried for each reasonable alternative. The inventory should include both direct and indirect emissions that are reasonably foreseeable. Normally, further analysis would not be required for pollutants where emissions do not exceed general conformity thresholds. However, based on the nature of the project and consultation with State and local air quality agencies additional analysis may be deemed appropriate, such as that required for cumulative impacts. If there are any questions about whether additional analysis is reasonable, contact the appropriate headquarters office and the Office of Environment and Energy. If required, the emissions for the proposed action then are translated into pollutant concentrations using a dispersion model. Depending on the project, this step can be data and computation intensive. Once dispersion modeling has been performed, pollutant concentrations are combined with background pollutant concentrations and compared to the NAAQS. If modeled concentrations do not result in projected exceedances of the NAAQS, then the analysis is complete. If concentrations exceed the NAAQS, emissions must be mitigated or offset, or the action redesigned to reduce emissions.

2.1d. In addition to NEPA, General Conformity, and grant funding requirements, there may be State and local air quality requirements to consider. These requirements can include, but are not limited to, provisions such as State indirect source regulations and State air quality standards.

2.1e. Section 176(c) of the CAA, as amended in 1990, requires that Federal actions conform to the appropriate Federal or State air quality plans (FIP's or SIP's) in order to attain the CAA's air quality goals. Section 176(c) states:

> ″No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan.″

2.1f. Conformity is defined as conformity to the implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards, and that such Federal activities will not:

(1). Cause or contribute to any new violation of any standard in any area.

(2). Increase the frequency or severity of any existing violation of any standard in any area.

(3). Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

2.1g. The CAA 1990 Amendments required the EPA to issue rules that would ensure Federal actions conform to the appropriate FIP or SIP. A final rule for determining conformity of general Federal actions (40 CFR part 93, subpart B) was published in the *Federal Register* (FR) on November 30, 1993, and became effective January 31, 1994. In addition, 40 CFR part 51, subpart W specifies requirements for conformity which States must include in their respective SIP's. Once a SIP conformity provision has been approved by EPA, the State conformity requirements included in the SIP apply. EPA issued separate rules addressing conformity of highway, roadway, and transit plans and projects (40 CFR part 93, subpart A, and 40 CFR part 51, subpart T) on November 15, 1993. The remaining conformity discussion addresses only General Conformity since FAA actions are subject to this rule, although projects involving airport access may also be subject to some provisions of Transportation Conformity.

2.1h. The General Conformity Rule establishes the procedures and criteria for determining whether certain Federal actions conform to State or EPA (Federal) air quality implementation plans. To determine whether conformity requirements apply to a proposed Federal action, the following must be considered: the non-attainment or maintenance status of the area; type of pollutant or emissions; exemptions from conformity and presumptions to conform; the project's emission levels; and the regional significance of the project's emissions. FAA actions are subject to the General Conformity Rule. Projects involving airport access that fall under 23 U.S.C. or the Federal Transit Act may also be subject to some provisions of Transportation Conformity. **2.1i**. General conformity requirements are distinct from NEPA requirements. For example, NEPA may require FAA to analyze several alternatives in detail. If a general conformity determination is required, only the proposed action must be addressed. General conformity, like other environmental requirements, should be integrated into the NEPA process as much as possible. For example, the draft conformity determination should be issued along with any required draft EIS for public comment. While for some decisions there may be valid reasons to address general conformity separately rather than concurrently, when conformity analysis provides information that is essential to a reasoned choice among alternatives then FAA must complete the conformity analysis and issue the final conformity determination prior to completion of a final EIS.

2.1j. The General Conformity Rule only applies in areas that EPA has designated non-attainment or maintenance. A non-attainment area is any geographic area of the U.S. that experiences a violation of one or more NAAQS. A maintenance area is any geographic area of

the U.S. previously designated non-attainment for a criteria pollutant pursuant to the CAA Amendments of 1990 and subsequently re-designated to attainment.

2.1k. The rule covers direct and indirect emissions of criteria pollutants or their precursors from Federal actions that meet the following criteria:

(1) Reasonably foreseeable, and

(2) Can practicably be controlled and maintained by the Federal agency through continuing program responsibility.

2.1l. Certain Federal actions are exempt from the requirement of the General Conformity Rule because they result in no emissions or emissions are clearly below the rule's applicability emission threshold levels. These include, but are not limited to:

(1) Continuing and recurring activities such as permit renewals.

(2) Routine maintenance and repair activities.

(3) Routine installation and operation of aviation and maritime navigation aids.

(4) Administrative actions.

(5) Planning studies and provision of technical assistance.

(6) The routine, recurring transportation of materiel and personnel.

(7) Transfers of land, facilities, and real properties.

(8) Actions affecting an existing structure where future activities will be similar in scope to activities currently being conducted.

(9) Enforcement and inspection activities.

(10) Air traffic control activities and adopting approach, departure and en route procedures for air operations.

2.1m. The General Conformity Rule provides a provision that permits agencies to develop a list of actions presumed to conform which would be exempt from the requirements of the rule unless regionally significant (discussed below). Notification of such a list and the basis for the presumption of conformity will be published in the *Federal Register*.

2.1n. A conformity determination is not required if the emissions caused by the proposed Federal action are not reasonably foreseeable; if the emissions caused by the proposed Federal

action cannot practicably be controlled and maintained by the Federal agency through its continuing program responsibility; if the action is listed as exempt or presumed to conform; or if the action is below the emission threshold (*de minimis*) levels. The emission threshold levels are defined in the General Conformity Rule. If a Federal action is not exempt or presumed to conform, the project's emissions must be analyzed with regard to conformity applicability emission levels. The rule established the threshold emission levels (annual threshold levels) to identify those actions with the potential to have significant air quality impacts. If the project's emissions are below annual threshold levels (*de minimis* levels) and are not regionally significant, then the requirements of the general conformity regulation do not apply to the Federal action or project (and therefore, a conformity determination is not required).

2.1o. In determining whether emission threshold levels are exceeded (and a conformity determination required), agencies must consider direct and indirect emissions. Direct emissions are those that are caused by or initiated by the Federal action and occur at the same time and place as the action. Indirect emissions are those caused by the Federal action, but occur later in time and/or may be removed in distance from the action. Temporary construction emissions must be considered in determining whether emission threshold levels are exceeded. (See EPA General Conformity Questions and Answers, dated November 1994.)

2.1p. In addition, the General Conformity Rule adopted the exclusive definition of indirect emissions, which excludes emissions that may be attributable to the Federal action, but that the FAA has no authority to control. The FAA is responsible for assessing only direct and indirect emissions of criteria pollutants and precursors that are caused by a Federal action, are reasonably foreseeable, and can practicably be controlled by the FAA through its continuing program responsibility. The FAA may compare emissions with and without the proposed Federal action during the year in which emissions are projected to be greatest in determining whether emission threshold levels are exceeded.

2.1q. If a Federal action does not exceed the threshold levels or is presumed to conform, it may still be subject to a general conformity determination if it has regional significance. If the total of direct and indirect emissions of any pollutant from a Federal action represent 10 percent or more of a maintenance or non-attainment area's total emissions of that pollutant, the action is considered to be a regionally significant activity and conformity rules apply. Parts of the overall Federal action that are exempt from conformity requirements (e.g., emission sources covered by New Source Review) should not be included in the analysis. The purpose of the regionally significant requirement is to capture those Federal actions that fall below threshold levels, but have the potential to impact the air quality of a region.

2.1r. When it has been determined that a proposed Federal action is not exempt, presumed to conform, exceeds emission threshold levels, or is regionally significant, the agency must prepare a conformity determination based on analysis using criteria stated in EPA's General Conformity Rule (40 CFR part 93 (58 FR 63250, November 30, 1993)).

2.1s. A proposed action cannot be approved or initiated unless conformity does not apply or a positive conformity determination is issued (i.e., the action conforms to the SIP). If initial analysis does not indicate a positive conformity determination, alternative actions (including

mitigation measures as part of the action) should be considered and further consultation, analysis, and documentation will be necessary.

2.2 FAA RESPONSIBILITIES.

2.2a. The FAA has a responsibility under NEPA to include in its EA or EIS sufficient analysis to disclose the potentially significant impact of a proposed action on the attainment and maintenance of air quality standards established by law or administrative determination.

2.2b. It is also the FAA's affirmative responsibility under section 176(c) of the CAA to assure that its actions conform to applicable SIP's. Before the FAA can fund or support in any way any activity, it must address the conformity of the action with the applicable SIP using the criteria and procedures prescribed in the General Conformity Rule or applicable SIP.

2.2c. In conducting air quality analysis for purposes of complying with NEPA or conformity, the FAA requires use of the Emissions and Dispersion Modeling System (EDMS) model for aviation sources (aircraft, auxiliary power units, and ground support equipment). The EPA accepted EDMS as a formal EPA preferred guideline model in 1993. An order form for the EDMS software and user's guide can be obtained from the EDMS Internet Site at http://www.aee.faa.gov/, or by writing the EDMS Program, Federal Aviation Administration, Office of Environment and Energy (AEE-300), 800 Independence Ave., S.W., Washington, D.C. 20591.

2.2d. If the proposed action either will not conform with the SIP or there is potential for the proposed action to cause the area to exceed the NAAQS, then further consultation, analysis, and documentation will be required in an EA or EIS and conformity determination document.

2.3 SIGNIFICANT IMPACT THRESHOLDS. Potentially significant air quality impacts associated with an FAA project or action would be demonstrated by the project or action exceeding one or more of the NAAQS for any of the time periods analyzed.

2.4 ANALYSIS OF SIGNIFICANT IMPACTS.

2.4a. When the analysis indicates potentially significant air quality impacts, it may be necessary to consult further with State or regional air quality officials and/or with EPA. It also is advisable to include such officials in the EIS scoping process to represent cooperating agencies with air quality expertise. These officials will help identify specific analyses needed, alternatives to be considered, or mitigation measures to be incorporated in the action.

2.4b. Air Quality Assessment Procedures**.** NEPA and the CAA Amendments of 1990 have separate requirements and processes; however, their steps can be integrated and combined for efficiency. Also, an air quality analysis can require the coordination of many different agencies. Such coordination and subsequent analysis takes time; therefore, air quality impacts should be addressed as early as practicable when preparing an EA or EIS. For more detailed guidance on air quality procedures see the FAA's report "Air Quality Procedures for Civilian Airports and Air Force Bases."

2.4c. Modeling Requirements**.** The EDMS is FAA's required methodology for performing air quality analysis modeling for aviation sources. EDMS also offers the capability to model other airport emission sources that are not aviation-specific, such as power plants, fuel storage tanks, and ground access vehicles.

2.4d. Except for air toxics or where advance written approval has been granted to use an equivalent methodology and computer model by the FAA Office of Environment and Energy, the air quality analyses for aviation emission sources from airport and FAA proposed projects conducted to satisfy NEPA, general conformity, and 49 USC 47106(c) requirements under the Clean Air Act Amendments of 1990 (as amended) must be prepared using the most recent EDMS model available at the start of the environmental analysis process. In the event that EDMS is updated after the environmental analysis process is underway, the updated version of EDMS may be used to provide additional disclosure concerning air quality but use is not required. A complete description of all inputs, particularly the specification of non-default data, should be included in the documentation of the air quality analysis. Users also must provide one copy of EDMS input files used in the analysis and the corresponding output files to the responsible FAA official on magnetic media specified by the FAA official.

2.4e. If air toxics analysis is performed, EDMS should be used or supplemented with other air toxic methodology and models in consultation with the appropriate FAA program office and AEE.

2.4f. Use of supplemental methodology and models for more refined analysis of non-aviation sources also is permitted in consultation with the appropriate FAA program office and AEE.

2.4g. All input data should be collected early in the environmental process and should reflect the latest available data. Assistance from the FAA Office of Environment and Energy is available on a case-by-case basis by request through the respective headquarters program office.

SECTION 3. COASTAL RESOURCES

Statute	Regulation	Oversight Agency
Coastal Barrier Resources Act of 1982 as amended by the Coastal Barrier Improvement Act of 1990 [16 U.S.C. 3501-3510] [PL 97-348]	U.S. Department of Interior Coastal Barrier Act Advisory Guidelines (57 FR 52730, November 5, 1992)	Fish and Wildlife Service Federal Emergency Management Agency
Coastal Zone Management Act as amended [16 U.S.C. 1451-1464] [PL 92-583]	15 CFR part 930, subparts C and D 15 CFR part 923	National Oceanic and Atmospheric Administration, Office of Coastal Zone Management Appropriate State CZM Agency
Executive Order 13089, Coral Reef Protection (63 FR 32701, June 16, 1998)		National Oceanic and Atmospheric Administration

3.1 REQUIREMENTS.

3.1a. Federal activities involving or affecting coastal resources are governed by the Coastal Barriers Resources Act (CBRA), the Coastal Zone Management Act (CZMA), and E.O. 13089, Coral Reef Protection. The CBRA prohibits, with some exceptions, Federal financial assistance for development within the Coastal Barrier Resources System that contains undeveloped coastal barriers along the Atlantic and Gulf coasts and Great Lakes. The CZMA and the National Oceanic and Atmospheric Administration (NOAA) implementing regulations (15 CFR part 930) provide procedures for ensuring that a proposed action is consistent with approved coastal zone management programs. E.O. 13089, Coral Reef Protection, requires Federal agencies to ensure that any actions that they authorize, fund, or carry out will not degrade the conditions of coral reef ecosystems.

3.1b. Permits/Certificates: Not applicable.

3.2 FAA RESPONSIBILITIES.

3.2a. CBRA**.** Maps specifically identifying lands included in the CBRA system are available from the Fish and Wildlife Service (FWS) office administering the CBRA program. If additional guidance on CBRA is needed, refer to the Department of Interior's (DOI) CBRA Advisory Guidelines (57 FR 52730, November 5, 1992). If the proposed action would occur on land within the CBRA system and involve funding for development, the action must receive an FWS exemption from the provisions of the CBRA. Results of consultation with FWS must be incorporated in the environmental document. Project-related impacts on coastal resource biotic resources and water quality may be described in the document's CBRA section or in the sections of the document addressing these biotic and water quality issues.

3.2b. CZMA. When a proposed action affects (changes the manner of use or quality of land, water, or other coastal resources, or limits the range of their uses) the coastal zone in a State with an approved coastal zone management (CZM) program, the EA or EIS shall include the following:

(1) For Federally assisted activities or for other activities FAA itself undertakes, the views of the appropriate State or local agency as to the relationship of such activities with the approved State coastal zone management program, and the determination of the State as to whether the proposal is consistent with the approved State coastal zone management program. However, if full consistency with the coastal zone management program is prohibited by existing laws, such as aviation laws and safety standards, omit these views. Instead, the EA or EIS should state that it provided to the State or local agency a written statement citing the statutory provisions or other legal authority that limited FAA's discretion to comply with the management program.

(2) For activities that the FAA itself undertakes, the EA or EIS should include the same information listed above for federally assisted activities. If the State or local agency that administers the CZM program objects to the consistency determination, then the FAA may proceed with the federal activity only if the FAA determines that full consistency is prohibited by existing laws specifically applicable to the agency, such as aviation laws. In such a case, the EA or EIS should further state that the FAA provided the State or local agency with a written statement clearly describing the statutory provisions, legislative history, or other legal authority that limits the FAA's discretion to be fully consistent with the enforceable policies of the CZM program.

3.2c. E.O. 13089, Coral Reef Protection. Under this executive order, U.S. coral reef ecosystems are defined to mean those species, habitats, and other natural resources associated with coral reefs in all maritime areas and zones subject to the jurisdiction or control of the United States. When a proposed FAA action may affect U.S. coral reef ecosystems, the FAA shall, subject to the availability of appropriations, provide for implementation of measures needed to research, monitor, manage, and restore affected ecosystems, including, but not limited to measures reducing impacts from pollution, sedimentation, and fishing. To the extent consistent with statutory responsibilities and procedures, these measures shall be developed in cooperation with the U.S. Coral Reef Task Force and fishery management councils and in consultation with affected States, territorial, commonwealth, and local government agencies, Tribes, nongovernmental organizations, the scientific community, and commercial interests as part of the U.S. Coral Reef Initiative. Refer to the National Action Plan for Coral Reef Conservation and NOAA's Coral Reef Information System (CoRIS) for further information regarding significant impacts to coral reefs and marine protected areas.

3.2d. Other statutes, regulations, and executive orders may apply such as the Marine Protection, Research, and Sanctuaries Act of 1972, as amended (33 U.S.C. 1401, 1402, 1411-1421, 1441-1444, and 16 U.S.C. 1431-1434), the Abandoned Shipwreck Act of 1987 (43 U.S.C. 2101 et seq.).

3.3 SIGNIFICANT IMPACT THRESHOLDS. (No specific thresholds have been established)

3.4 ANALYSIS OF SIGNIFICANT IMPACTS.

3.4a. When a State having an approved CZM program raises an objection to the proposed action because the action would not be consistent with the applicable CZM plan, the FAA can not approve the action, unless the objection is satisfied, or it is successfully appealed to the Secretary of Commerce. The process will be normally completed prior to a determination by the FAA of whether or not an EIS is needed for the action. Actions of concern include:

(1) The State agency objects to a FAA or sponsor consistency certification because the proposed action is inconsistent with the State's CZM Plan; or

(2) The FAA or sponsor does not successfully appeal the State agency's objection to the NOAA Assistant Administrator. In either of these cases, the FAA shall not approve such an action unless it includes State agency recommended changes that would make the proposed action consistent with the State's CZM Plan.

3.4b. If any issues remain that have not been resolved regarding the relationship of the action to an approved CZM program, such issues are identified in the scoping process and resolved in the EIS. In this situation, the State coastal zone management agency is invited to participate in the scoping process.

3.4c. For proposed actions determined to be inconsistent with the State’s approved program and if the project cannot be modified so that it is consistent with the plan, the final EIS shall include a finding by the Secretary of Commerce that the proposed action is consistent with the purposes or objectives of the Coastal Zone Management Act or is necessary in the interest of national security. If a finding is not obtained from the Secretary of Commerce, the FAA cannot approve the proposed action.

3.4d. CBRA. Information regarding CBRA application and funding exceptions, including consultation with FWS, is sufficient for EIS purposes. Any significant impacts are reported under other appropriate impact categories.

3.4e. CZMA. CZM consistency applies only to States having an approved CZM plan. If an action would occur in a State not having an approved CZM plan, the FAA should consult (as necessary) with State and Federal agencies having jurisdiction over or expertise on the affected resources to determine if additional information is needed. Discuss impacts on these resources in sections of the environmental document prepared for those resources.

SECTION 4. COMPATIBLE LAND USE

Statute	Regulation	Oversight Agency
Aviation Safety and Noise Abatement Act of 1979, as amended (49 U.S.C. 47501-47507)	14 CFR part 150	Federal Aviation Administration

4.1 REQUIREMENTS.

4.1a. The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Airport development actions to accommodate fleet mix changes or the number of aircraft operations, air traffic changes, or new approaches made possible by new navigational aids are examples of activities that can alter aviation-related noise impacts and affect land uses subjected to those impacts. In this context, if the noise analysis described in the noise analysis section (section 14) concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use. However, if the proposal would result in other impacts exceeding thresholds of significance which have land use ramifications, for example, disruption of communities, relocation, and induced socioeconomic impacts, the effects on land use shall be analyzed in this context and described accordingly under the appropriate impact category with any necessary cross-references to the Compatible Land Use section to avoid duplication.

4.1b. For airport actions, the Compatible Land Use section of the environmental document shall include documentation to support the required airport sponsor's assurance under 49 USC 47107(a)(10), formerly section 511(a)(5) of the 1982 Airport Act, that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. The assurance must be related to existing and planned land uses.

4.1c. The Airport Development Grant Program (49 USC 47101 *et seq*.) requires that a project may not be approved unless the Secretary of Transportation is satisfied that the project is consistent with plans (existing at the time the project is approved) of public agencies for development of the area in which the airport is located (49 USC 47106(a)(1)).

4.1d. Permits/Certificates: Not applicable.

4.2 FAA RESPONSIBILITIES.

4.2a. Local land use determinations are reserved rights of local governments. However, FAA officials will contact the sponsor and representatives of affected communities to encourage the development of appropriate compatible land use measures early in the project planning stage. The environmental document shall address what is being done by the jurisdiction(s) with land

use control authority, including an update on any prior assurance. When local land use jurisdictions have adopted local noise standards that differ from FAA's significant noise threshold (see Section 14.3 of this appendix), FAA will disclose those local standards in its NEPA documentation.

4.2b. Table 1 (taken from Part 150) provides Federal compatible land use guidelines for several land uses as a function of DNL values. The ranges of DNL values in Table 1 reflect the statistical variability for the responses of large groups of people to noise. Any particular DNL level might not, therefore, accurately assess an individual's perception of an actual noise environment. Compatible or non-compatible land use is determined by comparing the predicted or measured DNL values at a site to the values listed in Table 1.

4.2c. **Noise Sensitive Area.** This is an area where noise interferes with normal activities associated with its use. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas (including areas with wilderness characteristics), wildlife refuges, and cultural and historical sites. For example, in the context of noise from airplanes and helicopters, noise sensitive areas include such areas within the Day Night Level (DNL) 65 noise contour. Individual, isolated, residential structures may be considered compatible within the 65 DNL noise contour where the primary use of land is agricultural and adequate noise attenuation is provided. Also, transient residential use such as motels should be considered compatible within the 65 DNL noise contour where adequate noise attenuation is provided. A site that is unacceptable for outside use may be compatible for use inside of a structure, provided adequate noise attenuation features are built into that structure. (See table 1 on land use in this section; section 14 on noise in this appendix; and 14 CFR part 150, Airport Noise Planning, Land Use Compatibility Guidelines). The FAA recognizes that there are settings where the 65 DNL standard may not apply. In these areas, the responsible FAA official will determine the appropriate noise assessment criteria based on specific uses in that area. (See also section 6.2i of this appendix for further guidance.) In the context of launch vehicle operations, noise sensitive areas may include such sites within approximately 40 miles of the launch site for launches of very large rockets, whereas noise sensitive areas may include such sites within approximately 2 miles of the launch site for launches of small rockets. In the context of facilities and equipment, such as emergency generators or explosives firing ranges, but not including aircraft, noise sensitive areas may include such sites in the immediate vicinity of operations, pursuant to the Noise Control Act of 1972, (See State and local ordinances, which may be used as guidelines for evaluating noise impacts from operation of such facilities and equipment.)

TABLE 1—LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND

Land Use	Yearly day-night average sound level (L_{dn}) in decibels					
	< 65	65-70	70-75	75-80	80-85	> 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, nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government 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)	Y (4)	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 and water recreation	Y	Y	25	30	N	N

Numbers in parenthesis refer to notes; see continuation of Table 1 for notes and key.

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute Federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

(more)

TABLE 1—LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS (CONTINUED)

Key to Table 1	
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 1	
(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 of 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 of 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 noise 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.
(end of Table 1)	

4.3 ANALYSIS OF SIGNIFICANT IMPACTS. When the noise analysis (see Noise, section 14) indicates that, pursuant to NEPA, a significant noise impact will occur over noise sensitive areas within the DNL 65 dB contour, the analysis should include a discussion of the noise impact on those areas. Any mitigation measures to be taken in addition to those associated with other land use controls shall be discussed. FAA Advisory Circular 150/5020-1, Noise Control and Compatibility Planning for Airports, presents guidance for airport operators and planners to help achieve compatibility between airports and their environs. Part 150 guidelines include traditional recreational uses that may be protected under section 4(f) of the DOT Act (recodified as 49 U.S.C. 303). Special consideration needs to be given to whether Part 150 land use categories are appropriate for evaluating noise impact on unique and sensitive section 4(f) properties. (See Department of Transportation Act, Section 4(f), in section 6 of this appendix). For example, Part 150 land use categories are not sufficient to determine the noise compatibility of areas within a national park or national wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute, or to address noise effects on wildlife. (See section 14.3, SIGNIFICANT IMPACT THRESHOLDS, of this appendix).

SECTION 5. CONSTRUCTION IMPACTS

Statute	Regulation	Oversight Agency
See requirements below		

5.1 REQUIREMENTS.

5.1a. Local, State, Tribal, or Federal ordinances and regulations address the impacts of construction activities, including construction noise, dust and noise from heavy equipment traffic, disposal of construction debris, and air and water pollution. Many of the specific types of impacts that could occur and permits or certificates that may be required are covered in the descriptions of other appropriate impact categories. Additionally, see the section on Hazardous Materials, Pollution Prevention, and Solid Waste the requirements under E.O. 12088, as amended, Federal Compliance with Pollution Control Standards, concerning compliance with foreign pollution control standards in the construction and operation of Federal facilities outside the United States.

5.1b. Permits/Certificates: Clean Water Act section 402 National Pollutant Discharge Elimination System (NPDES) permit (when construction disturbs 1 acre or more).

5.2 FAA RESPONSIBILITIES. The environmental document must include a general description of the type and nature of the construction and measures to be taken to minimize potential adverse effects. At a minimum, reference is made to the incorporation in project specifications of the provisions of Advisory Circular 150/5370-10A, Standards for Specifying Construction of Airports. Although this AC provides information to reduce airport-related construction impacts, that information may also be applicable to many construction activities FAA undertakes or authorizes.

5.3 SIGNIFICANT IMPACT THRESHOLDS. Construction impacts alone are rarely significant pursuant to NEPA. Refer to the air quality, water, fish, plants and wildlife, and other relevant impact categories for further guidance in assessing the significance of the potential construction impacts.

5.4 ANALYSIS OF SIGNIFICANT IMPACTS. In an unusual circumstance where a construction impact would create significant consequences that cannot be mitigated, a more thorough discussion is needed, including the results of consultations with those agencies that have concerns and the reasons why such impacts cannot be avoided or mitigated to insignificant levels. For example, in areas designated severe nonattainment for ozone, consider whether NOx emissions caused by construction equipment for major capital improvement projects would result in potentially significant air quality impacts.

SECTION 6. DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(f)

Statute	Regulation	Oversight Agency
Department of Transportation Act of 1966, section 4(f) [recodified at 49 U.S.C. 303 (c)]		Department of Transportation

6.1 REQUIREMENTS.

6.1a. The Federal statute that governs impacts in this category is commonly known as the Department of Transportation (DOT) Act, section 4(f) provisions. Section 4(f) of the DOT Act, which is codified and renumbered as section 303(c) of 49 U.S.C., provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance or land from an historic site of national, State, or local significance as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land and such program, and the project includes all possible planning to minimize harm resulting from the use. This order continues to refer to section 4(f) because it would create needless confusion to do otherwise; the policies section 4(f) engendered are widely referred to as "section 4(f)" matters.

6.1b. Procedural requirements are set forth in Order DOT 5610.1C, Attachment 2, paragraph 4. The FAA also uses as guidance to the extent relevant the Federal Highway Administration and Urban Mass Transportation Administration's guidance defining *Constructive Use* under 23 CFR 771.135 (56 FR 13269, April 1, 1991).

6.1c. Designation of airspace for military flight operations is exempt from section 4(f). The Department of Defense reauthorization in 1997 provided that "[n]o military flight operations (including a military training flight), or designation of airspace for such an operation, may be treated as a transportation program or project for purposes of section 303(c) of title 49, United States Code"(PL 105-85, Nov. 18, 1997).

6.1d. Permits/Certificates: Not Applicable.

6.2 FAA RESPONSIBILITIES.

6.2a. Any part of a publicly owned park, recreation area, refuge, or historic site is presumed to be significant unless there is a statement of insignificance relative to the whole park by the Federal, State, or local official having jurisdiction thereof. Any such statement of insignificance is subject to review by the FAA**.**

6.2b. Where Federal lands are administered for multiple uses, the Federal official having jurisdiction over the lands shall determine whether the subject lands are in fact being used for

park, recreation, wildlife, waterfowl, or historic purposes. National wilderness areas may serve similar purposes and shall be considered subject to section 4(f) unless the controlling agency specifically determines that for section 4(f) purposes the lands are not being used.

6.2c. Where property is owned by and currently designated for use by a transportation agency and a park or recreation use of the land is being made only on an interim basis, a section 4(f) determination would not ordinarily be required. The FAA official or sponsor should indicate in any lease or agreement involving such use that this use is temporary.

6.2d. Where the use of a property is changed by a State or local agency from a section 4(f) type use to a transportation use in anticipation of a request for FAA approval, section 4(f) shall be considered to apply, even though the change in use may have taken place prior to the request for approval or prior to any FAA action on the matter. This is especially true where the change in use appears to have been undertaken in an effort to avoid the application of section 4(f).

6.2e. For section 4(f) properties, the initial assessment will determine whether the requirements of section 4(f) are applicable. When there is an actual physical taking of lands being used for park or other purposes in conjunction with a project, there is generally no latitude for judgment regarding 4(f) applicability. Use within the meaning of section 4(f) includes not only actual physical takings of such lands but also adverse indirect impacts (constructive use) as well. When there is no physical taking, but there is the possibility of constructive use, the FAA must determine if the impacts would substantially impair the 4(f) resource. If there would be no substantial impairment, the action would not constitute a constructive use and would not therefore invoke section 4(f) of the DOT Act. The responsible FAA official must consult all appropriate Federal, State, and local officials having jurisdiction over the affected section 4(f) resources when determining whether project-related noise impacts would substantially impair the resources. Following consultation, FAA is ultimately solely responsible for section 4(f) applicability and determinations.

6.2f. Substantial impairment occurs only when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. A project which respects a park's territorial integrity may still, by means of noise, air pollution, or otherwise, dissipate its aesthetic value, harm its wildlife, defoliate its vegetation, and take it in every practical sense. For section 4(f) purposes, the impairment must be substantial. With respect to aircraft noise, for example, the noise must be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes

6.2g. The land use compatibility guidelines in 14 CFR Part 150 (Part 150) may be relied upon to determine whether there is a constructive use under section 4(f) where the land uses specified in the Part 150 guidelines are relevant to the value, significance, and enjoyment of the 4(f) lands in question. Part 150 guidelines may be relied upon in evaluating constructive use of lands devoted to traditional recreational activities. FAA may primarily rely upon the average day night sound levels (DNL) in Part 150 rather than single event noise analysis because DNL is the best measure of significant impact on the quality of the human environment, is the only noise

metric with a substantial body of scientific data on the reaction of people to noise, and has been systematically related to Federal compatible land use guidelines.

6.2h. Turning to historic sites, FAA may also rely upon Part 150 guidelines to evaluate impacts on historic properties that are in use as residences. Part 150 guidelines may not be sufficient to determine the noise impact on historic properties where a quiet setting is a generally recognized purpose and attribute, such as a historic village preserved specifically to convey the atmosphere of rural life in an earlier era or a traditional cultural property. If architecture is the relevant characteristics of an historic neighborhood, then project-related noise does not substantially impair the characteristics that led to eligibility for or listing on the National Register of Historic Places. As a result the noise does not constitute a constructive use and section 4(f) would not be triggered. A historic property would not be used for section 4(f) purposes when FAA issues a finding of No historic properties affected or No Adverse Effect under section 106 of the National Historic Preservation Act. Findings of Adverse Effects do not automatically trigger section 4(f) unless the effects substantially impair the affected resource's historical integrity. Although there may be some physical taking of land, Section 4(f) does not apply to archeological resources where the responsible FAA official, after consultation with the SHPO/THPO determines that the archeological resource is important chiefly for data recovery, and is not important for preservation in place. FAA is responsible for complying with section 106 of the National Historic Preservation Act (NHPA) (see section 11 of this appendix) regardless of the disposition of section 4(f).

6.2i. When assessing use of section 4(f) properties located in a quiet setting and the setting is a generally recognized feature or attribute of the site's significance, carefully evaluate reliance on part 150 guidelines. Additional factors must be weighed in determining whether to apply the thresholds listed in Part 150 guidelines to determine the significance of noise impacts on noise sensitive areas within national parks, national wildlife refuges, and historic sites including traditional cultural properties. The Part 150 land use compatibility table may be used as a guideline to determine significance of noise impacts on section 4(f) properties to the extent that the land uses specified bear relevance to the value, significance, and enjoyment of the lands in question. For example, part 150 guidelines may not be sufficient for all historic sites (see 6.2h above) and do not adequately address the effects of noise on the expectations and purposes of people visiting areas within a national park or national wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute.

6.2j. If FAA determines that section 4(f) is applicable and there are no prudent and feasible alternatives which would avoid such use, the effect on the section 4(f) land shall be described in detail. The description of the land shall include size, activities, patronage, access, unique or irreplaceable qualities, relationship to similarly used lands in the vicinity, or other factors necessary to determine the effects of the action and measures needed to minimize harm. Such measures may include the mitigation of project impacts or the replacement of land and facilities and design measures such as planting or screening to mitigate any adverse effects. Replacement satisfactory to the Secretary of the Interior (DOI) is specifically required for recreation lands aided by the DOI's Land and Water Conservation Fund and for certain other lands falling under the jurisdiction of the DOI. The environmental document shall include evidence of concurrence

or efforts to obtain concurrence of appropriate officials having jurisdiction over such land regarding actions proposed to minimize harm.

6.2k. If Federal grant money was used to acquire the land involved (e.g., open space under the Department of Housing and Urban Development (HUD) and various conservation programs under DOI) the environmental document shall include evidence of or reference to appropriate communication with the grantor agency.

6.3 SIGNIFICANT IMPACT THRESHOLDS. A significant impact would occur pursuant to NEPA when a proposed action either involves more than a minimal physical use of a section 4(f) property or is deemed a "constructive use" substantially impairing the 4(f) property, and mitigation measures do not eliminate or reduce the effects of the use below the threshold of significance (e.g., by replacement in kind of a neighborhood park). Substantial impairment would occur when impacts to section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost. If there is a physical or constructive use, FAA is responsible for complying with section 4(f) even if the impact is less than significant for NEPA purposes.

6.4 ANALYSIS OF SIGNIFICANT IMPACTS. The FAA shall consult with the officials having jurisdiction over the section 4(f) property(ies), and other agencies, as necessary. The EIS should thoroughly analyze and document prudent and feasible alternatives that would avoid the use of section 4(f) property and provide detailed measures to minimize harm.

SECTION 7. FARMLANDS

Statute	Regulation	Oversight Agency
Farmland Protection Policy Act [7 U.S.C. 4201-4209] [PL 97-98, amended by section 1255 of the Food Security Act of 1985, PL 99-198]	7 CFR part 658 (59 FR 31109, June 17, 1994) 7 CFR part 657 (43 FR 4030) CEQ Memorandum on Analysis of Impacts on Prime and Unique Agricultural Lands in Implementing the National Environmental Policy Act, August 11, 1980 (45 FR 59189, September 8, 1980)	USDA Natural Resource Conservation Service Council on Environmental Quality

7.1 REQUIREMENTS.

7.1a. The Farmland Protection Policy Act (FPPA) regulates Federal actions with the potential to convert farmland to non-agricultural uses.

7.1b. Permits/Certificates: Not Applicable.

7.2 FAA RESPONSIBILITIES.

7.2a. Consultation with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) should occur to determine if the FPPA applies to the land the proposed action would convert to non-agricultural use, or if an exemption to the FPPA exists. If it is determined that the farmland is protected by the FPPA, formal coordination as provided by 7 CFR part 658 is required.

7.2b. The responsible FAA official should become aware of and make all reasonable attempts to consult with other Federal, State, and local officials who have responsibility over any adjacent, nearby, or potentially affected lands to assure compatibility of the proposed action and affected farmland.

7.2c. For FPPA-regulated farmland, scoring of the relative value of the site for preservation is performed by the NRCS and the proponent. If the total score on Form AD-1006 “Farmland Conversion Impact Rating” is below 160, no further analysis is necessary. Scores between 160 and 200 may have potential impacts and require further consideration of alternatives that would avoid this loss. Consider measures that reduce the amount of protected farmland that the project would convert or use farmland having relative lower value. If NRCS fails to respond within 45 days and if further delay would interfere with construction activities, the action may proceed as though the site were not farmland protected by the FPPA. The FAA then documents a "no response" by the NRCS in the environmental document.

7.2d. If there are unresolved land use issues with State and local officials, then further consultation will be required.

7.3 SIGNIFICANT IMPACT THRESHOLDS. A significant impact would occur pursuant to NEPA when the total combined score on Form AD 1006 (copies available from NRCS) ranges between 200 and 260 points. Note that impact severity increases as the total combined score approaches 260 points.

7.4 ANALYSIS OF SIGNIFICANT IMPACTS. The analysis evaluates the impacts on agricultural production in the area; compatibility with State, local and private programs and policies to protect farmland; any disruption of the farming community either as a direct result of the construction or by changes in land use associated with the action; and non-viability of farm support services in the area as a result of farmland conversion. Measures to minimize harm will be considered, including adjustments in the action to reduce the amount of farmland taken out of production or retain as much of the land as possible for agricultural use by incorporation into compatible land use plans.

SECTION 8. FISH, WILDLIFE, AND PLANTS

Statute and Other Guidance	Implementing Regulations and Other Guidance	Oversight Agency
Endangered Species Act of 1973 [16 U.S.C. §§1531-1544] [PL 93-205] Marine Mammal Protection Act of 1972 [16 U.S.C. §§1361-1421h] Related Essential Fish Habitat Requirements of the Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act [16 U.S.C. §1855(b)(2)]	50 CFR parts 17 and 22 50 CFR part 402 50 CFR parts 450-453 50 CFR 600.920 MOU [among 14 Federal agencies] on Implementation of the Endangered Species Act, September 28, 1994 MOU on Using an Ecosystem Approach in Agency Decision-making, December 5, 1995 CEQ Guidance on Incorporating Biodiversity Considerations into Environmental Impact Analysis, January 1993	U.S. Department of the Interior, Fish and Wildlife Service U.S. Department of Commerce, National Marine Fisheries Service Council on Environmental Quality
Sikes Act Amendments of 1974 [PL 93-452]		State Natural Heritage Programs
Fish and Wildlife Coordination Act of 1958 [16 U.S.C. §§661-666c] [PL 85-624]		Fish and Wildlife Service
Fish and Wildlife Conservation Act of 1980 [16 U.S.C. §§2901-2912] [PL 96-366] Executive Order 13112, Invasive Species (64 FR 6183, February 8, 1999) Migratory Bird Treaty Act of 1981 [16 U.S.C. §§703-712] Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds [66 FR 3853, January 17, 2001] Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federally Landscaped Grounds (April 26, 1994); Executive Order 13148, Greening the Government Through Leadership in Environmental Management (April 22, 2000).	50 CFR part 83 DOT Policy on Invasive Species, April 22, 1999 50 CFR Part 10 Environmental Protection Agency, Office of the Federal Environmental Executive, Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds (60 FR 40837, August 10, 1995) Paragraph 3f of attachment 2; Order DOT 5610.1C	Fish and Wildlife Service Departments of the Interior, Commerce, Agriculture, and Transportation Department of the Interior Environmental Protection Agency Office of the Federal Environmental Executive
The Animal Damage Control Act of 1931 [7 U.S.C. 426-426c] [46 stat. 1468]		U.S. Department of Agriculture; Animal and Plant Health Inspection Service; Wildlife Services

8.1 REQUIREMENTS.

8.1a. Section 7 of the Endangered Species Act (ESA), as amended, applies to Federal agency actions and sets forth requirements for consultation to determine if the proposed action "may affect" an endangered or threatened species. If an agency determines that an action "may affect" a threatened or endangered species, then Section 7(a)(2) requires each agency, generally the lead agency, to consult with the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS), as appropriate, to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any Federally listed endangered or threatened species or result in the destruction or adverse modification of critical habitat. (The effects on fish, wildlife, and plants include the destruction or alteration of habitat and the disturbance or elimination of fish, wildlife, or plant populations.) If the Secretary of the Interior has developed a recovery plan for an affected species pursuant to section 4(f) of the ESA, that plan should be reviewed by FAA NEPA practitioners to ensure that assessments of impacts from FAA actions consider the management actions and criteria for measuring recovery identified in the plan. If a species has been proposed for Federal listing as threatened or endangered, or a critical habitat has been proposed, section 7(a)(4) states that each agency shall confer with the Services. Refer to the FWS and NMFS "Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act," March 1998. Section 9 prohibits a Federal agency from taking, without an incidental take permit, any endangered species. Where a conservation plan has been developed pursuant to a section 10 permit (incidental take permit), the FAA NEPA practitioner should ensure that the impact analysis contained in the NEPA document for the affected species is consistent with the predicted impacts described in the conservation plan. Under the Magnuson-Stevens Act, Federal agencies must consult with the NMFS with regard to any action authorized, funded, or undertaken that may adversely affect any essential fish habitat identified under the Act. The consultation procedures are generally similar to ESA consultation requirements.

8.1b. The Sikes Act and various amendments authorize States to prepare statewide wildlife conservation plans and the Department of Defense (DOD) to prepare similar plans for resources under its jurisdiction. Actions should be checked for consistency with the State Wildlife Conservation Plans and DOD plans where such plans exist.

8.1c. The Fish and Wildlife Coordination Act requires that agencies consult with the State wildlife agencies and the Department of the Interior (FWS) concerning the conservation of wildlife resources where the water of any stream or other water body is proposed to be controlled or modified by a Federal agency or any public or private agency operating under a Federal permit.

8.1d. The Fish and Wildlife Conservation Act provides for financial and technical assistance to States to develop conservation plans, subject to approval by the Department of the Interior, and implement State programs for fish and wildlife resources. The Fish and Wildlife Conservation Act also encourages all Federal departments and agencies to utilize their statutory

and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and to promote conservation of non-game fish and wildlife and their habitats, in furtherance of the provisions of this Act.

8.1e. The Migratory Bird Treaty Act prohibits private parties (and federal agencies in certain judicial circuits from intentionally taking a migratory bird, their eggs, or nests. Take is defined as "pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR §10.21). The MBTA prohibits taking, selling, or other activities that would harm migratory birds, their eggs or nests, unless the Secretary of the Interior authorizes such activities under a special permit. Contact U.S. Fish and Wildlife, as needed, regarding this issue. Information on this requirement is available at 50 CFR Part 21.

8.1f. Pursuant to Executive Order 13112, Invasive Species, of February 3, 1999, Federal agencies whose actions may affect the status of invasive species (alien species whose introduction does or is likely to cause economic or environmental harm to human health) are directed to use relevant programs and authorities, to the extent practicable and subject to available resources, to prevent the introduction of invasive species, and provide for restoration of native species and habitat conditions in ecosystems that have been invaded. Agencies are not to carry out actions that they believe are likely to cause or promote the introduction or spread of invasive species unless the benefits of such actions clearly outweigh the potential harm, and all feasible and prudent measures to minimize risk of harm should be taken in conjunction with the actions.

8.1g. The Presidential Memorandum on Economically and Environmentally Beneficial Landscaping encourages the use of native plants at Federal facilities and in federally funded landscaping projects. In addition, FAA Advisory Circular 150/5200-33, Hazardous Wildlife Attractants on or near Public Use Airports, recommends that a wildlife management biologist review landscaping plans for airports to minimize attracting hazardous wildlife (i.e., wildlife commonly associated with wildlife-aircraft strikes) to aircraft movement areas.

8.1h. Also, it is the policy of the FAA, consistent with NEPA and the CEQ regulations, to encourage the use of a systematic, interdisciplinary approach that integrates ecological, economic, and social factors during the decisionmaking process. The goals of this approach are to restore and maintain the health, sustainability (i.e., doing things today to protect tomorrow's environment), and biological diversity of ecosystems, while supporting sustainable economies and communities (i.e., economies and community activities that consider the environmental needs of succeeding generations). Actions should reflect sensitivity to regional ecological and economic needs and support FAA's mission to ensure aviation safety. An ecosystem approach emphasizes: (1) ensuring that all relevant and identifiable ecological and economic consequences, both long- and short-term, are considered; and (2) improving coordination among Federal agencies.

8.1i. In accordance with 40 CFR 1507.2(e), 1508.8(b) and 1508.27, the CEQ guidance on incorporating biodiversity considerations into environmental impact analyses under the National Environmental Policy Act requires Federal agencies to consider the effects of Federal actions on

biodiversity to the extent that is possible to both anticipate and evaluate those effects. The guidance outlines the general principles and discusses the importance of context -- that is, examining the indirect, direct, and cumulative impacts of a specific project in the regional or ecosystem context.

8.1j. In addition, the MOU on Using an Ecosystem Approach in Agency Decision-making requires FAA to participate, as appropriate to its mandates, in ecosystem management efforts initiated by other Federal agencies, by state or local governments, Tribes, or as a result of local grass-roots efforts. The ecosystem approach, consistent with the requirements in NEPA to use ecological information, emphasizes consideration of all relevant and identifiable ecological and economic consequences both long term and short term; coordination among Federal agencies; partnership; communication with the public; efficient and cost-effective implementation; use of best available science; improved data and information management, and responsiveness to changing circumstances.

8.1k. Permits/Certificates: Various wildlife statutes, such as the Marine Mammal Protection Act, require permits, or the Endangered Species Act requires issuance of a Biological Opinion, if an action may affect a Federally-protected species. An incidental take permit may be required with a no jeopardy/adverse modification biological opinion issued by FWS under the ESA.

8.2 FAA RESPONSIBILITIES.

8.2a. Coordination is to be initiated with the FWS or NMFS, as appropriate, pursuant to the ESA for Federally listed endangered, threatened, and candidate species or designated critical habitat, and, pursuant to the Fish and Wildlife Coordination Act where there is a potential impact on water resources with the Services as well as other Federal, State, and local agencies and Tribes having administration over fish, wildlife, and plant resources. FAA will integrate this coordination with the NEPA process to make these reviews more efficient and effective. For Federally listed, proposed, and candidate species and listed and proposed critical habitat, this initial step is known as initiation of consultation and triggers the ESA section 7(d) prohibition on irreversible or irretrievable commitment of resources.

8.2b. Letters will be obtained from these officials on the possible effects of the proposal on these resources and possible mitigation measures. The letters from the appropriate officials will provide an indication of the potential for substantial damage to water resources and harm to wildlife attributable to the proposal, if applicable.

8.2c. As appropriate, the responsible FAA official shall ensure that consultation and coordination with wildlife management specialists from the U.S. Department of Agriculture's Wildlife Service or other qualified wildlife biologists has occurred. These efforts shall focus on proposed activities, including mitigation efforts, to prevent creating wildlife-aircraft hazards or exacerbating existing ones. (Refer to Section 18.2 of this appendix of this order for further information.)

8.2d. Biological Assessments: A biological assessment (BA) is defined as information prepared by, or under the direction of, a Federal agency to determine whether a proposed action is likely to: (1) adversely affect listed species or designated critical habitat; (2) jeopardize the continued existence of species that are proposed for listing; or (3) adversely modify proposed critical habitat. BA's are mandatory for "major construction activities." (See 50 CFR 402.12(b).) BA's are not required to analyze alternatives to proposed actions. The recommended contents of a BA are found at 50 CFR 402.12(f). For other types of proposed actions, the Federal agency must provide the Services with the information the Federal agency used in evaluating the likely effects of the action. The FAA need not initiate formal consultation with the Services if, as a result of preparation of a BA, or as a result of informal consultation with the Services, the FAA determines that the proposed action is not likely to adversely affect any listed species or critical habitat (see 50 CFR 402.14).

8.2e. Informal consultation under ESA section 7: Informal consultation is a process that includes all discussions, correspondence, etc., between the Services and the FAA or its designated non-Federal representative. It is designed to assist Federal agencies in determining whether formal consultation or a conference is required. If, during formal consultation, it is determined by the FAA, with written concurrence of the Service, that a proposed action is not likely to adversely affect listed species or critical habitat, the consultation process is terminated and no further action is necessary. During informal consultation, the Service may suggest modifications to the proposed action that FAA could implement to avoid the likelihood of adverse effects to listed species or critical habitat.

8.2f. Formal consultation under ESA section 7(a)(2): For Federally listed threatened and endangered species and Federally designated critical habitat, formal consultation with FWS or NMFS under section 7(a)(2) of the ESA is triggered when: (1) the FAA determines that the proposed action "may affect" Federally listed species or designated critical habitat, unless the FWS or NMFS concur in writing that the proposed action is not likely to adversely affect any listed species or critical habitat, or (2) the FWS or NMFS does not concur with the agency's determination that the proposed action is not likely to adversely affect Federally listed species or designated critical habitat. Formal consultation is concluded when FWS or NMFS issues a Biological Opinion, which will either be a No Jeopardy/Adverse Modification Opinion, including an incidental take statement), or a Jeopardy/Adverse Modification Opinion.

8.2g. Biological Opinion: If a Biological Opinion states that the proposed action is not likely to jeopardize the continued existence of Federally listed threatened or endangered species in the affected area or results in the destruction or adverse modification of Federally designated critical habitat in the affected area, it is a No Jeopardy/Adverse Modification Opinion. An incidental take statement included in this opinion may provide one or more reasonable and prudent measures, with associated terms and conditions, to minimize the level of incidental take. If a Biological Opinion determines that the proposed action is likely to jeopardize the species or adversely modify critical habitat (a Jeopardy/Adverse Modification Opinion), it will include nondiscretionary reasonable and prudent alternatives. Formal consultation may be reinitiated when the amount or extent of incidental take is exceeded; new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously

considered; the action is modified in a manner causing effects to listed species or critical habitat not previously considered; or a new species is listed or critical habitat is designated that may be affected by the action.) (See 50 CFR 402.14 for further guidance on formal consultation.)

8.2h. Conference under ESA section 7(a)(4): The conference process is designed to assist in identifying and resolving any potential conflicts with proposed species early in the planning process. If the proposed action is likely to adversely affect Federally proposed species or critical habitat, then conference is required for Federally proposed species and Federally proposed critical habitat. If a proposed action will affect both listed and proposed species (or both designated and proposed critical habitat), the conference can be incorporated into the formal consultation process. Conference can be useful in later expediting the consultation process when a proposed species is listed or proposed critical habitat is designated. The FWS or NMFS may offer conservation recommendations during consultations, which describe suggested discretionary conservation actions (see 50 CFR 402.02 and 402.14(j)).

8.2i. Other statutes: Other statutes, such as the Marine Mammal Protection Act, may also apply depending upon the circumstances.

8.2j. For species not Federally listed as threatened or endangered and habitats not Federally designated as critical under the ESA:

(1) The FWS, NMFS, or other Federal or State agency or Tribe responsible for protecting wildlife where there is an impact on a water resource indicate that the impacted area is human-dominated, or the impact is transient in nature, or the alteration would not result in a long-term or permanent loss of wildlife or water resources.

(2) If, after these efforts, significant impacts are unavoidable, then the responsible FAA official conducts further consultation and analysis with the Services and other Federal, State, Tribal, or local officials in the preparation of the EIS.

8.3 SIGNIFICANT IMPACT THRESHOLDS. A significant impact to Federally-listed threatened and endangered species would occur when the FWS or NMFS determines that the proposed action would be likely to jeopardize the continued existence of the species in question, or would result in the destruction or adverse modification of Federally-designated critical habitat in the affected area. The involvement of Federally listed threatened or endangered species and the possibility of impacts as potentially serious as extinction or extirpation, or destruction or adverse modification of designated critical habitat, are factors weighing in favor of a finding of significance. However, an action need not involve a threat of extinction to Federally listed species to meet the NEPA standard of significance. Lesser impacts including impacts on non-listed species could also constitute a significant impact. In consultation with agencies and organizations having jurisdiction or special expertise concerning the protection and/or management of the affected species, NEPA practitioners should consider factors affecting population dynamics and sustainability for the affected species such as reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), and the minimum population levels required for population maintenance. Relevant information may be

obtained from State and local wildlife management agencies and the scientific literature concerning wildlife management (e.g., USDA National Wildlife Research Center library).

8.4 ANALYSIS OF SIGNIFICANT IMPACTS.

8.4a. General. The FAA will, using the NEPA process for efficiency, coordinate with the Services, other Federal, State, or local wildlife agencies, Tribes, and others as necessary to assess the potential impacts. If the proposed action affects water resources and thereby triggers the Fish and Wildlife Coordination Act, then the FAA considers the recommendations of the FWS, NMFS, other Federal agencies, and the State or Tribal wildlife agency and assures that further detailed analysis is performed. This may include:

(1) Use of aerial photographs and field reconnaissance.

(2) Determining the significance of impacted habitats including the importance and range of fauna and flora and the location of nesting and breeding areas.

(3) A more detailed analysis of other impact areas (e.g., noise, air quality, water quality).

8.4b. Federally listed threatened and endangered species and Federally designated critical habitat. For Federally listed threatened and endangered species and Federally designated critical habitats, the FAA forwards to the Services the BA as required for major construction activities or supporting information as needed for other types of proposed actions with a request to initiate formal consultation under section 7(a)(2) of the ESA. The BA may be incorporated by reference or included in an EA. If the FAA accepts an alternative proposed by the FWS or the NMFS or proposes another acceptable alternative, the FAA also may conclude that impacts are not significant. If neither of the above apply, the potential impact is considered significant (see section 8.3 for other factors to consider when determining the significance of effects on affected species). In scoping the preparation of an EIS, the FAA requests the Services to be cooperating agencies on the basis of their jurisdiction. Further detailed analysis may consider:

(1) Further mitigation measures or action modifications.

(2) Further biological assessment.

(3) If the FWS or NMFS issues a Jeopardy/Adverse Modification Opinion, FAA may not proceed with the action unless the project is modified sufficiently to enable the Services to issue a No Jeopardy/Adverse Modification Opinion, or the action is exempted under 50 CFR part 451.

SECTION 9. FLOODPLAINS

Statute	Regulation	Oversight Agency
Executive Order 11988, Floodplain Management, May 24, 1977 (42 FR 26951) Appropriate State and local construction statutes	Order DOT 5650.2, Floodplain Management and Protection Federal Emergency Management Agency "Protecting Floodplain Resources: A Guidebook for Communities," 1996	Federal Aviation Administration Federal Emergency Management Agency Appropriate State and local agencies

9.1 REQUIREMENTS. Executive Order 11988 directs Federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Order DOT 5650.2 contains DOT's policies and procedures for implementing the executive order. Agencies are required to make a finding that there is no practicable alternative before taking action that would encroach on a base floodplain based on a 100-year flood (7 CFR 650.25).

9.2 FAA RESPONSIBILITIES.

9.2a. The responsible FAA official will consult with State and local officials to determine the boundaries of floodplains near the site of the action. The Federal Emergency Management Agency (FEMA) maps are the primary reference for determining the extent of the base floodplain. If a floodplain designation is in question, FEMA or the Army Corps of Engineers will be contacted for information.

9.2b. If the proposed action and reasonable alternatives are not within the limits of, or if applicable, the buffers of a base floodplain, a statement to that effect should be made. No further analysis is needed.

9.2c. If the agency finds that the only practicable alternative requires siting in the base floodplain, a floodplain encroachment would occur and further environmental analysis is needed. The FAA shall, prior to taking the action, design or modify the proposed action to minimize potential harm to natural floodplain values or within the base floodplain. The action is to be consistent with regulations issued according to section 2(d) of E.O. 11988. The FAA shall also provide the public with an opportunity to review the encroachment through its public involvement process and any public hearing presentations shall include identification of encroachment.

9.2d. A floodplain finding is required in cases of significant encroachment. This finding confirms that there is no practicable alternative to placing the project in the floodplain and that

all measures to minimize harm will be included in the project. (see sec. 2a of E.O. 11988, Floodplain Management; dated May 24, 1977 [42 FR 26951])

9.2e. When property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-Federal public or private parties, the FAA shall (1) reference in the conveyance those uses that are restricted under identified Federal, State, or local floodplain regulations; and (2) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successors , except where prohibited by law; or (3) withhold such properties from conveyance.

9.2f. FAA's analysis shall also indicate if the encroachment would be a "significant encroachment," that is, whether it would cause one or more of the following impacts:

(1) The action would have a high probability of loss of human life.

(2) The action would likely have substantial, encroachment-associated costs or damage, including interrupting aircraft service or loss of a vital transportation facility (e.g., flooding of a runway or taxiway; important navigational aid out of service due to flooding, etc.); or

(3) The action would cause adverse impacts on natural and beneficial floodplain values.

9.2g. If one or more of the alternatives under consideration includes significant floodplain encroachments, then any public notices, notices of opportunity for public hearing, public hearing notices, and notices of environmental document availability, shall note that fact.

9.2h. When flood storage is displaced, the analysis should consider compensatory floodwater storage impacts on upstream property, or how that storage could affect aquatic or other biotic systems. Development project not causing higher flood elevations or altering flood storage could adversely affect beneficial or natural floodplain values.

9.2i. Actions outside a base floodplain may adversely affect natural and beneficial floodplain resources. Consider impacts on natural and beneficial floodplain values, water pollution, increased runoff from impermeable surfaces, changes in hydrologic patterns, or induced secondary development. Mitigation to minimize such impacts is needed to comply with the applicable regulations. This mitigation may include: committing to comply with special flood-related design criteria; elevating facilities above the base flood elevation; or minimizing fill placed in floodplains.

9.3 SIGNIFICANT IMPACT THRESHOLDS. Floodplain impacts would be significant pursuant to NEPA if it results in notable adverse impacts on natural and beneficial floodplain values. Mitigation measures for base floodplain encroachments may include committing to special flood related design criteria, elevating facilities above base flood level, locating nonconforming structures and facilities out of the floodplain, or minimizing fill placed in floodplains.

9.4 ANALYSIS OF SIGNIFICANT IMPACTS.

9.4a. When the FAA prepares an EIS addressing significant impacts in this category, Federal, State, or local agencies with floodplain jurisdiction and expertise may become cooperating agencies. Further analysis includes the following as applicable to the action:

(1) Further consideration of the practicability of any alternatives.

(2) Inclusion of all practicable measures in the design of the proposal to minimize harm and to restore and preserve the natural and beneficial floodplain values affected. Commitments to later compliance with special flood related design criteria or the imposition, in advance, of protective conditions may be warranted in some situations.

(3) Evidence that the action conforms to applicable State and local floodplain protection standards.

SECTION 10. HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

Statute	Regulation	Oversight Agency
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (as amended by the Superfund Amendments and Reauthorization Act of 1986 and the Community Environmental Response Facilitation Act of 1992) [42 U.S.C. 9601-9675]	40 CFR parts 300, 311, 355, and 370	Environmental Protection Agency
Pollution Prevention Act of 1990 [42 U.S.C. 1310-1319]	CEQ Memorandum on Pollution Prevention and the National Environmental Policy Act, January 12, 1993 (58 FR 6478)	Council on Environmental Quality Environmental Protection Agency
Toxic Substances Control Act of 1976, as amended (TSCA) [15 U.S.C. 2601-2692] [PL 94-469]	40 CFR parts 761 and 763	Environmental Protection Agency
Resource Conservation and Recovery Act of 1976 (RCRA) [PL 94-580, as amended by the Solid Waste Disposal Act of 1980 (SWDA), PL 96-482, the Hazardous and Solid Waste Amendments of 1984, PL 98-616, and the Federal Facility Compliance Act of 1992, (FFCA) PL 103-386] [42 U.S.C. 6901-6992(k)]	40 CFR parts 240-280	Environmental Protection Agency
Executive Order 12088, Federal Compliance with Pollution Control Standards, October 13, 1978 (43 FR 47707), amended by Executive Order 12580, January 23, 1987 (52 FR 2923) January 29, 1987		Environmental Protection Agency
Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements (58 FR 41981, August 3, 1993)		Environmental Protection Agency
Executive Order 12580, Superfund Implementation, amended by Executive Order 13016 and 12777		

10.1 REQUIREMENTS.

10.1a. Four primary laws have been passed governing the handling and disposal of hazardous materials, chemicals, substances, and wastes. The two statutes of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the Resource Conservation and Recovery Act (RCRA) (as amended by the Federal Facilities Compliance Act of 1992) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA or Superfund) and the Community Environmental Response Facilitation Act of 1992. RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for consultation with natural resources trustees and cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

10.1b. E.O. 12088, as amended, directs Federal agencies to: comply with "applicable pollution control standards," in the prevention, control, and abatement of environmental pollution; and consult with the EPA, State, interstate, and local agencies concerning the best techniques and methods available for the prevention, control, and abatement of environmental pollution. For construction or operation of FAA facilities outside the United States, the FAA must ensure that such construction or operation complies with the environmental pollution control standards of general applicability in the host country or jurisdiction.

10.1c. Executive Order 12580, Superfund Implementation amended by Executive Order 13016 and 12777 delegates most response authorities to EPA and USCG for abatement. Agencies must participate in response teams with opportunity for public comment before removal action is taken.

10.1d. FAA actions to fund, approve, or conduct an activity may require consideration of hazardous material, pollution prevention, and solid waste impacts in NEPA documentation. NEPA documents prepared in support of project development should include an appropriate level of review regarding the hazardous nature of any materials or wastes to be used, generated, or disturbed by the proposed action, as well as the control measures to be taken. The CEQ Memorandum on Pollution Prevention and the National Environmental Policy Act encourages early consideration, for example, during scoping, of opportunities for pollution prevention. FAA should, to the extent practicable, include pollution prevention considerations in the proposed action and its alternatives; address pollution prevention in the environmental consequences section; and disclose in the record of decision the extent to which pollution was considered. A discussion of pollution prevention may also be appropriate in an EA. Consideration of these issues in evaluating the effects of proposed actions should begin with an understanding of the following three terms:

(1) Hazardous Material – any substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce (49 CFR part 172, table 172.101). This includes hazardous substances and hazardous wastes.

(2) Hazardous Waste – a waste is considered hazardous if it is listed in, or meets the characteristics described in 40 CFR part 261, including ignitability, corrosivity, reactivity, or toxicity.

(3) Hazardous Substance – any element, compound, mixture, solution, or substance defined as a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and listed in 40 CFR part 302. If released into the environment, hazardous substances may pose substantial harm to human health or the environment.

10.2 FAA RESPONSIBILITIES.

10.2a. The FAA must comply with applicable pollution control statutes and requirements that may include, but may not be limited to, those listed in Appendix 2 of Order 1050.10B, Prevention, Control, and Abatement of Environmental Pollution at FAA Facilities.

10.2b. In accordance with Order 1050.19, Environmental Due Diligence Audits in the Conduct of FAA Real Property Transactions, an Environmental Due Diligence Audit (EDDA) shall be conducted to evaluate subject properties for potential hazardous substances contamination that could result in future FAA liabilities.

10.2c. FAA actions to fund or approve airport layout plans for terminal area development may also require consideration of solid waste impacts in NEPA documentation. A preliminary review should indicate if the projected quantity or type of solid waste generated or method of collection or disposal will be appreciably different than would be the case without the action. Special attention shall be given to the control of hazardous waste.

10.2d. NEPA documents should include appropriate information as described below.

(1) The environmental document should demonstrate that the FAA (or applicant as appropriate) has determined whether hazardous wastes as defined in 40 CFR part 261 (RCRA) will be generated, disturbed, transported or treated, stored or disposed, by the action under consideration. If so, management of these wastes is regulated by 40 CFR parts 260-280 and transportation is governed by 49 CFR parts 171-199. To the extent that the existence of hazardous wastes affects phasing of project construction, analysis of alternatives and consideration of mitigation measures, the means for compliance with applicable regulations must be discussed. It may be helpful to briefly discuss the means for compliance with applicable regulations in the NEPA documentation. For example, operators of activities that would cause hazardous waste must obtain a RCRA hazardous waste generator identification number from EPA or an authorized State. It should also demonstrate that the FAA or applicant has considered pollutant prevention and control in accordance with EO 12088.

(2) The document should analyze alternatives considering applicable permitting requirements, and in the case of direct actions or funding, Federal and State guidelines and

regulations on procurement of recycled or recyclable productions, the source separation and recycling of recyclable products and solid waste storage, transport, or disposal.

(3) The document should analyze the cost and feasibility of alternatives regarding the avoidance or use of hazardous materials, hazardous wastes, recycled materials, recyclable products, and any related need for permits, remediation, storage, transport, or disposal.

(4) The document should indicate the presence of any sites within the action area listed or under consideration for listing on the National Priorities List (NPL) established by EPA in accordance with CERCLA. NEPA documentation should include a discussion of the impact of any NPL or NPL candidate sites on the action and/or impacts of the action on any NPL or NPL candidate sites. NEPA documentation should also identify sites in the vicinity that have been designated RCRA Solid Waste Management Units (SWMU's) and that may impact or be impacted by the action.

(5) The NEPA documentation should reflect that consultation with the appropriate State agency (or EPA) has been initiated. If a formal agreement has been reached, it should be included in the document itself or incorporated by reference, as appropriate. In many cases, construction may not commence until a formal agreement between the FAA (or action sponsor) and the State agency (or EPA) has been executed.

(6) The NEPA documentation, i.e., FONSI, EIS, Record of Decision, and FAA construction contracts should include a provision that in the event previously unknown contaminants are discovered during construction, or a spill occurs during construction, work should stop until the National Response Center (NRC) is notified. The NRC number is (800) 424-8802.

10.3 ANALYSIS OF SIGNIFICANT IMPACTS.

10.3a. Generally, additional information or analysis is needed only if problems are anticipated with respect to meeting the applicable local, State, Tribal, or Federal laws and regulations on hazardous or solid waste management. Additional data needed may include results of any further consultation with affected agencies and measures to be taken to minimize the impacts. Disposal that would adversely affect water quality or other environmental resources may be discussed under those sections of the environmental analysis addressing affected resources, with the hazardous material section cross-referencing those sections.

10.3b. Actions that involve property listed (or potentially listed on) the NPL are considered significant pursuant to NEPA by definition. In other cases, only an unresolved issue may warrant an EIS. NPL sites usually encompass relatively large areas, such as an entire military base, an electric power generation facility, or even a dumping ground of several million used automobile tires. Not all of the physical grounds within the boundaries of an NPL site are contaminated, which leaves space for siting a facility on "clean" land within the boundaries of an NPL site. If an FAA action involves acquiring property on an NPL site, by definition, it normally is considered a major action with significant impacts. Both FAA NEPA and EDDA guidance

require consideration of exposure to hazardous materials and minimizing further contaminant releases through pollution prevention design when siting on or near contaminated properties. These considerations warrant thorough NEPA environmental analysis. However, an EIS is not necessarily required. Chapter 4, paragraph 405g, of this order allows for mitigating impacts to thresholds below significance, such as siting on “clean” grounds within contaminated properties or NPL sites. Therefore, if appropriately mitigated, acquisition of land within the boundaries of an NPL site does not always have to be viewed as a major action with significant impacts.

10.3c. The cost and feasibility of any necessary remediation of hazardous waste contamination should be considered and for guidance on considering existing environmental contamination issues associated with proposed actions to acquire land consult Order 1050.19.

10.3d. For guidance on design, construction, and operational compliance of FAA facilities with pollution control statutes, the most current version of the following FAA orders should be consulted:

(1) Order 1050.10, Prevention, Control, and Abatement of Environmental Pollution at FAA Facilities.

(2) Order 1050.14, Polychlorinated Biphenyls (PCB) in the National Airspace System.

(3) Order 1050.15, Underground Storage Tanks at FAA Facilities.

(4) Order 1050.18, Chlorofluorocarbons and Halon Use at FAA Facilities.

10.3e. NPL sites, EPA National Priorities List of Superfund sites requiring priority cleanup under the Superfund Program, usually encompass relatively large areas, such as an entire military base, an electric power generation facility or even a dumping ground of several million used automobile tires. Not all of the physical grounds within the boundaries of an NPL site are contaminated, which leaves space for siting a facility on "clean" land within the boundaries of the NPL site. If an FAA action involves acquiring property on an NPL site, it is normally considered a major action with significant impacts. Both FAA NEPA and EDDA guidance require consideration of exposure to hazardous materials and minimizing further contaminant releases through pollution prevention design when siting on or near contaminated properties. These considerations warrant thorough NEPA environmental analysis. However, an EIS is not necessarily required.

10.3f. Chapter 4, paragraph 405g (mitigation) allows for mitigating impacts to thresholds below significance, such as siting on "clean" grounds within contaminated properties or NPL sites. Therefore, appropriately mitigated, acquisition of land within the boundaries of an NPL site does not always have to be viewed as a major action with significant impacts.

10.3g. "Would this require an EIS for ALP approval covering land on the NPL?" This depends on whether or not the actual ground needed is contaminated or just within the boundaries of the NPL site. If it is "clean" land within the boundaries an EIS is not required. If

some contamination is present, then mitigation to minimize exposure and further releases should be prepared, and the cost of remediation to both the FAA and the Airport Sponsor should be considered. However, if the magnitude of remediation and costs are significant, then preparation of an EIS is justified.

SECTION 11. HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

Statute	Regulation	Oversight Agency
Laws Governing National Historic Preservation Programs, National Natural Landmarks, and National Historic Landmarks:		
National Historic Preservation Act of 1966, as amended, including Executive Order 11593, Protection and Enhancement of the Cultural Environment (36 FR 8921, May 13, 1971) [16 U.S.C. 470, 470 note] [PL 102-575 (1992)]	36 CFR parts 60 (National Register of Historic Places (NRHP)), 61 (State and Local Preservation Programs), 62.1 (National Natural Landmarks), 63 (NRHP), 65, 65.1 (National Historic Landmarks), 68 (standards), 73 (World Heritage Program), 78 (waiver of Federal agency section 110 responsibilities), 79 (curation) and 800 (consultation), as revised (65 FR 77697; December 12, 2000, effective January 1, 2001)	National Park Service, various offices Advisory Council on Historic Preservation State Historic Preservation Officer Tribal Historic Preservation Officer
Laws Governing the Federal Archeology Program:		
Antiquities Act of 1906 [16 U.S.C. 431, 432, 433] [PL 59-209 (1906)]	43 CFR part 3 25 CFR part 261	Department of Interior, National Park Service
Archaeological and Historic Preservation Act of 1974, as amended [16 U.S.C. 469-469c] [PL 89-665]	Guidelines for Archeology and Historic Preservation: Standards and Guidelines (DOI) (48 FR 44716, September 29, 1983) 36 CFR part 68	Departmental Consulting Archeologist and Archeological Assistance Program, National Park Service
Archaeological Resources Protection Act of 1979, as amended [16 U.S.C. 470aa-470mm] [PL 96-95 (1979)]	43 CFR parts 3 and 7 36 CFR part 79 25 CFR part 262 Federal Archeological Preservation Strategy	Departmental Consulting Archeologist and Archeological Assistance Program, National Park Service
Native American Graves Protection and Repatriation Act of 1990 [25 U.S.C. 3001] [PL 101-601 (1990)]	43 CFR part 10 25 CFR 262.8	Departmental Consulting Archeologist and Archeological Assistance Program, National Park Service

Statute	Regulation	Oversight Agency
Other Major Federal Historic and Cultural Resource Preservation Laws and Executive Orders		
American Indian Religious Freedom Act of 1978 [42 U.S.C. 1996, 1996 note] [PL 95-341 (1978)]	43 CFR 7.7 and 7.32 25 CFR 262.7	
Department of Transportation Act [49 U.S.C. 303]		Department of Transportation
Public Building Cooperative Use Act of 1976 [40 U.S.C. 601(a), 601(a)(1), 606, 611(c), 612(a)(4)] [PL 94-541]	41 CFR parts 101-17, 101-17.002(l), (m), (n) (rural areas), 101.17.002(i)(2) (urban areas), and 101-19	General Services Administration
Executive Order 13006, Locating Federal Facilities on Historic Properties in Our Nation's Central Cities (61 FR 26071, May 24, 1996)		Advisory Council on Historic Preservation
Executive Order 13007, Indian Sacred Sites (61 FR 26771, May 29, 1996)		Assistant to the President for Domestic Policy
Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (65 FR 67249, November 9, 2000), and the Presidential Memorandum of April 29, 1994, Government-to-government Relations with Native American Tribal Governments.		
Executive Order 11593, Protection and Enhancement of the Cultural Environment (36 FR 8921, May 13, 1971) (16 U.S.C. 470 note)		Advisory Council on Historic Preservation

11.1 REQUIREMENTS.

11.1a. The National Historic Preservation Act (NHPA) of l966, as amended, establishes the Advisory Council on Historic Preservation (ACHP) and the National Register of Historic Places (NRHP) within the National Park Service (NPS). Section 110 governs Federal agencies responsibilities to preserve and use historic buildings; designate an agency Federal Preservation Officer (FPO); identify, evaluate, and nominate eligible properties under the control or jurisdiction of the agency to the National Register. Section 106 requires Federal agencies to consider the effects of their undertaking on properties on or eligible for inclusion in the NRHP; Compliance with section 106 requires consultation with the ACHP, the State Historic

Preservation Officer (SHPO), and/or the Tribal Historic Preservation Officer (THPO) if there is a potential adverse effect to historic properties on or eligible for listing on the National Register of Historic Places. Consultation on preservation-related activities may also occur with other Federal, State, and local agencies, Tribes, Native Hawaiian organizations, the private sector, and the public. Section 112 addresses professional standards. Section 314 discusses confidentiality requirements that may apply to an undertaking.

11.1b. The Archeological and Historic Preservation Act of l974 provides for the preservation of historic American sites, buildings, objects, and antiquities of national significance by providing for the survey, recovery, and preservation of historical and archeological data which might otherwise be destroyed or irreparably lost due to a Federal, Federally licensed, or Federally funded action. The DOI's Standards and Guidelines (48 FR 44716, September 29, 1983) advise Federal agencies on implementation of this law.

11.1c. The Archaeological Resources Protection Act (ARPA) prohibits unauthorized excavation of archaeological resources on Federal or Indian lands, establishing standards for permissible excavation by permit. ARPA requires federal agencies to identify archaeological sites on federal lands.

11.1d. The Native American Graves Protection and Repatriation Act (NAGPRA) deals with the disposition of cultural items, including human remains, by a Federally funded repository. Additionally, NAGPRA governs the inadvertent discovery of cultural items on Federal or Tribal lands. It provides for the inventory, protection and return of cultural items to affiliated Tribes. NAGPRA requires ARPA permits, as well as consultation with Tribes, for intentional excavation and removal of cultural items from Federal or Tribal lands. Its regulations include provisions that, upon inadvertent discovery, the federal agency will cease all activity in the area of discovery, protect the discovered items, and immediately notify the affected Tribe. Disposition of the items, which will include consultation, must then be carried out in accordance with NAGPRA procedures. For additional information on consultation, see the ACHP's policy statement of June 11, 1993, on Consultation with Native Americans Concerning Properties of Traditional Religious and Cultural Importance.

11.1e. The Antiquities Act of 1906 was the first general law providing protection for archeological resources, yet its permitting and prosecution sections have essentially been superseded by ARPA. It authorizes the President to declare areas of public lands as national monuments and to reserve or accept private lands for that purpose.

11.1f. The Historic Sites Act of 1935 declares as national policy the preservation for public use of historic sites, buildings, objects, and properties of national significance. It gives the Secretary of the Interior authority to make historic surveys, to secure and preserve data on historic sites, and to acquire and preserve archeological and historic sites. This act also establishes the National Historic Landmarks program for designating properties having exceptional value in commemorating or illustrating the history of the United States. It gives the Secretary of the Interior broad powers to protect nationally significant historic properties, including the Secretary's authority to establish and acquire nationally significant historic sites.

11.1g. The American Indian Religious Freedom Act of 1978 requires consultation with Native American groups concerning proposed actions on sacred sites or affecting access to sacred sites. It establishes Federal policy to protect and preserve for American Indians, Eskimos, Aleuts, and Native Hawaiians their right to free exercise of their religion. It allows these peoples to access sites, use and possess sacred objects, and freedom to worship through ceremonial and traditional rites. In practical terms, the act requires Federal agencies to consider the impacts of their actions on religious sites and objects that are important to Native Americans, including Alaska Natives, and Native Hawaiians, regardless of the eligibility for the National Register of Historic Places.

11.1h. The Public Building Cooperative Use Act of 1976, along with NEPA and NHPA, encourages the acquisition and use of space in suitable buildings of historic, architectural, or cultural significance. The associated regulations provide procedures for implementing this goal in urban and rural areas.

11.1i. Executive Order 13006, Locating Federal Facilities on Historic Properties in Our Nation's Central Cities, requires Federal agencies, when operationally appropriate and economically prudent, to use and maintain historic properties and districts, especially those located in central business areas and to give first consideration when locating Federal facilities to historic properties within historic districts, then developed or undeveloped sites within historic districts, and lastly to historic properties outside of historic districts. Any rehabilitation or construction that is undertaken must be architecturally compatible with the character of the surrounding historic district or properties**.**

11.1j. Executive Order 13007, Indian Sacred Sites, applies to Federal agencies that manage Federal lands, defined as "any land or interests in land owned by the United States, including leasehold interests held by the United States, except Indian trust lands. Agencies, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, must: (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners; and (2) avoid adversely affecting the physical integrity of such sacred sites. Agencies shall maintain the confidentiality of sacred sites by virtue of their established religious significance to, or ceremonial use by, an Indian religion; provided the Tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site. The responsible FAA official should consult the provisions in Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (65 FR 67249, November 9, 2000), and the Presidential Memorandum of April 29, 1994, Government-to-government Relations with Native American Tribal Governments. Agencies are required, in formulating policies significantly or uniquely affecting Tribes, to be guided, to the extent permitted by law, by principles of respect for Tribal self-government and sovereignty, for Tribal treaty and other rights, and for responsibilities that arise from the unique legal relationship between the Federal Government and Tribes. The EO requires Federal agencies to consult on a government-to-government basis with Tribes. This provides meaningful and timely input in development of regulatory policies on matters that significantly or uniquely affect their communities (see

63 FR 27655, May 19, 1998). Additional information may be obtained from the FAA Federal Preservation Officer.

11.1k. Executive Order 11593, Protection and Enhancement of the Cultural Environment (36 FR 8921, May 13, 1971; reprinted in 16 U.S.C. 470 note), and Order DOT 5650.1, Protection and Enhancement of the Cultural Environment, November 20, 1972, require that Federal plans and programs contribute to the preservation and enhancement of sites, structures, and objects of historic, architectural, or archaeological significance.

11.2 FAA RESPONSIBILITIES.

11.2a. **Consultation**. The SHPO/THPO and other appropriate sources must be consulted for advice early in the environmental process. See 36 CFR part 800 which governs the section 106 consultation process under NHPA and encourages coordination between section 106 and other statutes and with environmental and planning reviews under State or local ordinances. (Undertakings that have the potential to significantly affect historic properties pursuant to NEPA constitute an extraordinary circumstance requiring an EA even if the project normally qualifies as a categorical exclusion under NEPA. Findings of no historic properties present or affected, or no historic properties adversely affected, under NHPA section 106 support determinations of no use (either constructive or physical) under section 4(f) of the DOT Act). Findings of adverse effects do not automatically trigger section 4(f), unless the effects substantially impair the affected resource's historical integrity. See also specific requirements in 36 CFR part 800 and ACHP guidance for public involvement during the consultation process.

11.2b. **Determination of Undertaking**. The responsible FAA official determines whether the proposed action is an "undertaking," as defined in 36 CFR 800.16(y) (and not an undertaking that is merely subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency), and whether it is a type of activity that has the potential to cause adverse effects on historic properties eligible for or listed on the NRHP. If the agency determines, and the SHPO/THPO does not object, that an undertaking does not have the potential to have an effect on historic properties, a historical or cultural resource survey is not necessary and the FAA may issue a determination that the action has no effect. The first step is to identify the area of potential effect (APE) and the historical or cultural resources within it (see Secretary's Standards and Guidelines for Identification).

11.2c. **Determination of Area of Potential Effect (APE).** It is the FAA's responsibility to determine the APE. This determination is made generally in consultation with the appropriate SHPO(s)/THPO(s). APE means the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties are subsequently identified within the APE. The ACHP and the SHPO/THPO may provide technical advice.

11.2d. **Identification and Evaluation Process**. The FAA or designee must survey the APE to identify properties potentially eligible for or listed on the NRHP. If any eligible or listed property is identified within the area of the proposed action's APE, the ACHP's regulations,

Protection of Historic Properties (36 CFR part 800) will be consulted and followed. Additional information may be obtained from the FAA's Federal (Historic) Preservation Officer in the Office of Environment and Energy and through cultural resources surveys in the APE.

11.2e. **Traditional Cultural Places**. Traditional cultural places (TCP's) may be eligible for listing on the NRHP's and thus may become the subject of section 106 consultation pursuant to 36 CFR part 800 and the National Register Bulletin 38 on "Guidelines for Evaluating and Documenting Traditional Cultural Properties." Bulletin 38 identifies NRHP criteria for determining whether a place qualifies as a TCP under the NHPA. (Other NPS Bulletins are available to assist in identifying other types of historic properties. Many of these are on file with the FAA Federal Preservation Officer in the Office of Environment and Energy.) The FAA may obtain necessary information to apply the criteria by informally consulting. If informal consultation does not resolve issues relating to identification of properties as NRHP eligible or the determination of effect, then the FAA must follow the procedures for identification and analysis outlined in the Secretary of the Interior's Standards and Guidelines.

11.2f. **Protected Tribal Resources.** Protected Tribal Resources are those natural resources, properties, sites, and items of traditional or customary religious or cultural importance, either on or off Indian lands, retained, by, or reserved by or for, Tribes through treaties, statutes, judicial decisions, or executive orders, including Tribal trust resources.

(1) **Indian Sacred Sites**. If the site is an Indian Sacred Site, as defined in Executive Order 13007, regardless of whether it is the subject of section 106 consultation or eligible for the NRHP, the FAA must consult the Tribe under the AIRFA, E.O. 13007, Indian Sacred Sites, and the Executive Memorandum of April 29, 1994, "Government-to-Government Relations With Native American Tribal Governments."

11.2g. **Cultural Items**. If cultural items, as defined by Section 2(3) of NAGPRA, are discovered on Federal or Tribal lands, NAGPRA applies. Various archeological statutes, including ARPA and State, local and Tribal laws and ordinances may also apply. Criminal laws and the need to preserve evidence may also be involved when human remains are found.

11.2h. **Determination of Eligibility**. If the SHPO/THPO concurs with the FAA's determination regarding eligibility of a Traditional Cultural Property or Protected Tribal Resource for inclusion in the NRHP, the consultation moves to the next step. If the SHPO/THPO does not concur, the FAA must seek a determination of eligibility from the Keeper of the NRHP. The Keeper of the NRHP is responsible for issuing formal determination of NRHP eligibility when FAA and the SHPO/THPO can't agree on a resource's eligibility for the National Register. (See also 36 CFR part 63.) Any person can request ACHP review of an agency's findings related to identification of historic properties; evaluation of historic significance; and finding that no historic properties are present. As a result of such a request, the ACHP may request the FAA to seek a formal determination from the Keeper. This is called a "Determination of Eligibility" (DOE).

11.2i. **Other Laws**. If no properties have been identified within the APE, and no resources have been identified that are subject to ARPA, NAGPRA, AIRFA, section 4(f) of the DOT Act, the Archeological and Historic Preservation Act, E.O. 13007, Indian Sacred Sites, or other laws covering specific types of cultural resources, then no further analysis is needed.

11.2j. Effect Findings. A FAA undertaking would affect a property that is on or eligible for inclusion in the NRHP, if the action has the potential to alter the characteristics of the property making it eligible for inclusion in the NRHP. Regulations discussing the various degrees of effect are presented in 36 CFR Parts 800.4(d) and 800.5. Federal agencies can make one of three types of "effects findings" for an action. The level of finding depends upon how severely a project would alter the characteristics of a property that make it eligible for the NRHP. The following sections discuss the three types of Findings: "no properties affected;" "no adverse effect;" and "adverse effect" (see 36 CFR 800.4(d) and 800.5, if necessary for more detailed information). Although the Responsible FAA Official works closely with the SHPO/THPO to determine an effects finding, the FAA is ultimately responsible for that decision, not the SHPO or THPO.

11.2k. Finding of No Historic Properties Affected.

(1) Here, the Responsible FAA official can either determine that no historic properties on or eligible for inclusion in the NRHP are present in the Area of Potential Effect (APE) or that the proposed undertaking will not affect any NRHP properties in the APE. Before making a final decision on the undertaking's effects, the FAA must provide information specified in 36 CFR 800.11(d) to the SHPO/THPO. This information must describe:

(A) the undertaking;

(B) its APE;

(C) FAA efforts to identify historic properties; and

(D) FAA's basis for the finding.

(2) The FAA must also notify all consulting parties of this finding and ensure that the above information is available to them. FAA's responsibilities under Section 106 are complete if the SHPO/THPO does not object to FAA's finding within 30 days after receiving the required information. Use of certified mail or other means capable of providing proof of receipt of material is encouraged to record the date when the 30-day review period began.

11.2l. Finding of No Adverse Effect.

(1) If a NRHP-eligible property occurs within the undertaking's APE and the proposed action may affect the property's historic characteristics, the Responsible FAA Official must apply the criteria of effect listed in 36 CFR 800.5(a). The Official must examine the potential effects in consultation with the SHPO/THPO and any Tribe or Native Hawaiian organization attaching

religious or cultural importance to the identified property. 36 CFR 800.5(a)(3) permits phased assessments of effects when alternatives the agency is considering involve corridors, large land areas, or when access to property is restricted. The FAA Official may propose a "finding of no adverse effect" after determining that the undertaking would not:

(A) physically destroy the property;

(B) alter the property, but, if alterations would occur, they meet the requirements of the Secretary of the Interior's "Standards for Treatment of Historic Properties" (36 CFR part 68);

(C) remove the property from its historic location;
introduce an atmospheric, audible, or visual feature to the area that would diminish the integrity of the property's setting, provided the setting contributes to the property's historical significance; or

(D) through transfer, sale, or lease, diminishes the long-term preservation of the property's historic significance that Federal ownership or control would otherwise ensure.

(2) The FAA Official must provide the SHPO/THPO, any Tribe or Native Hawaiian organization attaching religious or cultural importance to the subject historic property, and all consulting parties with a notice of the proposed finding and the information listed in 36 CFR 800.11(e). This information must:

(A) describe the project and how FAA is involved;

(B) describe the APE;

(C) describe steps taken to identify historic properties;

(D) describe affected historic properties and the characteristics making them NRHP-eligible;

(E) describe the action's effects on historic properties;

(F) provide an explanation of why the adverse affect criteria did not apply; and

(G) contain copies or summaries of views that consulting parties or the public provided.

(3) The SHPO/THPO must provide a response to FAA's proposed finding within 30 days of receiving the finding and all documentation supporting it. If the SHPO/THPO does not reply within the 30-day period, FAA may assume that the SHPO/THPO agrees with the finding and proceed with the action, unless the ACHP is reviewing the finding per 36 CFR 800.5(c)(3).

(4) If the SHPO/THPO disagrees with FAA's finding within the 30-day period, the SHPO/THPO must provide reasons for that objection. FAA must discuss the objection with the SHPO/THPO to resolve it, or ask ACHP to review it. Likewise, if any Tribe or Native Hawaiian organization attaching religious or cultural importance to the subject property objects to the finding within the 30-day period, it must also notify FAA of its objection, explain the reasons for the objections, and ask ACHP to review the FAA's finding. Also, ACHP may, on its own initiative, within the 30-day period, request FAA'

(5) When a finding is submitted to the ACHP upon request of the FAA, the SHPO/THPO, or at the request of the Council, the FAA shall submit the documentation specified in 36 CFR 800.11(e). The Council shall review the finding and notify the FAA of its determination as to whether adverse effect criteria have been correctly applied within 30 days of receiving the documented finding from the FAA. ACHP's opinion on such matters will be advisory and will not require the FAA to proceed to any further step in the review process. If ACHP does not respond within 30 days, FAA may assume ACHP concurrence with its finding.

(6) The FAA Official must maintain a record of this finding and provide information on it when the public requests. However, the FAA Administrator or any public official receiving grant assistance may protect the confidentiality of information per Section 304 of NHPA (see 36 CFR 800.11(c)).

11.2m. Finding of Adverse Effect. If a NRHP-eligible property occurs within the undertaking's APE and the project may alter the property's historic characteristics, the Responsible FAA Official must apply the criteria listed in 36 CFR 800.5(a) to determine the how the action would affect those characteristics. The Official must examine the effects in consultation with the SHPO/THPO and any Tribe or Native Hawaiian organization attaching religious or cultural importance to an identified property. The FAA Official will make a "finding of adverse effect" when the undertaking would:

(1) physically destroy the property;

(2) alter the property so severely that it would not meet the requirements of the Secretary of the Interior's "Standards for Treatment of Historic Properties" (36 CFR part 68);

(3) remove the property from its historic location;

(4) introduce an atmospheric, audible, or visual feature to the area that would diminish the integrity of the property's setting, provided that setting contributes to the property's historical significance; or

(5) through transfer, sale, or lease, diminishes any long-term preservation of a property's historic significance that Federal ownership or control would preserve.

11.2n. Resolving Findings of Adverse Effect. Due to the level of impact on the historic property leading to a "finding of adverse effect," 36 CFR 800.6 requires Federal agencies to try

to find a way to avoid, minimize, or mitigate those impacts. This section summarizes that process (see 36 CFR 800.6 as needed for more detail).

(1) Consultation. Resolution of adverse effects will involve numerous parties having substantial interest in the project. Such consultation is intended to develop and evaluate alternatives or procedures to avoid, minimize, or mitigate the identified adverse effects on the historic property. The following sections discuss those involved in this required consultation.

(A) SHPO/THPO. The FAA Official will consult with the SHPO/THPO due to their duty to protect a state or Tribe's historic resources.

(B) ACHP. The FAA Official must notify the ACHP of the finding of adverse effect and provide a copy of the information listed in 36 CFR 800.11(e) (noted for convenience in section 11.2(l)(2)(A)-(G) above). The notice shall invite ACHP participation: if the Official wishes to involve the ACHP; if the action would adversely affect a National Historic Landmark; or if the FAA prepares a Programmatic Agreement pursuant to 36 CFR 800.14(b)). In addition to FAA's request, any consulting party, Tribe or Native Hawaiian organization may, on its own, request ACHP participation at any time (36 CFR 800.6(a)(ii)). The ACHP must notify FAA and all consulting parties that it will/will not participate in the proceedings within 15 days of receiving the request. If ACHP will participate, it must notify the FAA Administrator and provide the FAA Official and other consulting parties with a written notice that it will do so. In this instance, consultation to resolve effects will include the FAA, SHPO/THPO, ACHP, and any Tribe or Native Hawaiian organization attaching religious or cultural importance to the affected resource.

(C) Tribes and Native Hawaiian organizations. When the affected property is of religious or cultural importance to Tribes or Native Hawaiian organizations, the consultation must include them. These parties must receive information specified in 36 CFR 800.11(e) (in section 11.2(l)(2)(A)-(G) above), unless protected under the confidentiality provisions of 36 CFR 800.11(c).

(D) Other consulting parties. The FAA Official and SHPO/THPO and ACHP, if it is participating, may agree to invite other entities with a substantial interest in the proposed action. The FAA must invite local government officials having jurisdiction over affected areas or a proponent that will assume a specific role or responsibility in the resolving impacts (e.g., an airport sponsor or applicant for a commercial launch license). These parties must receive information specified 36 CFR 800.11(e) (in section 11.2(l)(2)(A)-(G) above), unless protected under the confidentiality provisions of 36 CFR 800.11(c).

(E) Public involvement. The FAA must provide the public with an opportunity to express their views on resolving adverse effects. To allow informed participation, FAA must make the information 36 CFR 800.11(e) specifies available for public review, unless confidentiality prohibits this (36 CFR 800.11(c)).

(2) Memorandum of Agreement (MOA). In most instances, the FAA Responsible Official and SHPO/THPO work to avoid, minimize, or mitigate identified adverse effects. Sometimes the ACHP is included in this effort when it chooses to enter the process or the FAA invites it to do so. A MOA that these parties and, in some cases, invited parties prepare and sign, verifies that the FAA has complied with Section 106. It describes the undertaking and contains instruction and terms that will the FAA will ensure are implemented to avoid, minimize, or mitigate adverse effects. When the ACHP is not participating and FAA and the SHPO/THPO cannot agree, the FAA must request that the ACHP join in the consultation. Detailed information on MOA's is contained in 36 CFR 800.6, particularly, 36 CFR 800.6(b) and (c). Appendix A of these regulations provides detailed guidance on addressing archeological sites. The following sections provide further information on the MOA.

(A) Signatories. These parties are solely responsible for developing, amending, and terminating the MOA. If the ACHP is not participating in the resolving adverse effects, the FAA Approving Official and SHPO/THPO will sign the MOA. If ACHP is participating, it too will sign the MOA.

(B) Invited signatories. The Approving FAA official may invite other parties to sign the MOA. Typically, these parties would be representatives of Tribes or Native Hawaiian organizations attaching religious or cultural significance to the affected historic resource. They may also be any party that will be responsible for implementing the MOA's terms and conditions of the MOA (e.g., airport sponsor, licensee for commercial space). It is important to note that any party refusing to be an invited signatory does not negate MOA or make it invalid.

(C) Concurring parties. The Approving FAA official or other signatory(ies) may invite all consulting parties to concur with the MOA. Refusal of a party to concur in the MOA does not negate or invalidate the MOA.

(D) Other information. Information on additional MOA content addressing duration, subsequent discoveries, amendments, and terminations is in 36 CFR 800.6(c)(4)-(7).

11.2o. Failing to Resolve Adverse Effects. It is FAA's intent to resolve adverse effects in all cases through consultation and cooperation; however, if further efforts are not productive, follow the instructions in 36 CFR 800.7. In such instances, the FAA Administrator must make the final decision regarding the action's fate (see 800.7(c)(4) for instructions in this case).

11.2p. Coordinating Section 106 and NEPA. To reduce paperwork and redundancy between the NEPA and Section 106 processes, Federal agencies may use the NEPA process to make their historical impact review more efficient and effective. But to do so, close adherence to the requirements of 36 CFR 800.8 is required. Cooperation among FAA, SHPO/THPO, consulting parties, the public, and in some instances, ACHP, is a key factor in combining the NEPA and Section 106 processes. Specific requirements for EA and EIS preparation and content are detailed in 36 CFR 800.8(c)(1)-(4). Critical components of this efficiency effort include:

(1) providing the SHPO/THPO and ACHP with advance notice that FAA will use the NEPA process to satisfy its Section 106 responsibilities;

(2) defining historic impacts and agency responsibilities under Section 106 early in the planning process to consideration of the widest range of alternatives;

(3) coordinating planning and/or scoping through agency consultation and public participation to facilitate identifying data needs, analyses, reviews, and the documentation that NEPA and Section 106 require;

(4) ensuring that the EA, DEIS, or FEIS is submitted for review to the SHPO/THPO and Tribes or Native Hawaiian organizations attaching religious or cultural significance to the affected resource before the NEPA document is available for public comment;

(5) ensuring that DEIS's and FEIS's are submitted to the ACHP for review;

(6) ensuring that a MOA is prepared when an EA/FONIS is prepared for a project; and

(7) using a ROD, in lieu of a MOA, to define binding commitments to avoid, minimize, or mitigate adverse effects on historic properties when an EIS is prepared for a project.

11.3 SIGNIFICANT IMPACT THRESHOLD. Regulations at 36 CFR 800.8(a) state that an adverse effect finding does not automatically trigger preparation of an EIS (i.e., a significant impact). The section 106 consultation process includes consideration of alternatives to avoid adverse effects on National Register listed or eligible properties; of mitigation measures; and of accepting adverse effects. But in all cases, the FAA makes the final determination on the level of effect and whether the appropriate action choice is an EIS or FONSI. Advice from the ACHP and SHPO/THPO may assist the FAA in making this determination.

11.4 ANALYSIS OF SIGNIFICANT IMPACTS.

11.4a. As noted above, FAA can use the "streamlining" process or "normal" process to meet Section 106 requirements for projects that are subjects of EIS's.

11.4b. Using the "NEPA/Section 106 streamlining process." As noted in section 11.2(p) of this appendix, FAA may use the NEPA process to comply with Section 106 requirements. In this case, the Responsible FAA Official shall adhere to the specific instructions in 36 CFR 800.8(c)(1)-(4) to ensure FAA has met the required steps to use the "streamlining" provision. This information and any other developed during the Section 106 consultation process should be sufficient for EIS purposes.

11.4c. Using the "normal" Section 106 process. If FAA is going to prepare an MOA to meet Section 106 requirements for a project assessed in an EIS, the MOA must contain the information discussed in 36 CFR 800.11.(f) and in section 11.2n(2)(A)-(D) of this appendix. If FAA has executed a MOA with other signatories before it circulates the DEIS for comment, the

DEIS should include that MOA. In all cases, an executed MOA must be included in the FEIS, unless extenuating circumstances prohibit this. As a result, it is critical that FAA execute the MOA so that FEIS contains it. Waiting to do so until preparation of a ROD is not the preferred way to complete this process to ensure that the FEIS adequately informs the public about measures that will be implemented to avoid, minimize, or mitigate adverse effects.

11.5 POST-REVIEW DISCOVERIES. There may be times when, after work on a project has begun historic properties are discovered. In such instances, the FAA must address both the existence of such properties and any potential adverse effects resulting from the project. This can be done in one of two ways.

11.5a. When pre-construction identification efforts indicate that historic properties are likely to be discovered. At times, the identification of historic properties efforts for a proposed project, especially a project involving excavation or ground-disturbing activities, may indicate that potentially eligible historic or archeological resources are likely to be discovered during construction. If pre-construction identification efforts indicate that historic properties are likely to be discovered, the FAA shall address such a potential discovery in it's initial no adverse effect determination, Programmatic Agreement (if one has been developed) or Memorandum of Agreement (MOA). In particular, a process to resolve any adverse effects, including excavation and recovery, upon such properties must be developed. The process can include provisions to halt construction in the immediate vicinity of the discovered properties if deemed appropriate. When the FAA has developed such a process and then discovers historic properties after completing Section 106 requirements, the FAA should follow the plan that was approved during the Section 106 consultation. Actions in conformance with the process satisfy the FAA's responsibilities under Section 106. If the adverse effect on the historic property is so severe that it will limit the use of the property, then section 4(f) of the DOT Act may be triggered. When the FAA has not prepared a plan to address discovery of unanticipated historic properties, then the FAA must afford the SHPO/THPO, the ACHP, and interested parties an opportunity to comment on effects to these newly discovered properties in one of several ways. (See 36 CFR part 800.13 for additional information.)

11.5b. Post-review discoveries without prior planning. At times, historic properties or unanticipated effects on historic properties may be discovered that were completely unanticipated, even through the identification of historic properties and determination of adverse effects efforts. The FAA should make reasonable efforts to avoid, minimize or mitigate adverse effects, if any, to such properties.

(1) Discovery prior to project approval or prior to starting construction on an approved project. If the FAA has not yet approved the undertaking or if construction on an approved project has not yet begun, and the FAA discovers historic properties or unanticipated effects on the historic properties, the FAA must consult to resolve any adverse effects as defined in 36 CFR 800.5.

(2) When discovered property is of value solely for its scientific, prehistoric, historic or archaeological data: Where the FAA, the SHPO/THPO and any Tribe or Native Hawaiian

organization that might attach religious and cultural significance to the affected property agree that the property is of value solely for its scientific, prehistoric, historic or archaeological data, the FAA may comply with the Archeological and Historic Preservation Act instead of the procedures under Section 106.

(3) Discovery after project approval or after construction has begun on an approved project. If the FAA has approved the undertaking and construction has begun and then discovers historic properties or unanticipated effects on the historic properties, the FAA must determine what actions can be taken to resolve any adverse effects. The FAA must also notify the SHPO/THPO and any Tribe or Native Hawaiian organization that might attach religious and cultural significance to the affected property, and the Council (ACHP) within 48 hours of the discovery. The notification should describe the actions proposed by the FAA to resolve the adverse effects. The SHPO/THPO and the Tribe or Native Hawaiian organization and the Council shall respond within 48 hours of notification and the FAA shall take into account their recommendations and carry out appropriate actions. The FAA shall provide a report of the actions when they are completed.

11.5c. Eligibility of post-review discoveries. Following consultation with the SHPO/THPO, the FAA may assume, for the purposes of Section 106 consultations, that the newly discovered properties are eligible for the National Register. The FAA shall list the National Register Criteria used to assume the property's eligibility so that that information can be used to determine if there are adverse effects.

11.5d. Post-review discoveries on Tribal Lands. The FAA shall comply with applicable Tribal regulations and procedures and obtain the concurrence of the Tribe on the proposed action if there is no process for addressing such post-review discoveries and:

(1) FAA discovers historic properties on Tribal lands; or

(2) There are unanticipated effects on historic properties found on Tribal lands, after the FAA has completed Section 106 consultations and construction has commenced.

11.6 PROGRAMMATIC AGREEMENTS.

11.6a. The FAA and ACHP may negotiate a programmatic agreement (PA) in a number of situations, but some of the most common are:

(1) when FAA will govern implementation of a particular program or the resolution of adverse effects from certain complex project situations or repetitive undertakings such as the decommissioning of a particular type of building;

(2) when an undertaking is complex, wide in scope, and the effects are not known precisely;

(3) where non-federal parties are delegated major decisionmaking responsibilities;

(4) where routine management activities are undertaken at Federal installations, facilities, or other land-management units; or

(5) where circumstances warrant departure from the normal Section 106 procedures.

11.6b. The FAA may negotiate a PA with the ACHP. A PA may also be negotiated with the ACHP and the National Conference of State Historic Preservation Officers (NCSHPO) if the undertaking will be repeated in several different States. The FAA may work through the National Association of Tribal Historic Preservation Officers (NATHPO) to facilitate coordination with Tribes.

11.6c. Typically, the FAA must be able to describe the undertaking, including the timeframe and whether the undertaking will be staged. For example, as studies are completed, the APE and the types of expected adverse effects as well as the potential for mitigation must be identified before the ACHP will agree to the PA. For more information see 36 CFR 800.14 and the ACHP's "Preparing Agreement Documents."

11.6d. Compliance with the procedures established by an approved Programmatic Agreement satisfies the FAA's Section 106 responsibilities for all individual projects of the program covered by the agreement until it expires or is terminated by one of the parties to the PA. If the ACHP determines that the terms of the PA are not being carried out, or that the agreement has been terminated, the FAA shall comply with the Section 106 consultation requirements with regard to the individual projects of the program covered by the agreement.

SECTION 12. LIGHT EMISSIONS AND VISUAL IMPACTS

Statute	Regulation	Oversight Agency
There are no special purpose laws for light impacts and visual impacts.		

12.1 REQUIREMENTS.

12.1a. A description of potential impacts due to light emissions or visual impacts associated with a Federal action may be necessary. Consideration should be given to impacts on people and properties covered by section 303 (formerly, 4(f)) of the DOT Act, using guidance in section 6 of this appendix to determine section 4(f) use and significant impact.

12.1b. Permits/Certificates**:** Not Applicable.

12.2 FAA RESPONSIBILITIES.

12.2a. Light Emissions. The responsible FAA official considers the extent to which any lighting associated with an action will create an annoyance among people in the vicinity or interfere with their normal activities. Because of the relatively low levels of light intensity compared to background levels associated with most air navigation facilities (NAVAIDS) and other airport development actions, light emissions impacts are unlikely to have an adverse impact on human activity or the use or characteristics of the protected properties. Information will be included in the environmental document whenever the potential for annoyance exists, such as site location of lights or light systems, pertinent characteristics of the particular system and its use, and measures to lessen any annoyance, such as shielding or angular adjustments.

12.2b. Visual Impacts. Visual, or aesthetic, impacts are inherently more difficult to define because of the subjectivity involved. Aesthetic impacts deal more broadly with the extent that the development contrasts with the existing environment and whether the jurisdictional agency considers this contrast objectionable. Public involvement and consultation with appropriate Federal, State, and local agencies and tribes may help determine the extent of these impacts. The visual sight of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact. The art and science of analyzing visual impacts is continuously improving and the responsible FAA official should consider, based on scoping or other public involvement, the degree to which available tools should be used to more objectively analyze subjective responses to proposed visual changes.

12.3 ANALYSIS OF SIGNIFICANT IMPACTS. When an action is determined to have significant light or visual-related impacts pursuant to NEPA, use the following applicable instructions:

12.3a. Light Emissions. The EIS description of potential annoyance from airport lighting and measures to minimize the effects should be documented in a similar fashion in an EIS to that in an EA. Further consideration may concentrate on previously unconsidered mitigation measures and alternatives. It is possible that the responsible FAA official will judge that a special lighting study is warranted.

12.3b. Visual Impacts. The impact discussion will normally include appropriate presentation of the application of design, art, architecture and landscape architecture in mitigating adverse visual and other impacts and encouraging enhancement of the environment.

SECTION 13. NATURAL RESOURCES AND ENERGY SUPPLY

Statute	Regulation	Oversight Agency
There are no special purpose laws for natural resources and energy supply.		

13.1 REQUIREMENTS.

13.1a. Executive Order 13123, Greening the Government Through Efficient Energy Management (64 FR 30851, June 8, 1999), encourages each Federal agency to expand the use of renewable energy within its facilities and in its activities. E.O. 13123 also requires each Federal agency to reduce petroleum use, total energy use and associated air emissions, and water consumption in its facilities.

13.1b. It is also the policy of the FAA, consistent with NEPA and the CEQ regulations, to encourage the development of facilities that exemplify the highest standards of design including principles of sustainability. All elements of the transportation system should be designed with a view to their aesthetic impact, conservation of resources such as energy, pollution prevention, harmonization with the community environment, and sensitivity to the concerns of the traveling public. This is in keeping with section 102(2)(A) of NEPA, which requires all agencies to "...utilize a systematic interdisciplinary approach, which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking...."

13.1c. Permits/Certificates: Not Applicable.

13.2 FAA RESPONSIBILITIES.

13.2a. Principles of environmental design and sustainability, including pollution prevention, waste minimization, and resource conservation should be followed generally in project or program planning. For purposes of the EA or EIS, the proposed action will be examined to identify any proposed major changes in stationary facilities or the movement of aircraft and ground vehicles that would have a measurable effect on local supplies of energy or natural resources. If there are major changes, power companies or other suppliers of energy will be contacted to determine if projected demands can be met by existing or planned source facilities. The use of natural resources other than for fuel need be examined only if the action involves a need for unusual materials or those in short supply. For example, if a large volume of water will be required, the availability of a supply of water from existing or planned water facilities or from surface or groundwater sources should be considered. Therefore, evaluation of significant energy, water, and other resource use for major construction actions is important.

13.2b. For most actions, changes in energy demands or other natural resource consumption will not result in significant impacts. If an EA identifies problems such as demands exceeding

supplies, additional analysis may be required in an EIS. Otherwise, it may be assumed that impacts are not significant.

13.3 ANALYSIS OF SIGNIFICANT IMPACTS. Analysis in an EIS includes detail needed to fully explain the degree of the problem and measures to be taken to minimize the impact. Measures such as more efficient airfield design, ground access improvements, or energy and resource efficient building design will be considered and described where applicable and incorporated in the action to the extent possible. The Department of Energy (DOE) may be a cooperating agency and be of assistance in determining additional specific analysis needed for energy use and in judging the seriousness of impacts.

SECTION 14. NOISE

Statute	Regulation	Oversight Agency
49 U.S.C. 47501-47507 (Aviation Safety and Noise Abatement Act of 1979, as amended) 49 U.S.C. 40101 et seq., as amended by PL 103-305 (Aug. 23, 1994) (The Federal Aviation Act of 1958) The Control and Abatement of Aircraft Noise and Sonic Boom Act of 1968 49 U.S.C. 47101 et seq., as amended by PL 103-305 (Aug. 23, 1994) (The Airport and Airway Improvement Act) 49 U.S.C. 2101 et seq. (Airport Noise and Capacity Act of 1990) 49 U.S.C. 44715 (The Noise Control Act of 1972)	14 CFR part 150 Noise Control and Compatibility Planning for Airports Advisory Circular, 150/5020 14 CFR part 161 Notice and Approval of Airport Noise and Access Restrictions	Federal Aviation Administration

14.1 REQUIREMENTS.

14.1a. For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of yearly day/night average sound level (DNL) as FAA's primary metric. The FAA recognizes CNEL (community noise equivalent level) as an alternative metric for California. An initial noise analysis during the environmental assessment process should be accomplished to determine whether further, more detailed analysis is necessary.

14.1b. Permits/Certificates. Not applicable.

14.2 FAA RESPONSIBILITIES.

14.2a. If significant noise impacts are expected, the FAA official must prepare a detailed noise analysis as part of an EIS in accordance with the following requirements. An EIS need not be prepared if the proposed action incorporates mitigation that reduces the noise impact below significant noise impact threshold levels.

14.2b. All detailed noise analyses must be performed using the most current version of the FAA's Integrated Noise Model (INM), Heliport Noise Model (HNM), or Noise Integrated Routing System (NIRS). Use of an equivalent methodology and computer model must receive

prior written approval from the FAA's Office of Environment and Energy (AEE). Preceedence evaluation with FAA screening methodologies, e.g., Area Equivalent Method (AEM) and Air Traffic Noise Screening (ATNS), may be appropriate. Use of equivalent screening methodologies must receive prior written approval from AEE. AEE has approved the DOD computer models MR_NMAP and MR_BOOMMAP for use and analysis of Special Use Airspace (SUA).

14.2c. All computer model input data should be collected early in the environmental process and should reasonably reflect current and forecasted conditions relative to the proposed action and alternatives. Unless it can be justified, all noise analyses must be performed using the FAA's INM, HNM, and/or NIRS standard and default data. Modification to standard or default data requires written approval from the Office of Environment and Energy (AEE). Guidance for submitting changes to the INM standard or default data can be obtained from the most current INM User's Guide. This guidance also applies for changes to standard or default NIRS data.

14.2d. Those who prepare EA's and EIS's will provide input documentation with one copy of the INM/HNM/NIRS input files used in the noise analyses and the corresponding case echo reports to the FAA official on electronic media specified by that official. If equivalent methodologies or the use of non-standard or non-default data are approved, a description of the methodology or additional, non-standard, or non-default data must be submitted along with a copy of AEE's approval.

14.3 SIGNIFICANT IMPACT THRESHOLDS. A significant noise impact would occur if analysis shows that the proposed action will cause noise sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the no action alternative for the same timeframe. For example, an increase from 63.5 dB to 65 dB is considered a significant impact. Special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within national parks, national wildlife refuges and historic sites, including traditional cultural properties. For example, the DNL 65 dB threshold does not adequately address the effects of noise on visitors to areas within a national park or national wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute.

14.4 ANALYSIS OF SIGNIFICANT IMPACTS.

14.4a. For proposed actions involving a single airport which result in a general overall increase in daily aircraft operations or the use of larger/noisier aircraft, as long as there are no changes in ground tracks or flight profiles, the initial analysis may be performed using the FAA's Area Equivalent Method (AEM) computer model. The time of day is also part of the equation used in the AEM method. If the AEM calculations indicate that the proposed action would result in less than a 17 percent (approximately a DNL 1 dB) increase in the DNL 65 dB contour area, it may be concluded that there would be no significant impact over noise sensitive areas and that no further noise analysis is required. If the AEM calculations indicate an increase of 17 percent or more, or if the proposed action is such that use of the AEM is not appropriate, then the proposed

action must be analyzed using the INM or HNM to determine if significant noise impacts will result.

14.4b. The determination of significance must be obtained through the use of INM, HNM, or NIRS noise contours and/or grid point analysis along with local land use information and general guidance contained in Appendix A of 14 CFR part 150. Special consideration may need to be given to whether Part 150 land use compatibility categories need adjustment when evaluating the noise impact on properties of unique significance such as national parks, national wildlife refuges, and Tribal sacred sites. For example, Part 150 guidelines are not sufficient to address the effects of noise on some national parks or some parts of national parks. Part 150 land use guidelines are not applicable to determining impacts on wildlife. When instances arise in which aircraft noise is a concern with respect to wildlife impacts, available studies dealing with specific species should be reviewed and used in the analysis.

14.4c. In accordance with the 1992 FICON (Federal Interagency Committee on Noise) recommendations, examination of noise levels between DNL 65 and 60 dB should be done if determined to be appropriate after application of the FICON screening procedure (FICON p.3-5). If screening shows that noise sensitive areas at or above DNL 65 dB will have an increase of DNL 1.5 dB or more, further analysis should be conducted to identify noise-sensitive areas between DNL 60-65 dB having an increase of DNL 3 dB or more due to the proposed action. The potential for mitigating noise in those areas should be considered, including consideration of the same range of mitigation options available at DNL 65 dB and higher and eligibility for federal funding. This is not to be interpreted as a commitment to fund or otherwise implement mitigation measures in any particular area. (FICON p. 3-7).

14.4d. The INM or HNM will be used to produce the following information:

(1) Noise exposure contours at the DNL 75 dB, DNL 70 dB, and DNL 65 dB levels. Additional contours are optional and considered on a case-by-case basis.

(2) Analysis within the proposed alternative DNL 65 dB contour to identify noise sensitive areas where noise will increase by DNL 1.5 dB. Increases of 1.5 dB that introduce new noise sensitive areas to exposure levels of 65 dB or more are included in this analysis.

(3) Analysis within the DNL 60-65 dB contours to identify noise sensitive areas where noise will increase by DNL 3 dB, only when DNL 1.5 dB increases are documented within the DNL 65 dB contour.

14.4e. The noise analysis will be conducted to reflect current conditions and forecast conditions for all reasonable alternatives, including the preferred and no action alternatives. This analysis should include maps and other means to depict land uses within the noise impact area. The addition of flight tracks is helpful in illustrating where the aircraft normally fly. Illustrations shall be large enough and clear enough to be readily understood.

14.4f. Noise monitoring data may be included in an EA or EIS at the discretion of the responsible FAA official. Noise monitoring is not required and should not be used to calibrate the noise model.

14.4g. DNL contours, grid point, and/or change-of-exposure analysis will be prepared for the following:

(1) Current conditions; and

(2) Future conditions both with and without (no action) the proposal and each reasonable alternative. Comparisons should be done for appropriate timeframes. Timeframes usually selected are the year of anticipated project implementation and 5 to 10 years after implementation. Additional timeframes may be desirable for particular projects.

14.4h. If the above comparisons show a DNL 1.5 dB or greater increase over a noise sensitive area exposed to DNL 65 dB or greater as a result of the proposed project or any of its reasonable alternatives (except no action), a level of significant noise impact has been reached.

14.4i. The following information will be disclosed in the EIS for each modeling scenario that is analyzed:

(1) The number of people living or residences within each noise contour at or above DNL 65 dB, including the net increase or decrease in the number of people or residences exposed to that level of noise. (Use of maps that depict locations within a community of noise sensitive areas is recommended.)

(2) The location and number of noise sensitive uses (e.g., schools, churches, hospitals, parks, recreation areas) exposed to DNL 65 dB or greater.

(3) Mitigation measures in effect or proposed and their relationship to the proposal.

14.4j. When a proposed FAA action would result in a significant noise increase and is highly controversial on this basis, the EIS should include information on the human response to noise that is appropriate for the proposal under analysis. Inclusion of data on background or ambient noise may be helpful.

14.5 SUPPLEMENTAL NOISE ANALYSIS.

14.5a. The Federal Interagency Committee on Noise (FICON) report, "Federal Agency Review of Selected Airport Noise Analysis Issues," dated August 1992, concluded that the Day-Night Average Sound Level (DNL) is the recommended metric and should continue to be used as the primary metric for aircraft noise exposure. However, DNL analysis may optionally be supplemented on a case-by-case basis to characterize specific noise effects. Because of the diversity of situations, the variety of supplemental metrics available, and the limitations of

individual supplemental metrics, the FICON report concluded that the use of supplemental metrics to analyze noise should remain at the discretion of individual agencies.

14.5b. Supplemental noise analyses are most often used to describe aircraft noise impacts for specific noise-sensitive locations or situations and to assist in the public's understanding of the noise impact. Accordingly, the description should be tailored to enhance understanding of the pertinent facts surrounding the changes. The FAA's selection of supplemental analyses will depend upon the circumstances of each particular case. In some cases, this may be accomplished with a more complete narrative description of the noise events contributing to the DNL contours with additional tables, charts, maps, or metrics. In other cases, supplemental analyses may include the use of metrics other than DNL. Use of supplemental metrics selected should fit the circumstances. There is no single supplemental methodology that is preferable for all situations and these metrics often do not reflect the magnitude, duration, or frequency of the noise events under study.

14.5c. Supplemental analyses may be accomplished using the various capabilities of INM or NIRS for specific grid point analysis. Noise analyses can be used in combination with geographic information system (GIS) design programs such as AutoCAD and the U.S. Census TIGER databases to determine various population impacts within specified areas.

14.5d. For proposed air traffic or special use airspace actions above 3,000 feet above ground level (AGL), the ATNS or other FAA-approved screening shall be used. The ATNS allows the user to evaluate potential noise impacts resulting from changes in airport arrivals and departures by screening proposed changes to determine whether the change increases the community noise level by 5 decibels or more beneath the aircraft route. Where a proposed change would cause an increase in noise of 5 decibels or greater, FAA considers whether there are extraordinary circumstances that warrant preparation of an environmental assessment.

14.5e. For air traffic airspace actions where the study area is larger than the immediate vicinity of an airport, incorporates more than one airport, or includes actions above 3,000 feet AGL, noise modeling will be conducted using NIRS. For those types of studies, NIRS will be used to determine noise impacts from the ground to 10,000 feet AGL. This noise analysis will focus on the change in noise levels as compared to populations and demographic information at population points throughout the study area. Noise contours will not be prepared for the NIRS analysis. However, NIRS will be used to produce change-of-exposure tables and maps at population centroids using the following criteria:

DNL 60-65 dB	± 3 dB
DNL 45-60 dB	± 5 dB

14.5f. The following metrics have been used in developing supplemental noise analyses for a variety of reasons such as sleep disturbance, speech interference, soundproofing, and analysis for special areas such as national parks:

(1) SEL (sound exposure level) - A single event metric that takes into account both the noise level and duration of the event and referenced to a standard duration of one second.

(2) L_{max} (maximum sound level) - A single event metric that is the highest A-weighted sound level measured during an event.

(3) L_{eq} (equivalent sound level) - A cumulative level of a steady tone that provides an equivalent amount of sound energy for any specific period.

(4) TA (time above) - A time-based metric that gives the duration, in minutes, for which aircraft-related noise exceeded a specified A-weighted sound level during a given period.

(5) SPL (sound pressure level) - One-third octave band sound pressure levels that form the starting point for all other noise metrics. SPL provides a detailed description of the frequency components of a single complex sound and are used in assessing the effectiveness of soundproofing.

(6) Audibility - A time-based metric developed for use in Grand Canyon National Park to evaluate the substantial restoration of natural quiet as mandated by Public Law 100-91.

14.5g. The type and nature of activity potentially impacted should be considered. The FICON report identified sleep disturbance and speech interference as two areas where it is appropriate to consider supplemental metrics. In the case of sleep disturbance, the report referred the reader to a dose-response relationship developed by the US Air Force Armstrong Laboratories. This relationship relates SEL to a percent-awakened number. No provision is made for combining the effects of multiple events. To examine speech interference, FICON recommends using a cumulative A-weighted metric that is limited to the affected time period hours or a Time-above analysis. Additionally, FICON provides a table that relates DNL to speech interference. The guidelines for both sleep interference and communication interference relate the degree of interference to single event indoor noise levels. Refer to FICON for further guidance. In addition, the FAA will consider use of appropriate supplemental noise analysis in consultation with the officials having jurisdiction for national parks, national wildlife refuges, and historic sites including traditional cultural properties where a quiet setting is a generally recognized purpose and attribute that FAA identifies within the study area of a proposed action. Such supplemental noise analysis is not, by itself, a measure of adverse aircraft noise or significant aircraft noise impact. Offices within FAA must consult with and receive approval from AEE in determining the appropriate supplemental noise analysis for use in such cases.

14.6 PROJECTS NOT REQUIRING A NOISE ANALYSIS.

14.6a. No noise analysis is needed for proposals involving Design Group I and II airplanes (wingspan less than 79 feet) in Approach Categories A through D (landing speed less than 166 knots) operating at airports whose forecast operations in the period covered by the EA do not exceed 90,000 annual propeller operations (247 average daily operations) or 700 jet operations (2 average daily operations). These numbers of general aviation (GA) propeller and jet

operations result in DNL 60 dB contours of less than 1.1 square miles that extend no more than 12,500 feet from start of takeoff roll. The DNL 65 dB contour areas would be 0.5 (one-half) square mile or less and extend no more than 10,000 feet from start of takeoff roll. Note that the Cessna Citation 500 and any other jet aircraft producing levels less than the propeller aircraft under study may be counted as propeller aircraft rather than jet aircraft.

14.6b. No noise analysis is needed for proposals involving existing heliports or airports whose forecast helicopter operations in the period covered by the EA do not exceed 10 annual daily average operations with hover times not exceeding 2 minutes. These numbers of helicopter operations result in DNL 60 dB contours of less than 0.10 (one-tenth) square mile that extend no more than 1,000 feet from the pad. Note that this rule applies to the Sikorsky S-70 with a maximum gross takeoff weight of 20,224 pounds and any other helicopter weighing less or producing equal or less levels.

14.7 PART 150 NOISE PROPOSALS. If the proposal requiring an EA or EIS is the result of a recommended noise mitigation measure included in an FAA-approved 14 CFR part 150 noise compatibility program, the noise analysis developed in the program will normally be incorporated in the EA or EIS. The FAA responsible official must determine whether this is sufficient for EA or EIS noise analysis purposes.

14.8 FACILITY AND EQUIPMENT NOISE EMISSIONS. The provisions of the Noise Control Act of 1972 (NCA) (P.L. 92-574), as amended, apply. FAA may use State and local standards as a guide for particular activities if these standards are at least as stringent as Federal standards. The NCA provisions apply to all land uses. FAA should give special attention to noise sensitive sites in developing mitigation (e.g., scheduling machinery operations near hospitals).

14.9 FLIGHT STANDARDS

14.9a. Flight Standards actions that are subject to environmental procedures and assessments include the issuance of an air carrier operating certificate, an operating certificate, the approval of operations specifications or amendments thereto that may significantly change the character of the operational environment of an airport. The person responsible for issuing the certificate or approving the operations specifications is also responsible for assuring the assessment is prepared. Thorough coordination among Flight Standards District Office personnel, the Regional Flight Standards Division and the Regional Noise Abatement Officer is essential. Coordination among regions is expected if an action crosses regional boundaries.

14.9b. In preparing a noise analysis for an assessment, the Flight Standards District Office personnel normally will collect information from the operator that includes airports, types of aircraft and engines, number of scheduled operations per day, and the number of day/night operations. The information should also include the operator's long range plans and operation assumptions that are sufficiently conservative to encompass reasonably foreseeable changes in operations.

14.9c. If the carrier declines to furnish the information, or if the furnished information on operations at the airport does not realistically address night operations (in view of the carrier's proposal and pattern of activity at that airport), or if the information otherwise patently understates the potential operations (when compared with carrier's operations at other airports or with other carrier's operations at that airport), the responsible Federal official will develop an operational assumption which includes night operations and which is otherwise consistent with the typical operations of similar carriers at similar airports. This operational assumption will be used in the environmental assessment after coordination with the affected air carrier. If the air carrier objects to the use of this operational assumption in the assessment, the carrier may specify that a lesser level of operations be used in the assessment, provided that the carrier agrees that this lesser level will serve as a limit on the operations specifications. If the carrier refuses such a limitation, the FAA will include all reasonably foreseeable operations in the assessment. In this situation the assessment shall state the operational assumption was developed solely for the purpose of environmental analyses and that it is not to be viewed as a service commitment by the carrier.

14.9d. If an EIS is required, the affected operator should be advised as soon as possible and should be requested for any additional required information. District Office personnel will coordinate, as necessary, any activity with the operator. The certificate will not be issued or the operations specifications approved until all issues and questions associated with the EIS are fully resolved and the regional Flight Standards Division manager has concurred with the issuance or approval.

SECTION 15. SECONDARY (INDUCED) IMPACTS

Statute	Regulation	Oversight Agency
See requirements below		

Major development proposals often involve the potential for induced or secondary impacts on surrounding communities. When such potential exists, the EA shall describe in general terms such factors. Examples include: shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by the airport development. Induced impacts will normally not be significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts. In such circumstances, an EIS may be needed.

SECTION 16. SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Statute	Regulation	Oversight Agency
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (59 FR 7629, February 16, 1994).	Order DOT 5610.2, Environmental Justice in Minority and Low-Income Populations, April 15, 1997 CEQ Environmental Justice: Guidance Under the National Environmental Policy Act, December 10, 1997 Final Guidance For Consideration of Environmental Justice in Clean Air Act 309 Reviews, July 1999.	Department of Transportation Council on Environmental Quality Environmental Protection Agency
Executive Order13045, Protection of Children from Environmental Health Risks and Safety Risks (62 CFR 19883, April 23, 1997).	40 CFR 1508.27	
Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 [42 U.S.C. 4601] [PL 91-528 amended by the Surface Transportation and Uniform Relocation Act Amendments of 1987, PL 100-117]	FAA Advisory Circular 150/5100-17 49 CFR part 24 FAA Order 5100.37A, Land Acquisition and Relocation Assistance for Airport Projects.	Federal Aviation Administration

16.1 REQUIREMENTS.

16.1a. Environmental Justice. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and the accompanying Presidential Memorandum, and Order DOT 5610.2, Environmental Justice, require FAA to provide for meaningful public involvement by minority and low-income populations and analysis, including demographic analysis, that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse. Included in this process is the disclosure of the effects on subsistence patterns of consumption of fish, vegetation, or wildlife, and effective public participation and access to this information. The Presidential Memorandum that accompanied E.O. 12898, as well as the CEQ and EPA Guidance, encourage consideration of environmental justice impacts in EA's, especially to determine whether a disproportionately high and adverse impact may occur. Environmental Justice is examined during evaluation of other impact categories, such as noise, air quality, water, hazardous

materials, and cultural resources. When performing analyses of environmental justice impacts, NEPA practitioners should be aware that the Department of Health and Human Services (HHS) poverty guidelines specified for use by DOT Order 5610.2, and the Census Bureau's poverty threshold specified for use in the CEQ and EPA environmental justice guidance, differ slightly (e.g., $12,100 and $12,674, respectively, for a family of four in 1989). An analysis of the effects on environmental justice will generally require the use of census data for establishing the demographic and socioeconomic baseline. Use of the Census Bureau's poverty threshold is consistent with the best available demographic data and is appropriate for use in environmental justice impact analysis for NEPA purposes. However, the HHS poverty guideline, which is updated every year on a nation-wide basis, may also be applicable in situations where, for example, survey data is available to identify pockets of poverty within census tracts or sectors. The responsible FAA official may choose to use whichever poverty value is deemed the most appropriate.

16.1b. Children's Environmental Health and Safety Risks. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, Federal agencies are directed, as appropriate and consistent with the agency's mission, to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Agencies are encouraged to participate in implementation of the Order by ensuring that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

16.1c. Socioeconomic Impacts. If acquisition of real property or displacement of persons is involved, 49 CFR part 24 (implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act of l970), as amended must be met for Federal projects and projects involving Federal funding. Otherwise, the FAA, to the fullest extent possible, observes all local and State laws, regulations, and ordinances concerning zoning, transportation, economic development, housing, etc. when planning, assessing, or implementing the proposed action. (This requirement does not cover local zoning laws, set-back ordinances, and building codes because the Federal government is exempt from them.)

16.1d. Permits/Certificates. Not Applicable.

16.2 FAA RESPONSIBILITIES.

16.2a. Environmental Justice. The Presidential Memorandum that accompanied Executive Order 12898 encourages the consideration of environmental justice impacts in EA's, especially to determine whether a disproportionately high and adverse impact may occur. Although such an analysis is not required in an EA, it may be helpful in determining whether there is a potentially significant impact. To implement Executive Order 12898, the accompanying Presidential Memorandum, and Order DOT 5610.2, where there is a potentially significant impact as part of its EIS process, the FAA must provide for meaningful public involvement by minority and low-income populations. Additionally, FAA must conduct analysis, including appropriate demographic analysis of the potential effects, to identify and address potential impacts on these populations that may be disproportionately high and adverse. It should then disclose this

information to potentially affected populations for proposed actions that are likely to have a substantial effect and for CERCLA sites. The responsible FAA official should follow the procedures outlined in Order DOT 5610.2 for analyzing the potential impacts, offsetting benefits, potential alternatives, and substantial need. Additional guidance may be obtained from the CEQ publication, "Environmental Justice: Guidance Under the National Environmental Policy Act." When FAA determines that a project has significant effects pursuant to NEPA, the potential for disproportionately high and adverse effects pursuant to environmental justice must be analyzed. FAA must ensure that its NEPA process provides public involvement opportunities for disproportionately affected low income and minority populations to comply with Executive Order 12898 and DOT Order 6510.2.

(1) EIS's should discuss the significant impact that a project would cause, then identify affected populations. If an impact would affect low income or minority populations at a disproportionately higher level than it would other population segments, an environmental justice issue is likely. In such cases, the EIS should:

(A) include demographic information about the affected populations;

(B) include information about the population(s) that have an established use for the significantly affected resource, or to whom that resource is important (i.e., subsistence fishing);

(C) provide results of analysis to determine if a low income or minority population using that resource sustains more of the impact than any other population segments;

(D) identify disproportionately affected low income and minority populations;

(E) discuss alternatives that would reduce the effect on those populations; and

(F) describe possible mitigation to reduce the effect on the disproportionately affected low income and minority populations.

(2) In cases where FAA finds a significant impact, but determines that mitigation would reduce that impact below the applicable significance threshold, the EA should describe how mitigation would reduce the impact to less than significant and verify that the project would not result in disproportionately high and adverse affects on low income and minority populations.

16.2b. Children's Environmental Health and Safety Risks. FAA is encouraged to identify and assess environmental health risks and safety risks that the agency has reason to believe could disproportionately affect children. Environmental health risks and safety risks include risks to health or to safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to. The Task Force on Environmental Health Risks and Safety Risks to Children created by the Order may develop guidance and recommendations useful for evaluating actions with the potential to disproportionately affect children.

16.2c. Socioeconomic Impacts. The responsible FAA official consults with local transportation, housing and economic development, relocation and social agency officials, and community groups regarding the social impacts of the proposed action. The principal social impacts to be considered are those associated with relocation or other community disruption, transportation, planned development, and employment. The environmental document provides estimates of the numbers and characteristics of individuals and families to be displaced, the impact on the neighborhood and housing to which relocation is likely to take place, and an indication of the ability of that neighborhood to provide adequate relocation housing for the families to be displaced. The environmental document includes a description of special relocation advisory services to be provided, if any, for the elderly, handicapped, or illiterate regarding interpretation of benefits or other assistance available.

16.3 SIGNIFICANT IMPACT THRESHOLDS.

16.3a. Environmental Justice. Disproportionately high and adverse human health or environmental effects on minority and low-income populations may represent a significant impact.

16.3b. Children's Environmental Health and Safety Risks. Disproportionate health and safety risks to children may represent a significant impact.

16.3c. Socioeconomic Impacts. Factors to be considered in determining impact in this category include, but are not limited to, the following:

(1) Extensive relocation of residents is required, but sufficient replacement housing is unavailable.

(2) Extensive relocation of community businesses, that would create severe economic hardship for the affected communities.

(3) Disruptions of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and its surrounding communities.

(4) A substantial loss in community tax base.

16.4 ANALYSIS OF SIGNIFICANT IMPACTS.

16.4a. This analysis is triggered when the potential for significant impact exists, because of extensive relocation impacts, fragmentation of neighborhoods and communities, disproportionately high adverse impacts on minority or low income communities, disproportionate health and safety risks to children, or other significant community disruption. In these cases, additional analysis is needed to describe the degree of impact and to identify mitigation or alternatives that could minimize such adverse effects.

16.4b. If an insufficient supply of generally available relocation housing is indicated, a thorough analysis of efforts made to remedy the problem will be reflected in the EIS including, if necessary, provision for housing of last resort as authorized by section 206(a) of the Uniform Relocation Assistance and Real Property Acquisition Policies Act. If business relocation would cause appreciable economic hardship on the community, if significant changes in employment would result directly from the action, or if community disruption is considered substantial, the EIS will include a detailed explanation of the effects and the reasons why significant impacts cannot be avoided.

16.4c. When the EA indicates substantial induced or secondary effects directly attributable to the proposal, a detailed analysis of such effects will be included in the EIS. As pertinent and to the extent known or reasonably foreseeable, such factors as effects on regional growth and development patterns, and spin-off jobs created will be described.

SECTION 17. WATER QUALITY

Statute	Regulation	Oversight Agency
Federal Water Pollution Control Act, as amended, known as the Clean Water Act [33 U.S.C. 1251-1387] [PL 92-500, as amended by the Clean Water Floodplains and Floodways Act of 1977, 33 U.S.C. 1252, PL 95-217, and PL 100-4]; as amended by the Oil Pollution Act of 1990 (section 311 of the Clean Water Act. Safe Drinking Water Act, as amended (SDWA, also known as the Public Health Service Act) [42 U.S.C. 300f to 300j-26] [PL 104-182] Fish and Wildlife Coordination Act of 1980 [16 U.S.C. 661-666c] [PL 85-624]	40 CFR parts 110-112, 116, 117, 122, 125, 129, 130, 131,136, and 403	Environmental Protection Agency State and Tribal Water Quality Agencies

17.1 REQUIREMENTS.

17.1a. The Federal Water Pollution Control Act, as amended (commonly referred to as the Clean Water Act), provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, location with regard to an aquifer or sensitive ecological area such as a wetlands area, and regulate other issues concerning water quality.

17.1b. If the proposed Federal action would impound, divert, drain, control, or otherwise modify the waters of any stream or other body of water, the Fish and Wildlife Coordination Act applies, unless the project is for the impoundment of water covering an area of less than ten acres. The Fish and Wildlife Coordination Act requires the responsible FAA official to consult with the Fish and Wildlife Service (FWS) and the applicable State agency to identify means to prevent loss or damage to wildlife resources resulting from the proposal.

17.1c. If there is the potential for contamination of an aquifer designated by the Environmental Protection Agency (EPA) as a sole or principal drinking water resource for the

area, the responsible FAA official needs to consult with the EPA regional office as required by section 1424(e) of the Safe Drinking Water Act, as amended.

17.1d. Permits/Certificates:

(1) Project proponents applying for a NPDES permit from EPA or a state, or a section 404 permit from the Army Corps of Engineers or an authorized state, must obtain a water quality certificate (WQC) to comply with section 401 of the Clean Water Act. Section 401 requires issuance of a WQC as part of the permit issuance process.

(2) A National Pollutant Discharge Elimination System (NPDES) permit under section 402 of the Clean Water Act is required for point-source discharges into waters of the U.S. A section 404 permit is required to place dredged or fill material in waters of the U.S. including jurisdictional wetlands (see 33 CFR 330.4 for information on water quality certificates requirements for Nationwide permits). A section l0 permit under the Rivers and Harbors Act of l899 is required for obstruction or alteration of navigable waters.

(3) Other State and local permits pertaining to water quality also may be required.

17.2 FAA RESPONSIBILITIES. The EA includes sufficient description of a proposed action's design, mitigation measures, including best management practices developed for non-point sources under section 319 of the CWA, and construction controls to demonstrate that State or Tribal water quality standards and any Federal, Tribal, State, and local permit requirements will be met. Consultation with the Federal, Tribal, State, or local officials will be undertaken if there is the potential for contamination of an aquifer designated by the EPA as a sole or principal drinking water resource for the area pursuant to section l424(e) of the Safe Drinking Water Act, as amended. Consultation with appropriate officials is necessary to determine which permits apply. The EA reflects the results of consultation with regulating and permitting agencies and with agencies that must review permit applications, such as the FWS, the Army Corps of Engineers, and Tribal, State and local officials, which may have specific concerns. Such consultation should be started at an early stage of the EA. The responsible FAA Official must ensure that the applicable water quality certificate is issued before FAA approves the proposed action.

17.3 SIGNIFICANT IMPACT THRESHOLDS. Water quality regulations and issuance of permits will normally identify any deficiencies in the proposal with regard to water quality or any additional information necessary to make judgments on the significance of impacts. If the EA and early consultation show that there is a potential for exceeding water quality standards, identify water quality problems that cannot be avoided or satisfactorily mitigated, or indicate difficulties in obtaining required permits, an EIS may be required.

17.4 ANALYSIS OF SIGNIFICANT IMPACTS.

17.4a. When the thresholds indicate that the potential exists for significant water quality impacts, additional analysis in consultation with State or Federal agencies responsible for

protecting water quality will be necessary. These agencies may require specific information or studies.

17.4b. In the MOA between the DOT and the Department of the Army on section 404 Permit Processing, there is a provision for elevating permit applications with the Department of the Army. When an Army District Engineer proposes to deny permit or condition one that would cause substantial, unacceptable conditions to the DOT agency, the responsible FAA official shall advise the appropriate FAA program office in Washington, D.C. That office will provide whatever follow-up action may be necessary at the Washington, D.C., level to resolve the differences.

SECTION 18. WETLANDS

Statute	Regulation	Oversight Agency
Clean Water Act, section 404 [33 U.S.C. 1344] [PL 92-500, as amended by PL 95-217 and PL 100-4] Rivers and Harbors Act of 1899, section 10 Executive Order 11990, Protection of Wetlands (May 24, 1977) (42 FR 26961)	33 CFR parts 320–330 Order DOT 5660.1A, Preservation of the Nation's Wetlands	Army Corps of Engineers Coast Guard Environmental Protection Agency

18.1 REQUIREMENTS.

18.1a. Executive Order (E.O.) 11990, Order DOT 5660.1A, the Rivers and Harbors Act of 1899, and the Clean Water Act address activities in wetlands. E.O. 11990 requires Federal agencies to ensure their actions minimize the destruction, loss, or degradation of wetlands. It also assures the protection, preservation, and enhancement of the Nation's wetlands to the fullest extent practicable during the planning, construction, funding, and operation of transportation facilities and projects. Order DOT 5660.1A sets forth DOT policy that transportation facilities should be planned, constructed, and operated to assure protection and enhancement of wetlands.

18.1b. Frequently, the FAA or an airport sponsor applies for a section 404 permit for projects requiring dredge or fill activities in jurisdictional waters after the NEPA document has been approved. There are benefits, however, to developing the permit application earlier in the process. Time savings and reduced controversy may outweigh the extra effort required to address section 404 considerations as an integral part of the NEPA process. When the two processes are integrated effectively, the Corps' approval of the permit can be concurrent with or closely follow FAA's approval. The Army Corps of Engineers may adopt the FAA's final NEPA document when making a 404 permit decision, thereby avoiding the need to prepare additional NEPA documents. For further information see 33 CFR part 320, "General Regulatory Policies" (COE), 33 CFR part 325, Appendix B, "NEPA Implementation Procedures for the Regulatory Program," chapter 11 of the Federal Highway Administration guidance cites 40 CFR 80 and 230, "Regulatory Program: Applicant Information," pamphlet EP 1145-2-1, May 1985, U.S. Army Corps of Engineers; and 40 CFR 1500.2.

18.1c. On December 13, 1996, the Army Corps of Engineers published a final rule reissuing and substantially revising, the nationwide permit program (NWP) under the Clean Water Act.

18.1d. The FAA promotes wetland banking as a mitigation tool for aviation-related projects that must occur in wetlands due to aeronautical requirements (e.g., unavoidable construction of a runway in a wetland due to prevailing wind). The FAA has developed a policy supporting the use of a wetland banking mitigation strategy. Wetland mitigation banking provides a way to mitigate wetland impacts before those impacts occur. Purchasing credits from a bank does not give the purchaser title to wetlands tracts that comprise a bank, however, it does fulfill the requirements of law and is cost effective. Rather, the purchase is simply a payment to the wetland banker for wetland mitigation services that the bank provides. The purchase of credits from an approved bank can be used by a section 404 permittee to satisfy its permit-required mitigation obligations. Copies of this policy are available on the websites of the FAA's Office of Airport Planning and Programming, Community and Environmental Needs Division, APP-600 (http://www.faa.gov/arp/600home.cfm), or the Office of Environment and Energy (http://www.aee.faa.gov).

18.1e. Permits/Certificates:

(1) A section 404 permit is required to place dredged or fill material in waters of the U.S., including wetlands, and a section l0 permit under the Rivers and Harbors Act of l899 is required for obstruction or alteration of navigable waters. If a section 404 permit and a section 10 permit are required, then the section 10 permitting process is typically combined with the section 404 permitting process of the Corps of Engineers. However, if only a section 10 permit is needed, then the FAA should follow the Coast Guard's section 10 procedures.

(2) Other State and local permits pertaining to wetlands may also be required. Many Corps Districts now have joint application procedures with their respective states.

18.2 FAA RESPONSIBILITIES.

18.2a. Early review of proposed actions will be conducted with agencies with special interest in wetlands. Such agencies include State and local natural resource and wildlife agencies, the FWS, the NMFS, the Coast Guard, the Army Corps of Engineers, the Department of Agriculture Wildlife Service, and EPA, as appropriate. This review may be combined as much as possible with the State and local officials. Specific consultation is required under the Fish and Wildlife Coordination Act with the FWS and the State agency having administration over the wildlife resources.

18.2b. If the action requires an EA, but it would not affect wetlands, the EA should contain a statement to that effect. In that case, no wetland impact analysis is needed.

18.2c. If there is uncertainty about whether an area is a wetland, the local district office of the Army Corps of Engineers or a wetland delineation specialist must be contacted for a delineation determination (or the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS) to delineate wetlands on agricultural lands). The EA includes information on the location, types, and extent

of wetland areas that might be affected by the proposed action. This information can be obtained from the FWS or State or local natural resource agencies.

18.2d. If the action would affect wetlands and there is a practicable alternative that avoids the wetland, this alternative becomes the environmentally preferred alternative, provided there are no other overriding environmental impacts. The EA should state that the original project would have affected wetlands, but selection of the practicable alternative enabled the project proponent to avoid the wetlands.

18.2e. If the action would affect wetlands and there is no practicable alternative, all practical means should be employed to minimize the wetland impacts due to runoff, construction, sedimentation, land use, or other reason. The EA or EIS must contain a description of proposed mitigations, with the understanding that a detailed mitigation plan must be developed to the satisfaction of the 404 permitting agency in consultation with those agencies having an interest in the affected wetland.

18.2f. Impacts of wetlands can be assessed by using the function and values of the wetlands area as a basis to determine significance. If wetlands functions and value are large in number and critical to the wetland's well-being, it would be appropriate to conduct further study as part of an EIS. For example, the action would substantially alter the hydrology, vegetation, or soils needed to sustain the functions and values of the affected wetland or the wetlands it supports. Conversely, if wetlands functions and values are few in number and/or not important, no significant wetland impacts would occur.

18.3 SIGNIFICANT IMPACT THRESHOLDS. A significant impact would occur when the proposed action causes any of the following:

18.3a. The action would adversely affect the function of a wetland to protect the quality or quantity of municipal water supplies, including sole source, potable water aquifers.

18.3b. The action would substantially alter the hydrology needed to sustain the functions and values of the affected wetland or any wetlands to which it is connected.

18.3c. The action would substantially reduce the affected wetland's ability to retain floodwaters or storm-associated runoff, thereby threatening public health, safety or welfare (this includes cultural, recreational, and scientific resources important to the public, or property).

18.3d. The action would adversely affect the maintenance of natural systems that support wildlife and fish habitat or economically-important timber, food, or fiber resources in the affected or surrounding wetlands.

18.3e. The action would promote development of secondary activities or services that would affect the resources mentioned in items (1) through (4) in this section.

18.3f. The action would be inconsistent with applicable State wetland strategies.

18.4 ANALYSIS OF SIGNIFICANT IMPACTS:

18.4a. An agency having expertise in wetland impacts or resources may indicate that the action has potential significant wetland impacts. The responsible FAA official shall consult with that agency and, as necessary, the FWS, the Corps of Engineers, EPA, or NRCS (if wetlands are on agricultural lands), and State and local natural resource or wildlife agencies to make a determination on severity of wetland impacts. If the action is on Tribal lands, then the responsible FAA official must consult with Tribal natural resource and wildlife representatives. Any of these agencies may become a cooperating agency due to their expertise or jurisdiction. Permitting agencies may also become cooperating agencies. To the extent practical, the responsible FAA official will ensure that the environmental document meets the needs of the consulted agencies as well as those of the FAA. Scoping is encouraged to meet the needs of the permitting and cooperating agencies. Detailed analysis should include the following, as applicable:

(1) Considerations specified in E.O. 11990, Protection of Wetlands.

(2) An opinion should be issued, based on the above considerations, on the action's overall effect on the survival and quality of the remaining wetlands after project implementation.

(3) Aeronautical safety, transportation objectives, economics, and other factors bearing on the problem.

(4) Further consideration of the practicability of any alternatives.

(5) Inclusion of all practicable measures to minimize harm.

(6) Pursuant to the Fish and Wildlife Coordination Act, the FAA applies the instructions contained above.

18.4b. For any action which entails new construction located in wetlands, a specific finding should be made including: (1) there is no practicable alternative to construction in the wetland, and that (2) all practicable measures to minimize harm have been included. The proposed finding should be included in the final EIS or FONSI.

18.4c. When Federally-owned wetlands or portions of wetlands are proposed for lease, easement, right-of-way or disposal to non-Federal public or private parties, the FAA shall (a) reference in the conveyance those uses that are restricted under identified Federal, State or local wetlands regulations; and (b) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successor, except where prohibited by law; or (c) withhold such properties from disposal.

SECTION 19. WILD AND SCENIC RIVERS

Statute	Regulation	Oversight Agency
Wild and Scenic Rivers Act of 1968 [16 U.S.C. 1271-1287] [PL 90-542 as amended by PL 96-487]	36 CFR part 297, subpart A (USDA Forest Service) Department of the Interior and Department of Agriculture, Wild and Scenic River Guidelines for Eligibility, Classification and Management of River Areas (47 FR 39454, September 7, 1982) CEQ Memorandum on Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory, August 11, 1980 (45 FR 59190, September 8, 1980)	Department of the Interior, National Park Service, Fish and Wildlife Service, and Bureau of Land Management Department of Agriculture, Forest Service Council on Environmental Quality

19.1 REQUIREMENTS.

19.1a. The Wild and Scenic Rivers Act, as amended, describes those river segments designated or eligible to be included in the Wild and Scenic Rivers System. Under section 5(d)(1), the Department of the Interior (DOI) National Park Service (NPS) River and Trail Conservation Assistance Program (RTCA) within NPS's National Center for Recreation and Conservation (NCRC) maintains a Nationwide Rivers Inventory (NRI) of river segments that appear to qualify for inclusion in the National Wild and Scenic River System but which have not been designated as a Wild and Scenic River or studied under a Congressional authorized study. Some section 5(d) rivers (i.e., those eligible for designation as Wild and Scenic Rivers) may not be included in the NRI maintained by the NPS.

19.1b. The President's 1979 Environmental Message Directive on Wild and Scenic Rivers (August 2, 1979) directs Federal agencies to avoid or mitigate adverse effects on rivers identified in the Nationwide Rivers Inventory as having potential for designation under the Wild and Scenic Rivers Act. The August 11, 1980 CEQ Memorandum on Procedures for Interagency Consultation requires Federal agencies to consult with the NPS when proposals may affect a river segment included in the Nationwide Rivers Inventory. The Nationwide Rivers Inventory is included on the Rivers and Trails Conservation Assistance Program's webpage at www.ncrc.nps.gov/programs/rtca/nri. For those rivers or river segments which are not study rivers or designated rivers, and are not included in the NRI, the responsible FAA official should

contact the Federal agencies and State or States having jurisdiction over the river to determine what the status of the river or river segment is.

19.1c. Under section 7 of the Wild and Scenic Rivers Act, the responsible FAA official must obtain a section 7 determination from the Federal agencies that administer designated or study rivers (see www.nps.gov/rivers/ for lists of designated and study rivers). The Federal agencies include the USDA Forest Service (USFS), DOI Bureau of Land Management (BLM), DOI NPS, and DOI Fish and Wildlife Service (FWS). States also administer Wild and Scenic Rivers or segments of such rivers and should also be consulted. Note that for study rivers, Congress will, in the act authorizing the study, have designated a specific agency as the lead and the responsible FAA official should initiate consultation with that agency. Designated Wild and Scenic Rivers and study rivers are listed in the NPS's Wild and Scenic Rivers Program website at www.nps.gov/rivers along the specific Federal and State agencies that have jurisdiction over each.

19.1d. Section 12 of the Act requires a Federal agency with jurisdiction over any lands which include, border upon, or are adjacent to any river included, or under study for inclusion in the Wild and Scenic Rivers System to take action necessary to protect such river in accordance with the purposes of the Act. In addition, Federal agencies are required to cooperate with the Secretary of the Interior and appropriate State agencies for the purpose of eliminating or minimizing pollution in protected Inventory rivers. All agencies shall, as part of their normal environmental review processes, consult with the DOI (National Park Service (NPS)) and other Federal and State agencies having jurisdiction prior to taking any actions which could effectively foreclose or downgrade wild, scenic, or recreational river status of rivers in the Wild and Scenic Rivers System, study rivers, river segments in the Nationwide Rivers Inventory, or rivers or river segments otherwise eligible under section 5(d) for inclusion in the Wild and Scenic Rivers System but not on the NRI or under study.

19.1e. Permits/Certificates: Not Applicable.

19.2 FAA RESPONSIBILITIES.

19.2a. As soon as it appears that the proposed action could affect: (1) a Wild and Scenic River, (2) a river or river segment under study for inclusion in the Wild and Scenic River System, (3) a Nationwide Rivers Inventory river segment, or (4) an otherwise eligible river, the responsible FAA official should identify the Federal agency having jurisdiction over the river if on Federal land or the State and contact them for verification of the status of the river or river segment and jurisdiction for further consultation. If the NPS or other Federal and State agency having jurisdiction indicates that the proposed action could affect a Wild and Scenic River, a study river, a river segment in the Nationwide Rivers Inventory, or an otherwise eligible river or river segment, the responsible FAA official should consult with the appropriate agency for guidance as to avoiding or minimizing impacts.

19.2b. For designated Wild and Scenic Rivers, rivers on the NRI, and otherwise eligible rivers, the responsible FAA official must consult with the specific Federal agency having

jurisdiction over Wild and Scenic Rivers (e.g., the state district office of the BLM and the regional offices of the USFS, NPS, and FWS).

19.2c. For study rivers, the responsible FAA official should initiate consultation with the agency designated by Congress as the lead for the study.

19.2d. For rivers on the NRI, see the CEQ Memorandum on Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory and the CEQ Memorandum on Procedures for Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory. If no river in the NRI is adversely affected or the impact is not considered severe enough to preclude inclusion of the affected river segment in the Wild and Scenic River System or downgrade its classification (e.g., from wild to recreational), no further analysis is necessary. Consultation with NPS will determine whether or not the impact on any NRI river is significant.

19.2e. For rivers or river segments that are eligible under section 5(d) but not on the NRI, the responsible FAA official should consult with the agency or agencies having jurisdiction over the river or river segment.

19.3 SIGNIFICANT IMPACTS THRESHOLD. (no specific thresholds have been developed)

19.4 ANALYSIS OF SIGNIFICANT IMPACTS.

19.4a. Under the CEQ Memorandum on Procedures for Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory, when consultation with DOI leads to a determination that the effects on a NRI river segment are significant, or would preclude inclusion in the Wild and Scenic River System or downgrade its classification, the FAA should invite the NPS and any affected land management agencies to be cooperating agencies. If the NPS does not respond to such request for assistance within 30 days, then the FAA may proceed as otherwise planned, taking care to avoid or minimize adverse effects on the National Inventory river. For projects requiring EIS's, the record of decision must adopt appropriate avoidance and mitigation measures and a monitoring and enforcement program.

19.4b. The process is significantly impacted when an agency with the jurisdiction over a designated or eligible river segment does not issue a consent determination for the proposed action as required by section 7 of the Wild and Scenic Rivers Act and the impact cannot be mitigated to acceptable levels. If the circumstances exist, the FAA cannot proceed with the proposed action.

19.4c. For eligible wild, scenic, and recreational river areas not included in the NRI, the responsible FAA official should consider the potential effects on the river area.

19.4d. For Wild and Scenic Rivers, study rivers, NRI rivers under section 5(d)(1), and otherwise eligible rivers or river segments under section 5(d), the responsible FAA official must

obtain a section 7 determination that the proposed action will not have a direct and adverse effect on the values for which the river was or might be established or otherwise invade the river area, or for designated rivers, unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on October 2, 1968.

APPENDIX B. FAA GUIDANCE ON THIRD PARTY CONTRACTING FOR EIS PREPARATION

1. INTRODUCTION.

1a. The Council on Environmental Quality (CEQ) regulation 40 CFR section 1506.5(c) states that any environmental impact statement (EIS) prepared pursuant to the requirements of the National Environmental Policy Act (NEPA) shall be prepared directly by a lead agency, upon request of the lead agency a cooperating agency, or a contractor selected by the lead agency.

1b. The intent of CEQ section 1506.5(c) is to avoid conflicts of interest by those preparing impact statements. Contractors must be able to sign a disclosure statement (see 40 CFR 1506.5(c))

1c. The following guidance is provided to ensure FAA's continued compliance with the CEQ regulations and NEPA.

2. GENERAL GUIDANCE.

2a. The FAA must either prepare an EIS in-house (utilizing agency personnel and resources) or select a contractor to prepare the EIS. One method of selecting a contractor that may be used is known as "third party contracting."

2b. "Third party contracting" refers to the preparation of an EIS by a contractor selected by the FAA and under contract to and paid by an applicant (e.g., airport sponsor, applicant, air carrier). Through the statement of work, the contractor is responsible for assisting the FAA in preparing an EIS that meets the requirements of the NEPA regulations, the FAA's NEPA procedures, and all other appropriate Federal, State, and local laws. Since this process is purely voluntary, it is recommended that an agreement to use this process, establish a scope of work, and delineate the FAA contractor and applicant responsibilities be formalized by a Memorandum of Understanding (MOU) among the FAA contractor and the project proponent. In such situations, FAA retains oversight of the EIS. The CEQ recognizes the third party contracting arrangement as a legitimate method of EIS preparation in which the non-Federal applicant actually executes the contract and pays for the cost of preparing the EIS (see CEQ "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" (46 FR 18026) and CEQ Guidance Regarding NEPA Regulations (48 FR 34263), available at http://ceq.eh.doe.gov/nepa/regs/guidance.html).

2c. The FAA's selection of a contractor under this process may be pursued by the FAA's evaluation of a preselection list ("short list") of contractors submitted to the FAA by an airport applicant based on the sponsor's request for proposal (RFP) and evaluation. The applicant may submit the list of candidates to the FAA ranked according to the sponsor's evaluation of the contractors qualifications. The FAA, however, is under no obligation to make a selection based

on this ranking. The applicant also may submit the list of candidates to the FAA in an unranked form.

2d. Costs for preparing the EIS are paid by the applicant. For airport development projects and related activities, EIS may be funded by either Airport Improvement Plan (AIP) funds or local funds including Passenger Facility Charge (PFC) revenues. While AIP funds may be used to pay for costs associated with EIS preparation by a contractor selected by the FAA, Federal procurement requirements do not apply. Federal agencies are permitted under 40 CFR Part 18 to substitute their judgment for that of the grantee (i.e., airport) if the matter is primarily a "Federal concern" (i.e., consultant selection by FAA to comply the requirement of CEQ section 1506.5(c) is a "Federal concern").

2e. Guidance provided in the most current version of FAA Advisory Circular 150/5100-14, Architectural, Engineering and Planning Consultant Services for Airport Grants Projects, shall be followed in selecting a contractor for EIS preparation.

2f. When an EIS is prepared by a contractor, the FAA is still responsible for:

(1) Obtaining a "disclosure statement" from the contractor,

(2) Exercising oversight of the contractor to ensure that a conflict of interest does not exist,

(3) Taking the lead in the scoping process,

(4) Furnishing guidance and participating in the preparation of the EIS,

(5) Independently evaluating the EIS and verifying environmental information provided by the applicant, or others, adding its expertise through review and revision, as necessary,

(6) Approving the EIS, and

(7) Taking responsibility for the scope and content of the EIS.

APPENDIX C. RELATED EXECUTIVE ORDERS, DOT & FAA ORDERS, AND MEMORANDA/GUIDANCE

This appendix contains annotated lists of Executive Orders, FAA and DOT orders, memoranda, guidance, and FAA policies that are general in nature and do not apply specifically to any of the environmental areas discussed in Appendix A. The responsible FAA official should be familiar with these because their language or direction may affect the analysis and determinations made for the impacts of many types of actions.

Figure 1. Related Executive Orders

EXECUTIVE ORDERS	DESCRIPTION
Executive Order 11514, Protection and Enhancement of Environmental Quality, March 4, 1970, as amended by Executive Order 11991, May 24, 1977.	Orders all Federal agencies to "initiate measures needed to direct their policies, plans, and programs so they meet national environmental goals."
Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, January 4, 1979.	Provides pertinent environmental considerations with respect to proposed actions outside the United States, its territories, and possessions (44 FR 18722, March 29, 1979).
Executive Order 12372, Intergovernmental Review of Federal Programs, July 14, 1982, and 49 CFR part 17, Intergovernmental Review of DOT Programs and Activities.	Requires Federal agencies to provide the opportunity for State and local elected officials to review and comment on Federal actions for Federal assistance or actions affecting them.
Executive Order 12866, Regulatory Planning and Review, and Presidential Memorandum, Plain Language in Government Writing, June 1, 1998.	Requires all Federal agencies to use plain language in all proposed and final rulemaking documents published in the Federal Register (63 FR 31885, June 10, 1998).
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994.	Requires each Federal agency to identify and address disproportionately high and adverse effects of its programs, policies, and activities on the human health or environment of minority and low-income populations, including effects on subsistence patterns of consumption of fish, vegetation, or wildlife, and to ensure effective public participation and access to information (59 FR 7629, February 16, 1994).
Executive Order 12906, Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure, April 11, 1994	Requires studies and geospatial data collected in the course of preparing an EA or EIS to conform to quality standards established under E.O. 12906 (59 FR 17671, April 13, 1994).
(more)	

Figure 1. Related Executive Orders (continued)

EXECUTIVE ORDERS	DESCRIPTION
Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks, April 21, 1997.	Requires agencies to ensure that its policies, programs, activities, and standards address disproportionate environmental health risks and safety risks to children, with specific additional requirements for rulemaking actions (62 FR 19885, April 23, 1997).
Executive Order 13175, Consultation and Coordination With Indian Tribal Governments, November 6, 2000.	Requires agencies, in formulating policies significantly or uniquely affecting Tribes, to be guided, to the extent permitted by law, by principles of respect for Tribal self-government and sovereignty, for Tribal treaty and other rights, and for responsibilities that arise from the unique legal relationship between the Federal Government and Tribes. Requires Federal agencies to consult on a government-to-government basis with Tribes to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities (see 65 FR 67249, November 9, 2000).
Executive Order 13148, Greening the Government Through Leadership in Environmental Management, April 21, 2000	Each agency is responsible for ensuring that all necessary actions are taken to integrate environmental accountability into agency day-to-day decisionmaking and long-term planning processes, across all agency missions, activities, and functions.
(end of Figure 1)	

Figure 2. Related FAA and DOT Orders

FAA and DOT ORDERS	DESCRIPTION
FAA Order 5050.4A, Airport Environmental Handbook, October 8, 1985.	Provides guidance on meeting the requirements of NEPA and other Federal and Departmental environmental regulations for airport-related projects.
FAA Order 1100.154A, Delegation of Authority, June 1990.	Provides delegation of authority to agency officials to sign environmental documents.
Order DOT 5610.1C, Procedures for Considering Environmental Impacts, (44 FR 56420, October 1, 1979), and Order DOT 5610.1, Changes 1 & 2 (July 13, 1982 and July 30, 1985).	Provides guidelines for considering environmental impacts of transportation actions.
Order DOT 5610.2, Environmental Justice in Low-Income Populations and Minority Populations, April 15, 1997.	Requires FAA to follow specific procedures for analyzing environmental justice effects of proposed agency actions (62 FR 18377, April 15, 1997).
Order DOT 5301.1, Department of Transportation Programs, Policies and Procedures Affecting American Indian, Alaska Native, and Tribes; November 6, 1999	
FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures, January 28, 2004	Provides policy guidance to strengthen FAA's government-to-government relationship with Tribes, and the consultation framework to promote meaningful coordination.
(end of Figure 2)	

Figure 3. Related Memoranda & Guidance

MEMORANDA & GUIDANCE	DESCRIPTION
CEQ Environmental Justice: Guidance Under the National Environmental Policy Act, December 10, 1997.	Provides guidance on integrating environmental justice considerations in NEPA analysis.
EPA Guidance for Consideration of Environmental Justice in Clean Air Act Section 309 Reviews, July 1999.	Describes EPA's approach to reviewing and commenting on environmental justice analyses in agency NEPA documents, as required under section 309 of the Clean Air Act.
Presidential Memorandum on Government-to-Government Relations with Native American Tribal Governments, April 29, 1994.	Outlines principles for government-to-government consultation with Tribes (59 FR 22951, May 4, 1994).
CEQ Memorandum on Designation of Non-Federal Agencies to be Cooperating Agencies in Implementing the Procedural Requirements of the National Environmental Policy Act, July 28, 1999.	Provides guidance on designating State, and local governments and Tribes as cooperating agencies.
CEQ Guidance on Considering Cumulative Effects Under the National Environmental Policy Act, January 1997.	Provides guidance for complying with the NEPA requirement to consider cumulative effects of the proposed action, that is, the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such other actions.
EPA Guidance on Consideration of Cumulative Impacts in EPA Review of NEPA Documents, May 1999.	Describes EPA’s approach to reviewing and commenting on cumulative effects analyses in agency NEPA documents, as required under the Clean Air Act section 309.
(more)	

Figure 3. Related Memoranda & Guidance (continued)

MEMORANDA & GUIDANCE	DESCRIPTION
Memorandum of Understanding (MOU) between the FAA and the Department of Defense, October 4, 2005.	Addresses environmental review for special use airspace actions.
Memorandum of Agreement (MOA) among Department of Defense, FAA, and the National Aeronautics and Space Administration on Federal Interaction with Launch Site Operators, August 21, 1997.	Addresses lead agency cooperation and responsibilities.
FAA Policy on Community Involvement, April 17, 1995, and FAA "Community Involvement Manual," August 1990.	Outlines the FAA's goals for community involvement and provides practical guidelines for involving the community in a variety of aviation planning situations.
Guidance - FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures; February 18, 2004	
(end of Figure 3)	

APPENDIX D ENVIRONMENTAL STEWARDSHIP AND STREAMLINING VISION 100 -- CENTURY OF AVIATION REAUTHORIZATION ACT

1. INTRODUCTION.

a. Title III of Vision 100, signed into law by the President on December 12, 2003, is also cited as the "Aviation Streamlining Approval Process Act of 2003." In Title III, Congress found that the Federal Aviation Administration (FAA), airport authorities, communities, and other Federal, State, and local government agencies must work together to develop a plan, set and honor milestones and deadlines, and work to protect the environment while sustaining the economic vitality that will result from the continued growth of aviation.

b. The Act directs the Secretary of Transportation to develop and implement an expedited and coordinated environmental review process for airport capacity projects at congested airports, aviation safety projects, and aviation security projects.

2. FAA POLICY. The FAA will adhere to the high standards of environmental review described in this Order for projects subject to environmental streamlining. The FAA will comply with all environmental protection requirements, maintain the integrity of the environmental process, and respect the environmental responsibilities of other agencies. Environmental streamlining will be used to give review priority to certain projects, manage timelines during the review process, improve and expedite interagency coordination, reduce undue delays, and emphasize accountability.

3. RELATIONSHIP TO OTHER REQUIREMENTS. The specific provisions in the Act on how the Secretary shall accomplish this mandate are consistent with DOT/FAA responsibilities under the National Environmental Policy Act (NEPA) and other environmental laws, as described in this Order. Nothing in the Act changes the FAA's environmental obligations or the practice of seeking public comment. The Act supplements Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Reviews, and FAA administrative streamlining practices. The Transportation Infrastructure Streamlining Task Force established by Executive Order 13274 may monitor airport projects that are subject to the coordinated and expedited review process under the Act.

4. PROJECTS SUBJECT TO STREAMLINING IN VISION 100. Three categories of aviation projects are subject to the Act's streamlining provisions -- (1) airport capacity projects at congested airports, (2) aviation safety projects, and (3) aviation security projects.

a Airport capacity project at a congested airport. An airport capacity project is a project for the construction or extension of a runway (including any land acquisition, taxiway, or safety area associated with the runway or runway extension) and other airport development projects that the Secretary of Transportation may designate as facilitating a reduction in air traffic congestion and delays. A congested airport is an airport that accounted for at least 1 percent of all delayed aircraft operations in the U.S. in the most recent year for which data is available, and an airport listed in table 1 of the FAA's Airport Capacity Benchmark Report 2001.

b. Aviation safety project. This is an aviation project that has as its primary purpose reducing the risk of injury to persons or damage to aircraft and property, as determined by the FAA Administrator, and is either needed to respond to a recommendation from the National Transportation Safety Board as determined by the Administrator, or is necessary for an airport to comply with 14 CFR part 139 relating to airport certification.

c. Aviation security project. This is a security project at an airport that is required by the Department of Homeland Security.

5. PROJECT DESIGNATION. The Act distinguishes in certain respects the designation of an airport capacity project at a congested airport from the designation of an aviation safety or security project for coordinated and expedited review under the Act. Projects may be designated that require the preparation of an EA, as well as those that require an EIS. In making a designation, the Administrator may consult with the Department of Homeland Security and any Federal or State agency that may have jurisdiction over environmental-related matters that may be affected by the project or may be required by law to conduct an environmental-related review or analysis of the project or determine whether to issue an environmental-related permit, license, or approval for the project.

a. Airport capacity project at a congested airport. Airport capacity projects at congested airports are more definitively defined in the Act than aviation safety and security projects. Airport capacity projects at congested airports are required to be subject to the coordinated and expedited environmental review process set forth in the Act. The Act states that its provisions shall apply to an airport capacity project at a congested airport whether or not the project is designated by the Secretary of Transportation as a high priority transportation infrastructure project under Executive Order 13274. The FAA Associate Administrator for Airports has the responsibility for designating runway construction and extension projects, consistent with the definition in the Act, and for recommending other projects for designation by the Secretary or his designee.

b. Aviation safety or security project. The FAA Administrator has the discretion to designate or not designate an aviation safety or security project. The Administrator may not delegate this authority. Once a project designation is made, the project shall be subject to the coordinated and expedited environmental review process set forth in the Act. The Administrator's designation is subject to the consideration of the following guidelines --

(1) the importance or urgency of the project;
(2) the potential for undertaking the environmental review under existing emergency procedures under the National Environmental Policy Act;
(3) the need for cooperation and concurrent reviews by other Federal or State agencies;
(4) the prospect for undue delay if the project is not designated for priority review; and
(5) for aviation security projects, the views of the Department of Homeland Security.

c. The FAA Associate Administrator with the lead responsibility may recommend the designation of projects that meet the Act's definitions of aviation safety and security projects,

subject to the above guidelines. The recommending office will forward its documentation to the Office of Environment and Energy (AEE). AEE will be responsible for the uniform interpretation and application of the guidelines and will review each recommended designation and provide advice on project designation to the recommending office and the Administrator. The FAA may receive recommendations for project designation from the Department of Homeland Security. These recommendations will be subject to the same FAA internal review procedures.

6. COORDINATED AND EXPEDITED ENVIRONMENTAL REVIEW PROCESS. For each project that has been designated for the coordinated and expedited environmental review process under the Act, the provisions below apply. It is the responsibility of the FAA office that has the prime responsibility for the proposed Federal action and is leading the environmental review to apply the provisions within the purview of the FAA to specific projects.

a. Identification of Federal and State Jurisdictional Agencies. The FAA will identify, as soon as practicable, all Federal and State agencies that may have jurisdiction over environmental-related matters that may be affected by the project or may be required by law to conduct an environmental-related review or analysis of the project or determine whether to issue an environmental-related permit, license, or approval for the project.

b. Federal and State Agency Participation. Each identified Federal agency is required to put mechanisms in place to enable the agency to participate in the coordinated review process and to ensure completion of environmental reviews, analyses, opinions, permits, licenses, and approvals in a timely and environmentally responsible manner. State agency participation is at the discretion of the Governor of the State in which the project is located. A Governor, consistent with State law, may choose to participate in the coordinated review process and provide that all identified State agencies will be subject to the process.

c. Coordinated and Expedited Review Process. The Act directs the Secretary to develop and implement a coordinated and expedited environmental review process for designated projects. This review process is to provide for better coordination among the Federal, regional, State, and local agencies concerned with the preparation of EIS's or EA's. It is to provide for all project environmental reviews, analyses, opinions, permits, licenses, and approvals that must be issued or made by a Federal agency or airport sponsor, or by a participating State agency, to be conducted concurrently to the maximum extent practicable and to be completed within a time period established by the Secretary. Additional factors that are included within the Act’s provisions to support and enhance a coordinated and expedited environmental review process are described below. The FAA may supplement these with measures that are considered to be best practices, consistent with environmental laws, regulations, and policies.

d. High Priority for Environmental Reviews. Each Federal agency is directed to give the highest possible priority to projects designated for coordinated review under the Act and to conduct their review, analysis, opinion, permit, license, or approval functions expeditiously. Participating State agencies are expected to perform similarly.

e. Memorandum of Understanding. The coordinated review process may be incorporated into a memorandum of understanding between the FAA and other participating Federal and State agencies and, if applicable, the airport sponsor. The use of a memorandum of understanding is discretionary, rather than required.

f. Interagency Environmental Impact Statement Teams. The FAA may, but is not required to, use an interagency EIS team to coordinate and expedite the environmental review process and to assist the FAA in preparing the EIS. If using an EIS team, FAA is required to invite Federaland State agencies and tribes with jurisdiction by law to participate on the team. Agencies with expertise may also be invited. In order to facilitate timely and efficient environmental review, team members shall agree on agency or Tribal points of contact, protocols for communication among agencies, and deadlines for necessary actions by each individual agency (including the review of environmental analyses, the conduct of required consultation and coordination, and the issuance of environmental opinions, licenses, permits, and approvals). The team members may formalize their agreement in a written memorandum.

g. Lead Agency Responsibility. The Act identifies FAA as the lead agency for projects designated for the coordinated and expedited environmental review process, and specifies that the FAA shall be responsible for defining the scope and content of EIS's, consistent with CEQ regulations. The Act further provides that any other Federal or State agency that is participating in the coordinated environmental review process shall give substantial deference, to the extent consistent with applicable law and policy, to the aviation expertise of the FAA. It is FAA's continuing responsibility to assure the integrity of aviation data used for environmental analyses and agency decision making.

h. Purpose and Need. For any environmental review, analysis, opinion, permit, license, or approval that must be issued or made by a Federal or State agency that is participating in the coordinated environmental review process and that requires an analysis of the purpose and need for a project, the Act provides that the agency shall be bound by the project purpose and need as defined by the Secretary, notwithstanding any other provision of law. The Act requires the Secretary to solicit and consider comments on project purpose and need from interested persons and governmental entities in accordance with NEPA. This may be accomplished through normal NEPA procedures for public and agency review. This provision of law does not change FAA's responsibilities described in this Order with respect to determining the purpose and need for a project. FAA will cooperatively review proposed project purpose and need statements with other agencies that have jurisdiction and decision making roles and will attempt to accommodate other agency needs, consistent with CEQ regulations and guidance, FAA program responsibility, and FAA substantive expertise on aviation proposals.

i. Alternatives Analysis. Similar to the provision on project purpose and need, the Act authorizes the Secretary to determine the reasonable alternatives to a project designated for the coordinated environmental review process. Any other Federal or State agency that is participating in the coordinated environmental review process shall consider only those alternatives to the project that the Secretary has determined are reasonable. The remainder of the guidance above on project purpose and need is also applicable to alternatives analysis with respect to the solicitation and consideration of comments, use of normal NEPA procedures,

compliance with the provisions of this Order, and consultation and cooperation with other agencies.

j. Reporting and Remedying Failure to Meet Project Deadline. The FAA will report to the Office of the Secretary if a Federal agency, State agency, or airport sponsor that is participating in the coordinated environmental review process has not met a deadline established for the project for an environmental review, analysis, opinion, permit, license, or approval. The Act directs the Secretary to notify, within 30 days of making a determination on such a missed deadline, the Senate Committee on Commerce, Science, and Transportation, the House Committee on Transportation and Infrastructure, CEQ, and the agency or sponsor involved about the failure to meet the deadline. The Act further directs, not later than 30 days after the receipt of such a notice, the agency or sponsor involved to submit a report to the Secretary, the Senate Committee on Commerce, Science, and Transportation, the House Committee on Transportation and Infrastructure, and CEQ that explains why the agency or sponsor did not meet the deadline and describes actions it intends to take to complete or issue the required review, analysis, opinion, permit, license, or approval. The FAA will make every effort to assist participants in the coordinated environmental review process to meet deadlines, or to remedy missed deadlines as rapidly as possible.

7. OTHER PROVISIONS. Vision 100 includes others provisions that may assist in facilitating the timeliness and completion of environmental reviews.

a. Airport Funding of FAA Staff and Consultants. The FAA Administrator may accept funds from an airport sponsor, including funds provided to the sponsor under the AIP program, to hire additional staff or obtain the services of consultants in order to facilitate the timely processing, review, and completion of environmental activities associated with an airport development project. The Office of Airport Planning and Programming is responsible for guidance and funding arrangements for reimbursable agreements.

b. Air Traffic Procedures for Airport Capacity Projects at Congested Airports. During the environmental planning process, FAA may consider flight procedures to avoid or minimize significant noise impacts of an airport capacity project at a congested airport that involves the construction of new runways or the reconfiguration of existing runways. If the Administrator determines that noise mitigation flight procedures are consistent with the safe and efficient use of the navigable airspace, the Administrator may commit, at the request of the airport sponsor and in a manner consistent with applicable Federal law, to prescribing the procedures in any Record of Decision approving the project. The Air Traffic Organization is the responsible FAA office for developing and approving noise mitigation flight procedures.

c. Flexible Funding of Noise Mitigation for Airport Capacity Projects and Other Airport Development Projects. The delivery of Airport Improvement Program (AIP) funding for noise mitigation can be enhanced and expedited by provisions in the Act that allow funding from the AIP noise set-aside for mitigation in FAA Records of Decision without additional approval under 14 CFR part 150. The Office of Airport Planning and Programming is responsible for AIP funding guidance.

d. Voluntary Air Quality Initiatives. The Act provides funding and emission credit incentives for commercial service airports in air quality nonattainment and maintenance areas to reduce airport ground emissions on a voluntary basis. While the purpose of these initiatives is not a streamlining one, emission credits that are granted to airports under this program may be used for current or future general conformity determinations under the Clean Air Act or as offsets under EPA's new source review program for projects on the airport or associated with the airport. Such provisions may reduce delays in complying with air quality requirements during environmental reviews. FAA and EPA are jointly responsible for issuing guidance for the air quality initiatives. Within FAA, the Office of Airport Planning and Programming is the responsible office.

e. Elimination of Duplication in Air and Water Quality Certification. A provision dating from 1970 to assure air and water quality protection by receiving a certification from the Governor of a state for certain major airport development projects has been eliminated. It is no longer necessary in view of protections in the Clean Air Act and Clean Water Act.

f. Issuance of FAA Environmental Guidance. The Act directs the Secretary to publish the final version of this Order no later than 180 days after enactment of the Act and, within an additional 180 days, to publish for public comment the revised FAA Order 5050.4B, Airport Environmental Handbook. Most of the projects that are subject to the streamlining provisions of the Act, and those that are of the greatest interest and concern, are airport capacity projects. FAA Order 5050.4B will include details on streamlining airport capacity project reviews.

APPENDIX E. LIST OF ACRONYMS

AAF	-	Airway Facilities Service
AAIA	-	Airport and Airway Improvement Act
AAT	-	Air Traffic Service
ABA	-	Assistant Administrator for Financial Services
ABU	-	Office of Budget
AC	-	Advisory Circular
ACHP	-	Advisory Council on Historic Preservation
ACR	-	Office of Civil Rights
ACS	-	Associate Administrator for Civil Aviation Security
ACT	-	Director, William J. Hughes Technical Center
AD	-	Airworthiness Directive
ADIZ	-	Air Defense Identification Zone
AEE	-	Office of Environment and Energy
AEE-200	-	Environment, Energy & Employee Safety Division
AEM	-	Area Equivalent Method
AEP	-	Assistant Administrator for Aviation Policy, Planning and Environment
AFS	-	Airway Facilities Service
AGC	-	Office of the Chief Counsel
AGC-620	-	Environmental Law Branch
AGL	-	Above Ground Level
AHM	-	Center for Management Development
AHR	-	Assistant Administrator for Human Resource Management
AHT	-	Office of Learning and Development
AIP	-	Airport Improvement Program
AIRFA	-	American Indian Religious Freedom Act
ALP	-	Airport Layout Plan
ALS	-	Approach Lighting System
AMA	-	FAA Academy
AMC	-	Mike Monroney Aeronautical Center
AND	-	Office of Communication, Navigation, and Surveillance Systems
ANI	-	National Airspace System Implementation Program
ANR	-	Program Director for Surveillance
ANSI	-	American National Standards Institute
AOP	-	NAS Operations
APE	-	Area of Potential Effect
API	-	Assistant Administrator for International Aviation
APP-600	-	Community and Environmental Needs Division
ARA	-	Associate Administrator for Research and Acquisitions
ARC	-	Associate Administrator for Region and Center Operations
ARM	-	Office of Rulemaking
ARP	-	Associate Administrator for Airports
ARPA	-	Archeological Resources Protection Act

ARSR	-	Air Route Surveillance Radar
ARTCC	-	Air Route Traffic Control Center
ASD	-	Office of Systems Architecture and Investment Analysis
ASDE	-	Airport Surface Detection Equipment
ASE	-	NAS Systems Engineering Service
ASM	-	Systems Maintenance Service
ASR	-	Airport Surveillance Radar
AST	-	Associate Administrator for Commercial Space Transportation
AST	-	Above Ground Storage Tank
ASU	-	Office of Acquisitions
ATA-300	-	Environmental Programs Division
ATC	-	Air Traffic Control
ATCBI	-	Air Traffic Control Beacon Interrogator
ATCT	-	Air Traffic Control Tower
ATNS	-	Air Traffic Noise Screening Procedure
ATO	-	Air traffic Organization
ATS	-	Associate Administrator for Air Traffic Services
AVR	-	Associate Administrator for Regulation and Certification
AVN	-	Aviation System Standards
AWOS	-	Automated Weather Observing System
BA	-	Biological Assessment
BLM	-	Bureau of Land Management
C-1	-	Office of the General Counsel
CAA	-	Clean Air Act
CBRA	-	Coastal Barriers Resources Act
CE	-	Categorical Exclusion
CEQ	-	Council on Environmental Quality
CERCLA	-	Comprehensive Environmental Response, Compensation and Liability Act
CFR	-	Code of Federal Regulations
CNEL	-	Community Noise Equivalent Level
CO	-	Carbon Monoxide
COE	-	Corps of Engineers
CWA	-	Clean Water Act
CZM	-	Coastal Zone Management
CZMA	-	Coastal Zone Management Act
DARC	-	Direct Access Radar Channel
dB	-	Decibel
DEIS	-	Draft Environmental Impact Statement
DER	-	Designated Engineering Representative
DNL or L_{dn}	-	Day Night Average Sound Level
DOA	-	Department of Agriculture
DOC	-	Department of Commerce
DOD	-	Department of Defense
DOE	-	Department of Energy
DOI	-	Department of Interior
DOT	-	Department of Transportation

DVOR	-	Doppler Very High Frequency Omnidirectional Range
EA	-	Environmental Assessment
EC	-	Environmental Concerns
EDDA	-	Environmental Due Diligence Audit
EDMS	-	Emissions and Dispersion Modeling System
EIS	-	Environmental Impact Statement
E.O.	-	Executive Order
EPA	-	U.S. Environmental Protection Agency
ER	-	Environmental Reservations
ESA	-	Endangered Species Act
EU	-	Environmentally Unsatisfactory
F&E	-	Facilities and Equipment
FAA	-	Federal Aviation Administration
FEIS	-	Final Environmental Impact Statement
FEMA	-	Federal Emergency Management Agency
FFCA	-	Federal Facility Compliance Act of 1992
FHWA	-	Federal Highway Administration
FICON	-	Federal Interagency Committee on Noise
FIP	-	Federal Implementation Plan
FMS	-	Flight Management System
FONSI	-	Finding of No Significant Impact
FPO	-	Federal Preservation Officer
FPPA	-	Farmland Protection Policy Act
FR	-	Federal Register
FSS	-	Flight Service Station
FWS	-	Fish and Wildlife Service
GA	-	General Aviation
GIS	-	Geographic Information System
GPS	-	Global Positioning System
GSA	-	General Services Administration
HNM	-	Heliport Noise Model
HUD	-	Department of Housing and Urban Development
IEEE	-	Institute of Electrical and Electronics Engineers
ILS	-	Instrument Landing System
INM	-	Integrated Noise Model
ISR	-	Indirect Source Review Liability Act
LAAS	-	Local Area Augmentation System
LEIS	-	Legislative Environmental Impact Statement
LLWAS	-	Low Level Wind Shear Alert System
Lmax	-	Maximum Noise Level
LO	-	Lack of Objections
LOU	-	Letter of Understanding
LV	-	Launch Vehicle
MALSR	-	Medium Intensity Approach Lighting System with Runway Alignment Light System
MERF	-	Mobile Emergency Radar Facilities

MLS	-	Microwave Landing System
MOA	-	Memorandum of Agreement
MOU	-	Memorandum of Understanding
MSL	-	Mean Sea Level
NAAQS	-	National Ambient Air Quality Standard
NAGPRA	-	National American Graves Protection and Repatriation Act
NAS	-	National Airspace System
NATHPO	-	National Association of Tribal Historic Preservation Officers
NAVAIDS	-	Air Navigation Facility
NCA	-	Noise Control Act of 1972
NCP	-	Noise Compatibility Program
NCRP	-	National Center for Recreation and Conservation
NCSHPO	-	National Conference of State Historic Preservation Officers
NEF	-	Noise Exposure Forecast
NEPA	-	National Environmental Policy Act
NEXRAD	-	Next Generation Radar
NHPA	-	National Historic Preservation Act
NLR	-	Noise Level Reduction
NMFS	-	National Marine Fisheries Service
NOA	-	Notice of Availability
NOAA	-	National Oceanic and Atmospheric Administration
NOI	-	Notice of Intent
NOTAMS	-	Issuance of Notices to Airmen
NOx	-	Oxides of Nitrogen
NPDES	-	National Pollutant Discharge Elimination System
NPIAS	-	National Plan of Integrated Airport Systems
NPL	-	National Priorities List
NPRM	-	Notice of Proposed Rulemaking
NPS	-	National Park Service
NRC	-	National Response Center
NRCS		Natural Resources Conservation Service
NRHP		National Register of Historic Places
NRI		Nationwide Rivers Inventory
NWP		Nationwide Permit Program
ODALS	-	Omnidirectional Approach Lighting System
OFA		Office of Federal Activities
OMB		Office of Management and Budget
P-1		Office of the Assistant Secretary for Transportation Policy
P-130		Environmental Policies Team
PA		Programmatic Agreement
PAD		Preparing Agreement Documents
PAPI		Precision Approach Path Indicator
PCB		Polychlorinated Biphenyls
PFC		Passenger Facility Charge
P.L.		Public Law
PRM		Precision Runway Monitor

PVD		Plan View Displays
RBDE		Radar Brite Display Equipment
RCAG	-	Remote Center Air/Ground Communications Facility
RCO	-	Remote Communications Outlet
RCRA	-	Resource Conservation and Recovery Act of 1976
RE&D	-	Research, Engineering & Development
REIL	-	Runway End Identifier Lights
RFP	-	Request for Proposal
RML	-	Radar Microwave Link
ROD	-	Record of Decision
RTCA	-	River and Trail Conservation Assistance Program
RT/R	-	Remote Transmitter/Receiver
RVR	-	Runway Visual Range
SARA	-	Superfund Amendments and Reauthorization Act of 1986
SAWS	-	Stand Alone Weather Sensors
SCS	-	Soil Conservation Service
SDWA	-	Safe Drinking Water Act
SEL	-	Sound Exposure Level
SHPO	-	State Historic Preservation Officer
SIP	-	State Implementation Plan
SPL	-	Sound Pressure Level
SSALSR	-	Simplified Shortened Approach Lighting System with Runway Alignment Indicator Light System
SUA	-	Special Use Airspace
SWDA	-	Solid Waste Disposal Act of 1980
SWMU	-	Solid Waste Management Unit
TA	-	Time Above
TACAN	-	Ultra-High Frequency Tactical Air Navigation Aid
TCP	-	Traditional Cultural Place
TDWR	-	Terminal Doppler Weather Radar
THPO	-	Tribal Historic Preservation Officer
TRACON	-	Terminal Radar Approach Control
TSCA	-	Toxic Substances Control Act of 1976, as amended
TSO	-	Technical Standard Order
U.S.C.	-	United States Code
USCG	-	United States Coast Guard
USDA	-	U.S. Department of Agriculture
UST	-	Underground Storage Tank
VASI	-	Visual Approach Slope Indicator
VHF	-	Very High Frequency
VOR	-	VHF Omnidirectional Range
VORTAC	-	(See VOR and TACAN)
VOT	-	VOR Test Facility
WAAS	-	Wide Area Augmentation System
WQC	-	Water Quality Certificate

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

National Policy

ORDER

1050.1E, CHG 1

Effective Date:
March 20, 2006

SUBJ: Environmental Impacts: Policies and Procedures

1. **PURPOSE.** This change transmits revised pages to Chapters 3,4,5, Appendix A and Appendix C of FAA Order 1050.1E, CHG 1.

2. **DISTRIBUTION.** This change will be electronically distributed within the FAA and made available to the public via the Internet at http://www.faa.gov/regulations_policies/orders_notices.

3. **EXPLANATION OF CHANGES.** This order revises the FAA agency-wide policies and procedures for compliance with the National Environmental Policy Act (NEPA) and implementing regulations issued by the Council on Environmental Quality (40 CFR parts 1500-1508). This revision includes changes for clarification; changes for consistency; a change for addition of information; corrections; and editorial changes.

4. DISPOSITION OF TRANSMITTAL. This transmittal is to be **RETAINED AND FILED IN THE BACK OF THIS HANDBOOK** until it is superseced by a new basic order.

Remove Pages	Dated	Insert Pages	Dated
3-1	06/08/04	3-1	03/20/06
3-3	06/08/04	3-3	03/20/06
3-9	06/08/04	3-9	03/20/06
4-3	06/08/04	4-3	03/20/06
4-4	06/08/04	4-4	03/20/06
4-7	06/08/04	4-7	03/20/06
5-10	06/08/04	5-10	03/20/06
5-11	06/08/04	5-11	03/20/06
5-20	06/08/04	5-20, 5-21	03/20/06
5-16	06/08/04	5-16	03/20/06
5-18	06/08/04	5-18	03/20/06
A-11	06/08/04	A-11, A-12	03/20/06
A-19	06/08/04	A-19	03/20/06
A-32	06/08/04	A-32	03/20/06
A-37	06/08/04	A-37	03/20/06
A-45	06/08/04	A-45	03/20/06
C-5	06/08/04	C-5	03/20/06

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