RUNWAY 17-35
PHL EIS

Federal Aviation Administration

PHILADELPHIA INTERNATIONAL AIRPORT

Runway 17-35 Extension Project

Final Environmental Impact Statement

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Introduction and Background

1.1 Introduction

The Federal Aviation Administration (FAA) has identified the Philadelphia International Airport (PHL) as one of the airports contributing to delays throughout the national airport system. Knowing this and realizing its regional and local importance, the City of Philadelphia's Department of Commerce, Division of Aviation (the Sponsor) began preparing a Master Plan Update (MPU) in the fall of 2000 to study the airport's facility needs relative to future operational and passenger demand. One of the specific objectives of the study was to evaluate the cause(s) of delay at the airport, which in 2003 was the sixth most delayed airport in the United States of America (U.S.)[1] Figure 1-1 shows the 10 most delayed airports in 2003 ranked by total delays.

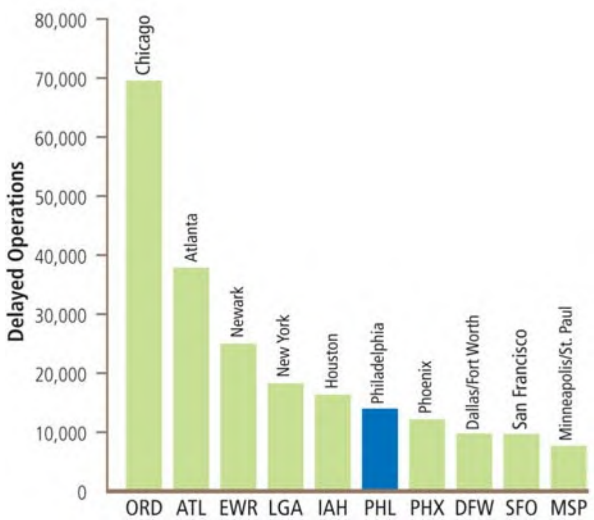
The Sponsor examined existing passenger and aircraft activity levels and measured both against the capacity of the existing facilities to efficiently handle these levels. The analyses of the forecast passenger and aircraft activity levels determined that the numbers and durations of delayed operations at PHL would continue to increase from their current average level of nearly 10 minutes per operation to nearly 19 minutes per operation in 2010. FAA considers an airport with average delay in excess of five minutes to be congested.[2]

The Federal Aviation Administration (FAA) has identified the Philadelphia International Airport (PHL) as one of the airports contributing to delays throughout the national airport system. The FAA has determined that a capacity and delay problem exists at PHL and that one of the major causes of the delay is inadequate all-weather airfield capacity due to the airfield's current configuration. The FAA has also determined that proposed projects identified by the City of Philadelphia (the Sponsor) to alleviate this problem would require FAA to prepare an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). One of these proposed projects, known as the Runway 17-35 Extension Project (the Project), would provide a short-term delay reduction.

1 *OPSNET Ranking Report, Federal Aviation Administration,* (http://www.apo.data.faa.gov/opsnet), 19 August 2004.

2 *National Plan of Integrated Airport Systems (NPIAS) (2001-2005), Report to Congress*, Federal Aviation Administration, 28 August 2002.

Figure 1-1 Top 10 Delayed U.S. Airports in 2003



Source: *OPSNET Ranking Report, Federal Aviation Administration*, (http://www.apo.data.faa.gov/opsnet/), 19 August 2004.
ORD = Chicago O'Hare; ATL = Atlanta; EWR = Newark-Liberty; LGA – LaGuardia; IAH = Houston; PHL PHX = Phoenix; DFW= Dallas Fort Worth; SFO = San Francisco; MSP = Minneapolis-St Paul.

The FAA prepared this Final Environmental Impact Statement (FEIS) to identify and evaluate the potential environmental effects associated with the construction and operation of proposed improvements to PHL. Based on this FEIS, FAA will issue a Record of Decision (ROD) that contains findings, explanations of the findings, and a decision on whether FAA may or may not provide the approvals and Federal actions necessary to facilitate the proposed project, based on projected environmental impacts.

In recognizing the importance of protecting the environment, the U.S. Congress passed the National Environmental Policy Act (NEPA) of 1969 so Federal agencies would consider the environment during their decision-making processes. NEPA requires Federal agencies to treat environmental impact as a primary criterion in evaluating a proposed project. It also requires Federal agencies to analyze and consider alternatives to, and the environmental impacts of, their proposed actions; to disclose and consider mitigation for those impacts; and to provide interested parties with an opportunity to participate in the environmental evaluation process. When selecting a preferred alternative, NEPA requires Federal agencies to consider a proposed action's environmental consequences and to balance them with the agency's statutory mission and responsibilities and technical and economic factors.

A second proposed project, known as the PHL Capacity Enhancement Program (CEP), is a major airfield redevelopment project that would provide additional capacity and, as a result, more comprehensive and longer-term delay reduction. FAA is early in this NEPA process for the CEP, but has assigned priority to the Project because of PHL's more immediate need to achieve short-term delay reductions as soon as possible.

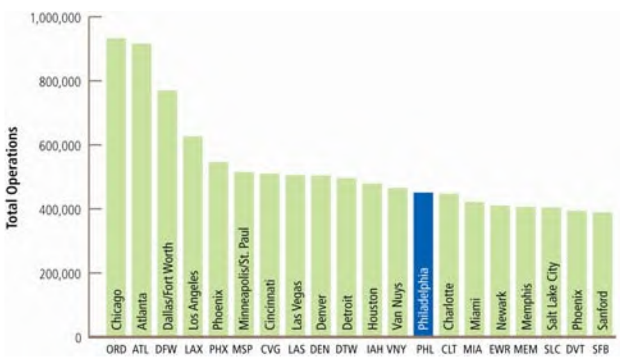
The FAA is also conducting an EIS on *Air Traffic Procedural Changes – New York/New Jersey /Philadelphia Metropolitan Airspace Redesign Project.*[3] The Airspace Redesign EIS will assess the potential environmental impacts resulting from proposed changes in air traffic routings in the New York-New Jersey – Philadelphia area. That EIS will examine ways to develop viable air traffic control (ATC) alternatives to current operations to increase efficiency and reliability of the air traffic system through the adjustment of traffic flows in the New York, New Jersey and Philadelphia areas to accommodate new technologies and reduce delays.

3 *Air Traffic Procedural Changes – New York/New Jersey/Philadelphia Metropolitan Airspace Redesign Project*, Federal Aviation Administration webpage, (http://aea.faa.gov/airspace/NYNJPHL_Airspace_Redesign), 27 March 2004.

1.2 The Philadelphia International Airport

The PHL is owned by the City and operated by the Sponsor. Designated by the FAA as a large hub airport, PHL serves 26 scheduled passenger airlines, six cargo airlines, and general aviation. The airport is a domestic hub and international gateway for US Airways and a hub for United Parcel Service (UPS). In 2003, PHL handled approximately 447,000 aircraft operations and 25 million passengers. In 2003, it was the 13th busiest airport in the U.S. in terms of operations.[4] Figure 1-2 shows the nation's top 20 airports ranked by operations.

Figure 1-2 Busiest Airports in the U.S. in 2003 (by operations)



Source: *2003 North American Traffic Report*, Airports Council International (ACI), (http://www.aci-na.org), 19 August 2003.

PHL occupies approximately 2,300 acres of land approximately seven miles southwest of downtown Philadelphia, and is within both Tinicum Township (Delaware County) and the City of Philadelphia (Philadelphia County) (Figure 1-3, bound separately in Volume 2). As shown in Figure 1-4, the airport is south of Interstate 95 (I-95) and State Route 291 (SR 291), west of Island Avenue, north of a local road known as Hog Island Road or Fort Mifflin Road, and east of Tinicum Island Road. The Airport also owns a portion of the land between Hog Island Road and the Delaware River.

The airport has been incrementally expanded and improved since it was originally opened as the Philadelphia Municipal Airport in 1940. The most recent improvements include construction of Runway 8-26, Terminal F, the new International Terminal A-West, and changes to the access roadways. The airport is currently modifying Terminals D and E, similar to recent improvements to Terminals B and C, to improve airport operations and flexibility.

Currently, PHL (shown in Figure 1-4) consists of six terminals with 3.3 million square feet of passenger handling facilities, 100 domestic gates, and 20 international gates. There are two primary runways (the 10,500-foot long Runway 9R-27L and the 9,500-foot long Runway 9L-27R) and two secondary runways (the 5,459-foot long Runway 17-35 and the 5,000-foot long Runway 8-26) (Figure 1-4). In addition to the terminals, airport facilities include the ATCT/TRACON facilities, hangars, a deicing facility, fuel facilities, a fire training facility, an 11,300-space parking garage, surface parking lots, rental car facilities, and the Southeastern Pennsylvania Transportation Authority (SEPTA) rail line with four regional rail stations. All of these assets are on property of the City of Philadelphia. Some of the other facilities adjacent to the airport include the U.S. Postal Service (USPS), the UPS buildings and cargo facilities, Cargo City, International Plaza office buildings, the U.S. Army Corps of Engineers (USACE) dredge disposal facility, Fort Mifflin, and Sunoco oil storage tanks and docks.

4 *2003 North American Traffic Report*, Airports Council International, (http://www.aci-na.org), 19 August 2003.

1.3 Public Participation

The FAA conducted a public outreach program for the Proposed Project to obtain information relevant to the study from local, regional, county, state and Federal agencies and to keep local officials, elected officials, community members, and other interested parties informed about the progress and results of the EIS. The public outreach program included a scoping meeting, public information meetings, meetings with elected officials, public notifications, and a project web site. Appendix B contains the Notice of Intent (NOI). Appendix C provides copies of public information materials.

The public outreach program provides access and opportunity for participation by all the communities in the Regional Study Area, but there has been a particular emphasis on the communities in the areas directly to the north and south of the runway, which would most likely be affected by the Proposed Project. In particular, the Eastwick neighborhood of Philadelphia, north of Runway 17-35, is a predominantly minority community and FAA made specific efforts to reach out to this community

1.3.1 Public Scoping Meeting

Following publication of the Notice of Intent in the *Federal Register* on July 30, 2003 (See Appendix B), the FAA held a public scoping meeting on August 12, 2003. The scoping comment period was from July 30, 2003 to September 3, 2003. The public was notified of the public scoping meeting through legal and display advertisements that ran in area newspapers in July 2003. Notice of the public scoping meeting was also mailed to 56 municipalities and 23 public libraries in Pennsylvania, New Jersey and Delaware. In addition, the FAA prepared a press release which was distributed to local media outlets in advance of the public scoping meeting. The Federal, state and local agencies with offices or regulatory interests in the Study Area were sent letters identifying the public meeting location and time and requesting comments for the scoping process.

Information on the project purpose and need, alternatives considered, and topics to be considered throughout the EIS process was provided in a Scoping Information Document. The Scoping Information Document was mailed to approximately 220 Federal, state and local agencies, elected officials, Federally-recognized Native American Tribal governments, and to municipalities and public libraries within the Study Area and is available on the project web site (www.phlrunway17-35eis.com).

Comments received during the scoping process are described in the *Philadelphia International Airport Runway 17-35 Extension Project Scoping Report*[5]. The primary issues and concerns raised during this process were the project's study area, the range of alternatives evaluated by the FAA, impacts of noise due to changes in the number and types of aircraft using Runway 17-35, the public health effects of air emissions from aircraft, social and economic impacts, and impacts to wildlife.

1.3.2 Public Information Meetings and Hearings

The FAA has held three sets of public information meetings in addition to the Scoping Meeting (Table 1-1). Elected and appointed officials, and the public, were notified of the public information meetings through newsletters, newspaper advertisements, and news releases. Press releases and meeting notices were sent to Philadelphia Inquirer, Philadelphia Daily News, South Jersey Courier-Post, Wilmington News Journal, Delaware County Daily Times, Gloucester County Times,

5 *Philadelphia International Airport, Runway 17-35 Extension Project, Scoping Report*, Vanasse Hangen Brustlin, Inc., (http://www.phlrunway17-35eis.com), 19 August 2003.

Town Talk, Philadelphia Weekly, Philadelphia Public Record, Al Dia, Brandywine Community News, the Associated Press Bureaus in Wilmington, Philadelphia, and Trenton and several area television and radio stations. Public officials were also notified by letter in advance of each public meeting. The FAA distributed newsletters before each public information meeting.

Table 1-1 Public Meetings and Hearings

Meeting	Date	Location	Number of People in Attendance
Public Scoping Meeting	August 12, 2003	Sheraton Suites Hotel, Philadelphia, PA	45
Public Information Meeting	April 13, 2004	Paulsboro High School, Paulsboro, NJ	33
– How the Airport Operates	April 14, 2004	Claymont Community Center, Claymont, DE	93
	April 15, 2004	Ridley Community Center, Folsom, PA	160
			Total = 286
Public Information Meeting	May 11, 2004	West Deptford High School, Westville, NJ	44
– Purpose and Need and the Alternatives Analysis process	May 12, 2004	Jewish Community Center, Wilmington, DE	15
	May 13, 2004	Eastwick at the Meadows, Philadelphia, PA	28
			Total = 87
Public Information Meeting	September 28, 2004	Paulsboro High School, Paulsboro, NJ	45
– Preliminary Results of the DEIS	September 29, 2004	Upper Darby High School, Drexel Hill, PA	46
	September 30, 2004	Mercy Wellness Center, Philadelphia, PA	103
			Total = 194
Public Hearing	November 15, 2004	Ridley Community Center, Folsom, PA	42
– Provide Opportunity for Public to Comment on the DEIS	November 16, 2004	West Deptford High School, Westville, NJ	95
	November 17, 2004	Brandywine High School, Wilmington, DE	34
	November 18, 2004	Eastwick at the Meadows, Philadelphia, PA	69
			Total = 240

The first set of public information meetings was held on April 13, 14, and 15, 2004 to discuss how PHL operates. The second set of public information meetings was held on May 11, 12, and 13, 2004 to discuss the Purpose and Need and the Alternatives Analysis process. The common concerns expressed at these meetings were existing and future noise levels, air quality, impacts on quality of life, noise mitigation measures (*e.g.*, soundproofing), the inclusion of more communities in the Study Area, impact of noise on property values of homes, and relocation of SR 291. The third set of public information meetings was held on September 28, 29 and 30 to discuss preliminary results of the environmental analyses with the public.

FAA has also ensured opportunities for the Eastwick community to participate in the EIS process, including holding a meeting in April 2004 at 'Eastwick at the Meadows' and a public information meeting on the DEIS findings in September 2004 at the Eastwick PAC's meeting location at the Mercy Wellness Center, both in Eastwick. Meeting notices for the September public information meeting and for the DEIS hearing were mailed to 600 Eastwick residents and businesses on the Eastwick PAC mailing list. The public scoping meeting on August 12, 2003 was held at the Sheraton Suites Hotel at 4101 B Island Avenue in Philadelphia, which is near the Eastwick community.

The FAA held Public Information Meetings on September 28, 29, and 30, 2004 to discuss the Preliminary Findings of the Draft Environmental Impact Statement for the Runway 17-35 Extension Project. A total of 45 people attended the September 28 meeting at Paulsboro High School in Paulsboro, New Jersey; 46 people attended the September 29 meeting at Upper Darby High School in Drexel Hill, Pennsylvania; and 103 people attended the September 30 meeting at the Mercy Wellness Center in Philadelphia (Eastwick), Pennsylvania.

The FAA held Public Hearings on the DEIS on November 15, 16, 17, and 18, 2004. An information session was held each night from 5 PM to 7 PM. This was an opportunity for people to view boards summarizing the results of the analyses reported in the DEIS and to ask questions of the EIS team. The public hearing session was held each night from 7 PM and 9 PM. The public hearing session was an opportunity to provide verbal comments on the Project for the formal public record.

A total of 42 people attended the November 15 hearing at the Ridley Community Center in Folsom, Pennsylvania; 95 people attended the November 16 hearing at West Deptford High School in Westville, New Jersey; 34 people attended the November 17 hearing at Brandywine High School in Wilmington, Delaware; and 69 people attended the November 18 hearing at Eastwick at the Meadows in Philadelphia, Pennsylvania.

In preparing this FEIS, the FAA reviewed and considered more than 900 written and oral comments received during the DEIS public comment period. Volume 3 of this FEIS provides copies of such comments and FAA's responses.

1.3.3 Web Site

A project web site (http://www.phlrunway17-35eis.com) has been established to provide information about the proposed project, advertise upcoming meetings, provide project-related documents, and provide contact information. The web site is updated periodically as information becomes available. The FEIS, DEIS and Appendices are available on the web site.

1.4 Consultation and Coordination

On July 30, 2003, the FAA Eastern Region published in the Federal Register an NOI to prepare an EIS. The NOI (Appendix B) described the project purpose, and indicated that the Project was selected by the U.S. Secretary of Transportation on October 31, 2002 as one of thirteen high-priority projects nationwide that are subject to *Presidential Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Review.*[6] This Order requires federal agencies to expedite environmental reviews of high-priority transportation infrastructure projects.

In response to the Proposed Project's designation as a High-Priority Project, the FAA and the state and Federal resource and regulatory agencies began working together in a series of meetings in the late summer and early fall 2003. The first meeting was held on July 24, 2003, with 37 representatives of FAA and environmental review agency leaders in

6 *Presidential Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Review*, 18 September 2002.

attendance (Appendix D). At this meeting, consensus was reached on an initial agreement that listed the key points to be addressed in the subsequent, more detailed cooperative interagency agreement. At the conclusion of the meeting, the initial agreement was signed by agency and FAA representatives (Appendix D).

The second meeting was held on September 3, 2003 with 26 representatives of FAA and environmental review agency representatives in attendance. Attendees came to consensus on the procedures for carrying out the agreement's seven key points and signed the finalized seven key points. At this meeting on September 30, 2003, 30 FAA and agency representatives were in attendance. At this meeting, a schedule of key milestones and time frames, in days, were established for each specific responsibility of each agency. The responsibilities include commitments to review and comment on specific technical reports, to attend specific meetings, and to indicate in writing the agency's agreement or disagreement with specific aspects of the EIS. At the conclusion of this meeting, the FAA and 18 environmental review agencies signed the *Interagency Stewardship and Streamlining Agreement for the Philadelphia International Airport Environmental Impact Statements and Permitting.* The Agreement (see Appendix D) establishes a mutually agreed upon, single, comprehensive environmental review and permitting path and schedule for the Project and the CEP.

Prior to finalizing the purpose and need statement and alternatives analysis, the FAA held meetings to gather consensus from the environmental review agencies at key decisions points. Agencies were also required to complete consensus forms at certain points indicating whether consensus has been achieved, consensus has not been achieved and the reasons why not, or the agency has no statutory authority regarding the consensus point. Key consensus points include purpose and need, alternatives, and the avoidance, minimization, and mitigation of impacts. All agencies have concurred with the proposed Project's Purpose and Need Statement, the range of alternatives studied, and the alternatives considered in this EIS. The U.S. Army Corps of Engineers (USACE), United States Environmental Protection Agency (US EPA), and Pennsylvania Department of Environmental (PA DEP) have agreed to participate in the review of this EIS as Cooperating Agencies.

Agency concurrence with minimization and mitigation measures was sought for Alternative 1, the Preferred Alternative, during preparation of the FEIS. PA DEP, USACE, US EPA, Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Department of Transportation (PennDOT), the National Park Service (NPS), and the United States Fish and Wildlife Service (USFWS) have concurred with the proposed mitigation.

An Agency Scoping Meeting attended by representatives of 18 State (Pennsylvania, Delaware and New Jersey) and Federal agencies was held on August 19, 2003. Coordination with agencies has continued throughout the preparation of this EIS. Comments received during the scoping process are described in the *Philadelphia International Airport Runway 17-35 Extension Project Scoping Report* (available on the project website). The primary issues and concerns raised during this process were the project's study area, the range of alternatives evaluated by the FAA, impacts to historical and archaeological resources, impacts to wetlands and water quality, impacts to threatened and endangered species, and secondary and cumulative impacts.

1.5 Required Permits and Actions

This EIS is required because the Sponsor is seeking FAA approval of PHL's *Airport Layout Plan* (ALP) and potential Federal funding for elements included in that ALP. This is a major Federal action that requires review pursuant to NEPA and Order 5050.4A.

FAA directives require that this EIS include evidence and required consultation to support any determinations applicable to the approval of the ALP, and the potential of Federal funding. FAA determinations that may be required for the Proposed Project include:

- Consistency with existing plans for development of the area;
- Finding of Non-Applicability with respect to Clean Air Act Conformity;
- Determination under Department of Transportation Section 4(f) Policy on Lands, Wildlife and Waterfowl Refuges, and Historic sites;
- Consistency with the Approved State Coastal Zone Management Program; and,
- ALP Approval Declaration. FAA's approval of the ALP will incorporate all the physical elements associated with the alternative.

Three alternatives are considered in detail in this EIS: the No-Action Alternative, Alternative 1 (extension of Runway 17-35 to 6,500 feet) and Alternative 2 (extension of Runway 17-35 to 7,000 feet), The No-Action Alternative would not require state or federal agency permits or approvals, as this Alternatives would not require construction nor result in impacts to land, water, air quality, or other regulated resources. Alternative 1, the Preferred Alternative, would require state and federal agency permits or approvals, as listed in Table 1-2, as these alternatives would result in disturbance of land, and impacts to water resources, and threatened and endangered species habitat, as described in Chapter 4 of this FEIS.

Table 1-2 Permits or Approvals

Agency	Approval or Permit
Pennsylvania Department of Environmental Protection (PA DEP)	■ Joint Permit Application Process (combines state PA DEP Water Obstruction & Encroachment Permit (Chapter 105 Permit) & USACE Clean Water Act (CWA) Section 404 Permit) ■ National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharges Associated with Construction Activities (Chapter 102 Permit) ■ Floodplain Management Permit (Chapter 106 Permit)
U.S. Army Corps of Engineers (USACE)	■ Joint Permit Application Process (coordinate review of state PA DEP Water Obstruction & Encroachment Permit (Chapter 105 Permit) & Federal USACE Section 404 Permit)
U.S. Environmental Protection Agency (USEPA)-Region III	■ Safe Drinking Water Act Compliance

2

Purpose and Need

Key Points

The FAA has identified PHL as one of the airports that contributes to delays throughout the national airport system. **The purpose of the Project is to reduce current and projected airfield delays at PHL in the short term.**

Passenger and aircraft activity data examined during the preparation of the PHL MPU show that aircraft operations at PHL are currently delayed an average of 10 minutes per operation. As stated in FAA's *National Plan of Integrated Airport Systems,*[1] an airport is considered to be congested when average delay exceeds five minutes per operation.

Delays at the Airport have been made worse by faster than predicted changes in the fleet mix from turboprop aircraft to regional jets. Yearly operations by regional jets are forecast to increase 144 percent between 2002 and 2010 from approximately 73,000 to 178,000. Conversely, operations by turboprop aircraft are forecast to decrease 15 percent (from approximately 117,100 to 98,700) between 2002 and 2010.

Secondary Runways 17-35 and 8-26 are presently 5,459 feet and 5,000 feet long, respectively. Because of their short lengths, regional jets and narrowbody aircraft cannot use these runways on a regular basis for takeoff to many of the destinations served from PHL. This is because, under the Airport's current schedule and destinations served, narrowbody and most regional jets require runway departure lengths of 6,300 feet to 6,700 feet. As a result, Runways 17-35 and 8-26 are underused and delays at PHL are increasing because the growing regional jet and small narrowbody fleets must share the Airport's primary 9,500-foot and 10,500-foot runway complex with the large narrowbody and widebody fleets. This congestion of the primary runway complex contributes to delays.

By 2010, combined regional jet and small narrowbody aircraft operations are forecast to total approximately 306,000 or 67 percent of PHL's total aircraft operations. This dramatic increase is because of the changes that the airlines serving PHL are projected to make to their fleets within the next three to seven years to meet passenger and cargo demands. Delays are forecast to increase to 19 minutes per operation by 2010 if no actions are taken to reduce delays. Immediate, short-term solutions are, therefore, needed to reduce current and projected short-term airfield delays at PHL.

Just prior to publication of the DEIS in October 2004, US Airways filed for bankruptcy under Chapter 11. The Airline has indicated it will not change its

1 *National Plan of Integrated Airport Systems (NPIAS) (2001-2005), Report to Congress,* Federal Aviation Administration, 28 August 2002.

Philadelphia schedule significantly, and the courts have allowed funding to maintain operations. FAA does not expect that this filing will affect the delay analysis or the need for the Proposed Project. PHL is a heavy origin-destination market with a considerable demand for air carrier services. If US Airways were to cancel services, other airlines would be expected to increase services to meet this demand.

2.1 Background

PHL is a large hub airport that plays a major role in the national air transportation network. Large hub airports are defined as very busy commercial service airports that account for greater than one percent of total U.S. passenger enplanements. It is a domestic connecting hub for US Airways, serves as US Airways' international gateway, and is a cargo hub for UPS. PHL serves both origin-destination traffic and connecting passengers. An estimated 63 percent of the annual enplaned passengers start their journeys at the Airport.

In the fall of 2000, the Sponsor began preparation of an MPU to study the facility needs of the Airport relative to future demand. One of the specific objectives of the study was to evaluate the cause(s) of delays at the Airport. The Sponsor examined existing passenger and aircraft activity levels, forecast future aviation activity levels, and measured both against the capacity of the existing facilities. The forecasts were submitted to the FAA for review and the FAA approved them in February 2004. The analysis of the forecast passenger and aircraft activity levels determined that the number of delayed operations at PHL would continue to increase to the year 2010 and that the delays are likely to increase in duration.[2]

2 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project, Justification and Definition,* DMJM Aviation, 27 August 2004.

2.1.1 Aircraft Operations

Commercial jets, commuter turboprops, and general aviation are the three major categories of aircraft that operate on the four existing runways at the Airport. Aircraft operations at PHL include departures and arrivals of the following types of aircraft:[3]

- **Commercial** – Large jet aircraft (i.e., with more than 60 seats) including widebody, narrowbody and most regional jets, primarily operated by commercial passenger and cargo airlines.
- **Commuter/Air Taxi** – Smaller propeller-driven and jet aircraft, including smaller regional jets (i.e., with less than 60 seats), comprising scheduled commercial passenger and cargo airlines as well as "on-demand" commercial operators.
- **General Aviation** – Primarily privately-owned aircraft and corporate jets.
- **Military** – U.S. military aircraft.

Air carrier jets are often classified as widebody or narrowbody because of their range, seating configuration, and passenger capacity. A widebody jet has two aisles with 200 or more passenger seats.[4] Common widebody aircraft that use PHL include the Airbus A300, Airbus A310, Airbus A330, Boeing 747, Boeing 767, and Boeing 777.

Narrowbody jets have a single aisle in the passenger compartment and generally contain 100 to 200 seats up to 280 seats.[5] Common narrowbody aircraft that use PHL include the Airbus 319, Airbus A320, Airbus 321, Boeing 717, Boeing 727, Boeing 737, Boeing 757, McDonnell-Douglas DC-9, and McDonnell-Douglas MD-80.

3 *Philadelphia International Airport: Master Plan Technical Report 2004.01, Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004.

4 Widebody and Narrowbody are product categories generally used by Boeing and Airbus to distinguish between aircraft types. The largest widebody aircraft at PHL, the Boeing 747, seats up to 524 passengers.

5 Larger narrowbody aircraft such as the Boeing 757 seats up to 280 passengers.

Regional jets are smaller turbojet-powered aircraft that have recently been introduced into airline inventories. A U.S. General Accounting Office Report, dated December 2001, on the National Airspace System defines a regional jet as "jets with 32 to 70 seats but generally with ranges of 1,000 miles or more.[6]" The Bombardier CRJ-200, Bombardier CRJ-700, Embraer ERJ-135 and Embraer ERJ-140 are common regional jets that are part of the PHL fleet mix.[7]

2.1.2 Runway Characteristics

PHL has four runways. Three parallel runways are aligned in the east-west direction and one runway is oriented north-south, as shown in Figure 1-4. A network of taxiways provide access to and egress from the runways from the terminal area.

The two primary runways are Runway 9R-27L, which is 10,500 feet long by 200 feet wide, and Runway 9L-27R, which is 9,500 feet long by 150 feet wide. Their centerlines are separated laterally by 1,400 feet. These runways are designated as precision instrument runways. A precision instrument runway uses a ground-based radio navigation system that provides an airplane pilot with precise guidance for a final approach and landing.

Runway 17-35, aligned in the north-south direction, is 5,459 feet long and 150 feet wide. Runway 17 (used for landings and take-offs to the south) is designated as a precision instrument runway and Runway 35 (used for landings and take-offs to the north) is a non-precision instrument runway. A non-precision instrument runway has visual aids and, at a minimum, a navigation aid that provides at least directional guidance adequate for a straight-in landing approach. Runway 17-35 intersects with Runway 9L-27R, 728 feet north of the Runway 35 threshold and 1,849 feet west of the Runway 27R threshold. Operations on Runway 17-35 also intersect with operations on Runway 9R/27L. When intersecting runways are active, aircraft movements on each must be carefully coordinated with those on the other runway to ensure safety.

Runway 8-26 is 5,000 feet in length by 150 feet in width and is north of the primary runways at the east end of the airfield. It is separated from Runway 9R-27L by 3,000 feet. Runway 8-26 was planned and constructed as a commuter runway at a time when PHL had substantially more turboprop operations.

Runway 8-26 is a unidirectional runway, that is, all arrivals approach from the east and all departures head to the east because the passenger terminal complex to the west is an obstruction. Runway 8 is a departure runway, while Runway 26 is a precision instrument arrival runway. Independent arrival operations (*i.e.*, those that need not be coordinated, as long as a number of air traffic management and terminal airspace conditions are satisfied) are permissible on Runways 26 and 27L with the use of Precision Runway Monitor (PRM) equipment.

The Airport MPU documented that a variety of large vessels use the Delaware River Shipping Channel, including cargo containers, cruise ships, U.S. Navy ships, and oil tankers. Some of these ships are 1,100 feet long, 230 feet wide, and are as much as 180 feet above the water. The Channel parallels the southern boundary of the Airport, and a portion of the FAR Part 77 imaginary approach surface extends over the Channel.

A record of actual large vessel usage from July 14, 2002 to July 14, 2003 was compiled by the Maritime Exchange Commission of the Delaware River and Bay Authority, during which period a total of

6 *Long-Term Capacity Planning Needed Despite Recent Reductions in Flight Delays*, United States General Accounting Office, December 2001.
7 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.

1,340 vessels (an average of 4 per day) used the Channel and passed by the Airport under the approach to Runway 35. At its closest point, the edge of the 800-foot wide shipping channel is located 460 feet from the shoreline south of the Airport. Some of the vessels using the shipping channel penetrate the airspace that is protected to provide for safe transit for aircraft landing on Runway 35, and FAA air traffic controllers at PHL will not allow aircraft to land on Runway 35 for a period of 15 minutes while a ship is using the channel.

Various independent mitigation measures have been proposed, most of which will have the effect of reducing the degree to which the surfaces are penetrated. Items proposed include:

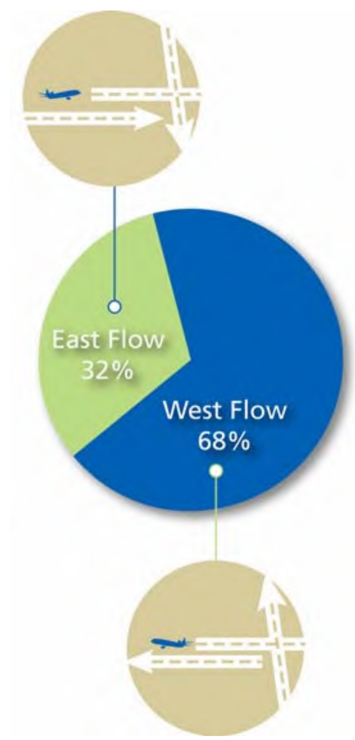
- Steeper than standard glideslope angle or climb gradient;
- Higher threshold elevations;
- Shorter proposed runways;
- Relocation of shipping channel;
- A charted visual procedure during good weather when west flow arrivals are needed;
- Shifting instrument arrival traffic to other runways when large ships are obstructions; and
- Publishing higher instrument minimums when large ships are obstructions.

However, an operational solution has been developed. In August 2004, the FAA and the U.S. Coast Guard developed a notification procedure that provides a permanent operational solution.

2.1.3 Runway Use

PHL has two modes of operation, depending on the wind direction, because aircraft must take off and land into the wind. In "West Flow," most aircraft arriving from the east and departing to the west, using primary Runways 27L and 27R, along with secondary Runways 26 and 35. In "East Flow," the primary Runways 9L and 9R are typically used for air carrier jets, with Runways 8 and 17 for turboprop and GA aircraft. Because it is a more efficient operation, West Flow is the preferred overall airport operating mode at PHL and generally occurs about 68 percent of the time as shown in Figure 2-1. East Flow is used the remaining 32 percent.[8]

Figure 2-1 East and West Flow



In West Flow, aircraft use Runways 27L, 27R, 26, 8, and 35.
In East Flow, aircraft use Runways 9L, 9R, 26, and 17.

8 *Philadelphia International Airport: Master Plan Technical Report 2004.17, Final Runway 17-35 Extension, Capacity/Delay Simulation Analysis*, DMJM Aviation, November 2004.

Use of the four runways at PHL varies among the different types of aircraft depending on runway length and orientation, as well as weather and traffic conditions. As shown in Table 2-1, the majority of air carrier jets (widebodies, large narrowbodies, and narrowbodies) and regional jets, along with a smaller percentage of the regional jets and turboprop aircraft use Runways 9R-27L and 9L-27R. Runway 17-35 and Runway 8-26 are used by turboprops and occasionally by regional jets.

Approximately 98 percent of departures by regional jets occur on Runways 9L-R or Runways 27L-R, with fewer than two percent of regional jets departing from Runway 17-35 or Runway 8. As discussed in more detail below, in the section of this FEIS titled *Runway Length Requirements for Regional Jet and Narrowbody Aircraft*, this occurs because the lengths of Runway 17-35 and Runway 8-26 cannot regularly accommodate many of the scheduled regional jet and narrowbody aircraft flight departures.

Regional jets arrive approximately 84 percent of the time on Runways 9L-9R and Runways 27L-27R and only 15 percent of the time on Runways 17-35 and Runway 26. Approximately 40 percent of the turboprop depart on Runway 17-35, and approximately 60 percent of the turboprop aircraft arrive on Runway 17-35. Aircraft can use the secondary runways more for arrivals because in general, aircraft require a longer runway length for departures. Figures 2-2 and 2-3 show the arrival and departure runway use for turboprops and regional jets.

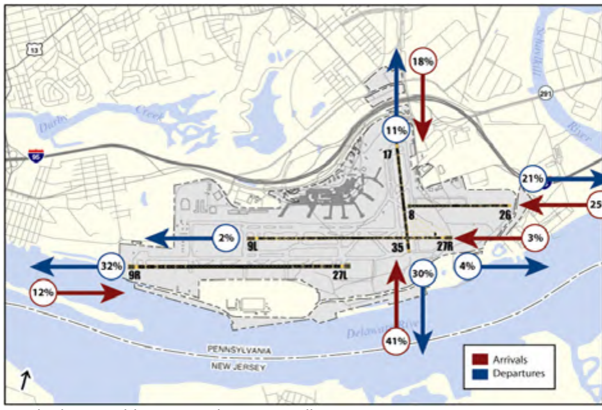
Table 2-1 Current Runway End Use (2003)

Arrivals	9L	9R	17	27L	27R	35	26	Total [1]
Large Narrowbody	0.8%	30.9%	0.0%	14.7%	53.6%	0.0%	0.0%	100%
Narrowbody	0.3%	31.8%	0.0%	7.8%	60.0%	0.0%	0.0%	100%
Prop/Turboprop	0.1%	12.1%	17.9%	0.5%	2.9%	41.3%	25.1%	100%
Regional Jet	0.3%	29.6%	2.3%	5.4%	48.9%	7.8%	5.6%	100%
Widebody	0.0%	32.0%	0.0%	10.7%	57.4%	0.0%	0.0%	100%

Departures	9L	9R	17	27L	27R	35	8	Total
Large Narrowbody	30.8%	1.8%	0.0%	63.8%	3.6%	0.0%	0.0%	100%
Narrowbody	32.5%	1.1%	0.0%	62.9%	3.5%	0.0%	0.0%	100%
Prop/Turboprop	3.9%	0.4%	10.5%	32.3%	1.9%	30.0%	21.2%	100%
Regional Jet	31.7%	0.5%	1.0%	62.9%	3.2%	0.3%	0.5%	100%
Widebody	30.0%	2.0%	0.0%	65.6%	2.5%	0.0%	0.0%	100%

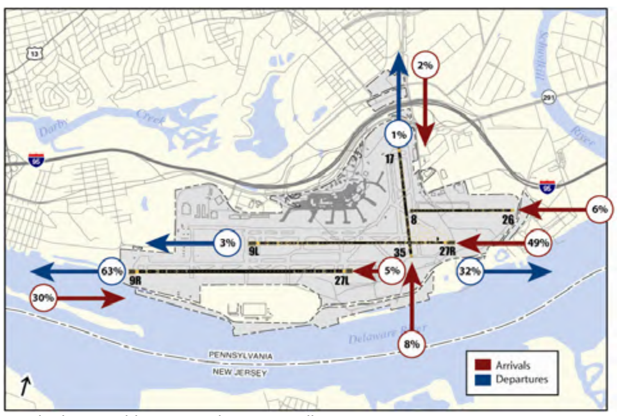
Source: *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.
1 Totals do not add to 100% due to rounding

Figure 2-2 Turboprop Runway Use



Totals do not add to 100% due to rounding

Figure 2-3 Regional Jet Runway Use



Totals do not add to 100% due to rounding

2.2 Need for the Project

Data on historical and forecast delays at PHL demonstrate that delays at PHL are severe and will increase substantially as a result of the changing fleet mix and increased aircraft operations.

2.2.1 Historical Information and Existing Conditions at PHL

The following sections provide historical information on airport traffic and delays at PHL. These data illustrate that, while activity levels have been temporarily reduced in response to the events on September 11, 2001, industry changes, and an economic downturn, the overall trend in passenger levels at the Airport is up. Runway length requirements for regional jets and narrowbodies and causes of delay at PHL are also discussed.

Passenger Volumes

Historically, PHL has experienced substantial growth in passenger demand. As indicated in Table 2-2, between 1993 and 2003 annual enplaned passengers[9] at PHL increased from approximately 8.1 million to approximately 12.3 million, an average annual increase of 5.3 percent. This exceeded the national average growth rate in passenger volumes of 2.4 percent during this period.[10] The Airports Council International–North America (ACI-NA) reported that, in 2003, PHL was ranked 18th nationally in total passengers (including arriving and departing passengers).[11]

Between January and June 2004, aircraft operations and enplaned passengers increased six percent and 12 percent respectively over the same period in 2003.[12]

Table 2-2 Historical Scheduled Activity Levels

Year	Total Enplaned Passengers	Total Aircraft Operations[1]
1993	8,083,930	390,736
1995	8,849,175	409,148
2000	12,131,345	484,963
2001	12,232,358	475,577
2002	11,649,324	467,141
2003	12,357,216	446,529

Source(s): APO Terminal Area Forecast Detail Report (for 1993-2002), (http://www.apo.data.faa.gov/faatafall.htm), 20 August 2004. Philadelphia International Airport (for 2003), (http://www.phl.org), 20 August 2004.

1 Includes General Aviation, Cargo, and Military Operations (military operations comprised 0.2% of all operations in 2003).

9 Enplaned passengers are those passengers who board aircraft at PHL.
10 *Aerospace Forecasts*, Federal Aviation Administration, (http://www.apo.data.faa.gov), 20 August 2004
11 *2002 Traffic Report: Total Passengers*, *North America,* Airports Council International (http://www.aci-na.org/asp/traffic.asp?art=215), 12 November 2003.
12 Philadelphia International Airport, (http://www.phl.org/activity_reports), 20 August 2004.

International passengers enplaned at PHL increased an average of 19 percent per year, from approximately 599,000 to 1.7 million passengers between 1993 and 2003.[13] The annual average increase for domestic passengers during this period was 3.9 percent, from 7.7 million to 10.6 million passengers.

Aircraft Operations

Similar to passenger volumes, total aircraft operations at PHL have increased over the last decade. As seen in Table 2-2, the number of aircraft operations increased by an average rate of 1.4 percent annually from approximately 391,000 in 1993 to approximately 447,000 in 2003. The majority of this increase is attributable to an average annual increase of 2.4 percent in commercial passenger operations at PHL during this period. Nationally, commercial passenger operations increased an average of 0.9 percent annually between 1993 and 2003, according to the FAA's *Terminal Area Forecasts*.[14] In 2003, PHL was the 13th busiest airport in the nation in terms of aircraft operations.[15]

Cargo Volumes

Cargo activity at PHL has increased even more rapidly than passenger activity, consistent with a nationwide trend of increased use of express cargo services and catalog and internet retailing services. Between 1992 and 2002, the last decade of data available, total cargo enplaned and deplaned at PHL increased at an average rate of 3.8 percent annually from approximately 391,000 tons in 1992 to 541,000 tons in 2002. This increase exceeded the national annual growth rate in cargo volumes from 1992 to 2002 of 3.6 percent, as reported by the Bureau of Transportation Statistics.[16] However, there is limited correlation between an increase in cargo volumes and an increase in the number of aircraft operations since much of the cargo is carried in the baggage compartments of scheduled passenger aircraft. PHL is used as a hub by UPS and also serves five other dedicated cargo carriers. FAA's *National Plan of Integrated Airport Systems* indicates that less than five percent of scheduled flights are by all-cargo aircraft.[17] Although cargo flights usually occur during off-peak periods and do not substantially contribute to airport congestion and delay problems, these operations must be considered in the analysis of delay.

Aircraft Fleet Mix

The aircraft fleet mix at PHL consists of widebody and narrowbody jet aircraft, regional jets, and turboprop aircraft. It is important to note that it is the airlines, rather than the FAA or the Sponsor, who are responsible for deciding the types of aircraft that are used in aircraft operations and scheduling flights.

As shown in Table 2-3, as recently as 1999 the fleet mix at PHL was comprised of approximately 48 percent small narrowbodies and nearly 38 percent turboprop aircraft, while regional jets represented only 4.2 percent of aircraft operations. By 2002, major changes to the fleet mix occurred as operations by turboprops decreased by approximately 36 percent, while those of regional jets increased approximately 262 percent.

13 Philadelphia International Airport, (http://www.phl.org/activity_reports), 20 August 2004.
14 *Terminal Area Forecast Detail Report*, Federal Aviation Administration Aviation Policy and Plans (APO), (http://www.apo.data.faa.gov/faatafall.htm), 20 August 2004.
15 *2003 Traffic Report: Total Movements*, Airports Council International – North America, (http://www.aci-na.org/asp/traffic.asp?art=217), 20 August 2004.
16 *Availability and Use of Domestic Flights: Air Freight*, United States Department of Transportation, Bureau of Transportation Statistics, (http://www.bts.gov/products/transportation_indicators/december_2002/Mobility/excel/Availability_and_Use_of_Domestic_Flights_Air_Freight.xls), 12 November 2003. Note: as of August 2004, data for 2003 was not available.
17 *National Plan of Integrated Airport Systems (NPIAS) (2001-2005), Report to Congress*, Federal Aviation Administration, 28 August 2002.

Table 2-3 Fleet Mix Forecast

	Actual					2004 FAA-Approved Projection					
Aircraft	1999 Ops.	Pct. of 1999 Ops.	2002 Ops.	Pct. of 2002 Ops.	Percent Change 2002 vs. 1999	2005 Ops.	Pct. of 2005 Ops.	Percent Change 2005 vs. 2002	2010 Ops.	Pct. of 2010 Ops.	Percent Change 2010 vs. 2002
Piston/ Turboprop	182,252	37.9	117,095	25.3	-35.8	126,100	24.8	7.7	98,700	17.7	-15.7
Regional Jets	20,202	4.2	73,242	15.8	262.5	134,700	26.5	83.9	178,700	32.0	144.0
Small Narrowbody	233,059	48.5	219,609	47.4	-5.8	182,100	35.8	-17.1	196,700	35.2	-10.4
Large Narrowbody	28,450	5.9	28,599	6.2	0.5	36,500	7.2	27.6	47,000	8.4	64.3
Small Widebody	11,270	2.3	12,366	2.7	9.7	17,800	3.5	43.9	24,400	4.4	97.3
Large Widebody	5,042	1.0	12,257	2.6	143.1	10,800	2.1	-11.9	13,500	2.4	10.1
Totals	480,275	100	463,167	100	-3.6	508,000	100	9.7	559,000	100	20.7

Ops. = Operations; Pct. = Percent
Small narrowbody include the 717, 737, A319, 320, 321, and the MD80. Large narrowbody include the 757. Small widebody include 767 and A300 while large narrowbody include the 747, 777, A330, DC8, and DC10/MD11.
Source: *Philadelphia International Airport, Master Plan Technical Report 2004.01, Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004.

Runway Length Requirements for Regional Jet and Narrowbody Aircraft

During this period, small narrowbodies, large narrowbodies, and small widebodies retained essentially the same percentage of the fleet mix as in 1999, while the percentage of operations by large widebodies increased 143 percent. However, in 2002, large widebodies represented only 2.6 percent of the fleet mix. This means that the shift in fleet mix was almost exclusively from turboprops to regional jets, rather than to other types of aircraft.

By 2002, aircraft operations by regional jets and small narrowbodies together accounted for approximately 63 percent of all operations at PHL. As the fleet mix has changed to include a greater percentage of regional jets and narrowbodies, their impact on runway use has become increasingly more important. Regional jets and narrowbody aircraft often must share the use of the primary runways with larger aircraft, Runways 9L-27R and 9R-27L, leaving Runway 17-35 and Runway 8-26 underused because these runways do not provide enough length for these aircraft to operate (although some smaller jets land on Runway 35). This increases delays because there are more aircraft operations on the two primary runways, which become congested. Efficient operation of the Airport, therefore, depends on more of these aircraft being able to use the secondary runways, Runways 17-35 and 8-26.

Runway departure length requirements are dictated by the performance characteristics of the most demanding aircraft expected to operate 500 or more annual operations at an airport or a particular runway (the critical aircraft), and also by the site conditions at the airport. Ideally, the critical aircraft should be able to operate fully loaded during all weather conditions. These conditions dictate the critical runway departure length. Many factors affect the runway length required by any aircraft movement on any given day. The most important among those at PHL are:

- Weight of the aircraft on departure or on arrival;
- Stage length (or non-stop distance to be flown);

- Weather, particularly temperature and ground level wind; and
- Pavement condition.

For most aircraft, the required runway length is greater for departure than for arrival. The greater the total weight (operating weight empty plus payload plus fuel) of an aircraft, the longer is the required departure length. Longer travel distances (stage lengths) mean more fuel and, thus, increased weight and longer required departure lengths. Temperature is also important because, on hot days, air density is lower and aircraft must achieve higher air speeds to create the same lift. This means a longer runway is required for departures. When aircraft take off into the wind, or with less than full payloads, the required runway departure length is reduced.

The importance of runway departure length for the secondary runways at PHL is shown by the Airport's current schedule and destination market. As of October 2003, PHL had 536 daily scheduled air carrier departures. Of these, 84 percent (453 departures) were to short- or medium-range destinations of 1,000 miles or less. Of the 453 departures, 25 percent were to destinations ranging from 750 to 1,000 miles away. These markets are generally served by the regional jet and narrowbody aircraft listed in Table 2-4.

Table 2-5 shows the departure runway length required by several regional jets and small narrowbody jets on typical medium-haul flights between 750 and 1,000 miles. At their present lengths of 5,459 feet and 5,000 feet respectively, Runways 17-35 and 8-26 cannot regularly accommodate many of the regional jet or narrowbody aircraft flights at PHL. These runways primarily serve turboprop and general aviation aircraft which are becoming a smaller part of the fleet.

Table 2-4 Narrowbody and Regional Jet Aircraft at PHL

Aircraft Type	Aircraft
Regional Jets	Embraer (EMB) series
	Canadair Regional Jet (CRJ) series
Narrowbody Aircraft	B-717 series
	B-737 series
	A-320 series
	MD-80 series

Source: *Philadelphia International Airport, Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.

Table 2-5 Maximum Departure Runway Length Requirements for Typical Regional Jet and Narrowbody Flights at PHL

Aircraft	Destination	Stage Length (miles)	Runway Length Requirements (feet) [1]
Regional Jets			
EMB145-LR	Saint Louis, MO	810	6,400
CRJ200-ER	Saint Louis, MO	810	6,550
Narrowbody Jets			
B-717	Fort Lauderdale, FL	995	6,400
B-737-400	Miami, FL	1,015	6,700
B-737-800	Miami, FL	1,015	6,300
A-320	Fort Myers, FL	995	6,450
MD-88	Atlanta, GA	665	6,700
Median Length Requirement			6,450

1 Takeoff Weight with Full Passengers, Zero Wind, Zero Runway Gradient, Hot Day (between 74°F and 86°F).

Source: *Philadelphia International Airport, Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.

Delays

Airport planners and designers estimate the annual average delay per aircraft operation (total delay divided by total operations) as a measure of congestion. As stated in the FAA's *National Plan of Integrated Airport Systems*, an airport is considered to be congested when the annual average delay exceeds five minutes per operation.[18] Delays are expensive to airlines because they cause additional operational cost, such as increased fuel, maintenance, and crew cost. These costs are typically passed on to the traveling public as higher fares. Passengers are inconvenienced by delays and incur lost personal time. Businesses also incur costs as a result of lost work time.

The FAA compiles statistics on airport activity and delays in its Air Traffic Operations Network database (OPSNET). In 2003, OPSNET ranked PHL as the 6th most delayed airport in the nation, with 16,425 delayed flights. Since 1990, PHL has ranked in the Top 20 Airports in terms of total delays and in the Top 10 since 1997.[19] The FAA's *Airport Capacity Benchmark Report* has identified PHL as one of the eight "pacing" airports that contribute to delays throughout the national airport system.[20]

A computer-based simulation model, Total Airspace and Airport Modeller (TAAM), was used to complete an airfield modeling and capacity/delay analysis for the MPU. The model uses a variety of inputs, including weather conditions, runway configuration and use, taxi patterns, aircraft separations, aircraft forecasts, schedules, and gate information. This analysis estimated that the annual average delay in 2004 at PHL was nearly 10 minutes per operation.[21]

2.2.2 Future Conditions

Future conditions at the Airport will reflect increased levels of activity. Increases in the number of operations using regional jets are also expected, resulting in a larger percentage of operations shifting to the primary runways.

Forecast Activity Levels

Based on an analysis of historical trends, input from airlines, and assumptions regarding key factors affecting airline traffic at PHL, the MPU forecast future aviation activity levels. As shown in Table 2-6, aviation activity is expected to increase throughout the immediate five-year planning horizon and beyond.

Table 2-6 provides actual activity data and the FAA-approved 2004 forecast. The MPU Forecast was prepared using assumptions consistent with existing conditions. Using the MPU Forecast, total annual enplaned passengers are forecast to increase from 12.4 million enplanements in 2002 to 22.5 million enplanements in 2020, a 3.4 percent average annual growth rate (Table 2-6). Similarly, total aircraft operations are forecast to increase 2.2 percent annually from approximately 463,000 operations in 2002 to approximately 686,000 operations in 2020.

18 *National Plan of Integrated Airport Systems (NPIAS) (2001-2005), Report to Congress*, Federal Aviation Administration, 28 August 2002.
19 Philadelphia International Airport, *OPSNET: Delays Report (1990-2002)*, (http://www.apo.data.faa.gov/faaopsnetall.htm), 5 November 2003.
20 *Airport Capacity Benchmark Report*, Federal Aviation Administration, April 2002.
21 *Philadelphia International Airport: Master Plan Technical Report 2004.17, Final Runway 17-35 Extension Capacity/Delay Simulation Analysis,* DMJM Aviation, November 2004.

Table 2-6 PHL Activity Forecast

Year	Total Enplaned Passengers	Total Aircraft Operations	Total Cargo (tons)
2002 (actual)	12,416,583	463,167	596,394
2005	13,550,000	508,000	620,000
2010	16,140,000	559,000	780,000
2020	22,550,000	686,000	1,200,000

Source: *Philadelphia International Airport: Master Plan Technical Report 2004.01, Final Forecast of Aviation Demand*, Leigh Fisher Associates, 23 February 2004.

Forecast Aircraft Fleet Mix

The FAA-approved 2004 forecast aircraft fleet mix at PHL will continue to include widebody and narrowbody jet aircraft, regional jets, and turboprop aircraft. However, as indicated in Table 2-3, the 2010 forecasted fleet mix includes a dramatic increase in the number of operations by regional jets and a substantial decrease in the number of operations by turboprop aircraft.

Operations by regional jets at PHL are forecast to increase 144 percent between 2002 and 2010 from approximately 73,000 to 178,000 yearly operations. Conversely, operations by turboprop aircraft are forecast to decrease 15 percent between 2002 and 2010.

In its *Aerospace Forecasts for Fiscal Years 2003-2014* in April 2003, FAA concluded that the number of regional jets is projected to grow from 976 in 2002 to 2,834 in 2014, an increase of 190 percent. Boeing's *Market Outlook 2003* forecasts air traffic growth and aircraft deliveries through 2022[22] and estimates that small and intermediate regional jets (up to 90-seat capacity) are expected to grow 212 percent over the twenty-year period, double the growth rate of medium and large capacity aircraft.

The predicted continued transition of the fleet mix beyond 2002 to a higher percentage of regional jets will mean that, without any action, an even greater number of the aircraft will need to use the primary runways rather than the secondary runways. This will increase delays at PHL because there will be more aircraft operations on the two primary runways.

Forecast Delays

As shown in Table 2-6, the MPU Base Forecast predicts aircraft operations to increase 20.7 percent from 463,167 in 2002 to 559,000 in 2010. The MPU performed a simulation analysis of the FAA-approved 2004 base forecast aircraft activity levels to estimate the future delays. As shown on Table 2-7, it concluded that, without improvements to the airfield, the average delay is expected to increase to 19 minutes by 2010.

The accelerated replacement of turboprop aircraft with regional jets increases the delay problems at PHL because, while the majority of turboprop aircraft uses secondary Runways 17-35 and 8-26, a larger number of regional jets and narrowbodies will have to share the primary parallel runways with larger aircraft. This is because the lengths of the secondary runways are too short for most scheduled regional jet and narrowbody aircraft departures. In addition, because of the wake vortex[23] created by large jets, the required spacing between large jets and regional jets is greater than between two larger aircraft, and is likely to worsen delays if both types of aircraft use the same runways. Delays will, therefore, increase because the primary runways will not be able to accommodate this increased number and type of predicted aircraft operations at the frequency required.

22 *Current Market Outlook*, Boeing, 2003.

23 Every aircraft generates a wake while in flight caused by a pair of counter-rotating vortices trailing from each wing tip. The vortices from larger aircraft pose problems to other aircraft following at close range, and turbulence generated within the vortices can damage aircraft components and equipment.

Table 2-7 Average Aircraft Delay Per Operation

Year	Average Aircraft Delay Per Operation (minutes)
2003	10
2007	14-15
2010	19
2015	32

Source: *Philadelphia International Airport: Master Plan Technical Report 2004.17, Final Runway 17-35 Extension Capacity/Delay Simulation Analysis*, DMJM Aviation, November 2004.
Note: Technical Report 2004.17 clarifies that there are two methods of calculating annualized delay from the simulation analyses. The first method was used for the results in the DEIS and this FEIS. The second method was used for the Benefit Cost Analysis.

This analysis of historical and forecast delays at PHL demonstrates that delays at PHL are severe and will increase substantially as a result of the changing fleet mix and increased aircraft operations. Based on this need, the FAA has defined the purpose of the project as to reduce current and projected aircraft delays at PHL in the short term. The shortest period of time that an alternative could be evaluated in the NEPA EIS review process, pass through the permitting or regulatory process, and proceed through construction and implementation would be by the beginning of 2007, in time for a full year of operation in 2007. The CEP will provide a more comprehensive and longer-term delay reduction through a major airfield redevelopment program that will require a longer time period for environmental review, design and implementation. Because PHL is a pacing airport, (an airport that contributes to delays throughout the National Airspace System) delay reduction is important to the efficient operation of airports throughout the National Airspace System.

3

Alternatives

3.1 Introduction

Alternatives to provide short-term relief for delays at PHL were identified in the PHL MPU, through NEPA Scoping,[1] by the Sponsor, Federal, state, and local agencies, and the public. These alternatives were evaluated ("screened") to determine their ability to meet the Project's purpose and need, and to determine if they are reasonable and feasible to implement. These on- and off-airport alternatives involve use of other airports, use of other modes of transportation, demand management, and airport infrastructure or technology improvements.

The Council on Environmental Quality (CEQ) regulations that implement NEPA (40 C.F.R. Parts 1500-1508) state that the alternatives section is the heart of an EIS. Those regulations and accompanying guidance, titled *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations* (CEQ's Forty Questions) require a Federal decision-maker, in this case, the FAA, to:

- Develop and describe the range of alternatives capable of achieving the purpose and need (1505.1(e)), including alternatives not within the jurisdiction of the lead agency (Question 2 of CEQ's Forty Questions) and the No-Action Alternative (1502.14(d)) and;
- Rigorously explore and objectively evaluate these alternatives, and provide reasons why the FAA eliminated certain alternatives from further study.

This Chapter, which documents the alternatives analyses conducted to meet these requirements, includes the following sections:

- **Section 3.2: Alternatives Screening Process** — Describes the process and criteria that FAA used to identify the range of possible reasonable alternatives (candidate alternatives) and to evaluate or screen the candidate alternatives.
- **Section 3.3: Candidate Alternatives and Screening** — Screens candidate alternatives at a preliminary level based on their ability to meet the Proposed Project's purpose and need. Provides results of the screening, including alternatives retained for additional screening (preliminary alternatives), and the reasons for eliminating other alternatives from further evaluation.
- **Section 3.4: Screening of Preliminary Alternatives** — Screens retained alternatives to identify those that are reasonable and feasible.

1 *Philadelphia International Airport: Runway 17-35 Extension Project, Scoping Report*, Vanasse Hangen Brustlin, Inc., December 2003.

Provides results of the screening, including alternatives retained for analysis in the DEIS and the reasons for eliminating other alternatives from further evaluation. This section also includes an evaluation of various runway design options.

- **Section 3.5: DEIS Alternatives** — Presents a detailed description of the retained alternatives, including operational characteristics and delay reduction benefits.

- **Section 3.6: Preferred Alternative** — Presents the rationale for the selection of the FAA's Preferred Alternative.

The purpose of the EIS is to provide the FAA with a detailed analysis of the relative impacts of the Proposed Project and each alternative on natural and human environments to inform its decision making. In subsequent chapters, this FEIS provides a detailed and in-depth evaluation of the impacts and benefits of each of the alternatives that were carried forward. It does not recommend the selection of any single alternative, but provides information to the FAA that allows the Administration to identify the alternative or combination of alternatives that meets the Project's purpose and the needs of the local and National Aviation System while minimizing impacts to the natural or human environment.

3.2 Alternatives Screening Process

A multi-tiered screening process was established by the FAA for the Project to identify those alternatives that could feasibly achieve the Project's goals and that are reasonable. This screening process is described below and is shown in Figure 3-1.

- **Candidate Alternatives and Screening** – Candidate Alternatives were identified in the MPU, through NEPA Scoping, and by the FAA. They were screened based on their potential to meet the Project's purpose and need of reducing delay as soon as feasible. As discussed in Chapter 2, *Purpose and Need*, delays are forecast to increase to 19 minutes per operation by 2010 if the Project Sponsor takes no action to reduce delays. Immediate, short-term solutions (by 2007[2]) are, therefore, needed to reduce current and projected airfield delays at PHL. Another project currently under consideration to address delay in the long term (after 2007) is the PHL Capacity Enhancement Program. FAA, therefore, eliminated from further consideration those alternatives incapable of reducing delay by 2007 and retained the remaining alternatives as Preliminary Alternatives for the next round of screening.

- **Screening of Preliminary Alternatives** – FAA evaluated the alternatives retained from the previous screening to determine if they were feasible and reasonable (i.e., could they be implemented, including required permitting, construction and/or policy changes, if applicable, by 2007) and if they met the Project's need. Alternatives that FAA determined did not meet the Project's need or that were infeasible or unreasonable in the short term, by the beginning of 2007, were eliminated from further consideration.

- **Environmental Impacts and Delay Reduction Analysis** – FAA retained alternatives to analyze in the DEIS. As required under CEQ regulations, the EIS includes a No-Action Alternative. This allows FAA to determine

2 The shortest period of time that an alternative could be evaluated in the NEPA Environmental Impact Statement review process, pass through the permitting or regulatory process, and proceed through construction and implementation would be by the beginning of 2007, in time for a full year of operation in 2007.

impacts that the reasonable alternatives would cause by comparison to the future baseline conditions that would exist if the Sponsor took no action at PHL.

- **Identification of the Preferred Alternative** – FAA has reviewed the reasonable alternatives described in the DEIS and the public comments on the DEIS, and has considered the ability of each reasonable alternative to achieve FAA's statutory mission to provide safe, efficient air transportation while considering the alternative's economic and environmental impacts and technical factors. Based on this evaluation, FAA has identified Alternative 1 as the environmentally preferred alternative and as FAA's preferred alternative, i.e. that alternative that promotes the national environmental policy, causes the least damage to the natural, biological and physical environments, and best protects historic and cultural resources. Section 3.6 of this FEIS provides the rationale for this determination.

Figure 3-1 Alternatives Screening Process

3.3 Candidate Alternatives and Screening

During the scoping process, FAA received a number of proposed on- and off-airport infrastructure and operational alternatives from members of the public and from agencies[3]. These alternatives were identified as Candidate Alternatives and retained for initial study. The Candidate Alternatives were evaluated based on the following criteria:

- Does the Candidate Alternative have the potential to reduce airfield delays at PHL, *i.e.*, could it address the causes of airfield delays through increased efficiency of the airfield, increased capacity, or reduced demand?
- Could the Candidate Alternative be permitted, designed, and implemented in the short term (by the start of 2007)?

Candidate alternatives were grouped into five categories:

- **Category A: Use of Other Airports** – More extensive use of other airports in the Philadelphia Airport Service region or construction of a new airport in that region.
- **Category B: Other Modes of Transportation** – Greater use of surface roadways, rail, and/or intercity buses for passengers.
- **Category C: Demand Management** – Market-based approaches that reduce demand by raising the price of using the airfield, and administrative approaches, such as slots, that strictly limit the number of flights permitted on an hourly basis.

3 *Philadelphia International Airport, Runway 17-35 Extension Project, Scoping Report*, Vanasse Hangen Brustlin, Inc., December 2003.

- **Category D: Airport Infrastructure** – Runway extensions and non-runway airfield improvements.
- **Category E: Technology Improvements** – Technological improvements in communication, navigation, and safety.

Other recommendations that would reduce the impacts of alternatives, such as routing aircraft over the Delaware River, is not an alternative that is likely to reduce airfield delay at PHL. Therefore, these types of suggestions were not included in the range of alternatives analyzed in this Chapter.

3.3.1 Category A: Use of Other Airports

This category of alternatives involves more extensive use of other airports in the Philadelphia International Airport Service region or construction of a new airport in that region. To be effective, these alternatives must produce a shift of operations from PHL. However, governmental authorities have relatively little control over the airlines' routing and scheduling. Before deregulation, the Civil Aeronautics Board (CAB) had the authority to license airlines to operate specific routes and to regulate fares. Airlines could not start new routes, or change fares without lengthy legal proceedings.

Under the 1978 Airline Deregulation Act (Public Law 95-904), once an airline is certified and licensed, its schedules, fares, destinations, and types of aircraft flown are subject only to limited FAA approval for amending an air carrier's operating specifications for new aircraft and/or routes. Domestic U.S. airlines can establish and drop routes, start or end service at any airport, and charge whatever fares they desire. Any airport that has received FAA funding (including PHL) must be available without discrimination to all users. Carriers or private aircraft users decide which airports to use. FAA and other government agencies, are prohibited by law from interfering with the free activities of these users.

The Candidate Alternative screening has been applied separately to the three alternatives in this category:

- More extensive use of existing large hub airports;
- More extensive use of regional airports; and
- Construction of a new airport.

Each of these three alternatives requires that aircraft operations shift from PHL to other airports to reduce delay at PHL. However, for an airline to shift its operations, the air passenger base (passenger demand) that warrants those aircraft operations would have to change significantly.

Alternative A1 – More Extensive Use of Existing Large Hub Airports

This alternative considers whether or not commercial airlines and air passengers could make more extensive use of other large hub airports. The FAA classifies the nation's airports according to the type of service, number of enplaned[4] passengers, and other factors. Commercial service airports are defined as having public scheduled passenger service of 2,500 or more enplaned passengers per year.

To further classify commercial service airports, FAA uses the term "hub" to identify very busy commercial service airports.[5] There are large, medium, and small hub airports with "large hub" airports each accounting for at least one percent of total U.S. passenger enplanements. Together, the 31 large hub airports, including PHL, account for 70 percent of all passenger

4 The number of passengers boarding commercial aircraft at an airport. Enplanements do not include arriving or connecting passengers.
5 *National Plan of Integrated Airport Systems (NPIAS) (2001-2005), Report to Congress*, Federal Aviation Administration, 28 August 2002.

enplanements in the U.S.[6] PHL is the large hub airport serving the City of Philadelphia and the surrounding metropolitan area (southeastern Pennsylvania, southern New Jersey, and a portion of northern Delaware). Other large hub airports in the vicinity of Philadelphia are shown in Figure 3-2 and presented in Table 3-1. A forecast of aviation demand conducted for PHL estimated that the majority of the local demand is generated within a one-hour drive time of an airport.

Table 3-1 Large Hub Airports

Airport	Location	Distance from PHL (miles)
Newark Liberty International (EWR)	Newark, NJ	81
Baltimore-Washington International (BWI)	Baltimore, MD	90
John F. Kennedy (JFK)	New York, NY	93
LaGuardia (LGA)	New York, NY	94
Ronald Reagan Washington National (DCA)	Washington DC	118
Washington Dulles (IAD)	Washington, DC	135

Source: AirNav webpage, (http://www.airnav.com), 9 March 2004.

Commercial Air Passenger Service

Overall at PHL, passengers who begin or end their trip at PHL (origin-destination passengers) account for 63 percent of the market, with connecting passengers making up the remaining 37 percent. However, when commercial air carriers consider their flight offerings, they target the domestic and international markets differently. Commercial air carriers serve three distinct passenger market segments at PHL[7]:

- **Domestic originating** – 63 percent of domestic passengers (55 percent of all enplaned passengers);
- **Domestic connecting** – 37 percent of domestic passengers (32 percent of all enplaned passengers), and
- **International** – 13 percent of all enplaned passengers; 60 percent of these are origin-destination and 40 percent are connecting.

The number of domestic connecting passengers has grown at an average annual growth rate of six percent, from 24 percent in 1980 to 37 percent of domestic passengers in 2003. Although US Airways accounted for 59 percent of PHL's air passengers in 2002, and while PHL serves as a connecting airline hub airport for US Airways, the majority of air passengers at PHL originate in the surrounding catchment area. At PHL, 37 percent of domestic air passengers are connecting passengers, which is significantly lower than US Airways' nearest other connecting hub airport, Charlotte/Douglas Airport, where 75 percent of air passengers are connecting passengers.[8] Given that 63 percent of PHL's air passengers begin or end their journey in the Philadelphia area, PHL is less sensitive to airline hubbing decisions.

Deregulation of the airline industry gives the FAA or the Project Sponsor limited control over an airline's decisions. Commercial airlines are not likely to make more extensive use of other large hub airports over PHL to serve domestic originating passengers because of the travel choices that each passenger makes, as discussed below.

Air Passengers

The general boundary of an airport's service region or catchment area is defined by geography, as well as by the availability and quantity of airline service which it provides. The airlines serving PHL provide a level of service that is competitive with other major

6 *Philadelphia International Airport: Master Plan Technical Report 2004.01, Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004.
7 *Ibid*.
8 *ibid*.

airports in the surrounding area, such as Baltimore-Washington, Newark, or John F. Kennedy. The extent to which an airport competes with other airports for passengers and service depends on a number of factors, including the destinations served, service frequencies, average airline fares, and travel time to and from the airport.[9]

- **Destinations Served and Service Frequencies** – The two closest large hub airports, Baltimore-Washington and Newark, offer both destinations served and service frequencies that are comparable to the service at PHL.[10]
- **Fares** – Average airfares at Newark are comparable to those at PHL, while ticket prices at Baltimore-Washington have been significantly lower since Southwest Airlines introduced low-fare service in 1994. However, the recent entry of low cost carriers (LCCs) like AirTran, Southwest, and Frontier at PHL will reduce the average fares, making them more comparable to those at Baltimore-Washington.
- **Travel Time** – Driving distance plays a significant role in an air passenger's choice of airport. The closest large hub airport, Newark, is approximately 80 miles from PHL, outside a one-hour driving distance from PHL, as shown in Figure 3-2. Air passengers could reasonably be expected to consider airports within an one-hour driving distance as viable alternatives. Figure 3-2 also shows the approximate service areas of two closest large hub airports to PHL, Baltimore-Washington International (BWI) and Newark Liberty International (EWR). BWI competes primarily with Washington Dulles (IAD) and Washington Reagan National (DCA), while EWR competes primarily with John F. Kennedy (JFK) and LaGuardia (LGA). Table 3-1 shows there are no competing large hub airports within a one-hour drive of PHL.

Given the large driving distances from the majority of the PHL catchment area to the closest other large hub airports and the availability of comparable service options and fares at PHL, these large hub airports can be expected to attract only a very small fraction of PHL's passenger traffic. Moreover, as discussed earlier, airlines and air passengers decide which airport to use based on market forces and these decisions cannot be regulated.

This alternative would make more extensive use of other existing large hub airports by shifting aircraft operations away from PHL. Airlines would choose to shift their operations from PHL to other airports only if passenger demand shifted.

FAA has eliminated Alternative A1: More Extensive Use of Existing Large Hub Airports from further consideration. It will not achieve the purpose and need for these reasons:

- 63 percent of PHL's air passengers begin or end their journey in the Philadelphia catchment area.
- PHL offers competitive destinations and service frequencies compared to the other large hub airports within the region.
- With the introduction of low cost carriers at PHL, fares are competitive with Newark and Baltimore-Washington, the closest large hub airports, further inducing passengers to choose PHL rather than drive further to these airports.
- Air passengers are unlikely to drive more than one hour from Philadelphia's primary catchment area to other existing large hub

9 *Philadelphia International Airport: Master Plan Technical Report 2004.01,Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004.
10 *Ibid*.

airports, given the availability of competitive service and fares at PHL.

- 37 percent of PHL's air passengers are connecting to another flight at the airport. An airline's decision to establish connecting operations at an airport is based on economics, location, and other factors. FAA or other government agencies are prohibited from controlling or making these decisions.

Alternative A2 – More Extensive Use of Existing Regional Airports

Regional airports fall into two main categories:[11]

- **Commercial service airports**. These include small, medium, or non-hub primary airports defined by the percent of commercial passenger enplanements as well as airports that could provide commerical service but that are not currently defined by FAA as commercial service airports.
- **General Aviation (GA) airports**. These serve all segments of civil aviation, except commercial air carriers. These include reliever airports, which have been developed by the FAA to provide GA with attractive alternatives to congested primary commercial airports.

Alternative A2.1 Commercial Service Airports

This alternative would make more extensive use of other commercial service airports if commercial aircraft operations (and therefore air passengers) could be shifted away from PHL. Existing small, medium, or non-hub commercial service airports in the Philadelphia area, as defined by the FAA, are shown in Table 3-2 and Figure 3-3.

Only Trenton-Mercer (TTN) and New Castle County Airport (ILG) are within a one-hour driving distance from PHL. As discussed previously, in addition to travel time to and from an airport, the extent to which an airport competes with others for passengers depends on the markets to which service is available, fares, and service frequencies. Although TTN and ILG have runways that can accommodate some Regional Jets (RJs), they offer limited or no commercial service. Trenton offers limited flights to only one destination, Pittsburgh,[12] while New Castle has no regularly scheduled service. Services at either airport would have to be improved significantly in terms of destinations and frequency of service for these airports to capture passengers from PHL.

Given certain conditions and certification by FAA, other airports that are not currently defined as commercial service airports, including Northeast Philadelphia Airport (PNE), could potentially attract air carrier service. However, since neither the FAA nor the Project Sponsor can dictate an increase in service or require airline service to an airport, this alternative cannot be guaranteed or relied upon to reduce delay at PHL in the short term. As discussed at the beginning of this section, airlines are responsible for determining where and when to start service. The FAA does not have the authority to do so. The presence of other carriers at an airport influences these decisions because some air passengers are connecting passengers. The recent decisions by Southwest and Frontier Airlines to operate at PHL, rather than at Trenton or PNE, demonstrate that low cost carriers are more willing to serve airports such as PHL.

11 *National Plan of Integrated Airport Systems (NPIAS) (2001-2005), Report to Congress*, Federal Aviation Administration, 28 August 2002.

12 Trenton-Mercer Airport, (http://www.mercercounty.org/airport/airlines.htm), 16 March 2004.

Table 3-2 Small, Medium, or Non-Hub Airports in the Philadelphia Area

Airport Name	Location	Distance (miles) & Direction from PHL	Aircraft Operations (avg/day)	Aircraft Percentage: GA	Military	Air Taxi/ Commuter	Commercial	Maximum[1] Runway Length (ft)
New Castle County Airport (ILG)[2]	Wilmington, DE	27 SW	345	89%	7%	3%	<1%	7,181
Trenton Mercer (TTN)	Trenton, NJ	36 NE	390	88%	3%	0%	9%	6,006
Reading Regional Airport (RDG)	Reading, PA	52 NW	407	88%	2%	2%	8%	6,350
Atlantic City International Airport (ACY)	Atlantic City, NJ	52 SE	341	45%	36%	10%	10%	10,000
Lancaster Airport (LNS)	Lancaster, PA	58 WNW	335	94%	3%	2%	<1%	5,398
Lehigh Valley International Airport (ABE)	Allentown, PA	63 N	385	71%	3%	13%	13%	7,600

1 Airport Directory, Aircraft Owners and Pilots Association, 2000, pp. 3-106; 3-347; 3-447; 3-341, 3-442; 3-436.
2 The 2002 NPIAS defines ILG as a commercial service airport although there is currently no commercial service.
Source(s): AirNav webpage (http://www.airnav.com), 7 March 2004 and NPIAS, August 2002.
Sorted by distance (miles) from PHL.

FAA has eliminated Alternative A.2.1, commercial service airports and airports that could potentially provide new commercial service, from further review because:

- These airports do not provide adequate levels of service in terms of destinations or frequencies, and therefore would not attract air passengers currently using PHL.
- Levels of service cannot be adequately increased in the short term to compete with service levels at PHL.
- Airlines and air passengers decide which airport to use based on market forces and neither FAA nor the Sponsor can regulate these decisions.
- FAA cannot require that another airport expand its facilities or service, nor can it direct air carriers to use particular airports.

Alternative A2.2 – General Aviation Reliever Airports

This alternative would require shifting GA operations from PHL to one or more other reliever airports. In 2003, GA accounted for 45,054 annual operations at PHL, or 10 percent of the total. In 2007, the total number of GA operations is forecast to increase to 61,200 annual operations and GA will continue to account for only 12 percent of the airport's total operations.[13] Since GA generally operates on PHL's secondary runways (Runway 17-35 and 8-26) during peak periods of congestion, since delays are caused by congestion on the primary runways, they have a minimal impact on delay. However, the redirection of GA operations to other airports was considered as an alternative to reduce delay.

The FAA has designated some airports in the National Airspace System as Reliever Airports. These airports are intended to serve as attractive alternatives for GA to using congested commercial airports, such as PHL, thereby allowing more efficient use of the commercial airports by commercial airlines and their passengers. There are several reliever airports around the Philadelphia area as shown in Figure 3-3 and listed in Table 3-3.

13 *Philadelphia International Airport: Master Plan Technical Report 2004.01,Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004. pp. 2-32.

Table 3-3 General Aviation Reliever Airports in the Philadelphia Area

Airport Name	Location	Distance (miles) & Direction from PHL	Longest Available Runway Length (ft.)
Wings Field Airport (LOM, formerly N67)[1]	Philadelphia, PA	18 N	3,700
Northeast Philadelphia Airport (PNE)	Philadelphia, PA	19 NE	7,000
Brandywine Airport (N99)	West Chester, PA	20 WNW	3,347
South Jersey Regional Airport (VAY)	Mount Holly, NJ	22 ENE	3,911
Pottstown Limerick Airport (PTW)	Pottstown, PA	30 NNW	3,371
Doylestown Airport (DYL)	Doylestown, PA	32 N	3,004
Chester County G.O. Carlson Airport (40N)	Coatsville, PA	34 WNW	5,400
Summit Airport (EVY)	Middletown, DE	35 SW	4,487
Trenton-Robbinsville Airport (N87)	Robbinsville, NJ	41 NE	4,275
Princeton Airport (39N)	Princeton, NJ	48 NE	3,500
Central Jersey Regional Airport (47N)	Manville, NJ	56 NE	3,509
Solberg-Hunterdon Airport (N51)	Readingtown, NJ	56 NE	3,735
Somerset Airport (SMQ)	Somerville, NJ	60 NNE	2,733

1 According to http://www.airnav.com – Wings Field Airport's airport code, formerly N67, is LOM.
Sources: AirNav webpage, (http:www.airnav.com), 7 March 2004 and NPIAS (August 2002), 28 March 2004.
Sorted by distance (miles) from PHL.

Given its available runway lengths and its distance from Philadelphia, the most likely candidate to attract GA from PHL is Northeast Philadelphia Airport (PNE). PNE is owned and operated by the Project Sponsor and is the City's primary GA airport, with a 7,000-foot runway and a 5,000-foot runway. In 2003, there were 171,346 GA operations at PNE.[14] Airport operators, including the Project Sponsor, encourage GA traffic at reliever airports by offering lower landing fees and convenient facilities. Because of the number of reliever airports in the Philadelphia area, and the availability of services at airports like PHL, the number of GA operations at PHL is small.

As with commercial aircraft, GA pilots are free to choose which airports they use. Some corporate jets, air taxis, and other GA operators choose PHL for specific reasons *e.g.,* connections to commercial flights or access to corporate facilities. Although the Project Sponsor owns both PNE and PHL, the Project Sponsor is prohibited from mandating that all GA use a specific airport, even if both airports are under the same ownership.[15] The owner of a multi-airport system can, however, segregate non-GA traffic at particular airports, so long as it provides a place for that traffic in that system. The Project Sponsor would have difficulty increasing landing fees for GA only because those fees may run counter to the FAA's Congressional mandate of non-discrimination, and may require a

14 *APO Database*, Federal Aviation Administration, (http://www.apo.data.faa.gov), 27 March 2004.

15 *Federal Aviation Administration Order 5190.6A, Airports Compliance Handbook*, Section 4.8(d), 1 October 1989.

comprehensive Part 161 study, which governs airport noise and access restrictions. Moreover, many GA users are either not price-sensitive or do not operate at congested times, and would be unlikely to change their preferred airport. In 2003[16], approximately half of the GA operations at PHL were by business jets which are not likely to be affected by any reasonable change in the landing fees. Most of the rest are turboprops or multi-engine piston aircraft which are either operating commercial services and could pass the additional cost to their customers, or which are operating outside the congested hours. Less than one percent of the airport operations are by single-engine aircraft which are most likely to be diverted by an increased fee.

FAA is eliminating Alternative A2.2, Reliever Airports, including Wings Field Airport, PNE, Brandywine, and South Jersey Regional, from is further review since it will not achieve the purpose and need, (*i.e.*, reduce currently or future delays), since:

- GA operations at PHL are a minor contributor to delay. In 2003, GA accounted for 45,054 annual operations at PHL, or 10 percent of the total operations. In 2007, the total number of GA operations is forecast to increase to 61,200 annual operations, only 12 percent of the airport's total operations.[17] Since GA generally operates on runways 17-35 and 8-26 during peak periods of congestion and the delays at PHL are caused primarily by congestion on the primary runways 9L-27R and 9R-27L, GA operations have minimal impact on delay.
- As with commercial aircraft, GA pilots are free to choose which airports they use. Some corporate jets, air taxis, and other GA operators choose PHL for specific reasons, such as connections to commercial flights or access to corporate facilities. In addition, although the Project Sponsor owns both PNE and PHL, the Sponsor is prohibited from mandating that all GA use a specific airport, even if both airports are under the same ownership.[18]

Alternative A3. Construction of a New Airport
This alternative involves identifying and purchasing a suitable site, permitting and constructing a new airport and shifting operations from PHL to the new airport. According to the FAA's 2000 *ACE Plan*, "construction of new airports provides the largest and most significant increase in aviation system capacity. However, given the high cost of construction, the large acquisition and use of land, and environmental impact of an airport, few new airports have been built: Denver International was completed in 1995 and Dallas/Fort Worth International (DFW) in 1974."[19]

While the construction of a new airport could reduce projected delays at PHL, this would require at least 10 to 20 years to implement and would not provide a short-term solution to PHL's immediate delay issues. As a result, it does not achieve the Project's purpose and need. The FAA is prohibited from constructing or operating an airport. This Alternative would require a Sponsor to propose constructing a new airport in the PHL catchment area.

Alternative A3, Construction of a New Airport is eliminated by FAA from further review because:

16 *Philadelphia International Airport: Master Plan Technical Report 2004.01,Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004.
17 *ibid*.
18 *Federal Aviation Administration Order 5190.6A, Airports Compliance Handbook*, Section 4.8(d), 1 October 1989.
19 *2000 Aviation Capacity Enhancement Plan*, Federal Aviation Administration, p. 53.

- While the construction of a new airport could reduce projected delays at PHL, it requires at least 10 to 20 years to implement and would not provide a short-term solution to PHL's immediate delay issues.
- No sponsor has proposed construction of a new airport in the PHL catchment area and the FAA cannot construct and operate an airport.

3.3.2 Category B: Other Modes of Transportation

Consideration was given to other modes of transportation, such as rail, automobile, and intercity buses, that could reasonably provide an alternative to air passengers who otherwise could use PHL for their travel needs. When deciding which mode of transportation to use for a trip, a traveler is confronted with a number of considerations including travel time, cost, and productivity while traveling, and wait time. Each of these factors carries a different weight, depending on whether the trip is for business or recreational purposes.

For business travelers, the total travel time and productivity while traveling likely carry the highest value or weight. For long distance travel, air is more attractive than rail even when air fares are higher because of the travel time savings. For shorter trips, the business traveler must weigh the impact of the total travel time (access, wait, actual trip, egress) of each mode. Highly congested highway routes divert potential business travelers to rail where rail offers a competitive door-to-door time with air. The ability to be productive while traveling also favors rail in the shorter haul markets even when the total travel time may be slightly longer than air. Automobile travel typically has an advantage for trips of less than 150 miles.[20]

The recreational or leisure traveler has a different set of values when deciding on a mode for a trip. Often the greatest consideration is the number of people traveling together. The automobile typically has the least user cost per passenger than air or rail. For long distance recreational trips, travel time does enter into the equation for the recreational traveler. A 1985 study[21] of the demand for intercity travel by different modes of transportation found that rail service is much more sensitive to changes in cost and travel time than the demand for travel by auto or air. Slight changes in fares or travel times either attract or drive away a disproportionate number of travels by rail. The business traveler has the least elasticity with regard to cost of travel by any mode. This is expected as most business travelers are reimbursed by their employer for travel expense.

As discussed earlier, there are two types of domestic air passengers at PHL, origin-destination passengers, (*i.e.,* those beginning or ending their journey at PHL), and connecting passengers, (*i.e.,* those connecting from one flight to another at PHL). A description of these two types of air passengers is followed by a discussion of the existing and possible use of auto, rail and intercity buses for these air passengers.

Origin-Destination Markets

Of PHL's domestic passengers, 63 percent originate or end their trips at PHL. The top 10 origin-destination markets for the Philadelphia catchment area, shown in Table 3-4, include the nation's top five airports, in terms of total passengers, and

20 *The Past and Future of U.S. Passenger Rail Service, A Congressional Budget Office Study*, Congress of the United States, September 2003, p 21.
21 *An Economic Analysis of the Demand for Intercity Transportation, Research in Transportation Economics*, Steven A. Morrison and Clifford Winston, vol. 2, 1985, pp. 213-237.

reflect the Philadelphia area's strong connection to the nation's largest metropolitan areas and business centers. However, because of distance from Philadelphia, Boston is the only one of these top ten markets that may reasonably be served by alternative modes of transportation.

Table 3-4 PHL Top Domestic Origin and Destination Markets and Airline Service

Rank	Market [1]	Air Miles from PHL	Share of Market	Average Daily Nonstop Departures[2]
1	Chicago	678	6.4%	31
2	Orlando	861	6.3%	11
3	Atlanta	665	5.8%	21
4	Miami/Fort Lauderdale	992	5.6%	14
5	Los Angeles	2,401	5.0%	7
6	San Francisco/ Oakland/San Jose	2,521	4.0%	6
7	Las Vegas	2,176	3.4%	6
8	Tampa/St. Petersburg/ Clearwater	920	3.3%	7
9	Boston	280	3.1%	23
10	Dallas/Fort Worth	1,302	3.0%	11

Source: *Philadelphia International Airport: Master Plan Technical Report 2004.01, Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004.

1 Cities with 1% or more of domestic origin and destination passengers at PHL as reported to the U.S. Department of Transportation Airline Passenger Origin and Destination Survey.

2 Official Airline Guide, Inc., 12 months ending 31 March 2003.

Connecting Air Passenger Markets

As discussed in Chapter 2 of this FEIS, one source of delay is the rapidly growing number of RJ aircraft in PHL's fleet mix. Approximately one third of all domestic passengers are making connecting flights to other destinations from PHL, where PHL serves as a hub for primarily for US Airways. RJs are generally used for passengers connecting from smaller primary or regional airport facilities to PHL. As the demand for this type of flight increases, more RJs are introduced into the fleet mix. Since Runway 17-35 and Runway 8-26 are presently too short to accommodate the majority of RJs, RJs are forced to use the longer runways at PHL where they must share the runways with the larger aircraft being used for longer haul domestic and international flights, thereby increasing existing and projected delays.

A reduction in the number of RJs in the fleet could reduce delay. Reducing the share of RJs could be achieved by diverting air passenger trips (either connecting or origin-destination trips) to other modes of transportation or airports. The primary markets for connecting flights at PHL are summarized in Table 3-5 and shown in Figure 3-4.

Table 3-5 PHL Top Connector Flight Markets

Rank	Market	Airport Code	Miles from PHL	No. of Daily Flights
1	Harrisburg, PA	MDT	84	9
2	New York, NY (LaGuardia)	LGA	93	8
3	Pittsburgh, PA	PIT	267	8
4	Allentown, PA	ABE	55	7
5	White Plains, NY	HPN	115	7
6	Washington, DC (Reagan National)	DCA	118	7
7	Scranton, PA	AVP	105	6
8	Salisbury, MD	SBY	107	6
9	Binghamton, NY	BGM	166	6
10	Hartford, CT	BDL	196	6

Note: The top 10 markets are shown along with four other markets that may be reasonably served by alternate modes to PHL on Figure 3-4.

Source: Arrival Data – DMJM Aviation; Distances – AirNav webpage (http://www.airnav.com).

* Representative communities within 250 miles driving distance from PHL.

These markets represent the highest frequencies of daily service (not passenger loads). The top ten markets are shown (Figure 3-4) along with other markets that may be reasonably served by alternate transportation modes to Philadelphia.

The following sections evaluate the potential for these alternate modes of transportation (roads, rail and intercity buses) to divert connection flights and origin-destination trips from PHL.

Alternative B1 – Automobile Travel

Philadelphia is well served by a regional and local highway system as shown in Figure 3-5. The primary north-south arterial is Interstate 95 (I-95) which runs from Florida to Maine through Washington D.C., Baltimore, Philadelphia, New York, New Haven, and Boston. In the Philadelphia area, other north-south highways include I-295 and the New Jersey Turnpike and I-476 in Pennsylvania. The primary east-west arterials are I-76 and the Pennsylvania Turnpike, which connects the New Jersey Turnpike to Pittsburgh.

Travel by car is generally competitive with air travel for short-range trips (up to 400 miles).[22] When travel distances exceed 400 miles, surface roadway transportation modes, including automobiles and buses, are not as preferable as air travel, particularly in congested urban areas. For example, traveling approximately 325 roadway miles by car between Boston and Philadelphia would take approximately five hours (assuming no delays). With the typical weekday traffic conditions along the highway routes between the two cities, however, the actual time is closer to seven hours given the northeast region's traffic congestion. The same trip by air would take approximately 57 percent of the time, or approximately three to four hours (including flight, security and check-in time, and some local transportation[23]). The substantial time saving associated with air travel is an important deciding factor for both leisure and business travelers. Despite the increased security at airports, the fact that passengers continue to fly demonstrates that the comparative ease of flying such a distance greatly outweighs the frustration and delays of highway travel.

Origin-Destination Markets

Of the top 10 destinations for PHL based on the domestic market share, only Boston is within 400 miles. The other nine markets range from 665 miles (Atlanta, Georgia) to 2,500 miles (Los Angeles and San Francisco/Oakland/ San Jose). The automobile does not serve these markets well, particularly for the time-sensitive traveler. Using roadways for passengers traveling to destinations that are within 400 miles of PHL would not significantly reduce the number of flights at PHL.

Connecting Air Passenger Markets

In the connector flight market, nine of the top ten cities are within 250 miles of PHL (Pittsburgh is just outside the threshold at 267 miles). Approximately one-third of domestic air passengers are connecting passengers using the airport to transfer between flights.[24] From a distance perspective, these markets are serviceable by auto. Using roadways for passengers traveling to destinations that are within 400 miles of PHL would not significantly reduce the number of flights at PHL. For example, a passenger flying from Binghamton, New York to San Francisco would transfer at PHL from a feeder flight (turboprop or regional jet) to a long-haul flight (narrow or wide-body). Such passengers would not choose to travel the first leg of their

22 *Wheels win over wings on short trips*, USA Today, De Lollis, Barbara, 23 March 2004, p.B5.

23 Assumes an additional one to two hours additional time for security purposes.

24 *Philadelphia International Airport: Master Plan Technical Report 2004.01,Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004.

journey by road and therefore, the proposed reduction in operations would not be realized.

This alternative would require the diversion of a significant number of air passenger trips from PHL to automobile travel to reduce aircraft delays at PHL.

Alternative B1, Surface Roadways, is eliminated by FAA from further review because:

- For the markets served by PHL that are greater than 400 miles from Philadelphia, the flying time is significantly shorter than the driving travel time and travel by automobile would not divert a sufficient number of air passenger trips from PHL to reduce current delay.

Alternative B2 – Passenger Rail

The Philadelphia area is well served by passenger rail as shown in Figure 3-5. Three carriers, the SEPTA, PATCO, New Jersey Transit (NJT), and the National Railroad Passenger Corporation (Amtrak) offer a variety of rail services within the area.

Local commuter rail services are provided by SEPTA, PATCO, and NJT. SEPTA operates 13 commuter rail lines that are combined into seven regional rail services in the metropolitan area of Philadelphia. This service carries approximately 100,000 trips each weekday. Connections to NJT and Amtrak services are provided at the 30th Street Station at the western edge of the downtown area. SEPTA's R1 Regional Rail Line provides direct rail service to all the terminals at PHL from the 30th Street Station and the other downtown Philadelphia rail terminals (including Suburban Station and Market East). The R1 Line carries approximately 2,000 trips each weekday to and from the four PHL rail stops (1,150 inbound boardings to downtown and 850 outbound alightings from downtown).

In the Philadelphia area, NJT provides commuter rail service from Philadelphia to Atlantic City. This service connects southern New Jersey communities between Atlantic City and Camden with the 30th Street Station in Philadelphia. Fourteen daily roundtrips are provided. Amtrak provides service to the north, to New York, Boston, and Montreal; to the west, to Harrisburg, Pittsburgh, and Chicago (with connecting service to the southwest, west, and northwest); and to the south, to Baltimore, Washington DC, Virginia, the Carolinas, Georgia, and Florida. Of these markets the Northeast Corridor, which extends 457 miles from Boston to Washington, DC, is the most successful for Amtrak. Amtrak currently captures approximately 47 percent of the non-auto travel and 14 percent of all intercity travel along the New York to Washington segment of the corridor.[25]

In general, the market for intercity passenger rail service is defined as trips of 150 to 500 miles. Automobiles generally have a travel time and convenience advantage from trips less than 150 miles in length. Air travel can generally provide better overall travel times for trips greater than 500 miles. Passenger rail is especially competitive with air travel for short-range trips (up to 250 miles) in high traffic areas (such as Philadelphia to New York or Philadelphia to Washington), or for mid-range trips from 250 miles to 500 miles if the rail connections are direct and efficient (such as Philadelphia to Boston).[26] Amtrak has been quite successful in capturing a significant share of the travel market along densely developed short haul urban corridors. The services offered along the New York-Washington segment of the Northeast Corridor are fast, frequent, and cost competitive

25 *The Past and Future of U.S. Passenger Rail Service, A Congressional Budget Office Study*, Congress of the United States, September 2003, p. 19.
26 *In Pursuit of Speed: New Options for Intercity Passenger Transport, Special Report 233*, Transportation Research Board, Washington DC, National Research Council, 1991, pp. 100 – 111.

resulting in a high capture rate. Amtrak has been reasonably successful in other short haul markets such as the San Diego-Los Angeles, Seattle-Portland, New York City-Albany, Harrisburg-Philadelphia, and Chicago-Milwaukee corridors. These corridors are between 86 and 226 miles long.

Origin-Destination Markets

The first travel market to examine in considering a rail alternative is the top domestic markets that RJs and narrowbodies serve from PHL. The rail alternative for this market needs to address whether rail can provide a satisfactory and competitive (frequency/time/cost) alternative to a direct flight to or from PHL. Travelers choosing to make this journey would use passenger rail service for their entire trip rather than air travel. It is presumed that these travelers generally reside in the greater Philadelphia area and would use rail services offered from Amtrak's 30th Street Station to their domestic destination.

Amtrak offers intercity rail service to the Top 10 PHL domestic air carrier destinations. Of the 10 destinations, the most frequent service is offered to Boston, the northern terminus of Amtrak's Northeast Corridor service. A total of 18 weekday and 12 weekend roundtrips are provided (Table 3-6). The fastest travel time is approximately five hours on Amtrak's Acela high-speed service.[27] A trip on a conventional train would take approximately 45 to 60 minutes longer. With the introduction of the high-speed service in late 2000, Amtrak has started to capture a larger share of both the non-auto and total travel along the Boston – New York – Washington Northeast Corridor. The greatest increases in ridership have been in the shorter trip segment markets (i.e. Boston – New York, New York – Philadelphia, New York – Boston). The five-hour travel time between Boston and Philadelphia, while an improvement over the six-hour trip on a conventional train or a seven-hour trip by automobile, is still outside the limits of most time-sensitive business travelers. The travel times cannot be improved in the short term.

Of the other nine domestic markets RJs and narrowbodies serve from PHL, Amtrak's service frequency ranges from one to three daily roundtrips. An example is the 16.5-hours travel time to Atlanta, Georgia to slightly longer than three days (SF/Oakland/San Jose and Los Angeles). These frequencies and travel times eliminate the rail service as an alternative to the time-sensitive traveler as well as most recreational travelers. Cost comparisons also show that Amtrak rail service to these markets is not competitive with air. For example, round-trip airfares from Philadelphia to Atlanta are as low as $186, slightly higher than a one-way rail fare. The service frequency or travel times cannot be improved in the short term.

Table 3-6 Rail Services to/from Representative Top Origin-Destination Flight Markets

Market	Frequency (Departures)		One-Way Fare[a]	Travel Time (Hrs)
	Weekday	Weekend		
Los Angeles, CA	3	3	$260	56
Las Vegas, NM	3	3	$259	34
Dallas, TX	3	4	$226	32
Chicago, IL	4	4	$109	18
Boston, MA	18	12	$74/$241[b]	5-6
Miami, FL	6	5	$266	27

(a) Reserved coach
(b) Unreserved coach/Acela business class

27 Traveling at 150 mph along new electrified tracks, the Amtrak's Acela's high speed rail cars trains cut 90 minutes off the current four-and-a-half hour trip between Boston and New York, and up to a half-hour off the three-hour service between Washington D.C. and New York.

Connecting Air Passenger Markets

The second travel market to examine in considering a rail alternative is the connector flight market. Travelers choosing to make this journey would use passenger rail service from the origin of their trip to PHL. At PHL, the traveler would board a flight to the final destination. The rail-served portion of the trip would replace the RJ connecting flight. All rail travel would pass through Center City Philadelphia where travelers would transfer to SEPTA's R1 Line at the 30th Street Station to access PHL. The rail access time from the 30th Street Station to PHL is between 20 and 25 minutes. Table 3-7 summarizes the passenger rail services offered to the Top 10 connector flight markets at PHL.

The greatest frequency of rail service is offered to New York and Washington. Both cities are within 135 miles of Philadelphia along Amtrak's Northeast Corridor. Amtrak currently captures approximately 47 percent of the non-auto travel and 14 percent of all intercity travel along the New York to Washington corridor. For Fiscal Year (FY) 2003 (October 2002 to September 2003), Amtrak carried approximately 2.94 million passengers on the Acela and Metroliner services and six million on regional service trains (some of the regional service trains operate beyond the limits of the Northeast Corridor). Many of these passengers are business travelers destined to the urban cores of these cities that are well served by rail. Of the cities included in Table 3-7, two have airports in the urban metropolitan area (LaGuardia in New York and Dulles in Washington). The rail service offered from the urban core of these two cities to PHL is not likely to entice the travelers using the suburban locations. The other connector flight markets either do not have sufficient rail service frequency or have no rail service alternative. The service frequency or travel times cannot be increased in the short term.

Table 3-7 Rail Services to/from the Top Connector Flight Markets

			Frequency (Roundtrips)		Travel Time[a]
Rank	Market	Rail Miles from PHL	Weekday	Weekend	(Hrs:mins)
1	Harrisburg, PA	104	11	6	1:58
2	New York, NY	91	41	22/27[d]	1:12[e]
3	Pittsburgh, PA	353	2	2	8:05
4	Allentown, PA	--	--	--	--
5	White Plains, NY	[b]	--	--	--
6	Washington DC	135	40	23/27[d]	1:48[e]
7	Scranton, PA	--	--	--	--
8	Salisbury, MD	[c]	--	--	--
9	Binghamton, NY	--	--	--	--
10	Hartford, CT	199	8	7	4:45

This table summarizes the passenger rail services offered to the Top 10 connector flight markets at PHL.
(a) Travel time to Center City Philadelphia. Rail access time on SEPTA's R1 Line from Center City to PHL is approximately 20 to 25 minutes
(b) White Plains and Newburg are served by rail but it requires a change of carriers and stations in New York City
(c) Salisbury, MD is served by a bus connection to rail in Wilmington, DE
(d) Saturday/Sunday service
(e) Express; Regional service is slower

Based on the rail service data for both the connector flight and Top 10 domestic destination markets, passenger rail services, as currently offered, do not present a viable alternative to travelers using PHL in the near term. In the connector flight market, outside Amtrak's current capture of approximately 47 percent of the non-auto intercity travel market along the New York – Philadelphia – Washington, DC segment of the Northeast Corridor, there are no other viable rail services available as an alternative. In the domestic destination market, travel times and frequencies (aside from Boston) are too long and too few to be attractive to most travelers. For the Boston market, Amtrak has attempted, with the Acela service, to reduce travel times and increase frequencies. However, these travel times and frequencies cannot be further improved in the short term.

This alternative would require the diversion of a significant number of air passenger trips from PHL to rail to reduce aircraft delays at PHL.

FAA has eliminated Alternative B2, Passenger Rail, from further review because of the following:

- No attractive rail alternatives are presently available outside the New York-Washington DC intercity travel market (northeast corridor).
- Travel times and frequencies are too long and too few to be attractive outside the northeast corridor, particularly to nine of PHL's top ten destinations.
- Rail travel time and frequencies cannot be further improved in the short term.

Alternative B3 – Intercity Bus

The Greater Philadelphia area is served by private intercity bus services. Greyhound Lines, Peter Pan Trailways, Susquehanna Trailways, and Mertz Trailways provide service between Philadelphia and cities throughout the United States. Travelers select transportation mode based on a comparison of time, cost, frequency of service, and convenience.

Intercity bus service often provides the lowest-cost connection between destinations, but generally has longer trip times than automobile, rail, or air transportation. Intercity bus travel may also require more transfers (less direct one-seat service) and provide less comfort than rail.

Origin-Destination Markets

The first travel market to examine in considering an intercity bus alternative is the top domestic markets from PHL. The bus alternative for this market needs to address whether bus can provide a satisfactory and competitive (frequency/time/cost) alternative to a direct flight to or from PHL. Travelers choosing to make this journey would use intercity bus service for their entire trip rather than air travel. It is presumed that these travelers generally reside in the Greater Philadelphia area and would use bus services offered from downtown Philadelphia to their domestic destination.

Greyhound Lines and Peter Pan Bus Lines offer intercity bus service to the Top 10 PHL domestic air carrier destinations. Of the 10 destinations, the most frequent service is offered to Boston. A total of 28 weekday and weekend trips are provided (Table 3-8), with a schedule trip time ranging from seven hours 30 minutes to nine hours 45 minutes. Of the other domestic markets, bus service frequency ranges from three to eight daily roundtrips. The travel times for representative destinations range from approximately 16 hours (Chicago, Illinois) to longer than three days (Los Angeles). These frequencies and travel times eliminate the bus service as an alternative to the time-sensitive traveler as well as most recreational travelers. Cost comparisons also show that intercity service to these markets is not competitive with air. For example, round-trip airfares from Philadelphia to Los Angeles are as low as $279, lower than the $338 round-trip bus fare. Intercity bus service may be less expensive for one-way trips. The service frequency or travel times cannot be improved in the short term.

Table 3-8 Intercity Bus Services to/from Representative Top Origin-Destination Flight Markets

Market	Frequency (departures) Weekday	Weekend	Fare[a]	Travel Time (Hrs)
Los Angeles, CA	6	6	$169	62 - 68
Las Vegas, NV	3	3	$169	54
Dallas, TX	9	8	$116	36 – 40.5
Chicago, IL	5	6	$82	16 - 21
Boston, MA	14	14	$55	8 - 10
Miami, FL	7	7	$120	28 - 33

(a) Unrestricted coach

Connecting Air Passenger Markets

The second travel market to examine in considering a bus alternative is the connector flight market. Travelers choosing to make this journey would use intercity bus service from the origin of their trip to downtown Philadelphia. The bus-served portion of the trip would replace a portion of the RJ connecting flight. All bus travel would pass through Center City Philadelphia where travelers would transfer to SEPTA's R1 Line at 30th Street Station to access PHL. The rail access time from the 30th Street Station to PHL is between 20 and 25 minutes.

Table 3-9 summarizes the intercity bus services offered to the Top 10 connector flight markets at PHL. Although intercity bus fares are substantially lower than for connecting air service, travel times are substantially higher than for automobile or air, particularly for destinations such as Hartford, Connecticut (driving time less than four hours). Because direct bus service does not connect to the airport, connecting passengers would be required to transfer to SEPTA service, adding time, expense, and inconvenience to the trip.

Table 3-9 Intercity Bus Services to/from the Top Connector Flight Markets

Rank	Market	Bus Miles from PHL	Frequency (Departures) Weekday	Weekend	Fare[a]	Travel Time (Hrs:mins)[b]
1	Harrisburg, PA	120	6	6	$18.50	2:30
2	New York, NY	95	23	25	$21.00	2:30
3	Pittsburgh, PA	306	3	6	$42.50	7:15
4	Allentown, PA	—	—	—	—	—
5	White Plains, NY	122	5	5	$26.00	4:30 – 5:25
6	Washington DC	143	9	9	$24$24	3:30 – 4:30
7	Scranton, PA	126	3	3	$30.00	4 – 5
8	Salisbury, MD	135	4	4	$38.50	3 – 4:10
9	Binghamton, NY	191	6	6	$38.50	5:30 – 6
10	Hartford, CT	207	12	12	$41.00	5:30 – 7

(a) Unrestricted coach
(b) Does not include additional transfer and travel time from downtown Philadelphia to PHL, approximately 20 to 25 minutes.

This alternative would require the diversion of a significant number of air passenger trips from PHL to bus to reduce aircraft delays at PHL.
Alternative B3 is eliminated by FAA from further consideration because:

Intercity bus service, because of long travel times and comfort, is not an attractive mode choice for the principal origin-destination markets served by PHL and would not reduce passenger demand sufficiently to reduce delay in the short-term.
Intercity bus service, because of long travel times, comfort, and lack of direct connection to the airport, is not an attractive mode choice for connecting flights for a sufficient number of PHL users, and would not reduce passenger demand sufficiently to reduce delay in the short term.

3.3.3 Category C: Demand Management

Delay at several U.S. Airports has been increasing as the aviation industry continues to return to pre-September 11, 2001 levels.[28] The FAA assesses the severity of delay at a specific airport using a number of measures including the total delay in minutes, the number of aircraft delayed, and the average delay time per delayed operation. The airport's role in the national and international airspace system is also important. An airport may be a network hub for the largest domestic airlines, an origin and destination for many international flights, or a logical connecting point for significant passenger flow across the U.S. Demand management policies are designed to bring into balance the demand for and the supply of limited airport capacity. They refer to any set of regulations or other measures aimed at addressing a persistent mismatch between supply and demand. While demand management programs typically attempt to change the behavior of users, demand management can also provide incentives for the airport to allocate capacity more efficiently. There are three primary ways of influencing aircraft operator behavior:

- **Administrative approaches**, can be used to address a persistent mismatch between demand and supply of capacity, through the establishment of operational limits.
- **Voluntary approaches** reduce demand through individually negotiated air carrier agreements that adjust or reduce schedules during congested times, including agreement to shift operations from peak to off-peak hours.
- **Market-based approaches** can provide monetary incentives for aircraft operators to shift operations from peak to off-peak hours.

This section analyzes the reasonableness of these three demand management options with respect to meeting the Proposed Project's purpose and need: to reduce current and projected airfield delay at PHL in the short term.

Alternative C1 – Administrative Approaches

Administrative approaches to demand management may involve the use of operational controls or schedule restrictions imposed by the FAA. In July 1968, air traffic congestion reached critical proportions in the New York City area when a total of 1,927 departing or arriving aircraft were delayed, some for as long as three hours. This type of delay was symptomatic of the conditions that forced the development of schedule restrictions for certain airports. As a result, the FAA designated five U.S. airports as "high density traffic airports" under the High Density Traffic Airport Rule or High Density Rule (HDR).[29] The five airports were LGA, JFK and EWR in the New York area, O'Hare International Airport (ORD), and DCA. The FAA

28 *Aerospace Forecasts, Fiscal Years 2004-2015*, Federal Aviation Administration, March 2004.

29 *14 Code of Federal Regulations*, Part 93, Subpart K.

implemented this rule because each airport's hourly aircraft activity level far surpassed its ability to accommodate the demand efficiently. In 1970, hourly slots at EWR were suspended because hourly peak operations during fiscal year 1970 averaged less than the assigned quota of 60.[30]

Since the HDR implementing slots at JFK, ORD, LGA and DCA was adopted by FAA, some have expressed concerns about the impact of the rule on airline competition, particularly since the passage of the Airline Deregulation Act in 1978. After 1978, numerous start-up airlines, many of them low-cost/low-fare companies, have tried to gain access to congested hub airports across the country to compete against established carriers. Low fare airlines were unable to obtain slots at the four HDR airports at peak times due to the limited number of slots available and the unwillingness of established carriers to relinquish their slots. The Wendell H. Ford Aviation Investment and Reform Act of the 21st Century (AIR-21) addressed that issue by requiring DOT to grant exemptions to new-entrant carriers from the slot rule at LGA, JFK and ORD for up to ten round trips, thereby providing opportunities for increased competition at these regulated airports. AIR-21 also directed DOT to grant unlimited slot exemptions to carriers providing service to small communities with aircraft having fewer than 71 seats. In addition, AIR-21 required FAA to completely phase out the HDR at ORD in 2002, and at LGA and JFK by 2007.

However, since FAA has been implementing the directives in AIR-21, both LGA and ORD have experienced a significant growth in number of aircraft operations which has led to unacceptable levels of congestion and delay. At LGA for example, the FAA had to cap the aggregate number of new operations by carriers serving small communities and new entrants and allocate those slot exemptions by lottery. Additionally, the FAA has had to consider alternative demand-management strategies and solutions at these airports. As delays and congestion reached unacceptable levels at ORD in late 2003, after the expiration of the HDR, the FAA obtained the formal agreement of the individual U.S. and Canadian airlines operating at ORD to make schedule reductions and de-peak their schedules and to limit the number of operations of smaller or new entrant carriers. At the end of these meetings, the FAA issued a Schedule Reduction Order (Docket 2004-16944-55; August 19, 2004) memorializing the agreements reached.

In AIR-21, Congress also expressed concern about the impact of dominant hub airlines affecting competition and increasing fares. At numerous hub airports a single airline enplanes more than 50 percent of the passengers. In order to promote increased competition in both service levels and fares, Congress directed the larger airports that serve as hubs where one or two airlines combined enplane more than 50 percent of the total passengers to prepare plans describing how they will enhance competition at their airport. PHL has prepared and submitted a competition plan to FAA which is available on the Airport's web site (http://www.phl.org/competition_plan).

While FAA is currently only considering the application of demand management measures in cases where there is a persistent mismatch between the demand for and the supply of airport capacity, the Office of the Secretary of Transportation (OST) and FAA continue to examine the broader policy and legal implications of demand management options at other congested airports.

In connection with this effort, the FAA, on June 12, 2001, requested comment on alternative policy options for managing capacity and mitigating congestion and delay at LGA (including longer-term demand management options). The June 12, 2001

30 *Historical Chronology (1926-1996)*, Federal Aviation Administration.

notice solicited comments on three types of administrative options including use of operational controls. However, it stated "This notice proposes both administrative and market-based pricing options to manage airport congestion and delays, which raise complex statutory, regulatory, and policy issues as well as difficult issues with respect to our international aviation obligations."

This alternative would require introducing operational controls or some other administrative measure that would strictly limit the number of flights permitted at PHL to reduce aircraft delay by reducing the number of operations. If it was determined that delays at PHL were severe enough to warrant rulemaking, this alternative could be responsive to the purpose and need of the project, which is to reduce current and projected delay in the short term.

Although FAA has proposed extending the O'Hare schedule reduction order through October and is considering issuing a proposed rule to further address congestion and delay reduction at ORD, such rulemaking is not appropriate at PHL at this time. The nature of the delay problem at ORD, as well as the importance of ORD to the National Airspace System, are not comparable to PHL. In addition, under FAA policy, administrative approaches should only be employed in circumstances, such as at a severely congested airport, where capacity cannot be expanded or as an interim, stop-gap measure, until an acceptable solution to delay can be implemented. The FAA-preferred long-term approach for solving the mismatch between the demand for and the supply of airport capacity is to expand capacity, where possible, rather than regulate it.

By nearly every objective measure, ORD is a much more severely delayed airport than PHL. ORD is the most delayed airport in the U.S., while PHL ranks fifth. ORD also is responsible for a greater number of disruptive, ripple effects in the NAS than PHL. ORD has twice as many operations as PHL each year, five times as many delayed operations as PHL, more than twice as many delays per 1,000 operations, and six times PHL's total annual minutes of delay. ORD had the greatest share of minutes of delay (31.4 percent in 2003) of the top 20 U.S. airports. ORD had more than twice the share of the next airport, Atlanta (12.5 percent) and more than six times the share of PHL (4.9 percent), which was ranked fifth.[31] Moreover, according to DOT's Bureau of Transportation Statistics, in November 2003, ORD ranked last among the nation's 31 major airports for on-time performance, with on-time arrivals 57.26 percent of the time. ORD also ranked last in on-time departures in November 2003, yielding on-time departures 66.9 percent of the time. The data for December 2003 reflected a similar performance by ORD.[32]

Additionally, ORD is a special situation. FAA noted the unique role of ORD in the NAS in its Order Limiting Scheduled Operations: "O'Hare enjoys a unique status within the NAS. O'Hare serves as a network hub for two of the largest domestic airlines, and as an origin and destination for many international flights by both U.S. and foreign carriers, and given its location as a logical connecting point for significant passenger flows across the United States … Because of its unique status, this level of congestion at ORD has a significant detrimental effect on the operational efficiency of the NAS. Air traffic management procedures that keep aircraft destined for ORD on the ground at the originating airports result in gate and ramp congestion at other airports,

31 Federal Aviation Administration 2003 OPSNET Data in Chicago O'Hare International Airport Draft Environmental Impact Statement, January 2005.
32 *Order to Show Cause, Order Limiting Scheduled Operations at O'Hare International Airport*, Docket No. FAA-2004-16944-72, U.S. Department of Transportation/FAA,11 February 2005. p.2.

which ripples throughout the entire system."[33] The Order further noted that "Delays at O'Hare can cause significant disruption to the efficiency of the NAS and substantial inconvenience to the traveling public."[34]

Based on ORD's rank as the most delayed airport in the U.S., and particularly on its potential to substantially disrupt the NAS, FAA made several attempts during 2004 to reduce delays temporarily at ORD through voluntary schedule reductions and de-peaking[35] (as described in Alternative C2) . In FAA's Order, the agency further noted that "The agency disfavors short-term operational caps and similar measures except where they are essential to preserve the efficiency of the system or safety. We emphasize, therefore, that *this Order is designed to deal with a highly unusual situation, one that is unlikely to be replicated, except at O'Hare"* [emphasis added] and that "by this Order we are not establishing a practice that delays will be addressed in the short-term by restricting scheduled operations."[36]

As a matter of policy, OST and FAA disfavor administrative approaches to demand management as an artificial constraint on the demand for air transportation. For example, such approaches bar air carriers from offering air travelers as much service as they would like. Administrative approaches should only be employed where absolutely necessary and as an interim, stop-gap measure, until an acceptable solution to delay can be implemented. In this respect, PHL further differs from ORD.

33 *Order Limiting Scheduled Operations at O'Hare International Airport*, Docket No. FAA-2004-16944-1, U.S. Department of Transportation/FAA, 23 January 2005. p. 2-4.

34 Ibid. p. 2

35 *Order Limiting Scheduled Operations at O'Hare International Airport*, Docket No. FAA-2004-16944-1, U.S. Department of Transportation/FAA, 23 January 2005; *Amendment No. 1*, Docket No. FAA-2004-16944-3, 21 April 2004; and *Amendment No. 2*, Docket No. FAA-2004-16944-55,19 August 2004.

36 *Order Limiting Scheduled Operations at O'Hare International Airport*, Docket No. FAA-2004-16944-1, U.S. Department of Transportation/FAA, 23 January 2005. p. 2.

At ORD, the airport has proposed infrastructure improvements that, if approved, would likely provide some delay reduction benefits in the near term (2007) and more extensive benefits after the project is fully realized (2013). Thus, in the event of a rulemaking at O'Hare, it is the FAA's intent that such an administrative approach would provide delay relief only during a short, interim period until the first proposed infrastructure improvements, if approved, could come on line in approximately 2007. Thus, at ORD, any administrative approach that is implemented would not be intended as a substitute for a solution in the short-term but would be an interim, stop-gap measure designed to provide relief before first stage of the proposed airport infrastructure project is completed.

If an administrative approach were implemented at PHL, it would not be an interim, stop-gap measure, and therefore would not be consistent with OST and FAA policy. Unlike ORD, the comparable proposed PHL capital enhancement program, CEP, if approved, would not come on line until 2015. Thus, an administrative approach would have to be employed for almost ten years (to assist PHL with delay reduction). Administrative approaches would interfere with opportunities for competition, and the benefits such competition brings at PHL while they are in effect. For example, such approaches bar air carriers from offering air travelers as much service as they would like. Therefore, an administrative approach would not be an acceptable alternative to the proposed Runway 17-35 Extension at PHL.

FAA is eliminating Alternative C1, Administrative Approaches from further review because :

- As a matter of policy, administrative actions such as operational controls or caps are not desirable to serve as long term solutions to delay at an airport where capacity expansion is physically possible (i.e., other than an LGA situation).

- It would be inconsistent with Congress' intent of promoting competition among airlines and prevent air carriers from satisfying their customers' demands.
- Past FAA actions indicate that the agency is not likely to undertake rulemaking absent a severe and extraordinary level of delay and effect on the NAS, which does not exist at PHL.

Alternative C2 – Voluntary De-Peaking and Flight Reduction

Voluntary de-peaking and flight reduction is an approach that reduces operations by seeking individual airline-FAA cooperation to adjust schedules during congested times by shifting operations from peak to off-peak hours or otherwise reducing peak operations. Under the authority[37] granted to the FAA in the *Vision 100--Century of Aviation Reauthorization Act*, the Secretary of Transportation may request that U.S. and Canadian air carriers meet with the FAA Administrator to "discuss flight reductions at severely congested airports to reduce over-scheduling and flight delays during hours of peak operation if: the Administrator determines that it is necessary to convene such a meeting; and the Secretary determines that the meeting is necessary to meet a serious transportation need or achieve an important public benefit."[38]

In general, schedule de-peaking and flight reduction as a demand management technique could be most effective at airports used as hubs by major airlines. However, such agreements are generally temporary. Delays at airline hub airports directly impact delays at other airports throughout the country. One airport that serves as an airline hub, ORD, has been the subject of intense scrutiny by FAA in 2004, particularly regarding the use of demand management to reduce delays. ORD is the busiest airport in the world in terms of aircraft operations, and the second busiest in terms of enplaned passengers (behind Atlanta Hartsfield). ORD is also a pacing airport. FAA has identified eight so-called pacing airports in the U.S.[39] that experience the greatest delay rates. ORD is unique among the eight pacing airports because it is a hub for two major airlines, United and American.

Between September 11, 2001 and early 2004, traffic at most airports in the U.S. either declined or was relatively flat due to a variety of factors. Consequently, delays at most airports were also reduced during that period. Since early 2004 however, national economic growth has stimulated air travel demand, and by the summer of 2004 delays at a number of airports, particularly at ORD, approached and exceeded pre-September 11, 2001 levels. Published schedules for O'Hare for January and February 2004 threatened to gridlock the airport. Therefore, OST and FAA worked with the two air carriers operating hubs at O'Hare on agreeing to temporarily reduce their proposed O'Hare schedules. However, these voluntary flight reductions failed to suppress delays sufficiently, and the two air carriers agreed to further reduce scheduled operations.

Despite the fact that the reductions were effective in reducing delay, competing carriers added new flights that partially refilled the peak periods. This action counteracted some of the benefits of delay reduction achieved through the agreements. By the summer of 2004, it was doubtful that the agreements entered into by the two hub carriers at O'Hare would be renewed upon their expiration. Without a voluntary limitation in place, it appeared that scheduled arrivals during several hours would

37 49 United States Code 40103.
38 *Vision 100*, Public Law 108-176, now codified at 49 U.S.C. 41722.
39 *Operational Evolution Plan*, 35 Benchmark Airports. Federal Aviation Administration, January 2004. The eight pacing airports are: Atlanta Hartsfield; Boston Logan; Chicago O'Hare; NY JFK; NY LaGuardia; Newark Liberty; Philadelphia; San Francisco.

exceed O'Hare's arrival capacity. As a result, the FAA invited all U.S. and Canadian scheduled air carriers to an August 2004 scheduling reduction meeting to discuss overscheduling at O'Hare and voluntary schedule reductions. The agreements resulting from the meeting generated an order limiting scheduled flights by U.S. and Canadian carriers during peak operating hours and spreading the flights throughout each day. The August 18, 2004 , order was set to expire after April 2005. However, the FAA has proposed to extend the order through October 31, 2005[40] because without it, the FAA anticipates a return of the congestion-related delays that precipitated the voluntary schedule reductions and adjustments reflected in the August 2004 agreement. Furthermore, the FAA is planning to issue soon a notice of proposed rulemaking to address, for a specified duration, scheduled operations at O'Hare. The rulemaking process would enable the FAA to adopt more refined measures for managing air traffic at O'Hare, rather than rely upon a number of extensions of its August 2004 Order.

From the start, OST and FAA emphasized that the situation at ORD is unique and has determined that other airports do not warrant the same approach:

"We emphasize, therefore, that this Order is designed to deal with a highly unusual situation, one that is unlikely to be replicated except at O'Hare. Moreover, each of the affected carriers recognized that immediate action was required to mitigate substantial inconvenience for their customers and millions of other airline passengers across the country, and each acquiesced in the FAA's exercise of its authority to limit the carrier's operations. Although the FAA will continue to examine *all* its alternatives for O'Hare, by this Order we are not establishing a practice that delays will be addressed in the short-term by restricting scheduled operations."[41]
If the O'Hare rulemaking goes forward, however, such a rule would be intended only as an interim measure because the FAA anticipates that the proposed expansion of capacity at ORD, if approved, will make any such controls unnecessary beyond the short-term.

LaGuardia (LGA) is also extremely congested and is classified by FAA as a pacing airport. FAA examined a number of demand management options for LGA in an effort to reduce delays, and noted that because LGA was not a hub for a major airline, voluntary de-peaking and flight reduction would be relatively ineffective. Instead, FAA has pursued alternatives including, but not limited to, modifying the current HDR, and using a lottery system to reallocate capacity [42].

Despite the effectiveness of voluntary de-peaking at O'Hare in the very short term, there are drawbacks with voluntary de-peaking as a delay reduction tool:

- Major airlines that de-peak at hub airports impact scheduling at many other airports throughout their network;
- Because it is voluntary, airlines can revert to their previous 'congested' schedule at the end of the agreed-upon period ;
- When hub airlines voluntarily de-peak independently, other airlines can schedule flights in those peak periods, as was recently demonstrated at ORD;

40 *Order to Show Cause, Order Limiting Scheduled Operations at O'Hare International Airport*, Docket No. FAA-2004-16944-72, U.S. Department of Transportation/FAA,11 February 2005.

41 *Order Limiting Scheduled Operations at O'Hare International Airport*, Docket No. FAA-2004-16944-1, U.S. Department of Transportation/FAA, 23 January 2005.

42 69 Fed. Reg. 40711-13 ((July 6, 2004).

FAA eliminated the voluntary de-peaking and flight reduction approaches to Demand Management from further review at PHL because:

- While they have proven effective at O'Hare in the very short term, the possibility of their effectiveness at PHL to meet the proposed project's purpose and need is unknown, due to the differences between the airports and in the severity of delay and congestion between O'Hare and PHL; the flight reduction approach (i.e. scheduling reduction meetings) is an interim, stop-gap measure and is not intended to fill a void of many years. It has other drawbacks, including lack of coverage of foreign air carriers.
- While PHL is delayed, it is not severely congested to a point where FAA would invite scheduled U.S. and Canadian carriers at PHL to a scheduling reduction meeting. The type and severity of delay and role that PHL plays in the national and international aviation systems, and the composition of airlines at PHL are significantly different from those at ORD.

Alternative C3 – Market-based Approaches that Reduce Demand

Market-based approaches can take several forms. The approach most relevant to PHL and the proposed project's purpose and need is peak period pricing, implemented by the airport proprietor. Airports have the right as proprietors to negotiate and set fees for the use of the airport. Conventionally, airport landing fees are based on the landing weight of the aircraft. A market-based alternative, referred to as "congestion pricing" or "peak period pricing," may combine the landing fee approach with a pricing practice used at utility companies where higher rates are charged during peak demand periods. This market-based approach relies on the economic theory of supply and demand, which holds that generally, demand will decline as the price increases until it is balanced with the supply (capacity).

With peak period pricing, an airport would charge higher fees during peak or congested periods to encourage airlines to move some of their flights to off-peak periods or to other airports. This approach allows free market decisions to determine the type of service airlines choose to offer at PHL. Market-based landing fees could vary with the time of day, possibly by season, and even by day-of-the-week, with higher fees during peak demand periods and lower fees during off-peak periods.

It is important to note that to date, peak period pricing has not yet been successfully implemented at any airport in the United States over an extended period of time. The FAA and OST continue to research whether market based approaches generally would be effective in managing congestion. Market-based approaches raise many issues, including: the most practical type of approach to implement, their effect on airfares, and their consistency with international agreements. In order to implement a peak period pricing system, it must be consistent with OST/FAA policy. The preamble to the FAA's Rates and Charges Policy [43] states:

"FAA's policy regarding peak pricing was established in its decision in the Massport PACE [Program for Airport Capacity Efficiency] fee case … In that decision, the Department concluded that a properly structured peak pricing system could be found reasonable and not unjustly discriminatory …. In reviewing a peak pricing system, the Department would scrutinize it carefully to determine first

43 Those portions of the Rates and Charges Policy permitting differential charging for airfield (cost-based) and non-airfield (market-based) facilities were vacated and remanded, (see, Air Transport Association of America v. Department of Transportation, 129 F.3d 625 (D.C. Cir. 1997)). However, the court subsequently invalidated the City of Los Angeles' use of opportunity costs (i.e., fair market value in this case) as a methodology for calculating landing fees. City of Los Angeles v. United States Department of Transportation, 165 F.3d 972 (D.C. Cir. 1999), rehearing denied en banc, 179 F.3d 937; petition for writ of certiorari denied, 120 S. Ct. 786 (2000). The courts have not invalidated the section of the Rates and Charges addressing peak period pricing (Paragraph 3.2).

whether the airport in fact suffers from congestion, and whether the peak-pricing system is an appropriate response. [44]

A properly structured peak period pricing system must be revenue neutral: total airfield revenues cannot exceed total airfield costs and no profit to the airport can result. Based on the above, the City of Philadelphia, as the airport proprietor, could implement a peak period pricing system if it was reasonable, not unjustly discriminatory, did not place an undue burden on interstate commerce, was properly structured, was justified by the existence of a sufficient congestion problem, and was an appropriate response to that problem.

In Boston, for example, Logan International Airport is taking steps to implement peak period pricing. The MassPort program was required by the Commonwealth of Massachusetts as a condition of its state environmental review. While the peak period pricing at Logan was required by the Massachusetts environmental finding, in its ROD for the new runway, the FAA required MassPort to submit its peak period pricing plan for FAA review prior to beginning construction on the new runway.

A "properly structured" peak period pricing program could reduce aircraft delays at PHL and potentially could be implemented in the short term. Therefore, this alternative passes the candidate alternative screening process and is carried forward as a preliminary alternative to be further screened (as presented in Section 3.4).

Alternative C3, Market Based Approaches that Reduce Demand (Properly Structured Peak Period Pricing), was retained for further review.

44 61 Federal Register 31994, 21 June 1996, Paragraph 3.2.

3.3.4 Category D: On-Airport Infrastructure

This category of alternatives includes a variety of on-airport infrastructure changes, including modifications to runways and taxiways, as well as new technologies.

Alternative D1 – Extension of Airport Secondary Runways

The purpose of the Proposed Project is to reduce delay in the short term. As defined in the MPU, one of the shortcomings of the existing airfield is the inadequate length of the two secondary runways, Runway 17-35 and Runway 8-26. These runways cannot regularly accommodate the increasing numbers of RJ aircraft.[45] The change in the mix of air carrier aircraft types operating nationwide and at PHL is expected to result in a greater number of RJs and a corresponding reduction in the use of turboprop aircraft, as documented in Chapter 2, *Purpose and Need*. Both Runway 17-35 and Runway 8-26 handle the majority of arriving and departing commuter turboprop operations. In 2003, 59.2 percent of all turboprop arrivals and 40.5 percent of departures occurred on Runway 17-35, while 25.1 percent of all turboprop arrivals and 21.2 percent of departures occurred on Runway 8-26.[46]

As turboprops are replaced by RJs, commuter operations are shifting to the primary parallel jet runways (Runway 9R-27L and Runway 9L-27R) resulting in increased congestion and reduced use of the secondary runways. In 2003, only 10.1 percent of RJ arrivals and 1.3 percent of RJ departures occurred on Runway 17-35, while only 5.6 percent of RJ arrivals and 1.3 percent of RJ departures occurred on Runway 8-26. An extension to one of the secondary runways would allow more

45 *Philadelphia International Airport: Master Plan Update Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.
46 *Philadelphia International Airport: Master Plan Update Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.

turboprops, narrowbodies, and RJs to avoid the primary parallel jet runways thereby freeing runways for larger turbo-jet aircraft.[47] Increased use of the secondary runways will offer a better balance in the runway system, thus reducing delay, and moving passengers and other payload through PHL more efficiently.

At their present lengths of 5,459 feet and 5,000 feet, respectively, secondary Runways 17-35 and 8-26 cannot regularly accommodate many of the destinations the regional jets and narrowbody aircraft serve from PHL, as discussed in Chapter 2 of this FEIS. This is because, under the Airport's current schedule and destinations served, narrowbody and most regional jets require runway departure lengths of approximately 6,500 feet. As a result, Runways 17-35 and 8-26 are underused. This increases delays at PHL because the growing regional jet and small narrowbody fleets must share the Airport's primary 9,500-foot and 10,500-foot runway system with larger narrowbody and widebody fleets. As a result, the primary runways are very crowded, leading to delays.

The extension of one of the secondary runways could reduce aircraft delays at PHL and may be implemented in the short term. Therefore, this alternative passes the candidate alternative screening process and is carried forward as a preliminary alternative to be further screened (as presented in the Section 3.4). Various physical alternatives, driven by on- and off-airport limitations, are presented and evaluated in Section 3.4. These include extensions of Runway 17-35 to the north and south, and of Runway 8-26 to the east and west.

Alternative D1, Extension of Airport Secondary Runways, was retained for further review.

47 *Ibid*.

Alternative D2 – Non-Runway Airfield Modifications

In addition to runways, delays can also result from inadequate taxiway systems at an airport. The taxiway system at PHL has developed incrementally since the airport was established in the 1920s and includes parallel, entrance, exit, and connecting taxiways. Taxiways K, J, S, and P are parallel to the primary runways, while Taxiways A, D, and E are parallel to the secondary runways. Entrance and exit taxiways connect the parallel taxiways to their runways, while other connecting taxiways serve the terminal areas.

PHL already is addressing taxiway and other operational improvements through the efforts of the Philadelphia Capacity Enhancement Task Force. Members of this Task Force are from various lines of business of the FAA including the Regional Office, Air Traffic Control, and Headquarters; PHL Division of Aviation; Port Authority of New York/New Jersey; and airline representatives. The Task Force meets quarterly to devise strategies for the existing airport layout to function as efficiently as possible. Items such as coordination during airport routine maintenance activities; optimal use of arrival and departure procedures, coordination with airspace programs, and use of taxiways are discussed and resolution sought.

The existing configuration of taxiways at PHL contributes to the delay problem experienced at PHL. Because of the restricted space between the terminal piers, and between the terminal area and runways, pilots are forced to use long taxi routes and to wait to avoid conflicts with other taxiing aircraft. A reconfiguration of the taxiways could assist in reducing delay at PHL, however, the redesign of the taxiway system cannot be accomplished in the short term. Optimal reconfiguration would require additional space in the apron areas around the terminals, either by moving Runway 9L-27R away from the terminals, eliminating the terminal ends to provide more space for aircraft, or moving the terminals. Since these configurations cannot be implemented in the short term they are eliminated from further consideration. The runway alternatives introduced in Alternative D1 will include taxiway improvements described in detail in Section 3.4.

Alternative D2, Non-Runway Airfield Modifications, was eliminated from further review because it requires significant airfield and/or terminal modifications, and therefore cannot be implemented in the short term.

Category E Technology Improvements (Alternative E1)

FAA has considered using technology at PHL and at other airports, and other agencies and reviewers, during scoping, suggested analyzing technology improvements. While several technology improvements have recently been implemented or are planned for implementation at PHL, including a Dual MXE procedural change to increase efficiency for west-flow departures and installing AMASS, PRM, STARS and modernizing the TRACON, these alone are not sufficient to keep pace with the growing demand for additional operations.

In his opening statement to the Aviation Subcommittee Hearing on Capacity Benchmarks[48] Honorable James L. Oberstar remarked that "… we must not limit our long-term planning for capacity growth by assuming that pouring concrete is the only solution for airport congestion. New runways will only get us part of the way…new runway technology and procedures on the horizon are expected to significantly enhance capacity." These technology improvements are described in the *Blueprint for National Airspace System (NAS) Modernization 2002* Update[49] and are intended to increase safety through new technologies, procedures, airspace changes, and collaboration among users and providers. The modernization initiative includes improvements in communication, navigation, surveillance, aviation, weather, and automation infrastructure.

Many evolving technologies apply to airport operations, such as navigation, safety, and communication. A study conducted for the San Francisco Airport (SFO) Runway Modernization Program included a technology assessment of Global Positioning System (GPS), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), Required Navigation Performance (RNP), Traffic Management Advisor-Multicenter (TMA-MC), and other technological solutions under development.

The findings of the SFO study also determined that technology-related operational capabilities alone will not eliminate SFO's existing and projected flight delays or fully accommodate its long-term projected flight demand.[50]

The FAA has considered other technologies that could assist in increasing the number of arrival operations, such as RNP, Paired Approach with Automatic Dependent Surveillance-Broadcast (ADS-B), Wake Vortex Advisory System and Center Terminal Radar Approach Control (TRACON) Automation System (CTAS) tools. Perhaps the most promising technology for reducing delays at PHL is the potential reduction of separation requirements for arrivals or departures on closely spaced parallel runways under certain crosswind conditions. This could produce a significant increase in the arrival rate. The FAA is collecting data and will then conduct operational and safety analyses before

48 Opening Statement of the Honorable James L. Oberstar, Aviation Subcommittee Hearing on Capacity Benchmarks, 25 April 2001.
49 Federal Aviation Administration webpage, (http://www.faa.gov/nasarchitecture/blueprnt/2002Update/index.htm), 5 March 2004.
50 *Potential Future Contributions of Air Traffic Management Technology to the Capacity of San Francisco International Airport*, SFO and San Francisco Bay Conservation and Development Commission (BCDC), August 2001.

making any decision on new procedures. Table 3-10 provides a summary of the technologies reviewed in the SFO study and their purpose.

FAA has assessed new and developing technologies to determine if any would be available within the timeframe of this Proposed Project. The possible implementation of GPS, WAAS, LAAS, RNP and TMA-MC (a CTAS tool) is not expected to be achieved by the beginning of 2007. However, implementation of ADS-B and the Wake Vortex Advisory System technologies are speculative because these technologies are in research and development and, for that reason, will not be able to be implemented in the short-term. Therefore, the use of new technologies to reduce delay is eliminated from further consideration.

Alternative E1, Technology Improvements, is eliminated by FAA from further review because it:

- Requires additional research and testing, and
- Cannot be implemented in the short term.

3.3.5 Summary

This section examined on- and off-airport infrastructure and operational Candidate Alternatives based on their ability to achieve the project purpose. Table 3-11 presents a summary matrix of the alternatives and the results of the candidate alternative screening process. Candidate Alternatives that successfully passed the screening requirements presented in this chapter are evaluated as Preliminary Alternatives in Section 3.4.

Table 3-10 Technologies Evaluated in SFO Study

Technology	Purpose
Global Positioning System (GPS)	Provides aircraft with precise location information and enables them to use a more efficient flight procedure
Wide Area Augmentation System (WAAS)	Navigation system that is intended to improve the accuracy of GPS information. Primarily applicable to en-route navigation and non-precision approaches.
Local Area Augmentation System (LAAS)	Navigation system that augments GPS with very high accuracy navigational data. Allows more precise instrument approaches.
Required Navigation Performance (RNP)	Enhanced ability of aircraft to maintain defined flight path. Has the potential to allow aircraft to safely fly closer to obstacles or other aircraft in instrument meteorological conditions.
Traffic Management Advisor-Multicenter (TMA-MC)	Computer-automated planning tool for en-route aircraft that allows air traffic operations in the terminal airspace to be more efficient. (Being developed for PHL)
Paired Approach with Automatic Dependent Surveillance-Broadcast (ADS-B),	GPS-based system that broadcasts GPS positions of aircraft to other aircraft and ground equipment. Potentially used to optimize approach spacing and reduce runway occupancy time when weather conditions preclude visual operations. (Still in nationwide testing)
Wake Vortex Advisory System	Enables controllers to predict and measure wake vortex and optimize spacing of aircraft.
Center Terminal Radar Approach Control (TRACON) Automation System (CTAS)	Improved operating system for air traffic controllers with potential to achieve optimal aircraft sequencing and separation.

Sources: *Potential Future Contributions of Air Traffic Management Technology to the Capacity of San Francisco International Airport. Report of the Independent Technology Panel*. August 2001.
Letter dated 20 March 2002 from Howard S. Yoshioka, Acting Manager, San Francisco Airports District Office to Stuart Sunshine, Director San Francisco International Airport.
Websites accessed 27 March 2004: http://gps.faa.gov/Programs/LAAS/laas.htm; http://www.faa.gov/ats/ato/rnp.htm; http://ffp1.faa.gov/tools/tools-tma.asp; http://www.ctas.arc.nasa.gov/project_description/index.html; http://www.navsource.com/technology/ADS-B/ads-b.html; http://adsb.tc.faa.gov/ADS-B.htm; http://gps.faa.gov/Programs/WAAS/waas.htm

Table 3-11 Candidate Alternative Screening Summary Matrix

Candidate Alternative	Likely to Reduce Airfield Delay	Can be Implement in the Short Term (2007)	Retained for Further Analysis	Rationale
A. Other Airports				
A1. Primary Commercial Service Airports	NO	N/A	NO	Long driving distance from Philadelphia. Comparable service options and fares at PHL. Airline choice of airports cannot be regulated
A2.1 Regional Airports – Commercial	NO	N/A	NO	Limited service options from other nearby airports. Other airports too far away. Airline choice of airports cannot be regulated.
A2.2 Regional airports – GA	NO	NO	NO	GA Operations have an insignificant impact on delay; Project Sponsor cannot ban GA from PHL.
A3. New airport	YES	NO	NO	10+ years for NEPA, permitting, land acquisition, construction, etc. No sponsor has proposed new airport.
B. Other Modes				
B1. Roadways	NO	N/A	NO	Travel time, roadway congestion.
B2. Rail	NO	N/A	NO	Travel time, limited service options and frequencies.
B3. Intercity Buses	NO	N/A	NO	Travel time, roadway congestion limited service options and frequencies.
C. Demand Management				
C.1 Administrative Approaches	YES	NO	NO	Requires major shift in policy.
C.2 Voluntary De-peaking and flight reduction	YES	NO	NO	Has only been instituted at O'Hare given the extremely unique role that ORD faces and severe delay at the airport.
C3. Peak Period Pricing	YES	YES	YES	Candidate Alternative screening shows that a Peak Period Pricing Program could meet the purpose and need.
D. On-Airport				
D1. Secondary Runway Extension	YES	YES	YES	Candidate Alternative screening shows that a secondary runway extension could meet the purpose and need.
D2. Non- Runway Airfield Modifications	YES	NO	NO	Taxiway improvements cannot be implemented in the short term.
E. Technology Improvements	NO	N/A	NO	New technologies are being investigated but are not capable of reducing delays in the next 3 years.

3.4 Screening of Preliminary Alternatives

On- and off-airport Candidate Alternatives were presented and screened in Section 3.3 based on their ability to meet the Project Purpose. Alternatives retained for further study have the potential of being implemented in the short term (by 2007) to reduce current and projected short-term airfield delay at PHL. This section further evaluates and screens these alternatives based on the Preliminary Alternative screening criteria described below.

3.4.1 Preliminary Alternative Screening Criteria

The Preliminary Alternative screening evaluated the feasibility of implementing each alternative in the short term. Feasibility is defined by the following criteria:

- **Implementation** – Can the Preliminary Alternative be implemented, including required permitting, construction and/or policy changes, if applicable, and do they meet the Project's need?
- **Timing** – Can the Preliminary Alternative be implemented in three years or less?

3.4.2 Preliminary Alternatives Identification and Analysis

This section identifies and analyzes the Preliminary Alternatives, which include:

- C3 – Peak Period Pricing
- D1.1 – Extension of Runway 8-26
- D1.2 – Extension of Runway 17-35

Alternative C3 – Peak Period Pricing

A Peak Period Pricing Program (PPPP) was modeled in support of this FEIS to determine if such a program would meet the proposed Project's need, *i.e.,* to reduce delays at PHL in the short term. The steps involved in the analysis and the results of the analysis are summarized below.[51]

Methodology

The delay reduction benefits of a PPPP at PHL were modeled in three steps:

- **Typical schedule**. An hourly pattern of arrivals and departures for each hour was determined. This pattern included both scheduled and unscheduled activity
- **Peak period fee**. The size of the congestion fees, based on FAA guidance,[52] was determined to be $200 per operation in the peak hours and $100 in the shoulder hours (hours adjacent to the peak hours).
- **Airlines' reactions**. A model of airline's profitability determined whether flights would either be canceled or moved them to less congested periods of the day based on the new fee. The model assumes that carriers cancel the least profitable flights first and reallocate passengers among the remaining flights.

Results

The analysis found that airlines are able to cancel services with relatively small aircraft while accommodating virtually all of its passengers on remaining flights. Most of the flights cancelled with a PPPP would be turboprop services that primarily use the secondary runways.

- In 2007:
  - 13 GA operations on the secondary runways are cancelled.
  - 3 GA operations on the primary jet runways are cancelled.

51 *Ibid.*
52 *Airport Benefit-Cost Analysis Guidance, Office of Aviation Policy and Plans*, Federal Aviation Administration, 15 December 1999.

- One scheduled operation on the secondary runways is cancelled.
- One scheduled operation on the primary runways is cancelled.
- 10 scheduled operations move out of the peak periods to other times of the day. All of these occur on the secondary runways.
- Delay reductions in 2007 due to PPPP are expected to be 0.2 minutes per operation.[53]

- In 2015:
  - 11 GA operations on the secondary runways are cancelled.
  - 5 GA operations on the primary jet runways are cancelled.
  - One scheduled operation on the secondary runways is cancelled.
  - One scheduled operation on the primary runways is cancelled.
  - 6 scheduled operations move out of the peak periods to other times of the day. All of these occur on the secondary runways.
  - Delay reductions in 2015 due to PPPP are expected to be 0.5 minutes per operation.

FAA rejects Alternative C3 Peak Period Pricing Program, from further review because:

- A PPPP is estimated to reduce only GA and turboprop service in both 2007 and 2015. These aircraft use the secondary runways during the peak periods and do not contribute to delays at PHL.
- Cancellation of turboprop and GA flights as a result of a PPPP would have no impact on congestion on the primary runways and therefore would not reduce delays at PHL.

Alternative D1 – Secondary Runway Extension

The two secondary runways at PHL are Runway 17-35 and Runway 8-26. As described in Section 3.3, an extension of either runway, if feasible, could reduce airfield delay at PHL. This section identifies several options associated with extending these two secondary runways.

Alternative D1.1 – Runway Extension - Runway 8-26

Runway 8-26 is 5,000 feet long, 150 feet wide, and is oriented in the east-west direction as shown in Figure 1-4. Runway 8-26 is a unidirectional runway. All arrivals approach from the east (landing on Runway 26) and all departures head to the east (taking off on Runway 8) because the passenger terminal complex lies to the west. Both runway ends have a 1,000-foot Runway Safety Area (RSA), although the RSA at the Runway 8 end extends across Runway 17-35 and Taxiway E.[54] As described in Table 2-5 in Chapter 2, *Purpose and Need*, under the Airport's current schedule and destinations served, most narrowbody and regional jets require a minimum runway departure length of 6,450 feet.

The MPU evaluated an extension of Runaway 8-26 of at least 1,300 feet or longer in various configurations to the east and west. Several factors were found to limit the feasibility of this extension. These factors include the runway pavement strength and its ability to accommodate heavier regional jets instead of turboprops; its design as a unidirectional runway because of the terminal complex to the west of the Runway; and limited space for an extension to the west because of the presence of the terminal complex. To the east, the constraining factors include the dredge disposal site owned by the USACE; the height and location of the Kvaerner Crane in the Kvaerner Philadelphia Shipyard[55] in relation to the runway; and the tunnel that conveys Hog Island Road and the railroad tracks under the Runway 26 RSA.

53 *Peak Load Pricing For Philadelphia International Airport* , Draft Report, GRA Incorporated, 30 August 2004, p ES-1.

54 *Philadelphia International Airport: Master Plan, Working Paper No. 2, Inventory*, DMJM Aviation, May 2001.

55 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.

Due to the complexities involved in eliminating the constraints at both ends of the runway, a 1,300-foot extension to Runway 8-26 would not be feasible by 2007 and this alternative was eliminated from further consideration.

Alternative D1.2 – Runway Extension - Runway 17-35

Runway 17-35 is 5,459 feet long and 150 feet wide and is the airport's only north-south runway. Both runway ends have a standard 1,000-foot RSA. In order to meet the Project need, a median departure runway length of 6,450 feet for the future fleet is required. Therefore, Runway 17-35 would need to be extended by at least 991 feet. The standard RSA required for the type of aircraft using PHL is 1,000 feet at each end, or 500 feet with Engineered Materials Arresting System (EMAS).[56] With a displaced threshold,[57] at least 6,450 feet of runway departure length would be required. The MPU evaluated four options for extending Runway 17 35. These options are shown in Figure 3-6, and summarized in Table 3-12. These include:

- Option A extends Runway 17-35 to the north only. I-95 is 1,900 feet north of the existing Runway 17 threshold. Since I-95 is elevated 35 feet above mean sea level, the highway would be an airspace obstruction[58] if the runway has a standard 1,000-foot RSA and is extended by more than 640 feet to the north.[59] This option would not fulfill the Project's purpose and was eliminated because it would only provide a total runway length of 6,100 feet, less than the minimum 6,450 feet required to meet the Project need.
- Option B extends Runway 17-35 to the south only with no displaced threshold. EMAS could be used at this location to reduce the RSA length and provide a longer runway pavement length. However, any extension greater than 400 feet would require a displaced landing threshold for Runway 35 to provide clearance above vehicles on Hog Island Road and trains on the railroad tracks. This option was eliminated because it would only provide a total runway length of 5,860 feet, less than the minimum 6,450 feet required to meet the Project need
- Option C extends the runway to the north 640 feet and to the south 400 feet for a total length of 6,500 feet with standard safety areas and would regularly accommodate many of the regional jet or narrowbody aircraft flights at PHL. As a result, there would be reductions in delays and the Project's purpose would be met. However, because of the occasional large vessels in the Delaware River that would be airspace obstructions, this option would require that the operational procedure developed to suspend Runway 35 arrivals when certain large ships are present be maintained.[60] This operational procedure is described in Section 3.5.

56 For large airports, such as PHL, standard RSAs generally are 1,000 feet. FAA has recently approved EMAS for aircraft overrun protection. A 500-foot EMAS RSA is functionally equivalent to a standard RSA, but requires less space than a standard RSA. EMAS uses a pad of collapsible concrete blocks that stop an overrunning aircraft by exerting predictable forces on the landing gear without damaging the aircraft. Between 1996 and 2003, EMAS was installed at nine airports, including JFK, Rochester, and Greater Binghamton in New York, Minneapolis-St. Paul, Minnesota, and Greenville, South Carolina. EMAS is also being installed in 2004 at New York LaGuardia, Fort Lauderdale, Hyannis, Massachusetts, and other airports.

57 A displaced threshold is a shift in the touch down location from the physical end of a runway to a point closer to the mid-point of the runway, reducing the length available for landing. A displaced threshold is often used to provide vertical clearance for arriving aircraft from obstacles under the approach path. For more information, refer to *Philadelphia International Airport, Master Plan Update, Technical Memorandum 2003.8, Airfield Alternatives Evaluation: Obstructions Review (Draft)*, DMJM Aviation, 23 September 2003 and FAR Part 77.23 *Standards for Determining Obstructions*.

58 An obstruction to air navigation is an object of greater height than any of the heights or surfaces presented in Subpart C of the 14 Code of Federal Regulations 7758. These objects obstruct the airspace that an aircraft requires to land or takeoff safely.

59 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition,* DMJM Aviation, 27 August 2004.

60 *Ibid*.

Table 3-12 Runway 17-35 Extension Options

	Extend to the North (feet)	Extend to the South (feet)	North Displaced Threshold (feet)	South Displaced Threshold (feet)	EMAS on North End	EMAS on South End	Total Runway Pavement (feet)[1]	Meets Project Need
A	640	No	No	No	No	No	6,100	No
B	No	400	No	No	No	No	5,860	No
C	640	400	No	No	No	No	6,500	Yes
D	1,140	400	500	1,444	Yes	No	7,000	Yes

1 Runway lengths have been rounded by 1 foot.
2 Project need defined as a minimum runway length of 6,450 feet

- Option D extends the runway to the north and the south and would provide clearance above the large ships in the Delaware River by displacing the Runway 35 landing threshold to the north by 1,444 feet. To offset the loss of landing length on the south end, a 500-foot RSA with EMAS would be used on the north end. This would increase the departure distance for both directions to 7,000 feet and provide 6,500 feet for landing to the south and 5,556 feet for landing to the north. A displaced landing threshold would be required on Runway 17 to avoid obstructions related to I-95.

Based on their ability to meet the Project's need, two design options (Options C and D) were retained for the extension of Runway 17-35. The two Preliminary Alternatives screening criteria were applied to the two options retained for further study.

- **Implementation** – Can the Preliminary Alternative be constructed or implemented?

  These design options require construction at the runway ends and this construction is feasible. For all retained options, the Sponsor will have to work with the Pennsylvania DOT to find an appropriate alternative to accommodate closing SR 291 north of Runway 17-35. Necessary permits will have to be obtained from Federal and state agencies. In addition, Option D would require displaced thresholds, which can be implemented upon FAA approval.

- **Timing** – Can the alternative be designed, permitted, and implemented in the short-term (before 2007)?

  These options can be designed, permitted, and implemented before 2007 because they do not require significant modifications to the airfield, land acquisition, significant fill, or significant environmental permits.

These two design options (Options C and D) were retained as Alternative 1 and Alternative 2 for analysis in the FEIS. These alternatives are described in Section 3.5.

3.4.3 Summary

This section described the Preliminary Alternatives and screening process that determined which alternatives would be retained for further study. Table 3-13 presents a summary matrix of the Preliminary Alternatives and the results of the screening process. The retained Preliminary Alternatives are described in Section 3.5.

Table 3-13 Preliminary Alternative Screening Summary Matrix

Preliminary Alternative	Retained	Rationale
Peak Period Pricing Program	NO	Peak Period Pricing Program is estimated to reduce only GA and turboprop service. These aircraft use the secondary runways during the peak periods and do not contribute to delays at PHL.
Secondary Runway Extension		
Runway 8-26	NO	Not feasible to implement in the short term.
Runway 17-35		
Option A: North Only	NO	Inadequate distance between the runway threshold and I-95. New runway length would not meet the Project purpose.
Option B: South Only	NO	Inadequate distance between the runway threshold and Hog Island Road and railroad tracks. New runway length would not meet the Project purpose.
Option C (Alternative 1): North and South Extension without Displaced Thresholds	YES	Provides a runway length that meets the Project's purpose and can be implemented in the short term.
Option D (Alternative 2): North and South Extension with EMAS and with Displaced Thresholds	YES	Provides a runway length that meets the Project's purpose and can be implemented in the short term.

3.5 EIS Alternatives

Table 3-14 summarizes the three alternatives studied in this EIS (Alternative 1, Alternative 2, and the No-Action Alternative). The table is followed by a description of the elements of each alternative and its anticipated cost, and anticipated delay reduction benefits.

3.5.1 Delay Reduction Analysis Methodology

The TAAM, Version 2.0, was used to simulate operation of the airport and analyze those operations to determine if the runway extension would reduce on-airport delay[61]. A Peak-Month, Average-Day (PMAD) schedule in 2003 was chosen as the baseline for calibration of the model. That schedule was grown to the PMAD level of operations for 2007 and 2015 based on the operations and fleet mix in the FAA-approved forecast[62] to estimate the No-Action conditions in those years and provide the basis for simulating the conditions for Alternative 1 and Alternative 2.

The procedure for operating the airport under existing conditions was documented and programmed into the model. Those procedures include such operating parameters as which runways are used for arrivals and departures under various weather conditions; the taxiing patterns for each of the operating configurations; the separations between aircraft approaching the various runways; and how choices are made among runways when wind conditions permit.

61 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.

62 *Philadelphia International Airport: Master Plan Technical Report 2004.01, Final Forecast of Aviation Demand Update*, Leigh Fisher Associates, 23 February 2004.

Table 3-14 Summary of DEIS Alternatives

	No-Action	Alternative 1	Alternative 2
Runway 17 End (southbound)			
Take-off Distance Available	5,460 feet[1]	6,500 feet	7,000 feet
Landing Distance Available	5,460 feet	6,500 feet	6,500 feet
Displaced Threshold[2]	No	No	500 feet
EMAS[3] RSA	No	No	Yes
Runway 35 End (northbound)			
Take-off Distance Available	5,460 feet	6,500 feet	7,000 feet
Landing Distance Available	5,460 feet	6,500 feet	5,556 feet
Displaced Threshold	No	No	1,444 feet
EMAS RSA	No	No	No
Ship Notification Procedure Required	Yes	Yes	No

1 Runway lengths rounded by 1 foot.
2 Displaced Thresholds is a threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold may be available for takeoffs in both directions and landings from the opposite direction.
3 EMAS are collapsible blocks made from water, foam, and cement that deform readily under the weight of an aircraft tire. As the tires crush the material, the drag forces decelerate the aircraft, bringing it to a safe stop. EMAS is proposed for use in Alternative for the RSA.

The model was then run with the 2003 PMAD schedule and the results discussed with the PHL Air Traffic Control personnel who agreed that the operational procedures and performance results were consistent with actual airport operations. FAA's air traffic controllers use different operating configurations for different wind and weather conditions. Four of these conditions were simulated for each of the alternatives, representing 93 percent of the total weather conditions at PHL. The two build alternatives were compared with the performance of the No-Action Alternative for each configuration for each of the analysis years, 2007 and 2015. The results are discussed for each alternative.

3.5.2 No-Action Alternative

Description

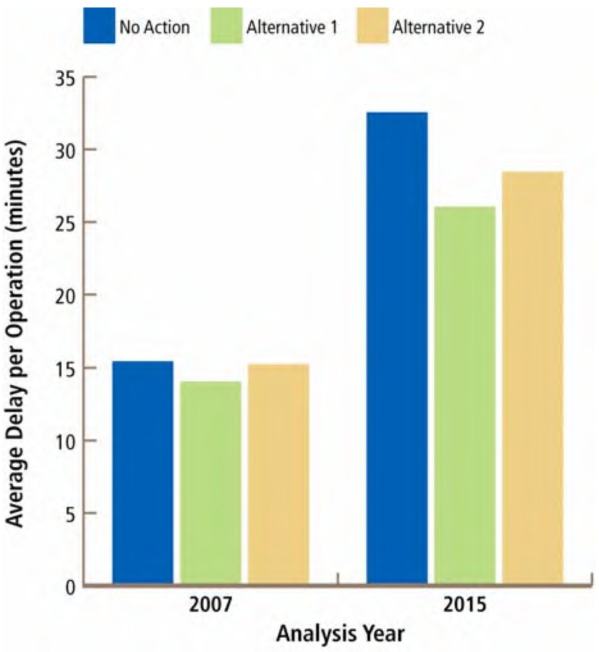
The No-Action Alternative involves only periodic maintenance and minor enhancements needed to maintain safe operations at PHL. The No-Action Alternative serves as the basis for assessing the impacts of the other alternatives being considered.

Operational Characteristics

Figure 3-7 presents the delay anticipated with the No-Action Alternative. In 2007, this alternative is predicted to have an average delay per operation of 15.3 minutes, increasing to 32.4 minutes in 2015[63]. Delay is calculated as annualized delay, which is based on an average of the delays for each operating configuration weighted by the percentage of the time the airport operates in that configuration. While many flights arrive or depart on time, an increasing number of flights are delayed substantially (often much more than the average), which causes the average delay to increase. Annualized delay is calculated for the peak month-average day volume of operations.

63 *Philadelphia International Airport: Master Plan Technical Report 2004.17, Final Runway 17-35 Extension Capacity/Delay Simulation Analysis*, DMJM Aviation, November 2004.

Figure 3-7 Projected Average Delay



Shipping Channel

Certain large vessels in the Delaware River Shipping Channel, when in the approach path, are currently an obstruction to Runway 35 arrivals. The FAA and the U.S. Coast Guard have developed a permanent notification procedure that provides an operational solution for the No-Action Alternative. This solution includes monitoring the shipping channel and notification of airport personnel. The PHL Air Traffic Control Tower would suspend use of the runway for Runway 35 arrivals during the ship passage period. Each event could last for as much as 15 minutes as a vessel moves through the approach path and these events would happen, on average, approximately four times per 24-hour period.[64] The runway closures were factored into the delay reduction analysis.

Runway Restrictions

The existing noise abatement procedure for this runway prohibits departures on Runway 35 and arrivals on Runway 17 between the hours of midnight and 6:00 AM during west flows. This procedure would remain in effect. This procedure is not applied when winds are from the east or when one or more of the other runways is closed.[65]

3.5.3 Alternative 1 - Preferred Alternative-Extension of Runway 17-35 without EMAS or Displaced Thresholds

This alternative would extend Runway 17-35 by 640 feet to the north and by 400 feet to the south to a new length of 6,500 feet as shown in Figure 3-8. Runway 17 would continue to be designated as a precision instrument runway while Runway 35 would remain as a non-precision instrument runway. The existing conditions and demolition plan for this alternative are shown in Figure 3-9, Figure 3-10 shows the proposed runway extension plan, Figure 3-11 shows the proposed navigation aids plan, and Figure 3-12 shows the proposed utility plan. The sections below describe the elements of this alternative.

Description

Northern Extension

The northern extension would be constructed entirely within the existing RSA for Runway 17. The area is already graded, level, and clear of objects. The Church Creek culvert runs diagonally underneath the RSA.

64 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.

65 The existing noise abatement procedure was approved on 20 May 2003 as voluntary and as an existing condition as part of the approved *FAR Part 150 Study* for PHL. The procedure is described in the *Philadelphia International Airport: Final FAR Part 150 Noise Compatibility Study*, Landrum & Brown Team, 23 May 2003.

- Runway, Taxiways, and Runway Safety Area
  - The runway pavement would be extended to the north by 640 feet, maintaining a width of 150 feet and having required shoulders on either side. Appropriate runway markings would be repositioned, as required.
  - Taxiway D and E are respectively east and west of Runway 17-35. The taxiways' pavement would be extended to the north by 640 feet and the width would be maintained at 75 feet. Appropriate connector taxiways, comparable to those already in place, would be constructed. Appropriate pavement markings, such as centerline, edge, and holding bars, would be painted and centerline lighting would be installed.
  - A new 30-degree high speed exit taxiway would be constructed approximately 1,700 feet south of the future Runway 17 edge of pavement to expedite exit of landing aircraft from the runway and reduce overall Runway Occupancy Time. This taxiway would connect the runway to Taxiway E.
  - The new runway safety area would extend 1,000 feet beyond the new Runway 17 edge of pavement. The RSA would be 500 feet wide and would be cleared and graded. The RSA would not be paved. As required in AC 150/5300-13,[66] all objects higher than 3 inches above grade would be removed or replaced with low impact resistant supports. The existing pavement that is used for the airfield service road and the economy parking lot would be demolished and removed.

66 *Advisory Circular 150/5300-13*, Federal Aviation Administration, 29 September 1989.

- Roadways and Parking
  - The extension would conflict with SR 291. The section of SR 291 from the Airport Exit Road north of Ramp F to Island Avenue would be abandoned and demolished (Figure 3-9). Bartram Avenue would be re-signed and designated as a replacement State Route. This work would be coordinated with the Pennsylvania DOT.
  - Approximately 1,000 spaces in the Economy Parking Lot would be displaced as a result of the runway extension. The majority of these displaced parking spaces would be replaced within the area that would become available in the SR 291 right-of-way, and in areas southwest and east of the existing Runway 17 threshold, as shown in Figure 3-9.
  - The segment of the airfield service road that passes north of the existing Runway 17 RSA would be relocated approximately 640 feet further north to remain clear of the future RSA.
- Land Acquisition - This alternative requires abandoning a portion of SR 291 from the Airport Exit Road north of Ramp F to Island Avenue. The Project Sponsor would have to acquire this portion of the SR 291 right-of-way from the Commonwealth of Pennsylvania. No other land acquisition would be required.
- Lighting, Navigation, Utilities, and Culverts
  - The 24-inch sanitary sewer line that crosses the proposed runway extension area would be relocated (see Figure 3-12). There are also abandoned oil pipelines and water utility lines under the proposed runway extension area. These would be cut, removed, and backfilled; or left in place

and grouted to eliminate a void beneath the runway extension.

- An existing Texas Eastern Transmission Corporation (TETCO) 16-inch natural gas pipeline lies along SR 291. This pipeline, which connects the Malvern and Philadelphia refineries, would be relocated along the new access roadway (Figure 3-12).

- Church Creek is in a culvert beneath the existing Runway 17 RSA. This culvert would be strengthened and the remaining segments of open channel would be covered by an extension of the culvert.

- The glide slope transmitter for the Runway 17 Instrument Landing System (ILS) would be relocated based on the new landing threshold.

- The MALSR (Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights) would be shifted to the north as shown on Figure 3-11. The existing MALSR extends across SR 291 and I-95 and the final two lights are in the Airport Employee Parking Lot. The shift would move the last light directly north of Bartram Avenue on airport property. Assuming that the City acquires the SR 291 right-of-way, the only portion of the MALSR that would continue to be off the airport property is that section that is within the I-95 right-of-way (Figure 3-11).

- A PECO 104-foot high electric transmission pole along the SEPTA line (Figure 3-13) would be an obstruction to navigation and would need to be lowered accordingly. The remaining poles are not obstructions.

- Buildings - The existing service station and associated underground tanks at the intersection of Island Avenue and SR 291 would be demolished. The property is owned by the City and the lease can be terminated, when necessary.

Southern Extension

Alternative 1 requires a 400-foot extension to the south, which would be constructed entirely within the existing RSA for Runway 35. Therefore, the area is already graded, level, and clear of objects. The elements of the Runway 35 (south) extension are illustrated on Figures 3-9 through 3-12 and described below. Alternative 1, because the Runway 35 threshold is at the south end of the runway, requires that the threshold be at 14.5 feet elevation, 5.5 feet higher than existing grade. This grade change requires more substantial filling and grading to construct the runway and connecting taxiways than does Alternative 2.

- Runway, Taxiways, and Runway Safety Area
  - The runway pavement would be extended to the south by 400 feet, maintaining a width of 150 feet and having required shoulders on either side. Appropriate runway markings would be repositioned, as required.
  - Taxiway D and Taxiway E would be extended to the south by 400 feet and the width would be maintained at 75 feet. Appropriate connector taxiways, comparable to those already in place, would be constructed. Appropriate pavement markings, such as centerline, edge, and holding bars, would be painted and centerline lightings would be installed.
  - A new holding apron would be added to the end of Taxiway S to serve the extended runway.

- The new RSA would extend 1,000 feet beyond the new Runway 35 edge of pavement. The RSA would be 500 feet wide and would be cleared and graded. The RSA would not be paved. All objects higher than 3 inches above grade would be removed or replaced with low impact resistant supports.

- Roadways and Parking
  - The segment of the airfield service road that passes south of the existing Runway 35 RSA would be reconfigured to remain clear of the future RSA.

- Lighting, Navigation, and Utilities - The existing Visual Approach Slope Indicator (VASI) for Runway 35 would be recalibrated or relocated pending their tolerance limitations, or replaced with a Precision Approach Path Indicator (PAPI) for improved visual guidance. The Runway End Identifier Lights (REILs) would be relocated 400 feet south of their current position. The existing Runway 17 localizer is 1,300 feet south of the existing Runway 35 threshold. The proposed extension may require that this localizer be relocated approximately 120 feet south of its current location.

Operational Characteristics

Figure 3-7 presents the delay anticipated with Alternative 1. In 2007, this alternative is predicted to have an average delay per operation of 13.9 minutes, increasing to 25.9 minutes in 2015. Alternative 1 would reduce the annualized average delay per operation by 1.4 minutes in 2007, and by 6.5 minutes in 2015.[67]

Shipping Channel

The ship notification procedure currently being implemented would continue to be used.

Runway Restrictions

The existing noise abatement procedure for this runway prohibits departures on Runway 35 and arrivals on Runway 17 between the hours of midnight and 6:00 AM during west flows. This procedure would remain in effect. This procedure is not applied when winds are from the east or when one or more of the other runways is closed.[68]

Cost

The cost of Alternative 1 is estimated at $36 million.[69] Costs include the physical components presented in this section and shown in Figures 3-9 through 3-13.

3.5.4 Alternative 2 - Extension of Runway 17-35 with EMAS and Displaced Thresholds at Both Ends

This alternative would extend Runway 17-35 by 1,140 feet to the north and by 400 feet to the south to a new pavement length of 7,000 feet, as shown in Figure 3-14. Runway 17 would continue to be designated as a precision instrument runway while Runway 35 would remain as a non-precision instrument runway. The existing conditions and demolition plan for this alternative are shown in Figure 3-15, Figure 3-16 shows the proposed runway extension plan, and Figure 3-17 shows the proposed navigation aids plan. The sections below describe the elements of this alternative.

67 *Philadelphia International Airport: Master Plan Technical Report 2004.17, Final Runway 17-35 Extension Capacity/Delay Simulation Analysis*, DMJM Aviation, November 2004,

68 The existing noise abatement procedure was approved on 20 May 2003 as voluntary and as an existing condition as part of the approved *FAR Part 150 Study* for PHL. The procedure is described in the *Philadelphia International Airport: Final FAR Part 150 Noise Compatibility Study*, Landrum & Brown Team, 23 May 2003.

69 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition*, DMJM Aviation, 27 August 2004.

Description

Northern Extension
The northern extension would be constructed within the existing RSA for Runway 17 and within the Economy Parking Lot. Therefore, the area is already graded, level and clear of objects. The Church Creek culvert runs diagonally underneath the RSA.

- Runway, Taxiways, and Runway Safety Area
  - The runway pavement would be extended to the north by 1,140 feet, maintaining a width of 150 feet and having required shoulders on either side. Appropriate runway markings would be repositioned as required.
  - Taxiway D and Taxiway E would be extended to the north by 1,140 feet and would be 75 feet wide. Appropriate connector taxiways, comparable to that already in place, would be constructed. Appropriate pavement markings, such as centerline, edge, and holding bars, would be painted and centerline lighting would be installed.
  - A new 30-degree high speed exit taxiway would be constructed approximately 2,200 feet south of the future Runway 17 edge of pavement to expedite landing aircraft from the runway and reduce overall Runway Occupancy Time. This taxiway would connect the runway to Taxiway E.
  - The new RSA would extend 500 feet beyond the new Runway 17 edge of pavement. An EMAS surface would be placed within the 500-foot RSA and would be 150 feet wide and made of collapsible, impervious concrete. The remainder (if any) of the 500-feet wide by 500-foot long RSA that is not occupied by the EMAS would be cleared and graded. This area of the RSA would not be paved. All objects higher than 3 inches above grade would be removed or replaced with low impact resistant supports. The existing pavement that is used for the service road and the economy parking would be demolished and removed.
- Roadways and Parking – would be the same as for Alternative 1, as shown in Figure 3-15.
- Land Acquisition - would be the same as for Alternative 1.
- Lighting, Navigation, Utilities (Figure 3-18), and Culverts - would be the same as for Alternative 1.
- Buildings - would be the same as for Alternative 1.

Southern Extension
Alternative 2 requires a 400-foot extension to the south, which would be constructed entirely within the existing RSA for Runway 35. Therefore, the area is already graded, level and clear of objects. The elements of the Runway 35 (south) extension are illustrated on Figures 3-14 through 3-16 and differ only in grading from Alternative 1 as described above. Because of the displaced threshold in Alternative 2, the south end of the runway will be at the existing grade (elevation 9.0 feet) and requires less fill and grading for the runway and taxiways at the south (Runway 35) end.

Operational Characteristics

Figure 3-7 presents the delay anticipated with Alternative 2. In 2007, this alternative is predicted to have an average delay per operation of 15.1 minutes, increasing to 28.3 minutes in 2015. Alternative 2 would reduce average annualized delay per operation by 0.2 minutes in 2007, and by 4.1 minutes in 2015.

Shipping Channel

Alternative 2 is designed to accommodate tall vessel obstructions (up to 189 feet) on the Delaware River by displacing the Runway 35 landing threshold by 1,444 feet to the north, thereby maintaining 5,556 feet for landing operations from the south. With the displaced threshold, arriving aircraft would fly on approach at a higher altitude than otherwise. The entire runway would be available for departures on Runway 35. The ship notification procedure currently in place would not be required.

Runway Restrictions

The existing noise abatement procedure for this runway prohibits departures on Runway 35 and arrivals on Runway 17 between the hours of midnight and 6:00 AM during west flows. This procedure is not applied when winds are from the east or when one or more of the other runways is closed.[70] This procedure would remain in effect.

Interstate 95

Alternative 2 maintains a 500-foot displaced threshold on the Runway 17 end to accommodate the obstruction caused by vehicles on I-95. These vehicles do not affect Alternative 1 because Alternative 1 is 500 feet further from the I-95 right of way.

Cost

The cost of Alternative 2 is estimated at $56 million.[71] Alternative 2 is costlier because of the longer runway and taxiway pavement, as well as the EMAS. Costs include the physical components presented in this section and shown in Figures 3-14 through 3-18.

70 The existing noise abatement procedure was approved on 20 May 2003 as voluntary and as an existing condition as part of the approved *FAR Part 150 Study* for PHL. The procedure is described in the *Philadelphia International Airport: Final FAR Part 150 Noise Compatibility Study*, Landrum & Brown Team, 23 May 2003.

71 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project, Justification and Definition*, DMJM Aviation, 27 August 2004.

3.6 Selection of the Preferred Alternative

Based on review of the information presented in the DEIS, and on comments provided by the public, elected officials, and state and federal resource agencies, the FAA has determined that Alternative 1 (Extend Runway 17-35) is the Preferred Alternative.

The Preferred Alternative (Figure 3-8) would extend Runway 17-35 from its current length of 5,460 feet to a new length of 6,500 feet by extending the runway 640 feet to the north and 400 feet to the south. It would require relocation of the runway safety areas, connecting taxiways, navigational aids and lights, airport service roads, and a portion of the Economy Parking Lot. In addition, the Preferred Alternative would close a portion of State Route 291. Traffic would be redirected onto Bartram Avenue and Island Avenue. Alternative 1 was selected as the Preferred Alternative because it best meets the project purpose (reduces average delay per operation by 1.4 minutes in 2007 and by 6.5 minutes in 2015), has a lower cost ($36 million), and has the fewest adverse environmental impacts (0.05 acres of impact to threatened species habitat in Waterway SEPD-2). Alternative 1 would shift 173 operations per day (2007) to Runway 17-35, reducing congestion on the primary runways.

Alternative 2 was not selected because it would be less effective in meeting the project purpose (would provide average annual delay reductions (per operation) of 0.2 minutes in 2007 and 4.1 minutes in 2015), has a higher cost ($56 million), and has greater adverse environmental impacts (would result in the loss of 0.1 acre of Waterway SEPD-2). Alternative 2 would shift 100 operations per day (2007) to Runway 17-35, reducing congestion on the primary runways.

The No-Action Alternative would not meet the project purpose, and would result in higher emissions of air quality pollutants than either Alternative 1 or Alternative 2.

4

Affected Environment and Environmental Consequences

4.1 Introduction

This chapter describes the existing environmental conditions within the area potentially affected by the Proposed Project, and describes the environmental consequences of each reasonable alternative considered in this FEIS. The discussion of environmental consequences includes the environmental impacts of the alternatives; any adverse environmental effects which cannot be avoided; 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 Project should it be implemented. Information provided under each impact category includes consideration of direct and indirect effects and their significance, possible conflicts between the Proposed Project and the objectives of Federal, regional, state, tribal, and local land use plans and policies, applicable permit or license requirements, and the status of interagency coordination.

The environmental impact categories considered in this FEIS include:

- noise;
- compatible land use;
- socioeconomic and secondary (induced) impacts;
- environmental justice and children's environmental health and safety risk;
- air quality;
- water quality;
- historical, architectural, archaeological and cultural resources;
- DOT Section 4(f) resources and Section 6(f) resources;
- biotic communities (fish, wildlife and plants);
- endangered and threatened species;
- wetlands;
- floodplains;
- surface transportation;

- hazardous materials and solid waste;
- coastal resources;
- farmlands;
- wild and scenic rivers;
- natural resources and energy supply;
- light emissions and visual impacts;
- construction impacts; and
- cumulative impacts.

For each category, each reasonable alternative are compared to the No-Action Alternative to determine the effect (beneficial or adverse) of the alternative. Where a reasonable alternative would result in an environmental impact, the DEIS provides an analysis of whether that impact is significant, in light of FAA guidance on impact thresholds for significant adverse effects provided in *FAA Order 1050.1E*, Appendix A and summarized in Table 4.1-1.

4.2 Noise

This section summarizes the existing noise environment from aircraft operations[1] in the vicinity of PHL. It provides an evaluation of the expected noise impacts for Alternative 1 and Alternative 2 and for the future No-Action Alternative, and includes an evaluation of measures to avoid, minimize, and mitigate impacts. DEIS Appendix A-1, *Noise Technical Report,* provides additional information on detailed methodology, data inputs and technical analyses. Construction noise impacts are addressed in Section 4.17, *Construction Impacts*.

1 Roadway noise is discussed in *Section 4.14, Surface Transportation*.

4.2.1 Introduction

Noise technical analyses were prepared for the following analysis conditions: 2003 Existing Conditions; the 2007 No-Action Alternative and two 2007 Build Alternatives (the project opening year); and the 2015 No-Action and two Build Alternatives (the project design year). These analyses include:

- Preparation of Day-Night Average Sound Level (DNL)[2] noise exposure contours which compares noise exposure levels among the No-Action and 2007 and 2015 Proposed Alternatives;
- Consideration of noise-sensitive receptors;
- Evaluation of supplemental measures of noise impact that evaluate the duration and maximum levels of noise experienced; and
- Mitigation measures, as warranted.

Regulatory Context

The specific analyses were conducted in accordance with FAA Orders 1050.1(E) and 5050.4A.[3,4] Collectively, these are referred to in the following sections as “the Orders” when both are applicable, and are mentioned by number only when one applies but not the other. FAA Order 1050.1E, effective June 8, 2004, specifies a number of requirements including which noise models are acceptable under various circumstances, what constitutes significant impact, and when supplemental noise analyses are needed.

2 DNL is a measure of the average noise level over a 24-hour day. It is the 24-hour, logarithmic (or energy) average, A-weighted sound pressure level with a 10-decibel penalty applied to the nighttime event levels that occur between 10:00 PM and 7:00 AM.

3 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures*, Federal Aviation Administration, 8 June 2004.

4 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, Chapter 5, 8 October 1985.

Table 4.1-1 Impact Thresholds for Significant Adverse Effects

Impact Category	Impact Threshold: Significant Adverse Effects
Air Quality	Proposed project would result in emissions of pollutants that would exceed National Ambient Air Quality Standards
Coastal Resources	State determination that the Proposed Project would not be consistent with the Coastal Zone Management Plan
Compatible Land Use	Proposed Project would result in a significant noise impact over a noise-sensitive area within the 65 dB DNL contour
Construction Impacts	Construction would create significant impacts that could not be mitigated
Department of Transportation Act, Section 4(f) and Section 6(f)	The Proposed Project would involve more than a minimal physical use of a Section 4(f) property or would substantially impair the 4(f) property, and where mitigation measures would not eliminate or reduce the effects below this threshold.
Farmlands	Significant impacts are determined by the Natural Resource Conservation Service (NRCS) Form AD 1006 method. The Proposed Project would result in the loss of farmland if a Form 1006 score registered higher than 200.
Endangered and Threatened Species	Determination by the US Fish and Wildlife Service or National Marine Fisheries Service that the Proposed Project would be likely to jeopardize the continued existence of a Federally-listed species, or result in the destruction or adverse modification of Federally-designated critical habitat.
Floodplains	The Proposed Project would result in notable adverse impacts to natural and beneficial floodplain values
Hazardous Materials and Solid Waste	The Proposed Project could not be designed to meet the applicable local, state, Tribal, or Federal regulations on hazardous or solid waste management
Historical, Architectural, Archaeological and Cultural Resources	Adverse effect on a property eligible for the National Register of Historic Places may be considered a significant impact
Light Emissions and Visual Impacts	The Proposed Project would have an adverse effect on human activity or the use or characteristics of properties protected under Section 4(f) that could not be mitigated
Noise	The Proposed Project would cause noise-sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB, when compared to the No-Action Alternative.
Environmental Justice, Children's Health and Safety	The Proposed Project would have disproportionately high and adverse human health or environmental effects on minority and low-income populations or disproportionate health and safety risks to children.
Socioeconomic Impacts	The Proposed Project may have a significant effect if it results in extensive relocation of residents; extensive relocation of community business that would create severe economic hardship for the community; disruption of local traffic patterns that substantial reduce the level of service of roads serving the airport and surrounding communities; or a substantial loss in the community tax base.
Water Quality	The Proposed Project would exceed state water quality standards, result in water quality problems that could not be avoided or mitigated, or would have difficult in obtaining required permits
Wetlands	The Proposed Project would adversely affect the function of a wetland to protect municipal water supplies or sole source aquifers; would substantially alter the hydrology needed to maintain wetlands; would threaten public health, safety or welfare by substantially reducing a wetland's ability to retain floodwaters; would adversely affect wildlife habitat or fish habitat; or would be incompatible with state wetland strategies.
Wild and Scenic Rivers	No specific thresholds have been developed. Significance is determined in consultation with the Department of the Interior.

Both Orders stipulate that a significant noise impact would occur if analysis shows that the proposed action would cause noise-sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above the DNL 65 dB noise exposure, when compared to the future No-Action Alternative for the same time frame. Noise-sensitive areas include residences, schools, hospitals, places of worship, and other uses identified in Section 4.3, *Compatible Land Use*.

Changes in noise were assessed by comparing the noise levels for the No-Action Alternative with the noise levels predicted for Alternative 1 and 2 and calculating the change in noise associated with each alternative. FAA Orders stipulate conditions that define "significant impact." If a location of incompatible land use is exposed to a Project-related increase in noise level of DNL 1.5 dB or more, and that location lies within the 65 dB DNL noise contour for the "with action" condition (Alternative 1 or Alternative 2), then the location is considered to be significantly impacted by noise.

Historically, the Federal Interagency Committee on Noise (FICON)[5] recommended that less than significant noise level changes also be identified for noise sensitive locations exposed to Project-related increases. FICON recommended reporting any changes in DNL of 3 dB or more between 60 and 65 dB DNL and increases of DNL 5 dB or more between the 45 and 60 dB DNL contour. The FAA's subsequent Air Traffic Noise Screening (ATNS) procedure[6] further emphasized the importance of these changes in DNL, so that they, also, are now included in FAA Order 1050.1E. While these recommendations only apply to cases where the significant threshold (1.5 dB or more DNL) is met or exceeded, they are included in this DEIS in response to comments raised during scoping.

Determination of Significance

The Runway 17-35 Extension Project requires a noise contour analysis to determine the significance of noise impacts. Both the Department of Housing and Urban Development (HUD)[7] and the FAA[8] define 65 dB DNL as the threshold of noise incompatibility with residential land uses. Thus, the 65 DNL contour is important for population impact assessments. A significant noise impact is defined as a noise-sensitive location within the 65 dB DNL contour that experiences project-related increases of 1.5 dB or more, when compared to the No-Action Alternative for the same time frame. Other areas that are disclosed are those that experience increases in project-related noise of 3 dB or more at noise-sensitive locations between the 60 and 65 dB DNL contours. This noise analysis also evaluates the potential for a 5 dB change in noise exposure level at noise-sensitive locations which would be exposed to a baseline noise exposure between 45 and 60 dB DNL for the appropriate altitudes.

Table 4.2-1 summarizes the criteria used to assess the level of change in noise. Increases of 3 dB or more in areas that would be exposed to DNL values between 60 dB and 65 dB are considered to reflect a slight-to-moderate change. Increases of 5 dB or greater in areas that would be exposed to DNL values between 45 dB and 60 dB are considered to reflect slight-to-moderate change because noise unrelated to the Project can have a significant influence on total exposure at these lower levels. The increases in noise at these levels are enough to

5 *Federal Agency Review of Selected Airport Noise Analysis Issues*, Federal Interagency Committee on Noise, Washington, D.C., August 1992.
6 *Air Traffic Noise Screening Procedure*, Version 2.0, January 1998.
7 *24 Code of Federal Regulations, Part 51, 44 Federal Register 40861, Environmental Criteria and Standards of the Department of Housing and Urban Development*, Department of Housing and Urban Development, Washington D.C., 12 July 1979.
8 *14 Code of Federal Regulations 150, Airport Noise Compatibility Planning*, Definitions, para. 150.7.

Table 4.2-1 Basis for Characterization of Changes in Noise

DNL Exposure Interval of Alternative or Proposed Action	Change in DNL	Characterization of Change	Reference
45 dB to less than 60 dB	5 dB or more	Slight-to-moderate change	FICON, 1992; Federal Register Notice, Vol. 65 Page 76339.
60 dB to less than 65 dB	3 dB or more	Slight-to-moderate change potential for mitigation should be considered	FAA Order 1050.1E, 2004.
Greater than or equal to 65 dB	1.5 dB or more	Significant impact	FAA Order 1050.1E, 2004; FAA Order 5050.4A, 1985; 14 CFR Part 150, FICON, 1992.

Source: FICON

be noticeable and potentially disturbing to some people, but the cumulative noise level is not high enough to constitute a significant impact. Only those increases of 1.5 dB or more within the 65 dB DNL contour are considered a significant impact by the FAA.

Study Area

Under NEPA, the FAA must analyze the environmental effects of the Proposed Project. To capture those effects, the Study Area must include not only the immediate airport environs where aircraft flight paths are aligned with the runways, it also must include other potentially affected areas beyond that, over which aircraft will fly as they follow new or changed flight corridors that join the surrounding airspace. The extent of this area is dependent on the altitudes flown by arriving and departing aircraft. FAA environmental orders require that noise analysis be conducted for aircraft departures to 10,000 feet AGL and aircraft arrivals from 7,000 feet AGL.

The geographical extent of the Study Area was determined from radar data by following flight paths for aircraft using each runway at PHL, from their start of takeoff to the points at which they reached 10,000 feet AGL on departure or 7,000 feet on arrival, whichever is the farther distance. In addition, to assure inclusion of noise effects from new flight tracks and climb profiles, a preliminary set of future flight tracks were developed to reflect the forecast fleet of aircraft and the two Build Alternatives under study, and those, too, were extended to the point at which aircraft on those tracks would reach 10,000 feet AGL. Given the significant dispersion of flight paths observed at these higher altitudes, a circular area with a radius of approximately 27 miles was used to define the Study Area. Figure 4.2-1 depicts the Study Area.

4.2.2 Affected Environment

This section describes the 2003 existing noise environment in the Local and Regional study areas and describes the methodology for evaluating the different noise metrics that are used to characterize noise.

Methodology

Existing and future aircraft noise levels at PHL were analyzed by evaluating noise contours using the FAA's Integrated Noise Model (INM) (Version 6.1). The INM uses airport geometry, descriptions of aircraft operations, and an internal database of noise and performance characteristics to compute the noise of individual flights. The INM then adds noise of individual flights together and presents the accumulation as a set of contours and/or noise calculations at specific points.

Detailed operational inputs to the INM fall generally into three categories of information:

- Daily numbers of daytime and nighttime takeoffs and landings by specific aircraft types (fleet mix and operations);
- Average statistics on usage of each runway and flight path by various aircraft groups (runway utilization); and
- Typical flight path and runway geometry (flight tracks).

Historical data traceable to sources such as PHL's noise and operations monitoring system, which records and saves FAA radar data from the Air Traffic Control Tower, are used to develop descriptions of past noise environments. Predicted aspects of an airport's operations are used to evaluate alternative assumptions regarding growth, future aircraft fleets, shifting of flight paths, new runway and taxiway configurations, delay, noise mitigation measures, and other critical planning efforts.

The detailed inputs to the INM model, such as fleet mix and operations, runway utilization, and flight tracks, are provided in DEIS Appendix A-1, *Noise Technical Report*.

INM Model Inputs
The INM model is based on information on fleet mix and operations, runway utilization, and flight tracks.

Fleet Mix and Operations. Fleet mix and annual operations for 2003 were derived from flight track radar data obtained from PHL's Noise and Operations Monitoring System (NOMS). The annual operations were used as input to the INM for the purpose of computing the baseline noise exposure. These data were processed to obtain critical operating information:

- The average number of daily takeoffs and landings for daytime hours (7:00 AM to 10:00 PM) and nighttime hours (10:00 PM to 7:00 AM) sorted into different trip lengths used by the INM to approximate takeoff weights.
- Actual, rather than scheduled, arrival and departure times.
- A breakdown of operations by aircraft groupings for air carrier, air taxi, general aviation, and a small number of military operations.
- The number of aircraft types within each grouping.

From these radar data, there were 415,031 flights for 2003. These counts were scaled to match the FAA Tower Counts for PHL, which totaled 445,974 operations for 2003.[9] The tables in DEIS Appendix A-1, *Noise Technical Report* (Attachment B), provide detailed summaries of the annual and daily operations by stage length and aircraft type for each of the future forecast years.

Table 4.2-2 provides a summary of annual operations for 2003 Existing conditions at PHL by category of fixed wing aircraft. This table was derived from the detailed operations and fleet mix data provided in the tables in DEIS Appendix A-1, *Noise Technical Report* (Attachment B).

As shown in Table 4.2-2, small narrowbody aircraft comprise the largest category of fixed wing aircraft operations at PHL representing approximately 43.6 percent of all operations in 2003. For the purposes of this analysis, the small narrowbody category is comprised of the following aircraft

9 Tower counts, Federal Aviation Administration.

types: B717, B727, B737, A319, A320, A321, BAC111, BAE146, DC93, DC95, F100, and MD81/82/83.

Table 4.2-2 Summary of Annual Operations for 2003 Existing Conditions at PHL

Categories of Fixed Wing Aircraft	2003 Annual Operations	
	Day	Night
Small Narrowbody	171,211	23,160
Small Widebody	9,184	3,733
Large Narrowbody	19,942	8,423
Large Widebody	8,498	1,067
Business Jet	20,618	7,157
Regional Jet	60,252	6,627
Multi-engine Piston	2,830	3,692
Single-engine Piston	2,798	260
Turboprop	84,037	12,477
Total	379,370	66,596

Source: HMMH analysis of 2003 flight track radar data from PHL's NOMS system, 2004.
Note: Daytime hours are 7:00 AM to 10:00 PM and nighttime hours are 10:00 PM to 7:00 AM

Runway Utilization. Runway use refers to the frequency with which aircraft utilize each runway during the course of a year, as dictated or permitted by wind, weather, aircraft weight, air traffic control and according to noise abatement procedures. Communities located near the ends of the runway or beneath the arrival and departure routes of aircraft using that runway will experience aircraft noise in proportion to utilization of the runway.

Radar data for 2003 were used in the development of runway use for the 2003 Existing Base Case. Takeoffs and landings were counted separately and sorted into daytime and nighttime operations, then further separated by groups of aircraft having different performance characteristics (for example, turboprops were separated from A319s) reflecting existing runway use restrictions and takeoff length requirements for certain aircraft. A summary of the computed runway utilization as a percent of the total operations for 2003 Existing Conditions is provided in Table 4.2-3.

Table 4.2-3 Runway Utilization for 2003 Existing Conditions

Type of Operation	Day or Night	Actual Annual Operations with Percent of Total Operations								Total
		8	9L	9R	17	26	27L	27R	35	
Departure	Day	10,063	39,697	1,730	4,312	0	96,565	7,264	13,563	173,194
		2.4%	9.6%	0.4%	1.0%	0.0%	23.3%	1.8%	3.3%	41.7%
Departure	Night	2,627	5,771	504	1,079	0	15,830	1,750	1,599	29,160
		0.6%	1.4%	0.1%	0.3%	0.0%	3.8%	0.4%	0.4%	7.0%
Arrival	Day	0	775	43,141	9,844	16,928	9,018	78,297	22,467	180,470
		0.0%	0.2%	10.4%	2.4%	4.1%	2.2%	18.9%	5.4%	43.5%
Arrival	Night	0	465	7,841	617	5,723	3,850	11,881	1,830	32,207
		0.0%	0.1%	1.9%	0.1%	1.4%	0.9%	2.9%	0.4%	7.8%
Sub-Totals		12,690	46,708	53,216	15,852	22,651	125,263	99,192	39,459	415,031
		3.1%	11.3%	12.8%	3.8%	5.5%	30.2%	23.9%	9.5%	100.0%

Source: HMMH, 2004.

In 2003 Existing conditions, aircraft operations off of the ends of Runway 17-35 accounted for approximately 13.3 percent of the total number of operations at PHL, with the majority of that traffic consisting of arrivals to Runway 35. As shown in the table, both Runway 17 and Runway 35 had relatively low levels of use at night during 2003, due to the existing voluntary noise abatement procedure, which prohibits departures on Runway 35 and arrivals on Runway 17 between the hours of 11:00 PM and 6:00 AM.

Flight Tracks. Aircraft arriving to or departing from the Airport create thousands of unique flight paths. Most flight paths are grouped into corridors based on their city of origin (for arrivals) or their destination (for departures). To evaluate existing and future noise exposure within the Study Area, these flight paths, or flight tracks, must be included as input to the INM.

Modeled aircraft flight tracks were developed for Existing Conditions using the radar data obtained from the TAMIS monitoring system for 2003 as a starting point. The "radar" flight tracks were used to develop "modeled" flight tracks for a variety of takeoff and landing operations on each of the Airport's runways.

Modeled flight tracks were defined in terms of a primary flight track (or "backbone" track) and additional "dispersed" tracks. This dispersion more accurately duplicates the flight paths followed by aircraft through a corridor by accounting for the variability attributed to wind, weather, aircraft type, traffic, pilot technique and other factors.

The radar flight tracks used to develop input for the INM are representative of the following operating conditions at PHL:

- "West" flow conditions, when 70 percent or more of the operations were on runways with north and west headings;
- "East" flow conditions, when 70 percent or more of the operations were on runways with south and east headings;
- A new procedure called the "Dual Modena." by air traffic controllers, implemented on October 31, 2003 and primarily affecting aircraft with southerly destinations; and
- New use of Runway 17-35 by air carriers for departures, particularly small narrowbody aircraft (mostly Boeing 737s and Airbus 319s), starting in early 2004.

The implementation of each new procedure was accurately reflected in the Existing and future forecast cases, as appropriate. The complete sample of radar flight tracks used to develop the modeled tracks also was representative of each month of the year and each day of the week.

The resulting sets of modeled tracks are an approximation of the flight corridors that were actually over flown during 2003 by operations from and to each of the runways. Figure 4.2-2 shows the Existing 2003 arrival flight tracks for all runways that were modeled in the INM. Figure 4.2-3 shows the Existing 2003 departure flight tracks that were modeled in the INM. In each figure, the thick lines represent the backbone flight tracks, while the thin lines depict the dispersed tracks.

Population Database

The noise analysis identifies both changes in the noise environment and the population (number of people and number of households) affected by noise. Most of the noise impact identified by this study is based on noise levels at population centroids, which are points representing the geographic center of a Census block as defined by the U.S. Bureau of Census. Population and other demographic data belonging to a block are assigned to each block's centroid. Population and other demographic data for the year 2003 were derived from the 2000 Census block-level data.[10] The INM was used to calculate a DNL value at each centroid for each operational scenario.

Population and housing located in noise sensitive areas (areas with DNL values greater than 60 dB) are calculated using 2000 U.S. Census data. If the centroid, which is a point representing the geographic center of a census block, is located within a noise contour of 60 dB or above, then all the population and households are typically counted within that contour.[11] The population assessment assumes no population changes in the area for the future conditions, and is also based on the 2000 Census.

Ambient Noise Measurements Within the Study Area

Although noise measurements are not required as part of an environmental process, noise measurements were undertaken to provide an understanding of the existing noise environment at selected sites. Specifically, the noise measurements provide the study with information on single event and cumulative noise exposure, and information on existing aircraft operations.

Two sets of noise measurement data were available for evaluation in this study. The first set of noise measurement data were obtained from the Airport's permanent NOMS for 2003. The second set of noise measurement data were obtained from a temporary noise monitoring program performed during the latter half of January 2004.

DEIS Appendix A-1, *Noise Technical Report* (Section 2.3-1), provides a detailed discussion of the noise monitoring study and its results.

2003 Existing Aircraft Noise Exposure

Aircraft noise exposure contours, described in terms of the 60, 65, 70, and 75 dB DNL contours for 2003 existing operations, are presented in Figure 4.2-4. DNL noise exposure contours are a graphical representation of how the cumulative noise from PHL's aircraft operations is distributed over the surrounding area on an average day of a given year (2003). As described earlier, both HUD and the FAA define 65 dB DNL as the threshold of noise incompatibility with residential land uses. The 65 dB DNL contour is also the basis on which the FAA determines eligibility for sound insulation funding.

As shown in Figure 4.2-4, the noise contours are aligned along the Delaware River, along industrial and commercial land uses. The shape of the contours follow an alignment along the Delaware River due in large measure to the prevailing winds from the west, and the configuration of the primary parallel Runways 9R-27L and 9L-27R. In addition, air traffic control noise abatement procedures direct departing aircraft to make slight left turns to follow the river. Most of the area within the 65 dB contour is within the Delaware River. Estimates of the numbers of people residing within each noise exposure contour are summarized in Table 4.2-4, while estimates of the numbers of households within each noise exposure contour are summarized in Table 4.2-5.

10 2000 United States Census data, (http://www.census.gov/main/www/cen2000.html), 2000.

11 Where the location population and block centroid either a census block were significantly different the centroid was adjusted. This occurred in only one location in Tinicum as is reflected in the tables and in Attachment I of DEIS Appendix A-1, *Noise Technical Report*.

Table 4.2-4 2003 Noise-Exposed Population

State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	2,922	2,922
New Jersey	Gloucester	0	0	0	0	58	58
Pennsylvania	Delaware	0	0	165[1]	165	1,758	1,923
Pennsylvania	Philadelphia	0	1[2]	0	1	0	1
Total		0	1	165	166	4,738	4,904

Source: HMMH, 2004.
1 Centroid location (26 people) is within the 70 contour but further analysis shows the population lies between 65 and 70 DNL.
2 Census block represents the caretaker quarters at Fort Mifflin. Because the FAR Part 150 study (p. 4-24, June 2002) indicates no one lives at this location, the analysis presented in this DEIS reflects the 2000 Census data.

Table 4.2-5 2003 Noise-Exposed Households

State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	1,153	1,153
New Jersey	Gloucester	0	0	0	0	24	24
Pennsylvania	Delaware	0	0	78	78	759	837
Pennsylvania	Philadelphia	0	0	0[1]	0	0	0
Total		0	0	78	78	1,936	2,014

Source: HMMH, 2004.
1 2000 Census data does not consider the caretaker at Fort Mifflin as a household.

For 2003 Existing Conditions, there are approximately 165 people (78 households) within the 65 dB – 70 dB DNL contour. The DNL 65 dB contour covers approximately 5,203 acres (8.1 square miles) of land, including both on-airport and off-airport land. Approximately 4,904 people are within the 2003 60 dB DNL contour, which encompasses 11,898 acres (18.6 square miles) of land, including both on-airport and off-airport land. In its current configuration, PHL occupies approximately 2,300 acres (four square miles) of land. Current noise conditions are similar to those predicted in the *Federal Aviation Regulations (FAR) Part 150 Noise Compatibility Study*.[12]

4.2.3 Environmental Consequences

This section describes the methodology used to assess noise impacts and the noise impacts of each of the alternatives evaluated in this FEIS.

Methodology

The following outlines the methodology for determining the 2007 and 2015 noise contours and

12 *Philadelphia International Airport: Federal Aviation Regulations Final Part 150 Noise Compatibility Study.* Landrum & Brown. 23 May 2003.

changes, including data inputs to the INM model for Alternatives 1 and 2 for 2007 and 2015.

This section discusses how noise impacts are calculated, and provides a detailed explanation of the changes in annual operations, flight tracks, and runway utilization associated with the future No-Action Alternative, Alternative 1 and Alternative 2.

Identifying Noise Impacts
DEIS Appendix A-1, *Noise Technical Report,* provides a detailed description of the methodology used to characterize the noise environment. The general approach for identifying noise affected areas is:

- Collect data inputs for INM (as described above);
- Run the INM to compute noise exposure from aircraft operations and compare each future Build Alternative to the future No-Action Alternative;
- Compute differences at specific grid points for the Alternatives and analysis years to identify any significant noise impacts - Areas of a 1.5 dB increase or greater at any noise-sensitive areas within the 65 dB DNL contour for the Build Alternatives;
- Compute differences at specific grid points for the Alternatives and analysis years to identify areas of a 3 dB increase or greater at any noise-sensitive area between the 60 and 65 dB DNL contour for the Build Alternatives;
- Compute differences at specific grid points for the Alternatives and analysis years to identify areas of a 5 dB increase or greater at any noise-sensitive area between the 45 and 60 dB DNL contours for the Build Alternatives to the appropriate altitudes specified by FAA policies; and
- Tabulate population, housing, and other noise-sensitive receptors such as schools, hospitals, nursing homes, libraries, places of worship, and auditoriums in these areas.

The INM can represent the noise data as a set of contours and/or noise calculations at specific points. The first step in the analysis is to prepare average annual day-night noise contours which are a graphical representation of how the cumulative noise from aircraft operations is distributed over the surrounding area on an average day of a given year. These contours are plotted on a United States Geologic Services (USGS) map.

Using U.S. Census data as described above, estimates of the numbers of people residing within each noise exposure contour are counted. The same process is conducted to estimate the number of affected households. Aircraft noise exposure for the 60, 65, 70, and 75 dB DNL contours for 2003 Existing, and 2007 and 2015 Future Conditions were developed to evaluate the noise affects of the proposed alternatives in comparison to the No-Action Alternative.

In addition to evaluating the total population affected by noise, consideration also is given to identify the amount of decibel changes experienced by the population. To identify the areas of change, a grid point methodology was used. This approach computes DNLs with the INM at specific uniformly-spaced grid points to examine noise level changes from aircraft operations below the 60 dB DNL. Specifically, the INM was used to identify 5 dB changes between 45 dB DNL and 60 dB DNL for a set of grid points with a uniform spacing of 3,000 feet.

As described in subsequent sections of this EIS, the changes in noise exposure between 45 dB DNL and 60 dB DNL, as well as the changes in noise exposure above 60 dB DNL, were displayed with color-coded squares centered on the uniformly spaced grid points; the color-coding of each square indicates the approximate magnitude of the change in DNL that was computed at the grid point. The color-coding of the squares centered on the grid points graphically depict the geographic area that would experience changes greater than or equal to 1.5 dB, 3 dB, or 5 dB.

Operations

The potential noise impacts for Alternatives 1 and 2 are based on forecast annual average daily aircraft operations for the years 2007 and 2015. In each future forecast year, the total number of flight operations is expected to be the same for the No-Action Alternative as for the Build Alternatives. Operations will not increase because of the proposed build alternatives, but will increase (or decrease) in response to passenger and cargo demand at an airport. The annual average daily operations were derived from the results of delay simulation modeling that was conducted as part of the MPU and in support of the alternatives analysis for this DEIS. The delay simulation used the TAAM[13] software and methodology. The TAAM forecast generated operations by aircraft type using the peak month average day.[14] As required for the noise analysis, this scenario was converted to annual average daily operations, which are the basis for noise modeling.

Table 4.2-6 provides a summary of the forecast average annual daily operations by category of fixedwing aircraft for the future forecast years of 2007 and 2015, for the day (7:00 AM to 10:00 PM) and night (10:00 PM to 7:00 AM) time periods considered in the noise analyses. Table 4.2-7 compares the total fixed-wing operations in those years to the total for the Existing Conditions (2003) case.

Forecast annual operations would total approximately 528,400 fixed wing aircraft operations for 2007, an 18 percent increase over 2003 operations. Between 2003 and 2007, a slight decline in the projected number of operations for small narrowbody, large widebody, and turboprop aircraft would be more than offset by a projected increase in operations for all of the other categories of fixed wing aircraft. Even with the slight decline in projected small narrowbody operations between 2003 and 2007, these aircraft would still represent the largest category of fixed wing aircraft operations in 2007. Between 2003 and 2007, the number of regional jet operations is expected to increase from approximately 66,879 to 121,361 annual operations, making regional jets the second highest fixed-wing category in 2007.

Forecast annual operations in 2015 would total approximately 616,000 fixed wing aircraft operations, representing a 17 percent increase over 2007 operations. Between 2007 and 2015, annual operations are projected to decrease for multi-engine, single-engine, and turboprop aircraft, while operations for all other categories of aircraft are expected to increase. In 2015 as in 2007, small narrowbody aircraft would represent the largest category of fixed wing aircraft operations at PHL, while regional jets would be the second highest category.

13 *Fast Time Gate-to-Gate Simulation*, Total Airport and Airspace Modeler Plus 11-295, Version 1, The Preston Group Pty Ltd., 1999.

14 *Philadelphia International Airport, Master Plan Technical Report 2004.17, Final Runway 17-35 Extension Capacity/Delay Simulation Analysis*, November 2004 .

Table 4.2-6 Summary of Forecast Day-Night Annual Operations for 2007 and 2015 by Category of Fixed Wing Aircraft

Categories of Fixed Wing Aircraft	2007 Annual Operations		2015 Annual Operations	
	Day	Night	Day	Night
Small Narrowbody	173,677	14,263	190,565	19,535
Small Widebody	16,455	3,985	25,668	4,932
Large Narrowbody	35,041	8,112	53,791	12,123
Large Widebody	7,154	2,273	10,450	3,436
Business Jet	33,668	5,831	45,762	7,613
Regional Jet	106,559	14,802	144,078	18,326
Multi-engine Piston Engine	5,815	2,299	5,045	1,276
Single-engine Piston Engine	2,380	793	1,545	927
Turboprop	86,426	8,867	64,121	6,806
Total	467,175	61,225	541,025	74,974

Source: HMMH analysis of TAAM operations data, 2004.

Flight Tracks
The proposed changes in runway length under consideration with each of the Build alternatives described in Chapter 3 are expected to have small changes on aircraft flight tracks particularly at moderate to large distances from the Airport. However, the Build alternatives are not expected to include any new flight paths as a result of the Proposed Action as may be expected with a more extensive project, such as a runway reconfiguration.

Aircraft flight tracks for both of the extended runway scenarios were developed by making minor changes to the existing flight tracks for Runway 17-35 operations assuming aircraft would follow the runway heading until the TRACON issues a radar vector for a new heading. These modeled flight tracks were developed and confirmed through a process of meetings and discussions with FAA headquarters and air traffic controllers.

Based on this assumption, the proposed runway extensions would effectively shift each existing flight track by the same distance as the runway extension itself. As an example, a modeled flight track for a regional jet departing Runway 35 to the north under Alternative 1 would start 400 feet further to the south, since Alternative 1 would extend Runway 17-35 400 feet to the south. Flight paths would shift by the amount that a runway end or threshold is shifted.

Air carriers began using Runway 17-35 for some jet departures in early 2004, and as a result Runway 17-35 experienced an increase in the numbers of departures of small narrowbody aircraft (mostly Boeing 737s and Airbus 319s). To properly account for this new use of Runway 17-35, additional flight track radar data were obtained from PHL's NOMS for the period from March 1, 2004, through May 30, 2004. Air carrier flight tracks and track utilization for Runway 17-35 were created from this new sample of aircraft radar data, and were used in all future forecast cases.

Runway Utilization

For the forecast years of 2007 and 2015, runway utilizations for the noise analysis were based on the results of the simulation (TAAM) modeling in the same manner that the operations data were developed. These data also are entirely consistent with the operations data used in the air quality analysis. Tables 4.2-7 through 4.2-9 provide summaries of the 2007 runway utilizations for the No-Action Alternative, Alternative 1, and Alternative 2, respectively. DEIS Appendix A-1, *Noise Technical Report* (Attachment C), contains additional tables with detailed runway utilizations by aircraft group broken down separately for arrivals and departures, and for daytime and nighttime operations for 2007.

Aircraft operations on Runways 17 and 35 accounted for 13.3 percent of all aircraft operations for the 2003 Existing Condition, while operations on Runways 9R and 27L accounted for 43.0 percent of all 2003 operations. As shown in Table 4.2-8 for the 2007 No-Action Alternative, aircraft operations on Runway 17-35 are expected to account for approximately 19.6 percent of the total number of operations at PHL, up from 13.3 percent of all operations for the 2003 Existing Condition. Because of congestion on the primary runways, pilots are anticipated to increase use of Runway 17-35 when weather, wind, and aircraft loads permit. The majority of the projected Runway 17-35 traffic for 2007 consists of daytime arrivals to Runway 35. Operations off Runway 9R-27L would account for 41.9 percent of all 2007 operations—down slightly from 43.0 percent of all operations in 2003.

Table 4.2-7 Summary of Annual Operations for 2003, 2007, and 2015

Categories of Fixed Wing Aircraft	Actual Annual Operations 2003	Forecast Annual Operations 2007	Forecast Annual Operations 2015
Small Narrow	194,371	187,940	210,100
Small Widebody	12,918	20,440	30,600
Large Narrowbody	28,365	43,153	65,914
Large Widebody	9,565	9,427	13,886
Business Jet	27,775	39,499	53,375
Regional Jet	66,879	121,361	162,404
Multi-engine Piston Engine	6,522	8,113	6,321
Single-engine Piston Engine	3,058	3,173	2,472
Turboprop	96,514	95,293	70,927
Total (future forecasts rounded to nearest 100)	445,967	528,400	616,000

Sources: 2003 Radar data, HMMH analysis of TAAM data, 2004.

Table 4.2-8 Runway Utilization as Percent of Total Operations for 2007 No-Action Alternative

Type of Operation	Day or Night	Runway Use as Percent of Total Operations for 2007 No-Action Alternative								Total
		8	09L	09R	17	26	27L	27R	35	
Departure	Day	3.9%	10.9%	0.5%	0.0%	0.0%	23.3%	1.9%	4.5%	45.0%
Departure	Night	0.5%	1.0%	0.1%	0.1%	0.0%	2.2%	0.3%	0.7%	5.0%
Arrival	Day	0.0%	0.2%	11.0%	1.5%	1.6%	2.2%	15.8%	11.3%	43.4%
Arrival	Night	0.0%	0.1%	2.2%	0.2%	0.5%	0.6%	1.8%	1.3%	6.6%
Sub-Totals		4.4%	12.2%	13.7%	1.8%	2.0%	28.2%	19.8%	17.8%	100.0%

Source: HMMH analysis of TAAM data, 2004.

Table 4.2-9 Runway Utilization as Percent of Total Operations for 2007 Alternative 1

Type of Operation	Day or Night	Runway Use as Percent of Total Operations for 2007 Alternative 1								Total
		8	9L	9R	17	26	27L	27R	35	
Departure	Day	3.6%	10.1%	0.4%	0.0%	0.0%	19.3%	1.6%	9.9%	45.0%
Departure	Night	0.5%	0.9%	0.1%	0.1%	0.0%	1.8%	0.2%	1.3%	5.0%
Arrival	Day	0.0%	0.2%	10.2%	1.9%	2.1%	1.9%	14.2%	13.0%	43.4%
Arrival	Night	0.0%	0.1%	2.0%	0.2%	0.6%	0.5%	1.6%	1.6%	6.6%
Sub-Totals		4.1%	11.3%	12.7%	2.2%	2.8%	23.5%	17.6%	25.9%	100.0%

Source: HMMH analysis of TAAM data, 2004.

As shown in Table 4.2-9 for 2007 Alternative 1, aircraft operations on Runway 17-35 are expected to account for approximately 28.1 percent of the total number of operations at PHL, up from the projected runway use of 19.6 percent of operations with the 2007 No-Action Alternative. As for the No-Action Alternative, the majority of the projected Runway 17-35 traffic for Alternative 1 would consist of daytime arrivals to Runway 35. Runway use for 9R-27L would drop to 36.2 percent of all operations, from a projected use of 41.9 percent with the No-Action Alternative.

As shown in Table 4.2-10 for 2007 Alternative 2, aircraft operations on Runway 17-35 are expected to account for approximately 26.5 percent of all aircraft operations at PHL. However, unlike Alternative 1, the projected traffic for Runway 17-35 under Alternative 2 would consist of almost equal numbers of daytime arrivals and departures, to and from Runway 35. Runway 9R-27L would account for 36.8 percent of all 2007 aircraft operations.

Table 4.2-10 Runway Utilization as Percent of Total Operations for 2007 Alternative 2

Type of Operation	Day or Night	Runway Use as Percent of Total Operations for 2007 Alternative 2								Total
		8	9L	9R	17	26	27L	27R	35	
Departure	Day	3.6%	10.0%	0.4%	0.0%	0.0%	18.6%	1.5%	10.9%	45.0%
Departure	Night	0.5%	0.9%	0.1%	0.2%	0.0%	1.8%	0.2%	1.3%	5.0%
Arrival	Day	0.0%	0.2%	10.9%	1.9%	1.7%	2.2%	15.8%	10.8%	43.4%
Arrival	Night	0.0%	0.1%	2.2%	0.2%	0.5%	0.6%	1.8%	1.3%	6.6%
Sub-Totals		4.1%	11.2%	13.7%	2.2%	2.1%	23.1%	19.4%	24.3%	100.0%

Source: HMMH analysis of TAAM data, 2004.

Tables 4.2-11 through 4.2-13 provide summaries of the 2015 runway utilizations for the No-Action Alternative, Alternative 1, and Alternative 2, respectively. DEIS Appendix A-1, *Noise Technical Report* (Attachment C), contains additional tables with detailed runway utilizations for 2015.

A comparison of Tables 4.2-8 and 4.2-11 indicates that for the 2007 and 2015 No-Action Alternatives, utilization of Runway 17-35 is expected to decrease slightly from approximately 19.6 percent to 17.3 percent of the total number of operations at PHL. Over the same period, utilization of Runway 9R-27L is expected to increase slightly from 41.9 percent to 43.3 percent of operations.

A comparison of Tables 4.2-9 and 4.2-12 shows that, for Alternative 1 between 2007 and 2015, utilization of Runway 17-35 is expected to decrease slightly from approximately 28.1 percent to 26.5 percent of the total number of operations at PHL, while utilization of Runway 9R-27L would increase from 36.8 percent to 38.2 percent. Alternative 1 departures from Runway 35 would be 2.3 times greater than the No-Action Alternative, and are 2.8 times greater for Alternative 2. Alternative 1 has a longer runway available for landings to Runway 35. The runway for Alternative 1 has 6,500 feet available for arrivals to Runway 35 whereas Alternative 2 has only 5,556 feet available for arrivals, which is only 97 feet longer than the existing runway. The number of arrivals is lower than the No-Action Alternative due to the increase of other traffic on the runway due to the extensions.

A comparison of Tables 4.2-9 and 4.2-12 indicates that, from 2007 to 2015 for Alternative 2, utilization of Runway 17-35 is expected to decrease slightly from approximately 28.1 percent to 23.9 percent of the total number of operations at PHL.

Note for each of the cases in each of the future forecast years, projected levels of nighttime use are expected to be relatively low for both Runway 17 and Runway 35. This is a result of the existing voluntary noise abatement procedure, which is expected to remain in place over the period considered by this study, with or without the implementation of the proposed actions. The Sponsor may request that the noise abatement program be amended to conform with changes in operations as a result of the runway extension.

Table 4.2-11 Runway Utilization as Percent of Total Operations for 2015 No-Action Alternative

Type of Operation	Day or Night	Runway Use as Percent of Total Operations for 2015 No-Action Alternative								Total
		8	9L	9R	17	26	27L	27R	35	
Departure	Day	3.2%	11.5%	0.5%	0.0%	0.0%	24.0%	2.0%	3.5%	44.7%
Departure	Night	0.4%	1.3%	0.1%	0.2%	0.0%	2.5%	0.3%	0.6%	5.3%
Arrival	Day	0.0%	0.2%	10.8%	1.2%	1.1%	2.3%	17.0%	10.5%	43.2%
Arrival	Night	0.0%	0.1%	2.5%	0.1%	0.5%	0.6%	1.9%	1.2%	6.8%
Sub-Totals		3.5%	13.1%	13.9%	1.5%	1.6%	29.4%	21.2%	15.8%	100.0%

Source: HMMH analysis of TAAM data, 2004.

Table 4.2-12 Runway Utilization as Percent of Total Operations for 2015 Alternative 1

Type of Operation	Day or Night	Runway Use as Percent of Total Operations for 2015 Alternative 1								Total
		8	9L	9R	17	26	27L	27R	35	
Departure	Day	2.8%	10.7%	0.5%	0.1%	0.0%	20.4%	1.7%	8.5%	44.7%
Departure	Night	0.4%	1.1%	0.1%	0.2%	0.0%	2.2%	0.3%	1.1%	5.3%
Arrival	Day	0.0%	0.2%	10.3%	1.3%	1.2%	2.0%	14.6%	13.7%	43.2%
Arrival	Night	0.0%	0.1%	2.3%	0.2%	0.6%	0.5%	1.7%	1.5%	6.8%
Sub-Totals		3.2%	12.1%	13.1%	1.7%	1.8%	25.1%	18.2%	24.8%	100.0%

Source: HMMH analysis of TAAM data, 2004.

Table 4.2-13 Runway Utilization as Percent of Total Operations for 2015 Alternative 2

Type of Operation	Day or Night	Runway Use as Percent of Total Operations for 2015 Alternative 2								Total
		8	9L	9R	17	26	27L	27R	35	
Departure	Day	3.1%	10.4%	0.4%	0.1%	0.0%	18.6%	1.5%	10.4%	44.7%
Departure	Night	0.4%	1.1%	0.1%	0.3%	0.0%	2.0%	0.3%	1.2%	5.3%
Arrival	Day	0.0%	0.2%	10.7%	1.3%	1.0%	2.5%	18.1%	9.4%	43.2%
Arrival	Night	0.0%	0.1%	2.4%	0.2%	0.4%	0.6%	2.1%	1.1%	6.8%
Sub-Totals		3.6%	11.8%	13.6%	1.8%	1.4%	23.8%	22.0%	22.1%	100.0%

Source: HMMH analysis of TAAM data, 2004.

Direct Impacts

The following section evaluates the noise-related impacts associated with the proposed Alternatives.

No-Action Alternative

The 2007 No-Action Alternative is first compared to 2003 Existing Conditions. Even though the No-Action Alternative would include no physical changes to the Airport, the DNL contours for the 2007 No-Action Alternative are expected to differ from the contours for the 2003 Existing Condition for these reasons:

- Annual operations are predicted to increase regardless of the future runway configuration.
- The 2007 fleet mix would change to reflect 1) the anticipated elimination of all Boeing 727 aircraft from the fleet mix at PHL, 2) the projected increase in newer Boeing and Airbus aircraft, and 3) a projected increase in regional jet operations.
- More small corporate jets and turboprops are expected to use Runway 17-35 in 2007 based on the results of the TAAM delay simulation, and FAA's determination that it would be possible to reduce the separation distance between aircraft on arrival to Runway 17-35 from a current separation distance of six nautical miles to a proposed separation distance of 3.5 nautical miles. Separation distances of 3.5 nautical miles are possible under Existing Conditions. However, according to air traffic controllers at PHL, separation distances of six nautical miles are more reflective of current operations, due to the limited types of aircraft that use Runway 17-35 at its current length.

Figure 4.2-5 compares the 2003 Existing DNL contours with the 2007 No-Action Alternative DNL contours. This figure shows that the 2007 No-Action noise contours would expand to the north and south with respect to the 2003 Existing Conditions, and contract to the east. To the west, the contour would shift to the north, away from New Jersey and expand to the west in Pennsylvania. The change in the contours is because:

- To the east of the Airport, the 2007 contours decrease because of a reduction in arrivals to Runways 26, 27L, and 27R.
- To the south, the 2007 contours increase because of the increase of corporate jet and regional jet arrivals to Runway 35.
- To the west, the 2007 contours increase along the extended centerline of Runway 9R because of increased arrivals, but decrease along the Delaware River because of a decrease in departures from Runway 27L.
- To the north, the 2007 contours increase because of increased arrivals to Runway 17 and departures from Runway 35.

As shown in Table 4.2-14, the increased size of the 2007 No-Action Alternative contours with respect to the 2003 Existing contours would result in an increase in the population within the 60 DNL contour. Populated areas exposed to noise would increase in the north, in the City of Philadelphia, and in Delaware County, Pennsylvania, to the west. These increases would offset the small decrease in the exposed population to the east in New Jersey.

The population counts summarized in Table 4.2-14 and subsequent tables are based on counts of people associated with a population centroid. As discussed earlier, a population centroid is a point that represents the geographic center of a Census block as defined by the U.S. Bureau of Census. There are some inherent inaccuracies in counting people within a given DNL contour interval based on the INM-computed results at a population centroid—particularly if the location of the centroid within the Census block is not representative of residential areas. Such is the case for 26 people associated with a Census block in Tinicum Township, Pennsylvania. The centroid of a Census block is in a non-residential section of the Census block, east of Poulsen Avenue. For the purpose of counting people within this block, these 26 people were in the residential area within the block, rather than at the centroid of the block. In DEIS Appendix A-1, *Noise Technical Report* (Attachment I, Population Centroid in Tinicum Township, Pennsylvania), shows the location of this centroid.

Table 4.2-14 Predicted 2007 No-Action Noise-Exposed Population

2003 Existing Conditions							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	2,922	2,922
New Jersey	Gloucester	0	0	0	0	58	58
Pennsylvania	Delaware	0	0	165[1]	165	1,758	1,923
Pennsylvania	Philadelphia	0	1[2]	0	1	0	1
Total		0	1	165	166	4,738	4,904

2007 No-Action Alternative							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	1,681	1,681
New Jersey	Gloucester	0	0	0	0	54	54
Pennsylvania	Delaware	0	0	165	165	3,069	3,234
Pennsylvania	Philadelphia	0	0	26	26	4,125	4,151
Total		0	0	191	191	8,929	9,120

Source: HMMH, 2004.
1 Twenty-six people were moved from within the DNL 70 contour to within the DNL 65 contour to better represent the locations of residence within this Census block.
2 The single person within the DNL 70 contour represents an on-site caretaker at Fort Mifflin.

For a few cases, a single person in Philadelphia County, Pennsylvania would be within the DNL 70 dB contour. This individual is assigned to a population centroid associated with Fort Mifflin.

The 2002 Part 150 Study[15] stated "the Fort is authorized to provide housing for a year round on-site caretaker, in order to maintain and provide security for the facility when it is closed and

15 *Philadelphia International Airport: Final Federal Aviation Regulations Part 150 Noise Compatibility Study*, Landrum & Brown Team, 23 May 2003.

especially during the nighttime…" Nevertheless, for the purposes of this study, one person will be assigned to the centroid for the Census block associated with Fort Mifflin.

The noise exposure contours for the 2015 No-Action Alternative represent the noise conditions around PHL assuming there would be no physical alterations to the airfield at PHL. The 2015 No-Action Alternative generally would have the same fleet mix as the 2007 No-Action Alternative, although operations for 2015 would increase by 17 percent over 2007 levels. The 2015 fleet mix also reflects a projected decrease in Boeing 737 operations and McDonnell Douglas DC-9 (hushkit) operations; these aircraft are replaced by similar aircraft in 2015.

The projected growth in aircraft operations between 2007 and 2015 is expected to increase the size of the area covered by all the measured DNL contours for the 2015 No-Action Alternative and thereby increase the population found within the 2015 No-Action contours. In 2007, the DNL 65 dB contour for the No-Action Alternative would cover approximately 5,145 acres of land, including both on-airport and off-airport land. In comparison, the DNL 65 dB contour for the 2015 No-Action Alternative would cover approximately 6,410 acres of land. Just over 1,000 people would be within the 65 dB DNL contour for the 2015 No-Action Alternative contour, an increase of 838 people compared to the 2007 No-Action Alternative. An additional 10,247 people would be within the DNL 60 dB contour in the 2015 No-Action Alternative.

Alternative 1 - Preferred Alternative

The length of Runway 17-35 would be extended to 6,500 feet, allowing an increased number of arrivals and departures by regional jets and narrowbody jets. The proposed extensions at both ends of the runway would be responsible for an increase in the size of the 65 DNL contour to the north and to the south as shown in Figure 4.2-6. Ways and reasons that the 2007 DNL contours for Alternative 1 differ from the contours for the 2007 No-Action Alternative include:

- To the east of the Airport, the Alternative 1 contours have contracted because of a decreased number of arrivals to Runways 27L and 27R.
- To the south, the Alternative 1 contours have expanded along the extended centerline of Runway 17-35 because of an increase of 28 percent in the use of Runway 35 for landing by regional jets and an increase of 16 percent in the use of Runway 35 for landing by small narrow-body jets when compared to the No-Action Alternative.
- To the west, the Alternative 1 contours would contract slightly along the extended centerline of Runway 9R because the projected decrease in arrivals for both air carrier and regional jets, and would remain the same along the Delaware River because the projected decrease in departures for regional jets that would be offset by the projected increase in corporate jet departures.
- To the north, the Alternative 1 contours increase to the north along the extended centerline of Runway 17-35 because of an increase in the use of Runway 17 for landing by small narrow-bodies and an increase in the use of Runway 17 for landing by regional jets, compared to the No-Action Alternative. In addition, the contours expand to the north and northwest because of an increase in the use of Runway 35 for departure by regional jets and an increase in the use of Runway 35 for departure by small narrow-bodies, offset by a decrease of 16 percent in the use of the runway for takeoff by corporate jets, thereby limiting

the amount of expansion in the DNL contours to the north.

Residential Receptors

The differences between the 2007 DNL contours for the No-Action Alternative and Alternative 1 would result in no net change to the population within the DNL 65 dB contour. Within the 60 DNL contour, in Camden County in New Jersey and Delaware County in Pennsylvania there would be decreases of 799 and 425 people, respectively, while in the City of Philadelphia 1,055 people would be added to the area between the 60 to 65 dB contour, as compared to the No-Action Alternative. The total number of people within the 60 DNL contour would decrease by approximately 169 people (see Figure 4.2-10).

Table 4.2-15 and 4.2-16 provides a summary of the number of people and households predicted to be exposed to noise within various DNL contours for the 2007 No-Action Alternative and Alternative 1.

Table 4.2-15 Predicted 2007 Noise-Exposed Population

2007 No-Action Alternative							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	1,681	1,681
New Jersey	Gloucester	0	0	0	0	54	54
Pennsylvania	Delaware	0	0	165	165	3,069	3,234
Pennsylvania	Philadelphia	0	0	26	26	4,125	4,151
Total		0	0	191	191	8,929	9,120

2007 Alternative 1							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	882	882
New Jersey	Gloucester	0	0	0	0	54	54
Pennsylvania	Delaware	0	0	165	165	2,644	2,809
Pennsylvania	Philadelphia	0	1[1]	25	26	5,180	5,206
Total		0	1	190	191	8,760	8,951

2007 Alternative 2							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	1,493	1,493
New Jersey	Gloucester	0	0	0	0	54	54
Pennsylvania	Delaware	0	0	111	111	3,144	3,255
Pennsylvania	Philadelphia	0	0	536	536	5,646	6,182
Total		0	0	647	647	10,337	10,984

Source: HMMH, 2004

1 The single person within the DNL 70 contour represents an on-site caretaker at Fort Mifflin.

Table 4.2-16 Predicted 2007 Noise-Exposed Households

2007 No-Action Alternative							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	631	631
New Jersey	Gloucester	0	0	0	0	21	21
Pennsylvania	Delaware	0	0	78	78	1,318	1,396
Pennsylvania	Philadelphia	0	0	10	10	1,900	1,910
Total		0	0	88	88	3,870	3,958

2007 Alternative 1							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	331	331
New Jersey	Gloucester	0	0	0	0	21	21
Pennsylvania	Delaware	0	0	78	78	1,129	1,207
Pennsylvania	Philadelphia	0	0	10	10	2,319	2,329
Total		0	0	88	88	3,800	3,888

2007 Alternative 2							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	554	554
New Jersey	Gloucester	0	0	0	0	21	21
Pennsylvania	Delaware	0	0	53	53	1,317	1,370
Pennsylvania	Philadelphia	0	0	314	314	2,597	2,911
Total		0	0	367	367	4,489	4,856

Source: HMMH, 2004.

Through a grid point analysis conducted for the study (see Figures 4.2-14, 4.2-16), it was determined that there are no significant noise impacts in 2007, i.e., there are no noise-sensitive locations that experience a change of 1.5 dB or greater within the 65 dB contour (Figure 4.2-10). The following section describes this analysis and shows the graphic results of the grid point analysis. Consideration also was given to changes of more than 3 dB within the 60 dB DNL contour. No changes were identified for Alternative 1 in 2007. For changed cumulative noise exposure between the 45 dB and 60 dB DNL contours, the grid point analysis, demonstrated that there would be no areas within the 45 dB DNL to 60 dB DNL that would experience a change in noise exposure 5 dB or greater.

As shown in Figure 4.2-7, the 2015 DNL contours for Alternative 1 would expand to the north and south of the Airport, and contract slightly to the west relative to the No-Action Alternative. The relatively small differences in the DNL contours between 2015 Alternative 1 and the 2015 No-Action Alternative would result in no change to the total population and household within the 65 DNL contour, and 310 people fewer within the DNL 60 dB contour in New Jersey. The changes in contours occur because:

- East of the Airport, the DNL contours for Alternative 1 would contract because of a projected decrease in arrival operations for air carrier and regional jets to Runways 27L and 27R.
- The contours for Alternative 1 would expand south along the extended centerline for Runway 17-35 because of an increase in arrivals for regional jets and small narrowbody aircraft, respectively.
- The contours for Alternative 1 would contract along the extended centerline of Runway 27L west of the Airport because of a projected decrease in air carrier and regional jet arrivals, but would expand along the Delaware River because of a projected increase in corporate jet departures, which offset a forecast decrease in regional jet departures.
- The contours for Alternative 1 would expand to the north along the extended centerline for Runway 35 because of an increase in arrivals for small narrowbody aircraft and an increase for regional jets. In addition, regional jet departures from Runway 35 are expected to increase and small narrowbody departures are expected to increase, expanding the DNL contours for Alternative 1 to the north and northwest.

There are no significant impacts from Alternative 1 in 2015 because there are no noise-sensitive receptors where there is a change of 1.5 dB or greater within the 65 dB contour. One undeveloped area south of Runway 35, in New Jersey, would experience a 1.5-dB increase.

For Alternative 1 in 2015, the largest increase within the 65 dB DNL contour would occur north of the Airport in Eastwick, Pennsylvania. The magnitude of this increase would be 0.5 dB (Figure 4.2-12). No changes of more than 3 dB within the 60 dB DNL contour were identified for 2015 for Alternative 1. For changed cumulative noise exposure between the 45 dB and 60 dB DNL contours, the grid point analysis demonstrated that there would be no areas within the 45 dB DNL to 60 dB DNL that would experience a change in noise exposure 5 dB or greater.

Non-Residential Sensitive Receptors
Aircraft noise levels were computed at 567 non-residential noise-sensitive sites including 21 auditoriums, ten nursing homes, five hospitals, 18 libraries, 314 places of worship, and 199 schools. None of these are expected to experience DNL levels in excess of 65 dB.

Places of worship are the most commonly affected noise-sensitive sites, though none experiences levels above a DNL of 65 dB. Of the 314 place of worship locations analyzed, 16 are exposed to levels of 60 to 65 dB in the future 2007 No-Action Alternative, with 15 for Alternative 1. In 2015, 39 buildings would experience levels above 60 dB but only minimally.

Alternative 2
Alternative 2 would extend Runway 17-35 to 7,000 feet. The proposed extensions at both ends of the runway would be responsible for the expansion of the noise contours to the north and to the south. The proposed runway extension with Alternative 2

would allow increased arrivals to Runway 17 but, because of the displaced threshold on Runway 35, there would be a small decrease in arrivals to this runway. With Alternative 2, the 7,000-foot runway would permit increased departures by larger aircraft on the runway. As shown in Figure 4.2-8, the 2007 DNL contours for Alternative 2 would expand in areas to the north, and would contract slightly in areas to the south, east, and west of the Airport compared to the No-Action Alternative because:

- To the south, the Alternative 2 contour would slightly contract because of a projected decrease in arrivals to Runway 35 by regional jets and corporate jets and because, with the displaced threshold, aircraft are higher over the same areas than in the No-Action Alternative. With Alternative 2, there would be a small increase in Runway 17 departures by air carrier and regional jets.
- To the west, the area within the Alternative 2 contours would decrease slightly. There would be a slight contraction in the contours along the extended centerline of Runway 27R because of the projected decrease in air carrier and regional jet arrivals from the west. Along the Delaware River, the contours for Alternative 2 also would contract somewhat because of a projected decrease in departures from Runways 27L and 27R by air carrier and regional jets.
- To the north, the contours for Alternative 2 would expand along the extended centerline of Runway 35 because of the forecast increase in arrivals for small narrowbody jets and a increase in arrivals for regional jets. With Alternative 2, regional jet departures from Runway 35 are expected to increase and small narrowbody departures are expected to increase; therefore, the contours for Alternative 2 also would expand to the north and northwest

When comparing the 2007 No-Action Alternative with 2007 Alternative 2, there would be an increase in the number of people included in the DNL 65 dB contour -- a total of 647 people would be included in the 65 DNL contour with Alternative 2, compared to a total of 191 people within the 65 DNL contour with the No-Action Alternative, representing an increase of 456 people within this DNL contour. Although the number of people in the 65 dB DNL contour would decrease in Delaware County from 165 to 111 people, the number in Philadelphia would increase from 26 to 536. With 2007 Alternative 2 there are expected to be approximately 510 people in the City of Philadelphia who would be newly included within the 65 DNL contour, but who would experience an increase in noise exposure of less than 1.5 dB. Consequently, no significant impacts are expected to occur with Alternative 2 in 2007 (Figure 4.2-11).

Alternative 2 also would result in an overall increase in Delaware County and Philadelphia of 1,864 people who would be within the 60 DNL contour. Of these, 819 people in Eastwick, Pennsylvania would experience an increase in cumulative noise exposure of more than 3 dB, which would be considered a slight-to-moderate change in noise exposure according to FAA. The FAA considers this area as experiencing a slight-to-moderate increase in noise exposure.
Table 4.2-15 compares the approximate number of households exposed to various levels of aircraft noise for the 2007 No-Action Alternative with Alternative 2.

The grid point analyses (Figures 4.2-15, 4.2-17) show that there would be no noise-sensitive areas within 65 dB DNL contours that would experience a 1.5 dB or greater change in cumulative noise exposure for Alternative 2 in 2007 (Figure 4.2-11). Consideration also was given to changes of more than 3 dB within the 60 dB DNL contour. The analyses show that 2007 Alternative 2 would result in an overall increase of 1,408 people who would be within the 60 DNL contour, and 810 people who would experience an increase in cumulative noise exposure of more than 3 dB.

At DNL levels between 60 and 65 dB there are three Census blocks northwest of the end of Runway 17-35 in Eastwick, Pennsylvania, that are projected to experience increases in noise exposure of greater than 3 dB, and by the FAA criteria in Table 4.2-1, are considered to experience slight-to-moderate change. For changed cumulative noise exposure between the 45 dB and 60 dB DNL contours, the grid point analysis, demonstrated that there would be no areas within the 45 dB DNL to 60 dB DNL that would experience a change in noise exposure 5 dB or greater.

As shown in Figure 4.2-9, the 2015 contours for Alternative 2 would expand to the north of the Airport and contract slightly to the south and west. The 2015 contours for Alternative 2 would remain the same as the No-Action Alternative east of the Airport. The 2015 DNL contours for Alternative 2 are different from those for the No-Action Alternative since:

- To the south, the contours for Alternative 2 would contract slightly because of a projected decrease in the numbers of arrivals to Runway 35 by corporate jets. Air carrier and regional jet departures from Runway 17 are expected to increase slightly in 2015 with Alternative 2.
- To the west, the contours for Alternative 2 would contract slightly along the extended centerline of Runway 9R because of a forecast decrease in the number of commercial jet arrivals. Along the river, the contours for Alternative 2 would contract slightly because of a decrease in departures from Runway 27L and 27R by air carrier and regional jets—offset by an increase in corporate jet departures.
- To the north, the contours for Alternative 2 would expand along the extend centerline of Runway 17 because of a forecast increase in small narrowbody arrivals and a forecast increase in regional jet arrivals. Furthermore, regional jet departures from Runway 35 are expected to increase and small narrowbody departures are expected to increase, thereby expanding the DNL contours for Alternative 2 to the north and northwest.

Residential Sensitive Receptors

Comparing 2015 Alternative 2 and the 2015 No-Action Alternative, the net effect of these predicted changes in the 2015 noise exposure contours would be an increase in the number of people included in the 65 DNL contour. A total of 1,284 people (614 households) would be included in the 65 DNL contour with 2015 Alternative 2, while a total of 1,029 people would be within the 65 dB DNL contour with the No-Action Alternative. This is a net increase of 255 people within this DNL contour. In Delaware County, Pennsylvania, there would be 125 fewer people within the 65 dB DNL contour in 2015, which would be offset by an additional 380 people included within the 65 dB DNL contour Philadelphia County, Philadelphia.

A total of 380 people in the City of Philadelphia would be newly included within the 65 DNL contour for Alternative 2; however, these people would experience an increase in cumulative noise exposure of less than 1.5 dB. With Alternative 2, the number of people within the 60 DNL contour would increase by 1,581 people relative to the 2015 No- Action Alternative. Tables 4.2-17 and 4.2-18 compare the 2015 No-Action, Alternative 1 and Alternative 2 population and household change, respectively.

Table 4.2-17 Predicted 2015 Noise-Exposed Population

2015 No-Action

State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	5,624	5,624
New Jersey	Gloucester	0	0	0	0	202	202
Pennsylvania	Delaware	0	0	493[1]	493	7,670	8,163
Pennsylvania	Philadelphia	0	1[2]	535	536	4,842	5,378
Total		0	1	1,028	1,029	18,338	19,367

2015 Alternative 1

State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	4,900	4,900
New Jersey	Gloucester	0	0	0	0	185	185
Pennsylvania	Delaware	0	26	467[1]	493	7,249	7,742
Pennsylvania	Philadelphia	0	1	535	536	5,694	6,230
Total		0	27	1,002	1,029	18,028	19,057

2015 Alternative 2

State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	5,624	5,624
New Jersey	Gloucester	0	0	0	0	202	202
Pennsylvania	Delaware	0	0	368[1]	368	7,646	8,014
Pennsylvania	Philadelphia	0	1[2]	915	916	6,192	7,108
Total		0	1[2]	1,283	1,284	19,664	20,948

Source: HMMH, 2004.
1 Twenty six people were moved from within the DNL 70 contour to within the DNL 65 contour to better represent the locations of residence within this Census block. Needs more explanation (copy from previous pg 4.2-6 #4)
2 The single person within the DNL 70 contour represents an on-site caretaker at Fort Mifflin.

Table 4.2-18 Predicted 2015 Noise-Exposed Households

2015 No-Action							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	2,183	2,183
New Jersey	Gloucester	0	0	0	0	80	80
Pennsylvania	Delaware	0	0	199	199	3,384	3,583
Pennsylvania	Philadelphia	0	0	314	314	2,086	2,400
Total		0	0	513	513	7,733	8,246

2015 Alternative 1							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	1,912	1,912
New Jersey	Gloucester	0	0	0	0	72	72
Pennsylvania	Delaware	0	0	199	199	3,185	3,384
Pennsylvania	Philadelphia	0	0	314	314	2,617	2,931
Total		0	0	513	513	7,786	8,299

2015 Alternative 2							
State	County	75 DNL to 80 dB	70 DNL to 75 dB	65 DNL to 70 dB	Total Above 65 DNL dB	60 DNL to 65 dB	Total Above 60 DNL dB
New Jersey	Camden	0	0	0	0	2,183	2,183
New Jersey	Gloucester	0	0	0	0	80	80
Pennsylvania	Delaware	0	0	152	152	3,339	3,491
Pennsylvania	Philadelphia	0	0	462	462	2,835	3,297
Total		0	0	614	614	8,437	9,051

Source: HMMH, 2004.

The grid point analyses shows that there would be no noise-sensitive areas within 65 dB DNL contours that would experience a 1.5 dB or greater change in cumulative noise exposure in 2015 with Alternative 2 (Figure 4.2-13). One area within the I-95 right-of-way would experience a 1.5-dB increase. The analyses show that 2015 Alternative 2 would not lead to population exposed to an increase in cumulative noise exposure of more than 3 dB.

For changed cumulative noise exposure between the 45dB and 60 dB DNL contours, the grid point analysis, demonstrated that there would be no areas within the 45 dB DNL to 60 dB DNL that would experience a change in noise exposure 5 dB or greater (Figure 4.2-13).

Non-Residential Sensitive Receptors

Aircraft noise levels were computed at 567 non-residential noise-sensitive sites including 21 auditoriums, ten nursing homes, five hospitals, 18 libraries, 314 places of worship, and 199 schools. Of these, two schools, two schools, the George Wolf School (Bartram High School Annex) and the George Wharton Pepper Middle School (2901 South 84th Street, Philadelphia, Pennsylvania) would be exposed to DNLs of 65.7 and 65.3 dB, respectively. In 2015 with Alternative 2, the Bartram High School Annex would experience an increase in noise exposure of 0.7 dB, and the George Wharton Pepper Middle School would experience an increase in noise exposure of 1.4 dB, with respect to a 2015 No-Action DNL of 63.9 dB. Increases of these magnitudes within the DNL 65 dB contour are not considered significant impacts.

Places of worship are the most commonly affected noise-sensitive sites, though none experiences levels above a DNL of 65 dB. Of the 314 place of worship locations analyzed, 16 are exposed to levels of 60 to 65 dB in the future 2007 No-Action Alternative, with 18 for Alternative 2. In 2015, 40 buildings would experience levels above 60 dB but only minimally.

Table 4.2-19 provides a comparison of the potential noise impact of each of the Alternatives in each of the future forecast years.

Supplemental Noise Metrics

The INM was used to compute supplemental noise metrics, in addition to DNL, to describe the future noise exposure characteristics for the DEIS alternatives. These metrics are supplemental and are not part of the criteria for significant impacts. The supplemental metrics computed for this study include:

- Nighttime DNL (NDNL);
- Maximum A-weighted Sound Level (L_{max}); and
- Time Above (TA) a specified level.

These noise metrics were computed for each of the 35 noise measurement sites and 567 non-residential noise-sensitive sites using the same input data used to develop the noise contours, and are presented here for informational purposes only.

Computed NDNL

As was the case for the computed DNL at the noise measurement sites, the highest NDNL values would occur at those sites closest to the Airport and most exposed to aircraft operations. Figure 4.2-18 shows the location of noise monitoring sites. Table 4.2-20 compares the computed NDNL for each future forecast scenario with 2003 Existing Conditions at each of the measurement sites. The computed NDNL values are lower than the computed DNL values because the NDNL represents the contribution of the forecast nighttime aircraft operations to the (total) DNL.

For the permanent noise monitors (NMS sites), the highest NDNL values would occur at NMS-2 and NMS-6, which are located at the entrance to Fort Mifflin and the corner of Front Street and Putnam Avenue in Tinicum Township, Pennsylvania, respectively.

For the temporary long-term sites (LT sites), the highest NDNL values would occur at LT-2 and LT-7, which are at 428 Iroquois Street in Tinicum Township, Pennsylvania, and at Quarters "O" along Admiral Peary Way in the Naval Business Center, respectively.

Table 4.2-19 Comparison of Potential Noise Impacts

	No-Action	Alternative 1	Alternative 2
2007			
Number of people within the 65 dB DNL contour	191	191	647
Number of people exposed to 1.5 dB increase or greater	--	0	0
Number of people newly included in the 65 dB DNL contour	--	0	510
Acres of land within the 65 dB DNL contour[1]	5,145	5,124	5,145
Square-miles of land within the 65 dB DNL contour[1]	8	8	8
Number of people within the 60 dB DNL contour	9,120	8,951	10,984
Number of people exposed to 3.0 dB increase or greater	--	0	819
Acres of land within the 60 dB DNL contour[1]	11,712	11,817	11,794
Square miles of land within the 60 dB DNL contour[1]	18	18.5	18.5
2015			
Number of people within the 65 dB DNL contour	1,029	1,029	1,284
Number of people exposed to 1.5 dB increase or greater	--	0	0
Number of people newly included in the 65 dB DNL contour	--	0	380
Acres of land within the 65 dB DNL contour[1]	6,410	6,368	6,412
Square miles of land within the 65 dB DNL contour[1]	10	10	10
Number of people within the 60 dB DNL contour	19,367	19,057	20,948
Number of people exposed to 3.0 dB increase or greater	--	0	0
Acres of land within the 60 dB DNL contour[1]	14,809	14,922	14,874
Square miles of land within the 60 dB DNL contour[1]	23	23	23

Source: HMMH, 2004.

1 Estimates of land area within the DNL contours include both on-airport and off-airport lands. Note that the airport occupies approximately 2,300 acres (4 square miles) of land.

Table 4.2-20 Summary of INM-Computed Nighttime DNL at the Noise Measurement Sites

				NDNL (dBA)						
				2003	2007			2015		
Site	Locality	County	State	Existing	No-Action	Alt. 1	Alt. 2	No-Action	Alt. 1	Alt. 2
NMS-1	Philadelphia	Philadelphia	PA	55.9	59.4	59.5	60.0	60.8	60.8	60.8
NMS-2	Philadelphia	Philadelphia	PA	74.3	73.7	73.3	73.6	74.8	74.6	74.9
NMS-4	Gloucester	Camden	NJ	57.9	57.1	56.8	57.1	54.8	58.2	58.5
NMS-5	West Deptford Township	Gloucester	NJ	52.2	51.9	51.6	51.8	53.5	53.3	53.5
NMS-6	Tinicum Township	Delaware	PA	65.1	64.6	64.6	64.6	66.3	66.2	66.2
NMS-8	Collingswood	Camden	NJ	53.0	52.1	51.9	52.0	52.1	53.2	53.5
LT-1	Darby Borough	Delaware	PA	48.2	50.7	51.1	51.7	51.9	52.3	52.3
LT-2	Tinicum Township	Delaware	PA	63.3	61.6	61.6	61.4	63.2	63.2	63.2
LT-3	Chester	Delaware	PA	58.1	58.7	58.6	58.7	60.3	60.2	60.2
LT-4	Brandywine	New Castle	DE	47.2	48.3	48.0	48.0	49.8	49.4	49.4
LT-5	West Deptford Township	Gloucester	NJ	49.9	51.3	53.4	51.7	52.0	53.9	52.0
LT-6	Haddonfield	Camden	NJ	48.4	47.5	47.1	47.4	48.6	48.4	48.6
LT-7	Philadelphia	Philadelphia	PA	64.3	63.5	63.2	63.4	64.7	64.5	64.8
ST-1	Tinicum Township	Delaware	PA	55.3	53.8	53.7	53.6	55.4	55.4	55.3
ST-2	Philadelphia	Philadelphia	PA	48.9	51.3	52.6	53.7	52.6	54.3	54.5
ST-3	Folcroft Borough	Delaware	PA	48.6	48.1	48.0	48.1	49.7	49.6	49.6
ST-4	Ridley Township	Delaware	PA	48.2	47.3	47.2	47.2	49.0	48.9	48.9
ST-5	Nether Providence Township	Delaware	PA	44.8	43.7	43.6	43.6	45.2	45.2	45.1
ST-6	Borough of Brookhaven	Delaware	PA	47.4	45.8	45.8	45.7	47.5	47.5	47.4
ST-7	Aston Township	Delaware	PA	47.6	45.9	45.7	45.6	47.5	47.3	47.3
ST-8	Upper Chichester Township	Delaware	PA	52.6	52.5	52.4	52.4	54.2	54.0	54.1
ST-9	Brandywine	New Castle	DE	44.1	45.4	44.5	44.5	46.9	45.9	45.9
ST-10	Logan Township	Gloucester	NJ	47.9	46.6	46.6	46.4	48.3	48.3	48.2
ST-11	Logan Township	Gloucester	NJ	57.1	55.5	55.5	55.4	57.1	57.2	57.1
ST-12	Greenwich Township	Gloucester	NJ	50.5	49.4	49.3	49.3	51.0	51.0	50.9
ST-13	Paulsboro	Gloucester	NJ	51.2	50.5	50.1	50.3	52.2	52.0	52.2
ST-14	Woodbury	Gloucester	NJ	44.2	43.1	43.6	44.0	44.5	44.4	44.8
ST-15	Westville	Gloucester	NJ	53.0	52.1	51.8	51.8	53.6	53.3	53.4
ST-16	Haddon Heights	Camden	NJ	47.7	46.9	46.6	46.7	48.4	48.1	48.2
ST-17	Bellmar	Camden	NJ	46.4	45.6	45.3	45.3	47.1	46.8	46.9
ST-18	Haddon Township	Camden	NJ	50.7	49.8	49.5	49.7	51.0	50.7	51.0
ST-19	Lawnside	Camden	NJ	44.0	43.1	42.6	42.7	44.6	44.1	44.3
ST-20	Camden	Camden	NJ	52.3	51.5	51.4	51.4	53.0	52.9	53.0
ST-21	Borough of Swarthmore	Delaware	PA	42.3	44.2	44.2	45.0	45.5	45.5	45.5
ST-22	West Deptford Township	Gloucester	NJ	53.1	52.6	53.2	54.0	54.4	54.6	55.3

Source: HMMH, 2004.

For the temporary short-term sites (ST sites), the highest NDNL values would occur at ST-1 and ST-11, which are at 241 Pontiac Street in Tinicum Township, Pennsylvania, and at 332 Floodgate Road in Logan Township, New Jersey, respectively.

DEIS Appendix A-1, *Noise Technical Report* (Attachment G.1 through G.8), provides detailed tables of INM-computed NDNL at the 567 non-residential noise-sensitive sites for 2003 Existing Conditions, as well as the No-Action, Alternative 1, and Alternative 2 for each of the study years.

Computed L_{max}

The supplemental noise metric L_{max} (the maximum noise level) was also computed for informational purposes. As was the case for the computed DNL and NDNL at specific points, the highest L_{max} values would occur at those sites closest to the Airport and most exposed to aircraft operations. Table 4.2-21 compares the computed L_{max} for each future forecast scenario with 2003 Existing Conditions at each of the noise measurement sites.

The computed values are for the aircraft operation that would have the highest L_{max}, whereas the values in the tables for DNL and NDNL are representative of the cumulative noise exposure for all aircraft operations. In Table 3-22, the same aircraft operation is generally responsible for the highest value of L_{max} in each fleet for all Alternatives, even though the number of its operations may vary among the Alternatives. In general, the values of L_{max} for 2007 and 2015 are expected to be lower than for the 2003 Existing Conditions due to the phase-out of some slightly noisier aircraft in the fleet mix.

The Federal Interagency Committee on Aviation Noise (FICAN) has evaluated data and conclusions of a number of field studies and combined the data into a dose-response curve that was published in 1997.[16] Based on FICAN's dose-response curve, an indoor Sound Exposure Level (SEL) of 80 dB for a single event results in a maximum of 10 percent awakening for a given residential population exposed to noise from the single event. Assuming the typical windows-open interior-to-exterior noise level reduction of approximately 12 dB, and an average 8 dB difference between the measured L_{max} and the measured SEL for an aircraft flyover,[17] an interior SEL of 80 dB roughly translates into an exterior L_{max} of 84 dB. Assuming a typical windows-closed condition, which could be applicable for a few months out of the year, given the climate of the Study Area, an interior SEL of 80 dB would roughly translate into an exterior L_{max} of 94 dB.

As shown in Table 4.2-21, the INM-computed L_{max} would approach or exceed 84 dB at a number of the noise measurement sites, while INM-computed L_{max} would approach or exceed 94 dB at a smaller number of the measurement sites.

The projected downward trend in the computed L_{max}, which would be directly related to a downward trend in the computed SEL, may be interpreted as a decrease in the approximate number of awakenings in the noise-exposed population.

Attachments G.1 through G.8 of Appendix A-1 provide detailed tables of INM-computed L_{max} at the 567 non-residential noise-sensitive sites for 2003 Existing conditions, as well as the No-Action, Alternative 1, and Alternative 2 for each of the study years.

16 *Effects of Aviation Noise on Awakenings from Sleep*, Federal Interagency Committee on Aviation Noise, June 1997, page 6.
17 Based on measurement data from the six permanent noise monitors for January 2004, the measured SEL was 8 dB greater than the measured Lmax on average, for over 16,000 aircraft noise events.

Table 4.2-21 Summary of INM Computed L_{max} at the Noise Measurement Sites

				L_{max} (dBA)						
				2003	2007			2015		
Site	Locality	County	State	Existing	No-Action	Alt. 1	Alt. 2	No-Action	Alt. 1	Alt. 2
NMS-1	Philadelphia	Philadelphia	PA	98.9	98.9	98.5	98.5	98.9	98.5	98.5
NMS-2	Philadelphia	Philadelphia	PA	110.3	105.1	105.1	105.1	105.1	105.1	105.1
NMS-4	Gloucester	Camden	NJ	89.6	89.6	89.6	89.6	89.6	89.6	89.6
NMS-5	West Deptford Township	Gloucester	NJ	95.1	95.1	95.1	95.1	95.1	95.1	95.1
NMS-6	Tinicum Township	Delaware	PA	94.7	94.7	94.7	94.7	94.7	94.7	94.7
NMS-8	Collingswood	Camden	NJ	85.8	85.8	85.8	85.8	85.8	85.8	85.8
LT-1	Darby Borough	Delaware	PA	91.0	91.0	90.5	90.5	91.0	90.5	90.5
LT-2	Tinicum Township	Delaware	PA	95.4	95.5	95.5	95.5	95.5	95.5	95.5
LT-3	Chester	Delaware	PA	87.9	87.9	87.9	87.9	87.9	87.9	87.9
LT-4	Brandywine	New Castle	DE	79.7	77.9	77.9	77.9	77.9	77.9	77.9
LT-5	West Deptford Township	Gloucester	NJ	90.5	90.5	92.7	92.4	90.5	92.7	92.4
LT-6	Haddonfield	Camden	NJ	82.5	82.5	82.5	82.5	82.5	82.5	82.5
LT-7	Philadelphia	Philadelphia	PA	96.1	93.9	93.9	93.9	93.9	93.9	93.9
ST-1	Tinicum Township	Delaware	PA	89.0	89.0	88.9	88.9	89.0	88.9	88.9
ST-2	Philadelphia	Philadelphia	PA	97.8	97.8	98.4	98.4	97.8	98.4	98.4
ST-3	Folcroft Borough	Delaware	PA	88.7	88.7	88.7	88.7	88.7	88.7	88.7
ST-4	Ridley Township	Delaware	PA	85.3	85.3	85.1	85.3	85.3	85.1	85.3
ST-5	Nether Providence Township	Delaware	PA	86.2	86.2	86.2	86.2	86.2	86.2	86.2
ST-6	Borough of Brookhaven	Delaware	PA	84.8	84.8	84.8	84.8	84.8	84.8	84.8
ST-7	Aston Township	Delaware	PA	82.4	82.4	82.4	82.4	82.4	82.4	82.4
ST-8	Upper Chichester Township	Delaware	PA	83.7	83.7	83.7	83.7	83.7	83.7	83.7
ST-9	Brandywine	New Castle	DE	77.8	75.8	75.8	75.8	75.8	75.8	75.8
ST-10	Logan Township	Gloucester	NJ	83.0	83.0	83.0	83.0	83.0	83.0	83.0
ST-11	Logan Township	Gloucester	NJ	90.8	89.2	89.2	89.2	89.2	89.2	89.2
ST-12	Greenwich Township	Gloucester	NJ	87.8	87.1	86.7	86.2	87.1	86.7	86.2
ST-13	Paulsboro	Gloucester	NJ	93.1	93.1	93.8	94.3	93.1	93.8	94.3
ST-14	Woodbury	Gloucester	NJ	88.1	88.1	88.4	88.3	88.1	88.4	88.3
ST-15	Westville	Gloucester	NJ	89.5	89.5	89.5	89.5	89.5	89.5	89.5
ST-16	Haddon Heights	Camden	NJ	86.1	86.1	86.1	86.1	86.1	86.1	86.1
ST-17	Bellmar	Camden	NJ	86.4	86.4	86.4	86.4	86.4	86.4	86.4
ST-18	Haddon Township	Camden	NJ	83.4	83.4	83.4	83.4	83.4	83.4	83.4
ST-19	Lawnside	Camden	NJ	81.9	81.9	81.9	81.9	81.9	81.9	81.9
ST-20	Camden	Camden	NJ	88.8	88.8	88.8	88.8	88.8	88.8	88.8
ST-21	Borough of Swarthmore	Delaware	PA	88.0	88.0	87.8	87.8	88.0	87.8	87.8
ST-22	West Deptford Township	Gloucester	NJ	98.1	98.1	97.7	97.4	98.1	97.7	97.4

Source: HMMH, 2004.

Time-Above Analysis at Specific Points
In addition to the NDNL and L_{max} metrics described above, the INM was used to compute TA a specified level at each of the noise measurement sites.
Table 4.2-22 provides a summary of the computed TA-65, TA-75, and TA-85 (in minutes per day) for each of the noise measurement sites for 2003 Existing Conditions and 2007 No-Action Alternative, 2007 Alternative 1, and 2007 Alternative 2. Table 4.2-23 provides a summary of the computed TA-65, TA-75, and TA-85 (in minutes per day) for each of the noise measurement sites for 2003 Existing Conditions and the 2015 No-Action, 2015 Alternative 1, and 2015 Alternative 2.

Affected Environment (2003). As shown in the table, the computed TA-65 for 2003 Existing Conditions ranges from a low of 0.2 minutes per day at Sites ST-3 in Folcroft Borough in Delaware County, Pennsylvania, and St-9 in Brandywine, Delaware, to a high of 235.9 at Site NMS-2 at Fort Mifflin. The second highest value of the computed TA-65 for 2003 Existing Conditions occurred at Site NMS-6, which is located at the corner of Front Street and Putnam Avenue in Tinicum Township, Pennsylvania. With 2003 Existing Conditions, A-weighted noise levels exceed 85 dB for some portion of the day at five noise measurement sites.

No-Action Alternative. In general, the computed values of the TA metrics for the 2007 No-Action Alternative are expected to increase with respect to 2003 levels.

The computed TA-65 for the 2015 No-Action Alternative ranges from a low of 0.3 minutes per day at Site St-9 in Brandywine, Delaware, to a high of 253.3 at Site NMS-2 at Fort Mifflin. The second highest value of the computed TA-65 for the 2015 No-Action Alternative occurred at Site NMS-6, which is located at the corner of Front Street and Putnam Avenue in Tinicum Township, Pennsylvania.

With the 2015 No-Action Alternative, A-weighted noise levels exceed 85 dB for some portion of the day at five noise measurement sites.

Alternative 1. In 2007, the computed TA-65 at most sites would be the same as or less than for the No-Action Alternative. TA-65 would increase at 5 sites, with increases ranging from 0.5 to 19.7 minutes. TA-75 would increase at one receptor by 3.8 minutes. Five sites would experience noise levels greater than 85 dB, but at levels comparable to the No-Action Alternative.

In 2015, Ta-65 would increase in comparison to the No-Action Alternative at most receptor sites, with the greatest increase being 24.5 minutes at one location. TA-75 is predicted to increase at 7 sites, with the largest increase being 8.7 minutes. Five sites would experience noise levels greater than 85 dB, with a maximum increase of 2.1 minutes over the No-Action Alternative.

Alternative 2. In general, the computed TA metrics for 2007 Alternative 2 are somewhat less than the TA metrics for the 2007 No-Action Alternative at noise measurement sites to the east of the Airport, while the TA metrics for 2007 Alternative 2 are somewhat more than the TA metrics for the 2007 No-Action Alternative at sites to the north and south.

Three out of the five measurement sites for 2003 Existing Conditions also would experience noise levels that exceed 85 dB on an average annual day for 2007 Alternative 2. With 2007 Alternative 2, A-weighted noise levels also would exceed 85 dB for some portion of the day at five noise measurement sites. The same five sites would experience noise levels that exceed 85 dB on an average annual day for 2015 Alternative 2.

In general, the computed TA metrics for 2015 Alternative 2 would be somewhat more than the TA metrics for the 2015 No-Action Alternative at most noise measurement sites.

Table 4.2-22 Computed Time-Above Specified Level for 2003 Existing Conditions and 2007 Alternatives (in minutes per day)

Site	2003 Existing			2007 No-Action			2007 Alternative 1			2007 Alternative 2		
	65 dB	75 dB	85dB	65 dB	75 dB	85dB	65 dB	75 dB	85dB	65 dB	75 dB	85dB
NMS-1	10.1	2.4	0.1	17.8	5.0	0.3	37.5	8.8	0.6	41.5	9.8	0.7
NMS-2	235.9	58.8	17.2	253.3	61.8	16.5	139.4	56.2	14.6	146.8	59.5	16.3
NMS-4	37.2	0.5	0.0	37.9	0.5	0.0	34.7	0.5	0.0	37.6	0.5	0.0
NMS-5	4.3	0.1	0.0	5.4	0.1	0.0	5.2	0.1	0.0	5.1	0.1	0.0
NMS-6	118.1	14.3	0.3	126.2	12.2	0.2	115.2	11.9	0.3	115.2	11.8	0.3
NMS-8	6.6	0.1	0.0	6.7	0.1	0.0	6.4	0.1	0.0	6.6	0.1	0.0
LT-1	3.3	0.0	0.0	6.1	0.5	0.0	12.7	0.5	0.0	14.0	0.6	0.0
LT-2	85.4	0.0	0.0	91.0	8.1	0.1	85.7	8.0	0.1	83.4	7.8	0.1
LT-3	33.6	0.1	0.0	36.1	1.1	0.0	34.0	1.2	0.0	34.2	1.2	0.0
LT-4	0.6	7.1	0.1	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
LT-5	3.8	0.9	0.0	9.0	0.3	0.0	15.5	0.4	0.0	8.5	0.3	0.0
LT-6	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0
LT-7	107.4	0.2	0.0	112.3	14.5	0.2	101.2	13.6	0.2	109.9	14.4	0.2
ST-1	10.7	0.0	0.0	11.6	0.1	0.0	11.4	0.1	0.0	11.2	0.1	0.0
ST-2	1.7	14.6	0.2	5.4	0.3	0.0	10.9	0.8	0.0	13.4	1.1	0.0
ST-3	0.2	0.0	0.0	0.5	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0
ST-4	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
ST-5	0.7	0.1	0.0	0.6	0.0	0.0	0.6	0.0	0.0	0.6	0.0	0.0
ST-6	1.5	0.1	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
ST-7	1.6	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0
ST-8	5.8	0.0	0.0	5.3	0.1	0.0	5.2	0.1	0.0	5.2	0.1	0.0
ST-9	0.2	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0
ST-10	1.7	0.0	0.0	1.4	0.0	0.0	1.4	0.0	0.0	1.4	0.0	0.0
ST-11	25.1	0.0	0.0	21.0	0.8	0.0	20.6	0.8	0.0	20.1	0.8	0.0
ST-12	2.0	0.1	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
ST-13	0.5	0.0	0.0	0.5	0.0	0.0	0.6	0.0	0.0	0.6	0.0	0.0
ST-14	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
ST-15	7.5	1.0	0.0	7.2	0.2	0.0	7.0	0.2	0.0	7.0	0.2	0.0
ST-16	1.9	0.0	0.0	1.7	0.0	0.0	1.6	0.0	0.0	1.7	0.0	0.0
ST-17	1.3	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0
ST-18	2.2	0.0	0.0	2.4	0.0	0.0	2.4	0.0	0.0	2.4	0.0	0.0
ST-19	0.5	0.2	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
ST-20	6.7	0.0	0.0	6.1	0.2	0.0	5.9	0.2	0.0	6.0	0.2	0.0
ST-21	0.3	0.0	0.0	0.6	0.1	0.0	1.1	0.1	0.0	1.5	0.1	0.0
ST-22	3.1	0.0	0.0	2.8	0.0	0.0	2.9	0.1	0.0	2.9	0.1	0.0

Source: HMMH, 2004.

Table 4.2-23 Computed Time-Above Specified Level for 2003 Existing Conditions and 2015 Alternatives (in minutes per day)

Site	2003 Existing			2015 No-Action			2015 Alternative 1			2015 Alternative 2		
	65 dB	75 dB	85dB	65 dB	75 dB	85dB	65 dB	75 dB	85dB	65 dB	75 dB	85dB
NMS-1	10.1	2.4	0.1	22.2	6.8	0.4	41.0	9.7	0.6	51.9	12.3	0.7
NMS-2	235.9	58.8	17.2	295.0	78.7	21.2	174.5	70.5	18.6	191.1	77.8	21.7
NMS-4	37.2	0.5	0.0	51.5	0.7	0.0	46.6	0.7	0.0	51.5	0.7	0.0
NMS-5	4.3	0.1	0.0	6.6	0.1	0.0	6.4	0.1	0.0	6.4	0.1	0.0
NMS-6	118.1	14.3	0.3	159.7	16.6	0.3	150.7	16.6	0.4	145.3	16.2	0.3
NMS-8	6.6	0.1	0.0	9.6	0.2	0.0	9.0	0.1	0.0	9.6	0.2	0.0
LT-1	3.3	0.0	0.0	7.7	0.7	0.1	13.4	0.6	0.0	16.5	0.8	0.0
LT-2	85.4	0.0	0.0	115.3	11.1	0.1	112.0	11.0	0.1	106.0	10.8	0.1
LT-3	33.6	0.1	0.0	46.2	1.5	0.0	44.4	1.7	0.0	44.7	1.6	0.0
LT-4	0.6	7.1	0.1	1.3	0.0	0.0	1.3	0.0	0.0	1.3	0.0	0.0
LT-5	3.8	0.9	0.0	9.9	0.3	0.0	19.6	0.4	0.0	8.8	0.2	0.0
LT-6	0.8	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0
LT-7	107.4	0.2	0.0	145.2	19.1	0.3	128.5	17.6	0.3	144.8	19.2	0.3
ST-1	10.7	0.0	0.0	15.9	0.1	0.0	15.8	0.2	0.0	15.6	0.1	0.0
ST-2	1.7	14.6	0.2	7.3	0.5	0.0	12.5	1.0	0.0	16.7	1.4	0.0
ST-3	0.2	0.0	0.0	0.6	0.0	0.0	0.8	0.0	0.0	1.0	0.0	0.0
ST-4	0.5	0.0	0.0	0.5	0.0	0.0	0.6	0.0	0.0	0.5	0.0	0.0
ST-5	0.7	0.1	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0
ST-6	1.5	0.1	0.0	1.3	0.0	0.0	1.4	0.0	0.0	1.3	0.0	0.0
ST-7	1.6	0.0	0.0	1.4	0.0	0.0	1.4	0.0	0.0	1.4	0.0	0.0
ST-8	5.8	0.0	0.0	7.1	0.1	0.0	7.1	0.1	0.0	7.0	0.1	0.0
ST-9	0.2	0.0	0.0	1.6	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0
ST-10	1.7	0.0	0.0	27.0	0.9	0.0	1.7	0.0	0.0	1.6	0.0	0.0
ST-11	25.1	0.0	0.0	2.3	0.1	0.0	27.2	1.0	0.0	26.1	0.9	0.0
ST-12	2.0	0.1	0.0	0.6	0.0	0.0	2.4	0.1	0.0	2.3	0.1	0.0
ST-13	0.5	0.0	0.0	0.5	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0
ST-14	0.5	0.0	0.0	9.5	0.3	0.0	0.5	0.0	0.0	0.6	0.0	0.0
ST-15	7.5	1.0	0.0	2.3	0.1	0.0	9.1	0.3	0.0	9.2	0.3	0.0
ST-16	1.9	0.0	0.0	1.5	0.0	0.0	2.2	0.1	0.0	2.3	0.1	0.0
ST-17	1.3	0.0	0.0	3.4	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0
ST-18	2.2	0.0	0.0	0.6	0.0	0.0	3.3	0.0	0.0	3.4	0.0	0.0
ST-19	0.5	0.2	0.0	8.5	0.3	0.0	0.6	0.0	0.0	0.6	0.0	0.0
ST-20	6.7	0.0	0.0	0.9	0.1	0.0	8.0	0.3	0.0	8.4	0.3	0.0
ST-21	0.3	0.0	0.0	3.5	0.1	0.0	1.4	0.1	0.0	1.8	0.1	0.0
ST-22	3.1	0.0	0.0	1.6	0.0	0.0	3.5	0.1	0.0	3.8	0.2	0.0

Source: HMMH, 2004.

DEIS Appendix A-1, *Noise Technical Report* (Attachment H,, provides the INM-computed TA-65, TA-75, and TA-85 for all cases for the 567 non-residential noise-sensitive sites, which consist of auditoriums, hospitals, libraries, nursing homes, places of worship, and schools.

Indirect and Secondary Impacts

Indirect impacts as a result of noise that could be caused by either build alternative of the proposed Project could include potential impacts to land use (Section 4.3, *Compatible Land Use*), environmental justice communities (Section 4.6, *Environmental Justice*), Section 4(f) Resources such as the Heinz National Wildlife Refuge (Section 4.8, *Section 4(f)*), and endangered and threatened species (Section 4.11, *Threatened and Endangered Species*).

4.2.4 Mitigation

According to the FAA criteria discussed in Section 3.4, neither Alternative 1 nor Alternative 2 will cause significant noise impacts anywhere in the study area during either of the two study years, 2007 or 2015. Thus, no mitigation measures are required as a result of the Proposed Project.

The FAR Part 150 Noise Compatibility Program is a voluntary program undertaken by the Sponsor that examines noise exposure levels and attempts to mitigate noise if the levels exceed DNL values of 65 dB in any residential areas or at any noise-sensitive sites around the airport. PHL's Part 150 program, approved by the FAA on May 19, 2003, included a number of measures that, when fully implemented, will reduce the number of people exposed to DNLs above 65 dB from 600 to zero in 2006. However, no one affected by the noise of Runway 17-35 was included in this count; their exposure was projected to remain less than DNL 65 dB, even without a Noise Compatibility Program.[18]

The FAA notes that the Sponsor has committed to update its 2003 Part 150 Study following any substantial changes in the airfield configuration and would evaluate expanding the noise attenuation program to the Eastwick neighborhood at that time.

4.2.5 Summary

Based on the noise analysis conducted, there are no significant noise impacts associated with either Alternative 1 or Alternative 2.

For 2003 Existing Conditions, there are approximately 166 people located within the DNL 65 dB contour. The DNL 65 dB contour covers approximately 5,203 acres (8.1 square-miles) of land, including both on-airport and off-airport land. In its current configuration, PHL occupies approximately 2,300 acres (3.6 square miles) of land.

With the No Action Alternative in 2007, there are expected to be 191 people within the within the DNL 65 dB contour, which would cover approximately 5,145 acres (8.0 square-miles) of land, including both on-airport and off-airport land.

In 2007, Alternative 1 would produce no net change to the population within the DNL 65 dB contour in comparison to the No Action Alternative, and the land area covered by the DNL 65 dB contour would decrease by roughly 20.6 acres (0.03 square miles). With Alternative 2, approximately 647 people would be included in the DNL 65 dB contour, representing an increase of 456 people within this contour zone.

18 *Philadelphia International Airport: Federal Aviation Regulations Final Part 150 Noise Compatibility Study*, vol. 1, Landrum & Brown Team, 23 May 2003.

In addition, with 2007 Alternative 2 there are expected to be approximately 510 people located in the City of Philadelphia who would be newly included within the 65 DNL contour, but who would experience an increase in noise exposure of less than 1.5 dB. Consequently, no significant impacts are expected to occur with 2007 Alternative 2.

The projected growth in aircraft operations between 2007 and 2015 is expected to increase the size of the area covered by the DNL contours for the 2015 No-Action Alternative and thereby increase the population within the contours. In 2007, the DNL 65 dB contour for the No-Action Alternative is expected to cover approximately 5,145 acres (8.0 square miles) of land, including both on-airport and off-airport land. In comparison, the DNL 65 dB contour for the 2015 No-Action Alternative would cover approximately 6,410 acres (10.0 square miles) of land. Just over 1,000 people would be located within the DNL 65 dB contour for the 2015 No-Action Alternative.

In 2015, the DNL 65 dB contour for Alternative 1 would decrease in size relative to the 2015 No-Action Alternative, while there would be no change to the total population within the 65 dB DNL contour.

A comparison of the 2015 noise exposure contours for Alternative 2 and the No-Action Alternative show that there would be a net increase in the number of people included in the 65 DNL contour. A total of 1,284 people would be included in the 65 DNL contour with Alternative 2, while a total of 1,029 people would be within the 65 DNL contour with the No-Action Alternative, representing an increase of 255 people within this DNL contour.

In 2015 with Alternative 2, roughly 380 people located in the City of Philadelphia would be newly included within the 65 DNL contour; however, these people would experience an increase in cumulative noise exposure of less than 1.5 dB. Therefore, significant impacts are not expected to occur as a result of this Proposed Action.

Supplemental analyses indicated that there would be no noise-sensitive areas within DNL 65 dB contours that would experience a 1.5 dB change in cumulative noise exposure, with either of the Build alternatives for any of the study years. That is, in all cases, the predicted changes in cumulative noise exposure within the DNL 65 dB contour were less than 1.5 dB; neither Alternative 1, nor Alternative 2 would generate a significant impact in either 2007 or 2015.

In addition, the supplemental analyses indicated that there would be no areas within the DNL 45 to DNL 60 that would experience a change in noise exposure greater than 5 dB.

Two non-residential noise-sensitive locations, the George Wolf School at 8110 Lyons Avenue and the George Wharton Pepper Middle School at 2901 South 84th Street, both of which are in Philadelphia, are expected to experience DNLs of 65.7 and 65.3 dB, respectively with Alternative 2 for 2015. However, these levels are not sufficiently high to justify mitigation, unless the Noise Level Reduction of the building façades are of extremely poor quality (less than 25 dB).

By FAA criteria contained in Orders 1050.1E and 5050.4A, neither Alternative 1 nor Alternative 2 will cause "significant impact" due to noise, anywhere in the Local or Regional Study Areas during either of the two study periods, 2007 or 2015.

4.3 Compatible Land Use

This section provides an evaluation of land use compatibility impacts expected for Alternative 1 and Alternative 2 and a general assessment of land use compatibility that would result from these

Build Alternatives. It also discusses, to the extent relevant, compatibility of the alternatives with the plans of public agencies for development of the area in which the Airport is located. Section 4.8, *Section 4(f)*, and Section 4.9, *Historic Resources*, address these specific land uses in further detail.

Land use compatibility is defined by the FAA in 14 CFR 150, *Airport Noise Compatibility Planning*, as the "use of land that is identified as normally compatible with the outdoor noise environment[19]". The outdoor noise environment, in relation to airport noise compatibility, is measured in terms of yearly DNL. FAA has published a matrix that identifies what types of land uses are incompatible with certain levels of noise exposure. For example, as shown in Table 4.3-1, Residential Land use would not be compatible within the 65-70 dB DNL.

4.3.1 Regulatory Context

The land use compatibility analyses were conducted in accordance with FAA Orders 1050.1E and 5050.4A.[20]

The Orders note that 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 and that if the noise analysis concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use. The Orders make a similar declaration with regard to other impacts exceeding thresholds of significance and that if those impacts may have land use ramifications, then the effects on land use should be analyzed in the context of the land use compatibility analysis. Section 4.3.5 describes other impacts and their potential for resulting in land use impacts.

19 *14 Code of Federal Regulations, 150, Airport Noise Compatibility Planning*, Definitions, paragraph 150.7.
20 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, Chapter 5, 8 October 1985.

4.3.2 Methodology

The analysis for this DEIS was conducted in accordance with FAA Orders 1050.1E[21] and 5050.4A.[22] Local and Regional study areas are defined, the affected environment is described and land use impacts are evaluated based on the analysis of other significant impacts in this DEIS.

A land use inventory was conducted to define the affected environment. The land use inventory conducted for the *Part 150 Study*, which was completed in 2002[23] and approved by FAA in May 2003, was a key source of information for this DEIS land use compatibility analysis. Other data incorporated from the *Part 150 Study* included zoning, identified noise sensitive land uses, and other receptors. These data were updated for this study. The Delaware Valley Regional Planning Commission (DVRPC) was the primary source of land use and zoning data. As the Federally-designated Metropolitan Planning Organization (MPO) for the nine-county, bi-state, Philadelphia-Camden-Trenton region, DVPRC is the regional planning entity that covers 8 of the 12 counties within the 27-mile radius from PHL.

DVRPC data were supplemented with information from the Wilmington Area Planning Council (WILMAPCO), the New Jersey Department of Environmental Protection (NJDEP),[24] local municipalities, U.S. Census Bureau, interviews with municipal officials, and windshield surveys.

21 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures,* Federal Aviation Administration, 8 June 2004.
22 *Federal Aviation Administration Order 5050.4A,* Airport Environmental Handbook, Federal Aviation Administration, Chapter 5, 8 October 1985.
23 *Philadelphia International Airport: Federal Aviation Regulations Final Part 150 Noise Compatibility Study*, Landrum & Brown Team, 23 May 2003.
24 NJ DEP was used to get data for Salem and Cumberland Counties because it had more information available than South Jersey Transportation Planning Organization, the MPO that covers these counties.

Table 4.3-1 Land Use Compatibility with Annual Day-Night Average Sound Level

Land Use	Annual 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 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
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: *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures*, Federal Aviation Administration, 8 June 2004.

Notes: 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 (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 or 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 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.

A detailed noise analysis was undertaken and is documented in DEIS Appendix A-1, *Noise Technical Report*, and Section 4.2, *Noise,* of this DEIS. As part of that analysis a series of noise contours were developed for the No-Action Alternative and for Alternatives 1 and 2 in 2007 and 2015 using the FAA's INM, Version 6.1. For each analysis year, the No-Action Alternative was compared to Alternative 1 and Alternative 2. These contours are used in this section analysis to identify and quantify noise-affected areas by land use type and areas of incompatible land use.

The *Part 150 Study* and this land use compatibility analysis used the same methodology including the same noise metrics and computer model to generate the noise contours, and both studies also overlaid the noise contours over local and regional land use maps to identify areas of non-compatible land uses. The *Part 150 Study*, however, used different study periods (2001 and 2006) compared with the DEIS (2003, 2007, and 2015).

The two studies also used different airport activity levels because of the different planning periods. However, the environmental consequences identified in the *Part 150 Study* and this report are very similar in terms of the size of the noise contours, the sensitive land uses within the 65-70 dB DNL, and the location of those sensitive land uses.

4.3.3 Affected Environment

The land use compatibility analysis examined land uses within the Local and Regional Study Areas.

Local Study Area

The geographical extent of the Local Study Area is the same as the Noise Local Study Area (Figure 4.3-1). The Noise Local Study Area was determined from radar data tracking flight paths for aircraft using each runway at PHL, from their start of takeoff to the points at which they reached 3,000 feet AGL on departure.[25]

Land uses within the Local Study Area include industrial, commercial, transportation, and residential uses, as well as areas of open space and recreational uses. A large percentage of the developed property and open space within the Local Study Area is compatible with airport noise; 37 percent is agricultural, commercial, industrial, transportation/utilities and wooded, and 43 percent of the land use is water and open space (a combined total of 80 percent of the land area). The remaining 20 percent of the land use in the Local Study Area is composed of community services, military, parks/open space, and residential uses. Figure 4.3-2 illustrates the land uses in the Local Study Area.

West of the Airport, the Local Study Area includes Tinicum Township (including the neighborhoods of Essington and Lester) and Chester, both within Delaware County, Pennsylvania. The Study Area extends west to the Commodore John Barry Bridge (Route 322) and is generally between the Delaware River and I-95. This section of the Local Study Area includes residential areas, schools, and recreation areas interspersed with commercial and industrial development, including industrial factory complexes and waterfront commercial facilities. Little Tinicum Island, part of the Pennsylvania State Forest system, is in the Delaware River south of Tinicum.

Sensitive land uses near the Airport, likely to experience the greatest noise exposure, fall within the boundaries of Tinicum Township and the Eastwick neighborhood in the City of Philadelphia. These areas near the Airport are almost completely developed and, consequently, are anticipated to

25 This procedure is based on guidance from *FAA Order 7210.360*, 14 September 1990.

have the same density and land use type in 2007 and 2015 as they do today.

The portion of the Local Study Area immediately north of the Airport contains transportation and airport-related uses. Bartram Avenue, the SEPTA rail line, I-95, and SR 291 separate the Airport from Eastwick. A complex of hotels, office buildings, restaurants, and parking lots are located between I-95 and Bartram Avenue. Further north of the Airport, the Local Study Area includes portions of the neighborhoods and boroughs of Eastwick (Philadelphia), Darby, Colwyn, and Yeadon. These are densely developed residential areas interspersed with commercial uses along the primary roads (Island Avenue and Lindberg Boulevard). The John Heinz National Wildlife Refuge is northwest of the Airport and is primarily outside the Local Study Area. The Local Study Area extends east to just south of the Walt Whitman Bridge (I-76) and includes a portion of Gloucester City, NJ. It also includes commercial and industrial areas between the Airport and I-95.

The Philadelphia Southwest Wastewater Treatment Plant, the Liquor Control Board, and the USACE's Fort Mifflin Dredge Disposal Facility are east of the Airport, and are accessed from Island Avenue and Enterprise Avenue. Along the Delaware River, the Local Study Area includes the Philadelphia Naval Shipyard and Business Center and commercial shipyard facilities.

Immediately south of the Airport in Pennsylvania, the Local Study Area includes a narrow strip of land between the Airport and the Delaware River. This area includes Hog Island Road and an active freight railroad line, as well as Sunoco's Fort Mifflin facility and Sunoco's Hog Island docks. Portions of the land are owned by the Airport. Historic Fort Mifflin is southeast of the Airport between the Sunoco facility and the USACE docks.

South and east of the Airport in New Jersey, the Local Study Area includes portions of Camden and Gloucester Counties. Part of Gloucester City on the Delaware River is within the Local Study Area, and it includes commercial, densely developed residential and recreational areas. Parts of National Park Borough and Red Bank, on the south shore of the Delaware River, are within the Local Study Area. These are primarily residential neighborhoods with some park uses, such as the Red Bank National Historic Site. The Local Study Area extends south into West Deptford, New Jersey. Land uses within the Study Area include newly-developed community recreational facilities near the Delaware River, residential neighborhoods, commercial, and industrial facilities. Some agricultural land is also present.

Regional Study Area

The geographical extent of "other potentially affected areas beyond the immediate airport area" (the Regional Study Area) was determined by considering flight paths and climb profiles of aircraft departing existing runways at PHL outward from the boundary of the Local Study Area (3,000 AGL) to the point at which the aircraft typically reached 10,000 feet AGL on departure, or 7,000 feet AGL on arrival, whichever is the farther distance.

A preliminary set of future flight tracks were developed to reflect the forecast fleet of aircraft for the two Build Alternatives under study, and were extended to the point at which aircraft on those tracks would reach 7,000 and 10,000 feet AGL. Given the significant dispersion of flight paths observed at these higher altitudes, a circular area with a radius of approximately 27 miles was used to define the Regional Study Area (Figure 4.3-3).

The Regional Study Area includes portions of southeastern Pennsylvania, northeast Delaware, and southwestern New Jersey. In the Regional Study Area, residential, commercial, industrial and institutional land uses are concentrated in the cities of Philadelphia, Pennsylvania; Camden, New Jersey; and Wilmington Delaware, and in the suburban counties of Bucks, Chester, Delaware, and Montgomery, Pennsylvania and Camden, Gloucester, and Burlington, New Jersey. The portions of Salem, Cumberland, and Atlantic Counties, New Jersey are primarily agricultural, wooded, and wetland, with smaller residential and commercial centers. Delaware County, Pennsylvania is similarly rural towards its western border as is Chester County, Pennsylvania. In Delaware, the Regional Study Area includes New Castle County and nine municipalities, such as Wilmington and New Castle. Figure 4.3-4 illustrates land uses in the Regional Study Area. Land uses within the study area include residential, agricultural, commercial, transportation, open space, and recreational.

Existing (2003) Noise Compatibility

Land uses within the various noise contours are shown in Table 4.3-2. Figure 4.3-5 illustrates land uses and 2003 noise contours, and Figure 4.3-6 illustrates sensitive receptors and 2003 noise contours. There are no incompatible land uses within the 70-75 dB DNL, or 75+ dB DNL contours. In terms of incompatible land uses, there are 10 acres of residential land use that lie within the 65 dB – 70 dB DNL contours. The 243 residential acres within the 60 – 65 dB DNL are in both Tinicum Township and the Eastwick neighborhood of Philadelphia.

Table 4.3-2 Land Use in Each Noise Contour for 2003 Existing Conditions (acres)

	Agriculture	Commercial	Community Services *	Industrial	Military	Recreational *	Residential *	Transportation/ Utilities	Undeveloped	Water	Total Acres
60 to 65 DNL	1	137	23	642	595	101	243	426	1,008	3,534	6,710
65 to 70 DNL	18	40	0	154	142	0	10	349	304	1,837	2,854
70 to 75 DNL	14	67	0	63	6	0	0	411	274	510	1,345
75+ DNL	0	9	0	42	0	0	0	843	83	36	1,013
Total	33	253	23	901	743	101	253	2,029	1,669	5,917	11,922

Source of data for the Local Study Area was the DVRPC Land Use Layer. DVRPC does not include Wetlands in their Land Use Categories
Other data sources include: HMMH, Environmental Systems Research Institute, Inc. (ESRI), NJDEP, Pennsylvania DOT (PennDOT), DVRPC and The Delaware Spatial Data Implementation Team.
* Defined by FAA as sensitive land uses

The Fort Mifflin Historic Site, which is located in the 70+ dB DNL contour, is not classified by FAA as a recreational land use because its primary use is historic preservation, not active recreation, although it is categorized as recreational use by the DVRPC in its land use plan. Fort Mifflin is addressed in Sections 4.8 and 4.9 in this DEIS. The use of a property is the primary use which it is designated, although some properties may have multiple uses.

The noise-sensitive land uses within the 65 dB DNL contour represent less than one tenth of one percent of the total land use within the Local Study Area.

4.3.4 Environmental Consequences

Because there are no areas of noise sensitive land uses in the 65 dB DNL contour that would experience an increase of 1.5 dB or greater as a result when comparing Alternatives 1 and 2 to the No-Action Alternative, there are no significant land use impacts. This section describes changes that occur for land uses in the 65-70 dB DNL contour. Tables 4.3-3 and 4.3-4 list the affected land uses by each category and analysis year for Alternatives 1 and 2.

Although Fort Mifflin is classified by DVRPC as recreational land use, it is not classified as such by FAA and therefore is not shown in the following tables. Fort Mifflin is presently within the 65 dB DNL contour, and an extension of Runway 17-35 would not result in any additional noise impact at the site.

Table 4.3-3 Sensitive Land Uses within the 65 dB DNL Contour (acres)

Year/Alternative	Community Services	Recreational	Residential
2007 No-Action	0	0	4
2007 Alternative 1	0	0	5
2007 Alternative 2	3	0	5
2015 No-Action	5	0	29
2015 Alternative 1	4	0	26
2015 Alternative 2	16	0	39

Note: Acreage based on Geographic Information Systems (GIS) data layer – actual use may differ.

Table 4.3-4 Sensitive Land Uses within the 65 dB DNL Contour

Year/Alternative	Community Services	Recreational	Residential (acres)
2007 No-Action	None	None	Tinicum Township (2) Eastwick (2)
2007 Alternative 1	None	None	Tinicum Township (1) Eastwick (4)
2007 Alternative 2	George Wolf School (John Bartram High School Annex) at 81st and Lyons Avenue in Philadelphia	None	Tinicum Township (1) Eastwick (4)
2015 No-Action	George Wolf School (John Bartram High School Annex) at 81st and Lyons Avenue in Philadelphia	None	Tinicum Township (16) Eastwick (6) Philadelphia Naval Business Center (7)
2015 Alternative 1	George Wolf School (John Bartram High School Annex) at 81st and Lyons Avenue in Philadelphia	None	Tinicum Township (16) Eastwick (5) Philadelphia Naval Business Center (5)
2015 Alternative 2	George Wolf School (John Bartram High School Annex) at 81st and Lyons Avenue in Philadelphia	George Wharton Pepper School Recreation Areas[1]	Tinicum Township (14) Eastwick (17) Philadelphia Naval Business Center (8)

1 Based on actual data and not based on GIS layer (classified as school rather than recreational use).

No-Action Alternative

In 2007, the No-Action Alternative would result in four acres of residential land within the 65 dB DNL contour. Two of these occur within the 65-70 dB DNL in Eastwick. The additional two acres of residential land use are in Tinicum Township.[26] There are no areas of community service land use in the 65 dB DNL contour in 2007.

In 2015, the No-Action Alternative would have 29 acres of residential land use in the 65 dB DNL contour. This includes 16 acres in Tinicum Township, six acres in Eastwick and seven acres in the Philadelphia Naval Business Center. There is no recreational land in the 65 dB DNL contour for the No-Action Alternative. One school would be within the 65 dB DNL contour.

Alternative 1 - Preferred Alternative

In 2007, Alternative 1 would decrease the area of residential land located in the 65 dB DNL contour, when compared to the No-Action Alternative, by six acres.

In 2015, Alternative 1 (26 acres) would result in a decrease of three acres of residential land use in the 65 dB DNL contour from the No-Action Alternative (29 acres). This includes 16 residential acres in Tinicum Township, five residential acres in Eastwick, and five residential acres in the Philadelphia Naval Business Center would be within the 65 dB DNL contour. Alternative 1 results in a one-acre decrease in community services land in the 65 dB DNL contour over the No-Action Alternative. There is no recreational land in the 65 dB DNL contour in either of the analysis years. One residential acre in Tinicum Township and four residential acres in Eastwick would be within the 65 dB DNL contour. In 2015 one school would be within the 65 dB DNL contour.

The noise analysis identified one site within the Study Area that would experience a 1.5 dB change within the 65 DNL contour, however, this is not classified as a noise sensitive area, and there would be no significant impacts. For Alternative 1, this is undeveloped land south of the Airport, directly across the Delaware River from Runway 35.

Alternative 2

In 2007, Alternative 2 would result in a decrease in the area of residential land located in the 65 dB DNL contour when compared to the No-Action Alternative of five acres, one in Tinicum and four in Eastwick. One school would fall within the 65 dB DNL contour. No recreational land would be affected by noise from Alternative 2.

In 2015, 14 residential acres in Tinicum Township, 17 residential acres in Eastwick, and eight residential acres in the Philadelphia Naval Business Center would be within the 65 dB DNL contour. This is an increase of 10 acres from the No-Action Alternative. One recreational area and one school would be within the 65 dB DNL contour. This Alternative would also increase the area of community services land within the 65 dB contour from 16 to 39 acres.

The noise analysis identified one site within the Study Area that would experience a 1.5 dB change within the 65 DNL contour, however, this is not classified as a noise sensitive area, and there would be no significant impacts. For Alternative 2, this is the area of I-95 immediately northwest of Runway 17.

26 CHPlanning, Inc.

4.3.5 Summary of Other Impacts of the Alternatives

Because the FAA Orders state that compatibility of existing and proposed land use in the vicinity of an airport is associated with other impacts that have land use ramifications, this section provides a summary of the results of the other environmental impact analyses in this DEIS.

As described in other sections of Chapter 4, effects of the project on endangered and threatened species, biotic communities, wetlands, floodplains and hazardous materials, as well as construction noise, would not exceed thresholds of significance. In addition, minor effects to these resources would occur only on the Airport property and therefore, would not result in land use compatibility impacts.

As described elsewhere in this chapter, there are no significant social, socioeconomic, air quality (long-term or construction), historical, archaeological, coastal zone, Section 4(f), farmland, light emissions, or energy supply and natural resource impacts that would occur as a result of the Build Alternatives. There are no wild and scenic rivers in the study area, and therefore no significant impacts. Thus there are no land use compatibility impacts associated with these impact categories.

Noise

Two areas were identified that would experience an increase of 1.5 dB at or above the DNL 65 dB noise contour. Neither of these areas are considered noise-sensitive – one is an undeveloped industrial area in New Jersey, south of the Delaware River, and one is within the I-95 right-of-way, north of the runway. The noise analysis in Section 4.2 of this DEIS concludes that in 2007 and 2015, no noise sensitive areas would experience an increase of 1.5 dB or more at or above DNL 65 dB noise exposure as a result of Alternative 1 or Alternative 2 when compared to the No-Action Alternative. Therefore, no significant noise impacts, and no noise-related land use compatibility impacts will result from either alternative. As described in Sections 4.8 and 4.9 of this DEIS, there are no significant noise impacts on Section 4(f) or historic resources and therefore, no land use compatibility impacts associated with these resources.

Water Quality

Direct impacts to water quality would occur on the Airport and indirect water quality impacts may occur in adjacent industrial areas. Mitigation measures described in Section 4.7 of this DEIS would be used during construction and would be incorporated in the design of the selected alternative to protect surface water quality. These measures would use best management practices compatible with airport operations, and would include measures such as catch basins, stormwater detention areas or chambers, aeration systems, and revised spill response and containment measures. Both Alternative 1 and Alternative 2 would be subject to a joint NPDES Construction General Permit/PA DEP Chapter 102 Permit. The Airport has an existing EPA NPDES Stormwater Multi-Sector Industrial Permit for discharges of stormwater. These permits will ensure adherence of the proposal to water quality standards. Water quality effects of either Build Alternative would not affect land use compatibility.

Surface Transportation

Alternatives 1 and 2 would require that SR 291 be abandoned and the Industrial Highway be closed to through traffic from a point just east of Ramp F to Island Avenue. Bartram Avenue and a portion of Island Avenue from Bartram Avenue to the Industrial Highway/Penrose Avenue would be designated SR 291, as described in the surface transportation analysis in Section 4.14, *Surface*

Transportation, of this DEIS. As a result of these changes, in 2007 and 2015, both the unsignalized intersection of Bartram Avenue and the I-95 SB on-ramp would have an unacceptable Level of Service (LOS) resulting from either Alternative 1 or Alternative 2. The intersection of SR 291 (Essington Avenue/Industrial Highway) and SR 291 (Bartram Avenue/Scott Way) is also projected to experience a substantial increase in delay.

These impacts would be mitigated without major construction. Mitigation would include measures such as changing the phasing, timing, and cycle length of an existing traffic signal; installing a new traffic signal and adding lanes within the existing curb to curb width by re-designating lanes (for example, from a through lane to a left turning lane). As shown in Table 4.14-5 of Section 4.14 of this DEIS, these measures would improve these intersections to a level better than existing conditions. Aside from the SR 291 right of way, no land will be taken for the improvements or the mitigation. Access to businesses residence or community facilities will not be affected and there are no significant impacts as a result of the reassignment of SR 291. Therefore, there are no associated land use impacts.

4.3.6 Summary

The analysis presented in this section and in Section 4.2, *Noise*, of this DEIS has demonstrated that there would be no significant noise impacts over noise-sensitive areas, and therefore, that neither Alternative 1 nor Alternative 2 would result in significant land use compatibility impacts. As a result, no mitigation measures are necessary.

4.4 Social Impacts, Induced Socioeconomic Impacts and Secondary Impacts

As required by *FAA Order 1050.1E*, this section discusses Project-related social impacts, induced socioeconomic impacts and secondary impacts for the No-Action Alternative, Alternative 1 and Alternative 2.

4.4.1 Social Impacts

Social impacts are defined as those that involve the relocation of a residence or business, the alteration of surface transportation patterns, the disruption of established communities or any appreciable change in employment.

No-Action Alternative

The No-Action Alternative would not involve the relocation of residences or businesses, alter surface transportation patterns, disrupt communities, or change employment.

Alternative 1 - Preferred Alternative

Alternative 1 would require the relocation of a portion of the Economy Parking Lot on airport property. However, this parking lot can be relocated elsewhere on PHL property, and would not require the acquistion of property or displacement of persons. Alternative 1 would also require closing and relocating a portion of SR 291. As discussed in Section 4.14, *Surface Transportation*, reasonable options exist to divert traffic from this portion of SR 291, therefore, this relocation will have no adverse impact on the businesses, their employees, and local residents that use SR 291. With the proposed mitigation, as described in Section 4.14, the relocation will not disrupt local traffic patterns or reduce levels of service on roads serving the airport or the surrounding community.

Alternative 2

Alternative 2 would require the relocation of a portion of the Economy Parking Lot on airport property. However, this parking lot can be relocated elsewhere on PHL property, and would not require the acquistion of property or displacement of persons. Alternative 2 would also require closing and relocating a portion of SR 291. As discussed in Section 4.14, *Surface Transportation*, reasonable options exist to divert traffic from this portion of SR 291, therefore, this relocation will have no adverse impact on the businesses, their employees, and local residents that use SR 291. With the proposed mitigation, as described in Section 4.14, the relocation will not disrupt local traffic patterns or reduce levels of service on roads serving the airport or the surrounding community.

4.4.2 Induced Socioeconomic Impacts and Secondary Impacts

In accordance with *FAA Orders 1050.1E* [27] and *5050.4A*,[28] this section examines the potential for the alternatives considered in this DEIS to result in induced or secondary impacts in surrounding communities, as well as the potential economic consequences of these alternatives.

Affected Environment

PHL is an important component of the existing economic base of both the City of Philadelphia and the larger regional economy. The City issued a report[29] which stated that improvement of the Airport is the top priority of the City's economic development agenda. Furthermore this report expressed the concern that without improvements the Airport would have difficulty remaining competitive, which in turn could have an adverse impact on the economy of the City and the region.

Since 1990 the unemployment rate in the City of Philadelphia[30] has typically been almost two percentage points higher than the Philadelphia Metropolitan Statistical Area (MSA).[31] The Philadelphia MSA consists of five counties in Pennsylvania (Bucks, Chester, Delaware, Montgomery, Philadelphia) and four counties in New Jersey (Burlington, Gloucester, Camden, Salem), in addition to the City itself. As of February 2004, the unemployment rate in the City was 7.4 percent compared to 5.7 percent in the MSA and 5.6 percent in the U.S. Total employment within the City in February 2004 was 613,000, compared to nearly 2.5 million within the MSA. The number of businesses within the City declined by 2.1 percent from 1998 to 2001, compared to an increase of 1.5 percent for the MSA during the same time period.

According to a report by GRA, Inc.[32] the Airport resulted in a total regional employment of 39,000 direct and 32,000 indirect jobs in the year 2000, for a total employment impact of 71,000 jobs. Furthermore, the study estimated that 45 percent of this employment, or 32,000 jobs, are held by City of Philadelphia residents and the remainder held by residents of the Delaware Valley Region. The Delaware Valley Region includes portions of the States of Delaware, New Jersey, and parts of Pennsylvania besides Philadelphia. PHL employment represents five percent of total employment within the City and two percent of the MSA employment.

27 *Federal Aviation Administration Order 1050.1E*, Federal Aviation Administration, 8 June 2004.
28 *Federal Aviation Administration Order 5050.4A*, Federal Aviation Administration, Chapter 5, 8 October 1985.
29 *Airport Expansion: A Key Component of Philadelphia's Economic Development Strategy*, 15 January 2002.
30 Bureau of Labor Statistics, United States Department of Labor.
31 *Ibid.*
32 *Regional Economic Impacts of Philadelphia International Airport*. 10 December 2001.

The communities and land uses adjacent to PHL are described in Section 4.3, *Compatible Land Use*, of this DEIS.

Environmental Consequences

No-Action Alternative
The No-Action Alternative includes several forseeable minor construction projects such as improvements to aprons that would provide some economic benefits from the direct and indirect jobs created by the new construction.

Alternative 1 - Preferred Alternative
Alternative 1 would require constructing runway extensions and taxiways at the north and south ends of Runway 17-35. This alternative would require closing a portion of the Economy Parking Lot, and closing and relocating a portion of SR 291. The Economy Parking Lot would be reconfigured to replace the lost parking. This alternative would not require the displacement of persons or acquisition of property other than the SR 291 right-of-way, and would not require any construction outside of the airport except for SR 291, improvements to three intersections on Bartram Avenue, and shifting the MALSR 500 feet to the north (relocating the northermost light station to the north side of Bartram Avenue). The parking lot can be relocated elsewhere on PHL property, resulting in no long-term impact on employment.

Depending on the phasing of the Project, temporary interruptions in revenues may be possible. The closing of the service station (located in Philadelphia) would result in the loss of employment and business income to the lessee, possible reduction in taxes paid to various governmental agencies, and the loss of lease revenue to the Airport. These impacts are considered to be insignificant relative to the size of the local economy and the airport budget.

Alternative 1 would therefore not be expected to affect the community tax base.

Alternative 1 would not create additional airport capacity or increase in airport operations and, therefore, is not expected to generate shifts in patterns of population movement and growth, public service demands, or changes in business economic activity. Long-term employment generation at PHL is not expected to change materially because there is no significant change in capacity at the airport as a result of this action. Alternative 1, which include extension of the existing runway both to the north and the south, would create new construction-related employment over a period of approximately 18 months (mid-2005 through 2006). In 2001, construction employment represented two percent of total employment within the City of Philadelphia and five percent of total employment within the MSA. Construction employment actually declined in the City from 1998 to 2001 and increased in the MSA during the same time frame. Therefore, the construction-related jobs associated with this Alternative would be beneficial to the construction industry, particularly within the City of Philadelphia.

Total construction costs of Alternative 1 are estimated at $36 million.[33] Based on statewide regional multipliers, approximately 33 direct and indirect jobs are created throughout the economy for every $1 million spent on new construction, resutling the creation of approximately 1,200 jobs during the 18-month construction period. This additional employment represents less than one tenth of one percent of the region's 2.8 million jobs and therefore would have no measureable short or long-term impacts.

33 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Justification and Definition,* DMJM Aviation, 27 August 2004.

Alternative 2

Alternative 2 would require constructing runway extensions and taxiways at the north and south ends of Runway 17-35. This alternative would require closing a portion of the Economy Parking Lot and closing and relocating a portion of SR 291. The Economy Parking Lot would be reconfigured to replace the lost parking. This alternative would not require the displacement of persons or acquisition of property other than SR 291, and would not require any construction outside of the airport except for SR 291, improvements to three intersections on Bartram Avenue, and relocating the northernmost MALSR light station to the north side of Bartram Avenue opposite the Fire Station, on airport property. The parking lot can be relocated elsewhere on PHL property, resulting in no long-term impact on employment. Depending on the phasing of the Project, temporary interruptions in revenues from the Economy Parking Lot may be possible. The closing of the service station (located in Philadelphia) would result in the loss of employment and business income to the lessee, possible reduction in taxes paid to various governmental agencies, and the loss of lease revenue to the Airport. These impacts are considered to be insignificant relative to the size of the local economy and the airport budget. Alternative 2 would therefore not be expected to affect the community tax base.

Alternative 2 would not create additional airport capacity or increase in airport operations and, therefore, is not expected to generate shifts in patterns of population movement and growth, public service demands, or changes in business economic activity. Long-term employment generation at PHL is not expected to change materially because there is no significant change in capacity at the airport as a result of this action. Alternative 2, which include extension of the existing runway both to the north and the south, would create new construction-related employment over a period of approximately 18 months (mid-2005 through 2006). In 2001, construction employment represented two percent of total employment within the City of Philadelphia and five percent of total employment within the MSA. Construction employment actually declined in the City from 1998 to 2001 and increased in the MSA during the same time frame. Therefore, the construction-related jobs associated with these Alternatives would be beneficial to the construction industry, particularly within the City of Philadelphia.

Total construction costs of Alternative 2 are estimated at $56.3 million.[34] Based on statewide regional multipliers, approximately 33 direct and indirect jobs are created throughout the conomy for every $1 million spent on new construction, resutling the creation of approximately 1,800 jobs during the 18-month construction period. This additional employment represents less than one tenth of one percent of the region's 2.8 million jobs and therefore would have no measureable short or long-term impacts.

4.4.3 Summary

All activities associated with these alternatives would occur on existing PHL property, on an adjacent section of the SR 291 right-of-way or within public ROW of Bartram Avenue. None of the alternatives considered in this DEIS would result in any significant social impacts because none of the Alternatives requires the relocation of residences or the disruption of any established communities or changes in employment.
Because all direct impacts of Alternatives 1 and 2 are on the Airport or adjacent short segment of SR 291, and the shift in traffic to Bartram Avenue will not disrupt traffic patterns or reduce level of service, these alternatives would not result in a shift in population, increase in public service demands, or

34 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Justification and Definition,* DMJM Aviation, 27 August 2004.

change business or economic activity. The proposed extension of Runway 17-35 would not have the potential to result in induced growth or secondary impacts in the surrounding communities. Both Alternatives 1 and 2 would be expected to provide additional construction-period jobs that would have a minor regional beneficial effect.

4.5 Air Quality

This section discusses emissions to the atmosphere of Airport-related pollutants, emissions of hazardous air pollutants, dispersion modeling results, and an assessment of carbon monoxide concentrations at roadway intersections at and near the Airport for existing conditions (Section 4.5.2). Section 4.5.3 provides an evaluation of the air quality impacts expected for Alternative 1, Alternative 2 and for the No-Action Alternative. Mitigation measures are addressed in Section 4.5.5. DEIS Appendix A-2, *Air Quality Technical Report*, provides more detailed information on the airport emissions inventory, dispersion modeling, hazardous air pollutants, and mitigation measures. While the Proposed Project would not result in new flights under Alternative 1 or Alternative 2 when compared to the No-Action Alternative, there would be changes in air quality associated with either alternative due to changes to taxiways and associated changes to aircraft queuing and taxiing times, as well as short-term construction activities.

4.5.1 Introduction

Air pollution is of concern because of its demonstrated effects on human health. Of special concern are the respiratory effects of pollutants, as well as their general toxic effects. Airport-related sources that have Federal, state, or local standards are described below, and include volatile organic compounds (VOCs), oxides of nitrogen (NOx), carbon monoxide (CO), particulate matter (PM); sulfur dioxide (SO2), lead, and hazardous air pollutants (HAPs).

VOCs are a general class of compounds containing various levels of hydrogen and carbon that are chemically active in the atmosphere. VOCs in the atmosphere come from evaporated fuel, partially burned fuel, solvent use, industrial processes, and natural sources. While concentrations of VOCs in the atmosphere are not generally measured, VOCs are known precursors to ozone, and it is ozone that is measured and used to assess potential health effects. When combustion temperatures are extremely high, as in aircraft engines, boilers, furnaces, or automobile engines, nitrogen gas from the atmosphere and from fuel will combine with oxygen gas to form various oxides of nitrogen. Of these nitrogen oxides, nitric oxide (NO) and nitrogen dioxide (NO_2) (collectively referred to as NOx) are the most significant air pollutants. CO is a colorless and odorless gas, which is a product of incomplete combustion.

SO_2 is a colorless gas that is formed during the combustion of fuels containing sulfur compounds. Lead is a stable compound that accumulates in the environment and in living organisms.
PM is comprised of small solid particles and liquid droplets (aerosols). Suspended particulates refer to particles of approximately 100 micrometers or less in diameter. PM10 refers to particulate matter with an aerodynamic diameter of 10 micrometers or smaller. The National Ambient Air Quality Standards (NAAQS) for PM10 were adopted in July 1987. On July 18, 1997, EPA supplemented the particulate matter standards by adopting new standards for PM2.5 (particles less than or equal to 2.5 micrometers) or "fine particulates." These standards had been the subject of continuing judicial challenges, but the legal issues have been resolved and the standards have been in force since March 26, 2002. Hazardous air pollutants are produced by a wide range of airport

and non-airport sources, including aircraft, ground support equipment, motor vehicles, home furnaces, evaporating fuel and paints, wood burning, carpets, dry-cleaning of clothing, and industrial facilities. These substances are contained in VOC and particulate emissions.

Regulatory Context

The air quality provisions that are applicable to the proposed Project include the *Clean Air Act of 1970 (CAA)*,[35] the *1977 Clean Air Act Amendments*,[36] the *1990 Clean Air Act Amendments (CAAA)*,[37] the *NAAQS*,[38] the NEPA requirements as specified in the Council on Environmental Quality's Regulations for Implementing the *National Environmental Policy Act (40 CFR 1500-1508)*, the *FAA's Airport Environmental Handbook*,[39] *FAA Order 1050.1E*,[40] the *FAA's Air Quality Procedures for Civilian Airports and Air Force Bases (FAA-AEE-97-03)*, dated April 1997,[41] the *Pennsylvania State Implementation Plan (SIP)*,[42] and the *Pennsylvania Ambient Air Quality Standards (PA AAQS)* as defined in Part 25, Article III of the Pennsylvania Code.[43]

FAA Airport Environmental Handbook (FAA Order 5050.4A) and Order 1050.1E

Evaluation of air quality is a necessary component of NEPA as required by the FAA NEPA regulations. The regulations that address air quality are discussed in the *FAA Airport Environmental Handbook (FAA 5050.4A)* in Chapter 5 at Paragraph 47e (5) and Chapter 8 at Paragraph 85e. The analyses were completed in compliance with Appendix A, Analysis of Environmental Impact Categories, Section 2. Air Quality of *Order 1050.1E.*

Ambient Air Quality Standards

Under the authority of the CAA, the USEPA established a set of NAAQS for various air pollutants. These standards are intended to protect the public health and welfare. Primary air quality standards are established at levels that protect the public health from harm with an adequate margin of safety. Secondary standards are set at levels necessary to protect the public welfare (buildings, clothing, and vegetation). The pollutants most relevant to this Project include ozone, NO_2, CO, PM10, PM2.5, and SO_2. Since the prohibition of lead as an additive in liquid fuels, lead has ceased to be a major transportation-related pollutant and will not be addressed further, except as a HAP. The PA AAQS are identical to the Federal standards for criteria pollutants, and, in addition include standards for Beryllium, Fluorides, Hydrogen Sulfide, and settled particulates. The PA AAQS and the Federal standards are summarized in Table 4.5-1.

State Implementation Plan Requirements

Pursuant to the CAA, the USEPA designates geographical regions of the country as "attainment areas" if ambient pollutant concentrations are in compliance with the NAAQS, as "nonattainment areas" if ambient pollutant concentrations are not in compliance with the NAAQS, and as "maintenance areas" if the area was previously in nonattainment and has achieved attainment. PHL is partly in the City and County of Philadelphia and partly in Delaware County. Both of these counties have been classified as in attainment for CO, NO_2, PM10, SO_2, and lead.

35 The *Clean Air Act of 1970*, United States Congress, Public Law 91-604.
36 The *1977 Clean Air Act Amendments.* United States Congress, Public Law 95-95.
37 The *1990 Clean Air Act Amendments.* United States Congress, Public Law 101-549.
38 *40 United States Code of Federal Regulations,* Part 50, Section 121.
39 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, Chapter 5, 8 October 1985.
40 *Environmental Impacts: Policies and Procedures.* Federal Aviation Administration, 8 June 2004.
41 *Air Quality Procedures for Civilian Airports and Air Force Bases. AEE-120. Report Number FAA-AEE-97-03*, United States Department of Transportation, Federal Aviation Administration, Office of Environment and Energy, Washington, DC, April 1997.
42 *State Implementation Plan Revision for the Philadelphia Ozone Nonattainment Area, Revised Highway Vehicle Emissions Budgets*, Pennsylvania Department of Environmental Protection, Harrisburg, PA. January 2003.
43 *25 Pennsylvania Code* Title 25, Chapter 131, Part I, Subpart C, Article III.

Table 4.5-1 National and Pennsylvania Ambient Air Quality Standards[1]

Pollutant	Averaging Time	Primary Standards[2]		Secondary Standards[2]	
		ppm	$\mu g/m^3$	ppm	$\mu g/m^3$
Ozone	1-Hour	0.12	235	0.12	235
	8-Hour[3]	0.08	157	0.08	157
Carbon Monoxide	1-Hour	35	40,000	None	None
	8-Hour	9	10,000	None	None
Nitrogen Dioxide	Annual	0.053	100	0.053	100
Sulfur Dioxide	3-Hour	None	None	0.50	1,300
	24-Hour	0.14	365	None	None
	Annual	0.03	80	None	None
Particulate Matter – 10 microns	24-Hour	—	150[4]	—	150[4]
	Annual	—	50	—	50
Particulate Matter – 2.5 microns	24-Hour	—	65[5]	—	65[5]
	Annual	—	15	—	15
Lead	Quarterly Mean	—	1.5	—	1.5
Beryllium[6]	30-Days	—	0.01	—	—
Fluorides (total soluble, as HF) [6]	24-Hour	—	5	—	—
Hydrogen Sulfide[6]	1-Hour	0.1	—	—	—
	24-Hour	0.005	—	—	—
Settled particulate (total) [6]	30-Days	1.5 $\mu g/cm^2/mo$	—	—	—
	Annual	0.8 $\mu g/cm^2/mo$	—	—	—

Source: 40 Code of Federal Regulations, Part 50, and Pennsylvania Code Title 25, Part I, Subpart C, Article III, Chapter 131.
1 National and Pennsylvania standards are identical, and, except for annual means, are not to be exceeded more than once per year.
2 The primary standards are designed to protect the public health. Secondary standards are for protection of the public welfare.
3 Fourth daily maximum 8-hour running mean (based on a 3-year average).
4 Based on a 3-year average of the 99th percentile.
5 Based on a 3-year average of the 98th percentile.
6 Pennsylvania State Standard only.
Note: There are no NAAQS for VOCs

The EPA has not yet made attainment designations for PM2.5. With respect to the 1-hour ozone standard, these two counties are part of the Philadelphia Interstate Ozone Nonattainment Area because of measured violations of the 1-hour ozone standard at several monitoring sites in the region.

In accordance with the classification scheme established by the CAAA, the EPA classified this Ozone Nonattainment Area as Serious-15 with respect to the 1-hour ozone standard. Like other Serious-15 1-hour ozone nonattainment areas, this nonattainment area is required to attain the 1-hour ozone standard by the year 2005.

With respect to the 8-hour ozone standard, the EPA issued final rules[44,45] on April 15, 2004, that designate this area of Pennsylvania as a Moderate nonattainment area. This designation took effect on June 15, 2004. As a Moderate ozone nonattainment area for the 8-hour ozone standard, the Philadelphia 8-Hour Ozone Nonattainment Area is required to attain the 8-hour ozone standard by the year 2010. With designations in place for the 8-hour ozone standard, the EPA plans to revoke the 1-hour ozone standard in June 2005. To avoid "backsliding" or losing clean air progress toward attaining the 1-hour standard, the April 15, 2004 rules require that current emission control measures for the 1-hour standard must stay in place until the area attains the 8-hour ozone standard. The NAAQS define both primary and secondary standards that must be met. Where there are no secondary standards, the primary standards apply.

In compliance with the CAAA, the PA DEP has developed a SIP for air pollution control. The SIP defines the process by which the NAAQS will be attained, and defines the control strategies and schedule that the state will employ to reduce emissions to attain the 1-hour ozone standard by 2005. PA DEP is currently preparing a SIP to demonstrate attainment of the 8-hour ozone standard by 2010. To comply with the SIP, any proposed construction project must not result in any violations of the NAAQS or Pennsylvania standards, and must meet the conditions of the conformity regulations.

44 *40 Code of Federal Regulations, Part 81, Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard – Phase 1*. (http://www.epa.gov/ozonedesignations), 15 April 2004.

45 *40 Code of Federal Regulations, Part 81, Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality* Standards; Early Action Compact Areas with Deferred Effective Dates, (http://www.epa.gov/ozonedesignations), 15 April 2004.

Conformity with the Pennsylvania SIP

Under Section 176(c) of the CAA, 42 United States Code (U.S.C.) § 7670(c), Federal agencies, such as the FAA, are prohibited from engaging in, supporting in any way, providing financial assistance for, licensing or permitting, or approving any activity in a nonattainment or maintenance area that does not conform to an approved SIP. Since PHL is in an ozone nonattainment area, it is FAA's responsibility, under Section 176(c), to assure that the proposed Project conforms to the Pennsylvania SIP.

For projects in areas designated as being in nonattainment with the ambient air quality standards, the EPA and PA DEP (Pennsylvania Code, Article III, Chapter 127, Subchapter J) have issued rules for determining general conformity of Federal Actions other than those associated with projects funded by the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), or U.S.C. Title 23.[46] EPA's General Conformity Rule defines a "conforming" project as one that: 1) conforms to the SIP's overall objective of eliminating or reducing the severity and number of air quality violations in a state and achieving expeditious attainment of the NAAQS; 2) does not cause or contribute to new NAAQS violations in the area; 3) does not increase the frequency or severity of existing NAAQS violations in the area; and 4) does not delay the state's timely attainment with NAAQS or impede required progress toward attainment. Under the general conformity rules, a project does not require a conformity determination if the increase in emissions from a proposed Federal Action is less than the *de minimis* thresholds outlined in 40 CFR Part 93 Subpart B. Regarding Philadelphia's Severe-15 ozone

46 *40 Code of Federal Regulations, Part 51*. Subpart W. Promulgated in the Federal Register, vol. 58, p. 63214, 30 November 1993.

nonattainment status with respect to the 1-hour ozone standard, the critical thresholds are 25 tons per year of VOCs and 25 tons per year of NOx.

With respect to Philadelphia's Moderate nonattainment status with the 8-hour ozone standard, and its location within the Ozone Transport Region (pursuant to Section 184 of the CAA), the critical emissions thresholds for conformity, as given in 40 CFR 93 Subpart B, will be 50 tons per year of VOCs and 100 tons per year of NOx. Section 176(c) of the CAA provides for a one-year grace period from the time that the 8-hour nonattainment designation takes effect (June 15, 2004) to the time that general conformity applies to the area. Thus, the *de minimis* thresholds for Moderate nonattainment of the 8-hour ozone standard will not apply until June 15, 2005. As noted above, EPA also plans to revoke the 1-hour ozone standard on June 15, 2005. The revocation of the 1-hour ozone standard will have the effect of revoking the current conformity *de minimis* thresholds for the one-hour ozone standard as well. After June 15, 2005, only the 8-hour ozone standard will be in effect, and only the *de minimis* thresholds for Moderate Nonattainment areas in the Ozone Transport Region, or 50 tons per year of VOCs and 100 tons per year of NOx, will apply to the Project.

The earliest that Project-related emissions will be subject to general conformity will occur when construction starts (that is, the third quarter of 2005 which begins on July 1, 2005). As construction is anticipated to start after June 15, 2005, Project-related emissions are expected to be subject only to the conformity thresholds of 50 tons per year of VOCs and 100 tons per year of NOx. Nevertheless, to assure compliance with the current conformity criteria, this Project has been evaluated with respect to the current, more restrictive emissions thresholds of 25 tons per year of VOC or NOx.

Study Area

The air quality analysis addressed impacts in three study areas: the Project Area, the Local Study Area, and the Airport Roadway Study Area. These areas are described in the following sections and shown in Figure 4.5-1.

Runway 17-35 Project Area

The Project Area is the area within which any of the alternatives would physically disturb soils, pavement, or structures. The Project Area extends from SR 291 to the Airport property line at Hog Island Road and includes the parking lot relocation and service road relocation.

Local Study Area

The Local Study Area is a slightly larger area than the Project Area and includes sources of air pollution that affect the Project Area. This area is defined as the entire Airport property, including runways, taxiways, terminal areas, parking facilities, rental car facilities, fuel storage facilities, cargo handling facilities, and access and egress roadways. This area was evaluated for air pollutant concentrations in the immediate vicinity of the Airport. Air quality impacts from construction activities were assessed in the Local Study Area.

Airport Roadway Study Area

The Airport Roadway Study Area includes the entire Local Study Area plus the regional roadways such as SR 291, Bartram Avenue, Island Avenue, and the intersections of those roadways with I-95. This area was assessed for regional air quality impacts (Airport-related pollutant emissions) and impacts on the general public (air pollutant concentrations), including aircraft operations up to a height of 3,600 feet above ground level.

4.5.2 Affected Environment

This section describes the existing air quality environment for the defined study areas.

Methodology

A Draft Air Quality Analysis Protocol[47] that described the analysis methodologies, databases, and basic assumptions to be used in the analyses for this Project was prepared and submitted to the appropriate regulatory agencies in March 2004. These agencies included PA DEP, NJ DEP, Delaware Department of Natural Resources and Environmental Control (DE DNREC), USEPA Region 3, and USEPA Region 2. A meeting was held on June 14, 2004 at the PA DEP Region 1 offices to discuss the State Implementation Plan and General Conformity issues with respect to the proposed Project. Numerous communications between the Project team and the agencies occurred throughout March, April, and May 2004, resulting in a Final Air Quality Analysis Protocol[48] being agreed to by involved parties. The Final Protocol is provided in DEIS Appendix A-2, *Air Quality Technical Report*. The information contained in the Final Protocol was incorporated into the appropriate air quality analyses.

The air quality analysis consists of four main elements:

- Emission inventory analysis of VOC, NOx, CO, SO_2, PM10, and PM2.5 for the Regional Study Area;
- Emission inventory analysis of HAPs in the Regional Study Area;
- Ambient concentrations analysis for the Regional Study Area; and
- Ambient concentrations analysis of CO concentrations from roadway intersections (or hot spots) in the Local and Regional Study Areas.

Emissions were modeled using FAA's Emissions and Dispersion Modeling System (EDMS) program.[49] Where necessary and appropriate, this was supplemented with emissions data developed using the EPA's Guidance for Emissions Inventory Development,[50] the EPA-approved MOBILE6.2 program[51] as released by the Office of Transportation and Air Quality (OTAQ)[52] and

47 *Philadelphia International Airport: Runway 17-35 Extension Project, Environmental Impact Statement, Draft Air Quality Analysis Protocol*, KM Chng Environmental Inc., Burlington, MA, 18 March 2004.

48 *Philadelphia International Airport: Runway 17-35 Extension Project, Environmental Impact Statement, Final Air Quality Analysis Protocol*, KM Chng Environmental Inc., Burlington, MA, 18 May 2004.

49 *Emissions and Dispersion Modeling System (EDMS) Reference Manual,* United States Department of Transportation, Federal Aviation Administration, Office of Environment and Energy. Washington, DC, Version 4.12, October 2003.

50 *Introduction and Use of EIIP Guidance for Emissions Inventory Development*, EPA-454/R-97-004a, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, July 1997.

51 *User's Guide to MOBILE6.1 and MOBILE6.2 Mobile Source Emission Factor Model*, United States Environmental Protection Agency, Office of Transportation and Air Quality, Assessment and Standards Division, Report number 420-R-03-010, Ann Arbor, MI, August 2003.

52 Approved final version of MOBILE6.2 computer program released by memorandum *Policy Guidance on the Use of MOBILE6.2 and the December 2003 AP-42 Method for Re-entrained Road Dust for SIP Development and Transportation Conformity.* Margo Tsirigotis Oge, Director, Office of Transportation and Air Quality, and Steve Page, Director, Office of Air Quality Planning and Standards. United States Environmental Protection Agency, Washington, DC, 24 February 2004.

EPA's AP-42 document.[53] VOC emissions from fuel storage and handling were calculated using the EPA's TANKS model[54] and methodologies, as described in Appendix A-2.

Measured Air Quality Data for 2003

The PA DEP and the Philadelphia County Air Management Services maintain a network of monitoring stations that routinely measure pollutant concentrations in the ambient air and provide data to assess compliance with the National and PA AAQS and to evaluate the impact of pollution control strategies. Table 4.5-2 presents the maximum measured pollutant concentrations for the pollutants of concern from the nearest representative monitoring stations for 2003, the most recent full year of data.[55] These data can be compared to the National and PA AAQS, which are also presented in Table 4.5-2.

The maximum measured concentrations of pollutants for averaging times in the PHL area in 2003, except for the 8-hour ozone concentration, were below the applicable Federal and state standards. The maximum measured 8-hour ozone concentration at the South Broad Street site was 0.098 parts per million (ppm), which exceeds the 8-hour ozone standard of 0.08 ppm. As a result of measured 8-hour ozone levels above the standard at various locations in recent years, EPA has designated this area of Pennsylvania as a Moderate nonattainment area for 8-hour ozone.

53 *Compilation of Air Pollutant Emission Factors. AP-42*, U.S. Environmental Protection Agency, Fifth Edition (with Supplements), Office of Air Quality Planning and Standards, Research Triangle Park, NC, January 1995. (As updated on EPA's TTN CHIEF website www.epa.gov/ttn/chief through 2003.)

54 *User's Guide to TANKS, Storage Tank Emissions Calculation Software Version 4.09b*. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, 10 January 2001.

55 *AirData Monitor Values Report for 2003 for Pennsylvania*, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, (http://epa.gov/air/data/monvals.html), 20 April 2004.

Emissions of Criteria Pollutants in 2003

A summary of the VOC, NOx, CO, SO_2, PM10, and PM2.5 emissions for the 2003 Existing Conditions from Airport-related sources in the study area is presented in Table 4.5-3. Emissions for the 2003 Existing Conditions were estimated to be approximately 536 tons per year of VOC; 2,166 tons per year of NOx; 7,040 tons per year of CO; 228 tons per year of SO_2; 20 tons per year of PM10; and 20 tons per year of PM2.5.

The PM10 and PM2.5 emissions presented here include emissions from all Airport-related sources, except for aircraft. No recent, accurate PM emission factors are available for aircraft nor many of the other sources inventoried, except for motor vehicles. Appendix D of FAA's *Air Quality Procedures For Civilian Airports & Air Force Bases* indicates that particulate data are available for only a few aircraft engines, and that, until further data becomes available, PM10 emission factors of engines for which no data are available should be assumed to be zero.[56] Therefore, no PM10 emissions from aircraft were quantified in this EIS.

No applicable FAA/EPA approved emission factors were available for PM2.5. For the remainder of this report, all PM2.5 emissions and concentrations were assumed to be the same as for PM10. That is, the conservative assumption was made that PM10 emissions and concentrations are made up entirely of PM2.5.

56 *Environmental Impacts: Policies and Procedures*, Federal Aviation Administration, Washington, DC, 8 June 2004.

Table 4.5-2 2003 Highest Measured Ambient Pollutant Concentrations

Pollutant	Averaging Time	Monitoring Station Location	2003 Measured Concentrations	NAAQS and PA AAQS
Carbon Monoxide	1-Hour	500 South Broad Street, Philadelphia, PA Site ID No. 421010047	2.2 ppm	35 ppm[1]
	8-Hour	500 South Broad Street, Philadelphia, PA Site ID No. 421010047	1.6 ppm	9 ppm[1]
Ozone	1-Hour	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	0.107 ppm	0.12 ppm[1]
	8-Hour	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	0.098 ppm	0.08 ppm[1]
Nitrogen Dioxide	Annual	500 South Broad Street, Philadelphia, PA Site ID No. 421010047	0.024 ppm	0.053 ppm[1]
Sulfur Dioxide	3-Hour	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	0.049 ppm	0.50 ppm [2]
	24-Hour	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	0.027 ppm	0.14 ppm[1]
	Annual	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	0.005 ppm	0.03 ppm[1]
Particulate Matter – 10 microns	24-Hour	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	63 $\mu g/m^3$	150 $\mu g/m^3$ [1]
	Annual	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	24 $\mu g/m^3$	50 $\mu g/m^3$ [1]
Particulate Matter – 2.5 microns	24-Hour	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	56 $\mu g/m^3$	65 $\mu g/m^3$ [1]
	Annual	5917 Elmwood Avenue, Philadelphia, PA Site ID No. 421010136	14.7 $\mu g/m^3$	15 $\mu g/m^3$ [1]
Lead	Quarterly Mean	Castor and Delaware Avenues, Philadelphia, PA Site ID No. 421010449	0.02 $\mu g/m^3$	1.5 $\mu g/m^3$ [1]

Source: *AirData Monitor Values Report for 2003 for Pennsylvania,* United States Environmental Protection Agency, Office of Air Quality Planning and Standards, (http://epa.gov/air/data/monvals.html), 20 April 2004.

Notes: There are no NAAQS for VOCs
1 Primary Standard
2 Secondary Standard

Table 4.5-3 Summary of Pollutant Emissions (2003) (tons per year)

Source Category	VOCs	Nitrogen Oxides	Carbon Monoxide	Sulfur Dioxide	PM10	PM2.5
Aircraft	141.1	1,679.4	1,611.8	143.6	ND[3]	ND
GSE/APU[1]	142.3	238.2	3,427.8	25.3	7.9	7.9
Motor Vehicles – Roads[2]	118.1	226.8	1,844.5	7.5	7.8	7.8
Motor Vehicles – Parking	11.8	6.5	148.5	0.1	0.1	0.1
Heating Plants	0.4	15.4	6.6	51.0	0.6	0.6
Fuel Storage and Handling	119.8	NA[4]	NA	NA	NA	NA
Training Fires	0.8	0.1	0.9	<0.01	3.1	3.1
Deicing	1.4	NA	NA	NA	NA	NA
Total	535.7	2,166.4	7,040.1	227.5	19.5	19.5

Source: KM Chng Environmental, Inc. 2004.
1 Ground Support Equipment (GSE) and aircraft Auxiliary Power Units (APU).
2 Includes motor vehicles on roadways and terminal curbsides.
3 ND means no data are available for particulate matter for aircraft.
4 NA means not applicable. Source component does not emit that pollutant.

2003 Estimated Concentrations from Airport-Related Sources

Pollutants emitted to the ambient air are transported by air movements and are diluted by mixing in the air. The resulting concentrations at various receptor locations in the Regional Study Area were estimated by dispersion modeling. For each pollutant and averaging period, the highest estimated concentrations were determined at each receptor location. The highest concentrations from among the receptors modeled for the 2003 Existing Conditions are presented in Table 4.5-4. These results can be compared with the Pennsylvania and NAAQS, which are also listed in Table 4.5-4. For 2003, the estimated concentrations from airport-related sources are below NAAQS, except for the annual PM2.5 concentration, where the ambient (background) conditions are above the NAAQS, before any Airport-related sources are taken into account.

Table 4.5-4 Maximum Estimated Ambient Pollutant Concentrations (2003)[1]

Pollutant and Averaging Time	NAAQS	2003 Existing Conditions
Nitrogen Dioxide, μg/m³		
Annual	100	80.3
Carbon Monoxide, ppm		
1-Hour	35	18.9
8-Hour	9	6.9
Sulfur Dioxide, μg/m³		
3-Hour	1,300	289.2
24-Hour	365	114.9
Annual	80	24.0
Particulate Matter[2] – 10 microns, μg/m³		
24-Hour	150	69.4
Annual	50	27.1
Particulate Matter[2] – 2.5 microns, μg/m³		
24-Hour	65	63.4
Annual	15	17.8[3]

Source: KM Chng Environmental, Inc. 2004.
1 Concentrations include contributions from all source categories during routine operations, as well as an appropriate background concentration.
2 Particulate matter concentrations do not include contributions from aircraft because accurate particulate matter emission factors for most aircraft engines are not available in Emission Dispersion Modeling System
3 The ambient conditions are above the NAAQS for 2003.
Note: There are no NAAQS for VOCs

2003 Estimated Concentrations from Roadway Intersections

The intersection analysis evaluated impacts at six intersections in the vicinity of the Airport. Ambient 1- hour and 8- hour CO concentrations were estimated for the 2003 Existing Condition in accordance with the EPA's 1992 Guidelines. Carbon monoxide is used as the indicator pollutant for motor vehicle-related air quality impacts because motor vehicles have relatively high CO emission rates, and the NAAQS for CO are quite stringent. With the combination of high emission rates and stringent standards, the CO standards would be the first NAAQS to be exceeded due to local traffic in the vicinity of intersections: in the event of adverse air quality conditions. If estimated concentrations of CO are less than the NAAQS, then it is very likely that concentrations of other pollutants would also be less than their respective standards.

The maximum estimated 1- hour and 8-hour CO concentrations in the vicinity of each intersection for the 2003 Existing Conditions are presented in Table 4.5-5. The highest 1-hour CO concentration predicted at any intersection was estimated to be 10.5 ppm. This concentration occurred at the intersection of Bartram Avenue and Island Avenue, at a sidewalk receptor 25 meters from the stop line along the Island Avenue northbound approach. The estimated maximum 8-hour CO concentration was 7.1 ppm and occurred at the same location. The estimated maximum 1- hour and 8-hour CO concentrations at the intersections analyzed for the 2003 Existing Conditions are below the NAAQS of 35 and 9 ppm, respectively. The detailed intersection modeling results are presented in Attachment E of DEIS Appendix A-2, *Air Quality Technical Report*.

Emissions of Hazardous Air Pollutants

Emission inventories of a number of substances commonly called "Hazardous Air Pollutants" were prepared for 2003 Existing Conditions. The substances evaluated here include only those aircraft and Airport-related pollutants in Table 1 of FAA's guidance document titled *Select Resource Materials and Annotated Bibliography on the Topic of Hazardous Air Pollutants Associated with Aircraft, Airports, and Aviation*.[57]

The term HAPs refers to pollutants that do not have established NAAQS, but present potential adverse human health risks from short-term or long-term exposures. Although there are no Federal or state reporting requirements applicable to airports for these pollutants, the analysis presented here is consistent with agency guidelines for quantifying emissions of HAPs.

Table 4.5-6 presents a summary of the emissions of the FAA-identified HAPs for the 2003 Existing Conditions and, for comparison purposes, emissions of HAP compounds for Delaware and Philadelphia Counties (and the two-County sum) for 1996 (the most recent data available) from the National Air Toxics Assessment (NATA) study.[58] The analysis used these two counties because of the location of PHL on the boundary between the counties.

Emissions of a number of pollutants are described in detail in Attachment I of DEIS Appendix A-2, *Air Quality Technical Report*. In general, airport-related

57 *Technical Directive Memorandum D01-010*, Select Resource Materials and Annotated Bibliography on the Topic of Hazardous Air Pollutants Associated with Aircraft, Airports, and Aviation, Federal Aviation Administration, Office of Environment and Energy. Washington, DC, 1 July 2003.

58 *National Air Toxics Assessment Program: The Integrated Urban Strategy Report to Congress, Report No. EPA-453/R-99-007*, United States Environmental Protection Agency, July 2000.

Table 4.5-5 Maximum Estimated Carbon Monoxide Concentrations (ppm)[1] at Intersections (2003)

Intersection Location	2003 Existing (ppm)[2]		NAAQS (ppm)	
	1-Hr[3]	8-Hr[3]	1-Hr[3]	8-Hr[3]
SR 291 and Island Avenue	7.3	4.8	35	9
Bartram Avenue and Island Avenue	10.5	7.1	35	9
Bartram Avenue and 84th Street	8.4	5.6	35	9
Bartram Avenue and Tinicum Boulevard	7.0	4.6	35	9
SR 291 and International Plaza Drive	8.3	5.5	35	9
SR 291 and Bartram Avenue/Scott Way	8.3	5.5	35	9

Source: KM Chng Environmental, Inc. 2004.
1 Concentrations are in parts per million (ppm).
2 Background concentrations of 5.0 ppm and 3.2 ppm for the 1-hour and 8-hour averaging periods, respectively, are included in the results.
3 The National Ambient Air Quality Standards for Carbon Monoxide are 35 ppm for the 1-hour period and 9 ppm for the 8-hour period.

HAPs emissions are a very small portion of the HAPs emitted in the region.

4.5.3 Environmental Consequences - Direct Impacts

Emission inventories and ambient concentrations estimates were prepared for the No-Action Alternative, Alternative 1, and Alternative 2 for the analysis years 2007 (the Project opening year) and 2015 (the Project design year). A General Conformity Assessment also was conducted and is discussed in Section 4.5.4.

No-Action Alternative

This section documents the emissions inventory, VOC emissions, NOx emissions, ambient concentrations, roadway intersection CO concentrations, and HAPs emissions predicted for the No-Action Alternative.

Emissions Inventory

Table 4.5-7 shows the predicted emissions inventory for PHL for the No-Action Alternative. Emissions of all modeled compounds are anticipated to increase in both the 2007 and 2015 scenarios, compared to the 2003 Existing Conditions.

VOC Emissions

VOC emissions associated with the No-Action Alternative are shown in Table 4.5-8 and emissions due to aircraft only are shown graphically in Figure 4.5-2. In 2007, the No-Action Alternative is anticipated to result in a total emission of 848.5 tons of VOCs, with aircraft contributing the majority (438.7 tons) of these emissions. In 2015, emissions of VOCs are predicted to increase to 1,209.1 tons, with aircraft contributing the majority (796.2 tons) of these.

Table 4.5-6 Summary of HAPs Emissions (2003) (tons per year)[1]

Pollutant	2003 Existing	1996 NATA Emissions for Delaware County)	1996 NATA Emissions for Philadelphia County	Two-County Total 1996 NATA Emissions
Formaldehyde	30.1	285	891	1,176
Acetaldehyde	9.3	198	328	436
Benzene	12.8	434	958	1,392
Toluene	18.8	NA[2]	NA	NA
Acrolein	3.9	23.7	83.0	106.7
1,3-Butadiene	4.5	37.4	114	151.4
Xylene	14.3	NA	NA	NA
Lead	0.01	0.8	15.6	16.4
Naphthalene	1.1	NA	NA	NA
Propionaldehyde	2.1	NA	NA	NA
Ethylbenzene	4.3	NA	NA	NA
Styrene	0.9	NA	NA	NA
n-Hexane	3.6	NA	NA	NA
2,2,4-Trimethylpentane	7.3	NA	NA	NA
7-PAH[3]	<0.01	1.5	3.94	5.44
16-PAH (POM)[4]	1.2	39.7	93.7	133.4

Source: KM Chng Environmental, Inc. 2004.

1 *1996 National Air Toxics Assessment, Air Toxic Emissions Inventories for Delaware and Philadelphia Counties in Pennsylvania*, United States Environmental Protection Agency.

2 NA means No Data. There are no emissions data available in NATA for this compound.

3 7-PAH designates a group of seven substances identified by EPA as probable human carcinogens, i.e., Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, and Ideno(1,2,3-cd)pyrene.

4 16-PAH designates a group of 16 substances known as polycyclic organic matter (POM), which includes the 7-PAH plus Acenaphthene, Acenaphthylene, Anthracene, Benzo(ghi)perylene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene.

Table 4.5-7 Summary of Pollutant Emissions by Alternative (tons per year)

Pollutant	2003 Existing	2007 No Action	2007 Alt. 1	2007 Alt. 2	2015 No Action	2015 Alt. 1	2015 Alt. 2
Volatile Organic Compounds	535.7	848.5	812.2	837.8	1,209.1	1,100.0	1,044.4
Nitrogen Oxides	2,166.4	2,956.8	2,890.4	2,937.1	3,957.5	3,770.6	3,675.4
Carbon Monoxide	7,040.1	10,348.3	9,950.3	10,228.3	14,200.2	13,086.1	12,519.1
Sulfur Dioxide	227.5	367.5	351.6	362.7	531.9	487.3	464.7
Particulate Matter – 10 Microns	19.5	19.0	19.0	19.0	29.2	29.2	29.2
Particulate Matter – 2.5 Microns	19.5	19.0	19.0	19.0	29.2	29.2	29.2

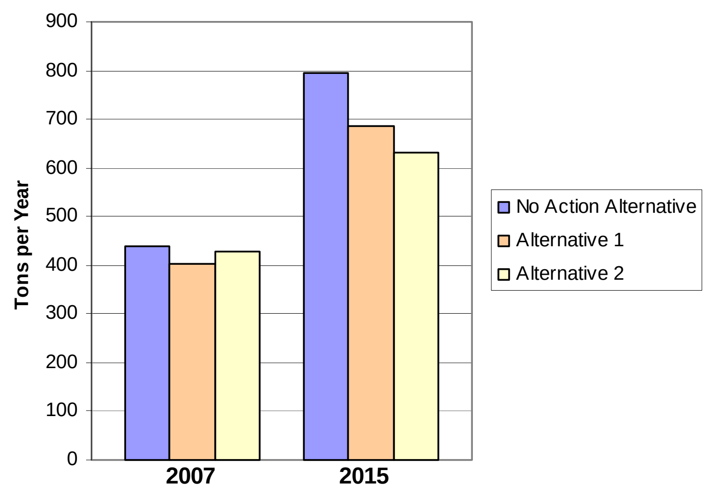
Source: KM Chng Environmental, Inc. 2004.

Table 4.5-8 Emissions of Volatile Organic Compounds by Source Category and Alternative

Source Category	2003 Existing (tpy)[1]	2007 No-Action (tpy)	2007 Alt. 1 (tpy)	2007 Alt. 2 (tpy)	2015 No-Action (tpy)	2015 Alt. 1 (tpy)	2015 Alt. 2 (tpy)
Aircraft	141.1	438.7	402.1	427.7	796.2	687.0	631.4
GSE/APU[2]	142.3	168.0	168.0	168.0	198.6	198.6	198.6
Motor Vehicles – Roads[3]	118.1	89.0	89.5	89.5	43.0	43.2	43.2
Motor Vehicles – Parking	11.8	8.9	8.7	8.7	3.7	3.6	3.6
Heating Plants	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Fuel Storage and Handling	119.8	141.3	141.3	141.3	165.0	165.0	165.0
Training Fires	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Deicing	1.4	1.4	1.5	1.5	1.4	1.5	1.5
Total	535.7	848.5	812.2	837.8	1,209.1	1,100.0	1,044.4

Source: KM Chng Environmental Inc. 2004.
1 Emissions are given in tons per year (tpy).
2 Ground Support Equipment (GSE) and aircraft Auxiliary Power Units (APU).
3 Includes motor vehicles on roadways and terminal curbsides.

Figure 4.5-2 Emissions of Volatile Organic Compounds from Aircraft Only by Alternative (2007 and 2015)



Source: KM Chng Environmental, Inc. 2004.

NOx Emissions

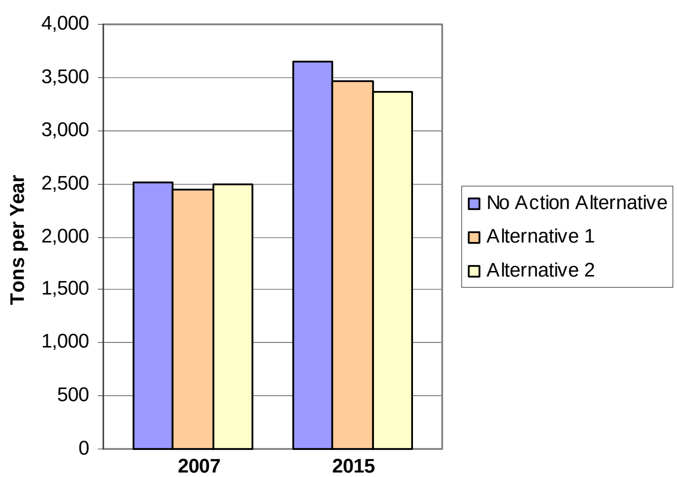
NOx emissions associated with the No-Action Alternative are shown in Table 4.5-9, and aircraft emissions only are shown in Figure 4.5-3. In 2007, the No-Action Alternative is anticipated to result in a total emission of 2,956.8 tons of NOx, with aircraft contributing the majority (2,516.9 tons) of these emissions. In 2015, emissions of NOx are predicted to increase to 3,957.5 tons, with aircraft contributing the majority (3,644.4 tons) of these. The NOx emissions from the No-Action Alternative in 2015 are modeled to be about 3,958 tons per year which represents an increase of about 1,001 tons per year (or 34 percent) from 2007 No-Action Alternative. This increase reflects the growth in aircraft operations and motor vehicle traffic. Emissions of NOx from motor vehicles decline significantly from 2007 to 2015 despite growth in traffic volumes. As with VOC emissions, the increased traffic

Table 4.5-9 Emissions of Nitrogen Oxides by Source Category and Alternative

Source Category	2003 Existing (tpy)[1]	2007 No-Action (tpy)	2007 Alt. 1 (tpy)	2007 Alt. 2 (tpy)	2015 No-Action (tpy)	2015 Alt. 1 (tpy)	2015 Alt. 2 (tpy)
Aircraft	1,679.4	2,516.9	2,450.0	2,496.7	3,644.4	3,457.3	3,362.1
GSE/APU[2]	238.2	244.5	244.5	244.5	218.8	218.8	218.8
Motor Vehicles – Roads[3]	226.8	175.1	175.7	175.7	76.4	76.7	76.7
Motor Vehicles - Parking	6.5	4.8	4.7	4.7	2.4	2.3	2.3
Heating Plants	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Fuel Storage and Handling	NA	NA	NA	NA	NA	NA	NA
Training Fires	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Deicing	NA	NA	NA	NA	NA	NA	NA
Total	2,166.4	2,956.8	2,890.4	2,937.1	3,957.5	3,770.6	3,675.4

Source: KM Chng Environmental Inc. 2004.
1 Emissions are given in tons per year (tpy).
2 Ground Support Equipment (GSE) and aircraft Auxiliary Power Units (APU).
3 Includes motor vehicles on roadways and terminal curbsides.
NA means not applicable. There are no emissions of this pollutant from this source category.

Figure 4.5-3 Emissions of Nitrogen Oxides from Aircraft Only by Alternative (2007 and 2015)



volumes are offset by decreases in the NOx emission rates from motor vehicles due to the Federal Motor Vehicle Emissions Control Program (FMVECP). All other emission sources remain constant between 2007 and 2015.

Ambient Concentrations

Ambient pollutant concentrations were predicted at specific locations of interest (receptors) throughout the Local and Regional Study Areas, using dispersion modeling techniques. Using peak-hour airside and landside activity data, maximum and second maximum concentrations of CO, NO_2, SO_2, PM10, and PM2.5 (where data are available) are presented in Table 4.5-10 and were modeled at receptor locations in the airport environs for the same analysis years and alternatives described above for the emission inventory analysis. The dispersion modeling results for this analysis are summarized below:

- All of the modeled maximum concentrations for NO_2, CO, SO_2, and PM10 are below the NAAQS.
- Modeled maximum 24-hour concentrations of PM2.5 in 2007 are below the NAAQS, but would exceed NAAQS in 2015.
- Modeled annual PM2.5 concentrations with the No-Action Alternative are above the NAAQS because of a high ambient background level, which itself exceeds the standard for the Existing Conditions in 2003 and in 2007 and 2015.

Table 4.5-10 Summary of Maximum Modeled Ambient Pollutant Concentrations[1] by Alternative

Pollutant and Averaging Time	NAAQS and PA AAQS	2003 Existing	2007 No-Action	2007 Alt. 1	2007 Alt. 2	2015 No-Action	2015 Alt. 1	2015 Alt. 2
Nitrogen Dioxide, $\mu g/m^3$								
Annual	100	80.3	82.5	82.2	81.4	80.8	78.8	78.2
Carbon Monoxide, ppm								
1-Hour	35	18.9	22.0	21.3	20.9	19.6	18.4	17.9
8-Hour	9	6.9	8.6	8.6	8.5	8.2	8.0	7.9
Sulfur Dioxide, $\mu g/m^3$								
3-Hour	1,300	289.2	334.8	322.7	315.4	337.3	308.4	300.3
24-Hour	365	114.9	122.2	121.5	119.8	126.4	123.6	122.9
Annual	80	24.0	25.1	25.1	27.0	25.9	25.0	24.7
Particulate Matter[2] – 10 microns, $\mu g/m^3$								
24-Hour	150	69.4	68.1	68.1	68.1	71.7	71.7	71.7
Annual	50	27.1	27.0	27.0	27.0	27.8	27.8	27.8
Particulate Matter[2] – 2.5 microns, $\mu g/m^3$								
24-Hour	65	63.4	62.1	62.1	62.1	65.7	65.7	65.7
Annual	15	17.8	17.7	17.7	17.7	18.5	18.5	18.5

Source: KM Chng Environmental Inc. 2004.
1 Concentrations include contributions from all source categories during routine operations, as well as an appropriate background concentration.
2 Particulate matter concentrations do not include contributions from aircraft because recent, accurate Particulate Matter emission factors for most aircraft engines are not available in EDMS.
Note: There are no NAAQS for VOCs

CO Concentrations at Intersections
The maximum 1- and 8-hour CO concentrations were estimated at the six roadway intersections[59] in the Airport Roadway Study Area for the 2007 and 2015 Conditions. Approach volumes, turning movements, travel speeds, and signal cycle times for the peak hour were developed for the modeling analysis. A regional background concentration was added to each of the predicted CO concentrations for comparison to the NAAQS, as shown in Table 4.5-11.

The estimated maximum 1- and 8-hour CO concentrations at the intersections analyzed for the 2007 No-Action Alternative are below the NAAQS of 35 and 9 ppm, respectively. The estimated maximum 1- and 8-hour CO concentrations at the intersections analyzed for the 2015 No-Action Alternative are below the NAAQS for 1-hour and 8-hour, respectively. None of these estimated maximum 1- and 8-hour CO concentrations exceed the 1-hour and 8-hour NAAQS.

Emissions of Hazardous Air Pollutants
As shown in Table 4.5-12, emissions of HAPs for each of the alternatives analyzed show that in the No-Action Alternative, emissions are anticipated to increase over time due to increased operations and aircraft delay times at the Airport except for 2,2,4-Trimethylpentane, which is primarily emitted by motor vehicles as a contributor to total VOCs, since motor vehicle-based VOC emissions are estimated to decrease in the future.

Alternative 1 - Preferred Alternative

This section documents the emissions inventory, VOC emissions, NOx emissions, ambient concentrations, roadway intersection CO concentrations, and HAPs emissions predicted for Alternative 1.

Emissions Inventory
Table 4.5-7 shows the predicted emissions inventory for PHL for Alternative 1. Emissions of all modeled compounds are anticipated to be less than the emissions from the No-Action Alternative in both the 2007 and 2015 scenarios.

VOC Emissions
VOC emissions in 2007 are estimated to be approximately 812 tons per year, a decrease of 36 tons per year (or four percent) from the 2007 No-Action Alternative. Table 4.5-8 shows the relative contribution of VOCs, by source, for 2007 and 2015. This decrease reflects reduced aircraft idling delays due to redistribution of aircraft on the runways and taxiways. Emissions of VOC from motor vehicles on roads increase slightly between the 2007 No-Action Alternative and Alternative 1 due to the closure of SR 291 resulting in the rerouting of traffic onto Bartram Avenue. This causes a slight increase in vehicle-miles-traveled and, thus, a small increase in emissions. For motor vehicles located in parking facilities, however, there is a slight decrease in VOC emissions due to the reduction in size of the economy lot with the extension of Runway 17. An estimated rise in deicing activity due to the extension of Runway 17-35 and additions to taxiways results in slightly higher VOC emissions from this source. Emissions from all other sources remain constant between the No-Action Alternative and Alternative 1 in 2007.

In 2015, VOC emissions are estimated to be approximately 1,100 tons per year, a decrease of 109 tons per year (or 10 percent) from the 2015 No-Action Alternative. This decrease demonstrates the effects of reduced aircraft idling delays due to redistribution of aircraft on the runways and

59 The six signalized intersections were identified in accordance with EPA guidance as described in Section 2.2.4 of Appendix A-2, *Air Quality*.

Table 4.5-11 Summary of Maximum Modeled Carbon Monoxide Concentrations (ppm) at Intersections

Intersection Location	2003 Existing[1]		2007 No-Action		2007 Alt. 1		2007 Alt. 2		2015 No-Action		2015 Alt. 1		2015 Alt. 2	
	1-Hr[2]	8-Hr[2]	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr
SR 291 and Island Avenue	7.3	4.8	6.4	4.2	6.6	4.3	6.6	4.3	6.0	3.9	6.2	4.0	6.2	4.0
Bartram Avenue and Island Avenue	10.5	7.1	9.0	6.0	9.1	6.1	9.1	6.1	7.8	5.2	7.9	5.2	7.9	5.2
Bartram Avenue and 84th Street	8.4	5.6	7.6	5.0	7.8	5.2	7.8	5.2	6.8	4.5	7.1	4.7	7.1	4.7
Bartram Avenue and Tinicum Boulevard	7.0	4.6	6.5	4.3	7.0	4.6	7.0	4.6	6.1	4.0	6.3	4.1	6.3	4.1
SR 291 and International Plaza Drive	8.3	5.5	6.9	4.5	6.9	4.5	6.9	4.5	6.3	4.1	6.3	4.1	6.3	4.1
SR 291 and Bartram Avenue/Scott Way	8.3	5.5	7.0	4.6	7.1	4.7	7.1	4.7	6.4	4.2	6.4	4.2	6.4	4.2
NAAQS	35	9	35	9	35	9	35	9	35	9	35	9	35	9

Source: KM Chng Environmental, Inc. 2004.
1 Background concentrations of 5.0 ppm and 3.2 ppm for the 1-hour and 8-hour averaging periods, respectively, are included in the results.
2 The National Ambient Air Quality Standards for Carbon Monoxide are 35 ppm for the 1-hour period and 9 ppm for the 8-hour period.

Table 4.5-12 Summary of HAPs Emissions by Alternative (tons per year)

Pollutant	2007 No-Action	2007 Alt. 1	2007 Alt. 2	2015 No-Action	2015 Alt. 1	2015 Alt. 2
Formaldehyde	80.6	74.4	78.8	141.1	122.4	112.9
Acetaldehyde	24.9	22.9	24.3	43.4	37.6	34.7
Benzene	20.2	19.4	20.0	28.7	26.3	25.1
Toluene	21.4	21.2	21.3	23.2	22.5	22.1
Acrolein	11.4	10.5	11.1	20.5	17.7	16.3
1,3-Butadiene	10.5	9.7	10.2	17.7	15.5	14.4
Xylene	17.0	16.8	17.0	19.4	18.8	18.5
Lead	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Naphthalene	2.9	2.7	2.9	5.1	4.4	4.1
Propionaldehyde	5.3	4.9	5.2	9.2	8.0	7.4
Ethylbenzene	5.2	5.2	5.2	6.1	5.9	5.8
Styrene	2.2	2.0	2.2	3.8	3.3	3.0
n-Hexane	3.9	3.9	3.9	4.0	4.0	4.0
2,2,4-Trimethylpentane	7.5	7.5	7.5	7.3	7.2	7.2
7-PAH[1]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16-PAH (POM)[2]	3.0	2.8	2.9	5.1	4.4	4.1

Source: KM Chng Environmental, Inc. 2004.
1 7-PAH designates a group of seven substances identified by EPA as probable human carcinogens, i.e., Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, and Ideno(1,2,3-cd)pyrene.
2 16-PAH designates a group of 16 substances known as polycyclic organic matter (POM), which includes the 7-PAH plus Acenaphthene, Acenaphthylene, Anthracene, Benzo(ghi)perylene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene.

taxiways. Emissions of VOC from motor vehicles on roads increase slightly between the 2015 No-Action Alternative and Alternative 1 due to the closure of SR 291 and the rerouting of traffic onto Bartram Avenue while emissions from motor vehicles located in parking facilities decrease due to the reduction in size of the economy lot. VOC emissions due to deicing activity increase slightly due to the extension of Runway 17-35 and additions to taxiways. All other sources remain constant between the No-Action and Alternative 1 in 2015.

NOx Emissions

NOx emissions for Alternative 1 in 2007 are estimated to be approximately 2,890 tons per year, a decrease of 67 tons per year (or two percent) from the 2007 No-Action Alternative. Table 4.5-9 shows that NOx emissions for both 2007 and 2015 are lower than the No-Action Alternative. As with VOC emissions, this decrease reflects the reduction in aircraft idling delays due to redistribution of aircraft on the runways and taxiways. (Note that the air quality analysis of aircraft emissions is based on taxiway and idling delays only, which are one component of overall delay.) NOx emissions, from motor vehicle sources on roads, increase slightly due to an increase in VMT as a result of the closure of SR 291 and the redirection of traffic onto Bartram Avenue. However, NOx emissions from motor vehicles in parking facilities decreases due the extension of Runway 17, which results in reduction of the size of the economy lot. All other sources remain constant.

In 2015, NOx emissions are estimated to be approximately 3,771 tons per year. With Alternative 1 in 2015, NOx emissions are estimated to be about 187 tons per year (or five percent) lower than the 2015 No-Action NOx emissions. As with VOC emissions, this decrease demonstrates the effects of reduced aircraft idling delays due to redistribution of aircraft on the runways and taxiways. Emissions of NOx from motor vehicles on roads increase slightly between the 2015 No-Action Alternative and Alternative 1 due to the closure of SR 291 while motor vehicles in parking facilities decrease due to the smaller economy lot. For all other emission sources, the NOx emissions remain constant.

Ambient Concentrations

Ambient pollutant concentrations were estimated at receptor locations in the airport environs for the same analysis years and alternatives described above for the emission inventory analysis. The dispersion modeling results for this analysis for Alternative 1 are summarized below:

- All of the estimated maximum concentrations for NO_2, CO, SO_2, and PM10 are below the NAAQS.
- Estimated maximum 24-hour concentrations of PM2.5 in 2007 are below the NAAQS.
- Because of existing high ambient background level, estimated annual PM2.5 concentrations with the No-Action Alternative and, therefore, Alternative 1 are above the NAAQS. Therefore, because of existing conditions, all alternatives in 2007 and 2015 will exceed the NAAQS.
- As with the annual concentrations, estimated maximum 24-hour concentrations of PM2.5 in the 2015 No-Action Alternative and, hence, 2015 Alternative 1 are above the NAAQS.
- Alternative 1 in both 2007 and 2015, shows decreases in NO_2, CO, and SO_2 compared to the respective No-Action Alternatives because of shifting aircraft operations to Runway 17-35 and delay reduction.

CO Concentrations at Intersections
The maximum 1- and 8-hour CO concentrations were estimated at the six roadway intersections for the 2007 and 2015 Conditions. Approach volumes, turning movements, travel speeds, and signal cycle times for the peak hour were developed for the modeling analysis. A regional background concentration was added to each of the predicted CO concentrations for comparison to the NAAQS, as shown in Table 4.5-11. The findings demonstrate that:

- The estimated maximum 1-hour CO concentrations at the intersections analyzed are well below the 1-hour CO NAAQS of 35 ppm.
- All the estimated maximum 8-hour CO concentrations at the intersections analyzed are below the 8-hour CO NAAQS of nine ppm.

Emissions of Hazardous Air Pollutants (HAPs)
As shown in Table 4.5-12, emissions of HAPs are anticipated to increase over time due to increased operations and aircraft delay times at the Airport. In 2007 and 2015, Alternative 1 would have fewer HAPs emissions than the No-Action Alternative due to the decreases in overall aircraft delay. Alternative 1 would have slightly lower HAPs emissions than Alternative 2 in 2007, but higher emissions in 2015. Formaldehyde (the largest component of HAPs) emissions from Alternative 1 are predicted to be 74.4 tons in 2007 (6.2 tons less than the No-Action Alternative) and 122.4 tons in 2015 (18.7 tons less than the No-Action Alternative).

Alternative 2

This section documents the emissions inventory, VOC emissions, NOx emissions, ambient concentrations, roadway intersection CO concentrations, and HAPs emissions predicted for Alternative 2.

Emissions Inventory
Table 4.5-7 shows the predicted emissions inventory for PHL for Alternative 2. Emissions of all modeled compounds are anticipated to be less than for the No-Action Alternative in both the 2007 and 2015 scenarios.

VOC Emissions
VOC emissions in 2007 are estimated to be approximately 838 tons per year, a decrease of about 11 tons per year (or about one percent) from the 2007 No-Action Alternative. This decrease reflects lower aircraft idling delays due to redistribution of aircraft on the runways and taxiways. Emissions trends for motor vehicle sources and all other sources discussed above for Alternative 1 are the same for Alternative 2. Compared to Alternative 1, Alternative 2 VOC emissions would be almost 26 tons per year higher. This is due exclusively to the aircraft taxiing time for Alternative 2 being over three minutes higher per aircraft than for Alternative 1.

In 2015, VOC emissions are estimated to be approximately 1,044 tons per year, a decrease of about 165 tons per year (or about 14 percent) from the 2015 No-Action Alternative. This decrease reflects reduced aircraft idling delays due to redistribution of aircraft on the runways and taxiways. Compared to Alternative 1, VOC emissions in 2015 due to Alternative 2 would be almost 56 tons per year lower. This is due to the aircraft taxiing time for Alternative 2 being over six minutes per aircraft less than the Alternative 1 aircraft taxiing time.

NOx Emissions
NOx emissions in 2007 are estimated to be approximately 2,937 tons per year, a decrease of almost 20 tons per year (or less than one percent) from the 2007 No-Action Alternative. As with VOC

emissions, this decrease reflects the reduction in aircraft idling delays due to redistribution of aircraft on the runways and taxiways. Also, emissions trends for motor vehicle sources and all other sources discussed above for 2007 Alternative 1 apply to Alternative 2. Compared to Alternative 1, 2007 Alternative 2 NOx emissions are higher by about 47 tons per year. This is again due to the aircraft taxiing time for Alternative 2 being over three minutes higher than for Alternative 1.

NOx emissions for Alternative 2 in 2015 are estimated to be approximately 3,675 tons per year, a decrease of 282 tons per year (or seven percent) from the 2015 No-Action Alternative. This decrease reflects the reduction in aircraft idling delays due to redistribution of aircraft on the runways and taxiways. (Note that the air quality analysis of aircraft emissions is based on taxiway and idling delays only, which are one component of overall delay.) Also, emissions trends for motor vehicle sources and all other sources discussed above for 2015 Alternative 1 are the same for Alternative 2. Compared to Alternative 1, NOx emissions for the 2015 Alternative 2 are lower by about 95 tons per year. This is again due exclusively to the aircraft taxiing time for Alternative 2 being over six minutes less than the Alternative 1 aircraft taxiing time.

Ambient Concentrations

Ambient pollutant concentrations were estimated at receptor locations in the airport environs for the same analysis years described above for the emission inventory analysis. The dispersion modeling results for this analysis for Alternative 2 are summarized below:

- All of the estimated maximum concentrations for NO_2, CO, SO_2, and PM10 are below the NAAQS.
- Estimated maximum 24-hour concentrations of PM2.5 in 2007 are below the NAAQS.
- Existing high ambient background levels are above the NAAQS. Therefore the estimated annual PM2.5 concentrations exceed the standard for all alternatives in 2007 and 2015.
- As with the annual concentrations, estimated maximum 24-hour concentrations of PM2.5 in 2015 are above the NAAQS.
- Alternative 2, in both 2007 and 2015, shows decreases in NO_2, CO, and SO_2 compared to the respective No-Action Alternative because of shifting aircraft operations to Runway 17-35 and delay reduction.

CO Concentrations at Intersections

The maximum 1- and 8-hour CO concentrations were estimated at the six roadway intersections for the 2007 and 2015 Conditions. Approach volumes, turning movements, travel speeds, and signal cycle times for the peak hour were developed for the modeling analysis. A regional background concentration was added to each of the predicted CO concentrations for comparison to the NAAQS, as shown in Table 4.5-11. The findings demonstrate that:

- The estimated maximum 1-hour CO concentrations at the intersections analyzed for Alternative 2 are well below the 1-hour CO NAAQS of 35 ppm.
- All the estimated maximum 8-hour CO concentrations at the intersections analyzed are below the 8-hour CO NAAQS of nine ppm.

Hazardous Air Pollutant Emissions

As shown in Table 4.5-12, emissions of HAPs are anticipated to increase over time due to increased operations and aircraft delay times at the Airport. In 2007 and 2015, Alternative 2 would have fewer

HAPs emissions than the No-Action Alternative due to the decreases on overall aircraft delay. Alternative 2 would have slightly higher HAPs emissions than Alternative 1 in 2007, but lower emissions in 2015. Formaldehyde (the largest component of HAPs) emissions from Alternative 2 are predicted to be 78.8 tons in 2007, (1.8 tons less than the No-Action Alternative) and 112.9 tons in 2015 (28.2 tons less than the No-Action Alternative).

Indirect and Secondary Impacts

Indirect impacts on air quality that could be caused by either build alternative of the proposed Project could include potential increases in utility plant emissions from increased lighting requirements for the proposed runway extension. These indirect impacts will be negligible since additional energy requirements are minimal, as documented in Section 4.16.4. Short-term construction impacts are evaluated in Section 4.7.2.

Secondary impacts from the proposed Project could include reduced ozone concentrations downwind of the Airport from decreased ozone precursor pollutant (VOC and NOx) emissions and improved aesthetics due to decreased pollutant emissions. Changes in ozone concentrations downwind of the Airport may occur, but will likely be indistinguishable from existing concentrations since the potential changes in Airport-related precursor emissions, compared to emissions in the entire nonattainment area, are negligible. There is no induced growth from secondary development anticipated as a result of the proposed Project.

4.5.4 General Conformity Assessment

The proposed Project was evaluated under the General Conformity Rule. Compliance with the General Conformity Rule requires that direct and indirect emissions, as well as emissions due to construction activities, of the ozone precursors VOCs and NOx are addressed. Under the General Conformity Rule, a project does not require a conformity determination if the increase in emissions due to a proposed Federal action is less than the *de minimis* thresholds. In a severe ozone 1-hour nonattainment area (such as the Philadelphia region), the *de minimis* thresholds for ozone precursor pollutants are 25 tons per year of VOC and 25 tons per year of NOx. In addition to the *de minimis* test, a conformity determination is also required if the increase in emissions due to the project would make the project “regionally significant,” i.e., equal to or exceeding ten percent of the total emission inventory for the entire nonattainment area. Finally, the project must not create or exacerbate any violation of the NAAQS.

The air quality analyses were conducted for 1) the year of greatest emissions (2015) and 2) the SIP attainment year (2005). No other years have SIP emissions bugets. Because no changes to operations are anticipated to occur in 2005, only construction emissions were calculated for that analysis year.

Operational Emissions

Table 4.5-13 lists the changes in VOC and NOx emissions due to routine operations at the Airport once the proposed Project is completed (both direct and indirect emissions). This table shows that, compared to the No-Action Alternative, VOC emissions associated with Alternative 1 of the proposed Project are estimated to decrease by over 36 tons per year in 2007, and over 109 tons per year in 2015. Compared to the No-Action Alternative, VOC emissions associated with Alternative 2 of the proposed Project are estimated to decrease by almost 11 tons per year in 2007, and by almost 165 tons per year in 2015. The table also shows that, compared to the No-Action Alternative, NOx emissions associated with Alternative 1 are estimated to decrease by over 66 tons per year in 2007, and by nearly 187 tons per year in 2015. Compared to the No-Action Alternative, NOx emissions associated with Alternative 2 are estimated to decrease by almost 20 tons per year in 2007, and by 282 tons per year in 2015.

Conformity Assessment

As shown in Table 4.5-13 the changes in VOC and NOx emissions in both 2007 and 2015 due to routine operations of the proposed Project (regardless of which Alternative is evaluated) are less than the General Conformity *de minimis* thresholds of 25 tons per year of VOC or NOx. When compared to the No-Action Alternative, the changes in emissions show decreases in both VOC and NOx emissions for both Build Alternatives, an improvement in conditions when compared to the status quo.

Compliance with the General Conformity Rule also requires that VOC and NOx emissions due to construction activities are addressed. As shown in Table 4.5-13 and described in Section 4.17.2, for Alternative 1, the VOC emissions from construction activities (including asphalt paving emissions) are 1.29 tons per year in 2005 and 1.76 tons per year in 2006 (see Table 4.5-13). The 1.76 tons per year is less than the General Conformity *de minimis* threshold of 25 tons per year of VOC. For Alternative 2, the VOC emissions from construction activities (including asphalt paving emissions) are 1.49 tons per year in 2005 and 2.00 tons per year in 2006 (Table 4.5-13). The maximum of 2.00 tons per year of VOC (for Alternative 2 in 2006) is less than the *de minimis* level of 25 tons per year of VOC.

NOx emissions from Alternative 1 due to construction activities are 13.35 tons per year in 2005 and 11.95 tons per year in 2006 (see Table 4.5-13). The 13.35 tons per year is less than the General Conformity *de minimis* threshold of 25 tons per year of NOx. For Alternative 2, the NOx emissions from construction activities (including asphalt paving emissions) are 15.39 tons per year in 2005 and 13.28 tons per year in 2006 . The maximum of 15.39 tons per year (for Alternative 2 in 2005) is less than the *de minimis* level of 25 tons per year of NOx.

The changes in VOC and NOx emissions due to routine operations and construction activities are also far below the threshold at which a project is considered to be regionally significant for purposes of demonstrating conformity. According to the most recent data from PA DEP,[60] the VOC emissions inventory for the Pennsylvania portion of the Philadelphia Ozone Nonattainment Area[61] for 1999 (the most recent year with an approved inventory) is 172,698 tons per year; the 1999 NOx emission inventory is 124,311 tons per year. As stated above, VOC and NOx emissions from routine operations would decrease compared to the No-Action Alternative, regardless of which Alternative is considered. Thus, VOC and NOx emissions from routine operations of the proposed Project would be less than 10 percent of the Nonattainment Area inventories (Table 4.5-13). As also stated above, construction activity for the proposed Project would generate a maximum of 2.00 tons per year of VOC during 2006, which is much less than one percent of the 1999 VOC emissions inventory for the entire Pennsylvania portion of the Nonattainment Area; and 15.39 tons per year of NOx during 2005, which is much less than one percent of the 1999 NOx emissions inventory for the entire Pennsylvania portion of the Nonattainment Area. Thus, since the Project's emissions for both VOC and NOx are less than ten percent of the total emission inventory for the entire nonattainment area, this Project is not "regionally significant."

60 Emails from C. Trostle, Pennsylvania Department of Environmental Protection, Bureau of Air Quality to A. Goldman, KM Chng Environmental Inc. 25-26 May 2004.

61 Total emission budgets were not received from New Jersey, Delaware, and Maryland to track the emissions from the entire four-state Nonattainment Areas. The project emissions are much less than 10 percent of the PA portion; therefore, would be an even smaller percentage of the entire Attainment Area's emissions budgets.

Table 4.5-13 Summary of Changes in Project-Related VOC and NOx Emissions by Project Alternative

	Operational Emissions					
	2007 Proposed Project Minus No-Action (tpy)[1]		2015 Proposed Project Minus No-Action (tpy)		General Conformity *de minimis* Threshold (tpy)	Regionally Significant Emissions Levels (tpy)
	Alternative 1	Alternative 2	Alternative 1	Alternative 2		
Volatile Organic Compounds	-36.3	-10.7	-109.1	-164.7	+25	17,270
Nitrogen Oxides	-66.4	-19.7	-186.9	-282.1	+25	12,431

	Construction Emissions				
	2005 Construction-Related Emissions (tpy)		2006 Construction-Related Emissions (tpy)		General Conformity *de minimis* Threshold (tpy)
	Alternative 1	Alternative 2	Alternative 1	Alternative 2	
Volatile Organic Compounds	1.29	1.49	1.76	2.00	+25
Nitrogen Oxides	13.35	15.39	11.95	13.28	+25

Source: KM Chng Environmental Inc. 2004.
1 Emissions are given in tons per year (tpy). A negative number indicates a decrease in emissions.

The emission inventory analysis demonstrates that the proposed Project not will cause VOC and NOx emissions to increase due to Project operation, and will not cause construction emissions of VOC or NOx to exceed 25 tons per year for any year. Thus, the Project-related VOC and NOx emissions will be less than the *de minimis* thresholds and a General Conformity determination is not required.

General Conformity Summary

The assessments presented above demonstrate that the net annual changes in emissions of VOC or NOx due to either alternative when compared to the No-Action Alternative will:

- Not result in an increase in emissions from operations above the *de minimis* threshold of 25 tons per year of VOC or NOx, or result in the proposed Project being regionally significant;
- Not cause or contribute to any new violation of any of the NAAQS in the Airport Project Area;
- Not increase the frequency or severity of any existing violation of any NAAQS in the Project area; and
- Not delay timely attainment of NAAQS or any required interim emission reductions in the Project area.

Therefore, no further evaluation of General Conformity is required.

4.5.5 Mitigation

The previous sections demonstrate that there would be no significant adverse air quality impacts from the Project for either Alternative 1 or Alternative 2. The emissions inventory analysis demonstrates that the Project would not cause emissions to increase from Project operation, and the dispersion modeling analyses show that there are no predicted violations of any of the National or Pennsylvania AAQS due to Project-related impacts. Therefore, no air quality mitigation measures are required for routine operation of this Project.

While mitigation is not required for this project, FAA understands that the City of Philadelphia, Division of Aviation, is considering the development of an alternative fuels program for the airport, a goal of which is to improve air quality. Elements of the program could include conversion of airside ground service equipment to alternative fuels such as electricity or compressed natural gas, and conversion of landside fleet buses to alternative fuels. This program could further improve air quality, particularly in the reduction of VOCs.

4.5.6 Regulatory Coordination

FAA has coordinated with local, state, and Federal agencies, including EPA, PA DEP, NJ DEP and the City of Philadelphia, Department of Public Health, Division of Air Management Services throughout the preparation of the DEIS, and has obtained consensus with the modeling protocols and results of the air quality analysis.

4.6 Environmental Justice and Children's Environmental Health and Safety Risk

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations* (EO 12898), and FAA Order 1050.1E require agencies to identify and address potential disproportionate high and adverse impacts on minority,[62] and low income populations. This section fulfills this requirement and reports on efforts to involve minority and/or low income populations in the planning and decision-making process for the Project. This section also describes the Affected Environment (Section 4.6.1), Environmental Consequences (Section 4.6.2), and outreach to the potentially affected community (Section 4.6.3).

4.6.1 Affected Environment

This section reports on the presence of minority and low income populations in the Environmental Justice Study Area. It also describes the study area and the methodology and source of data for identifying minority and low income populations.

Methodology

Since environmental justice impacts are predicated on the potential for significant impacts in other environmental categories, the study area for environmental justice is the area in which significant impacts may occur in the other environmental impact categories. This area is based on an ellipse created by connecting the outermost points of the 65 dB DNL contours for all of the alternatives in the analysis years 2007 and 2015. The Environmental Justice Study Area is shown in Figures 4.6-1 and 4.6-2.

Minority and low income populations are identified using 2000 U.S. Census data. The following definitions were used in the analyses:

- Minority Populations – A Minority person is defined as an individual who is a member of one of the following population groups: Black or African American; American Indian and Alaska Native; Asian; and Native Hawaiian, Other Pacific Islander, some other race alone, and two or more races.[63]

62 The United States Census defines a minority as a person who is Black (a person having origins in any of the black racial groups of Africa); 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 American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

63 *2000 United States Census data*, (http://www.census.gov/main/www/cen2000.html), 2000.

- Low-Income Populations – The final DOT Order 5610.2 defines Low-Income persons as those whose "median household income is below the United States Department of Health and Human Services poverty guidelines."[64] CEQ Guidelines state that Low-Income populations should be identified using the annual statistical poverty thresholds developed by the Bureau of the Census. Data for Poverty by Age (P87) at the Block Group Level from the 2000 U.S. Census were used to identify Low-Income populations.

Minority populations were identified using 2000 U.S. Census block data, the smallest unit for which minority population data are available. All census blocks that fell at least partially within the Study Area were included to determine the total population. Low-Income populations were identified using 2000 U.S. Census block group data, which are larger than census blocks, but are the smallest unit for which income data are available. All census block groups that fell within or partially within the Study Area were included to determine the total population.

Minority and Low-Income Populations

The minority and low income populations in the Environmental Justice Study Area are shown in Table 4.6-1. The minority population in this Study Area, 40,594 persons, is 32 percent of the total Study Area population. The low income population in the Study Area, 20,616 persons, is 13 percent of the total Study Area population. Figures 4.6-1 and 4.6-2 illustrate the spatial distribution of the minority and low-income populations in the Environmental Justice Study Area.

64 *Federal Register, 5610.2, Final Order to Address Environmental Justice in Minority Populations and Low-Income Populations, United States Department of Transportation,* Volume 62, No. 72, 15 April 1997.

4.6.2 Environmental Consequences

As described in other sections of this chapter, effects of the Project (Alternative 1 or Alternative 2) on Endangered and Threatened species, biotic communities, wetlands, floodplains and hazardous materials, as well as construction noise effects would occur only on the Airport, on the adjacent segment of SR 291 between the Airport and I-95, and on Bartram Avenue, and would not affect adjacent communities. Direct impacts to water quality would occur on the Airport and indirect water quality impacts may occur in adjacent industrial areas. Water quality impacts can be mitigated and would not affect residential communities. There are no significant social, socioeconomic, air quality (long-term or construction), historical, archaeological, coastal zone, farmland, light emissions, or energy supply and natural resource impacts that would occur as a result of the alternatives. There are no Wild and Scenic rivers in the study area, and therefore no impacts. Changes in surface transportation, land use, and noise have the potential to affect adjacent communities. These are summarized below and described in more detail in other sections of Chapter 4.

Surface Transportation

As presented in Section 4.14, *Surface Transportation*, without mitigation the unsignalized intersection of Bartram Avenue and the I-95 Southbound on-ramp would have an unacceptable level of service (LOS) from either Alternative 1 or Alternative 2. The intersection of SR 291 and Bartram Avenue/Scott Way is also projected to experience a substantial increase in delay. However, with mitigation measures, the LOS at each of these intersections would improve as a result of the Project. Since there are no adverse or high surface transportation effects of the Project with mitigation to acceptable levels of service, there is no potential for disproportionate adverse or high impacts on minority or low income populations.

Table 4.6-1 Estimated Minority and Low-Income Population in the Environmental Justice Study Area

	Total[1]	Minority	Non-Minority	Total	Low-Income	Not Low- Income
Population	128,287	40,594	87,693	154,079	20,616	133,463
Percent	100%	32%	68%	100%	13%	87%

1 Total population is different for minority and for low income because in each case, total population is the sum of all 2000 U.S. Census blocks (minority) or block groups (low income) that fall at least partially within the Study Area. Census blocks are the smallest unit of measure for which minority population data are available. Census block groups, which are larger, are the smallest unit of measure for income data due to confidentiality concerns.

Source: 2000 U.S. Census.

Land Use

As presented in Section 4.3, *Compatible Land Use*, one noise-sensitive receptor that currently is not in the 65 dB DNL contour, George Wolf School, also known as John Bartram High School Annex, would be in the 65 dB DNL contour under the No-Action Alternative in 2015. Neither Alternative 1 nor Alternative 2 would increase noise by 1.5 dB or greater at this location. Since this is not a significant Project impact, there is no potential for an environmental justice concern.

Noise

FAA's threshold of significance for noise impacts has been determined to be a 1.5 dB DNL increase in noise over any noise sensitive area within the 65 dB DNL contour.[65] The noise analyses (Section 4.2) show that there are no significant noise impacts as a result of either of the two Build Alternatives. No populations or noise-sensitive areas within DNL 65 dB contours would experience a 1.5 dB change in noise exposure, with either of the Build Alternatives for any of the study years. Since there are no significant noise impacts of the Project, there is no potential for disproportionate adverse or high impacts on minority and low-income populations.

4.6.3 Outreach

Access to the decision-making process is a fundamental principle of environmental justice. To further the goals of environmental justice in accordance with Federal directives, FAA conducted a public outreach program with nearby communities for the Project EIS. Over the 14 months between the publication of the *NOI* in the Federal Register on July 30, 2003 and the distribution of the DEIS in October 2004, FAA has conducted a number of public information meetings and workshops to seek community input, guidance and ideas, and to maintain dialogue with the community as the EIS process has advanced. Section 1.3 of this DEIS provides additional information on the public outreach process.

The public outreach program provides access and opportunity for participation by all the communities in the Regional Study Area, but there has been a particular emphasis on the communities in the areas directly to the north and south of the runway, which would most likely be affected by the Project. In particular, the Eastwick neighborhood of Philadelphia, north of Runway 17-35, is a predominantly minority community and FAA made specific efforts to reach out to this community. FAA's representative met with the members of the Eastwick Project Area Committee (PAC),[66] a leading social and

65 *Federal Aviation Administration Order 1050.1D*, Changes 1 thru 4, *Policies and Procedures for Considering Environmental Impacts*, Attachment 2, Federal Aviation Administration, 8 October 1985.

66 Eastwick Project Area Committee, Inc., is a community based organization that serves over 40,000 residents in the Eastwick area of Philadelphia, Pennsylvania. The Eastwick PAC promotes the welfare of the Eastwick community and all of its inhabitants by

economic development agency for the Eastwick Area. FAA has also ensured opportunities for this community to participate in the DEIS process, including holding a meeting in April 2004 at 'Eastwick at the Meadows' and a public information meeting on the DEIS findings in September 2004 at the Eastwick PAC's meeting location at the Mercy Wellness Center, both in Eastwick. Meeting notices for the September public information meeting and for the DEIS hearing were mailed to 600 Eastwick residents and businesses on the Eastwick PAC mailing list. The public scoping meeting on August 12, 2003 was held at the Sheraton Suites Hotel at 4101 B Island Avenue in Philadelphia, which is one mile south of the Eastwick community.

Another effort by the FAA to reach out to area minority and low income populations included selecting meeting locations that are accessible by public transportation. Public transportation directions to the meeting locations were detailed on the Project's web site.

The FAA also reached out to minority populations by publishing meeting notifications in area minority newspapers. These newspapers included an advertisement for the August 2004 public scoping information meeting that ran in a Spanish Language newspaper, *Al Dia* in July 2003. Advertisements for the August 2003 public scoping information meeting and public information meetings in April and May 2004 ran in the *Philadelphia Daily News*, which has a circulation area that consists of more than 50 percent minorities.[67]

See Section 1.3 of this DEIS for more information on Project's public outreach program, which includes Scoping, public information meetings and workshops, newsletters and a public Project web site.

Linguistically Isolated Populations

Census data were analyzed to describe the percentage of households in the Regional Study Area who are linguistically isolated. A linguistically isolated household is one in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English "very well." In other words, all members 14 years old and over have at least some difficulty with the English language.

2000 U.S. Census data for each county showed that an average of three percent of households in the counties that fall at least partially within the Regional Study Area are linguistically isolated. The percentage of linguistically isolated households within the largest noise affected area for the Project was analyzed based on the Alternative 2, 60 dB noise contour, for 2015.[68] In the 61 census block groups included in this noise contour, the total linguistically isolated population is 1.6 percent, less than the regional threshold value of three percent. Therefore, it was determined that foreign language versions of the DEIS are not required.

4.6.4 Children's Environmental Health and Safety Risk

Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, Federal agencies are directed to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. As discussed in FAA Order 1050.1E, Appendix A paragraph 16.2b, environmental health risks and safety risks include risks to health or safety that are

expanding opportunities for and benefits from better education, health, safety, human rights, housing and economic security through referrals to jobs and training.

67 Racial Diversity of the news staff and circulation area demographics for the Philadelphia Daily News. Bill Dedman and Stephen K. Doig. (http://www.powerreporting.com/knight/pa_philadelphia_daily_news.html), May 2004.

68 Of the four 60 dB DNL contours (Alternative 1 and Alternative 2 for 2003 and 2015) the 2015 Alternative 2 60 dB DNL contour includes the largest number of block groups.

attributable to products or substances that a child is likely to come into contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

As documented in Sections 4.5 and 4.7 of this DEIS, the proposed project, for either Alternative 1 or Alternative 2, would not result in significant impacts to air quality, drinking water, recreational waters, or other products or substances that a child might come into contact with or ingest. The Proposed Project would therefore not result in disproportionate health or safety impacts to children.

4.6.5 Summary

The proposed project would not result in significant impacts to any natural or human resources, and therefore, would not have a disproportionately high and adverse impact on minority or low income populations, or result in disproportionate health or safety risks to children.

4.7 Water Quality

This chapter includes a summary of existing water quality conditions of surface water and groundwater resources in the Project Area and Local Study Area (Section 4.7.2). These on-site and adjacent resources include water bodies, waterways, drainage channels, and a sole source aquifer. Expected water quality impacts, including construction and operational impacts, are identified and evaluated in Section 4.7.3 for each Alternative and for the No-Action Alternative. An evaluation of measures to avoid, minimize, and mitigate impacts as well as recommendations for implementation of such measures is described in Section 4.7.4. DEIS Appendix A-3, *Water Quality Technical Report*, provides additional detailed information.

4.7.1 Introduction

The Airport is within the Delaware River watershed and the New Jersey Coastal Plain Sole Source Aquifer (SSA) review area. Both construction of the Proposed Project and future Airport operations may potentially affect water quality. Stormwater runoff from the Project would discharge to the Delaware River through the SEPD drainage system and through tributaries to the Schuylkill River.

Regulatory Context

Surface and groundwater resources are protected under Federal and state laws and regulations, including the Clean Water Act (Section 401), the Safe Drinking Water Act, the NPDES, and PA DEP Water Quality Standards.

Safe Drinking Water Act

The Safe Drinking Water Act (Public Law 93-523, Section 142S(e))[70] authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. Under this act, the EPA regulates SSAs.

EPA NPDES Stormwater Permit

The EPA requires a NPDES Stormwater Multi-Sector Industrial Permit for discharges of stormwater from conveyance systems at major airports to surface Waters of the U.S. (40 CFR Parts 122,123 and 124). The multi-sector permit falls under Standard Industrial Code (SIC) Group 45 “Transportation by Air” and NPDES Category viii, Transportation. The stormwater permit does not permit the discharge of dredged or fill materials to Waters of the U.S.. This would require a Section 404

70 *New Jersey Coastal Plain, Support Document*, Environmental Protection Agency, (http://www. epa.gov/region02/water/aquifer/coast/coastpln.htm), May 1998.

permit. The multi- sector permit also does not allow point source discharges to surface waters from sources other than stormwater. Non-stormwater discharges via a conveyance would need to be authorized under a separate NPDES individual permit for the specific discharge. PHL currently has a NPDES Permit, administered by PA DEP, in place (PA 0056766).

EPA NPDES Construction General Permit

The EPA requires a NPDES Construction General Permit for discharges of stormwater to Waters of the U.S. from construction sites disturbing greater than one acre of land.

PA DEP Water Quality Standards and PA Clean Streams Law

The PA DEP Chapter 93 of the Pennsylvania Code establishes water quality standards for surface waters and wetlands of the Commonwealth. These standards are based upon protected water uses and are considered by the DEP in its regulation of discharges. PA DEP also protects water quality during construction through its Erosion and Sedimentation Control Rules and Regulations (25 Pennsylvania Code Chapters 92 and 102).

Study Area

Water resources and water quality were investigated within the Project Area and the Local Study Area. The Project Area (Figure 4.7-1) includes the waterways potentially affected by the Project as well as the water bodies receiving stormwater from Runway 17-35. There are three drainage areas within the Project Area: the north drainage area, which discharges to Mingo Creek, the south drainage area, which discharges to the Delaware River, and a small drainage area that discharges to Eagle Creek (Figure 4.7-3). The Local Study Area includes the Airport and adjacent water resource areas that may be impacted by activities at the Airport. The surface water resource areas in the Local Study Area include the Delaware River to the south, the Schuylkill River to the east, Darby and Cobbs Creeks to the north, and Darby Creek to the west. PHL has eight stormwater outfalls (discharge structures). Four outfalls discharge to the Delaware River, two to Eagle Creek (a tributary to the Schuylkill River), one to Mingo Creek (also a tributary to the Schuylkill River), and one to Darby Creek.

The Airport is in the 13,539-square-mile Delaware River Basin. It is in the Lower Delaware River Basin (PA DEP Subbasin 3), which covers 2,708 square miles and drains parts of Pennsylvania, New Jersey, and Delaware (Figure 4.7-2). One of the largest tributaries to the Lower Delaware River Basin is the Schuylkill River, which is east of PHL. PHL is also within the Delaware Estuary, which is part of the Delaware River Basin. An estuary is a body of water where salt water from the ocean mixes with fresh water from a river. The Delaware Estuary extends approximately 133 miles from the falls of the Delaware River at Trenton, New Jersey and Morrisville, Pennsylvania, south to the mouth of Delaware Bay between Cape May, New Jersey and Cape Henlopen, Delaware.

The Airport is also within the review area of the New Jersey Coastal Plain Aquifer (Figure 4.7-4), part of the Potomac-Raritan-Magothy Aquifer System, which is designated as a SSA by the EPA under provisions in the Safe Drinking Water Act (Public Law 93-523, Section 142S(e)).[71] The Airport is not directly over the New Jersey SSA, but it is within the review area, which includes stream flow portions within two miles of the Delaware River.[72]

71 *New Jersey Coastal Plain, Support Document*, Environmental Protection Agency, (http://www. epa.gov/region02/water/aquifer/coast/coastpln.htm), May 1998.

72 *Ibid*.

4.7.2 Affected Environment

This section describes the surface and groundwater resources within the Project Area and Local Study Area and describes the existing Airport stormwater management system, including deicing practices, and stormwater quality.

Methodology

The information presented in this section was collected from existing data, maps, and reports (see DEIS Appendix A-3). This information was supplemented by water quality regulations and standards for the Commonwealth of Pennsylvania. The PA DEP and PHL airport staff also provided information.

Watersheds and Drainage

PHL is in two subbasin watersheds of the Lower Delaware River Basin. Both of these are classified as a "Category I priority watershed needing restoration" by the PA DEP under its unified watershed assessment. The PA DEP defines Category I watersheds as those in which more than 20 percent of the watershed has been assessed with 15 percent or greater impairment and those watersheds in which more than 10 percent of the watershed has been assessed with 50 percent or greater impairment.[73]

The Project Area is in the Lower Schuylkill River Watershed, which has a total drainage area of 226 square miles and includes the lower portions of the Schuylkill River and a portion of the City of Philadelphia. The majority of the subbasin is highly urbanized. The Project Area consists of three subwatersheds, which, discharge stormwater runoff at Outfall 001, Outfall 003, and Eagle Creek (Figure 4.7-3).

Drainage Area 1 – Outfall 001

The majority of the Project Area (174 acres) is in Drainage Area 1 (Figure 4.7-3). This area is approximately 174 acres and 53 percent impervious, and includes portions of the existing Economy Parking Lot and SR 291 as well as all six terminals and the majority of Runway 9L-27R and Runway 17-35, a portion of Runway 8-26, and Taxiways A, D, E, G, H, J, K, L, M, N, Q, R, and T. This area discharges to Church Creek, which flows to Mingo Creek. According to DEP, drainage from Outfall 001 and several square miles of southeast Philadelphia drain to a large surge basin where Mingo Creek flows into the Schuylkill River. The City of Philadelphia maintains the water surface elevation at an elevation lower than the tidally influenced Schuylkill River.

Stormwater runoff from Runway 17-35 and taxiways is collected in catchbasins, which allow some settling of suspended solids, and is discharged to Church Creek upstream of Outfall 001 where stormwater compliance sampling is conducted. Runoff from the existing Economy Parking Lot flows untreated through catch basins to the open section of Church Creek just upstream of three 120-inch culverts that discharge to Mingo Creek. The portion of SR 291 within the Project Area discharges to Mingo Creek.

Eagle Creek

Runoff from approximately three acres of the southern section of Runway 17-35, between the intersection of Taxiway H and Taxiway K (Figure 4.7-5), is collected in catch basins and conveyed to Eagle Creek (EMC) north of Runway 8-26 by a series of culverts and open channels. This 25-acre drainage area includes some

73 *Unified Watershed Assessment and Setting of Restoration Priorities for Pennsylvania*, Pennsylvania Department of Environmental Protection, (http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/Nonpointsourcepollution/Initiatives/WRASLISTINFO/UniWshed.htm), 29 March 2004.

of Taxiway D and is approximately 65 percent impervious. Portions of Runway 8-26, Taxiway A, and Fort Mifflin Road, as well as a small portion of Runway 17-35 where it intersects with Taxiway K, are in this drainage area.

Drainage Area 3 - Outfall 003

A 62-acre portion of the Runway 17-35 Project Area discharges through the SEPD to Outfall 003 to the Delaware River. This area comprises the southernmost portion of Runway 17-35 near the intersection with Taxiway S and is approximately 25 percent impervious. The majority of the area is grassed, and stormwater runs overland to SEPD-2, a portion of the SEPD drainage system. The rest of the area is collected in catch basins and piped to the drainage ditch. Portions of Runway 17-35, Runway 9L-27R, Runway 9R-27L, and Taxiways D, E, and S are in this drainage area, as are several tenants of PHL, the Air Traffic Control Tower/FAA administration building, and the fire station.

Surface Water Quality – Local Study Area

The PA DEP Chapter 93 of the Pennsylvania Code establishes the water quality standards for surface waters and wetlands of the Commonwealth. The water quality classifications that apply to the major waterbodies adjacent to the Airport are defined as:

- **Warm Water Fishes (WWF) –** Maintenance and propagation of fish species and additional flora and fauna that are indigenous to a warm water habitat.
- **Migratory Fishes (MF) –** Passage, maintenance, and propagation of anadromous[74] and catadromous[75] fish species and other fish species that ascend to flowing waters to complete their life cycle.

The three major waterbodies in the Regional Study Area (the Delaware River, the Schuylkill River, and Darby Creek), are included on the Section 303(d) list[76]. The PA DEP has not developed Total Maximum Daily Limits (TMDLs) for discharge of contaminants to any of these waterbodies, although all three are PA DEP "Category 5: Impaired Streams Requiring TMDLs." Although its water quality is impaired, the Delaware River is an important regional drinking water source.

The Delaware River Estuary was assessed by PA DEP for aquatic life and found to be impaired because of siltation, metals, and toxic organic compounds. The Delaware River was also assessed by PA DEP for human health uses and found to be impaired because of mercury and polychlorinated biphenyls (PCBs). Darby Creek was found to be impaired because of siltation, metals, water/flow variability, other habitat alterations and unknown causes. The Schuylkill River was found to be impaired because of metals, dissolved oxygen and biochemical oxygen demand (BOD). The Schuylkill River was also assessed by PA DEP for human health uses and found to be impaired because of PCBs. Mingo Creek, which receives discharge from Church Creek and flows to the Schuylkill River, has not been assessed.

While the PA DEP has not developed Total Maximum Daily Loads (TMDLs[77]) for the Delaware River, the Delaware River Basin Commission (DRBC) has developed TMDLs for the river for VOCs, toxicity, and most recently PCBs. The recent TMDL for PCBs was accepted and presented to the public jointly by

74 Anadromous fish are those species that, like salmon, reproduce in freshwater but spend the majority of their life cycle in salt water.
75 Catadromous fish are those species that, like eels, reproduce in salt water but spend the majority of their life cycle in fresh water.
76 *2002 Section 303(d) List for Pennsylvania*, EPA Region III, 3 June 2003.
77 Total Maximum Daily Loads (TMDLs) are the maximum amount of a pollutant that a body of water can receive daily and still meet water quality standards.

the EPA, the DE DNREC, the NJ DEP, the PA DEP, and the DRBC. The TMDLs for PCBs in Delaware River apply to reaches of the River from Trenton, New Jersey to the head of Delaware Bay.

Surface Water Quality – Project Area

Surface water quality within the Project Area was assessed based on data collected under the Airport's NPDES permit. The current NPDES permit requires samples to be taken at a minimum of once per month from December to April following storm events that require deicing. At least one sample must be taken following a storm event between May and November.

Existing water quality in Church Creek and the SEPD was evaluated by comparing the Airport's sampling results to the National Urban Runoff Program (NURP) event mean concentrations of pollutants in urban runoff, which is considered typical of urban areas.[78] The sampling results from PHL occasionally show a higher than typical value of BOD and chemical (COD) oxygen demand. The sampling results show a higher than typical value of nitrate concentration in March and April of 2003 only, and of the phosphorus concentration at one outfall in February 2003. Total suspended solids (TSS) were above typical NURP mean concentrations at one outfall in January 2003.

These data generally show that mean concentrations for typical stormwater constituents are consistent with the range found in runoff from commercial and industrial areas. Only two parameters had concentrations that were higher than typical for industrial areas. These are for BOD and COD. These higher values are largely due to the use of propylene glycol and urea for deicing, which during their natural degradation process consume oxygen, thus increasing the demand for dissolved oxygen and decreasing dissolved oxygen in the water. The effect of the oxygen demands are different, based on each storm event and the particular characteristics of each waterbody. These effects also vary according to the amount of propylene glycol or urea used during a deicing event, how much of the product runs off, the volume of water that dilutes and transports the glycol or urea to the waterway, the temperature of the water and the physical characteristics of the receiving water body, such as the water body size and flushing capacity.

Groundwater

The New Jersey Coastal Plain Aquifer is part of the Potomac-Raritan-Magothy Aquifer System and is designated as a SSA by the EPA.[79] SSAs are designated when an area is dependent upon groundwater for drinking water supplies and which, if contaminated, would create a significant hazard to public health. Federally assisted projects proposed for construction in this area and within the project review area are subject to EPA review to protect the drinking water supply.[80] The Airport is not directly over the SSA, but it is within the review area, which includes streams within two miles of the Delaware River.[81] The New Jersey Coastal Plain SSA is jointly managed by EPA Region II and III. According to the EPA, there are no additional regulations for the SSA. The Delaware River in the vicinity of the Airport is not currently considered to be a significant source of water to the distant pumping wells in New Jersey.[82]

78 *Results of the Nationwide Urban Runoff Program: Volume I Final Report*, United States Environmental Protection Agency, December 1983.

79 Safe Drinking Water Act (Public Law 93-523, Section 142S(e)). The notice of approval was published in the 53 *Federal Register* 23791 on 24 June 1988.

80 *Ibid*.

81 *Ibid*.

82 *Report 03-4255: Historical Ground-Water-Flow Patterns and Trends in Iron Concentrations in the Potomac-Raritan-Magothy Aquifer System in Parts of Philadelphia, Pennsylvania and Camden and Gloucester Counties, New Jersey*, Ronald A. Sloto, United States Geological Survey Water-Resources Investigations, Figure 5, 2003, p. 8.

The aquifer system typically consists of layers of clay and sand. The sand layers contain the aquifer's groundwater reserves.[83] Near the Delaware River, however, the units are not in distinct layers[84] and some of the upper units are not continuous.[85] The bedrock and Lower and Middle Sand Units of the aquifer are deeper beneath the south portion of the Project Area than the north portion. The depth and thick clay layers offers protection against vertical migration of contaminants to the sand units of the aquifer.

Regional Groundwater Flow Direction

Regional groundwater flow directions were identified to determine whether groundwater that originates at the Airport contributes to the SSA. Groundwater pumping has changed the groundwater flow direction over time. The pre-development groundwater flow direction in the lower aquifer was south and east, toward the Delaware River.[86] Intensive pumping in Philadelphia from the 1920s to 1960s caused a large cone of depression, which altered groundwater flow direction so that water flowed from New Jersey toward Pennsylvania and drew water from the Delaware River into the aquifer. After intensive pumping in Philadelphia ceased in the 1960s due to elevated concentrations of iron and manganese and after pumping increased in New Jersey from the 1950s to 1980s, the groundwater flow direction changed from Pennsylvania to New Jersey. The most recent model of the aquifer (1998), shows that the southern portion of the Project Area is on the boundary of the lower confined aquifer and the northern portion is outside the influence of the pumping from drinking water wells in the lower aquifer system in the SSA.[87]

A hydrogeologic investigation, conducted by Roy F. Weston, Inc.[88], for a Phase I Site Hydrogeologic Investigation at the Enterprise Avenue Landfill site (at the boundary of the airport, east of the Project Area) concluded that the groundwater flow direction in wells 40 to 54 feet deep was northwesterly. Flow in the deep aquifer (in wells from 114-149 feet deep) was east-northeast, although the direction would briefly shift east-southeast during occasional low tides.[89] These data show that the Project Area does not contribute to the SSA, although there are deeper layers within the aquifer in which groundwater flows from PA to NJ. While the data show that the majority of the airport is over the coastal aquifer, it is outside the mapped limits of the sole source aquifer. Because of the sand and clay layers in the aquifer, the airport contributes to the surficial aquifer but is unlikely to contribute to the lower aquifer layers.

Local Groundwater Flow

Local shallow groundwater flow direction may be affected by a number of influences. Natural influences, such as tides, and artificial influences, such as the pump-and-treat groundwater extraction system at the Enterprise Landfill site east of the

83 *Report 01-4218: Simulation of Ground-Water Flow in the Potomac-Raritan-Magothy Aquifer System Near the Defense Supply Center Philadelphia and the Point Breeze Refinery, Southern Philadelphia county, Pennsylvania*, Schreffler, Curtis L., United States Geological Survey Water-Resources Investigations, 2001.

84 *Report 03-4255: Historical Ground-Water-Flow Patterns and Trends in Iron Concentrations in the Potomac-Raritan-Magothy Aquifer System in Parts of Philadelphia, Pennsylvania and Camden and Gloucester Counties, New Jersey*, Ronald A. Sloto, United States Geological Survey Water-Resources Investigations, Figure 5, 2003, p. 8.

85 *Ibid*.

86 *Report 01-4218: Simulation of Ground-Water Flow in the Potomac-Raritan-Magothy Aquifer System Near the Defense Supply Center Philadelphia and the Point Breeze Refinery, Southern Philadelphia county, Pennsylvania*, Schreffler, Curtis L., United States Geological Survey Water-Resources Investigations, 2001.

87 *Report 03-4255: Historical Ground-Water-Flow Patterns and Trends in Iron Concentrations in the Potomac-Raritan-Magothy Aquifer System in Parts of Philadelphia, Pennsylvania and Camden and Gloucester Counties, New Jersey*, Ronald A. Sloto, United States Geological Survey Water-Resources Investigations, Figure 5, 2003, p. 8.

88 Roy F. Weston, Inc., 15 August1994, Geotechnical Investigation Summary Report, Runway 8-26 Project, The Enterprise Avenue Landfill Site.

89 *Remedial Investigation/Final Report, Volume 1,* Environmental Partners, Inc. and Innovative Engineering Solutions, June 1999, p.11.

Project Area and pumping of some of the surface water bodies, including Mingo Creek, may affect local groundwater flow direction. The heterogeneous fill material in the upper layers may affect groundwater flow direction close to the surface.

One investigation, associated with the Auto Gas Fuel Facility at the Airport, reported a local groundwater flow direction of northeast and southeast with variations attributed to tidal influences.[90] Investigations at the Enterprise Avenue Landfill concluded that flow direction of shallow groundwater could not be determined because of the complex nature of the system. A groundwater investigation of the former Tinicum Remote Load Rack, approximately a half mile west of Runway 17-35, found multiple perched groundwater flow systems.[91] No definitive pattern of shallow groundwater flow was identified.

Regional Groundwater Quality

The regional groundwater quality has been degraded in South Philadelphia and in the vicinity of the Project Area by petroleum hydrocarbon releases from industrialized sites.[92] The groundwater quality is also degraded by highly elevated iron, manganese and sulfates, which can clog well screens and drinking water systems, stain sinks and laundry, and impart a bad taste to the water.

Local Groundwater Quality

Limited information is available on groundwater quality at PHL. The only groundwater samples collected from the Project Area were from the Exxon gasoline station at 4298 Island Avenue, near the intersection with SR 291. The most recent groundwater sample concentration of methyl tertiary-butyl ether (MTBE[93]) in a groundwater monitoring well was 21.1 parts per billion, slightly exceeding the PA DEP Medium Specific Concentrations for Used Aquifers of 20 parts per billion.[94] The concentration of MTBE in groundwater on the western portion of the gas station was slightly above PA DEP standards in 2000, but may be the result of a release of gasoline elsewhere on the site or in the surrounding area. Past construction projects in the area as well as state water quality reports have shown that high iron concentrations are a problem if construction requires dewatering.

Stormwater Management and Operations

PHL has an existing NPDES Stormwater Discharge Permit from the PA DEP (NPDES Permit No. PA 0056766) issued January 3, 2003. The permit has been issued to the Airport to authorize discharge of Airport stormwater runoff including that from aircraft deicing areas. In addition to deicing at the dedicated deicing facility, the current permit allows aircraft defrosting in the Terminal area with no more than 40 gallons of deicing fluid (glycol) per aircraft. Aircraft deicing in the Terminal areas is allowed under special defined circumstances, such as deicing of critical components of the aircraft or deicing to reduce weight.

This stormwater discharge permit authorizes discharges to Mingo Creek at Outfall 001 and discharges to the Delaware River at Outfalls 003, 004 and 005. Outfall 001, at Church Creek, receives

90 *Philadelphia International Airport: Site Characterization Report, Auto Gas Fuel Facility*, Alternative Environmental Solutions, July 2001.

91 *Philadelphia International Airport: Former Tinicum Load Rack, Remedial Actions*, Madison Environmental Group, 15 August 2003.

92 *Report 01-4218: Simulation of Ground-Water Flow in the Potomac-Raritan-Magothy Aquifer System Near the Defense Supply Center Philadelphia and the Point Breeze Refinery, Southern Philadelphia county, Pennsylvania*, Schreffler, Curtis L., United States Geological Survey Water-Resources Investigations, 2001. pp. 2- 3.

93 MTBE is a chemical compound used as a fuel additive in gasoline. It replaced lead as an octane enhancer and reduces tailpipe emissions of greenhouse gases. MTBE can make drinking water supplies undrinkable due to its offensive odor and taste.

94 *Remedial Action Progress Report – Exxon Service Station #2-8048*, Handex, April 2000.

Airport stormwater runoff from approximately 889 acres including runways, fueling areas and limited deicing activities.

NPDES discharge permits require the proper management of "industrial activities" that occur outside, such as vehicle washing and maintenance and materials storage, to prevent the contamination of stormwater runoff. Training for Airport staff to implement the proper stormwater management best management practices (BMPs) is also required.

The NPDES Permit also requires the Airport to develop and implement a Preparedness, Prevention, and Contingency (PPC) Plan. PHL developed a PPC Plan in 1997 and updated it in August 2002. The Plan identifies industrial activities that can potentially discharge pollutants to stormwater and provides guidance for developing and implementing BMPs to reduce the discharge of pollutants.[95] Activities within the Project Area subwatersheds that may affect stormwater quality include aircraft maintenance, cleaning, and storage; aircraft fueling; and materials storage. Residual oil on pavement can also wash into Church Creek from the existing parking area, and oil and gasoline may be present in runoff from the existing gas station.

Maintenance, Cleaning, Storage
Minor aircraft maintenance operations, such as mechanical repairs required prior to departure, aircraft servicing, and interior cleaning are conducted at the apron area next to the terminal. Other maintenance operations, such as aircraft rehabilitation, lubrication and exterior cleaning are conducted at dedicated maintenance facilities.

95 *Preparedness, Prevention and Contingency Plan and Contingency Plan for Hazardous Material and Hazardous Waste Management.* Weston Solutions, Inc., August 2002, p A-1.

Fueling
Aircraft fueling is done by Aircraft Services International Group (ASIG) by fuel truck at the apron and ramp areas in all areas except for the United Airlines Terminal D gates, which are supplied by an underground hydrant fuel line from the Jet Fuel Storage Racks south of Terminal F. Aircraft fueling is also conducted at corporate hangars and at the Atlantic Aviation Facility by fueling trucks.

ASIG operates the Philadelphia Fuel Facilities Corporation, which is the one jet fuel storage operation at the Airport, and has an emergency response plan in place for the fuel storage area This plan serves as the primary emergency response plan for the ASIG fueling operations. Ground vehicle fueling and fuel storage areas are at each automobile rental tenant and at the gas station. Other tenants receive fuel from tank truck services provided by ASIG at their respective facilities.

Materials Storage
Hazardous waste materials are stored in sheds or in sealed drums so there is a low risk of contaminating stormwater. The Division of Aviation (DOA), Fleet Management and PHL tenant personnel maintain above ground and below ground storage tanks for aircraft and vehicle fuels, heating oils, glycols, motor oils, and waste oils. Drum storage at PHL includes product and waste material, which are usually staged outside the DOA Supply Warehouse before disposal.

Deicing Operations

Deicing of aircraft and paved areas can affect water quality. Propylene glycol, the principal deicing fluid used at the Airport, is an organic compound that degrades quickly in surface water and soil. However, this decomposition depletes oxygen and can, in high concentrations, degrade surface water quality.

The Airport performs deicing and anti-icing operations on paved surfaces including roadways, parking areas, taxiways, runways, and ramps. Roadways and parking areas are typically salted, with some urea used occasionally. Taxiways, runways, and ramps are deiced with propylene glycol or sand when temperatures are at or above 25 degrees Fahrenheit (F). Sand is more frequently used than glycol. At colder temperatures, urea is used around terminals. On paved surfaces, Type I propylene glycol deicing fluid (50 percent water, 50 percent propylene glycol mix) is used. PHL applies propylene glycol from a 3,000 gallon truck at a rate of 0.75 to 1.5 gallons per 1,000 square feet for deicing and 0.33 to 0.5 gallons per 1,000 square feet for anti-icing.

Aircraft are deiced with Type 1 fluid (propylene glycol) diluted with water. Type IV propylene glycol (100 percent concentration) is also used for aircraft anti-icing operations. The Airport recently built a new aircraft deicing facility (Figure 1-4) that became operational in 2002. The new facility can process three wide-body aircraft and four smaller aircraft simultaneously. The new facility is at the west end of the Airport close to the major runways, so it reduces deicing fluid volumes by reducing the need for a second deicing. There are two 600,000-gallon stormwater/glycol recovery tanks contained within an impoundment area adjacent to the new deicing facility. This impoundment area has one stormwater drain, which is normally kept closed to the North Ponding Ditch. After inspection confirms that stormwater is not contaminated, the valve is opened to drain stormwater that has accumulated in the impoundment area. Only trained personnel perform deicing to avoid use of excessive deicing fluids.

Stormwater runoff below the PA DEP interim threshold limit from the deicing pad is conveyed to Outfall 005 through stormwater ditches, as permitted under the current NPDES Permit. No other wastewater is generated at the deicing facility. Aircraft defrosting may occur at the terminals before departure during bad weather. There is also a minor contribution to stormwater of deicing fluids that blow off the aircraft during takeoff.

Runoff from the deicing pads flows to a sump where total organic carbon (TOC) analyzers continuously measure TOC concentrations. If TOC concentrations are detected above the PA DEP interim threshold limit, then the valves to the North Ponding Ditch are automatically closed, and sump contents are directed to the wastewater storage tanks. If TOC concentrations are below the PA DEP interim threshold limit, sump contents are allowed to flow to the North Ponding Ditch and discharge to the Delaware River. These discharges are permitted under a NPDES Permit (PA 0056766), issued by PA DEP January 3, 2003. Discharges to the sanitary sewer are permitted under a City of Philadelphia Water Department (PWD) Permit Number PHIL02911122TD to PHL (issued October 1, 2002) allowing the discharge of wastewater from the West Cargo City Deicing Apron Glycol Recovery System. The PWD issued a subsequent permit that limits the discharge of stormwater with high levels of biological and chemical oxygen demand.

Surface water quality is also affected by deicing on other paved areas within the Project Area. SR 291 and the gas station are sanded and/or salted in winter months, which contribute solids and dissolved salt to receiving waters. Urea is used on the existing Economy Parking Lot, which can contribute high levels of nitrates into receiving waters, specifically in Church Creek.

4.7.3 Environmental Consequences

Anticipated environmental consequences were determined by comparing existing conditions with expected conditions for the proposed Alternatives. Anticipated hydrologic impacts were determined by using the Natural Resources Conservation Service (NRCS) Technical Release 55 (TR-55) Model for Urban Hydrology to estimate stormwater runoff for each Alternative.

Direct Impacts

The No-Action Alternative would not affect existing practices or stormwater systems at PHL, and therefore would not create any new impacts to water quality. Because no mitigation measures would be implemented, water quality in Church Creek and SEPD would continue to degrade.

Alternative 1

Alternative 1 would displace a portion of the Economy Parking Lot, demolish the existing Exxon Gas Station across SR 291 from Runway 17-35, and close a segment of SR 291. Some or all of the displaced parking spaces from the Economy Parking Lot would be moved to areas within the existing SR 291 right-of-way and a GA apron, which are currently paved. The portion of the Economy Parking Lot within the Runway 17-35 Project Area that is not used for the runway extension or the EMAS would be seeded. A portion of the former SR 291 and the demolished gas station would also be grassed. Two open-channel sections of Church Creek would be enclosed in culverts.

Alternative 1, as described previously, would increase Runway 17-35 from 5,460 feet to 6,499 feet. The extension would be constructed entirely within the existing RSAs for Runway 17 and Runway 35. The total increase in impervious area for the Project Area is estimated to be 11.3 acres. The area discharging to Mingo Creek would have an increase in impervious area of about 4.8 acres, and the increase in impervious area to Outfall 003 would be approximately 9.9 acres. This increased impervious area would increase stormwater runoff and decrease groundwater recharge, and would increase the use of deicing compounds. No runoff from paved areas would be directed to Wetland DR-7, south of the runway.

The Airport has a comprehensive stormwater management plan that addresses pollution prevention as well as a Spill Prevention Control and Countermeasure (SPCC) plan that addresses spill response procedures. Industrial activities that take place in the Project Area include vehicle fueling and occasional aircraft maintenance. These activities are not expected to change as a result of the Proposed Project, and are discussed only because they are within the drainage areas surrounding Runway 17-35. This section describes potential impacts to water quality; potential hydrologic impacts; and potential impacts to groundwater.

Water Quality Impacts

The additional impervious area would affect water quality in surface waters receiving runoff from the extended runway and taxiway areas. This additional pavement would require additional deicing and anti-icing of the runway and taxiways. Propylene glycol Type I, which is a solution of 50 percent glycol and 50 percent water, is typically applied at a rate of 0.75 to 1.5 gallons per 1,000 square feet for deicing and 0.33 to 0.5 gallons per 1,000 square feet for anti-icing, with sand used more than glycol.

Alternative 1 would result in an additional 9.47-acre area requiring application of deicing materials within the Mingo Creek drainage area (the north runway extension and taxiways) and an additional 8.57-acre area to be deiced that discharges to Outfall 003 (the south runway extension and taxiways). In the Mingo Creek drainage area this could result in an increase of 309 to 619 gallons per application for deicing and between 136 to 506 gallons for anti-icing. For Outfall 003, approximately 1.8 acres would be the new airfield service road and would be deiced with urea rather than glycol. In terms of glycol the 8.6 acres of new runway and taxiway area could result in an increase in glycol use by 280 to 560 gallons for deicing and 123 to 187 gallons for anti-icing above what is used under existing conditions per event.

The potential for this increase, which amounts to a maximum of four percent in the use of deicing materials in the Project Area, is expected to have a negligible impact to the existing groundwater quality. The deicing material used at the Airport is propylene glycol. This chemical is not hazardous and does not have a PA DEP Act 2 groundwater standard. The compound is organic and will degrade quickly in soil and surface water with adequate oxygenation. There is a decrease in the concentration of oxygen in the surface water or groundwater with the addition of large amounts of propylene glycol. A depletion of oxygen in the groundwater could contribute to an increase in concentration of dissolved minerals, such as iron, manganese and sulfates. The Airport minimizes the use of deicing materials on the runway surface by the use of sand, when appropriate.

The majority of aircraft deicing would continue to take place at the deicing facility at the west end of the airport. Discharge of glycol from aircraft during departure is not expected to significantly increase with increased aircraft use of Runway 17-35, because this runway would have limited use in weather requiring deicing. In winter storm events, PHL generally operates in East Flow, with aircraft departing on Runway 9L.

The proposed taxiways would be constructed over the open sections of Church Creek. The existing culverts would be extended by approximately 588 feet (Table 4.12-2), resulting in a loss of open channel. The existing open channel currently provides flood storage in large storm events, and provides some water quality benefits during small events, as the detention time in the open culvert allows some settling of particles.

PA DEP has suggested that Church Creek (CMC-3 and CMC-4), below Outfall 001, provides potential containment for spills in Drainage Area 1, and that enclosing these sections of the open channel could affect PHL's ability to respond to large fuel spills because spill responders would not have access to the channel for containment and recovery operations However, existing manholes east and south of the Church Creek channel provide access to the channel, and the proposed culverts will include junction box tie-ins that will provide access in the future.
Any large spill at the terminal area could be contained and recovered off-airport, at the Mingo Creek stormwater basin.

The removal of the gas station, a portion of SR 291, and a portion of the Economy Parking Lot would reduce paved areas and therefore reduce the discharge of urea, oil, gasoline, and other contaminants to Church Creek and Mingo Creek.

Hydrologic Impacts
The extension of the runway and associated taxiways would increase impervious area, which would increase uncontrolled stormwater runoff (Table 4.7-1). The increase in stormwater runoff was calculated using TR-55. The net increase in peak stormwater runoff rates was calculated by comparing existing conditions with each of the alternatives.

The increase in impervious area was determined by calculating the new impervious area associated with each of the alternatives and subtracting the existing impervious area that is being demolished. A significant portion (approximately 11.1 acres) of the existing 41.7-acre Economy Parking Lot at the north end of Runway 17-35 would be demolished and/or displaced, along with existing Taxiway D2 and Taxiway E2, a two-mile segment of SR 291, and the Exxon gas station, which is approximately 1.1 acres. Figures 4.7-5 and 4.7-6 show new impervious areas and impervious areas to be demolished. Approximately 2.8 acres of the area to which part of the Economy Parking Lot is being displaced is pervious under existing conditions; therefore, there would be impacts from the parking relocation. The existing gas station across from the Economy Parking Lot would be vegetated. The portion of SR 291 that runs through the Project Area was included as pervious because it would be vegetated. There is no increase in impervious area (Table 4.7-1) to Eagle Creek and therefore would be no increase in peak discharge for the five-year storm event.

Impervious area contributing to Mingo Creek would increase by 4.8 acres. The 2.6 percent increase in impervious area would not result in a significant increase in the peak discharge rate to Mingo Creek.

Alternative 1 would increase the impervious area that discharges to the Delaware River at Outfall 003 by 9.9 acres andwould increase the peak rate of discharge by 25 cubic feet per second. This increase in peak discharge rate, if unmitigated, could cause increased erosion at the discharge location in SEPD. The net increase in impervious area for the entire Project Area is approximately 14.7 acres and would decrease recharge in the area of Runway 17-35 by approximately 3.8 percent. In relation to the Airport, which is 2,300 acres, this decrease in recharge area is less than one percent and not significant. The fill and compaction in this area most likely limits recharge even under existing conditions.

The impacts from increased peak discharge rates at the discharge locations within the SEPD and Church Creek could potentially cause increased erosion and suspension of materials because of increased water velocity. This could increase turbidity and decrease water quality. No increase in discharge rates or volumes would be experienced at Eagle Creek.

Table 4.7-1 Hydrologic Impacts

Alternative Identification	Existing Impervious Area (acres)	Net Increase in Impervious Area (acres)	% Change in Impervious Area (acres)	Peak Stormwater Runoff Rate (cfs) 5-Year Storm Existing Conditions	Peak Stormwater Runoff Rate (cfs) 5-Year Storm Proposed Conditions	Net Increase in Stormwater Runoff Peak Rate (cfs)
No-Action						
To Mingo Creek	184.0	0.0	0.0	1,182	1,182	0
To Eagle Creek	17.8	0.0	0.0	132	132	0
To Outfall 003	19.4	0.0	0.0	295	295	0
Alternative 1:						
To Mingo Creek	184.0	4.8	0.8	1,182	1,182	0
To Eagle Creek	17.8	0.0	0.0	132	132	0
To Outfall 003	19.4	9.9	51.0	295	320	25
Alternative 2:						
To Mingo Creek	184.0	10.8	4.1	1,182	1,212	30
To Eagle Creek	17.8	0.0	0.0	132	132	0
To Outfall 003	19.4	9.9	51.0	295	320	25

Groundwater Impacts
The analysis of groundwater quality and flow in the local (shallow) and deep (regional) aquifers shows that groundwater recharge within the Project Area is limited and does not contribute significantly to the groundwater reserves of the SSA. The Proposed Project would increase impervious area slightly and would not significantly affect groundwater recharge. The Proposed Project would not discharge contaminants to groundwater.

Alternative 1 was evaluated using the criteria at FAA Order 5050.4A and 1050.1E to determine if water quality impacts were significant. The Proposed Project can be designed to meet state Water Quality Standards; would not result in special water-related problems; and no difficulty is anticipated in obtaining permits. Alternative 1 therefore would not result in significant impacts to water quality.

Alternative 2
Potential impacts to surface and groundwater quality and quantity from Alternative 2 would be similar to Alternative 1 and would differ only in the amount of new impervious surface (Table 4.7-1). Alternative 2 would increase the length of Runway 17-35 from 5,460 feet to 7,000 feet. The extension would be constructed mostly within the existing RSA at the northern end and entirely within the existing RSA at the southern end (Figure 4.7-6). The total net increase in impervious area for the Project Area is estimated to be 20.7 acres. The impervious area discharging to Mingo Creek would increase by about 10.8 acres. The increase to Outfall 003 is approximately 9.9 acres, the same as for Alternative 1.

Impervious area contributing to Mingo Creek would increase by 10.8 acres. The 2.6 percent increase in impervious area would result in a 30 cubic feet per second increase in peak discharge rate. The increased runoff ratecould result in erosion and sediment suspension at the discharge location and decrease water quality.

Alternative 2 would increase the impervious area that discharges to Outfall 003 and would increase the peak discharge rate by 25 cubic feet per second. This increase in peak discharge rate, if unmitigated, could cause increased erosion at the discharge location in the SEPD. The net increase in impervious area for the entire Project Area is approximately 20.8 acres in Alternative 2. This would decrease recharge in the area of Runway 17-35 by approximately 5.4 percent in Alternative 2. In relation to the Airport, which is 2,300 acres, this decrease in recharge area is less than one percent and not significant.

Alternative 2 would result in an additional 15.5-acre area for application of deicing materials within the drainage area to Mingo Creek. This would increase the use of glycol for deicing by 506 to 1,013 gallons, and 223 to 338 gallons for anti-icing during applications. The increase in glycol to Outfall 003 would be the same as in Alternative 1.

Indirect and Secondary Impacts
Secondary impacts potentially include impacts to water quality downstream at the ultimate receiving body, the Schuylkill River or the Delaware River, or impacts to groundwater, as a result of increased discharge of deicing fluids, other contaminants in stormwater runoff, or suspended sediments. The Proposed Project is not anticipated to affect water quality in the Delaware River or Schuylkill River, because the stormwater discharge volumes from the Project Area are negligible in comparison to the flow volumes of these waterbodies. Average daily summer flow rates are 1,342 cubic feet per second

in the Schuylkill River and 5,767 cubic feet per second in the Delaware River at Trenton, with maximum daily flow rates of 33,800 cubic feet per second.[95] The anticipated peak flow rate increase calculated for the Project Area (25 cubic feet per second) would not result in significant contributions of contaminants that could affect water quality in these large water bodies.

Although there would be a minor increase in the amount of deicing materials used under either Alternative 1 or Alternative 2, with the implementation of appropriate BMPs (for example, aeration at detention areas to accelerate glycol breakdown before discharge to receiving waters) there would be no increased effect to any downstream receiving water. The small incremental increase in pavement area and pollutants potentially generated as a result of vehicle and aircraft operations is minimal and not anticipated to affect downgradient water quality, particularly if appropriate mitigation measures are implemented. In the absence of mitigation, construction could result in short-term temporary discharges of sediment to downstream waters, potentially resulting in short-term increases in turbidity at the discharge point. Any short-term effects would be limited to the discharge point and would be dissipated by river flow over a short distance. Alternative 1 and Alternative 2 are not anticipated to result in any off-airport development or construction, and therefore there are no foreseeable secondary impacts from any of the alternatives.

4.7.4 Mitigation

This section outlines measures that could be taken to avoid or minimize adverse environmental impacts and the mitigation measures that could be implemented during both the construction of the Project and for long-term operation of the runway for Alternative 1 or Alternative 2.

Avoidance

The No-Action Alternative would avoid any new temporary and permanent impacts to water quality, as these alternatives would not result in any new construction, new pavement, or loss of open waterway channels.

Avoidance options were investigated for Alternatives 1 and 2. Runway 17-35 and its taxiways cannot be extended without adding pavement. Both Alternatives 1 and 2 would require covering the waterway segments of Church Creek (CMC-3 and CMC-4) to construct the proposed extensions of Taxiway E and Taxiway D. To avoid impact to CMC-3, the extension of Taxiway E would have to be relocated approximately 200 feet to the west. This is not practicable, as the extension of Taxiway E would not line up with the existing Taxiway E and would require a sharp curve in the taxiway. This would further increase impervious surface, and would require culverting approximately 200 feet of CMC-2, the segment of Church Creek south of the Economy Parking Lot. To avoid impact to CMC-4, the extension of Taxiway D would have to be relocated approximately 200 feet to the east. This is not practicable because the extension of Taxiway D would not line up with the existing Taxiway D, and would require demolition of the former Overseas Terminal Building. The distance between CMC-4 and Island Avenue is approximately 400 feet, which would not accommodate the relocated taxiway and taxiway safety area.

Minimization

Appropriate measures would be taken to minimize environmental impacts from the Runway 17-35 extension. The increase in the impervious area proposed in either Alternative 1 or 2 is the minimum to achieve optimal aircraft operations.

95 United States Geological Survey, (http://sss.waterdata.usgs.gov/nwis),18 August 2004.

Impervious pavement required for the displaced parking spaces from the partial demolition of the Economy Parking Lot would be placed in an area that is impervious under existing conditions. This reuse of existing impervious area minimizes the new impervious area required, thereby minimizing an increase in uncontrolled stormwater runoff.

The Airport currently minimizes the use of deicing materials on the runway surface and would do so for the new runway and taxiway areas that either Alternative 1 or Alternative 2 would create.

The Proposed Project would not result in significant impacts to surface or groundwater quality as defined in FAA Order 1050.1E (Appendix A, paragraph 17.3) and therefore would not require mitigation.

However, mitigation for minor impacts to water quality may be required by PA DEP or other regulatory agencies under the permitting process. The DEIS identified a range of potential measures that could be implemented to mitigate for adverse effects to water quality. Long-term pollutant removal may be enhanced with the use of sediment forebays or oil-grit separators upstream, or at the entry to detention areas, and upstream of direct discharge to water bodies, to remove solids prior to discharge. Installing impermeable liners at the bottom of waterways may reduce the potential of glycol infiltration into the soil below the basin and to act as a containment area in the event of a fluid spill. However, placing liners may conflict with habitat requirements of red-bellied turtles, and would not protect groundwater because glycol used for runway deicing is volatile and does not contribute to groundwater contamination.

Water quality mitigation measures that would be incorporated into the Preferred Alternative include spill prevention and containment measures, source controls, peak runoff rate controls, and construction-period source controls. The use of these mitigation measures will be finalized in coordination with the agencies.

Construction Period

Erosion and Sediment Control Plans would be used for the Runway 17-35 Project to provide the contractor with guidelines to prevent the erosion of soils and sediment deposition into storm drains and surface waters, including sediment and silt resulting from dewatering activities. Erosion and sediment controls, and dewatering devices, would be designed to specifically address iron precipitation. Specific elements of the construction-period mitigation include:

- Soils and groundwater would be tested for contamination and iron content prior to construction and excavation;
- Dry soil would be watered to prevent dust production;
- Any highly erosive soils would be stabilized and reinforced with structural methods, such as erosion control blankets, as necessary;
- Slopes would be reinforced using a hydroseed mix with a resin base, native vegetation, or other approved methods;
- During excavation and dewatering, sediment control methods would be employed, such as silt bags to catch silt and sediment, or temporary sediment basins for areas that would receive a large portion of construction runoff from exposed soil; and
- Existing catch basins in the Project Area would be protected with sediment traps to prevent accumulation of sediment in the structure.

Details of the sedimentation and erosion control methods would be included in the SWPPP for construction activities required by the NPDES Construction General Permit.

Water quality during construction may be affected by the discharge of groundwater high in iron, as iron oxides may precipitate when exposed to air. A treatment or filtration system may be required during construction to remove ferric oxide (iron) solids before discharge to a surface water body or the wastewater treatment plant. During the final design phase of the Proposed Project, the Airport will identify areas where dewatering would be required, and will develop a dewatering control plan.

Spill Prevention and Containment Measures

To prevent and contain spills and other discharges of water quality contaminants, the Airport would

- Implement an appropriate Operation and Maintenance Plan.
- Design and construct the Church Creek culvert to provide access to the culverts for monitoring water quality at Outfall 001.
- Update existing SPCC Plans to reflect changed conditions at Runway 17-35, and continue to use these plans to provide emergency spill response procedures and preventive maintenance for areas at PHL with fuel or hazardous material storage/operations. The potential loss of spill containment and recovery areas in CMC-3 and CMC-4 would require revising the SPCC Plan to include a protocol for containment and recovery in the downstream Mingo Creek Stormwater Basin.
- Update existing Preparedness, Prevention and Contingency Plans and continue to use these for BMPs meant to reduce the discharge of pollutants from industrial activities as part of a long-term operation and maintenance program; and
- Continue to follow current and future NPDES Permits, and continue to monitor Outfalls 001 and 005 and report to the PA DEP.

Source and Runoff Rate Controls

Structural measures would be incorporated into the design of the Preferred Alternative to control the discharge of potential contaminants to surface or ground water, and to control peak runoff rates to reduce erosion. Measures that will be evaluated during the final design phase of the Proposed Project include:

- Installing catchbasins with sumps and hoods in the reconstructed portions of the Economy Parking Lot; and
- Designing the stormwater collection system (sheet flow from paved areas to shallow detention areas, where catchbasins convey flows through a system of pipes to either Church Creek or the Southeast Ponding ditch) to maximize detention times and reduce peak discharge rates.

A summary of mitigation measures is provided in Table 4.7-2.

Table 4.7-2 Potential Mitigation Measures

Environmental Impact	Potential Mitigation Measure
Increased Deicing Materials at Runway/Taxiways	Preparedness Plan Implementation
Erosion and Sediment	Erosion and Sediment Control Plans
	NPDES Permit for Construction Activities
Construction Dewatering	Silt Bags; chemical or mechanical treatment to remove iron precipitate
Potential Oil/Hazardous Waste Spill	SPCC/PPC Plan Revision

4.7.5 Regulatory Coordination and Required Permits

Coordination with Federal and state agencies, including the EPA, the PA DEP, and the Pennsylvania Fish and Boat Commission (PFCB), has been initiated and will be conducted throughout the preparation of the EIS. The permits listed below are likely to be required for the construction of Alternative 1 or Alternative 2.

EPA NPDES Stormwater Permit

The EPA requires a NPDES Stormwater Multi-Sector Industrial Permit for discharges of stormwater from conveyance systems at major airports to surface waters of the U.S. (40 CFR Parts 122,123 and 124). The multi-sector permit falls under SIC Group 45 "Transportation by Air" and NPDES Category viii, Transportation. The stormwater permit does not permit the discharge of dredged or fill materials to Waters of the U.S. as this would require a Section 404 permit. The multi-sector permit also does not allow point source discharges to surface waters from sources other than stormwater. Non-stormwater discharges via a conveyance would need to be authorized under a separate NPDES individual permit for the specific discharge. PHL has an individual NPDES Permit Number 0056766, which expires on January 31, 2008. This regulates stormwater discharges at four of the Airport's outfalls, including Outfall 001 and Outfall 003 which discharge runoff from the Project Area. NPDES permits are administered by PA DEP.

EPA NPDES Construction General Permit/ PA DEP Chapter 102 Permit

Construction of either Alternative 1 or Alternative 2 would require preparation of a Stormwater Pollution Prevention Plan for construction and submittal of a Notice of Intent to the EPA, as the project would disturb more than 1 acre of soil. This permit would be applied for in conjunction with a PA DEP Chapter 102 Permit, which governs construction and post-construction discharges of stormwater to surface waters. This permit would regulate erosion and sedimentation controls and dewatering during construction, as well as post-construction mitigation measures for water quality protection.

Safe Drinking Water Act

No commitment for Federal funding assistance may be entered into for any project which EPA determines may contaminate a sole source aquifer through its recharge zone so as to create a significant hazard to public health. A significant hazard to public health would occur if the level of contaminants in an aquifer would exceed any maximum contaminant level or otherwise threaten public health. Because the Runway 17-35 Project is within the review area for the New Jersey Coastal SSA, EPA is required to review the Project and make a determination as to its potential effects on drinking water.

Local Zoning Regulations

The southern portion of the Project Area is in the Township of Tinicum, Pennsylvania. Extension of Runway 17-35 and associated taxiway construction may require review under Tinicum's Zoning Regulations (Chapter 61). The Philadelphia International Airport is within a Special Use District as defined in these regulations, which require that buildings, parking, and impervious areas occupy no more than 66.67 percent of the property. The increased pavement required for construction of either Alternative 1 or Alternative 2 would not cause the Airport to exceed this percentage and is not expected to require a variance from zoning regulations.

4.7.6 Summary

The No-Action Alternative, and two construction alternatives proposed for the Project were analyzed to determine the primary and secondary environmental impacts associated with each. The No-Action Alternative includes only periodic maintenance and minor enhancements, with no other physical alteration of the airfield, and will result in no new environmental impacts.

Both Alternative 1 and Alternative 2 would increase the pavement to extend the runway and taxiways. Both build alternatives also require closing a two-mile portion of SR 291, north of Runway 17-35, demolishing the existing Exxon gas station, and displacing a portion of the Economy Parking Lot. For Alternative 1, this pavement removal would help offset the amount of new impervious area discharging to Mingo Creek, which is a tributary to the Schuylkill River, compared to existing conditions. In Alternative 2, this pavement removal helps offset the amount of impervious area being constructed, however it would not increase the pervious area discharges to Mingo Creek compared to existing conditions.

Alternative 1 includes a reduction in impervious area from the partial demolition of the Economy Lot, demolition of the existing gas station, and partial closure of SR 291. This pavement removal would decrease the amount of sand and/or salt and urea from the existing Economy Lot discharging untreated into Church Creek from winter maintenance operations, as well as the amount of residual oil and gasoline from the parking area and from the gas station. The reduced impervious area would also reduce the peak runoff rates to Mingo Creek as previously presented.

Both alternatives would result in a net gain in impervious area to the area discharging to Outfall 003 and would increase impervious area for the entire Project Area. The additional impervious area would increase the amount of uncontrolled stormwater runoff generated. It would also potentially reduce the amount of water recharged into the groundwater system, although the relatively impervious fill materials result in low recharge under existing conditions. The recharge area within the Project Area would be reduced by approximately 3.8 percent in Alternative 1 and 5.4 percent in Alternative 2.

The volume of deicing materials used for the deicing of the runway and taxiways would increase because of the increase in paved surface area. In Alternative 1 and Alternative 2, there would be an increase in paved area draining to both Mingo Creek and Outfall 003. Water quality effects would be slightly greater in Alternative 2 because there would be a larger area disturbed during construction, and the increase in impervious area is also larger. Additional deicing of runway and taxiways is expected to have a negligible effect on groundwater quality. Reduced delay times may also reduce the deicing fluids needed for aircraft in remote locations.

Mitigation measures would be used during construction and could be incorporated in the design of the selected alternative to protect surface water quality. These measures would use BMPs compatible with airport operations, and would include measures such as aeration systems, and revised spill response and containment measures.

4.8 Section 4(f) Resources

This section provides an analysis of the Project's compliance with Section 4(f) provisions of the U.S. DOT Act of 1966, recodified at 49 U.S.C., Section

303(c).[96] The law states, "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."[97]

The Section 4(f) resources that are evaluated in this FEIS include:

- Public parks;
- Public recreation areas;
- Wildlife and waterfowl refuges of national, state, or local significance; and
- Land from an historic site of national, state, or local significance (including properties listed on or eligible for listing on the National Register of Historic Places and archaeological sites warranting preservation in place).

Playgrounds on public school properties are considered Section 4(f) resources if they meet the four conditions of a park or recreation area (publicly owned, open to the public, must be used for recreation, and must be considered significant). School playgrounds protected under Section 4(f) need to support substantial organized or officially sanctioned recreation opportunities or sporting events.[98]

This section also considered the effects of the Proposed Project on properties protected under Section 6(f) of the Land and Water Conservation Funds Act[99], legislation that provides for the public purchase and preservation of land. Section 6(f) properties, lands purchased with Land and Water Conservation Act funds, must be maintained perpetually in public outdoor recreation use.

As required by FAA Order 1050.1E,[100] this FEIS identifies consequences of the Project (Alternative 1 and Alternative 2) that would result in a "use" of Section 4(f) resource, and analyzes and documents alternatives and mitigation measures that would avoid and/or minimize potential adverse effects to the Section 4(f) resources.

4.8.1 Affected Environment

This section explains the Local Study Area and the methodology used to identify Section 4(f) resources.

Local Study Area

The Local Study Area includes 24 municipalities in four counties in Pennsylvania and New Jersey (Figure 4.8-1). It extends east to west from Gloucester City NJ, just south of the Walt Whitman Bridge (Interstate 76) to the Commodore Barry Bridge (U.S. Route 322). The Local Study Area for the Project encompasses an area larger than the existing (2003) 65 dB DNL noise contour, and was established to include all areas directly affected by the Proposed Project and all areas potentially affected by noise changes from the alternatives considered in this FEIS. The Study Area was based on noise because increased noise has the largest geographic areas which has the potential to impair the use of Section 4(f) resources. The noise analysis

96 *Section 4(f) of 1966, (recodified at 49 USC, Subtitle I, Section 303 (c))*. United States Department of Transportation Act.
97 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures,* Section 6. Paragraph 6.1a, Federal Aviation Administration, 8 June 2004.
98 Section 4(f) Interactive Document, (http://www.section4f.com/res_other.htm#3), Maryland Department of Transportation, State Highway Administration. 8 July 2004. With respect to this particular issue, Maryland DOT provides a clear concise definition accepted by FHWA and used as guidance in this process.
99 *16 United States Code 4601-4*, 3 September 1964.
100 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures,* Section 6. Paragraph 6.4 Federal Aviation Administration, 8 June 2004.

documented in Section 4.2 of this FEIS showed no significant or noticeable noise changes outside the Local Study Area and Alternatives 1 and 2 would not acquire land or cause visual impacts outside of the Local Study Area; therefore, no Section 4(f) analysis was warranted for beyond this area.

Methodology

Section 4(f) resources were identified within the Local Study Area (portions of Delaware County, Pennsylvania; Philadelphia County, Pennsylvania; Camden County, New Jersey and Gloucester County, New Jersey) using available GIS data, available street maps and atlases, USGS Quadrangle Maps, municipal websites, and field reconnaissance. In addition to these resources, the Section 4(f) analysis also takes into account resources identified in Section 4.9 of this FEIS and information provided in the *Final FAR Part 150 Noise Compatibility Study*[101]

Resources within the Local Study Area

Section 4(f) resources (public parks, recreation areas, and Listed or Eligible Historic Sites and Historic Landmarks) identified within the Local Study Area are listed in Table 4.8-1 and shown on Figure 4.8-1.

One Section 4(f) resource, the West Deptford Rivergate Public Park, was also identified as a Section 6(f) resource. Section 6(f) resources are parks and recreation areas that have received grants through the Land and Water Conservation Fund Act.[102] Section 6(f) of this Act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the Department of the Interior's National Park Service.

Some areas, such as Little Tinicum Island, are not considered Section 4(f) resources because they are not designated for public recreation use and are not wildlife refuges. Little Tinicum Island is designated by the Pennsylvania Department of Conservation and Natural Resources (DCNR) as a natural area for the protection of unique plant communities (see Appendix D).

Recreational bicycle routes/lanes within highway ROW are not considered Section 4(f) resources because they do not constitute a recreational facility as defined by the DOT.[103,104,105] No bicycle path on a separate public ROW exists within the Local Study Area, nor are any anticipated to be constructed by 2007.[106] Recreational bicycle routes, both existing and proposed, within the Local Study Area are described in Section 4.14, Surface Transportation.

4.8.2 Environmental Consequences

This section describes the methodology used to identify direct impacts, if any, to Section 4(f) resources.

Methodology

The "use" of a Section 4(f) resource, as described in 23 CFR 771.135 and FAA Order 1050.1E, Appendix A paragraph 6.2c, includes any action

101 *Philadelphia International Airport: Federal Aviation Regulations Final Part 150 Noise Compatibility Study*, Volume 1, Landrum & Brown Team, 23 May 2003.
102 *Land and Water Conservation Fund Act*. Department of the Interior. 1965.
103 Section 4(f) Interactive Document, (http://www.section4f.com/res_other.htm#3), Maryland Department of Transportation, State Highway Administration, 8 July 2004. With respect to this particular issue, Maryland DOT provides a clear concise definition accepted by FHWA and used as guidance in this process.
104 *Federal Aviation Administration 5050.4A, Airport Environmental Handbook*, United States Department of Transportation, Paragraph 85(g) and 47e(7)(a)2. 8 October 1985.
105 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures*, Appendix A, Section 6.2c. Federal Aviation Administration, 8 June 2004.
106 *The Tinicum-Fort Mifflin Trail, Executive Summary*, (http://www.nps.gov/phso/rtca/tinfort) and *The East Coast Greenway in Pennsylvania. Master Plan and Needs Assessment,* (http://www.cleanair.org/Transportation/ecg).

Table 4.8-1 Section 4(f) and Section 6(f) Resources within the Local Study Area

	Property	Type of Property	Primary (Designated) Use of Property	State/Town
1	Gloucester City Park	Public Park	Boat Launch, Passive Recreation, Picnic, Waterfront access, Playground	Gloucester City, NJ
2	6th Street and Division Street Playground	Recreation Area	Playground	Gloucester City, NJ
3	Brooklawn Park	Public Park	Passive Recreation	Brooklawn Borough, NJ
4	River Drive Park	Public Park	Passive Recreation	Westville Borough, NJ
5	West Deptford Rivergate	Public Park/Section 6(f) property	Public Boat Ramp, Playground, Picnic Areas, Tennis, Basketball	West Deptford, NJ
6	Red Bank Battlefield Park	National Historic Landmark/ Public Park	Passive Recreation, Historic Site, Picnic Areas	National Park, NJ
7	Riverwinds Park	Public Park	Scenic Trails, Football, Hockey, Soccer, Tennis, Benches, Waterfront access, outdoor amphitheater and concert space	West Deptford, NJ
8	Clement Farmhouse	National Register – Eligible	Historic Structure	West Deptford, NJ
9	West Deptford Municipal Park	Public Park	Passive Recreation	West Deptford, NJ
10	Barry Bridge Park	Public Park	Passive Recreation, Boat Ramp	Chester City, PA
11	Veterans Memorial Park	Public Park	Active, Passive, Playground , Game Court, Play Fields (Baseball, Football), Shelter or Building	Chester City, PA
12	Yarnell Circle Playground	Recreation Area	Playground	Chester Township, PA
13	Williams Circle	Recreation Area	Playground	Chester Township, PA
14	Crozier Park	Public Park	Active Recreation, Passive Recreation, Play Fields (Baseball, Football)	Chester City, PA
15	Ethel Waters Park	Public Park	Passive Recreation	Chester City, PA
16	Deshong Park	Public Park	Active Recreation, Passive Recreation, Play Fields (Baseball, Football)	Chester City, PA
17	Sun Village Park	Public Park	Active, Play Fields (Baseball, Football), Playground, Picnic Area, Game Court, Shelter or Building	Chester City, PA
18	Eddystone Park	Public Park	Passive Recreation	Eddystone Borough, PA
19	Tinicum Manor Field Recreation Area	National Register Historic District	Historic District	Philadelphia, PA

Table 4.8-1 Section 4(f) and Section 6(f) Resources within the Local Study Area (Cont'd.)

	Property	Type of Property	Primary (Designated) Use of Property	State/Town
20	Second/Warwick Street Playground	Recreation Area	Playground	Tinicum Township, PA
21	Corinthian Yacht Club	National Register – Eligible	Historic Site	Tinicum Township, PA
22	Governor Printz Park and Landing (The Printzhof)	National Historic Landmark/ Public Park	Historic Site, Passive Recreation, Historical Markers	Tinicum Township, PA
23	The Lazaretto	National Register – Listed	Historic Site	Essington, PA
24	Tinicum Public Library Ballfield	Recreation Area	Baseball Field	Tinicum Township, PA
25	Westinghouse Grove	Public Park	Tennis Courts, Basketball Courts, Passive Recreation, Baseball Fields	Tinicum Township, PA
26	John Heinz National Wildlife Refuge	National Wildlife Refuge	Wildlife Refuge	Tinicum Township, PA
27	George Wolf School	National Register – Listed	Historic Structure	Philadelphia, PA
28	George Wharton Pepper Middle School Recreation Areas	Public Recreation Area	Ballfields	Philadelphia, PA
29	Tribet Place Park	Recreation Area	Baseball Fields, Walking Paths, Gardens, Benches	Philadelphia, PA
30	Bosacco Park	Public Park	Passive Recreation	Colwyn Borough, PA
31	Cobbs Creek Park	Public Park	Passive Recreation	Philadelphia City and Yeadon Borough, PA
32	Colwyn School	National Register – Eligible	Historic Structure	Colwyn Borough, PA
33-34-35	Lincoln Avenue Historic District	National Register- Eligible	Historic District	Yeadon Borough, PA
36	Yeadon Community Park	Public Park	Passive Recreation	Yeadon Borough, PA
37	Yeadon Theater	National Register – Eligible	Historic Structure	Yeadon Borough, PA
38	Bell Avenue School	National Register – Eligible	Historic Structure	Yeadon Borough, PA
39	Blunston Run Park	Public Park	Passive Recreation	Yeadon Borough, PA
40	Blue Bell Tavern	National Register – Eligible	Historic Structure	Philadelphia, PA
41	Island Avenue Fire Station	National Register – Eligible	Historic Structure	Philadelphia, PA
42	Fort Mifflin	National Historic Landmark	Historic Site	Philadelphia PA
43	Philadelphia Naval Shipyard Historic District	Recreation Area	Benches, Ball Fields, Basketball Court, Playground (used outside school hours)	Philadelphia, PA

Source: VHB, Inc. in association with CHPlanning, Ltd. 2004 that would permanently incorporate land from a Section 4(f) resource into a transportation facility; any temporary occupancy of land that would be adverse in terms of the purposes of the Resource; or any impacts due to the proximity of the Project that would substantially impair the activities, features, or attributes of the Resource that qualified for protection.

Therefore, the analysis of environmental consequences examined all of the effects of Alternatives 1 and 2 to determine if these would require the permanent or temporary use of land from a Section 4(f) resource, or if there would be changes in noise, air quality, traffic, or other environmental qualities that would impair the use of a Section 4(f) resource. These changes are described in other sections of this FEIS.

Direct Impacts

This section describes the potential effects of the Proposed Project to determine if there would be a "use" of any Section 4(f) resource, including the acquisition of land through fee or easement) or constructive use of the property.

According to FAA Order 1050.1E, substantial impairment to a Section 4(f) resource occurs only when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished by means of noise, air pollution, or otherwise, that affect its aesthetic value, harm its wildlife, defoliate its vegetation, or take it in any practical sense."[107] FAA Order 1050.1E, Appendix A, Paragraph 11.2a, also states that, for historic properties, there is no "constructive use" under Section 4(f) if FAA issues a Finding of No Effect under Section 106. FAA has made a Finding of No Effect, as documented in Section 4.9 of this FEIS.

Alternative 1

Alternative 1 would not require acquisition of any Section 4(f) or Section 6(f) property, nor would this Alternative affect access to any property or alter the visual setting or ecology of any property. The only property acquisition would be a section of SR 291 north of the Economy Parking Lot, which is not a Section 4(f) resource.

Alternative 2

Alternative 2 would not require acquisition of any Section 4(f) or Section 6(f) property, nor would it affect access to any property or alter the visual setting or ecology of any property. The only property acquisition would be a section of SR 291 north of the Economy Parking Lot, which is not a Section 4(f) resource.

Indirect Impacts

Indirect impacts are effects of the Proposed Project, other than land acquisition or physical disturbance that would impair the use of the Section 4(f) resource. FAA Order 1050.1E states that the Part 150[108] land use compatibility guidelines may be used to determine if Section 4(f) resources would be considered substantially impaired by "constructive uses." Constructive use may include noise impacts, access restrictions, vibration impacts, ecological intrusions, and visual impacts that substantially diminish the activities, features or attributes of a resource that contribute to its significance or

107 *Federal Aviation Administration Order 1050.1E, National Policy*, Appendix A, Section 6.2f. United States Department of Transportation, 8 June 2004.

108 *Philadelphia International Airport: Final Federal Aviation Regulations Part 150 Noise Compatibility Study*, Volume 1, Landrum & Brown Team, 23 May 2003.

enjoyment. Noise impacts must be at a level high enough to amount to a taking of a park or portion of a park. FAA Order 1050.1E, Appendix A paragraph 6.2 states that the land use compatibility guidelines in 14 CFR Part 150 may be relied on to determine whether there is a constructive use under Section 4(f). For outdoor recreational areas such as parks, athletic fields, and outdoor music shells, noise levels of up to 75 dB DNL are compatible with these uses. For historic resources, FAA Order 1050.1E states that "if architecture is the relevant characteristic of a 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."[109] A constructive use of a historic property would occur only if the effects substantially impair the affected resource's historical integrity.

The only off-airport effects of Alternatives 1 and 2 to Section 4(f) resources are potential increases in noise from changes in aircraft use of Runway 17-35. Table 4.8-2 provides the noise level for each analyzed condition for each Section 4(f) property in the Local Study Area.

Other potential impacts of the Alternatives do not require analysis with respect to Section 4(f) resources. Changes in air quality resulting from Alternative 1 and Alternative 2, as described in Section 4.6 of this FEIS, would not exceed the NAAQS and would not impair the use of any Section 4(f) resource within the Study Area. Potential changes in traffic patterns and volumes from Alternative 1 or Alternative 2 would be limited to Bartram Avenue and would not affect access to or use of any Section 4(f) resource.

109 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures*, Appendix A, Section 6.2h. Federal Aviation Administration, 8 June 2004.

No Section 4(f) resources are within DNL 65 dB contours that would experience a significant change (a 1.5 dB or greater increase in cumulative noise exposure), from either Alternative 1 or Alternative 2 for either of the study years, 2007 and 2015. Based on supplemental noise analyses (see DEIS Appendix A-1, *Noise*), there are three noise-sensitive areas northwest of the end of Runway 17-35 in Eastwick, Pennsylvania at DNL levels between 60 and 65 dB that are projected to experience increases in noise exposure of greater than 3 dB. However, no Section 4(f) Resources were identified within these three areas. There would be no areas within the DNL 45 to DNL 60 dB contours that would experience a change in noise exposure greater than 5 dB.

Alternative 1

Two Section 4(f) properties would experience noise levels greater than 65 dB in 2007 (Figure 4.8-3). Noise levels at both properties would decrease in comparison to the No-Action Alternative. Noise levels at the Island Avenue Fire Station would decrease by 0.1 dB, and noise levels at Fort Mifflin would decrease by 0.4 dB, from 72.1 dB to 71.7 dB. These changes are imperceptible to the human ear. In 2015, two properties would experience noise levels greater than 65 dB (Figure 4.8-5). Noise would decrease at Fort Mifflin (by 0.3 dB) and at the Island Avenue Fire Station (by 0.6 dB). Noise levels at the Island Avenue Fire Station are predicted to decrease as a result of the change to RJs and narrow body aircraft that are quieter than the turboprops and corporate jets that would use Runway 17-35 in the No-Action Alternative. Because Runway 17-35 would be extended to the south, aircraft would also take off further south and turn to the west earlier, further decreasing noise at the Fire Station location. This section also discusses noise changes at the John Heinz National Wildlife Refuge.

Table 4.8-2 Existing and Predicted Noise Levels at Identified Section 4(f) Properties (DNL dB)[1]

			2007			2015		
	Property	2003	No-Action	Alternative 1	Alternative 2	No-Action	Alternative 1	Alternative 2
1	Gloucester City Park	60.8	60.4	60.1	60.3	61.7	61.4	61.7
2	6th Street/Division Playground	60.6	60.2	59.8	60.1	61.4	61.1	61.4
3	Brooklawn Park	53.3	52.9	52.6	52.7	54.3	54.0	54.1
4	River Drive Park	54.5	54.0	53.7	53.8	55.4	55.1	55.2
5	West Deptford Rivergate	58.8	58.9	58.6	58.7	60.3	60.0	60.2
6	Red Bank Battlefield Park	55.5	55.6	55.4	55.5	57.1	56.8	57.0
7	Riverwinds Park	55.4	55.0	55.5	56.0	56.6	56.7	57.3
8	Clement Farmhouse	50.0	51.5	52.8	51.9	52.3	53.5	52.3
9	West Deptford Municipal Park	54.2	57.3	59.8	57.0	57.9	60.6	57.3
10	Barry Bridge Park	58.0	57.7	57.6	57.6	59.1	59.1	59.0
11	Veterans Memorial Park	58.4	58.9	58.8	58.8	60.3	60.2	60.2
12	Yarnall Circle Playground	57.5	57.8	57.7	57.7	59.3	59.1	59.1
13	Williams Circle	57.4	57.7	57.6	57.6	59.2	59.0	59.1
14	Crozier Park	54.3	53.6	53.6	53.5	55.0	55.0	54.9
15	Ethel Waters Park	60.6	61.2	61.0	61.1	62.5	62.4	62.4
16	Deshong Park	55.4	54.8	54.8	54.7	56.2	56.2	56.1
17	Sun Village Park	53.4	52.7	52.6	52.5	54.1	54.1	54.0
18	Eddystone Park	53.8	53.2	53.0	53.0	54.6	54.5	54.4
19	Tinicum Manor Field	54.7	54.1	54.0	53.9	55.6	55.5	55.4
20	Second/Warwick Street Playground	58.4	58.3	58.1	58.1	59.7	59.7	59.6
21	Corinthian Yacht Club	60.4	60.5	60.4	60.3	61.9	61.9	61.8
22	Governor Prinz Park	60.2	60.2	60.1	60.0	61.7	61.6	61.5
23	The Lazaretto	59.4	59.2	59.1	59.0	60.7	60.6	60.5
24	Tinicum Library Baseball Field	58.1	57.4	57.2	57.2	58.8	58.7	58.6
25	Westinghouse Grove	56.6	55.8	55.7	55.6	57.2	57.2	57.0
26	John Heinz Wildlife Refuge	55.9	55.9	55.6	55.6	57.4	57.2	57.2
27	George Wolf School	57.8	63.4	64.0	64.7	65.0	64.9	65.7
28	George Warton Pepper Playground	55.6	60.9	62.3	63.2	62.4	63.3	64.1
29	Tribet Place Park	52.8	58.3	59.0	59.8	59.9	60.0	60.8
30	Bosacco Park	53.1	58.2	58.8	59.5	59.7	59.7	60.5
31	Cobbs Creek Park	55.1	57.7	59.0	59.4	58.9	59.7	60.2
32	Colwyn School	52.7	56.9	57.7	58.3	58.4	58.6	59.3
33	Simmons House (incl. in 35)	48.2	49.6	50.9	51.4	50.6	51.7	52.1

Table 4.8-2 Existing and Predicted Noise Levels at Identified Section 4(f) Properties (DNL dB)[1] (Cont'd.)

			2007			2015		
	Property	2003	No-Action	Alternative 1	Alternative 2	No-Action	Alternative 1	Alternative 2
34	Bright House (incl. in 35)	47.5	49.3	50.5	51.0	50.4	51.3	51.8
35	Lincoln Avenue District	47.3	49.1	50.3	50.8	50.2	51.1	51.6
36	Yeadon Community Park	49.9	50.8	52.4	52.6	51.6	53.1	53.3
37	Yeadon Theater	47.5	49.2	50.1	50.3	50.2	50.8	51.2
38	Bell Avenue School	49.1	51.2	52.2	52.5	52.4	52.9	53.3
39	Blunston Run Park	49.7	52.2	53.2	53.5	53.4	53.9	54.4
40	Blue Bell Tavern	50.2	53.5	54.3	54.7	54.6	55.1	55.6
41	Island Avenue Fire Station	63.0	67.9	68.0	68.5	69.4	68.8	69.5
42	Fort Mifflin	72.6	72.1	71.7	71.9	73.3	73.0	73.2
43	Philadelphia Naval Shipyard Historic District	63.9	63.5	63.2	63.4	64.7	64.4	64.7

Bold indicates noise levels above 65 dB DNL
Source: HMMH, 2004

John Heinz National Wildlife Refuge. The John Heinz National Wildlife Refuge is northwest of the Philadelphia International Airport, separated from the Airport by I-95, the SEPTA rail line, and Bartram Avenue. The Refuge is not aligned with any existing runway and is not on the direct approach or departure track for any of the existing runways, and would not be on the approach or departure track for Alternative 1. Departing aircraft from Runway 27R or Runway 35 occasionally pass over the Heinz Refuge.

The noise analysis completed for this project demonstrated that, under existing conditions and the No-Action Alternative, the Heinz Refuge experiences noise levels between 45 and 60 dB DNL. A noise monitoring site on Lindberg Boulevard south of the refuge showed an average DNL of 50 dB. This is calculated to increase to 53.5 dB in 2007 and 2015 for the No-Action Alternative.

Alternative 1 would increase the use of Runway 17-35 by regional jets and narrowbody jets (which are quieter than the turboprops and corporate jets that currently use Runway 35) and would shift the departure threshold of Runway 35 approximately 400 feet to the south. This could shift departing flight tracks slightly south, resulting in departing flights being higher over the Refuge. The landing threshold of Runway 17 would shift 640 feet to the north, resulting in arriving flights being lower over the Refuge. Alternative 1 would increase calculated noise levels at the monitoring site by 1.9 dB in 2007 and by 3 dB in 2015. Noise levels are predicted to be 55.4 dB in 2007 and 56.5 dB in 2015. These noise levels are compatible with the outdoor recreational use of the Heinz Refuge in accordance with FAR Part 150 criteria for compatible land use (Part 150, Table 1, Appendix A).

Alternative 2

Two Section 4(f) properties would experience noise levels greater than 65 dB in 2007 (Figure 4.8-4). Noise levels at the Island Avenue Fire Station would increase by 0.6 dB, from 67.9 dB to 68.5 dB, and noise levels at Fort Mifflin would decrease by 0.2 dB, from 72.1 dB to 71.9 dB. In 2015 (Figure 4.8-6), three properties would experience noise levels greater than 65 dB. Noise would increase at the George

Wolf School by 0.7 dB (from 65 dB to 65.7 dB) and at the Island Avenue Fire Station (by 0.1 dB), from 69.4 dB to 69.5 dB. Noise would decrease at Fort Mifflin (by 0.1 dB). Noise levels at the Island Avenue Fire Station are predicted to decrease as a result of the change to RJs and narrow body aircraft that are quieter than the turboprops and corporate jets that would use Runway 17-35 in the No-Action Alternative. Because Runway 17-35 would be extended to the south, aircraft would also take off further south and turn to the west earlier, further decreasing noise at the Fire Station location.

Island Avenue Fire Station, Philadelphia. The Island Avenue Fire Station is a historic structure determined eligible for the National Register of Historic Places under Criterion C (architecture). The fire station is at the edge of the PHL employee parking lot at the busy intersection of Island Avenue and Bartram Avenue. In 2007, Alternative 2 would result in noise levels of 68.5 dB, a 0.6-dB increase over the No-Action Alternative. Noise levels in 2015 would increase to 69.5 dB, which is 0.1 dB more than the No-Action Alternative. This would not impair the setting, features, or attributes that contribute to its significance. These levels of noise are compatible with the use of the property as a fire station, and with its setting in an urban area.

George Wolf School, Philadelphia, Pennsylvania. The George Wolf School, also known as the John Bartram High School Annex, is protected under Section 4(f) as a historic property. It also contains a small playground that is accessible to the public and therefore is also considered a public recreation area. It was first listed as a National Historic Landmark in 1988[110] under Criterion C (distinctive characteristics of a type, period or method of construction, or that possess high artistic values). In 2015 condition, Alternative 2 would result in noise levels of 69.5 dB, an increase of 0.1 dB from the No-Action Alternative. This change is not a significant impact on this Section 4(f) resource and would not impair the setting, features, or attributes that contribute to its significance. The small playground adjacent to the school would have a noise exposure increase of 1.0 dB in 2015, from 64.5 to 65.5 dB. Noise levels of 65 dB or higher are also considered compatible with outdoor recreational activities.

John Heinz National Wildlife Refuge. As described for Alternative 1, Alternative 2 would also shift the landing threshold of Runway 17 end approximately 640 feet to the north, and would shift the departure threshold of Runway 35 to the north by 1,044 feet. This would shift both departing and arriving flight tracks slightly north and slightly lower than in existing or No-Action conditions, and would increase calculated noise levels at the monitoring site by 2.9 dB in 2007 and by 3.8 dB in 2015. Noise levels are predicted to be 56.4 dB in 2007 and 57.3 dB in 2015. These noise levels are compatible with the outdoor recreational use of the Heinz Refuge in accordance with FAR Part 150 criteria for compatible land use (Part 150, Table 1, Appendix A).

4.8.3 Summary

The Secretary of Transportation may 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.[111]

110 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures*, Appendix A, Section 6.2h. Federal Aviation Administration, 8 June 2004.

111 *Ibid.*

In 2007, Alternative 1 would result in small increases in noise levels at one Section 4(f) property (the Island Avenue Fire Station) when compared to the No Action Alternative; however, the noise increase would not impair the integrity or use of this resource. Alternative 2 would result in a small noise increase at one historic resource (Island Avenue Fire Station) in 2007, and small increases in noise at one historic resource and public recreational property (George Wolf School) in 2015. These small increases in noise would not impair the uses of these public recreation areas or the integrity or use of the historic structures.

The implementation of either Alternative 1 or Alternative 2 would neither incorporate land from a Section 4(f) resource nor impair the normal activity or aesthetic value of a public park, recreation area or wildlife refuge. No properties on or eligible for listing on the National Register of Historic Places would be impaired by either of the Project alternatives in such a way that would interfere with the designation of the property. Therefore, the Project build alternatives would not result in the "use" of a Section 4(f) property, and there is no need to prepare a Section 4(f) Evaluation of prudent or feasible alternatives to such use.

4.9 Historical, Architectural, Archaeological and Cultural Resources

Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), requires Federal agencies to consider the effects of their undertakings on properties on or eligible for inclusion in the National Register of Historic Places (NRHP). Compliance with Section 106 requires consultation with the Advisory Council on Historic Preservation, the State Historic Preservation Officer (SHPO), and the Tribal Historic Preservation Officer, if there is a potential adverse effect to historic properties on or eligible for listing on the NRHP. This section describes the historic, architectural, archaeological and cultural resources within the Project's Area of Potential Effect (APE) and identifies the potential effects of the Proposed Project on those resources.

4.9.1 Historic and Architectural Resources

Historic and architectural resources are those above-ground resources that are listed on, or eligible for, the NRHP. To be eligible for listing, a resource (building, site, structure, object, or district) must be at least 50 years old and possess integrity of location, design, setting, materials, workmanship, feeling and association. In addition, the resource must also meet at least one of the Criteria for Evaluation defined by the National Park Service.[112] Historic resources (buildings, sites, structures, objects or districts) must possess a quality of significance in American history, architecture, engineering and culture and:

- Are associated with events that have made a significant contribution to the broad patterns of our history (Criterion A);
- Are associated with the lives of persons significant in our past (Criterion B);
- Embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or

112 *36 Code of Federal Regulations § 60.4 (Criteria for Evaluation)*, Chapter I. National Park Service. 1 July 2003.

- Have yielded or may be likely to yield information important to history or prehistory (Criterion D).

This section describes the above-ground resources within the APE and identifies potential effects of the Project. DEIS Appendix A-4, *Historic Resources Survey and Determination of Eligibility Report,* provides additional detailed information on the identification and evaluation of historic resources within the APE.

Affected Environment

This section describes the existing above-ground historical and architectural resources within the Project's APE.

Area of Potential Effect

An APE is defined as the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR Part 800.16(d)). The historic structures APE was developed as a conservative approach to encompass all potential areas where aircraft noise from the extension of Runway 17-35 may exceed 60dB DNL. Increases of noise where existing noise levels exceed 60 dB may potentially affect the setting of a historic resource. The APE does not include areas affected by noise from the primary runways (Runway 9L/27R and 9R/27L) because, according to the findings documented in Section 4.2 of this FEIS the alternatives would not increase noise levels east or west of the airport.

The APE for historic resources (Figure 4.9-1) extends approximately nine miles along a northwest-southeast axis defined by the centerline of Runway 17-35 with an average width of approximately 4,500 feet. It includes portions of Darby Borough, Yeadon Borough, Colwyn Borough, Tinicum Township, Upper Darby Township, Lansdowne Borough, East Lansdowne Borough, and the Eastwick and Essington sections of Philadelphia, as well as a portion of West Deptford, NJ. This initial APE was reviewed and approved by the Pennsylvania Historic and Museum Commission (PHMC)[113] and NJ SHPO[114] (see Appendix D).

Methodology

Historic resources within the APE were identified based on information provided by the PHMC and NJ SHPO, research on background history and historical contexts, and field reconnaissance. After completing background research, a field survey of the APE was conducted to identify resources that appear to be greater than 50 years old and evaluated those that appear to meet the criteria for the National Register. Properties that were previously listed on or determined eligible for the National Register in prior studies were also field-verified. Recommendations for National Register eligibility were made for previously unevaluated resources based on the Criteria for Evaluation.[115] During a two-day site visit on May 23 and 24, 2004 with the PHMC staff, additional properties were identified as potentially National Register eligible. The NJ SHPO and PHMC have concurred with these determinations of eligibility (See Appendix D).

Resources

Table 4.9-1 lists the historic and architectural resources that were determined to be eligible for the National Register. No properties listed on the National Register are within the APE, although other significant historic resources are in the

113 Concurrence letter from Kurt Carr PHMC to Wayne Heibeck, Harrisburg Airports District Office, 7 April 2004.
114 Concurrence letter from Dorothy Guzzo NJSHPO to Wayne Heibeck, Harrisburg Airports District Office, 7 April 2004.
115 *36 Code of Federal Regulations Section 60.4 (Criteria for Evaluation)*, Chapter I. National Park Service, 1 July 2003.

vicinity of the APE. These include Fort Mifflin, southeast of Runway 17-35; the Lazaretto and the Printzhoff, both west of the airport in Tinicum; and the Philadelphia Naval Shipyard Historic District, east of the airport. Figure 4.9-1 shows existing (2003) noise contours in relation to the historic properties in the APE and adjacent to PHL

Table 4.9-1 Historic Resources in the APE

Resource	Location
Colwyn School	Colwyn Borough, PA
Blue Bell Tavern	Philadelphia, PA
Fairmount Park	Philadelphia, PA
Island Avenue Fire Station	Philadelphia, PA
George Wolf School	Philadelphia, PA
John Bartram High School	Philadelphia, PA
Clement Farmhouse	West Deptford, NJ
State Highway 44 Bridge, Mantua Creek	West Deptford, NJ
Bell Avenue School	Yeadon Borough, PA
Lincoln Avenue Historic District (including the Bright and Simmons Houses)	Yeadon Borough, PA
Yeadon Theater	Yeadon Borough, PA

Environmental Consequences

Impacts to historic resources may occur as a result of property acquisition, alteration, demolition, changes in visual setting, or changes in noise levels that would affect the integrity of the property's setting. In some cases, high noise levels may cause vibration sufficient to physically damage historic structures. As defined in FAA Order 1050.1E,[116] an FAA undertaking would affect a property that is on or eligible for inclusion in the NRHP if the action has the potential to alter its character-defining features. This section provides information on the methods used to assess the potential effects of the Project on historic structures, and the anticipated effects of each of the Project alternatives. Neither of the alternatives evaluated in this FEIS would require property acquisition, alteration, demolition, or changes in the visual setting, of any historic property. Therefore, this section evaluates the effects of changes in noise levels.

Methodology

Section 4.2, Noise, of this FEIS provides an analysis of existing and future aircraft noise levels at PHL. Changes in noise were assessed by comparing the noise levels for the No-Action Alternative with the noise levels predicted for Alternative 1 and 2 at each historic property within the APE, and calculating the change in noise associated with each alternative. FAA Orders stipulate conditions that define "significant impact." If a location of incompatible land use is exposed to a Project-related increase in noise level of DNL 1.5 dB or more, and that location lies within the 65 dB DNL noise contour for the "with action" condition (Alternative 1 or Alternative 2), then the location is considered to be significantly impacted by noise. The FICON recommended that less than significant noise level changes also be identified for noise sensitive locations exposed to Project-related increases. FICON recommended reporting any changes of DNL 3 dB or more between the 60 and 65 dB DNL contour and increases of DNL 5 dB or more between the 45 and 60 dB DNL contour. The findings of the noise analysis are provided in DEIS Appendix A-1, *Noise Technical Report,* and summarized in Section 4.2, *Noise*, of this FEIS.

Direct Impacts

Direct impacts are defined as any action that would destroy, damage, alter, or remove any property, or change the physical features within the physical

116 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures,* Appendix A. Section 11, Federal Aviation Administration, 8 June 2004, p A-41.

setting of any property that contributes to its historic significance.

No-Action Alternative. The No-Action Alternative would not directly affect any historic resource.

Alternative 1. Alternative 1 would not result in any direct physical impact to any historic resource. The areas that would be affected by construction of Alternative 1, including on-airport areas, the section of SR 291 that would be demolished, intersection improvements on Bartram Avenue, and relocation of navigational aids, would not be within or adjacent to any historic property.

Alternative 2. Alternative 2 would not result in any direct physical impact to any historic resource. The areas that would be affected by construction of Alternative 2, including on-airport areas, the section of SR 291 that would be demolished, intersection improvements on Bartram Avenue, and relocation of navigational aids, would not be within or adjacent to any historic property.

Indirect Effects

Indirect effects on historic resources include changes in noise levels that have the potential to alter its character-defining features. None of the historic properties include a quiet setting as a character-defining feature. However, this FEIS presents noise information in the interest of disclosure. The analysis of indirect effects takes into account the APE established for the Proposed Project as well as the larger area which may experience changes in noise levels.

No-Action Alternative. Two historic resources would experience noise levels greater than 65 dB DNL in the No-Action Alternative. In 2007, noise levels at Fort Mifflin would be 72.1 dB (0.5 dB less than in 2003), and noise levels at the Island Avenue Fire Station would be 67.9 dB, 4.9 dB higher than in 2003. In 2015, Fort Mifflin would experience a cumulative noise level of 73.3 dB, and the Island Avenue Fire Station would have a noise level of 69.4 dB. Noise levels at the George Wolf School would be 65 dB (Table 4.9-2). Figures 4.8-3 and 4.8-5 show the No-Action Alternative noise contours in relation to historic properties.

Alternative 1. As shown in Table 4.9-2, Alternative 1 would result in cumulative noise levels greater than 65 dB at two historic resources in 2007 and in 2015 (Figures 4.8-3 and 4.8-5). The change in noise levels from the No-Action Alternative for each analysis period is less than one decibel and would not be perceptible to the human ear. As described below, Alternative 1 would decrease noise levels at certain resources. In 2007, Alternative 1 would decrease noise levels at Fort Mifflin by 0.4 dB.

Alternative 1 would increase noise levels at one historic resource, the Island Avenue Fire Station, by 0.1 dB in 2007. The building was determined eligible for the National Register because of its architecture. It is in an urban setting. Quiet surroundings do not exist in current or future conditions, and do not contribute to the property's significance.

In 2015, Alternative 1 would decrease noise levels at Fort Mifflin by 0.3 dB, and at the Island Avenue Fire Station by 0.6 dB. Noise levels at the Island Avenue Fire Station are predicted to decrease as a result of the change to RJs and narrowbody aircraft that are quieter than the turboprops and corporate jets that would use Runway 17-35 in the No-Action Alternative. Because Runway 17-35 would be extended to the south, aircraft would also take off further south and turn to the west earlier, further decreasing noise at the Fire Station location.

Table 4.9-2 Noise Levels at Historic Properties (db DNL)

Historic Resource	2003	2007			2015		
		No-Action	Alternative 1	Alternative 2	No-Action	Alternative 1	Alternative 2
Blue Bell Tavern (Fairmont Park)	50.2	53.3	54.3	54.7	54.6	55.1	55.6
Clement Farmhouse	50.0	51.5	52.8	51.9	52.3	53.5	52.3
Colywn School	52.7	56.9	57.7	58.3	58.4	58.6	59.3
Corinthian Yacht Club	60.4	60.5	60.4	60.3	61.9	61.9	61.8
Fort Mifflin	72.6	72.1	71.7	71.9	73.3	73.0	73.2
George Wolf School	57.8	63.4	64.0	64.7	65.0	64.9	65.7
Governor Printz Park and Landing (The Printzhof)	60.2	60.2	60.1	60.0	61.7	61.6	61.5
Island Avenue Fire Station	63.0	67.9	68.0	68.5	69.4	68.8	69.5
Lincoln Avenue Historic District (100 and 102 Lincoln Ave.)	48.2	49.6	50.9	51.4	50.6	51.7	52.1
Philadelphia Naval Shipyard Historic District	63.9	63.5	63.2	63.4	64.7	64.4	64.7
Red Bank Battlefield	55.5	55.6	55.4	55.5	57.1	56.8	57.0
Bell Avenue School	49.1	51.2	52.2	52.5	52.4	52.9	53.5
The Lazaretto	59.4	59.2	59.1	59.0	60.7	60.6	60.5
Yeadon Theater	47.5	49.2	50.1	50.3	50.2	50.8	51.2

Bold indicates noise levels above 65 dB DNL
Source: HMMH 2004

Alternative 2. Alternative 2 would result in cumulative noise levels greater than 65 dB at two historic resources in 2007 and at three in 2015 (Table 4.9-2; Figures 4.8-4 and 4.8-6). The change in noise levels from the No-Action Alternative for each analysis period is less than one decibel and, as described below, Alternative 2 would decrease noise levels at certain resources. In 2007, Alternative 2 would decrease noise levels at Fort Mifflin by 0.2 dB. In 2007, Alternative 2 would increase cumulative noise levels at the Island Avenue Fire Station (by 0.6 dB). In 2015, Alternative 2 would decrease noise levels at Fort Mifflin by 0.1 dB.

Alternative 2 would increase noise levels at the George Wolf School, by 0.7 dB and at the Island Avenue Fire Station by 0.1 dB in 2015. These changes are not perceptible to the human ear. Both buildings were determined eligible for the National Register because of architecture. Both are in an urban setting. Quiet surroundings do not exist in current or future conditions, and do not contribute to either property's significance.

Based on these findings, the FAA determines that the proposed Project, either Alternative 1 or Alternative 2, would have no effect on historic properties. The NJ SHPO and the PHMC have concurred with this determination of no effect (see Appendix D).

4.9.2 Archaeological Resources

A Phase 1A Archaeological Survey was undertaken for the Project to assess the archaeological sensitivity of the area likely to be disturbed by construction of the alternatives considered in this FEIS. DEIS Appendix A-5, *Archaeological Reconnaissance Report*, provides additional detailed information on archaeological resources.

Affected Environment

This section describes the methods used to identify the potential for archaeological resources to occur within the APE.

Area of Potential Effect

The APE for archaeology included any areas that would be disturbed for construction of Alternative 1 or Alternative 2, as shown on Figure 4.9-2. This area extends from approximately I-95 in the north to Hog Island Road south of the Airport, and includes the existing Economy Parking Lot. The APE extends approximately 500 feet east and west of the centerline of existing Runway 17-35. The initial APE was extended based on modifications to the initial design concept to include all areas of potential surface disturbance for each alternative.

Methods

The Phase IA Survey included documentary and map research, review of pertinent historic and archaeological literature, a visual inspection of the APE, and geomorphological testing within the APE. The locations of documented historic and known or suspected precontact sites in the vicinity of the APE were analyzed in relation to current conditions.

Resources

The *Phase 1A Archaeological Survey*, DEIS Appendix A-5, determined that portions of the APE exhibit moderate to high potential for the presence of precontact archaeological resources despite late 20th century alterations of the land. Portions of the APE may also contain the remnants of the Hog Island Shipyard and other early 20th century structures, as well as archaeological remains from early colonial-era settlement. However, most of the APE contains modern fill material underlain by estuarine soils that would have been unattractive for settlement by either early Native Americans or later inhabitants. The historic fill horizon (natural substrate) potentially containing archaeological resources is at least 6.5 feet below the existing ground surface throughout the APE.

Environmental Consequences

Although the APE was assessed to have a moderate to high potential for precontact and historic archaeological resources, the Phase 1A Survey indicated that the APE exhibits little sensitivity to intact archaeological deposits. Geomorphological testing within the APE confirmed the presence of an estuarine environment below substantial depths of fill. The most historic land surface identified, probably dating to the end of the 19th century, was 6.5 feet below the ground surface. This land surface potentially containing archaeological resources is below the depth of Project impact or excavation. Therefore, neither Alternative 1 nor Alternative 2 is expected to affect archaeological resources. The PHMC concurred with the No Effects Finding for Archaeological Resources (see Appendix D).

If subsurface archaeological resources are identified during construction, FAA would comply with the requirements of the Archaeological and Historic Preservation Act. If the resource was determined to be significant, FAA may conduct a survey of the site and undertake the recovery, protection and preservation of data.

4.9.3 Consultation and Coordination

As required by 36 CFR Part 800, which governs the Section 106 consultation process under the NHPA, and as described in FAA 1050.1E, the FAA has consulted with the New Jersey and Pennsylvania SHPOs, appropriate THPOs, and other appropriate sources during the preparation of this FEIS, and invited appropriate entities to be consulting parties. Consulting parties for the Proposed Project include the PHMC, NJ SHPO, Tinicum Township, City of Philadelphia Division of Aviation, and the City of Philadelphia Planning Commission. FAA determined the APE for this Project, in consultation with the NJ SHPO and PHMC. Historic resources were identified and documented in consultation with the SHPOs. The FAA's Finding of No Effect was circulated to the Consulting Parties.

4.9.4 Summary

The FAA finds that the proposed Project, for either Alternative 1 or Alternative 2, would have no effect on historic resources. Alternatives 1 and 2 would not result in any direct physical impacts to historic resources, because these alternatives would not destroy, damage, alter, or remove any property, nor would they change the physical features within the physical setting of any property that contributes to its historic significance. All physical alterations from Alternative 1 or Alternative 2 would be within the airport property and would not directly affect any historic resource. Because of the shallow depth of excavation and earthwork, neither Alternative 1 nor Alternative 2 would affect areas potentially containing archaeological resources. Alternatives 1 and 2 would result in minor increases in noise (less than 1 dB) at two historic resources (the George Wolf School building and the Island Avenue Fire Station) but would not alter the character-defining features of either property. Both alternatives would decrease noise levels at Fort Mifflin, by less than one decibel.

4.10 Biotic Communities

This section addresses impacts to biological diversity based on biotic communities. Section 4.10.2 provides a description of the affected environment and biotic communities within the Project Area and Local Study Area. Section 4.10.3 provides an evaluation of the consequences of each alternative on biotic communities. An evaluation of measures to avoid, minimize, and mitigate impacts, as well as recommendations for implementation of such measures, are included in Section 4.10.4. DEIS Appendix A-6, *Biotic Resources Technical Report*, provides more detailed information on methodology, affected environment, and environmental consequences.

4.10.1 Introduction

Biological diversity or "biodiversity" is an assessment of the numbers, types, and relative abundance of plant and animal species in natural communities. Biodiversity encompasses species richness as well as the genetic differences among individuals, abundance or rarity of species in a landscape, and the variety of habitats, communities, ecosystems, and landscapes where species occur. The concept of biodiversity is a combination of the connections within, between, and among these levels, and how the interrelated elements sustain the system as a whole.

For this FEIS, biodiversity is described primarily in terms of important wildlife and vegetation communities that are known to occur in the PHL Project Area. Rare species, which represent one of the most sensitive elements of biodiversity, are considered in Section 4.11 of this FEIS. Rare species are subject to regulatory protection, whereas overall biodiversity is not. Rare species may have greater sensitivity to human practices, and they are often more habitat-specific than common species and, therefore, more likely to be affected by disturbance.

Regulatory Context

All biotic community analyses were conducted in accordance with the requirements of NEPA of 1969;[117] CEQ's *Incorporating Biodiversity Considerations Into Environmental Impact Analysis Under the National Environmental Policy Act*,[118] FAA Order 1050.1E;[119] *FAA Advisory Circular (AC) 150/5200-33a*;[120] the *Fish and Wildlife Coordination Act* (16 U.S.C. 661-667e);[121] Pennsylvania Code 25: Chapter 93;[122] and Pennsylvania Code 25: Chapter 102.[123] Regulatory programs specific to the protection of endangered and threatened species are addressed in Section 4.11 of this FEIS. *FAA AC 150/5200-33a* provides guidance on locating certain land uses having the potential to attract wildlife that is hazardous to aircraft operations to or in the vicinity of public-use airports. This AC also provides guidance concerning the placement of new airport development projects (including airport construction, expansion, and renovation) pertaining to aircraft movement in the vicinity of hazardous wildlife attractants.[124]

Federal Executive Order 13112, Invasive Species, provides guidance on the definition, prevention, response, and monitoring of invasive species and the restoration of native species and habitat conditions in ecosystems that have been invaded.

The *Fish and Wildlife Coordination Act* (16 U.S.C. 661-667e)[125] provides that whenever the waters or channel of a body of water are modified by a department or agency of the U.S., the department or agency first shall consult with the USFWS and with the head of the agency exercising administration over the wildlife resources of the state where construction will occur, with a view to conserving wildlife resources.

Study Area

The Project Area encompasses all areas of potential ground disturbances within the areas encompassed by each of the alternatives. The Project Area is bounded by SR 291 to the north and Hog Island Road to the south (Figure 4.10-1). It includes the existing Runway 17-35 and its associated taxiways, and it extends approximately 500 feet east and west of the centerline of the runway. The Project Area also includes the Economy Parking Lot, a gas station, and mowed grass areas. Church Creek crosses the Project Area in the north and a drainage ditch, SEPD-2, is south of the runway.

The Local Study Area is a larger area in which indirect impacts to biotic communities may result from construction or operations of the alternatives considered in this FEIS. This includes land between the Project Area and the Delaware River, a portion of the Delaware River to the south, and the John Heinz National Wildlife Refuge to the northwest.

Regional Context

The Project Area and Local Study Area are in a predominantly developed region in which land uses include residential, light industrial, commercial,

117 *National Environmental Policy Act of 1969, as amended. Pub. L. 91-190, 42 United States Code 4321-4347*, 1 January 1970, as amended by Pub. L. 94-52, 3 July 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), 13 September 1982.
118 *Incorporating Biodiversity Considerations into Environmental Impact Analysis under the National Environmental Policy Act*. Council on Environmental Quality, Washington, DC: U.S. Council on Environmental Quality, TIC: 241456, 1993.
119 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, 8 October 1985.
120 Advisory Circular 150/5200-33a, *Hazardous Wildlife Attractants on or Near Airports*, United States Department of Transportation and Federal Aviation Administration. 27 July 2004.
121 *16 United States Code 661-667e, Fish and Wildlife Coordination Act*. 9 July 1965.
122 *25 Pennsylvania Code, Water Quality Standards*. Chapter 93, Section 4b, 18 November 2000.
123 *25 Pennsylvania Code, Erosion and Sediment Control.* Chapter 102, 1 January 2000.
124 *Federal Aviation Administration Advisory Circular 150/5200-33A. Hazardous Wildlife Attractants on or near Airports*, 27 July 2004.
125 *16 United States Code 661-667e, Fish and Wildlife Coordination Act.* 9 July 1965.

transportation, and undeveloped land. The Delaware River, a freshwater tidal estuary, is an important regional biotic community, which includes intertidal mudflats, a community of special concern to Pennsylvania (identified by Pennsylvania Department of Conservation and Natural Resources, PA DCNR, February 9, 2004 Appendix D). The John Heinz National Wildlife Refuge is an important regional estuarine community providing habitat to fish, animals, and plants.

4.10.2 Affected Environment

Biotic communities within the Project Area and the Local Study Area south of the Project Area were identified and characterized in order to assess the environmental consequences of the alternatives evaluated in this FEIS.

Methodology

Research and field surveys were conducted within the Project Area and Local Study Area south of the project area. The data generated through these field surveys were used to prepare a description of the ecological conditions within the Project Area in order to predict project impacts and to identify mitigation options. Vegetation cover types were identified and mapped. Wildlife evaluations were conducted by reviewing information on potential threatened and endangered species habitat received through coordination with the Pennsylvania Game Commission (PGC), the USFWS, the PA DCNR and the National Marine Fisheries Service (NMFS). Previous studies conducted at PHL were also reviewed for information on existing biotic communities within the Project Area. In addition to the field work, previous studies conducted by Normandeau Associates, Inc. (NA) in 2001[126] and by Herpetological Associates, Inc. (HA) in 1999, 2000, and 2001[127,128,129] were also reviewed.

Aerial photographs (2002) were evaluated to determine land cover types, which were field verified and mapped. Biotic communities associated with each land use and land cover were analyzed and classified for each of the land use categories. Potential wildlife use was identified and described for each of the land use categories.

Project Area Biotic Communities

Six habitat types were identified within the Project Area. Five of these (Table 4.10-1) are considered biotic communities because of their potential to support natural vegetation and wildlife. These include drainage ditches, *Phragmites* (common reed) stands possibly associated with wetlands; *Phragmites* stands non-wetlands; brushland/scrubland; and disturbed sites. A sixth habitat type, Airport, includes all runway areas, taxiways, and related structures, as well as the mowed areas between. These mowed grass areas were not considered a specific biotic community because wildlife is discouraged from using these areas by airport operations, because of their hazard to aircraft. This Airport habitat type comprises 373 acres of the 384-acre Project Area.

Each community contains vegetation typical of urban areas of the northeast region. All upland areas are previously-disturbed. Although PHL actively discourages wildlife because of potential hazards, many birds and small mammals use the area. These are also typical of urban areas

126 *Philadelphia International Airport: Master Plan, Technical Report No. 3 Benthic Macroinvertebrate Sample Analysis*, Normandeau Associates, 19 October 2001.

127 *Philadelphia International Airport: Master Plan, Endangered and Threatened Wildlife Species Surveys in Wetlands throughout Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania*. Herpetological Associates, 13 October 2001.

128 *Philadelphia International Airport: Master Plan, Technical Report No. 2: A Survey of Fishes of the Philadelphia International Airport and the Adjacent Delaware River Estuary*. Herpetological Associates, 5 October 2001.

129 Philadelphia International Airport: Master Plan, Technical Report No. 6: Draft Fish Surveys of Wetlands at Philadelphia International Airport and the Adjacent Delaware River Estuary. Herpetological Associates, 31 December 2002.

(Table 4.10-1). White-tailed deer (*Odocoileus virginianus*) are occasionally seen on the Airport despite perimeter fencing. The state-listed red-bellied turtle (*Pseudemys rubriventris,* Pennsylvania Threatened) is found in wetlands and waterways at the Airport, including SEPD-2.

Wetlands and waterways within this urbanized site are primarily manmade drainage ditches. They lack continuous habitat and display characteristics of disturbed areas. For example, most waterways are dominated by invasive plant species or by only a single plant species and contain low diversity of fish and macroinvertebrate species. The waterways in the Project Area are channelized and have low water quality. Sections 4.7 and 4.12 of this FEIS provide additional information on Project Area wetlands and waterways.

Drainage Ditches

Drainage ditches are classified as areas that are man-made and convey stormwater, overland runoff, and/or channelized stream flow. A drainage ditch is differentiated from wetlands by the presence of an impervious surface along the bed of the waterway or banks, generally lacks emergent vegetation, has flow, and may or may not be culverted at the inlet or outlet. Some hydrophytic plant species may be present below mean low water, and the drainage ditches may provide habitat for wildlife. Within the Project Area there are six drainage ditches, CMC-1, CMC-2, CMC-3, CMC-4, SEPD-2, and DR-7, comprising 1.76 acres (0.46 percent) of the 384-acre Project Area (Figure 4.10-1).

Church Creek (containing drainage ditches CMC-1, CMC-2, CMC-3 and CMC-4) is a severely disturbed channel with grouted riprap banks. The creek flows from southwest to northeast through the northern section of the Project Area. As a tributary to Mingo Creek, Church Creek is classified as a Warm Water Fishery (WWF) under Pennsylvania Code 25: Chapter 93.[130] CMC-1 and CMC-2 support persistent and woody vegetation along the concrete and gravel banks, including smartweed (*Polygonum* sp.), floating primrose-willow (*Ludwigia peploides*), purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), and box elder (*Acer negundo*). These are typical plant species found in disturbed wetlands and waterways on the PHL property and adjacent areas, as well as in disturbed wetlands throughout the region. CMC-3 and CMC-4 are mowed to control hazardous wildlife, and goose netting is also installed across the channel to prevent Canada geese (*Branta canadensis*) from landing. The vegetation is dominated by common reed. Fish were found only in CMC 4. Fish species observed included brown bullhead (*Ameluris nebulosis*), eastern mudminnow (*Umbra pygmaea,* Pennsylvania Candidate), mummichog (*Fundulus heteroclitus*), and pumpkinseed *(Lepomis gibbosus)*.[131] An analysis of benthic invertebrates (aquatic insects, crustaceans, and other invertebrates) indicated that the CMC channel sections have poor to very poor water quality.[132]

SEPD-2 is a man-made drainage channel that conveys stormwater from the Airport runways to the Delaware River. SEPD-2 provides habitat for the red-bellied turtle (*Pseudemys rubriventris*, Pennsylvania Threatened).[133] Dominant plant species include broadleaf cattail (*Typha latifolia*), false indigo (*Amorpha fruticosa*), purple loosestrife, floating primrose-willow, common reed, black

130 *25 Pennsylvania Code, Water Quality Standards*, Chapter 93.4b, Harrisburg, Pennsylvania, 1996.
131 *Philadelphia International Airport: Master Plan, Endangered and Threatened Wildlife Species Surveys in Wetlands throughout Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania*. Herpetological Associates, 13 October 2001.
132 *Ibid.*
133 *Ibid.*

Table 4.10-1 Fish and Wildlife Species Typical of/Likely to Inhabit the Project Area

Habitat Types	Fish Species	Wildlife Species	Area (Acres)	Percentage of Total Area
Drainage ditches	brown bullhead *(Ameluris nebulosis)* mummichog *(Fundulus heteroclitus)* pumpkinseed *(Lepomis gibbosus)* eastern mosquitofish (*Gambusia holbrooki*) banded killifish *(Fundulus diaphanous)* bluegill *(Lepomis macrochirus)* green sunfish *(Lepomis cyanellus)*	Canada geese *(Branta canadensis)* painted turtle *(Chrysemys picta)* red-bellied turtle *(Pseudemys rubriventris*, Pennsylvania Threatened*)*	1.76	0.46
Phragmites stands (possibly wetland associated and non-wetland areas)	N/A	robin *(Turdus migratorius)* blue jay *(Cyanocitta cristata)*	5.6	1.47
Brushland/Scrubland (non-wetland areas)	N/A	skunk *(Mephitis mephitis)* eastern cottontail rabbit *(Sylvilagus floridanus)* red fox *(Vulpes vulpus)* robin *(Turdus migratorius)* blue jay *(Cyanocitta cristata)*	1.8	0.47
Disturbed sites	N/A	Canada geese *(Branta canadensis)* Migratory bird species may use these areas to graze	2.3	0.61
Airport areas	N/A	N/A	373	97.1

willow (*Salix nigra*), and soft rush (*Juncus effusus*). In addition to the red-bellied turtle, this ditch supports painted turtles (*Chrysemys picta*), fish species including eastern mosquitofish (*Gambusia holbrooki*), mummichog, banded killifish *(Fundulus diaphanous)*, pumpkinseed, bluegill *(Lepomis macrochirus)*, and green sunfish *(Lepomis cyanellus)*, as well as other common species.

DR-7 is a portion of a channel discharging into the Delaware River from the PHL property (Figure 4.10-1). DR-7 is hydrologically connected to DR-8 by a pipe under Hog Island Road. Dominant species include mulberry (*Morus* sp.), staghorn sumac (*Rhus typhina*), purple loosestrife, spotted jewelweed (*Impatiens capensis*), rice cutgrass (*Leersia oryzoides*), and common reed. The mature trees are confined to the upper banks of the channel and provide potential habitat for songbirds such as robins *(Turdus migratorius)*, blue jays *(Cyanocitta cristata)*, red-wing blackbird (*Agelaius phoeniceus*), song sparrow (*Melospiza melodia*), and the American crow (*Corvus brachyrhynchos*). However, these species are considered a hazard to aircraft, and current PHL Wildlife Management practices require the removal of trees, particularly species such as mulberry, that are bird attractants.

***Phragmites* Stands**
Phragmites stands are single-species communities that may be mowed periodically and that may occur on upland or wetland soils. *Phragmites* stands occur on non-wetland soils in the north of the Project Area, and a smaller stand of *Phragmites* grows along DR-7 in the south. These stands can be found in approximately 1.47 percent of the Project Area (5.6 acres). *Phragmites* stands may provide cover and nesting habitat for songbirds and small mammals.

Brushland/Scrubland (Non-Wetland Areas)
Brushland/scrubland contains deciduous scrub-shrub stands that range from early successional species to more mature communities. Also included in this category are former agricultural fields that are covered primarily by grasses, shrubs, and hedgerows of trees with an average height over 20 feet. These stands can be found in approximately 0.47 percent of the Project Area (1.8 acres). Brushland/scrubland stands within the Project Area tend to be disturbed and occur in small patches. Typical plant species include red maple, tree of heaven (*Ailanthus altissima*), princess tree (*Paulownia tomentosa*), and privet (*Ligustrum* sp.). Typical wildlife species associated with disturbed brushland/scrubland stands include common songbirds and small mammals.

Disturbed Sites
Disturbed sites are under construction or were recently filled. Many of these areas are vegetated by upland pioneer plant species such as mullein (*Verbascum thapsus*) or broomsedge (*Andropogon virginicus*) that are common to disturbed sites throughout the region. These stands can be found in approximately 0.61 percent of the Project Area (2.3 acres). Typical wildlife species associated with disturbed areas include birds such as Canada geese, red-wing blackbird, and the American crow.

Local Study Area Biotic Communities
Biodiversity in the region is maintained by the John Heinz National Wildlife Refuge and the Delaware River, which provide large contiguous areas of unique habitats for resident and migratory species. The John Heinz National Wildlife Refuge, northwest of the Project Area is a freshwater tidal habitat, providing habitat for foraging and breeding for diverse species of both resident and migratory species. The Delaware River, south of the Project Area, is also a freshwater tidal habitat.

The Local Study Area south of the Project Area contains three habitat types: drainage ditches, deciduous forest, and tidal river.

Drainage Ditch
DR-8 is a portion of a channel discharging into the Delaware River from the PHL property (Figure 4.10-1). DR-8 is hydrologically connected to DR-7 by a pipe under Hog Island Road and the rail line. Extensive dumping is evident at this site. Dominant species identified in prior studies include common reed, purple loosestrife, Walter's barnyard grass (*Echinochloa walteri*, Pennsylvania Endangered), and black willow. These are typical plant species found in disturbed wetlands. The trees and other vegetation present provide potential habitat for common songbirds. Because it is outside of the fenced portions of PHL, it may provide habitat for mammals such as opossum, skunk, eastern cottontail rabbits, grey squirrels, and red fox.

Deciduous Forested Stands (Non-Wetland Areas)
Forested stands contain deciduous trees with crown closure of 50 to 100 percent. The average height of the stand is at least 20 feet, and the average width at least 30 feet. Forest stands within the Regional Study Area are disturbed and not contiguous with other forested areas. Typical plant species include red maple (*Acer rubrum*), tree of heaven, sycamore (*Platanus occidentalis*), green ash (*Fraxinus*

pennsylvanica), and princess tree. The deciduous forest stands in the Local Study Area are filled with debris and other signs of disturbance. Typical wildlife species associated with disturbed forest stands include songbirds and common small mammals and deer.

Tidal Rivers, Inland Bays, and Other Tidal Waters
Tidal rivers include smaller features, which commonly drain tidal marsh systems, as well as portions of intermediate and large features, such as the Delaware River. While these are regularly flushed, portions of the enclosed bays may have complex flushing patterns because of the relatively small outlets. These areas may provide important finfish, shellfish, and waterfowl habitat. Included in this category is freshwater intertidal mudflat habitat, a rare habitat associated with the Delaware River. No tidal marshes or bays occur within the Local Study Area south of the Project Area.

In a letter dated February 9, 2004, PA DCNR stated that a rare intertidal mudflat habitat was associated with the freshwater tidal portions of the Delaware River. PA DCNR, Bureau of Forestry, Pennsylvania Natural Diversity Index (PNDI) stated in a subsequent letter dated March 16, 2004, that the portion of the Delaware River associated with Runway 17-35 Project Area is not considered a part of the rare intertidal mudflat habitat.

Common species of fish associated with the Delaware River include the eastern mosquitofish, blueback herring (*Alosa aestivalis*), common carp (*Cyprinus carpio*), banded killifish, eastern silvery minnow (*Hybognathus regius*), pumpkinseed, and white perch (*Morone americana*). Migratory birds such as mergansers (*Mergus merganser*), blue wing teal (*Anas discors*), mallards (*Anas platyrhyncos*), great egrets (*Ardea alba*), and great blue herons (*Ardea herodias*) may be associated with this habitat.

4.10.3 Environmental Consequences

Direct and indirect impacts on biotic communities within the Project Area were evaluated for each alternative. Short-term effects include construction-related impacts such as sedimentation and accidental spills. Long-term effects include habitat loss/conversion or habitat degradation from clearing, grading, construction, and the potential introduction of invasive species.

Direct Impacts

Direct impacts include the loss of biotic communities and wildlife habitat by habitat loss or conversion, as well as habitat degradation.

No-Action Alternative
The No-Action Alternative would not result in new or changed impacts to biotic communities within the Project Area or Local Study Area. This Alternative would not result in the loss of any portion of a biotic community, nor would it modify a biotic community in any way as to affect its function. Ongoing vegetation management practices to maintain airfield visibility and to control hazardous wildlife would continue.

Alternative 1
Alternative 1 would affect biotic communities primarily within the Project Area drainage ditch habitats, as described in Table 4.10-2, and shown on Figure 4.10-2. The open channels of the Church Creek waterway segments (CMC-3 and CMC-4) would be culverted. Approximately 1.9 percent of the 2,383-linear-foot SEPD-2 would be culverted. Some upland mowed grass areas would be converted to paved runway, taxiways, and a service road. The southern RSA would be regraded and revegetated with turf grass. The proposed airfield service road would cross SEPD-2 on the north-south segment of this waterway, approximately 100 feet north of the bend where the waterway becomes parallel to Hog Island Road. The road

would cross SEPD-2 using a single, 65-inch by 40-inch, arched pipe. The bottom of the pipe would be depressed at least two feet in order to provide a natural bottom substrate. The proposed pipe would be approximately 45 feet long. From the crossing, the new airfield service road would extend southwest to connect with the existing service road along the north side of the drainage ditch. All work would be within previously disturbed Airport property.

Direct impacts to biotic communities would be minor and include some habitat loss and conversion, including a minor direct loss of red-bellied turtle (Pennsylvania Threatened) habitat (2,025 square feet) at the north end of SEPD-2. However, the area that would be lost is not prime habitat, because it consists of shallow water. Therefore its loss would not affect the turtle populations. Impacts to Threatened and Endangered species and mitigation measures are described in greater detail in Section 4.11 of this FEIS.

This Alternative would also have a beneficial effect to the operation of the airport by eliminating a hazardous wildlife attraction. Culverting CMC-3 and CMC-4 would remove habitat that attracts Canada geese in close proximity to the runway.

Alternative 1 would result in the loss of 5.08 acres of *Phragmites* stands and in a minor reduction in wildlife habitat associated with this vegetation type. Most of this impact (5.02 acres) would occur in the area between existing SR 291 and I-95. Both alternatives would also result in the minor loss of shrub-dominated upland habitat. Because these habitat types are common within the Airport property and adjacent areas, there would be no loss of local or regional biodiversity. There would be no direct impacts to the forested stands within the Local Study Area. Wildlife habitat losses would be minor and restricted to poor-quality habitat. There would be no significant loss of fish habitat.

Alternative 2

Alternative 2 would have similar impacts to Alternative 1, and would affect biotic communities primarily within the Project Area drainage ditch habitats, as described in Table 4.10-3 and shown on Figure 4.10-3. Approximately 4.2 percent of SEPD-2 would be culverted. Alternative 2 would result in the loss of 5.08 acres of *Phragmites* stands and in a minor reduction in wildlife habitat associated with this vegetation type. Because these habitat types are common within the Airport property and adjacent areas, there would be no loss of local or regional biodiversity. Wildlife habitat losses would be minor and restricted to poor-quality habitat. There would be no significant loss of fish habitat. There would be no direct impacts to the forested stands within the Local Study Area.

This Alternative would also have a beneficial effect to the operation of the airport by eliminating a hazardous wildlife attraction. Culverting CMC-3 and CMC-4 would remove habitat that attracts Canada geese in close proximity to the runway.

Indirect Impacts

Indirect impacts are defined as the consequences of an action's direct impacts. These are generally not quantifiable and may occur over a larger area or longer time. For example, a direct impact (i.e., change in dissolved oxygen) would affect water quality, which could change the habitat suitability for endangered fish or even common fish, possibly resulting in mortality, reduced growth, or diminished reproductive success.

Secondary impacts are defined as reasonably foreseeable indirect consequences to the environment caused by a proposed action that would occur either in the future or in the vicinity of the direct impacts associated with an action. Generally, secondary impacts are regarded as the results of secondary development (growth or development induced as a

Table 4.10-2 Summary of Alternative 1 Direct and Indirect Impacts to Biotic Communities

Biotic Community	Results of Direct Impacts	Results of Indirect Impacts	Species Impacted
CMC-1	Temporary minor loss of nesting, foraging areas		Songbirds and small mammals
CMC-2	Temporary minor loss of nesting, foraging areas		Songbirds and small mammals
CMC-3	Loss of 0.20 acres of foraging areas Eliminates wildlife hazard close to the runway	Reduced wildlife movement	Songbirds and small mammals.
CMC-4	Loss of 0.12 acres of foraging areas, minor loss of fish habitat Eliminates wildlife hazard close to the runway	Reduced wildlife movement	Songbirds, small mammals, common warm-water fish
SEPD-2	Loss of 0.05 acres of nesting, foraging areas, fish habitat	Reduced wildlife movement	Red-bellied turtle Common turtles; common warm-water fish; songbirds; small mammals
Phragmites stands	Loss of 5.08 acres of nesting, foraging habitat, primarily between existing SR 291 and I-95		Common songbirds and small mammals
Brushland/scrubland	Minor loss of habitat type (0.26 acres)		Small mammals, and common songbirds
Disturbed sites	Loss of 2.32 acres of nesting, foraging areas between existing SR 291 and I-95		Common songbirds and small mammals

Table 4.10-3 Summary of Alternative 2 Direct and Indirect Impacts to Biotic Communities

Biotic Community	Results of Direct Impacts	Results of Indirect Impacts	Species Impacted
CMC-1	Temporary minor loss of nesting, foraging areas		Songbirds and small mammals
CMC-2	Temporary minor loss of nesting, foraging areas		Songbirds and small mammals
CMC-3	Loss of 0.20 acres of foraging areas Eliminates wildlife hazard close to the runway	Reduced wildlife movement	Songbirds and small mammals.
CMC-4	Loss of 0.12 acres of foraging areas, minor loss of fish habitat Eliminates wildlife hazard close to the runway	Reduced wildlife movement	Songbirds, small mammals, common warm-water fish
SEPD-2	Loss of 0.10 acres of nesting, foraging areas, fish habitat	Reduced wildlife movement	Red-bellied turtle Common turtles; common warm-water fish; songbirds; small mammals
Phragmites stands	Loss of 5.08 acres of nesting, foraging habitat, primarily between existing SR 291 and I-95		Common songbirds and small mammals
Brushland/scrubland	Minor loss of habitat type (0.26 acres)		Small mammals, and common songbirds
Disturbed sites	Loss of 2.32 acres of nesting, foraging areas between existing SR 291 and I-95		Common songbirds and small mammals

result of the action). No indirect or secondary environmental impacts to biotic communities are anticipated for the No-Action Alternative. There are no secondary impacts associated with Alternative 1 and Alternative 2, although temporary indirect impacts from construction may occur.

Indirect impacts from Alternative 1 and Alternative 2 potentially include increased sedimentation that may result in temporary impacts to water quality and that may affect aquatic species, in the absence of mitigation. Additional indirect impacts from Alternative 1 and Alternative 2 could include ground and waterway disturbance that may allow the introduction of invasive plant species. Although much of the Project Area is dominated by common reed, an introduced, invasive species, new ground disturbance may provide an opportunity for common reed to expand or for other invasive species such as purple loosestrife or water hyacinth (*Eichornia crassipes*) to become established.

Indirect impacts to the biotic communities within the Local Study Area are not anticipated, other than indirect temporary impacts to nesting, foraging and wildlife movement during construction activities. Construction impacts are discussed in Section 4.17.

There are no indirect impacts on the biotic communities in the John Heinz National Wildlife Refuge, because there would be no increase in the number of overflights or any anticipated changes in flight paths or noise over the Refuge, as described in Section 4.2 of this FEIS.

The Project alternatives are not anticipated to result in significant alterations to the ecological systems within the Project Area or the Local Study Area. Although there would be a minor loss of red-bellied turtle habitat at the north end of SEPD-2, the area that would be lost is not prime habitat and therefore would not affect the turtle population. The habitats that would be altered by Alternative 1 or Alternative 2 are previously disturbed portions of the Airport property that provide minimal habitat value.

4.10.4 Mitigation

Each alternative was evaluated to identify ways to avoid, minimize, and mitigate impacts to biotic communities within the Project Area. The No-Action Alternative would not impact biotic communities because there would be no construction.

Avoidance

Alternative 1 and Alternative 2 cannot be designed to avoid impacts to biotic communities. In order to lengthen the runway and taxiways, the loss of grassed upland areas in the existing RSAs is unavoidable. Modifications to Alternative 1 and Alternative 2 that would avoid impacts to the waterways CMC-3, CMC-4, and SEPD-2 were evaluated for practicability (i.e., logistics, constructability, or cost).

CMC-3 and CMC-4

Both Alternative 1 and Alternative 2 would require covering waterway segments CMC-3 and CMC-4 to construct the proposed extensions of Taxiway E and Taxiway D. To avoid impacts to CMC-3, the extension of Taxiway E would have to be relocated approximately 200 feet to the west. This is not practicable, as the extension of Taxiway E would not line up with the existing Taxiway E, and would require a sharp curve in the taxiway. This would further increase impervious surface, and would require culverting approximately 200 feet of CMC-2, the segment of Church Creek south of the Economy Parking Lot. To avoid impacts to CMC-4, the extension of Taxiway D would have to be relocated approximately 200 feet to the east. This is not practicable because the extension of Taxiway D would not line up with the existing Taxiway D, and would require demolition of the former Overseas Terminal Building. The distance between CMC-4 and Island Avenue is approximately 400 feet, which would not accommodate the relocated taxiway and taxiway safety area.

Spanning each waterway to avoid placing fill and extending the culverts was also investigated. Because soils within the Project Area are compressible, a structure and pavement section required to span the waterways would require pilings to support the structure in the deeper, stronger subsurface soil layers. This measure would not avoid the loss of the open channel and would not avoid impacts to biotic communities.

SEPD-2

Alternative 1 and Alternative 2 include culverting a short segment of SEPD-2 to relocate the existing airport perimeter service road. The purpose of this road is to provide access to the Airport Operations Area (AOA) for emergency, security, and maintenance vehicles, and to provide a secure means of patrolling the interior of the airfield perimeter. Because SEPD-2 extends from the RSA at the south end of Runway 17-35 to Taxiway SA, and extends south to Hog Island Road, there are no alternative available routes for a continuous service road that would avoid SEPD-2. Any road alignment that avoided SEPD-2 would leave the secure airport property and would not meet the purpose of the airfield service road nor FAA safety standards.

Minimization

Several design alternatives were examined to minimize unavoidable impacts to wetlands and waterways. Based on this analysis, the design alternative which best minimized impacts was incorporated into the conceptual design of Alternative 1 and Alternative 2.

CMC-3 and CMC-4

Under both alternatives, Taxiway D and E extensions for the north (Runway 17) runway end would cross both CMC-3 and CMC-4 ditches. The Airport's planning consultant evaluated minimizing impacts by reducing culvert length and leaving a small section (less than 50 feet) of each waterway in an open channel. These two short channel sections would be between the taxiway and the runway extension, within the taxiway safety area limits. Maintaining a deep open channel beside the taxiway is infeasible because of safety concerns.

SEPD-2

Several design alternatives to minimize impacts to SEPD-2 were evaluated to determine if there was a practicable alternative with less impact. The evaluation, described in Section 4.11.4, considered the location of the service road crossing and the type of culvert structure, as well as the characteristics of the resource. The design alternatives incorporated into Alternative 1 and Alternative 2 best minimize impacts to biotic communities.

Mitigation

Pursuant to FAA Order 1050.1E, no significant impacts would occur to biotic communities, therefore, no mitigation would be required. Expected impacts are either minor, representing only a small percentage of the habitat type in the Project Area, or are impacts to previously disturbed and actively managed Airport areas. Except for the presence of red-bellied turtles (Pennsylvania Threatened) in SEPD-2 (see Section 4.11), areas that would be impacted currently support plant and animal species that are common to disturbed areas in the region. Further coordination with PA DEP will continue during the project design to determine whether mitigation measures may be necessary to obtain state and Federal wetland permits. Currently, because of minimal impacts to biotic communities within the Project Area, it is anticipated that the Proposed Project would be able to secure approval from regulatory agencies. However, it is anticipated that the minor loss of red-bellied turtle habitat may require mitigation as part of the wetland permitting process. Mitigation for habitat loss for red-bellied turtles is discussed in Section 4.11.4 of this FEIS.

Potential mitigation measures to prevent and control invasive plant species, as stated in *EO 13112*,[134] would be implemented. These include measures such as prevention of invasive plant species by using selected native grass seed mixes; landscaping with native plants; monitoring for invasive plant species and removing invasive plant species that become established.

4.10.5 Regulatory Coordination and Required Permits

Coordination has been initiated with the appropriate agencies with jurisdiction over biological resources. Agencies include the USFWS, which regulates fish, birds and mammals; PGC, which regulates birds and wildlife; PADCNR, which regulates plant species; and PFBC, which regulates fish, reptiles and amphibians. Letters received from PGC, PA DCNR's PNDI Inventory, and USFWS stated that none of the species of concern that were identified for the PHL property and adjacent areas were in the Project Area

134 *Executive Order 13112. Invasive Species*. 3 February 1999.

(Appendix D). No regulatory permits are required for impacts to biotic communities

4.10.6 Summary

The Project Area contains primarily altered land developed for airport use. In addition to paved areas, this includes upland mowed grassland; brushland/shrubland; uplands and wetlands dominated by common reed; and the drainage ditches associated with Church Creek and SEPD-2. Trees occur along the banks of some ditches (CMC-1, CMC-2, DR-7). All habitat types within the Project Area are well-represented locally and regionally, and have low wildlife habitat value because of the lack of cover, low water quality, and active airport wildlife management practices. One ditch (SEPD-2) supports a state-listed species, the red-bellied turtle.

The No-Action Alternative would not affect biotic communities. Alternative 1 and Alternative 2 would result in unavoidable loss of some low-quality biotic communities within the area of construction. This includes the loss of upland mowed grassland, common reed stands, minor amounts of shrubland, and the open water channels of CMC-3 and CMC-4. Either alternative would also require construction of an access road crossing SEPD-2 which would have minor direct and indirect effects on the habitat of the red-bellied turtle, which are addressed in Section 4.11. These alternatives would not result in significant impacts to biotic communities, because they would result in the removal of a small amount of common habitat types that supports a limited variety of common wildlife species (*FAA Order 5050.4A* Paragraph 47(9)).

4.11 Threatened and Endangered Species

This section documents Threatened and Endangered species within the Project Area and Local Study Area, predicts impacts to Threatened and Endangered species and habitat, and identifies mitigation options for any Threatened and Endangered species impacts associated with the Proposed Project alternatives. Section 4.11.2 describes the affected environment and the Threatened and Endangered species within the Project Area and Local Study Area. Section 4.11.3 provides an evaluation of the consequences of each alternative on Threatened and Endangered species, including construction and operational impacts from the Project. An evaluation of measures to avoid, minimize, and mitigate impacts as well as recommendations for implementation are included in Section 4.11.4. Detailed descriptions of the technical studies supporting this section are in DEIS Appendix A-7.

4.11.1 Introduction

The USFWS defines an "Endangered" species as one that is in danger of extinction throughout all or a significant portion of its range. A "Threatened" species is one that is likely to become Endangered in the foreseeable future.[135] The USFWS maintains a list of plants and animals native to the U.S. that are candidates or are proposed for possible addition to the Federal list. Listings, including proposed additions and delistings, are announced through the *Federal Register*.

The PGC and PFBC define "Endangered" as wildlife species (birds and mammals) that are in

135 Species Information Threatened and Endangered Animals and Plants, United States Fish and Wildlife Service, (http://Endangered.fws.gov/wildlife.html), 4 April 2004.

imminent danger of extinction or extirpation throughout their range in Pennsylvania. These species have already been reduced to critically low numbers or have experienced drastic habitat loss or degradation. Immediate management action is required to prevent extinction in the state. A "Threatened" species is a species that may become Endangered within the foreseeable future throughout their range in Pennsylvania, unless the impacts affecting their populations are reversed.[136] These species include: 1) those that have been heavily depleted by adverse factors and, while not actually Endangered, are still in critical condition; or 2) those that may be relatively abundant but are under severe threat from serious adverse factors that have been identified and documented.[137]

The PA DCNR is responsible for endangered and threatened plant species in Pennsylvania. Reptiles, amphibians, fishes and aquatic invertebrates are under the jurisdiction of the PFBC. The PGC regulates and protects birds and mammals.

Regulatory Context

Threatened and Endangered species analyses were conducted in accordance with the following requirements: Section 7 of the *Endangered Species Act of 1973*, as amended 16 U.S.C 1531 et seq.[138]; Pennsylvania Code Title 17., Chapter 45, *Conservation of Pennsylvania Native Wild Plants* (1993)[139]; Pennsylvania Code Title 58., Chapter 75, *Endangered Species* (1984)[140] and Chapter 133, *Wildlife Classification*[141]; and Pennsylvania Code Title 25., Chapter 93,[142] *Water Quality Standards* and Chapter 102, *Erosion and Sediment Control*.[143] Each regulation is defined below.

Section 7 of the *Endangered Species Act of 1973* (the Act)[144] authorizes the determination and listing of species as Endangered and Threatened and prohibits unauthorized taking, possession, sale, and transport of Endangered species. Section 7 of the Act[145] requires federal agencies to ensure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of listed species or to modify their critical habitat.

Pennsylvania Code Title 17, Chapter 45, *Conservation of Pennsylvania Native Wild Plants* (1993) regulates native wild plants by the PA DCNR.[146] It states that native wild plants must not be removed, transported, or sold. Pennsylvania Code Title 58, Recreation, Parts II and III, (1984), regulates the protection of Threatened, Endangered and Candidate species by the PFBC (Chapter 75)[147] and Endangered and Threatened Species by the PGC (Chapter 133).[148]

Habitats of Threatened and Endangered species are also protected under Pennsylvania Code Title 25,

136 *Ibid.*
137 Pennsylvania Game Commission, (http://www.pgc.state.pa.us/pgc/cwp/view.asp?a=458&q=152491#Endangered\).
138 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, 8 October 1985.
139 *Pennsylvania Code Title 17, Chapter 45, Conservation of Pennsylvania Wild Plants*, Pennsylvania Department of Conservation and Natural Resources, 1993.
140 *Pennsylvania Code Title 58, Chapter 75, Endangered Species*, 7 January 1984.
141 *Pennsylvania Code Title 58, Chapter 133, Wildlife Classification*, 1 July 1987.
142 *Pennsylvania Code Title 25,Chapter 93, Water Quality Standards*, Section 93.4b, 18 November 2000.
143 *Pennsylvania Code Title 25, Chapter 102. Erosion and Sediment Control*, 1 January 2000.
144 *Endangered Species Act of 1973, Section 7*, United States Fish and Wildlife Service.
145 *Ibid.*
146 *Pennsylvania Code Title 17, Chapter 45, Conservation of Pennsylvania Wild Plants*, Pennsylvania Department of Conservation and Natural Resources. 1993.
147 *Pennsylvania Code Title 58, Chapter 75, Endangered Species*, 7 January 1984.
148 *Pennsylvania Code Title 58, Chapter 133, Wildlife Classification*, 1 July 1987.

Chapter 105, which designates wetland habitats of state-listed species as exceptional value wetlands.[149]

Habitats of Threatened and Endangered species are also protected under *Pennsylvania Code Title 25, Chapter 102*, which requires consultation with PNDI for projects requiring a NPDES Permit for stormwater discharges that may adversely affect Threatened and Endangered species habitat.

Study Area

The Project Area encompasses all areas of potential ground disturbances within the areas encompassed by each of the alternatives. The Project Area is bounded by SR 291 to the north and Hog Island Road to the south (Figure 4.10-1). It includes the existing Runway 17-35 and its associated taxiways, and it extends approximately 500 feet east and west of the centerline of the runway. The Project Area also includes the Economy Parking Lot, a gas station, and mowed grass areas. Church Creek crosses the Project Area in the north, and a drainage ditch, SEPD-2, is south of the runway.

The Local Study Area is a larger area in which indirect impacts to Threatened and Endangered species may result from construction or operations of the alternatives considered in this FEIS. This includes land between the Project Area and the Delaware River, a portion of the Delaware River to the south, and the John Heinz National Wildlife Refuge to the northwest.

Regional Context

The Project Area and Local Study Area are in a predominantly developed region in which land uses include residential, light industrial, commercial, transportation, and undeveloped land. The Delaware River, a freshwater tidal estuary, is an important regional biotic community, which includes intertidal mudflats, a community of special concern to Pennsylvania (identified by PA DCNR, February 9, 2004 Appendix D). The John Heinz National Wildlife Refuge is an important regional estuarine community providing habitat to fish, animals, and plants.

4.11.2 Affected Environment

This section describes Federal and state-listed Threatened and Endangered species within the Project Area and Local Study Area.

Methodology

Species-specific field surveys were performed in February and March 2004 (see DEIS Appendix A-7) to verify, update, and document the affected environment. Threatened and Endangered species and their habitats were inventoried and mapped. These data were used to prepare a description of existing habitats within the Project Area to predict project impacts and identify mitigation options. Wildlife evaluations were conducted through coordination with the PGC, the USFWS, the PA DCNR, and the PFBC. An extensive review of the available scientific literature was also conducted to assess the effects of aircraft on bald eagle nesting behavior and reproductive success.

Previous investigations of Threatened and Endangered Species in the Project Area and Local Study Area were conducted by HA[150,151,152] and Roy F. Weston, Inc.[153] (Weston).

149 *Pennsylvania Code Title 25,Chapter 93, Water Quality Standards*, Section 93.4b, 18 November 2000.

150 Philadelphia International Airport: Master Plan, *Endangered and Threatened Wildlife Species Surveys in Wetlands throughout Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania*, Herpetological Associates, 13 October 2001.

151 Philadelphia International Airport: *Master Plan Technical Report No. 2: A Survey of Fishes of the Philadelphia International Airport and the Adjacent Delaware River Estuary*, Herpetological Associates, 5 October 2001.

In 1999, agency coordination identified eight vertebrate species of concern at or in the vicinity of PHL: the Atlantic sturgeon (*Acipenser oxyrinchus*, Pennsylvania Endangered), shortnose sturgeon (*Acipenser brevirostrum*, Federally Endangered, Pennsylvania Endangered), bridle shiner (*Notropis bifrenatus*, Pennsylvania Endangered), eastern mudminnow (*Umbra pygmaea*, Pennsylvania Candidate), threespine stickleback (*Gasterosteus aculeatus*, Pennsylvania Endangered), New Jersey chorus frog (*Pseudacris feriarum kalmi*, Pennsylvania Endangered), coastal plain leopard frog (*Rana utricularia*, Pennsylvania Endangered), and red-bellied turtle (*Pseudemys rubriventris,* Pennsylvania Threatened). These species are under the jurisdiction of the PFBC.

Resources potentially within the Project Area and Local Study Area include Federal and state-listed species. However, the PA DCNR, the PGC, and the USFWS submitted letters (Appendix D) determining that there were no Threatened and Endangered species under their jurisdictions in the Project Area.

Listed Species in the Project Area

The USFWS identified the American bald eagle (*Haliaeetus leucocephalus*, Federally Threatened) as potentially in the Project Area and adjacent areas. Agency Scoping comments provided by the USFWS requested an aerial survey for the American bald eagle.[154] A helicopter survey was completed in March 2004; no bald eagles or nests were observed in the Project Area. In a letter dated September 5, 2003 (Appendix D), the USFWS stated that the bald eagle, (Federally Threatened) was not present in the Project Area. All previous studies were field verified. State-listed species potentially occurring in the Project Area are discussed below.

State-Listed Fish

No state-listed fish species were observed or documented to occur in the Project Area. However, in a 2001 sample[155], the eastern mudminnow (Special Interest, Pennsylvania) was observed in 18 of the 48 wetlands on the Airport. None of these wetlands occurred in the Project Area. The eastern mudminnow tended to be abundant in the deeper areas of shallow wetlands and areas associated with vegetation.

Red-bellied Turtle

During a three-year wildlife survey,[156] red-bellied turtles (Pennsylvania Threatened) were observed 78 times, in six of the eight major watersheds on the Airport property. In the Project Area, the turtles were observed in SEPD-2, a drainage ditch in the south[157] (Figure 4.11-1). No red-bellied turtle nests were found in SEPD-2, but they were found in four of the eight watersheds during all three survey seasons: North/South Ponding Ditch (NSPD), EMC, Darby Creek (DC), and the Delaware River. Active from May to October, they prefer relatively large, deep creeks, rivers, ponds, lakes, and marshes with ample basking sites. The species tolerates brackish water, but prefers freshwater, and is found close to the coast from southern

152 Philadelphia International Airport: Master *Plan Technical Report No. 6: Draft Fish Surveys of Wetlands at Philadelphia International Airport and the Adjacent Delaware River Estuary*, Herpetological Associates, 31 December 2002.
153 *Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania. West Chester, Pennsylvania,* Roy F. Weston, Inc. July 1993.
154 *Philadelphia International Airport, Runway 17-35 Extension Project, Scoping Report*, Vanasse Hangen & Brustlin, Inc., 19 August 2003.
155 Philadelphia International Airport: *Master Plan Technical Report No. 2: A Survey of Fishes of the Philadelphia International Airport and the Adjacent Delaware River Estuary,* Herpetological Associates, 5 October 2001.
156 Philadelphia International Airport: Master Plan, *Endangered and Threatened Wildlife Species Surveys in Wetlands throughout Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania,* Herpetological Associates, 13 October 2001.
157 *Ibid.*

females may nest more than once a year. The time of hatching is believed to be in late summer, and young may overwinter in the nest. Young and adults feed on a variety of aquatic animals and plants, but fish are not normally part of the diet. The red-bellied turtle is Threatened, because the limited habitat they require is under threat from industrial uses and heavy urbanization, drainage or filing of wetlands, and pollution.

Figure 4.11-1 Typical Rare Species Habitat – SEPD-2

SEPD-2 contains two distinct habitat types. The waterway segments that are oriented in an east-west direction, parallel to Runway 9L/27R, are relatively broad open water channels with some vegetation and basking sites (dead branches) along the banks. The banks are steep, riprapped in places, and sparsely vegetated. A narrow strip of open sandy soil at the top of these banks may provide nesting habitat. The upstream segment of SEPD-2, at the south end of Runway 17-35, is densely vegetated with common reed growing in standing shallow water. It does not appear to provide aquatic or basking habitat. Due to the presence of state-listed fauna within and around the waterway, SEPD-2 may be considered Exceptional Value. However, the portions of SEPD-2 within the Project Area are not optimal habitat for several reasons. The concrete and grouted riprap along the banks is unsuitable for nesting; the water is shallow within portions of the channel closest to the existing runway; and the area is vegetated with dense stands of common reed and does not contain open water.

Although no red-bellied turtles were observed during the 2004 field investigation, painted turtles (*Chrysemys picta*), were observed close to the Project Area. Painted turtles share a similar habitat with red-bellied turtles.

New Jersey Chorus Frog

The PFBC requested that studies for the New Jersey chorus frog (Pennsylvania Endangered) and the coastal plain leopard frog (Pennsylvania Endangered) be conducted. The New Jersey chorus frog breeds in small, relatively open bodies of water with a mixture of shrubby and herbaceous aquatic vegetation, or sometimes in shallow backwater areas of larger water bodies with similar vegetation. Over the course of field work conducted during 2000 and 2001, no New Jersey chorus frogs or coastal plain leopard frogs were encountered anywhere on the airport property.[158] As verified in 2004, only two of the surveyed watersheds within the airport property were thought to possibly contain suitable habitat for the target frog species. Neither are located in the Project Area.

Coastal Plain Leopard Frog

The coastal plain leopard frog is a Pennsylvania Endangered frog species that breeds in early spring. Found only in Bucks and Delaware Counties along the coastal plain near the Delaware River, the coastal plain leopard frog is designated as Endangered primarily because of habitat loss and

158 Philadelphia International Airport: Master Plan, *Endangered and Threatened Wildlife Species Surveys in Wetlands throughout Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania,* Herpetological Associates, 13 October 2001.

degradation. No coastal plain leopard frogs were identified at PHL during previous inventories.[159] As verified in 2004, there is no suitable habitat for the coastal plain leopard frog in the Project Area.

Local Study Area Listed Species

Protected species potentially present within the Local Study Area include shortnose sturgeon, bald eagle, and several state-listed plant species. Potential effects to these species are evaluated in Section 4.11.3.

During Project Scoping the NMFS indicated that the Federally Endangered shortnose sturgeon, also listed as Endangered by Pennsylvania, is known to occur in the Delaware River from the lower bay upstream to at least Lambertville, New Jersey, north of the Project Area and is therefore likely to occur within the Delaware River south of PHL. The shortnose sturgeon is a benthic species which is described as "freshwater amphidromous."[160] Adults remain in freshwater all year, moving upriver in the spring to spawn, but regularly enter estuarine saltwater habitats to feed. Adults tend to occupy concentration areas where natural or artificial features cause a decrease in surface flow, possibly creating suitable subtrate for freshwater mussels, a major food source. The concentration area used by adults from June to March in the Delaware River is in the vicinity of Morrisville, Pennsylvania, approximately 30 river miles upstream of the Airport. In late March, sturgeon spawn on gravel substrates and in riffles as far upstream as possible. In the Delaware River, spawning has been identified in the vicinity of Scudders Falls, Pennsylvania, approximately 35 river miles upstream of the Airport. Neither of these key habitats is in the vicinity of PHL.

159 *Endangered and Threatened Wildlife Species Surveys in Wetlands throughout Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania*, Herpetological Associates, 5 October 2001.

160 *Final Recovery Plan for the Shortnose Sturgeon*, National Marine Fisheries Service, December 1998.

Shortnose sturgeon are likely to use the portion of the Delaware River in proximity to PHL for upstream and downstream movement of adults, and downstream movement of juveniles in spring to the estuarine freshwater-saltwater interface.

Bald eagles (Federally Endangered, Pennsylvania Endangered, New Jersey Endangered) have been documented to nest at two locations in New Jersey south and southwest of PHL, and individuals occasionally perch in trees along the Delaware River while foraging. One active nest is east of Mantua Creek, approximately 8,250 feet south of Runway 17-35, and the second is east of Monds Island, approximately 13,000 feet west-southwest of Runway 9R-27L. Bald eagles may use the Delaware River banks south of the Airport for foraging habitat and may perch in trees along the river's edge.

One state-listed plant species occurs in an area potentially affected by stormwater runoff from the Proposed alternatives. Walter's barnyard grass (*Echinochloa walteri*), designated an Endangered Species in Pennsylvania, was previously identified in wetland DR-8, between Hog Island Road and the Delaware River (Figure 4.10-1),[161] but was not relocated in 2004.

PA DCNR identified the following plant species of special concern associated with a freshwater intertidal mudflat community along the Delaware River: waterhemp ragweed (*Amaranthus cannabinus*, Pennsylvania Rare); eastern baccharis (*Baccharis halimifolia*, Pennsylvania Rare); Wright's Spike rush (E*leocharis obtusa var. peasii*, Pennsylvania Endangered); little "Dwarf" spikerush (*Eleocharis parvula*, Pennsylvania Endangered); multiflowered mud plantain (*Heteranthera multiflora*, Pennsylvania Endangered); shrubby camphor-weed (*Pluchea*

161 *Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County and City of Philadelphia, Philadelphia County*. Roy F. Weston, Inc. July 1993.

odorata, Pennsylvania Endangered); long lobed arrowhead (*Sagittaria calycina* var *spongiosa*, Pennsylvania Endangered); awl-leaved arrowhead (*Sagittaria subulata*, Pennsylvania Rare), Smith's bulrush (*Schoenoplectus smithii*, Pennsylvania Endangered); Indian wild-rice (*Zizania aquatica*, Pennsylvania Rare); swamp beggar-ticks (*Bidens bidentoides*, Pennsylvania Endangered); Walter's barnyard grass (Pennsylvania Endangered); stagger-bush (*Lyonia mariana*, Pennsylvania Endangered); southern red oak (*Quercus falcata*, Pennsylvania Endangered); willow oak (*Quercus phellos*, Pennsylvania Endangered); and river bulrush (*Schoenoplectus fluviatilis*, Pennsylvania Rare). In a letter dated March 16, 2004 (Appendix D), the PA DCNR, Bureau of Forestry stated that no intertidal mudflat community containing these species was in the Runway 17-35 Project Area. Intertidal mudflat communities occur within the Local Study Area at some locations along the Delaware River, but not within the Project Area.

4.11.3 Environmental Consequences

Potential direct, indirect, and secondary impacts on Threatened and Endangered species in the Project Area or Local Study Area were evaluated for each alternative. Short-term effects include construction-related impacts, such as sedimentation and pollution. Long-term direct effects include habitat loss or conversion; habitat degradation associated with clearing, grading, and construction; and the potential introduction or expansion of invasive species. Table 4.11-4 summarizes direct and indirect impacts to Threatened and Endangered species.

Indirect impacts are defined as the consequences of an action's direct impacts. These are generally not quantifiable, and may occur over a larger area or longer time. For example, a direct impact (i.e., change in dissolved oxygen) would affect water quality, which could change the habitat suitability for endangered fish or even common fish, possibly resulting in mortality, or reduced growth, or diminished reproductive success.

Secondary impacts are defined as reasonably foreseeable indirect consequences to the environment caused by a proposed action that would occur either in the future or in the vicinity of the direct impacts associated with an action. Generally, secondary impacts are regarded as the results of growth or development induced as a result of the action.

Direct Impacts

No direct environmental impacts to Threatened and Endangered species are anticipated for the No-Action Alternative because it would not require physical changes to the Airport.

There are no Federally-listed species of concern within the Project Area, therefore there are no direct effects on Federally-listed Threatened and Endangered species. Therefore, according to *FAA Order 5050.4A*,[162] a Biological Assessment for Federally-listed species will not be required.

Alternative 1

Alternative 1 would directly impact habitat of the state Threatened red-bellied turtle by placing a culvert in SEPD-2 (Figure 4.10.2) for the relocated airfield service road and constructing the service road parallel to SEPD-2. For Alternative 1, 1.9 percent (45 linear feet) of the 2,383 linear feet of SEPD-2 would be impacted. The proposed crossing would result in the loss of approximately 2,025 square feet of a portion of the channel that has shallow water and is densely vegetated with common reed. This area does not contain aquatic habitat or basking habitat, but may be used for feeding, aestivating (summer inactivity), or winter

162 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, Ch. 5, 8 June 1985.

hibernating, particularly by juvenile turtles. The crossing has been designed with a large-diameter culvert with a natural substrate bottom to facilitate turtle movements to the approximately 500 feet of SEPD-2 upstream of the culvert. Potential nesting habitat may also be lost at this location. Although red-bellied turtles were identified in SEPD-2 in 1999, 2000, and 2001,[163] no nests were found, indicating that this is not preferred habitat. Construction of the proposed airfield service road parallel to SEPD-2 would not result in the loss of potential nesting habitat in the upland, because the service road is not directly adjacent to the nesting habitat areas and would be within a densely vegetated grass turf that does not provide the open sandy soils required for nesting.

Although this would be a minor permanent loss of state-listed rare species habitat, there is sufficient habitat to support the red-bellied turtle population on the PHL property. These impacts do not result in a significant long-term loss of habitat for the red-bellied turtle. The PFBC, as the agency with jurisdiction, agreed with this finding (see Appendix D).

Alternative 2

Alternative 2 would also directly impact habitat of the state-Threatened red-bellied turtle by placing a culvert in SEPD-2 (Figure 4.10.3) for the airfield service road and constructing the service road parallel to SEPD-2. For Alternative 2, 4.2 percent (100 linear feet) of the 2,383 linear feet of SEPD-2 would be impacted by the culvert. An additional 2,613 square feet of SEPD-2 at its uppermost end would also be filled for construction of the RSA at the south end of Runway 17-35. The proposed crossing would result in the loss of approximately 2,025 square feet of a portion of the channel that has shallow water and is densely vegetated with common reed. This area does not contain aquatic habitat or basking habitat, but may be used for feeding, aestivating (summer inactivity), or winter hibernating, particularly by juvenile turtles. The crossing has been designed with a large-diameter culvert with a natural substrate bottom to facilitate turtle movements to the approximately 500 feet of SEPD-2 upstream of the culvert. Potential nesting habitat may also be lost at this location. Although red-bellied turtles were identified in SEPD-2 in 1999, 2000, and 2001,[164] no nests were found, indicating that this is not preferred habitat. Construction of the proposed service vehicle road parallel to SEPD-2 would not result in the loss of potential nesting habitat in the upland, because the service road is not directly adjacent to the nesting habitat areas and would be within a densely vegetated grass turf that does not provide the open sandy soils required for nesting.

Although this would be a minor permanent loss of state-listed rare species habitat, there is sufficient habitat to support the red-bellied turtle population on the PHL property. These impacts do not result in a significant long-term loss of habitat for the red-bellied turtle. The PFBC, as the agency with jurisdiction, agreed with this finding.

Indirect Impacts

No indirect or secondary environmental impacts to Threatened and Endangered species are anticipated for the No-Action Alternative.

Shortnose Sturgeon

The state and Federally-listed shortnose sturgeon and American bald eagle are potentially present in the Local Study Area. In the absence of mitigation, construction could result in temporary and negligible indirect effects to water quality as a

163 Philadelphia International Airport: Master Plan, *Endangered and Threatened Wildlife Species Surveys in Wetlands throughout Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania.* Herpetological Associates, 13 October 2001.

164 Ibid.

result of increased sedimentation but would not affect the habitat of the shortnose sturgeon. The project would not result in the discharge of toxins (PCBs, metals, PAH, chlorinated hydrocarbons) that have been identified as adversely affecting sturgeon habitat.[165] There are no breeding habitats or concentration areas used by the sturgeon in the vicinity of the airport. The NMFS has concurred that the Runway 17-35 Extension Project would not affect shortnose sturgeon (Appendix D).

Bald Eagle

The USFWS recommended[166] that the EIS include an assessment of potential disturbance from noise to bald eagle nests in the vicinity of the Airport, especially if airplanes would be flying below 1,500 feet within one mile of an active nest (see letter, Appendix D). Two active nests are in the vicinity of the Airport. The Monds Island nest is west of the airport, south of the approach/departure path from Runway 9R-27L. The Mantua Creek nest is south of the airport, west of the approach/departure path of Runway 17-35. An analysis of existing flight tracks shows that the majority of aircraft using Runway 17-35 fly within one mile of the Mantua Creek nest, at elevations less than 1,500 feet, because of the proximity of the nest to the runway end. The majority of aircraft using Runway 9R-27L are outside of this distance, although a few flights are closer to the nest.

Alternative 1 would increase the use of Runway 17-35 by regional jets and narrowbody jet aircraft, which are quieter (and faster) than the turboprop aircraft and corporate jets that current are the primary users of this runway. In Alternative 1, the landing threshold on Runway 35 would shift south by 400 feet, and the departure threshold on Runway 17 would shift north by 640 feet. This means that aircraft would land further to the south than they do currently, and would be slightly lower (20 feet) when they pass the Mantua Creek nest site. Aircraft on departure would also be slightly lower than they are currently (by 100 feet). Alternative 1 would not change flight tracks or operations in proximity to the Monds Island nest.

Alternative 2 would increase the use of Runway 17-35 by regional jets and narrowbody jet aircraft, which are quieter than the turboprop aircraft and corporate jets that current are the primary users of this runway. In Alternative 2, the landing threshold on Runway 35 would shift north by 1,044 feet, and the departure threshold on Runway 17 would shift north by 1,140 feet. This means that aircraft would land further to the north than they do currently, and would be slightly higher (by 50 feet) when they pass the Mantua Creek nest site. Aircraft on departure would slightly lower than they are currently (by 70 feet). Alternative 2 would not change flight tracks or operations in proximity to the Monds Island nest.

As shown in Table 4.11-2, Alternative 1 would not increase cumulative noise levels at the Mantua Creek in 2007 and would result in an 0.2-dB decrease in sound levels in 2015. Noise levels at the Monds Island nest would decrease by 0.1 dB in 2007 and would increase by 0.1 dB in 2015. Alternative 1 would decrease the maximum noise exposure at the Mantua Creek nest by 0.5 dB in both 2007 and 2015, and would decrease the maximum noise exposure by 0.6 dB in both 2007 and 2015 at the Monds Island nest (Table 4.11-2). There would be no substantial change in noise at either location, in comparison to the No-Action Alternative.

As shown in Table 4.11-2, Alternative 2 would decrease cumulative noise levels at the Mantua Creek in 2007 by 0.1 dB and would result in an

165 *Final Recovery Plan for the Shortnose Sturgeon*, National Marine Fisheries Service, December 1998.
166 Staples, John C., United States Fish and Wildlife Service, New Jersey Field Office, 29 July 2004.

0.3-dB decrease in sound levels in 2015. Noise levels at the Monds Island nest would decrease by 0.1 dB in both 2007 and 2015. Alternative 2 would decrease the maximum noise exposure at the Mantua Creek nest by 1.0 dB in both 2007 and 2015, and would decrease the maximum noise exposure by 0.6 dB in both 2007 and 2015 at the Monds Island nest (Table 4.11-3). There would be no substantial change in noise at either location, in comparison to the No-Action Alternative.

Because both the Monds Island and Mantua Creek nests are on the existing airport flight tracks and close to the runway ends, it is likely that the two nesting pairs are habituated to aircraft passage and noise and would not be affected by minor changes in noise, frequency, or proximity of aircraft. Departures from Runway 27L pass the Monds Island nest at approximately 1,000 ft horizontal and 1,500 to 3,000 ft vertical. Arrivals on Runway 35 pass the Mantua Creek nest at approximately 2,000 ft horizontal and 300-600 ft vertical. Existing maximum noise exposures reach 97.4 dB (at Mantua Creek).

Table 4.11-1 Average Distance and Elevations of Aircraft to the Mantua Creek Nest Site

	Lateral Distance		Average Elevation	
		No-Action	Alternative 1	Alternative 2
Arrivals on Runway 35	2,000 ft	477	457	530
Departures on Runway 17	3,000 ft	1667	1570	1600

Table 4.11-2 Cumulative Noise Exposure (DNL) at Bald Eagle Nest Sites (dB)

	Existing	Forecast 2007 DNL			Forecast 2015 DNL		
Nest	2003	No-Action	Alternative1	Alternative 2	No-Action	Alternative 1	Alternative 2
Mantua Creek	54.3	54.3	54.3	54.2	55.8	55.6	55.5
Monds Island	64.9	64.0	63.9	63.8	65.3	65.4	65.2

Table 4.11-3 Maximum Noise Exposure (Lmax) at Bald Eagle Nest Sites (dB)

	Existing	Forecast 2007 Lmax			Forecast 2015 Lmax		
Nest	2003	No-Action	Alternative 1	Alternative 2	No-Action	Alternative 1	Alternative 2
Mantua Creek	97.4	97.4	96.9	96.4	97.4	96.9	96.4
Monds Island	96.6	91.4	90.8	90.8	91.4	90.8	90.8

Neither Alternative 1 nor Alternative 2 would change flight tracks or elevations of aircraft using Runway 27L and would not affect the Monds Island nest. Both alternatives would change flight elevations (but not flight tracks) of aircraft using Runway 17-35. However, in both Alternative 1 and 2, the average noise exposure (DNL) and the maximum noise exposure (Lmax) would be less than in the No-Action Alternative. This is due to the fact that the aircraft using the runway would be quieter than those currently using it, and because planes departing on Runway 17 would be at a higher altitude because the departure threshold shifts to the north.

Red-Bellied Turtle

In the absence of mitigation, construction required for Alternative 1 and Alternative 2 may indirectly impact habitat for the state Threatened red-bellied turtle as a result of minor water quality impacts from potential increases in glycol and sediment discharges to SEPD-2. However, as previously noted, SEPD-2 does not provide optimal habitat due to the very shallow water depths and dense vegetation. In addition, the areas of SEPD that will be impacted are located at the northern end of the waterway, resulting in minor habitat fragmentation. These alternatives would potentially restrict access to the upper 690 linear feet of SEPD-2. However, this segment of the channel is densely vegetated with common reed and does not provide aquatic habitat used by the turtle, although some portions of the banks may provide nesting habitat.

Other State-Listed Species

There are no indirect impacts to any state-listed species in the John Heinz National Wildlife Refuge, because there is no increase in the number of overflights or anticipated changes in flight paths or noise over the Refuge (see Section 4.2 for information on changes in noise).

Walter's barnyard grass was previously identified in DR-8, outside of the Project Area and downstream of DR-7 (Figure 4.10-1), but was not relocated in 2004. Wetland DR-7 does not contain any state-listed species. DR-7 would not receive any additional stormwater under Alternative 1 or Alternative 2. The proposed airfield service road would be approximately 150 feet north of DR-7 and graded to drain stormwater runoff down the road to the northwest, away from DR-7. No stormwater runoff, during construction or post-construction is anticipated to be discharged from the Proposed Project to this wetland. There would therefore be no temporary increase in sediment, which could affect turbidity. It would not be expected to have an increase in the winter discharge of glycol, since stormwater from the paved surface would not be directed to this wetland. In the unlikely event that the Proposed Project did result in increases in the discharge of sediments or glycol to Wetland DR-7 there would be no anticipated adverse effects to the barnyard grass, as this tall emergent species would not be affected by water clarity, and, like all wetland species, is adapted to poorly oxygenated hydric soils

4.11.4 Mitigation

This section considers measures to avoid and minimize impacts to state-listed red-bellied turtle habitat, and identifies potential mitigation measures to protect red-bellied turtles and their habitat during construction and long-term future operations.

The proposed airfield service road would cross SEPD-2 on the north-south segment of this waterway, approximately 100 feet north of the bend where the waterway becomes parallel to Hog Island Road. The road would cross SEPD-2 using a single, 65-inch by 40-inch arched pipe that would provide a natural bottom substrate. The proposed pipe would be approximately 45 feet long. From the crossing, the new airfield service road would

Table 4.11-4 Potential Impacts to Threatened and Endangered Species

Alternative	Species	Direct Impacts	Indirect Impacts
No Action	red-bellied turtle	No impacts	No impacts
Alternative 1	red-bellied turtle	Minor loss of low quality aquatic habitat.(0.05 acre) Potential loss of nest habitat	Change in water quality/Minor habitat fragmentation No indirect impacts
	shortnose sturgeon	No direct impacts	No impacts
	bald eagle	No direct impacts	No impacts
	Walter's barnyard grass	No direct impacts	No impacts
Alternative 2	red-bellied turtle	Minor loss of low-quality aquatic habitat (0.10 acre) Potential loss of nest habitat	Change in water quality/ Minor habitat fragmentation
	shortnose sturgeon	No direct impacts	No impacts
	bald eagle	No direct impacts	No impacts
	Walter's barnyard grass	No direct impacts	No impacts

extend southwest to connect with the existing service road along the north side of the drainage ditch. Measures to avoid and minimize Threatened and Endangered species habitat impacts within a portion of SEPD-2 will be pursued throughout the development process. Measures to minimize impacts will continue through final design, including coordination with the regulatory agencies. Potential water quality impacts associated with construction activities will be addressed by BMPs, such as sediment traps and silt fences, to prevent water quality problems and provide erosion and sedimentation (E & S) controls.

Avoidance

Alternative 1 and Alternative 2 include culverting a short segment of SEPD-2 to provide a continuous airport perimeter service road. The purpose of this road is to provide access to the AOA for emergency, security, and maintenance vehicles, and it must provide a secure means of patrolling the interior of the airfield perimeter. Because SEPD-2 extends from the RSA at the south end of Runway 17-35 to Taxiway SA, and extends south to Hog Island Road, there are no alternative available routes for a continuous service road that would avoid SEPD-2. Any road alignment that avoided SEPD-2 would leave the secure airport property and would not meet the purpose of the airfield service road nor FAA safety standards.

Minimization

Several design alternatives to minimize impacts to SEPD-2 were evaluated to determine if there was a practicable alternative with less impact on Threatened or Endangered species. The evaluation considered the location of the service road crossing and the type of culvert structure, as well as the characteristics of the resource. As described previously, SEPD is a waterway that was constructed to serve as a drainage ditch for the airfield. SEPD-2, the uppermost portion of this waterway, is densely vegetated with common reed. Its shallow water areas are covered in summer by duckweed and algal mats. The waterway becomes deeper and wider just upstream of the point where it makes a 90-degree bend and becomes parallel to

Hog Island Road. From this point, the ditch is an open water aquatic habitat.

Three crossing locations were evaluated, as described in Table 4.11-5 below. Crossing locations A and B would meet the project purpose and minimize impacts to aquatic habitats. Crossing location A would require filling an open water area of SEPD-2, while crossing location B would require filling an area vegetated with common reed. Crossing location C would affect a larger area of open water habitat. Crossing location B was selected to minimize impacts to the resource.

Four crossing types were evaluated, as described in Table 4.11-5 below. Crossing type 1 would have the greatest impact to the aquatic habitat and was therefore eliminated from further consideration. Crossing types 2, 3, and 4 are not substantially different in their impacts to threatened and endangered species habitat. Each would provide a large-diameter opening with a natural substrate that would minimize the loss of the resource, while maintaining hydrological and wildlife connectivity between the upper and lower portions of SEPD-2. Because of the presence of compressible subsurface soils (old tidal marsh sediments and peats), a structure spanning the waterway would require pilings to the deeper, stronger subsurface soil layers. Crossing types 3 and 4 would therefore result in greater temporary impacts to the resource for construction and would substantially increase the cost of the crossing without minimizing impacts to threatened species habitat.

Crossing type 2 was therefore selected as the most effective means of minimizing impacts to the resource. PFBC concurred with the selected option.

Mitigation

The DEIS stated that mitigation may be required due to impacts to the red-bellied turtle habitat at SEPD-2 within the Project Area, and indicated that any mitigation planning or implementation will be coordinated with the Airport's management plan that is being developed for the red-bellied turtle. The DEIS also identified a range of mitigation measures to mitigate for long-term habitat loss, including creating nesting habitat of sandy banks in other areas of SEPD-2 or other waterways on the PHL property; removal of common reed in SEPD-2 or other waterways where potential red-bellied turtle habitat is available; habitat restoration, or enhancement on the PHL property; providing turtle basking platforms in suitable waterways; and water quality improvements.

The DEIS also indicated that mitigation could include measures to mitigate for construction impacts such as timing construction to avoid nesting times; monitoring during construction and relocating turtles if necessary; and erecting exclusion fencing to protect the red-bellied turtles.

In their comment letter (see Volume 3, Letter 18) on the DEIS, PFBC noted that the agency has no objections to the Crossing Location B and Crossing Type and Dimension No. 2 for the proposed surface road crossing of SEPD-2. They recommended that the invert of the culvert bottom be depressed at least one foot below the existing bottom elevation and that both upstream and downstream culvert headwalls be constructed to minimize culvert length. PFBC also recommended the installation of turtle basking platforms and a turtle nesting beach within the lower reaches of SEPD-2 to help compensate for the wetland habitat impacts.

Table 4.11-5 Service Road Minimization Options

	Crossing Location	Advantages	Disadvantages
A	Cross 40 ft N of bend in SEPD-2	Reduces number of turns in service road Avoids impacts to SEPD-2 segment parallel to Hog Island Road Outside of RSA and OFA	Service road parallel to and close to SEPD-2. Potential work within turtle nesting habitat Crosses SEPD-2 in open water area
B	Relocate road to 100 ft N of bend in SEPD-2	Road is outside of OFA and RSA Shifts road (where parallel to SEPD-2) further north, reducing or avoiding work in potential turtle nest habitat	Requires crossing SEPD-2 in area vegetated with common reed
C	Relocate road to south, cross SEPD at ARFF	Keeps road within perimeter fence Reduces or avoids work in potential turtle nesting habitat	Increases impacts to aquatic habitat - crosses wider, deeper portion of SEPD with greater aquatic habitat values
	Crossing Type and Dimensions	Advantages	Disadvantages
1	Dual 30-inch culverts, 125 ft long	Service road crosses at-grade	Small diameter, long culverts potentially decrease movement of wildlife
2	Single 65 x 40 inch arched pipe with natural bottom 45 ft long	Natural bottom substrate facilitates wildlife passage Sufficient light in culvert to allow passage	Service road will have to be raised on 2-4 ft of fill – additional drainage structures needed
3	Precast concrete box culvert (72 x 48 inches) with natural bottom 80 ft long	Natural bottom substrate facilitates wildlife passage Sufficient light in culvert to allow passage	Service road will have to be raised on 2-4 ft of fill – additional drainage structures needed Pile supports likely to be required Significantly higher cost and larger temporary construction impacts
4	Bridge across SEPD-2 32 ft long	Natural bottom substrate facilitates turtle passage Sufficient light in culvert to allow passage Shorter culvert length	Service road will have to be raised on 2-4 ft of fill – additional drainage structures needed Pile supports likely to be required Significantly higher cost and larger temporary construction impacts

The proposed design for Alternative 1 includes these measures. The design of each measure is conceptual: engineering designs and specifications will be developed by the Airport's engineering consultant during the final design process. The final design will be prepared in coordination with the Airport's overall management plan for protection of the red-bellied turtle population.

Airfield Service Road Culvert

The Airfield Service Road will be designed to cross SEPD-2 at least 100 feet north of the bend in the ditch. The road will reconnect with the existing service road approximately 800 feet west of the crossing. This location minimizes impacts to aquatic habitat used by the turtles, and keeps the service road (where it parallels SEPD-2) as far from the bank of the ditch as is practicable.

The proposed culvert will be a 45-foot long arched pipe, 65 inches wide and 40 inches high. The bottom of the culvert will be depressed at least one foot below the existing wetland bottom elevation to maintain a natural substrate and habitat connectivity. Headwalls will be constructed on both the upstream and downstream ends of the culvert to minimize habitat loss.

Construction Measures

Exclusion fencing will be installed between the work area and SEPD-2 to prevent turtle movement into the construction zone and protect against unintentional turtle mortality. Exclusion fencing may be installed in conjunction with erosion and sedimentation controls, and will consist of staked, entrenched siltation fencing. The entrenched portion of the fence should be on the outside of the fence (outside the work zone) to discourage turtles from tunneling under the fence.

Siltation fence or cofferdams will be installed across the SEPD-2 channel both upstream and downstream of the proposed culvert crossing. The work area will be searched by a PFBC approved biologist for turtles and any individuals will be relocated to the lower section of SEPD-2, which will not be disturbed.

Basking Habitat

SEPD-2 is a linear drainage ditch system that provides little opportunity for turtle basking. Basking is essential to maintain turtle metabolic functions and is important to maintaining population viability. Artificial basking platforms have been constructed in wetlands adjacent to the Airport, as mitigation for the International Terminal (A-West) and access roadway construction. Basking platforms have also been recently constructed by the PA DCNR, under a permit issued by the US Army Corps of Engineers, on the Delaware Canal at the Trenton-Morrisville Route 1 Toll Bridge[167]. A total of 42 wooden platforms, 4-feet in diameter, were built to enhance red-bellied turtle habitat.

To enhance turtle habitat at the Philadelphia International Airport, a minimum of twenty basking platforms will be installed at an appropriate location in SEPD-2 where these do not cause a wildlife hazard. These will consist of 6-foot long boards or logs, 2 inches thick by 6 inches wide, anchored on the bank and extending into the water.

Because of the potential for even small baskng platforms to attract birds (such as great blue herons or canada geese), placing basking platforms in proximity to the runway may create a hazardous wildlife attractant. During the final design phase, the Airport will identify appropriate locations within SEPD-2 for basking platforms, in consultation with PFBC and consistent with FAA Advisory Circular AC150/5200-33, *Hazardous Wildlife Attractants on or Near Airports.* A five-year monitoring and maintenance plan will be developed with the DEP and PFBC during the final design phase.

Nesting Habitat Enhancement

Turtle populations are also often limited by the availability of suitable nesting sites. Optimum nesting habitat is provided by open or sparsely vegetated sandy or loamy soils in open, sunny areas. The open, sparsely vegetated, soft substrates facilitate the female turtle's ability to excavate a nest. Open sunny conditions provide optimum temperatures for embryo development. These optimum nesting sites are very limited in the vicinity of SEPD-2, as most areas adjacent to the ditch are densely vegetated with turf grasses and have a clay soil. Some small areas of sandy soil are present at the top of the bank slope or on the steeply sloping banks of the ditch.

During construction, artificial nest habitat will be created to augment the limited natural nesting habitat. Because recent research[168] indicates that clumped nests are more likely to be subject to predation by raccoons, skunks or fox, many (a

167 *Public Notice, CENAP-PL-E-02-04, Delaware Canal Reconstruction Project, Falls Township*, Bucks County, Pennsylvania.

168 Marchand, Michael N., John A. Litvaitis, Thomas J. Maier, Richard M. DeGraaf. 2002. *Use of artificial nests to investigate predation on freshwater turtle nests*. Wildlife Society Bulletin 2002, 30(4): 1092-1098.

minimum of 20) small nest sites will be created. Each nest site will be circular, and three feet in diameter. Each nest site will be excavated to a depth of 18 inches and filled with a mixture of sand, peat and loam. The nest sites will be located at varying distances from the top of the bank of SEPD-2, with the closest site approximately three feet from the top of the bank. During the final design phase, the Airport will identify the appropriate locations along SEPD-2 for the created nest habitats, in consulation with the PFBC. A five-year monitoring and maintenance plan will also be developed during the final design phase with the DEP and PFBC.

Implementation Schedule

Threatened and endangered species mitigation measures will be implemented as soon as feasible following the completion of design and issuance of all required construction permits. A construction schedule will be developed that includes these actions. All mitigation measures will be completed prior to the end of construction.

- Exclusion fencing will be installed prior to any construction at the south (Runway 35) end of the runway;
- Nest habitat will be created as soon as feasible in the construction schedule;
- Basking platforms will be constructed as soon as feasible in the construction schedule;
- No construction (of the airfield service road culvert) will be done in SEPD-2 during the season when turtles are most active, from May 1 through July 31; and
- Exclusion fencing will be removed at the completion of construction.

4.11.5 Regulatory Coordination and Required Permits

The FAA has coordinated with the relevant regulatory agencies (USFWS, PGC, PA DCNR, and the PFBC) throughout the preparation of the EIS. Letters from the PGC, PA DCNR Bureau of Forestry, and the USFWS were received (Appendix D) stating that none of the species of concern that were identified for the PHL property and adjacent areas were present in the Project Area. PFBC, in a letter dated August 17, 2004 (Appendix D) concurred with the proposed culvert location and type, and with the proposed mitigation measures. Additional coordination is anticipated during the permitting process.

4.11.6 Summary

The Project Area contains suitable habitat for one state-listed species, the Pennsylvania Threatened red-bellied turtle. Areas within the Local Study Area contain state-listed plant species that would not be affected by the alternatives considered in this FEIS. Although two Federally-protected species may occur within the Local Study Area, no habitat within the Project Area is used by the shortnose sturgeon or bald eagle. Bald eagle nests south and southwest of PHL would not experience changes in noise in comparison to the No-Action Alternative, although flights would be slightly lower. Either Alternative 1 or Alternative 2 would result in the minor loss or fragmentation of a portion of a wetland habitat of the red-bellied turtle, and could affect a small area of potential nest habitat as a result of the proposed airfield service road construction. Mitigation measures, including further minimization of impacts, construction measures, and habitat enhancement, could be implemented. These Alternatives are not anticipated to result in long-term adverse effects to the population of the red-bellied turtle, and would not affect any Federally-protected species.

4.12 Wetlands and Waterways

This section (Section 4.12.2) describes the existing surface water resources and wetlands within the Project Area and Local Study Area, including jurisdictional and non-jurisdictional wetlands and waterways. Section 4.12.3 discusses consequences of each alternative to wetland and waterways, including construction and operational impacts. Section 4.12.4 discusses avoidance, minimization, and mitigation of impacts to wetlands and waterways. Detailed descriptions of the technical studies supporting this section are in the DEIS Technical Appendix A-8, *Wetlands and Waterways*.

4.12.1 Introduction

Wetlands are defined as areas inundated by surface water or groundwater sufficient to support a prevalence of vegetative or aquatic life that requires saturated soil conditions. These wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds, as well as estuarine areas, tidal overflows, and shallow ponds with emergent vegetation. Areas that do not support hydrophytic vegetation because of lack of hydrology, and perennial streams, reservoirs, and deep lakes, are not considered wetlands and are defined as waterways or waterbodies.

The USACE has jurisdictional authority over Waters of the United States, which include waterways and wetlands, through Section 404 of the CWA. Waters of the U.S. include all waters which are used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters, including interstate wetlands; and all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or drainage ditches leading to regulated Waters of the U.S., the degradation or destruction of which could affect interstate or foreign commerce.[169,170]

Under Pennsylvania Code 25, Chapter 102, the PA DEP has jurisdiction over Waters of the Commonwealth. Waters of the Commonwealth are defined as "all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs and other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial," within the Commonwealth of Pennsylvania.[171]

Regulatory Context

Wetlands and waterways within the Project Area were addressed in accordance with the following: Executive Order 11990, *Protection of Wetlands*;[172] DOT. Order 5660.1A, *Preservation of Wetlands*;[173] Section 401 and 404 of the Federal CWA;[174] and PA DEP Title 25, Chapters 93[175] and 105.[176]

In compliance with these orders, Federal agencies are to avoid destruction and modification of, or construction within, existing wetlands where there

169 *Technical Support Document: Clean Water Act Jurisdiction over Streams and Ditches.* United States Army Corps of Engineers, Philadelphia District. *Philadelphia District*, October 2003.
170 *Draft Compensatory Mitigation Guidelines, Philadelphia District,* United States Army Corps of Engineers, Philadelphia District. (http://www.nap.usace.army.mil/cenap-op/regulatory/draft_mit_guidelines.pdf), April 2004.
171 *25 Code of Federal Regulations, Chapter 93, Water Quality Standards,* Pennsylvania Department of Environmental Protection, Bureau of Water Quality Management, Harrisburg, Pennsylvania, 1996.
172 *Executive Order 11990, Protection of Wetlands*, 24 May 1997.
173 *United States Department of Transportation Order 5660.1A, Preservation of Wetlands*, 24 August 1978.
174 *Navigable Waters Chapter 26 – Water Pollution Prevention and Control Subchapter IV - Permits And Licenses*, Regulatory Program of the U.S. Army Corps of Engineers, January 1994.
175 *Pennsylvania Code, Title 25, Chapter 93: Water Quality Standards, Harrisburg, Pennsylvania*, 1996.
176 *Pennsylvania Code. Title 25, Chapter 105: Dam Safety and Waterway Management*, 27 September 1980.

is a practicable alternative. If a proposed project would impact existing wetlands, DOT Order 5660.1A requires Federal transportation agencies to make a finding that there is no practicable alternative. The FAA has consulted with Federal, state, and local agencies as necessary when applicable thresholds are exceeded or an agency expresses a special interest in an area or project. The impact analysis for unavoidable impacts in this FEIS includes an opinion of the proposal's "overall effect on the survival and quality of the wetlands."[177]

Section 401 of the Federal CWA specifies additional requirements for permit review on the state level.[178] Any applicant for a Federal license or permit to conduct any activity that may result in discharge into navigable waters must provide a certification from the state in which the discharge originates. If appropriate, an interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates may issue a permit in lieu of the state. Section 401 certification also allows states to address associated chemical, physical, and biological impacts, such as low dissolved oxygen levels, turbidity, inundation of habitat, stream volumes and fluctuations, filling of habitat, impacts on fish migration, and loss of aquatic species as a result of habitat alterations that are specific to the needs of that state and/or region.[179]

177 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, 8 October 1985.
178 *Section 404 of the Clean Water Act Title 33 - Navigation and Navigable Waters Chapter 26 – Water Pollution Prevention and Control Subchapter IV - Permits And Licenses*, Regulatory Program of the U.S. Army Corps of Engineers, January 1994.
179 Wetlands Regulatory Program, United States Army Corps of Engineers, (http://www.usace.army.mil/inet/functions/cw/cecwo/reg/index.htm), April 2004.

Section 404 of the CWA regulates the discharge of dredged or fill material within navigable waters. It prohibits the use of any defined area as a disposal site whenever the discharge of such materials will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas.[180]

The Section 404(b)1 Guidelines state that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less of an adverse impact on the aquatic ecosystem or a special aquatic site, and requires that appropriate and practicable steps be taken to minimize potential adverse impacts on the aquatic ecosystem.

Pennsylvania Code Water Quality Standards,[181] under the jurisdiction of the PA DEP, set forth standards for surface waters, including wetlands, based upon water uses that are protected. PA DEP considers these in its regulation of discharges.[182]

Pennsylvania's Chapter 105 Regulations (*Dam Safety and Encroachments Act*), under the jurisdiction of the PA DEP, provides for the comprehensive regulation and supervision of dams, reservoirs, water obstructions and encroachments in order to protect the health, safety, welfare and property of the people, as well as to protect the natural resources, environmental rights and values secured by the Pennsylvania Constitution to conserve and protect the water quality, natural regime and carrying capacity of watercourses.[183]

180 *Ibid*.
181 *Draft Compensatory Mitigation Guidelines, Philadelphia District,* United States Army Corps of Engineers, Philadelphia District, (http://www.nap.usace.army.mil/cenap-op/regulatory/draft_mit_guidelines.pdf), April 2004.
182 *Pennsylvania Code Title 25, Chapter 93, Water Quality Standards*, 18 November 2000.
183 *Pennsylvania Code, Title 25, Chapter 105*,

Study Area

The Project Area for the Runway 17-35 Extension Project includes the existing Runway 17-35, the Economy Parking Lot, SR-291, and other areas within the PHL property (Figure 4.12-1). The Project Area includes all areas of potential wetland disturbances for each of the alternatives. The Project Area is within three subwatersheds of the Delaware River Estuary (part of the Delaware River Basin): CMC, the SEPD drainage system, and the Delaware River. These subwatersheds are within highly developed commercial, industrial, and residential areas.

The Local Study Area for wetlands and waterways includes the Project Area and extends south of Hog Island Road to the Delaware River. The Local Study Area includes all areas of potential indirect and secondary effects to wetlands and waterways.

Regional Context

The region beyond the Local Study Area is described to provide a context for evaluating the wetlands and waterways within the Local Study Area and Project Area. Typical wetlands and waterways immediately outside the Local Study Area include perennial waterways, drainage ditches, and palustrine wetlands. A majority of wetlands and waterways within the region have been affected, altered, or created by drainage and development.

Many wetlands and waterways are within PHL and the immediate vicinity. Most of the on-airport waterways outside the Project Area are maintained drainage channels that discharge into the Delaware River through tide gates. An estimated 129 acres of waters and wetlands are on PHL property and lands immediately adjacent to the Airport[184]; some wetlands outside the Project Area within the PHL property are depressions that are frequently mowed, while other wetlands are densely vegetated, often with invasive vegetation. Directly northwest of the Project Area is the John Heinz National Wildlife Refuge, which contains extensive tidal wetlands associated with Darby Creek. Other waters and wetland areas outside the PHL property include drainage channels, vegetated detention basins, open waters, and natural wetlands. Subwatersheds within the region that include waterways and wetlands are Church Creek, Mingo Creek, Schuylkill River, Eagle Creek, Darby Creek, Long Hook, and the Delaware River. The Delaware River, part of the Delaware Estuary, includes tidal wetlands along the banks of the river.

4.12.2 Affected Environment

Waters of the U.S. within the Project Area have developed as a result of channelization of the existing waterways and the creation of new drainage channels required for airport operations. Field observations in 2004 confirmed the previous delineation boundaries for the waterways within the Project Area.

Methodology

A *Wetland Determination Report*, which includes the Project Area, was completed in 1993 for the entire PHL property,[185] and wetland boundaries were confirmed by USACE in a Jurisdictional Determination (JD). Subsequently, several additional delineations were performed and additional changes to existing mapping were made. A second JD determined USACE jurisdiction over areas dominated by common reed (*Phragmites australis*). The most recent JD in 2000 (DEIS Technical Appendix A-8, *Wetlands*, Attachment A) confirmed these prior delineations. Fieldwork was performed

(http://www.pacode.com/index.html), April 2004.

184 *Philadelphia International Airport: Master Plan Technical Report 2004.02, Final Runway 17-35 Extension Project Justification and Definition,* DMJM Aviation, 27 August 2004.

185 Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania, West Chester, Pennsylvania, Roy F. Weston, Inc., July 1993.

in 2004 to verify the Project Area wetlands. FAA, USACE, and PA DEP wetland and waterway criteria were considered during the field evaluation.

Functions and values were assessed for each waterway in the Project Area using the modified New England Corps Descriptive Approach.[186] This method was developed by the USACE, New England District, and includes a qualitative description of the physical characteristics of the wetland or waterway, identifies the functions and values exhibited, and provides the basis for conclusions using a "best professional judgment" approach. The Descriptive Approach is two-fold in that it first determines whether particular functions and values are present, followed by a determination of what functions and values are primary and why. A function or value can be primary if it is an important physical component of a wetland ecosystem, and/or if it is considered of special value or significant to society, from a local, regional, and/or national perspective.

All Waters of the U.S. within the Project Area and Local Study Area were also evaluated to determine if they meet the Pennsylvania criteria for Exceptional Value Waters. Exceptional Value waterways and wetlands, which serve as habitat for Threatened and Endangered plants and animals, are to be maintained and protected before, during, and after any project within the vicinity of the resource.

Existing Waterways – Project Area

Three waterways (Church Creek, SEPD-2, and DR-7), divided into segments by culverts, are within the Project Area (Figure 4.12-1). All are classified as "Riverine Lower Perennial Unconsolidated Bottom, Mud waterways" according to the Cowardin classification system used by the USACE[187]. Church Creek within the Project Area is a severely disturbed channel with grouted riprap banks and vertical retention walls. The creek flows from southwest to northeast through the northern section of the Project Area. A tributary to Mingo Creek, Church Creek is classified as a WWF. Mingo Creek discharges into the Schuylkill River, whose confluence with the Delaware River is upstream of PHL. The SEPD-2 is one of several created drainage channels that store and convey stormwater flow from airport runways and discharge into the Delaware River through a tidegate at Hog Island Road. An unnamed tributary to the Delaware River originates on PHL (DR-7), flows through a culvert south of Hog Island Road (DR-8), and discharges into the Delaware River. The segment of the ditch within DR-8 is tidal; a tidegate downstream of DR-7 prevents tidal influence from DR-8 to DR-7. Table 4.12-1 provides information on these waterways.

These waterways were previously identified as wetlands in the *1993 Wetland Determination Report*[188] and included in the JD as Waters of the U.S. These are classified as jurisdictional waterways (not wetlands) because they have a defined bed and bank and perennial water flow. Some portions of these ditches are bordered by vegetated banks that may be considered wetlands. All of these ditches are subject to Section 404 as Waters of the United States. The drainage channels and channelized waterways are artificially maintained.

186 *The Highway Methodology Workbook, Supplement, Wetland Functions and Values, A Descriptive Approach,* United States Army Corps of Engineers, November 1995.

187 *Classification of Wetlands and Deepwater Habitats of the United States*, L.M. Cowardin, V. Carter, F. C. Golet and E. T. LaRue, US Government Printing Office, Washington, DC, FWS/OBS 79/31,1979.

188 Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania, West Chester, Pennsylvania, Roy F. Weston, Inc., July 1993.

Table 4.12-1 Existing Waterways

Waterway	Area	Length	Primary Functions and Values
CMC-1	0.1 acres	729 ft	■ Floodflow alteration ■ Sediment and toxicant retention
CMC-2	0.1 acre	584 ft	■ Floodflow alteration ■ Sediment and toxicant retention
CMC-3	0.2 acre	337 ft	■ Floodflow alteration ■ Sediment and toxicant retention
CMC-4	0.12 acre	251 ft	■ Floodflow alteration ■ Sediment and toxicant retention
SEPD-2	3.24 acre	2,383 ft	■ Floodflow alteration ■ Sediment and toxicant retention ■ Production export ■ Wildlife habitat ■ Endangered species habitat
DR-7	0.08 acre	195 ft	■ Floodflow alteration ■ Sediment and toxicant retention ■ Sediment stabilization

*R2UB3 = Riverine Lower Perennial Unconsolidated Bottom, Mud[189]

Recent mapping keys identified wetlands and waterways by watershed drainage area. These designations have been used on the current 2004 mapping (Figure 4.12-1). The watershed drainage designations will be used throughout this report to name Waters of the U.S. within the Project Area and Local Study Area. The CMC segments meet the definition of watercourse in PA DEP Chapter 105 regulations. SEPD-2 meets the definition of a watercourse and is also considered a "stormwater management facility." Six jurisdictional waterways supporting vegetation on the bed and banks are present within the Project Area. These waterways are designated as CMC-1, CMC-2, CMC-3, CMC-4, SEPD-2, and DR-7. The total waterway acreage within the Project Area is 1.9 acres (2,857 linear feet).

189 *Classification of Wetlands and Deepwater Habitats of the United States*, L.M. Cowardin, V. Carter, F. C. Golet and E. T. LaRue, US Government Printing Office, Washington, DC, FWS/OBS 79/31,1979.

CMC-1

CMC-1 is part of a channelized section of Church Creek, which flows from southwest to northeast through the northern end of the Project Area. The total length of CMC-1 is 729 feet. This waterway supports vegetation along the concrete and gravel banks. The 2004 investigation confirmed that the waterway boundaries are the same as indicated in the 1993 delineation report and 2000 JD. Dominant vegetation in the channel included smartweed and floating primrose-willow .[190] Purple loosestrife common reed, and black willow occur along the banks.

The principal functions and values of the waterway are floodflow alteration and sediment and toxicant retention. The 2001 Benthic Macroinvertebrate Sample Analysis indicates that the Church-Mingo Creek watershed had a "very poor" water quality rating.[191] The waterway does not support any Threatened or Endangered flora or fauna and is not an Exceptional Value waterway.

CMC-2

CMC-2 is also a channelized section of Church Creek, downstream of CMC-1. CMC-2 is completely within the Project Area, and is upstream of CMC-3 and CMC-4. The total length of CMC-2 is 584 feet. The 2004 investigation confirmed that the waterway boundaries are the same as indicated in the 1993 Wetland Determination Report [192] and 2000 JD. Dominant vegetation in the channel included purple loosestrife, yellow nutsedge, and

190 *Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania, West Chester, Pennsylvania,* Roy F. Weston, Inc., July 1993.
191 *Philadelphia International Airport, Technical Report No. 3: Benthic Macroinvertebrate Sample Analysis*, Normandeau Associates, Inc., October 2001.
192 *Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania, West Chester, Pennsylvania,* Roy F. Weston, Inc., July 1993.

duckweed. Purple loosestrife, common reed, red maple , and black willow occur along the banks.

The principal functions and values of the waterway are floodflow alteration, and sediment and toxicant retention. The 2001 Benthic Macroinvertebrate Sample Analysis indicates that the Church-Mingo Creek watershed had a "very poor" water quality rating. The waterway does not support any Threatened or Endangered plants or animals and is not an Exceptional Value waterway.

CMC-3

CMC-3 is the third channelized section of Church Creek, between CMC-2 and CMC-4. The total length of CMC-3 is 337 feet. The 2004 investigation confirmed that the waterway boundaries are the same as indicated in the 1993 *Wetland Determination Report* and 2000 JD. Church Creek flows from CMC-2 to CMC-3 via two corrugated metal pipes at the west end of CMC-3. Water in this segment passes under the airport safety apron, through a single corrugated metal pipe leading to CMC-4. Dominant vegetation included common reed, which is frequently mowed as part of wildlife control measures close to the runway. Water shows evidence of sediment deposition. A sewage odor was noted; this area is the site of a prior dumping violation of septic waste during the winter of 2003-2004.[193]

The principal functions and values of the waterway are floodflow alteration and sediment and toxicant retention. The 2001 Benthic Macroinvertebrate Sample Analysis[194] indicates that the Church-Mingo Creek watershed had a "very poor" water quality rating. The waterway does not support any Threatened or Endangered plants and animals and is not an Exceptional Value waterway.

CMC-4

CMC-4 is also part of the channelized Church Creek. CMC-4 is downstream of CMC-1, CMC-2, and CMC-3. The total length of CMC-4 is 251 feet. The 2004 investigation confirmed that the waterway's boundaries are the same as in the 1993 *Wetland Determination Report* [195] and 2000 JD. Dominant vegetation includes common reed and soft rush, which are frequently mowed. Church Creek flows from CMC-3 to CMC-4 via one corrugated metal pipe at the west end of CMC-4. Water in this segment discharges from the Airport property through a single corrugated metal pipe. A second pipe, surrounded by riprap, discharges into the channel on the northern bank. A water monitoring station is over the outlet pipe at the northeast end of the channel. The water shows evidence of sediment deposition. A sewage odor was noted originating from the water flow; this segment is downstream of the septic waste dumping site (CMC-3).

The principal functions and values of the waterway are floodflow alteration, and sediment and toxicant retention. The 2001 Benthic Macroinvertebrate Sample Analysis[196] indicates that the Church-Mingo Creek watershed had a "very poor" water quality rating. The waterway does not support any Threatened or Endangered plants or animals and is not an exceptional value waterway.

193 Quigley, Pat, personal communication, January 2004.
194 *Philadelphia International Airport, Technical Report No. 3: Benthic Macroinvertebrate Sample Analysis*, Normandeau Associates, Inc., October 2001.
195 *Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania, West Chester, Pennsylvania,* Roy F. Weston, Inc., July 1993.
196 *Philadelphia International Airport, Technical Report No. 3: Benthic Macroinvertebrate Sample Analysis*, Normandeau Associates, Inc., October 2001.

SEPD-2

SEPD-2 is the headwaters segment of the SEPD. The total length of SEPD-2 is 2,383 feet, 940 feet of which is within the Project Area. The total SEPD drainage system has a total length of 6,192 feet. The 2004 investigation confirmed that the waterway boundaries are the same as indicated in the 1993 *Wetland Determination Report*[197] and 2000 JD. Common reed, broadleaf cattail, false indigo, purple loosestrife, and floating primrose-willow were dominant in the drainage channel along with black willow, and soft rush. Duckweed and algal mats cover the surface in shallow areas. The steep sloping banks are sparsely vegetated and are grouted and riprapped in some locations. The SEPD-2 waterway is connected to other segments of the SEPD through culverts, and ultimately discharges into the Delaware River through a tide gate outside the Project and Local Study Areas. SEPD is divided into segments by culverts and road crossings.

The principal functions and values of the waterway are floodflow alteration, sediment and toxicant retention, production export, wildlife habitat, and endangered species habitat. The 2001 Benthic Macroinvertebrate Sample Analysis[198] indicates that the SEPD drainage channels had a "very poor" water quality rating. However, previous studies indicated that portions of SEPD-2 supported habitat for the Pennsylvania Threatened red-bellied turtle (*Pseudemys rubriventris*), and individuals were observed within the waterway in 2001[199].

197 Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania, West Chester, Pennsylvania, Roy F. Weston, Inc., July 1993.

198 *Philadelphia International Airport, Technical Report No. 3: Benthic Macroinvertebrate Sample Analysis*, Normandeau Associates, Inc., October 2001.

199 Endangered and Threatened Wildlife Species Surveys in Wetlands throughout the Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania, Herpetological Associates, Inc., 13 October 2001.

DR-7

DR-7 is a drainage channel that is hydrologically connected to the Delaware River. DR-7 originates at an outlet pipe and flows for 195 feet on the PHL property. The perennial waterway is upstream of DR-8 and is connected through a pipe running under Hog Island Road. A tide gate is between DR-7 and DR-8, effectively preventing any tidal influence from DR-8 upstream to DR-7. The 2004 investigation confirmed that the boundaries are the same as in the 1993 *Wetland Determination Report*[200] and the 2000 JD. Mulberry, staghorn sumac , purple loosestrife, spotted jewelweed, rice cutgrass, red maple, privet, and common reed were dominant. The mature trees are confined to the upper banks of the channel.

The principal functions and values of the waterway are floodflow alteration, sediment and toxicant retention, and sediment stabilization. The 2001 Benthic Macroinvertebrate Sample Analysis did not examine the DR-7 drainage channel. DR-7 does not support any Threatened or Endangered flora or fauna and is not an Exceptional Value waterway.

Existing Waterways – Local Study Area

Two waterways (DR-8 and the Delaware River) occur within the Local Study Area, south of the Project Area.

DR-8

DR-8 is within the Local Study Area but outside the Project Area. DR-8 is downstream of DR-7 and south of Hog Island Road. Extensive dumping has occurred in and around the waterway. The 2004 investigation confirmed that the waterway boundaries are the same as the 1993 *Wetland*

200 *Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania, West Chester, Pennsylvania,* Roy F. Weston, Inc., July 1993.

Determination Report[201] and the 2000 JD. DR-8 is part of a storm drainage ditch dominated by common reed, purple loosestrife, and black willow.

The principal functions and values of the waterway are floodflow alteration, sediment and toxicant retention, sediment stabilization, and endangered species habitat. The 2001 Benthic Macroinvertebrate Sample Analysis[202] did not examine DR-8. Walter's barnyard grass, an Endangered species of Pennsylvania, was identified during the 1993 delineation but was not relocated in 2004.

Delaware River

Within the Local Study Area, the Delaware River is a lower perennial waterway that flows from northeast to southwest. The Delaware River in this area is tidal and part of the Delaware Estuary. All waterways within the Project Study Area and Local Study Area discharge to the Delaware River through tide gates that prevent flow of tidal waters upstream from the Delaware. The banks of the Delaware include dense vegetation, mud flats, and disturbed land.

4.12.3 Environmental Consequences

Potential impacts to wetlands and waterways were evaluated by overlaying the proposed limits of grading for each alternative on mapping of existing conditions. The overlay plans were then assessed to determine primary direct and indirect impacts, temporary impacts, and secondary impacts on waterways within the Project Area and Local Study Area.

Direct Impacts

Direct impacts include all physical changes to wetlands and waterways within the Project Area for each alternative being considered. Direct impacts associated with the Project include excavation and filling for replacing culverts, or constructing new culverts, within waterways.

No direct environmental impacts to jurisdictional waterways are anticipated for the No-Action Alternative, as it would not require construction. Alternative 1 and Alternative 2 would result in direct impacts to CMC-1, CMC-2, CMC-3, CMC-4, and SEPD-2, as summarized in Table 4.12-2.

Alternative 1

Alternative 1 would require that the existing culvert linking CMC-3 and CMC-4 be strengthened. This would not result in new waterway impacts. The remaining open channel sections of Church Creek (CMC-3 and CMC-4) would be culverted. The estimated potential, direct waterway impact for these two segments is approximately 13,939 square feet (608 linear feet). The CMC waterways primarily function to store and discharge floodflow during storm events. Vegetation at the banks of the channel also serves to slow stormwater, sediments, and toxicants; impacts to these functions would occur. Because of poor water quality in Church Creek, the macroinvertebrate[203] population within the

201 *Wetland Determination Report for Philadelphia International Airport, Tinicum Township, Delaware County, and City of Philadelphia, Philadelphia County, Pennsylvania, West Chester, Pennsylvania,* Roy F. Weston, Inc., July 1993.

202 *Endangered and Threatened Wildlife Species Surveys in Wetlands throughout the Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania*, Herpetological Associates, Inc., 13 October 2001.

203 Macroinvertebrates are small, but visible with the naked eye, animals without backbones (insects, worms, larvae, etc.). The species composition, species diversity and abundance of the macroinvertebrates in a given water body can provide valuable information on the relative health and water quality of a waterway.

Table 4.12-2 Summary of Direct Impacts to Waterways

Watershed	Waterway	Open Channel Length (ft)	Waterway Area (ac)	Alternative 1 Length (ft)	Alternative 1 Area (ac)	Alternative 2 Length (ft)	Alternative 2 Area (ac)
Church-Mingo Creek	CMC-1	729	0.10	10	< 0.01	10	< 0.01
	CMC-2	584	0.10	10	< 0.01	10	< 0.01
	CMC-3	337	0.20	337	0.20	337	0.2
	CMC-4	251	0.12	251	0.12	251	0.12
Total		1,901	0.52	608	0.32	608	0.32
			% Loss:	31.9 %	61.5%	31.9 %	61.5%
Southeast Ponding Ditch	SEPD-2	2,383	3.24	45	0.05	100	0.10
			% Loss:	1.9%	1.4%	4.2%	3.3 %

waterway is limited;[204] however, any macroinvertebrate activity would be lost.

The existing culvert between waterway segments CMC-1 and CMC-2 would be reconstructed, resulting in a temporary impact to approximately 44 square feet (10 linear feet) upstream (on CMC-1) and 87 square feet (10 linear feet) downstream (on CMC-2) of the culvert. This would result in a total of 130 square feet (20 linear feet) of temporary impacts to Church Creek. The total direct impacts to Church Creek would affect approximately 32 percent of the stream length and 62 percent of the total acreage within the Project Area.

A section of SEPD-2 would be culverted to relocate the existing airfield service road. As seen on Figure 4.12-2, Alternative 1 would directly affect approximately 2,025 square feet (45 linear feet) of the waterway by construction of the access road. The principal functions of SEPD-2 include floodflow alteration, sediment/toxicant retention, production export, wildlife habitat, and Threatened and Endangered species habitat. Because of the observed presence of a Pennsylvania Threatened species, SEPD-2 is considered an Exceptional Value waterway. These functions would be lost within the area of direct impact from the culvert and road crossing. These impacts are equivalent to 1.4 percent of the total area and 1.9 percent of the total length of SEPD-2. The ability of SEPD-2 to continue to support a population of red-bellied turtles would not be impaired.

Alternative 2

Alternative 2 would also require that the existing culvert linking CMC-3 and CMC-4 be strengthened. This would not result in new waterway impacts. The remaining open channel sections of Church Creek (CMC-3 and CMC-4) would be culverted. The estimated potential direct waterway impact for these two segments is approximately 13,939 square feet (608 linear feet). The CMC waterways primarily function to store and discharge floodflow during storm events. Vegetation at the banks of the channel also serves to slow stormwater, sediments, and toxicants; impacts to these functions would occur. Because of poor water quality in Church Creek, the macroinvertebrate population within the

204 *Philadelphia International Airport, Technical Report No. 3: Benthic Macroinvertebrate Sample Analysis*, Normandeau Associates, Inc., October 2001.

waterway is limited;[205] however, any macroinvertebrate activity would be lost.

The existing culvert between waterway segments CMC-1 and CMC-2 would be reconstructed, resulting in a temporary impact to approximately 44 square feet (10 linear feet) upstream (on CMC-1) and 87 square feet (10 linear feet) downstream (on CMC-2) of the culvert. This would result in a total of 130 square feet (20 linear feet) of temporary impacts to Church Creek. The total direct impacts to Church Creek would affect approximately 32 percent of the stream length and 62 percent of the total acreage within the Project Area.

A section of SEPD-2 would be culverted to construct an access road crossing. For Alternative 2, approximately 4,638 square feet (100 linear feet) of the SEPD-2 waterway is likely to be directly affected by grading for the RSA (Figure 4.12-3): 2,025 square feet (45 linear feet) would be affected by relocation of the proposed airfield service road, and an additional 2,613 square feet (56 linear feet) would be impacted by construction of the RSA. The principal functions of SEPD-2 include floodflow alteration, sediment/toxicant retention, production export, wildlife habitat, and Threatened and Endangered species habitat. Because of the observed presence of a Pennsylvania Threatened species, SEPD-2 is considered an Exceptional Value waterway. These functions would be lost within the area of direct impact from the culvert and road crossing. These impacts are equivalent to 3.3 percent of the total area and 4.2 percent of the total length of SEPD-2.

205 *Philadelphia International Airport, Technical Report No. 3: Benthic Macroinvertebrate Sample Analysis*, Normandeau Associates, Inc., October 2001.

Indirect and Secondary Impacts

Secondary impacts include reasonable foreseeable indirect consequences, usually associated with secondary development within the Local Study Area. No indirect or secondary environmental impacts to Waters of the U.S. are anticipated for the No-Action Alternative. Secondary environmental impacts to waterways and wetlands outside the Project Study Area and Local Study Area are not anticipated.

In the absence of mitigation, waterways within the Project Area and Local Study Area may experience temporary indirect impacts from Alternative 1 and Alternative 2 from the discharge of sediments during construction. Changes in water quality downstream of affected waterways could be caused by the loss of functions in culverted sections, which currently provide the opportunity for pollutant settling or absorption by vegetation or soils. Changes in surface water temperature may occur from culverting or increased pavement area, which could affect dissolved oxygen and affect fish populations. The increase in impervious surface area within the watershed from the runway expansion would slightly increase stormwater runoff and could also slightly increase pollutant and toxicant load, resulting from deicing and other activities caused by the runway expansion, as described in Section 4.7 of this FEIS.

4.12.4 Mitigation

Each alternative was evaluated to identify ways to avoid and minimize impacts to Waters of the U.S. within the Project Area. The No-Action Alternative does not involve any physical impacts; therefore, this section only discusses mitigation measures associated with Alternative 1 and Alternative 2. While there is no significant impact to wetlands or waterways, FAA is considering mitigation because of requirements of the state and USACE permitting process.

The USEPA/USACE memorandum is specific to the Section 404 Regulatory Program, particularly Section 404(b)1 Guidelines, and is intended to provide guidance for agency field personnel on the type and level of mitigation required to demonstrate compliance with CWA Section 404(b)(1) guidelines.[206] The Memorandum of Understanding (MOU) provides guidance to both USACE and USEPA personnel and must be adhered to when considering mitigation requirements for standard permit applications. The MOU requires that proposed mitigation plans for impacts consider impact avoidance and minimization, prior to development of compensatory mitigation for unavoidable impacts.[207]

This mitigation approach also relied on the USACE Draft Compensatory Mitigation Guidelines, issued by the Philadelphia District in 2004, describing the basic requirements of compensatory mitigation plans, including gathering baseline site information, selecting a site, defining success criteria, developing a monitoring plan, maintaining the site, and creating contingency plans for site changes.

As part of the USACE permitting process, the acreage and functions of the wetlands impacted are required to be replaced. Section 404(b)(1) of the CWA requires wetland replacement based on the area of wetland loss, the type of wetland lost, and the functions and values of the wetlands and other aquatic resources impacted by the proposed improvements.[208] This also complies with NEPA regulations regarding mitigation, which is to sequentially consider avoidance; minimization; rehabilitation and restoration; reduction or elimination of the impact over time through preservation and maintenance; and compensation through replacement or substitution of similar resources and environments.[209] The MOU between the EPA and the USACE regarding mitigation procedures[210] and the USACE Draft Compensatory Mitigation Guidelines[211] were also consulted as a guidance document.

Avoidance

Modifications of Alternative 1 and Alternative 2 that would avoid direct impacts to the waterways CMC-3, CMC-4, and SEPD-2 were examined and determined to be not practicable. The relocated airfield service road would cross SEPD-2 on the north-south segment of this waterway, approximately 100 feet north of the bend where the waterway becomes parallel to Hog Island Road. The road would cross SEPD-2 using a single, 65-inch by 40-inch, arched pipe that would provide a natural bottom substrate. The proposed pipe would be approximately 45 feet long. From the crossing, the airfield service road would extend southwest to connect with the existing service road along the north side of the drainage ditch.

CMC-3 and CMC-4

Both Alternatives 1 and 2 would require covering the waterway segments of Church Creek (CMC-3 and CMC-4) to construct the proposed extensions of Taxiway E and Taxiway D. To avoid impact to CMC-3, the extension of Taxiway E would have to

206 *Section 404 of the Clean Water Act Title 33 - Navigation and Navigable Waters Chapter 26 - Water Pollution Prevention and Control Subchapter IV - Permits And Licenses*, Regulatory Program of the U.S. Army Corps of Engineers, January 1994.
207 *Memorandum of Understanding*, Environmental Protection Agency, United States Army Corps of Engineers, 6 February 1990.
208 *Section 404 of the Clean Water Act Title 33 - Navigation and Navigable Waters Chapter 26 - Water Pollution Prevention and Control Subchapter IV - Permits And Licenses*, Regulatory Program of the U.S. Army Corps of Engineers, January 1994.
209 *40 Code of Federal Regulations 1508.20, Council for Environmental Quality Regulations for Implementing NEPA.*
210 *Memorandum of Understanding*, Environmental Protection Agency, United States Army Corps of Engineers, 6 February 1990.
211 *Draft Compensatory Mitigation Guidelines, Philadelphia District,* United States Army Corps of Engineers, Philadelphia District, (http://www.nap.usace.army.mil/cenap-op/regulatory/draft_mit_guidelines.pdf), April 2004.

be relocated approximately 200 feet to the west. This is not practicable, as the extension of Taxiway E would not line up with the existing Taxiway E and would require a sharp curve in the taxiway. Aircraft would have difficulty negotiating this curve. This would further increase impervious surface, and would require culverting approximately 200 feet of CMC-2, the segment of Church Creek south of the Economy Parking Lot. To avoid impact to CMC-4, the extension of Taxiway D would have to be relocated approximately 200 feet to the east. This is not practicable because the extension of Taxiway D would not line up with the existing Taxiway D, and would require demolition of the former Overseas Terminal Building. The distance between CMC-4 and Island Avenue is approximately 400 feet, which would not accommodate the relocated taxiway and taxiway safety area.

Spanning each waterway to avoid placing fill and extending the culverts was considered. This was determined to be not practicable due to constructability. Because soils within the Project Area are compressible, a structure and pavement section required to span the waterways could not be supported by soils and would require pilings to the deeper, stronger subsurface soil layers. This pile-supported structure would not reduce impacts to the environment.

SEPD-2

Alternative 1 and Alternative 2 include culverting a short segment of SEPD-2 to provide a continuous airport perimeter service road. The purpose of this road is to provide access to the AOA for emergency, security, and maintenance vehicles, and to provide a secure means of patrolling the interior of the airfield perimeter. Because SEPD-2 extends from the RSA at the south end of Runway 17-35 to Taxiway SA, and extends south to Hog Island Road, there are no alternative available routes for a continuous service road that would avoid SEPD-2. Any road alignment that avoided SEPD-2 would either leave the secure airport property and would not meet the purpose of the airfield service road, or would be within the RSA and would not meet FAA safety standards.

Minimization

Various Federal and state regulations require minimization of unavoidable impacts to waters, including FAA 5050.4A,[212] the EPA/USACE Memorandum of Understanding,[213] Section 404 of the Clean Water Act, and Chapter 102 and 105 of the Pennsylvania Code.[214,215] Alternative 1 and Alternative 2 would result in a similar acreage of potential impacts to waterways within the Project Area. Therefore, the following recommendations are relevant to both conceptual designs and are dependent upon final design for both alternatives. Several design alternatives were examined to minimize unavoidable impacts to wetlands and waterways. These alternatives were evaluated and found not to be reasonable because of constructability and cost.

Potential water quality impacts associated with construction activities will be addressed by BMPs, such as sediment traps and silt fences, to prevent water quality problems. Prior to construction, an E&S Control Plan would be developed and implemented throughout the Project Area.

212 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, 8 October 1985.
213 *Memorandum of Understanding*, Environmental Protection Agency, United States Army Corps of Engineers, 6 February 1990.
214 *Pennsylvania Code, Title 25, Pennsylvania Code, Section 102*, 1 January 2000.
215 *Pennsylvania Code, Title 25, Pennsylvania Code, Section 105*, 27 September 1980.

CMC-1, CMC-2, CMC-3, CMC-4

The CMC-1, CMC-2, CMC-3, and CMC-4 channel segments function primarily to store and discharge surface water and to retain sediments and toxicants related to storm events from the surrounding landscape. CMC-3 and CMC-4 are within the Taxiway D and E extensions for the north (Runway 17) runway end of Alternative 1 and Alternative 2. Minimizing impacts by reducing culvert length would leave a small section (less than 50 feet) of each waterway in an open channel. These two, short channel sections would be between the taxiway and the runway extension within the taxiway safety area limits. Maintaining a deep open channel beside the taxiway is not practicable, because it would present a hazard to planes or vehicles that accidentally left the taxiway pavement.

Temporary impacts associated with the culvert replacement between CMC-1 and CMC-2 would be minimized through limiting the impact area to 10 feet upstream and downstream of the existing culvert, and through implementation of E&S Control procedures before, during, and after construction. E&S Controls would also minimize sediment, flow, and other water quality concerns associated with culverting CMC-3 and CMC-4.

SEPD-2

Several design alternatives to minimize impacts to SEPD-2 were evaluated to determine if there was a practicable alternative with less impact to wetlands. The evaluation considered the location of the service road crossing and the type of culvert structure, as well as the characteristics of the resource. As described previously, SEPD is a drainage system that was constructed to serve as a drainage ditch for the airfield. SEPD-2, the uppermost portion of this waterway, is densely vegetated with common reed and dead stems of common reed, with shallow water covered in summer by duckweed and algal mats. The waterway becomes deeper and wider just above the point where it makes a 90-degree bend and becomes parallel to Hog Island Road. From this point, the ditch is an open water aquatic habitat.

Three crossing locations were evaluated, as described in Section 4.11-4. Crossing locations A and B would meet the project purpose and minimize impacts to aquatic habitats. Crossing location A would require filling an open water area of SEPD-2, while crossing location B would require filling an area vegetated with common reed. Crossing location C would affect a larger area of open water habitat. Crossing location B was selected to minimize impacts to the resource.

Four crossing types were evaluated, as described previously in Table 4.11-5. Crossing type 1 would have the greatest impact to the aquatic environment and was therefore eliminated from further consideration. Crossing types 2, 3, and 4 are not substantially different in their impacts to aquatic resources; each would provide a large-diameter opening with a natural substrate that would minimize the loss of the resource while maintaining hydrological and wildlife connectivity between the upper and lower portions of SEPD-2. Because of the presence of compressible subsurface soils (old tidal marsh sediments and peats), a structure spanning the waterway would require pilings to the deeper, stronger subsurface soil layers. Crossing types 3 and 4 would therefore result in greater temporary impacts to the resource for construction and would substantially increase the cost of the crossing without minimizing impacts to wetlands and waterways. Crossing type 2 was therefore selected to minimize impacts to the resource.

Compensatory Mitigation

The Proposed Project would not impact wetlands, and therefore would not require the construction of compensatory wetlands. The Proposed Project would impact regulated waters of the Commonwealth (i.e. a watercourse which currently serves as a Stormwater Management Facility). The SEPD-2 happens to be a waterway that harbors a threatened and endangered species (the red-bellied turtle), so the activity will require mitigative measures (approved by the PFBC) to assure that the overall impact to the red-bellied turtle will not be adverse. As the joint permit application process proceeds, impacts to the waterway, impacts to the red-bellied turtle, and any mitigative measures will be documented in detail.

4.12.5 Regulatory Coordination and Required Permits

The FAA has coordinated with the USACE, USFWS, PA DEP, EPA, and other agencies with regulatory jurisdiction over wetlands and waterways throughout the preparation of this FEIS.

Impacts to aquatic resources as a result of the Project will be coordinated with the PA DEP and the USACE for permitting under the Joint Permit Application (JPA). The JPA coordinates the review of the state PA DEP Water Obstruction & Encroachment Permit application and the Federal USACE Section 404 permit application. These permit applications require final design plans, which are the responsibility of the Sponsor. Sections of the JPA that require review by additional state and local agencies (other than the PA DEP and USACE) are listed in Table 4.12-3.

As stated in 25 PA Code Chapter 105.16,[216] the applicant must demonstrate that any project located in an area which serves as a habitat of a threatened and endangered species will not have an adverse impact on the species.

4.12.6 Summary

Table 4.12-2 summarizes the potential direct impacts to waterways associated with the Alternatives evaluated for the Proposed Project. Alternative 1 and Alternative 2 are anticipated to have a total of 0.37 acre and 0.42 acres of impact, respectively, to waterways within the Project Area, while the No-Action Alternative would have no impact to existing waterways.

The CMC watershed is anticipated to have the greater amount of impact; approximately 32 percent of the existing open channel length and 62 percent of the total waterway area will be permanently altered. A minimal amount of additional area (1.1 percent of the open channel stream length, and 0.5 percent of the total waterway) would be temporarily impacted for the culvert replacement between CMC-1 and CMC-2. Church Creek has the poorest water quality, habitat, and function of the three waterways within the Project Area.[217] Based on the existing conditions at Church Creek and the proposed mitigation measures, Alternative 1 or Alternative 2 would be anticipated to result in a minimal effect on the water quality of Church Creek.

Approximately two percent of the existing open channel in SEPD-2 and one percent of the total waterway area would be permanently culverted in

216 *Pennsylvania Code Title 25, Chapter 105, Water Quality Standards*, 18 November 2000.

217 Philadelphia International Airport: Master Plan, *Endangered and Threatened Wildlife Species Surveys in Wetlands throughout Philadelphia International Airport, Delaware and Philadelphia Counties, Pennsylvania*, Herpetological Associates, 13 October 2001.

Table 4.12-3 Joint Permit Application Sections and Appropriate Reviewing Agencies

JPA Section and Title	Agency for Review and/ or Concurrence
C. Act 14 Notification – Acts 67/68/127	Planning Commissions of City of Philadelphia, Tinicum Township, and Delaware County
D. Determination of Historic/Archeological Sites	Pennsylvania Historical and Museum Commission (PHMC)
E. PNDI Search (Threatened and Endangered Species)	Pennsylvania Natural Diversity Inventory (PNDI) Pennsylvania Fish and Boat Commission (PFBC) United States Fish and Wildlife Service (USFWS) Pennsylvania Game Commission (PGC) Pennsylvania Department of Conservation and Natural Resources (DCNR)
J. Erosion and Sedimentation Control Plan and Approval Letter	Delaware County Conservation District (Philadelphia County does not have a Conservation District) Pennsylvania Department of Environmental Protection (PA DEP)
L. Stormwater Management Analysis with Consistency Letter	Planning Commissions of City of Philadelphia, Tinicum Township, and Delaware County
M. Floodplain Management Analysis with Consistency Letter	Planning Commissions of City of Philadelphia, Tinicum Township, and Delaware County

Alternative 1; this impact length would increase to four percent of the open channel length and about three percent of the waterway area for Alternative 2, due to additional slope changes required for the RSA construction. The Project impacts to the SEPD drainage system would be negligible. SEPD-2 may qualify as an Exceptional Value waterway, due to the presence of red-bellied turtles. Based on the existing conditions at SEPD-2, the limited extent of proposed culverting, and the proposed mitigation measures, Alternative 1 and Alternative 2 are anticipated to result in a minimal temporary effect and no long-term permanent effect on the functions and values of the SEPD-2 waterway, because the loss of the resource is small and sufficient vegetated channel and aquatic habitat remain to provide sediment and toxicant retention, export of detritus and nutrients, and wildlife habitat values.

Impacts are unavoidable and have been minimized to the extent practicable. Remaining losses of waterway functions would be mitigated through enhancement of threatened species habitat in SEPD-2.

4.13 Floodplains

This section documents floodplains within the Project Area with a description and mapping of flood prone lands (100- and 500-year floodplains) within the Project Area. Section 4.13.3 describes unavoidable impacts and consequences to natural and beneficial floodplain values. Detailed descriptions of the technical studies supporting this section are in the DEIS Appendix A-9.

4.13.1 Introduction

Floodplains are defined in *EO 11988, Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands. Floodplains include, at a minimum, those areas with at least a one percent or greater chance of being inundated by a flood in any given year" (i.e., the area that the 100-year flood would inundate).

The one percent annual chance (100-year) flood has been adopted by the Federal Emergency Management Agency (FEMA) as the "base flood" for floodplain management purposes. The 0.2 percent annual chance flood (500-year) is also employed to indicate additional areas of flood risk. The 500-year floodplain is the minimum floodplain of concern for Critical Actions.[218] Critical Actions, as described in *U.S. DOT Order 5650.2*, include flooding impacts, such as loss of life, injury to persons, or damage to property. Proposed alternatives should not create, maintain, or extend the useful life of any structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, or water-reactive materials; or provide essential and irreplaceable records or utility or emergency services (ambulance, fire, police) that may become lost or inoperative during flood and storm events.

Regulatory Context

All floodplain analyses were conducted in accordance with the following: *EO 11988, Floodplain Management*[219]; *U.S. DOT Order 5650.2, Floodplain Management and Protection*[220]; National Flood Insurance Program (NFIP) regulations, and applicable state and local regulations. Each regulation is defined below.

EO 11988 directs Federal agencies to "take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains…" This order also establishes a policy to avoid taking an action within a 100-year floodplain unless there is no practicable alternative.[221]

U.S. DOT Order 5650.2, Floodplain Management and Protection, contains DOT policies and procedures for implementing *EO 11988*. The DOT order defines significant encroachments and the natural and beneficial values served by floodplains. The natural and beneficial values of floodplains include, but are not limited to, "natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, and forestry."

The Commonwealth of Pennsylvania Floodplain Management Act of 1978 provides for the regulation of land and water use for flood control purposes in Pennsylvania, imposing duties and conferring powers on the Department of Community and Economic Development, the DEP, and municipalities.

The Drainage, Grading and Erosion Floodplains ordinance of Tinicum Township contains policies for regulating the modification of the natural terrain, the alteration of drainage, and the

218 *24 Code of Federal Regulations 55*, Subpart A, Section 55.2, 1 October 2002.
219 *Executive Order 11988, Floodplain Management*, 42 FR 26971, 3 CFR, 1977, 24 May 1977.
220 *United States Department of Transportation Order 5650.2, Floodplain Management and Protection*.
221 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, Ch. 5, 8 October 1985.

maintenance of artificial structures and surfaces within Tinicum Township so as to assure and safeguard the health, safety, morals and general welfare of the citizens.

Study Area

The Project Area includes the existing Runway 17-35 and is bounded by SR 291 to the north and by Hog Island Road to the south, and extends approximately 500 feet east and west of the centerline of the existing runway (Figure 4.13-1). The Project Area also includes the Economy Parking Lot, SR 291, and other areas within the PHL property. The Project Area encompasses all areas of potential ground disturbances for each of the alternatives.

Regional Context

The Project Area is within the Delaware River Estuary (part of the Delaware River Basin), surrounded by highly developed commercial, industrial, and residential areas.

The entire PHL property is included within the 100- or 500-year tidal floodplains of the Delaware River, which covers extensive areas in Pennsylvania, New Jersey, and Delaware. This broad floodplain includes industrial, commercial, transportation, and agricultural land uses.

4.13.2 Affected Environment

This section identifies the 100-year and 500-year floodplains within the Project Area, and describes the natural and beneficial values of the floodplain.

Methodology

The areas subject to flooding were identified and mapped according to existing Flood Insurance Rate Maps (FIRM) issued by FEMA.[222,223] Previous studies at PHL were also reviewed for information on the 100- and 500-year floodplains within the Project Area.[224,225,226] The Project Area is included on two FIRM maps: City of Philadelphia, Philadelphia County, Pennsylvania, Panel Number 420757 0188F and Delaware County, Pennsylvania, Panel Number 42045C 0062 D. FEMA mapping was refined based on actual topography showing the 10 foot floodplain contour.

Existing Floodplains

The entire PHL property is within the 100- or 500-year tidal floodplains of the Delaware River (Figure 4.13-1). According to the FIRM maps, the Project Area is partially in designated Zone AE and designated Zone X500 on FEMA FIRM.[227,228] Zone AE refers to areas within the 100-year floodplain that experience shallow flooding with average depths between one and three feet. Zone X500 indicates areas with minimal 100-year flood risk that are also within the 500-year floodplain.[229] The Project Area is not within a Special Flood Hazard Zone (Zone A or V) according to FIRM mapping.[230,231,232]

222 *Flood Insurance Rate Map: City of Philadelphia, Philadelphia County, Pennsylvania – Panel Number 420757 0188 F, Federal Emergency Management Agency*, 2 August 1996.

223 *Flood Insurance Rate Map: Delaware County, Pennsylvania – Panel Number 42045C 0062 D, Federal Emergency Management Agency*, 3 September 1993.

224 *Finding of No Significant Impact, Rehabilitation of Runway 17-35 and Safety Area Improvements,* Department of Transportation, Federal Aviation Administration, 2001.

225 *Philadelphia International Airport*, *Runway 17-35 Rehabilitation and Safety Improvements: Environmental Evaluation form "C" (Short Environmental Assessment) for Airport Development Project*, Federal Aviation Administration, 2001.

226 *Flood Insurance Rate Map: City of Philadelphia, Philadelphia County, Pennsylvania – Panel Number 420757 0188 F, Federal Emergency Management Agency*, 2 August 1996.

227 *Ibid.*

228 *Flood Insurance Rate Map: Delaware County, Pennsylvania – Panel Number 42045C 0062 D, Federal Emergency Management Agency*, 3 September 1993.

229 *Flood Insurance Study: City of Philadelphia, Philadelphia County, Pennsylvania,* Federal Emergency Management Agency, 1996.

230 *Flood Insurance Rate Map: Delaware County, Pennsylvania – Panel Number 42045C 0062 D, Federal Emergency Management Agency*, 3 September 1993.

231 *Flood Insurance Rate Map: City of Philadelphia, Philadelphia County, Pennsylvania – Panel Number 420757 0188 F, Federal Emergency Management Agency*, 2 August 1996.

232 *Proposed Runway 17-35 Grading Plan – Alternatives 1 and 2*, DMJM Aviation, 19 March 2004.

The 100-year floodplain within the Project Area includes all areas at or below the elevation of 10 feet above mean sea level (MSL). Accordingly, the base floodplain is the area theoretically inundated by a 10-foot surge in the Delaware River. Based on actual topographic contours, 88 percent of the Project Area (339.5 acres) is in the 100-year floodplain of the Delaware River.[233] The 100-year floodplain also includes adjacent areas of the airport and terminal buildings (Figure 4.13-1). The Project Area elevations range from six to 13 feet, so flooding of the Project Area in the event of a theoretical 100-year storm event would range from zero to four feet. Furthermore, 12 percent of the Project Area (44.9 acres) is in the 500-year floodplain, which, in the event of a 500-year storm, would be inundated along with all lands within the 100-year floodplain. The 500-year floodplain is all land within the Project Area at an elevation greater than 10 feet above MSL.[234,235,236]

According to the Flood Insurance Study for the City of Philadelphia and a letter from USACE to Roy F. Weston, Inc. dated August 5, 1993, the 100-year floodplain for the Project Area is controlled by tidal flooding of the Delaware River, and no floodway[237] has been established.[238]

The Project Area lies within the urbanized setting of PHL, where runoff is controlled by stormwater management, including stormwater drainage ditches and tidegates. The natural and beneficial values of the Project Area floodplains include moderation of flood waters over a wide area, water quality protection of the Delaware River, wildlife habitat (red-bellied turtle, *Pseudemys rubriventris,* Pennsylvania Threatened), and groundwater recharge for the New Jersey Coastal Plain Sole Source Aquifer. The floodplain within the Project Area does not provide natural and beneficial values for fish, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, or forestry because it is within the fenced, managed, and maintained limits of PHL; is not accessible to the public; does not contain natural vegetation except in limited and managed areas; and does not contain water bodies that are capable of supporting fish populations.

4.13.3 Environmental Consequences

The No-Action Alternative would not require work within the 100-year floodplain and therefore, would result in no impacts to floodplains.

Direct impacts on floodplains in the Project Area were evaluated for Alternatives 1 and 2 by overlaying each build alternative footprint onto floodplain mapping to determine if any fill, runway extension segments, or necessary equipment would be placed within the floodplain; what the loss of flood storage would be; whether any critical actions would occur within the 500-year floodplain; and if a 100-year flood would lead to the loss of any transportation facility. Alternative designs and grading plans were also used to evaluate the extent of alteration of the floodplain, the amount of fill to be used, and any effects on natural and beneficial floodplain values. The data generated through this evaluation were used to predict project impacts on natural and beneficial floodplain values or transportation facilities. There are no indirect or secondary impacts to floodplains anticipated. This

233 *Ibid.*
234 *Flood Insurance Rate Map: Delaware County, Pennsylvania – Panel Number 42045C 0062 D, Federal Emergency Management Agency*, 3 September 1993.
235 *Flood Insurance Rate Map: City of Philadelphia, Philadelphia County, Pennsylvania – Panel Number 420757 0188 F, Federal Emergency Management Agency*, 2 August 1996.
236 *Proposed Runway 17-35 Grading Plan – Alternatives 1 and 2*, DMJM Aviation, 19 March 2004.
237 Floodway is defined as a part of the floodplain, the channel of a river or stream. The floodway is the portion of the floodplains adjoining the channel which are reasonably required to carry and discharge the flood water or floodflow of any river or stream.
238 Letter to Roy F. Weston, Inc., United States Army Corps of Engineers, 5 August 1993.

section therefore evaluates the direct effects of construction within the floodplain.

Alternative 1

Alternative 1 involves placing clean fill in an approximately 79.8-acre area of the 100-year base floodplain (Figure 4.13-2). Placing fill within the floodplain is required primarily to extend and raise the south end of Runway 17-35 to meet FAA design standards. Proposed fill volume for the extension of Runway 17-35 is estimated at 50,592 cubic yards for Alternative 1 (Table 4.13-1). The proposed changes in elevation vary from zero to five feet above the existing grade, with a maximum elevation of 14.5 feet above MSL.

Alternative 1 may affect the floodplain's ability to provide some natural and beneficial values, specifically groundwater recharge to the aquifer, because of fill and paving on the north and south ends of the runway (see Section 4.7). The extension of runway pavement would increase impervious surfaces in the Project Area. However, a portion of the existing impervious Economy Parking Lot will be demolished and grassed as part of the proposed RSA, which will partially balance the paving of existing grassed areas for the proposed runway.

The USACE, in a letter (August 5, 1993) to Roy F. Weston, Inc., noted that the PHL property is controlled by tidal flooding and no floodway has been established. Any development in the PHL area would not increase the 100-year flood elevation because there are no barriers to floodflow passage and the floodway is unconstrained, allowing for flooding expansion over a wide area. Accordingly, Alternative 1 would not have a significant encroachment on the Delaware River floodplain, because there is not a considerable probability of loss of human life, due to lack of human residents in the Project Area. Future damage substantial in cost or extent is not likely, because no structures or equipment are being added in the Project Area that could be damaged by flooding. Accordingly, no further analysis and no special floodplain findings are necessary.[239]

Since flooding in the Project Area is tidal rather than the result of overflow of inland streams or rivers, fill volumes added to the floodplain and any excavation within the floodplain will have no effect on the lateral extent, depth, or duration of flooding in this unconstrained floodplain.[240] However, because Runway 17-35 is within the 100-year base floodplain, a 100-year storm event may require closing Runway 17-35, or the entire airport, under existing conditions and Alternative 1.

Since the 100-year flood elevation for the Project Area is controlled by tidal flooding, no floodway has been established by the Flood Insurance Study for the City of Philadelphia.[241] Therefore, the Project is automatically in compliance with Section 60.3 of the NFIP regulations.[242] Additionally, there are no critical actions, presently occurring or proposed, in the floodplain as described in *U.S. DOT Order 5650.2*. Specifically, any flooding within the Project Area will most likely not result in loss of life, injury to persons, or damage to property, due to lack of residents and lack of residential property that could be damaged by flooding. Alternative 1 does not include plans to create, maintain, or extend the useful life of any structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, or water-reactive materials; or provide essential and irreplaceable records or utility or emergency services (ambulance, fire,

239 Letter to Roy F. Weston, Inc., United States Army Corps of Engineers, 5 August 1993.
240 *Flood Insurance Study: City of Philadelphia, Philadelphia County, Pennsylvania,* Federal Emergency Management Agency, 1996.
241 *Ibid.*
242 *44 Code of Federal Regulations*, Volume 1.

police) that may become lost or inoperative during flood and storm events.

All off-site fill materials to be brought to the Project Area will be evaluated in accordance with the PA DEP "Management of Fill" policy. Although it is difficult to predict the sources of fill materials that would be used during the Project, it is possible that soil stockpiled to the east of Runway 17-35 could be used as an on-Site source of fill. This soil stockpile is comprised of excess soil generated during previous excavation projects at the Airport including the construction of Runway 8-26. This material will be tested before reuse on-site.

Alternative 2

Alternative 2 would have similar impacts to Alternative 1 and would require similar work within the same areas of the floodplain. Alternative 2 would require placing clean fill in an approximate 66.2-acre area of the 100-year base floodplain (Figure 4.13-3). Proposed fill volume for the extension of Runway 17-35 is estimated at 54,540 cubic yards for Alternative 2 (Table 4.13-1). The proposed grade increase is less than two feet, with a maximum elevation of 10 feet above MSL.

4.13.4 Mitigation

Work within the 100-year floodplain cannot be avoided for Alternatives 1 or 2, as the entire Project Area is within the 100-year floodplain of the Delaware River. Mitigation measures were not evaluated, as neither Alternative 1 nor Alternative 2 would result in significant losses of beneficial functions or would increase flood elevations.

4.13.5 Regulatory Coordination and Required Permits

The USACE Flood Plain Management Branch and FEMA Region 3 have been contacted with regard to this Project. Construction of either Alternative 1 or Alternative 2 would require a Floodplain Management Permit from PA DEP as described in Title 25, Chapter 106 of the Rules and Regulations of the DEP. The Floodplain Management Permit application materials would be submitted in the same package with the Waterway Obstruction and Encroachment Permit Application (Chapter 105 Permit) materials.

4.13.6 Summary

Alternatives 1 and 2 would encroach in a floodplain by requiring fill and paving on the north and south ends of the existing Runway 17-35, in order to extend the runway. These impacts are not avoidable, as the entire runway system of the Airport is within the floodplain. All the proposed actions and facilities would be within the limits of the 100- or 500-year floodplain. However, the Project Area is subject only to tidal flooding of the Delaware River and no floodway has been established. Development in the Project Area, therefore, would not increase the 100-year flood elevation, because tidal flooding occurs over a wide unconstrained area. These alternatives would not result in a significant encroachment on the Delaware River floodplain, and there would be only minor impacts to natural and beneficial floodplain values, if any. Additionally, there are no critical actions presently occurring or proposed in the floodplain, there would be no barriers to floodflow passage, and there would be no long-term loss of flood storage volume.

Table 4-13.1 Existing Conditions and Proposed Floodplain Impacts

Variable	Alternative 1	Alternative 2
Area within 100-Year Floodplain	339.5 acres	339.5 acres
Existing Paved Area	278 acres	278 acres
Proposed New Paved Area in 100-Year Floodplain	17.3 acres	19.7 acres
Proposed Fill Volume in 100-Year Floodplain	50,592 cubic yards	54,540 cubic yards
Proposed Fill Area in 100-Year Floodplain	79.8 acres	66.2 acres

4.14 Surface Transportation

This section of the FEIS addresses concerns relative to surface transportation. Section 4.14.1 describes the existing roadway network providing access to PHL. Existing traffic volumes and the LOS of intersections in the Airport Study Area are described in Section 4.14.2. The effect of the proposed alternatives are identified in Section 4.14.3 and mitigation measures are discussed in Section 4.14.4. Additional detailed information on existing conditions, impacts and mitigation measures are provided in DEIS Appendix A-10, *Surface Transportation Technical Report*.

4.14.1 Introduction

The surface transportation resources discussed in this section include the local roadway network intersections and intersections of interstate highway ramps with the local roadway network within the Study Area.

Regulatory Context

FAA 5050.4A[251] requires FAA to consider alteration of surface transportation patterns and determine whether there is a noticeable increase in congestion or access time to community facilities, recreation areas, or places of residence or business.

Study Area

The Study Area for the surface transportation analysis was established based on the potential area of impacts from the Build Alternatives. It includes the roadway system along Bartram Avenue, Island Avenue and SR 291 (Essington Avenue/Industrial Highway/Penrose Avenue). All the major intersections along these three local streets, including the intersections with the I-95 ramps, are included. Figure 4.14-1 shows the surface transportation Study Area and the Study Area intersections.

Regional Context

The Airport is adjacent to I-95 and accessible to the Greater Philadelphia and Tri-state region of Pennsylvania, New Jersey, and Delaware, from the major regional interstates leading to I-95. These include I-76 from Philadelphia, I-476 from Delaware and Montgomery Counties and I-295 from New Jersey. Access to the Airport from Delaware is direct from I-95. Local access to the Airport is via Bartram Avenue, Island Avenue and SR 291 (Industrial Highway).

251 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, 8 October 1986.

The SEPTA offers both regional rail and bus service to the Airport. SEPTA's Regional Rail line (R1) offers scheduled service from Center City Philadelphia to the Airport with stops at each terminal. Three bus routes - the Route 37, 108, and 305 bus lines - provide service to the Airport

4.14.2 Affected Environment

This section discusses the methods used in this study, the existing roadway network, the existing traffic volumes, and existing traffic conditions.

Methodology

The methodology used in this study followed standard industry practice. Traffic volume data were collected at the Study Area intersections and along road segments. Parking and transit data were also collected. Field investigations documented intersection and Airport traffic operations.

The Study Area includes both signalized and unsignalized intersections. Methods from the 2000 Highway Capacity Manual[252] were used to evaluate the LOS at the study intersections shown in Figure 4.14-1. LOS are calculated for individual turning movements and for the intersection as a whole at signalized locations and for individual movements at unsignalized locations. For this proposed Project, overall intersection LOS D or better is considered acceptable for both signalized (overall intersection) and unsignalized (individual movements) locations. Intersections with an overall LOS E or F will be considered unacceptable and would be considered for mitigation if found to be the result of the proposed Project.

Level of service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver frustration, discomfort, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Delay may be measured in the field or estimated using the Highway Capacity Software (based upon procedures presented in the Highway Capacity Manual). Delay is a complex measure and is dependent on a number of variables, including the quality of progression between adjacent signalized intersections, the cycle length, the amount of green time allocated, and the volume to capacity ratio for the lane group in question. Specifically, LOS criteria for traffic signals are stated in terms of the control delay per vehicle, typically for a fifteen-minute analysis period.

Level of Service for unsignalized intersections is defined in terms of delay. However, the delay thresholds for each level of service are lower for unsignalized intersections than for signalized intersections. In the unsignalized intersection analysis, it is assumed that the through and right-turning vehicles on the major street proceed without delay. The methodology computes delay only for those movements that have conflicts, including left turns from the major street and all minor street movements which must yield to other conflicting traffic movements.

In the 2000 Highway Capacity Manual (HCM), the levels of service are stated in terms of average control delay per vehicle for a 15-minute analysis period.

Existing Roadway Network

The existing roadway network includes the highways and local streets described below.

- **I-95** is a major north-south interstate highway that varies from six to nine lanes in the vicinity of the Airport. Direct access to the Airport is provided by northbound (NB) and southbound (SB) ramps that connect to the Airport arrivals and departures roadways.

252 *2000 Highway Capacity Manual*, Transportation Research Board, 2000.

Signalized Level-of-Service Description

LOS	Delay (seconds)	Description
A	< 10	LOS A describes operations with very low control delay, up to 10 seconds per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10 and < 20	LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	> 20 and < 35	LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35 and < 55	LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55 and < 80	LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be an unacceptable level of delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	> 80	LOS F describes operations with control delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

Source: Transportation Research Board, Highway Capacity Manual (HCM 2000), (Washington, DC., 2000), pp 10-15, 10-16

Unsignalized Level-of-Service Description

LOS	Control Delay (seconds/vehicle)
A	< 10
B	> 10 < 15
C	> 15 and < 25
D	> 25 and < 35
E	> 35 and < 50
F	> 50

Source: Transportation Research Board, Highway Capacity Manual (HCM 2000), (Washington, DC) p 17-2

- **SR 291** is an east-west four-lane divided roadway immediately adjacent to the Airport property. It is parallel to and south of I-95 and provides direct access to both the Airport and the adjacent Airport-related businesses, including remote parking facilities, hotels, cargo and delivery concerns. The adjacent land uses include only the Airport on the south side. The north side is bounded by the I-95 right-of-way. SR 291 is known as Essington Avenue west of the Bartram Avenue/Scott Way intersection; Industrial Highway between the

Bartram Avenue/Scott Way intersection and Island Avenue; and Penrose Avenue east of Island Avenue. SR 291 through the Study Area is a limited-access highway.

- **Bartram Avenue** is parallel to and north of I-95. It begins at SR 291 across from Scott Way. It is generally east-west and exits the Study Area at Island Avenue. It is generally a divided six-lane roadway including a bicycle lane and shoulder in each direction for most of its length. The adjacent land use is generally commercial and office on the south including hotels, the PNC office park, parking, and restaurants. The John Heinz Wildlife Refuge and other open lands are north of Bartram Avenue.
- **Island Avenue** is a generally north-south, median-separated, four-lane roadway that includes intersections with SR 291 and Bartram Avenue at the south and north limits of the Study Area. Adjacent land use is generally commercial with hotels and a gas station.

Existing Traffic Volumes

Automatic traffic recorder classification counts were conducted at 13 locations on the regional roadway network, as well as the on-airport arrival and departure roadways. Details are provided in Attachment C of DEIS Appendix A-8, *Surface Transportation*.

Daily volumes along SR 291 vary from approximately 25,170 vehicles along Essington Avenue west of Scott Way to 14,850 in front of the Airport (Industrial Highway) to 10,220 just west of Island Avenue. Daily volumes along Bartram Avenue range from approximately 18,720 near Scott Way to 30,480 near Island Avenue. This large daily volume of 30,480 in the vicinity of Island Avenue is possibly due in part to traffic traveling between the residential areas north of Bartram Avenue via 84th Street and the I-95 NB ramps further east along Bartram Avenue.

Morning and evening peak period manual turning movement traffic counts were conducted in March 2004 from 7:00 to 9:00 AM and 4:00 to 6:00 PM, respectively, at 13 locations. The intersections with the highest total intersection peak hour volumes (PM Peak) are Bartram Avenue and Island Avenue (Intersection No. 8) and Bartram Avenue and 84th Street (No. 9) with 4,477 and 3,147 vehicles, respectively. The intersection of SR 291 (Essington Avenue/Industrial Highway) and Bartram Avenue/Scott Way (No. 1) has the next highest volume (PM Peak) with 2,483 vehicles. The morning and evening peak hours were found to be 7:30 AM to 8:30 AM and 4:30 PM to 5:30 PM respectively. The intersection with the lowest PM peak hour volume is Ramp F and Economy Parking/Recirculation Road (#4) with 881 total vehicles. A high number of U-turns were observed from Bartram Avenue westbound (WB) to eastbound (EB). Bartram Avenue U-turns were observed and counted at its intersection with Tinicum Boulevard. The existing morning peak hour has high left-turn volumes at the following locations:

- SR 291 (Essington Avenue) EB to Bartram Avenue EB (463 vehicles)
- 84th Street SB to Bartram Avenue EB (679 vehicles, not including the 158 equivalent left turns that then turn right and make a U-turn at Tinicum Boulevard and head east on Bartram Avenue)
- Island Avenue SB to Bartram Avenue EB (596 vehicles).

During the evening peak hour, the following locations have substantial left-turn volumes:

- SR 291 (Essington Avenue) EB to Bartram Avenue EB (478 vehicles)
- Bartram Avenue WB to 84th Street NB (449 vehicles)

- 84th Street SB to Bartram Avenue EB (506 vehicles)
- Island Avenue NB to Bartram Avenue WB (463 vehicles)

Existing LOS Analysis

A LOS analysis was performed for each of the Study Area intersections. As previously discussed, LOS D or better for the overall intersection is generally considered acceptable. A summary of the overall intersection levels of service for the morning and evening peak hours for the 2003 Existing Condition is presented in Table 4.14-1. Four intersections currently function at LOS E or F during one or both peak hours:

- SR 291 (Essington Avenue/Industrial Highway) and Bartram Avenue/Scott Way (No. 1)
- SR 291 (Industrial Highway) and International Plaza/Jughandle (No. 2) (due to LOS F on the SB left turn; most other movements are LOS D or better)
- Bartram Avenue and Island Avenue (No. 8)
- Bartram Avenue and 84th Street (No. 9)

The intersection of Bartram Avenue and Tinicum Boulevard is currently experiencing a high volume of U-turns from vehicles unwilling to wait to turn left from 84th Street southbound to Bartram Avenue eastbound. These vehicles instead turn right from southbound 84th Street, make a U-turn at Tinicum Boulevard and then travel eastbound on Bartram Avenue. Detailed intersection levels of service by movement are presented in Figure 2-5. (The complete level of service analysis results are presented in DEIS Appendix A-10.) Two intersections with overall acceptable levels of service have individual movements that function at LOS F for one movement. These are:

- SR 291 (Industrial Highway/Penrose Avenue) WB left turn at Island Avenue
- I-95 SB Off-ramp left turn at Bartram Avenue

The remaining movements function at acceptable levels of service.

Bicycle Facilities

One designated bicycle facility is within the Study Area. The Bicycle PA Route E connects Delaware through the City of Philadelphia to New Jersey, parallel to I-95. This route is designated by signage on SR 291 west of the SR 291 and Bartram Avenue/Scott Way intersection. At this intersection, the bike route shifts to Bartram Avenue where it is marked by signage and pavement striping in the shoulder lane. SR 291 from Bartram Avenue to Island Avenue is a limited-access highway and is not designated for bicycle use. In addition, 84th Street north of Bartram Avenue is a designated part of the Philadelphia Bicycle Network.

Three additional bicycle routes are proposed in the vicinity of the Airport:

- **The East Coast Greenway** is proposed as a long-distance multimodal corridor extending from Maine to Florida. The Greenway is anticipated to be a separate off-road facility for cyclists, hikers, and other non-motorized users that would use existing roads until such time as off-road facilities could be constructed.

  According to the National Park Service (see Appendix A Comment Letter #6), currently approximately 20 percent of the entire trail is off-road, and 80 percent is anticipated to be off-road when the system has been completed. In the vicinity of the Airport, the interim route of the East Coast Greenway is the PA Bicycle Route E. According to the NPS, Tinicum

Table 4.14-1 Existing (2003) Overall Intersection Levels of Service (LOS)

Intersection	Control*	Intersection LOS and Delay (in seconds) AM LOS	AM Delay	PM LOS	PM Delay
1. SR 291 (Essington Avenue/Industrial Avenue) and Bartram Avenue/Scott Way	S	F	83	E	71
2. SR 291 (Industrial Highway) and International Plaza Drive/Jughandle	S	C	26	F	93
3. SR 291 (Industrial Highway) and Airport Recirculation Road/Rental Car Road (not officially signed)	S	B	11	B	12
4. Ramp F and Economy Parking/Recirculation Road	S	B	11	B	11
5. SR 291(Industrial Highway) and Ramp F	S	B	14	B	20
6. SR 291(Industrial Highway/Penrose Avenue) and Island Avenue	S	D	46	D	47
7. Island Avenue and I-95 Southbound (SB) On-Ramp	U	A	8	A	9
8. Bartram Avenue and Island Avenue	S	F	105	D	51
9. Bartram Ave and 84th Street	S	F	116	F	144
10. Bartram Avenue and Tinicum Boulevard	S	B	17	B	12
11. Bartram Avenue and 88th Street	S	A	9	B	10
12. Bartram Avenue and I-95 SB Off-Ramp	S	C	22	A	7
13. Bartram Avenue and I-95 SB On-Ramp	U	B	13	B	14

* (S) Signalized and (U) Unsignalized intersections

Township has approved funding for the Route 291-Powhatan Avenue segment of the Greenway (between Darby Creek and Wanamaker Avenue). The project is anticipated to complete the final design phase in 2005.

- **The Washington-Rochambeau Revolutionary Route** is the historical route of the combined allied French and American forces in 1781 from Providence, Rhode Island to Yorktown, Virginia. The NPS is currently studying the historic resources that comprise this route for potential management options. In Pennsylvania, the potential trail could follow the same route as the proposed East Coast Greenway.

- **The Tinicum-Fort Mifflin Trail** is proposed to be a 20-mile bicycle/mixed use facility that would extend from the City of Philadelphia to Essington, along the west bank of the Schuylkill River, Fort Mifflin Road, Hog Island Road, and Second Street in Essington. The trail would have connections with the John Heinz NWR and the Cobbs Creek Parkway. The trail is expected to be signed on existing roads until an off-road facility could be constructed. According to the NPS, the Clean Air Council has received funding to determine the specific route and provide preliminary design guidance for two off-road segments of the Tinicum-Fort Mifflin Trail (the Cobbs Creek to John Heinz NWR segment and the Hog Island Road segment). The feasibility and preliminary design process for the Hog Island Road segment is anticipated to be completed in 2005.

- **The Cobbs Creek Recreation Trail** is a proposed, 10-mile facility connecting the Airport north to City Line Avenue (Route 1). According to the NPS, portions of the Cobbs Creek Bikeway are currently under construction. Within the Project Study Area, the Cobbs Creek Recreation Trail would follow Bartram Avenue.

4.14.3 Environmental Consequences

This section discusses potential traffic effects of the alternatives considered in this FEIS.

Methodology

Potential environmental consequences were initially assessed by projecting traffic volumes for the No-Action Alternative in the 2007 and 2015 analysis years based on establishing a growth factor and applying this factor to peak hour turning movements. Traffic volumes were then estimated for Alternative 1 and Alternative 2 for the 2007 and 2015 analysis years, based on re-assigning morning and evening peak hour traffic volumes from the closed portion of SR 291. LOS for the Study Area intersections was detemined based on the projected future traffic conditions and volumes. The LOS analysis conducted for the Study Area intersections measured the change in overall intersection LOS and average delay per vehicle.

While there are development projects that have been studied and presented to the public for input (such as the Rental Car Facility Relocation and Employee Parking Lot Expansion), none are currently at a stage where they could be reasonably defined to the degree necessary to generate traffic volumes for distribution along the roadway network. Other projects, such as the United States Postal Services Facility, are outside the limits of this Project's Study Area.

In cases where traffic from specific development projects cannot be quantified, it is customary to determine and apply a growth factor. In the Greater Philadelphia Area, the DVRPC applies a "regional" growth rate of 1.5 percent per year. This rate is generally applied to regional roadways such as I-95, I-76, and I-476 in the vicinity of the Study Area. A growth factor of one percent per year was applied to all traffic movements at all intersections in the Study Area. This factor was selected after review of prior studies and planned development in the immediate Project vicinity.

One percent was selected rather than 1.5 percent because of the proximity of I-95 and the reasonable expectation that most traffic growth would take place on the interstate rather than the local roadway network. Furthermore, it is general practice to apply the growth factor to through movements and select turning movements. In this case, however, the one percent per year growth rate was applied to all movements. It is important to note that the majority of travelers using PHL arrive and depart the facility via I-95. Few Airport passengers use the local roadway system. Therefore, passenger growth at PHL is not factored onto the one percent annual growth rate applied to the traffic volumes on local streets.

The existing intersection turning movements were increased by a factor of 1.04 to obtain 2007 peak hour turning movement volumes and 1.12 to obtain 2015 peak hour turning movement volumes. Traffic patterns were assumed to be very similar to the existing conditions for both analysis years.

Direct Impacts

Direct impacts are those that are a direct consequence of the proposed Project. In this case, only the Build Alternatives have a direct impact upon the surface transportation network as a result of closing a portion of SR 291. The No-Action Alternative is presented in this chapter to provide a basis for comparison with the Build Alternatives. Correcting deficiencies identified in the No-Action Alternative that result from local area traffic growth would be the responsibility of others and not undertaken as part of the actions described in this FEIS.

No-Action Alternative

The No-Action Alternative would not require closing SR 291 and, therefore, would have no effect on surface transportation. This alternative reflects growth in traffic volumes unrelated to the proposed Project that could reasonably be expected during the period being studied. Figures 4.14-2 and 4.14-3 show projected daily traffic volumes in 2007 and 2015. A summary of the No-Action Levels of Service compared with existing conditions is presented in Table 4.14-2 to establish the context of the future 2007 and 2015 analysis years. Similar to existing conditions, four intersections would continue to function at unacceptable levels of service with increases in delay in both 2007 and 2015:

- SR 291 (Essington Avenue/Industrial Highway) and Bartram Avenue/Scott Way (No. 1);
- SR 291 (Industrial Highway) and International Plaza Drive/Jughandle (No. 2);
- Bartram Avenue and Island Avenue (No. 8); and
- Bartram Avenue and 84th Street (No. 11).

Alternative 1

Alternative 1 would require that a portion of SR 291 be abandoned and that Industrial Highway be closed to through traffic from a point just east of Ramp F to Island Avenue. Bartram Avenue and a portion of Island Avenue from Bartram Avenue to the Industrial Highway/Penrose Avenue would be designated SR 291 (Figure 4.14-4). As part of this alternative an existing private airport service road would be relocated north of its current location. This roadway is not currently nor proposed to be available to the public and, therefore, is not included in the analysis.

SR 291 traffic was reassigned to the existing roadway network. The displaced traffic volumes were manually traced through the network to the extent possible based on existing travel patterns. The shortest distance was estimated and professional judgment was applied to determine how these volumes would then traverse the "new" roadway network to their final destination.

- For this EIS, traffic that was estimated to travel between SR 291 (Essington Avenue) west of the Bartram Avenue/Scott Way intersection and east of Island Avenue was routed along Bartram Avenue and Island Avenue.
- Traffic exiting the airport via Ramp F was re-routed based upon the existing EB left-turn volume at the SR 291 approach to Island Avenue and the I-95 on-ramp at Island Avenue and reassigned to I-95 SB directly from the Airport.

Closing a section of SR 291 and designating Bartram Avenue as SR 291 would result in an increase in traffic volumes on Bartram Avenue. The highest total intersection volume would occur during the evening peak hour at the intersection of Island Avenue and Bartram Avenue (5,300 vehicles). The greatest increase in volume along Bartram Avenue is expected to occur at its intersection with the I-95 SB on-ramp during the morning peak hour. Figures 4.14-5 and 4.14-6 show

Table 4.14-2 Intersection LOS Summary: Existing (2003) and 2007 No-Action Alternative

Intersection	Control	Existing 2003				2007 No Action				2015 No Action			
		AM		PM		AM		PM		AM		PM	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. SR 291 (Essington Avenue/ Industrial Highway) and Bartram Avenue/Scott Way	S	F	83	E	71	F	91	E	77	F	109	F	90
2. SR 291 (Industrial Highway) and International Plaza Drive/ Jughandle	S	C	26	F	93	C	27	F	100	C	27	F	116
3. SR 291 (Industrial Highway) and Airport Recirculation Road/Rental Car Road (not officially signed)	S	B	11	B	12	B	11	B	12	B	12	B	13
4. SR 291 (Industrial Highway) and Ramp F	S	B	14	B	20	B	14	C	20	B	14	C	23
5. Ramp F and Economy Parking/ Recirculation Road	S	B	11	B	11	B	11	B	11	B	11	B	11
6. SR 291 (Industrial Highway/ Penrose Avenue) and Island Avenue	S	D	46	D	47	D	47	D	48	D	48	D	49
7. Island Avenue and I-95 SB On-ramp	U	A	8	A	9	A	8	A	9	A	9	A	9
8. Island Avenue and Bartram Avenue	S	F	105	D	51	F	116	D	54	F	138	E	62
9. Bartram Ave and 84th Street	S	F	116	F	144	F	126	F	159	F	147	F	191
10 Bartram Avenue and Tinicum Boulevard	S	B	17	B	12	C	20	B	13	C	28	B	13
11. Bartram Avenue and 88th Street	S	A	9	B	10	A	10	B	10	B	10	B	11
12. Bartram Avenue and I-95 SB Off-ramp	S	C	22	A	7	C	24	A	8	C	30	A	8
13. Bartram Avenue and I-95 SB On-ramp	U	B	13	B	14	B	13	C	15	B	15	C	18

* (S) Signalized and (U) Unsignalized intersections

projected daily traffic volumes for 2007 and 2015 for Alternative 1.

The proposed closure and re-designation of a portion of SR 291 would not affect bicycle trails or facilities, since the section of SR 291 that would be closed is a limited-access facility and not designated as a bike route. This section is also not incorporated into any future bike path concepts. While Alternative 1 would result in an increase in vehicular traffic on Bartram Avenue, this Alternative would not affect the existing designated bicycle lanes on Bartram Avenue.

The morning and evening peak hour volumes for 2007 and 2015 for Alternative 1 are presented in Figures 4.14-7 and 4.14-8, respectively. A summary of the unmitigated Alternative 1 intersection levels of service compared with the No-Action is presented in Table 4.14-3 for 2007 and Table 4.14-4 for 2015.

In 2007, the only intersection that would degrade to an unacceptable LOS (E or F) as a result of Alternative 1 (without mitigation) is SR 291 (Bartram Avenue) and I-95 SB unsignalized on-ramp (No. 13) The SR 291 (Essington Avenue/Industrial Highway) and Bartram Avenue/Scott Way (No. 1) intersection remains at an unacceptble LOS (E or F) under both the No-Action and Alternative 1, but deteriorates from LOS E to LOS F in the PM with increases in delay from 91 seconds to 320 seconds. Although it remains LOS F in the AM in both the No-Action and Alternative 1, average delay is projected to increase from 91 seconds to 183 seconds as a result of Alternative 1.

At three other intersections, the LOS is expected to deteriorate but would remain better than LOS E.

- Island Avenue and I-95 SB On-Ramp (No. 7) (LOS A to LOS B in the AM);
- Bartram Avenue and Tinicum Boulevard (No. 10) (LOS C to LOS D in the AM); and
- Bartram Avenue and 88th Street (No. 11) (LOS A to LOS B in the AM).

Two intersections would improve under Alternative 1:

- SR 291 (Industrial Highway) and International Plaza Drive/Jughandle (No. 2) would improve from LOS F to LOS E in the PM;
- SR 291 (Industrial Highway/Penrose Avenue) and Island Avenue (No. 6) would improve from LOS D to C in the AM.

The predicted patterns in 2015 are similar to those in 2007. As shown on Table 4.14-4, the LOS would deteriorate to an unacceptable level at two intersections:

- Bartram Avenue and Tinicum Boulevard (No. 10) is projected to deteriorate from LOS C to LOS E in the AM.
- The unsignalized intersection left-turn movement from Bartram Avenue to the I-95 on-ramp (No. 13) is projected to degrade from LOS C to LOS F and have a delay of 119 seconds.

At Island Avenue and I-95 SB On-Ramp (No. 7) LOS is expected to deteriorate (from LOS A to LOS B in the AM and from LOS A to LOS C in the PM but would remain better than LOS E. No other intersections are expected to experience a degradation of LOS.

The LOS at the intersections of SR 291 (Essington Avenue/Industrial Highway) and Bartram Avenue/Scott Way (No. 1) is not expected to degrade; however, the overall intersection delay is projected to increase in the AM from 109 seconds to 212 seconds and in the PM from 90 seconds to 360 seconds. The SR 291 (Industrial Highway/ Penrose Avenue) and Island Avenue intersection (No. 6) would actually experience a loss of traffic and therefore a better LOS in the morning and effectively no change in the evening.

Alternative 2
Alternative 2 would also require that a portion of SR 291 be abandoned as described for Alternative 1. The effect on the surface transportation system, including the resulting intersection impacts and delay are the same as those presented for Alternative 1 and shown in Tables 4.14-3 and 4.14-4.

Indirect or Secondary Impacts
There are no indirect or secondary surface transportation impacts anticipated for either of the build Alternatives. All potential surface transportation impacts are limited to the immediate Project Area as discussed in this section. The Proposed Project would require that a portion of SR 291 be abandoned and that a portion of Island Avenue from Bartram Avenue to the Industrial Highway/Penrose Avenue would be designated SR 291. SR 291 traffic would be reassigned to this roadway. Figure 4.14-4 shows the re-assigned SR 291 on Bartram Avenue. The adjacent land use is generally commercial and office on the south including hotels, the PNC office park, parking, and restaurants. The Heinz Wildlife Refuge, SEPTA R1 rail line, and other open lands are north of Bartram Avenue. There are no residential land uses immediately adjacent to this section of Bartam Avenue as depicted in Figure 4.3-2 and, there are no adjacent sensitive noise receptors as depicted in Figure 4.3-6. Therefore, there are no noise impacts anticipated as a result of the re-assigned SR 291 traffic.

Summary of Impacts
Construction of either Alternative 1 or Alternative 2 would have a minor direct effect on surface transportation system by closing a portion of SR 291 and diverting traffic to Bartram Avenue, which would be designated as SR 291.

In 2007 and 2015, the unsignalized intersection of Bartram Avenue and the I-95 SB on-ramp (No. 13) would have an unacceptable LOS resulting from either Alternative 1 or Alternative 2. The intersection of Bartram Avenue and Tinicum Boulevard (No. 10) would experience LOS E in the morning peak hour in 2015 as a result of either alternative. The intersection of SR 291 (Essington Avenue/Industrial Highway) and Bartram Avenue/Scott Way (No. 1) is also projected to experience a substantial increase in delay as a result of either alternative.

4.14.4 Mitigation

Alternatives 1 and 2 would both require that a portion of SR 291 be abandoned and the short segment from the intersection with Ramp F to the intersection with Island Avenue be closed to through traffic. Based on on-going coordination with PennDOT, Bartram Avenue, from existing SR 291 to Island Avenue, and Island Avenue from Bartram Avenue south to existing SR 291, would be designated as SR 291. The increase in traffic on Bartram Avenue and Island Avenue would require mitigation.

Avoidance

- The No-Action Alternative would avoid changes to SR 291. There are no feasible means of avoiding changes to SR 291 with Alternative 1 or Alternative 2. SR 291, left in its existing location,

Table 4.14-3 2007 Levels of Service (unmitigated)

Intersection	Control*	No-Action Alternative				Alternative 1 and Alternative 2			
		AM		PM		AM		PM	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. SR 291 (Essington Avenue/ Industrial Highway) and Bartram Avenue/Scott Way	S	F	91	E	77	F	183	F	320
2. SR 291 (Industrial Highway) and International Plaza Drive/ Jughandle	S	C	27	F	100	C	24	E	80
3. SR 291 (Industrial Highway) and Airport Recirculation Road/Rental Car Road (not officially signed)	S	B	11	B	12	B	12	B	13
4. Ramp F and Economy Parking/ Recirculation Road	S	B	11	B	11	B	11	B	10
5. SR-291 Industrial Highway and Ramp F	S	B	14	C	20	N/A**	N/A	N/A	N/A
6. SR 291 (Industrial Highway/ Penrose Avenue) and Island Avenue	S	D	47	D	48	C	31	D	43
7. Island Avenue and I-95 SB On-ramp	U	A	8	A	9	B	11	B	15
8. Bartram Avenue and Island Avenue	S	F	116	D	54	F	99	D	53
9. Bartram Ave and 84th Street	S	F	126	F	159	F	120	F	144
10. Bartram Ave and Tinicum Boulevard	S	C	20	B	13	D	43	B	15
11. Bartram Ave and 88th Street	S	A	10	B	10	B	11	B	13
12. Bartram Ave and I-95 SB Off-ramp	S	C	24	A	8	C	22	A	7
13. Bartram Ave and I-95 SB On-ramp	U	B	13	C	15	C	19	F	63

* (S) Signalized and (U) Unsignalized intersections
** (N/A) The Industrial Highway will be closed to through traffic at this location under the Build Alternative

Table 4.14-4 2015 Levels of Service (unmitigated)

		No-Action Alternative				Alternative 1 and Alternative 2			
		AM		PM		AM		PM	
Intersection	Control	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. SR 291 (Essington Avenue/ Industrial Highway) and Bartram Avenue/Scott Way	S	F	109	F	90	F	212	F	360
2. SR 291 (Industrial Highway) and International Plaza Drive/ Jughandle	S	C	27	F	116	C	25	F	98
3. SR 291 (Industrial Highway) and Airport Recirculation Road/ Rental Car Road (not officially signed)	S	B	12	B	13	B	13	B	13
4. Ramp F and Economy Parking/ Recirculation Road	S	B	11	B	11	B	12	B	11
5. SR 291 (Industrial Highway) and Ramp F	S	B	14	C	23	N/A**	N/A	N/A	N/A
6. SR 291 (Industrial Highway/ Penrose Avenue) and Island Avenue	S	D	48	D	49	C	32	D	48
7. Island Avenue and I-95 SB On-ramp	U	A	9	A	9	B	12	C	18
8. Bartram Avenue and Island Avenue	S	F	138	E	62	F	118	E	61
9. Bartram Ave and 84th Street	S	F	147	F	191	F	140	F	173
10. Bartram Avenue and Tinicum Boulevard	S	C	28	B	13	E	62	B	16
11. Bartram Avenue and 88th Street	S	B	10	B	11	B	12	B	13
12. Bartram Avenue and I-95 SB Off-ramp	S	C	30	A	8	C	27	A	7
13. Bartram Avenue and I-95 SB On-ramp	U	B	15	C	18	C	23	F	119

* (S) Signalized and (U) Unsignalized intersections
** (N/A) The Industrial Highway will be closed to through traffic at this location under the Build Alternative

would be within the RSA for the northern extension of Runway 17-35. It is not practicable to retain SR 291 with its existing endpoints, as this would require shifting existing SR 291 into the I-95 right-of-way.

Mitigation Measures

Three intersections would exhibit unacceptable LOS (E or F) during the morning and/or evening peak hour in 2015 due to either Build Alternative:

The signalized intersection of SR 291 (Essington Avenue/Industrial Highway) and Bartram Avenue/Scott Way (No. 1) would experience a substantial increase in intersection delay during the evening peak hour.

- The signalized intersection of Bartram Avenue and Tinicum Boulevard (No. 10) would have an unacceptable LOS during the morning peak hour. This condition is related to the high volume of U-turns from motorists unwilling to wait to turn left from 84th Street SB to Bartram Avenue EB. These vehicles instead turn right from SB 84th Street, make a U-turn at Tinicum Boulevard and then travel EB on Bartram Avenue. As a result, mitigation is also required at the intersection of Bartram Avenue and 84th Street to address the conditions at Bartram Avenue and Tinicum Boulevard even though the Build condition does not worsen intersection operations.
- The unsignalized intersection of Bartram Avenue and the I-95 SB on-ramp (No. 13) would have an unacceptable LOS during the evening peak hour.

Mitigation measures may mitigate potential impacts to the surface transportation system. In general, the following mitigation measures at signalized intersections are evaluated in a hierarchical fashion: traffic signal timing changes; traffic signal phasing changes; lane designation changes (within existing pavement); and physical changes to the intersection that may require widening and/or right-of-way. These measures were evaluated and the following measures are proposed to mitigate the effects of either Alternative 1 or 2:

- Add one left-turn lane on the 84th Street southbound approach to provide additional left-turn capacity, by redesignating one of the existing through traffic lanes;
- Implement signal timing adjustments at the Bartram Avenue-Tinicum Boulevard intersection; and
- Install a traffic signal at the intersection of Bartram Avenue and the I-95 SB on-ramp.

Measures that could be implemented at the signalized intersection of SR 291and Bartram Avenue/Scott Way to improve LOS are:

- Add an EB left-turn lane within the existing curb-to-curb width;
- Remove one of the WB through lanes; and
- Change signal phasing, timing, and cycle length.

Table 4.14-4 presents the LOS and delay comparison summary for the 2015 No-Action, unmitigated build Alternatives, and mitigated build Alternatives for these intersections. Figure 4.14-9 presents morning and evening peak hour LOS with mitigation measures.

As shown in Table 4.14-5, these measures would improve these intersections to a level better than existing conditions. These mitigation measures can be accomplished within the existing pavement.

Table 4.14-5 Intersection LOS Summary (2015) with Mitigation Measures

	No-Action Alternative				Alternative 1 and Alternative 2				Alternative 1 or Alternative 2 with Mitigation			
	AM		PM		AM		PM		AM		PM	
Intersection	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. SR 291 (Essington Avenue/ Industrial Highway) and Bartram Avenue/Scott Way	F	109	F	90	F	212	F	360	D	42	D	47
9. Bartram Avenue and 84th Street	F	147	F	191	F	140	F	173	D	49	E	67
10. Bartram Avenue and Tinicum Boulevard	C	28	B	13	E	62	B	16	A	7	B	12
13. Bartram Avenue and I-95 SB On-ramp (unsignalized)	B	15	C	18	C	23	F	119	A	3	A	9

Design issues would be clarified and resolved during the final design stage. With these potential mitigation measures, the Study Area intersection operations would improve to acceptable levels of service and delay. In all cases, the delay would be less than under existing conditions.

The proposed mitigation measures at Bartram Ave. and 84th Street, and a new signal at SR 291 and the I-95 Ramp would not affect the bicycle lanes on Bartram Avenue. Proposed improvements at the SR 291 (Essington Avenue/Industrial Highway) and Bartram Ave/Scott Way intersection (No. 1) would be designed to accommodate bicyclists using the designated E-Route.

4.14.5 Regulatory Coordination and Required Permits

Coordination with state and local agencies, including the Federal Highway Administration, Pennsylvania DOT and the City of Philadelphia Department of Streets has been initiated and will continue throughout the preparation of the EIS and through construction, should a build alternative be implemented.

4.15 Hazardous Materials and Solid Waste

This section describes potential and confirmed sources of subsurface contamination and/or waste materials within the Project Area, and evaluates the potential impacts that subsurface contamination and/or waste materials would have on the construction of either Project alternative (Section 4.15-3). An assessment of measures to avoid, minimize, and mitigate the impacts of subsurface contamination and waste materials is included in Section 4.15.4. Additional detailed information is provided in DEIS Appendix A-11.

4.15.1 Introduction

The identification of confirmed or potential subsurface contamination and/or waste materials related to the runway alternatives is an important element of environmental impact analysis for the following reasons:

- Direct and indirect impacts to human health, welfare, and the environment;

- Potential financial and long-term environmental liability associated with the City's acquisition of contaminated property;
- Potential delays during construction from the discovery of unanticipated subsurface contamination;
- Design changes that may be required as a result of subsurface contamination;
- Defining appropriate PA DEP and/or USEPA response actions that may be required to remediate contamination;
- Defining appropriate health and safety provisions to protect construction workers and sensitive receptors during construction;
- Demolition of structures that may contain asbestos and other regulated materials; and
- Removal and management of other special and hazardous wastes, including oil and/or hazardous materials storage tanks, electrical transformers, and solid waste/demolition debris.

Regulatory Context

Subsurface contamination and waste materials are regulated under several Federal and state statutes, including EPA regulations under the Clean Water Act (administered by PA DEP); Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and regulations concerning Asbestos Containing Materials (ACM). The Occupational Safety and Health Administration (OSHA) regulates the protection of worker safety and health at the workplace. OSHA regulations, including regulations pertaining to Hazardous Waste Operations and Emergency Response (HAZWOPER), asbestos, and lead based paint, may apply to workers involved in construction. The PA DEP regulations regarding the Land Recycling Program, Storage Tank and Spill Prevention Act, Solid Waste Management Act, and groundwater discharge also are applicable to construction at PHL. These regulations and their applicability to the alternatives are discussed in Section 4.15.5.

Study Area

Confirmed or potential contamination areas were evaluated based on their distance from the Project Area limits. Because of different concerns for each potential contamination source, multiple Study Areas were used. Known soil and groundwater contamination may be considered a concern if they are within the Project Area limits (Figure 4.15-1). Hazardous Waste Use and Storage Areas, and existing and removed underground and above ground fuel storage tanks may also be considered a concern because these may be sources of contaminants. Hazardous Waste Use and Storage Areas and tanks were evaluated within 1/8 mile of the Project Area. This distance was chosen as an interpretation of the recommended search distance of "property and adjoining properties" for registered underground storage tanks (USTs) set forth in the ASTM E 1527 Standard Practice for Environmental Site Assessments.[194] Confirmed contamination release areas reported to federal and state authorities were evaluated if they were within the Release Study Area limits (within ½-mile of the Project Area). This distance was chosen based on the recommended search distance for state reported releases and leaking USTs set forth in the ASTM E 1527 Standard Practice for Environmental Site Assessments.[195]

194 *ASTM E 1527 Standard Practice for Environmental Site Assessments*, American Society for Testing and Materials, July 2000.
195 *Ibid.*

4.15.2 Affected Environment

The confirmed or potential sources of contamination in the vicinity of the Project Area that may be encountered during construction are described below.

Methodology

Multiple sources of information were evaluated to assess the confirmed and potential presence of subsurface contamination and oil or hazardous material use and storage areas. Efforts were taken to obtain the most recent and best available data during the preparation of this FEIS. All assessments and conclusions were made based on the information obtained from the sources described in this section. A computer database search was conducted for the entire Airport and immediate adjacent properties to evaluate reported releases that could potentially be within the Study Areas. A review of Federal, state, and proprietary environmental databases was conducted through Environmental Data Resources, Inc. (EDR) to identify properties in the vicinity of the Project Area that have had a release of oil and/or hazardous materials (OHM). PA DEP and City of Philadelphia offices were contacted to identify reports of historical use, spills, disposal areas, and past releases of OHM within the applicable Study Areas. PA DEP reports provided information regarding the type of release, precise location of soil or groundwater impacts, magnitude of the impacts, and the most recent status of any monitoring or remediation activities for each of the releases. During the final design process, soil and groundwater sampling can provide more definitive and current data regarding the environmental condition within and near the Project Area.

Areas of Environmental Concern

There are several potential sources of soil or groundwater contamination within or adjacent to the Project Area (Figure 4.15-1) as described below.

Former Hog Island Shipyard

The operation of the former Hog Island Shipyard may have resulted in residual soil and/or groundwater contamination in the vicinity of the Project Area. Contaminants associated with historic operations including industrial activities, the railroad spur network, and petroleum based roadway treatments may remain within the Project Area. Any construction activities on the southern portion of the Project Area may encounter contaminated soils and/or groundwater.

Dredge Sediment and Fill Materials

Large quantities of fill materials, including dredged sediment from the Delaware River and urban fill materials, have been placed within the limits of the current Airport.[196] These types of fill materials may contain elevated contaminant concentrations. Lead contamination identified at a property in the vicinity of the Project Area may be due to the urban fill and dredge materials placed in the area. It appears that previous sampling within Airport limits for contaminants associated with urban fill and dredge sediments has not been performed. The majority of sampling performed has been associated with an identified source (tank release, spill, etc.). Any construction activities within the Project Area may encounter contaminated fill materials.

Known Releases

Five known releases have been determined to be areas of environmental concern (Figure 4.15-1). Other known releases were eliminated as areas of

196 *The Greatest Shipyard in the World, 1918*, Figure from Hog Island, W.H. Blood, Jr. Esq., reviewed at the Philadelphia Free Library.

environmental concern based on their distance from the proposed construction areas, remediation activities performed for the releases, such as the former Enterprise Avenue Landfill and the Lower Darby Creek Superfund site, and specific characteristics of the release.

- **Exxon Service Station.**
  During subsurface investigations in 1996, 1998, and 2000, concentrations of petroleum constituents were identified in soil and groundwater at the Exxon Service Station property.[197] Previous environmental assessments of the Exxon Service Station property have not investigated soil and groundwater in the vicinity of five USTs on the eastern portion of the property. The extent of contamination associated with a reported release of petroleum from the UST piping has not been documented. In addition, Methyl Tertiary Butyl Ether (MTBE), a highly soluble gasoline additive, was detected in groundwater on the western portion of the property and may be indicative of the edge of a groundwater plume. Although definitive soil and groundwater data are not available, it is likely that contaminated soil and/or groundwater would be encountered during construction activities at this property.

- **Former Atlantic Aviation.**
  Soil and groundwater petroleum contamination associated with releases from USTs (removed) at the former Atlantic Aviation site was identified during subsurface investigations in 1999. [198] Response actions including soil excavation conducted in 1999 have reduced soil and groundwater contaminant concentrations to below PA DEP standards. [199]Because this release has been remediated in accordance with PA DEP regulations, it is unlikely to directly impact the Proposed Project. However, since the release occurred within the proposed areas of construction for the Build Alternatives and limited quantities of residual soil or groundwater contamination may remain in the area, the potential for encountering subsurface contamination during construction cannot be completely eliminated.

- **Former PA National Guard Site.**
  A release of jet fuel from a UST (removed) at the former PA National Guard site was identified in 1995. Subsequent subsurface investigations indicated petroleum and lead groundwater contamination. [200]Although jet fuel impacts to soil were noted during the removal of a UST, no confirmatory soil samples were collected for laboratory analysis. It is likely that petroleum impacted soil remains within the vicinity of the former UST. Residual groundwater benzene and lead contamination remain at the property slightly above applicable PA DEP Action Levels, and contaminated soil and groundwater may be encountered during any excavations in this area.

- **Terminal E Short Term Parking Lot.**
  Soil semi-volatile organic compound (SVOC) and groundwater SVOC, volatile organic compound (VOC), and lead contamination from a former UST farm were discovered

197 *Remedial Action Progress Report – Exxon Service Station #2-8048,* Handex, April 2000.
198 *Site Characterization Report, Atlantic Aviation*, Tank Compliance, Inc., December 1999.
199 *ECP – Storage Tank Program, Atlantic Aviation FBO*, Pennsylvania Department of Environmental Protection, 3 December 2002.
200 *Submission of a Final Report for the Pacetti Site located at 4721 Island Avenue,* Weston Solutions, 28 January 2004.

- during the construction of the Terminal E Short Term parking lot in 2000.[201] Because the extent of the groundwater contamination from this facility is not known, the groundwater release may have migrated to within the Project Area. As a result, contaminated groundwater may be encountered during any excavations in this area below the groundwater table.
- **Alamo Rent-A-Car.**
  Concentrations of MTBE were identified in soil groundwater at the Alamo Rent-A-Car site due to releases from a UST system.[202] Because of the close proximity (less than 400 feet) of a groundwater release at this facility to the Proposed Economy Parking Lot, it is possible that the groundwater contamination has migrated to within the Project Area. As a result, contaminated groundwater may be encountered during any excavations in this area below the groundwater table.

Church Creek and Drainage Ditches

Field observations of a surface water sheen within Church Creek (CMC-3 and CMC-4) on April 1, 2004 suggest that runoff from the surrounding paved areas is carrying petroleum constituents into the Church Creek drainage system. Miscellaneous debris including trash and metal has also collected within the creek. In addition, areas of erosion indicate that the soil surrounding Church Creek consists of urban fill materials. Based on these observations, it is likely that Church Creek and other drainage ditch sediments contain elevated concentrations of petroleum compounds and metals. Further testing will be needed to determine if construction within these areas is likely to encounter contaminated sediments.

Existing and Former Underground and Aboveground Storage Tanks

Fourteen tanks of unknown status were identified within 1/8 mile of the Project Area (Figure 4.15-2). It is possible that the tanks have been removed or abandoned but no details concerning tank size, contents, or status are known. Because of the limited information regarding potential leaking from these tanks, these tanks are considered to be of potential environmental concern to the Project Area. The unknown tanks are generally near the former Overseas Terminal on the eastern boundary of the Project Area, near the Commuter Apron to the west of the Project Area, and near the Bliss Building within the Project Area. It is possible that construction activities in these areas may encounter a UST which has not been removed or properly closed. Tanks are also present at the Airport's Rescue Boat Facility but are not a concern as this area is downgradient from the Project Area. Active, inactive and removed tanks that have not had a reported release are not considered to pose an environmental concern to the Project Area.

Underground Pipelines

Due to their proximity to the Project Area, potential releases from nine underground fuel pipelines along the Delaware River (Figure 4.15-2) may be a potential source of contamination. Excavation activities in the southern portion of the Project Area may encounter soil or groundwater contamination from these pipelines. There is conflicting information regarding the existence of abandoned oil pipelines beneath the north end of Runway 17-35. It is possible that excavation in this area could encounter soil and groundwater contamination associated with an abandoned oil pipeline.

201 *Results of Additional Subsurface Investigation, Terminal Short Term Parking Lot, Philadelphia International Airport, Environmental Services Contract*, Roy F. Weston, Inc., 17 May 2000.
202 Letter to the consultant for Alamo Rent-A-Car Facility, Facility ID 51-43128, Pennsylvania Department of Environmental Protection, Southeast Regional Office, July 2003.

Asbestos-Containing Asphalt
During construction of Runway 8-26 (partially within the Project Area), approximately 4,600 cubic yards of asbestos-reinforced asphalt (greater than one percent asbestos fibers) was removed from the runway area.[203] Similar asphaltic materials may be present in Runway 17-35 or taxiways.

4.15.3 Environmental Consequences

Construction activities within the Project Area may encounter contaminated soils, sediments, and groundwater or may generate regulated and hazardous wastes. Certain areas of contamination and potential sources of contamination would be remediated during the implementation of either Build Alternative. This impact is considered beneficial. The direct and indirect impacts are not anticipated to affect the design or feasibility of either Alternative 1 or Alternative 2. However, the presence of contaminated soils, sediments or groundwater could result in:

- Increased Project costs, as the management and remediation of subsurface contamination encountered during construction will likely increase the cost of Project implementation;
- Construction schedule delays, as the management and remediation of subsurface contamination encountered during construction will likely cause schedule delays during Project implementation;
- Environmental liability concerns to the City from the proper management of contaminated wastes, impacts to ongoing remediation at known releases, identification of new releases, removal of underground storage tanks, and health impacts to construction workers; and,
- Health and safety concerns for construction workers, as subsurface contamination encountered during construction could affect the health and safety of construction workers.

Direct Impacts

Direct impacts are defined as immediate consequences to the environment as a result of the implementation of either Alternative 1 or 2 (Build Alternatives). The No-Action Alternative would not encounter contaminated soils or groundwater or generate solid waste.

Alternative 1
The construction of Alternative 1 has the potential to encounter subsurface contamination or waste materials within the disturbed areas, affecting construction activities.

Contaminated Soils. Contaminated soils may be encountered during excavation work. Potential contaminants that may be encountered during soil management include petroleum, PAHs, VOCs, and metals. These compounds may cause acute or carcinogenic effects in humans exposed to sufficient concentrations of these contaminants. Specific effects are dependent on actual concentrations and the route of exposure (i.e. ingestion, inhalation, or absorption) that may be present. Excavation of contaminated soils may generate dust that also poses a hazard.

Contaminated Sediments. Evidence of petroleum and urban fill was identified within Church Creek (CMC-3 and CMC-4) and other drainage ditches (SEPD-2). Proposed culvert construction may encounter sediments that contain elevated concentrations of petroleum, PAHs, and metals. These compounds may cause acute or carcinogenic effects in human beings exposed to sufficient concentrations of these contaminants. Specific

203 *Notification of Compliance letter*, Harvard Environmental, Inc., 4 May 1998.

effects are dependent on actual concentrations and the exposure potential that may be present.

Contaminated Groundwater. It is likely that areas of contaminated groundwater would be encountered during excavation work. Potential contaminants that may be encountered during groundwater management include petroleum, PAHs, VOCs, and metals. These compounds may cause acute or carcinogenic effects in humans exposed to sufficient concentrations of these contaminants. Specific effects are dependent on actual concentrations and the exposure potential that may be present.

Asphalt and Demolition Debris. Asphalt and demolition debris would be generated by the demolition of SR 291, the Economy Parking Lot, and the Exxon Service Station. Proper waste management of these materials is required.

Unknown Status USTs. Fourteen unknown status fuel storage tanks may be present within or in the vicinity of the Project Area. Should a UST be encountered during construction activities, assessment and removal would be required.

Exxon Service Station. The Exxon Service Station would be demolished. Demolition would likely destroy groundwater monitoring wells installed for monitoring the groundwater release at the Exxon Station. Based on the age of the buildings, it is possible that asbestos and lead based paint are present within the structures. Six USTs and one AST would require removal.

Abandoned Oil Pipelines. It is possible that abandoned oil pipelines are present beneath the north end of Runway 17-35. If a pipeline is encountered, it will be abandoned or removed in accordance with PA DEP regulations. Assessment of potential soil and/or groundwater contamination may be required.

Airborne Soil Contamination (Dust). Construction activities have the potential to cause contaminated soils to enter the air as dust which can pose a threat to human health.

New Releases. Construction activities have the potential to generate new releases/spills as a result of the storage and use of hazardous materials such as diesel fuel, gasoline, hydraulic oil, and lubricating oils associated with the construction equipment.

Alternative 2

Alternative 2 would have the same potential impacts as Alternative 1, as it would require construction within the same footprint and would encounter the same sources of potentially contaminated soils, contaminated sediments, contaminated groundwater, and would create the same potential for generating asphalt and demolition debris, airborne soil contamination, and new releases of contaminants.

Indirect Impacts

An indirect impact related to subsurface contamination or waste materials management would exist if an alternative has the potential to affect ongoing remediation of known releases or would produce additional sources of subsurface contamination or waste materials following construction. Neither Alternative 1 nor Alternative 2 would be expected to result in any adverse indirect impacts, but may result in a beneficial effect. Contaminated materials and potential sources of contamination encountered would be removed during construction of either Build Alternative, positively affecting the environment. Beneficial impacts include the excavation and off-site disposal of contaminated soil and groundwater, removal of USTs as a potential source of future contamination, and potential identification of previously unidentified releases and the reporting of these areas to the PA DEP for further monitoring and remediation. These actions would not be conducted in the No-Action Alternative.

4.15.4 Mitigation

This section describes measures to avoid, minimize, and mitigate the direct and indirect impacts identified for the implementation of either Build Alternative. The Proposed Project would not result in significant impacts as defined in *FAA Order 1050.1E*, Appendix A paragraph 10.3, and therefore does not warrant mitigation. The Proposed alternatives could be designed and constructed in compliance with applicable local, state, and Federal laws and regulations concerning hazardous or solid waste management. However, measures to protect workers and the environment would be required before or during construction. Section 4.17.8 of this FEIS further describes construction impacts and mitigation measures.

Avoidance

Based on the location of confirmed or potential areas of concern, there are no measures that entirely avoid the direct impacts from subsurface contamination or waste materials for the Build Alternatives.

Preventive Measures During Construction

Although there are no measures that avoid the impacts to construction from subsurface contamination or waste materials, the following measures can be used to minimize any potential cost increases or construction schedule delays. Mitigation measures, such as those presented in this section, may be required during construction to minimize the impacts and concerns from subsurface contamination and waste materials.

Coordination with PA DEP

To minimize the construction concerns as a result of known release areas, the PA DEP will be contacted prior to any construction and the Sponsor will develop procedures and response plans in accordance with PA DEP guidance and Pennsylvania regulations. Coordination and establishment of project procedures would help reduce potential future delays.

Preliminary Investigations

Many potential or confirmed areas of concern within the Project Area include soil and/or groundwater contamination. Because limited sampling and analysis of soil or groundwater has been performed within the limits of the Project Area, the nature and extent of contamination is not known. To further define the level, type, locations and detail related to mitigation measures summarized below, subsurface investigation may be performed to collect soil and groundwater samples for laboratory analysis. Identification and characterization of each contamination area prior to construction would reduce potential construction schedule delays, logistical problems, and cost concerns of managing the contamination concurrently with construction activities. Prior to any excavation, investigations would be conducted in coordination with PA DEP. These may include:

- **Subsurface Investigations.** A reasonable subsurface investigation of areas to be excavated involving the collection of sediment, soil and groundwater samples could provide information on the nature, extent, and location of contamination that may be excavated or dewatered during construction and the location of contamination that may be remediated prior to construction. Mitigation measures would then be prepared based on actual contaminant concentrations and locations.

- **Fill Sampling.** In addition to the subsurface investigations described above, a representative number of soil samples from on-site subsurface fill materials (not including fill materials to be brought to the site during construction) would be collected and analyzed for petroleum, polychlorinated biphenyls (PCBs), dioxins, and metal contaminants including lead. This sampling effort would provide information that would be used to determine the approximate cost and appropriate receiving facilities for the ultimate recycling/disposal of excavated excess on-site fill materials and health and safety measures that may need to be implemented during construction. Although these materials may contain residual concentrations, they may not exceed action levels and may not require removal and disposal under PA DEP Act 2 Regulations.
- **Pre-Demolition Inspection.** Before demolition of the Exxon Service Station, a pre-demolition inspection would be prepared to identify whether asbestos-containing materials, lead based paint, or regulated waste materials will need to be abated.

Hazardous Waste and Special Waste Management Any hazardous, contaminated or special wastes generated through excavation of contaminated soils, dewatering of contaminated groundwater, and demolition activities, may require special management procedures. The hazardous waste and special waste management procedures described below are likely to be implemented during construction.

Contaminated Soils and Sediment Management. Contaminated soils such as urban fill materials, dredge sediment materials, drainage channel sediment, and petroleum-impacted soil may be encountered during the excavation. These excavated soils may require special management and recycling or disposal during construction. Excess soil materials that are associated with regional background conditions (urban fill, dredge sediment) may be able to be returned to excavations to the extent feasible. Reuse of excess soils associated with background conditions may be able to be accommodated within the Airport and/or stockpiled with the existing soil stockpiled in the vicinity of Runway 8-26. A detailed soil management plan would be prepared and may require review by the PA DEP before construction.

Some contaminated soil that may require excavation due to contamination would require removal from the property in accordance with Act 2 regulations. Excavated soils would be stockpiled, further characterized through sampling and analysis, and transported off-site for recycling (asphalt batch plant, reuse as daily cover in a landfill), treatment, or disposal in accordance with RCRA regulations, PA DEP Solid Waste Management Act, and PA DEP Management of Fill Policy.[204]

Contaminated Groundwater Management. Areas of excavation encountering groundwater may be dewatered (pumped to remove accumulated groundwater) during construction. If excavation dewatering is to occur in an area of groundwater contamination, the PA DEP Bureau of Watershed Management is likely to require notification. The PA DEP will evaluate information regarding the rate of discharge, contaminant

204 *Management of Fill Policy*, Document No. 258-2182-773, Pennsylvania Department of Environmental Protection, 24 April 2004.

concentrations, water quality indicators and dewatering schedule. Treatment or off-site disposal of contaminated groundwater may be required. It is likely that a Philadelphia Water Department Permit authorizing discharge to the Southwest Water Pollution Control Plant would be obtained and dewatering effluent would be discharged to this publicly-owned treatment works (POTW).

Demolition Waste. Waste from the demolition of the Exxon Service Station, portions of SR 291, the Economy Parking Lot and other areas will include concrete, metal, asphalt, brick, and other building materials. Disposal of these materials must be conducted in accordance with PA DEP solid waste regulations. Other special waste, including PCB-containing electrical equipment (fluorescent light ballasts, transformers), mercury-containing fluorescent light bulbs, and miscellaneous containers of oil or hazardous materials, will require removal and recycling/disposal.

Asbestos. A survey of the Exxon Station for suspect ACM will need to be performed in accordance with National Emission Standards for Hazardous Air Pollutants (NESHAPS) procedures. Sampling procedures include the collection of the Asbestos Hazardous Emergency Response Act (AHERA)-required number of samples depending on the type and quantity of suspect material. Samples of all identified suspect friable (easily crumbled or crushed to powder by hand pressure) and non-friable ACM will need to be collected. All ACM must be managed by a Pennsylvania/City of Philadelphia-licensed Asbestos Abatement Contractor pursuant to all applicable Federal, state and local asbestos abatement regulations.

In addition, asbestos may be present in asphalt materials associated with aircraft operation areas within the Project Area. A survey for the presence of asbestos in all asphalt areas to be removed should be performed. Any identified asbestos-reinforced asphalt would be removed and disposed during construction of by a Pennsylvania-licensed Asbestos Abatement Contractor.

Lead-Based Paint. The presence of lead -based paint (LBP) within the buildings to be demolished primarily represents a construction worker health and safety exposure issue. The results of pre-demolition inspection will be provided to demolition contractors to document the locations of LBP. Work practices will be designed to prevent exposure of lead dust (sawing, cutting, and sanding) and lead fumes (torch cutting, and welding) to contractors. Under certain circumstance, lead-painted building components may require segregation for disposal as a hazardous waste because of leachable lead concentrations with the specific building components.

Assessment and Remediation of Known Releases
Five releases overseen by the PA DEP under Act 2 could be encountered during construction. The following measures would be required to maintain compliance with Act 2 and to mitigate impacts to ongoing remediation efforts.

- **Exxon Service Station.** The Exxon Service Station would be demolished with either Build Alternative. Because releases at the property are regulated under Act 2 and contamination likely remains in soil and groundwater, coordination with the PA DEP may be required during construction. Remediation activities such as soil excavation and groundwater treatment may be required before and during construction. Any groundwater monitoring wells would require replacement. Monitoring of groundwater impacts following Project implementation may also be required.

- **Former Atlantic Aviation.** Although this release has been remediated in accordance with PA DEP regulations, limited quantities of residual soil or groundwater petroleum contamination may remain. Any encountered residual contamination in the release area will likely not need PA DEP reporting or oversight. Contaminated materials would be managed in accordance with the contaminated soil and contaminated groundwater management mitigation actions listed above.
- **Former PA National Guard Site.** Although this release has been remediated in accordance with PA DEP regulations, limited quantities of residual soil or groundwater petroleum contamination may remain. Any encountered residual contamination in the release area will likely not need PA DEP reporting or oversight. Contaminated materials would be managed in accordance with the contaminated soil and contaminated groundwater management mitigation actions listed above.
- **Terminal E Short Term Parking Lot and Alamo Rent-a-Car.** Petroleum-impacted groundwater from this area may have migrated into the Project Area. It is unlikely that encountered contaminated groundwater will need PA DEP reporting or oversight. Any contaminated groundwater encountered in this area would be managed under the contaminated groundwater management mitigation actions listed above.

Assessment and Remediation of Newly Identified Releases
If previously unreported releases are identified during construction, work would stop until the National Response Center is identified, as required by FAA Order 1050.1E, Appendix A Paragraph 10.2. PA DEP reporting may also be required. Specific response actions would be tailored to newly discovered release areas.

Underground Storage Tank Removals
Closing the six USTs at the Exxon Service Station and any unknown USTs encountered during construction would be performed by either the tenant or Sponsor in accordance with the Pennsylvania Storage Tank and Spill Prevention Act. This regulation outlines procedures, such as hazard recognition and abatement; removal and handling of vapors and product from the UST system; removing the UST system from the ground; excavating soil from around the UST system; on-site staging of excavated soil; waste management and disposal; and site assessment activities, to determine if contamination is present around each tank system.[205]

Abandoned Oil Pipeline Removal
If an abandoned oil pipeline is encountered during construction, it would be removed in accordance with all applicable DEP regulations and procedures and any release to soil and/or groundwater would be investigated.

Construction Worker Health and Safety Planning
The health and safety of construction workers who may come in contact with identified contaminated materials is regulated under the following laws and procedures:

- **Contaminated Soils and Groundwater.** The HAZWOPER regulations are designed to protect the health and safety of people working with contaminated waste materials. Any work in areas of soil or groundwater contamination would require compliance with these regulations, involving training, medical

205 *Closure Requirements for Underground Storage Tank Systems,* Pennsylvania Department of Environmental Protection, 1 April 1998.

monitoring, and the preparation of a site-specific Health and Safety Plan.

- **Asbestos.** The health and safety of construction workers who may be exposed to asbestos is regulated under 29 CFR 1910.1001 and 29 CFR 1926.58. Any demolition or construction work involving impact to ACM would require compliance under these regulations. Any demolition or asbestos removal activity must also comply with state and local asbestos requirements, such as the Philadelphia Asbestos Code and Regulations.
- **Lead Based Paint.** The health and safety of construction workers involved in renovation or demolition activities that disturb LBP is regulated under 29 CFR 1926.62. Any demolition or construction work involving impact to LBP would require compliance with these regulations.
- **Dust Suppression.** Best Management Practices to prevent the transport of contaminated soils through the air as dust would be implemented during construction, such as soil hydration with water (misting), covered soil stockpiles, and covering trucks transporting contaminated soil with tarpaulins.

4.15.5 Regulatory Coordination and Required Permits

The preparation of this FEIS has been completed through coordination with the PA DEP. On April 2, 2004, the PA DEP Southeast Regional Office was visited to review files relevant to the Project and PA DEP staff members were also interviewed to obtain information regarding the Airport, nearby release sites, and applicable regulations. Construction of Alternative 1 or Alternative 2 may require permits, reviews, or approvals under the regulatory programs listed below.

Environmental Protection Agency Regulations

The following EPA regulations may apply to the construction of either Alternative 1 or Alternative 2.

- The NPDES permit process, under the CWA, requires that a permit be obtained for every point source of pollutants discharged to waters regulated under the CWA. Any excavation dewatering of potentially contaminated groundwater that will be discharged to the storm drain system or a surface water body would require compliance with NPDES.
- EPA regulations require that certain types of ACM be removed or abated before demolition of structures containing ACM.
- The RCRA sets forth regulations for the generation, characterization, storage, treatment (recycling/disposal), and transport of hazardous materials waste (cradle-to-grave) and establishes compliance regulations for underground storage tanks.

Occupational Safety and Health Administration Regulations

The OSHA regulates the protection of worker safety and health at the workplace. The following OSHA regulations may apply to workers involved in construction:

- The HAZWOPER regulations are designed to protect the health and safety of people working with contaminated or hazardous waste materials. Any excavation work in an area of subsurface contamination may require compliance with these regulations, involving training, medical monitoring, and preparing a Health and Safety Plan (HASP).
- The health and safety of workers who may be exposed to asbestos is regulated under 29 CFR 1910.1001 and 29 CFR 1926.58. Any

demolition or construction work involving impact to ACM would require compliance under these regulations.

- The health and safety of workers involved in renovation or demolition activities that disturb LBP is regulated under 29 CFR 1926.62. Any demolition or construction work involving impact to LBP would require compliance under these regulations.

Pennsylvania Department of Environmental Protection Regulations

The PA DEP regulates the protection of the natural environment in the Commonwealth of Pennsylvania, including water, soil, and air. The following PA DEP regulations may apply to construction of either Alternative 1 or Alternative 2:

- **Land Recycling Program (Act 2).** This PA DEP regulation is designed to regulate the voluntary clean up of contaminated sites. The Land Recycling Program, referred to as Act 2, establishes cleanup standards, review procedures, liability release procedures, and financial assistance for the remediation of unused and abandoned industrial sites. Thirteen properties within or adjacent to the Project Area are currently within the Act 2 Program. Work within these release areas will require compliance and coordination with Act 2 provisions.

- **Groundwater Discharge Permit.** The PA DEP Bureau of Watershed Management will require notification if excavation dewatering of contaminated groundwater is to be conducted. The PA DEP will evaluate information regarding the rate of discharge, contaminant concentrations, and dewatering schedule and provide comprehensive conditions for handling potentially contaminated groundwater as a condition within the NPDES Permit.

- **Underground Storage Tanks.** The removal of USTs will require compliance with the Storage Tank and Spill Prevention Act (Act 32, Chapter 245). This regulation sets forth procedures for tank cleaning and removal, site assessment, and waste management during the closure of a UST.

- **Solid Waste Management Act.** The Pennsylvania Solid Waste Management Act (Act 97) regulates landfill, recycling, incinerators, and other solid waste management facilities. Off-site disposal of solid waste, soil, and groundwater materials will require compliance with this regulation.

4.15.6 Summary

Several potential sources of soil or groundwater contamination are within or adjacent to the Project Area, such as the former Hog Island Shipyard; dredge sediment and fill materials; known releases of petroleum products; existing and former above ground and underground storage tanks; underground pipelines; and asbestos-containing asphalt. The nature and extent of contamination is not fully known. Construction activities for either Alternative 1 or Alternative 2 may encounter contaminated soils, sediments or groundwater, or may generate regulated and hazardous wastes. Although there are no feasible means of avoiding areas of potential subsurface contamination or waste materials, mitigation measures may be implemented during construction to mitigate impacts and risks. Preliminary investigations would be undertaken before construction to identify any required hazardous waste and special waste management procedures, specific response actions, dust suppression measures, and to develop construction Health and Safety Plans to protect construction workers who could come into contact with contaminated materials.

4.16 Other Resource Categories

FAA Orders 5050.4A[206] and 1050.1E require that a range of issues be addressed in terms of potential environmental consequences of the Project. This chapter includes a summary of environmental categories not affected by the Project or which require limited evaluations, such as the Coastal Zone Management Program, Wild and Scenic Rivers, Farmland, Energy Supply and Natural Resources, Light Emissions, and Solid Waste.

4.16.1 Coastal Zone Management Program

Coastal zone analyses are conducted in accordance with *Federal Aviation Administration* (FAA) *Order 5050.4A*[207]; *FAA Order 1050.1E*[208]; the National Oceanic and Atmospheric Administration (NOAA) regulations (15 CFR Part 930, Subparts C, D and F); the *Coastal Zone Management Act* (CZMA) *of 1972* (16 USC 1451-1564); and, Pennsylvania's Coastal Zone Management (CZM) Program. The study area for the Coastal Zone Management Program Assessment consists of any area regulated by CZM that may potentially be impacted by the Project.

In 1972, the CZMA established a national program to encourage coastal states to develop and implement a CZM Program. Section 307 of CZMA of 1972, as amended, requires Federal agencies proposing activities within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone to ensure that those activities are conducted in a manner which is consistent, to the maximum extent practicable, with the enforceable policies of the approved state CZM Program.[209] Pennsylvania's CZM Program was approved by the U.S. Department of Commerce in September 1980 under authority of the CZMA of 1972. These programs have regulatory responsibility for the protection of natural resources, including wetlands, wildlife, floodplains, water quality, and special protected areas.

The PA DEP is designated as the lead agency for implementing and administering the Federal CZM Program for the Commonwealth of Pennsylvania. Management authority is primarily based on Commonwealth statutes, including the Dam Safety and Encroachment Act, the Floodplain Management Act, the Clean Stream Act, the Air Pollution Control Act, the Solid Waste Management Act, and the Soil Conservation Law Act.[210] Executive Order 1980-20 directs all Pennsylvania administrative departments and independent boards and commissions to the maximum extent permitted by law, to act consistently with the goals, policies, and objectives of the CZM Program.[211] All the airport property, including the Runway 17 -35 Extension Project Area, is in a designated coastal zone. Therefore, the relationship of the Project to the state's CZM Program, and a determination by the state regarding consistency with the approved state CZM Program is required.[212]

This EIS has considered impacts on coastal areas through the analyses performed under other impact

206 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Federal Aviation Administration, Chapter 5, 8 October 1985.
207 *Ibid.*
208 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures*, Federal Aviation Administration. 8 June 2004.
209 *Pennsylvania Coastal Zone Management Program* (http://www.dep.state.pa.us/river/czmp.htm#factsheets).
210 *Pennsylvania Code 10 Pa.B. 4018, Soil Conservation Law Act*, Subchapter EE adopted by Executive Order No. 1980-20, 22 September 1980.
211 *Ibid.*
212 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures*,. Federal Aviation Administration. 8 June 2004.

categories (see sections on Water Quality, Biotic Communities, Wetlands and Waterways, Endangered and Threatened Species, and Floodplains) using the thresholds established under these respective categories. The FAA will forward a copy of this FEIS to the PA DEP CZM office for review along with a request for consistency determination on the potential impacts of the proposed Project to Pennsylvania's Coastal Zone. The CZM Program Manager will review this FEIS for consistency with the Pennsylvania CZM Program and respond to FAA with a determination within 30 days of receipt of the consistency request.

4.16.2 Wild and Scenic Rivers

Wild and Scenic Rivers, as defined by the Wild and Scenic Rivers Act of 1968 (the "Act") (Public Law 90-542 as amended), are defined as "free flowing and possessing '…outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values."[213] According to the Act, the Department of the Interior (DOI) maintains a National Inventory of river segments, which qualify for inclusion in the National Wild and Scenic River System. The study area for Wild and Scenic Rivers includes those waterways adjacent to the Airport that could be directly or indirectly affected by the Proposed Project.

The portion of Delaware River in the vicinity of the Philadelphia International Airport is not a Wild and Scenic River segment as defined by this Act. The designated Wild and Scenic River portion of the Delaware River ends approximately 32.5 miles northeast (upstream) of the Airport.[214] Therefore, the Project will not adversely affect a listed segment within the National Wild and Scenic River System.

The segments of the Delaware River that are included in the National System are:

- **Upper Delaware River, New York and Pennsylvania.** The Upper Delaware River stretches 73.4 miles along the New York and Pennsylvania border and includes the East and West branches below Hancock, New York, to the existing railroad bridge immediately downstream of Cherry Island in the vicinity of Sparrow Bush, New York.
- **Middle Delaware River (Delaware Water Gap), Delaware, New York, Pennsylvania, and New Jersey.** This segment commences where the river crosses the northern boundary of the Delaware Water Gap National Recreation Area to the point where the river crosses the southern boundary of the recreation area.
- **Lower Delaware River, New Jersey and Pennsylvania.** This segment consists of portions of the Delaware River and tributaries from river mile 193.8, north of the city of Easton, Pennsylvania, to the town of Washington Crossing, Pennsylvania.

4.16.3 Farmland Soils

In 1981, the United States Department of Agriculture (USDA) passed the Farmland Protection Policy Act (FPPA) to ensure that significant agricultural lands are protected from being converted to non-agricultural uses during Federal Programs. The FPPA regulates four types of farmland soils: prime farmland, unique farmland, farmland of statewide importance, and farmland of local importance.

The study area for the Project consisted of those federal, state or locally listed farmland soils potentially located within the Project Area (those soils that would be disturbed by construction activities). According to the USDA's NRCS

213 *Federal Aviation Administration Order 5050.4A, Airport Environmental Handbook*, Paragraph 47e(15)(c), Federal Aviation Administration, 8 October 1985.
214 *Delaware River Basin Commission*, (http://www.state.nj.us/drbc/wild_scenic_map.htm).

Delaware and Philadelphia Counties Soil Survey, only three soils are within the PHL Project Area. These three identified soils (Marsh and Urban Land in Bucks and Philadelphia Counties and Tidal Marsh in Chester and Delaware Counties) are not Prime Farmland Soils or Farmland Soils of Local or Statewide Importance as classified by the NRCS and Pennsylvania State College of Agricultural Sciences. Therefore, the Runway 17-35 Extension Project will not adversely affect a designated Prime Farmland or Unique Farmland designated area.

4.16.4 Energy Supply and Natural Resources

The effects of airport projects on energy supply and natural resources are related to the amount of energy required for stationary facilities, such as terminal buildings and airfield lighting, and for mobile uses, such as aircraft, aircraft GSE, and motor vehicles. *FAA Order 5050.4A*, the *Airport Environmental Handbook* requires that these energy uses be considered to identify any proposed substantial changes in energy or resource consumption. *Order 5050.4A* provides the following criteria for identifying substantial changes:

- Proposed major changes in stationary facilities must be examined if they would have a measurable effect on local energy supplies.
- Increased consumption of fuel by aircraft must be evaluated if the time required for aircraft operations, such as queuing and delays, would increase substantially in the absence of offsetting efficiencies in operational procedures.

Increased consumption of fuel by motor vehicles must be examined if access time would increase substantially or there would be a substantial change in movement or traffic patterns.

The study area for this assessment of Energy Supply and Natural Resources consisted of the Philadelphia International Airport property boundary, within which the Proposed Project has the potential to affect energy supply or natural resources.

Stationary Facilities

Alternatives 1 and 2 would result in a minor increase in electricity usage from the increased numbers of runway lights required for the additional runway lengths. Based on a comparison of relative runway lengths at PHL, Alternative 1 would increase the electricity usage for lighting Runway 17-35 by about three percent, while Alternative 2 would increase the electricity usage for lighting Runway 17-35 by about five percent, compared to the No-Action Alternative. As these percentage increases apply to runway lighting only, the Project-related increase in PHL's total electricity usage would be much less than these percentages.

The *Draft Energy Systems Master Plan Report*[215] presents an analysis of PHL's electricity usage, the associated infrastructure, and the regional electric utility system. That analysis indicates that the increased runway lighting associated with Alternatives 1 and 2 would not have a measurable effect on local electricity supplies. None of the Project alternatives would change energy consumption for other stationary facilities, such as the terminal buildings.

Aircraft

Alternatives 1 and 2 would reduce airside delays and the associated aircraft fuel consumption compared to the No-Action Alternative. With Alternatives 1 and 2, the reductions in aircraft fuel consumption during delays are estimated to more than offset the increased fuel needed to taxi the incremental additional distances to the runway ends. Based of the reduction in airside delays, the net decrease in aircraft fuel consumption for landing and takeoff cycles (LTOs) at

215 *Philadelphia International Airport, Draft Energy Systems Master Plan Report*, DMJM+Harris Energy Systems, 14 January 2002.

PHL is estimated to be about six percent[216] with Alternative 1 and about two percent with Alternative 2 in 2007, compared to the No-Action Alternative. In 2015, the net decrease in aircraft fuel consumption is estimated to be about 10 percent with Alternative 1 and about 15 percent with Alternative 2. Alternatives 1 and 2 also would lead to negligible increases in airside fuel consumption by ground service vehicles for runway snow plowing, deicing, and general maintenance. The Project would not affect fuel usage by general ground service equipment.

Motor Vehicles

None of the Project alternatives would change ground vehicle access times. Alternatives 1 and 2 would result in negligible changes in vehicle-miles traveled (VMT) and fuel consumption from the closure of SR 291 and the associated alterations in roadways and traffic patterns. The net change in motor vehicle VMT and fuel consumption is estimated to be much less than 0.1 percent[217] with either Alternative 1 or Alternative 2, compared to the No-Action Alternative, in both 2007 and 2015. While petroleum fuels are ultimately a finite resource, these products are not in short or critical supply.

Natural Resources

FAA Order 5050.4A states that use of natural resources, other than for fuel, need be examined only if the action necessitates the use of materials that are unusual or in short supply. None of the Project alternatives would involve materials that are unusual or in short supply for routine operations. Construction of the improvements proposed with Alternatives 1 and 2 would require only conventional materials, products, and resources, none of which is unusual or in short supply.

216 Percentages based on *Air Quality Technical Report* located in DEIS Appendix A-2.
217 *Ibid.*

In summary, none of the Project alternatives would result in significant impacts on energy supplies or natural resources and, accordingly, no mitigation is required to address such impacts.

4.16.5 Solid Waste Impacts

The study area for the Solid Waste Impacts Assessment consisted of those areas to be potentially disturbed during construction of the Project and in which solid waste could be generated. The improvements will not generate the need for additional solid waste collection, control, or disposal other than that from construction. The section below describes construction impacts of proposed Alternatives 1 and 2.

Any hazardous, contaminated or special wastes generated through excavation of contaminated soils, dewatering of contaminated groundwater, and demolition activities, may require special management procedures as described below. The Pennsylvania Solid Waste Management Act (Act 97) regulates landfill, recycling, incinerators, and other solid waste management facilities. Off-site disposal of solid waste, soil, and groundwater materials from construction of either Alternative 1 or Alternative 2 will require compliance with this regulation.

Contaminated Soils and Sediment Management.

Contaminated soils, such as urban fill materials, dredge sediment materials, drainage channel sediment, and petroleum-impacted soil may be encountered during excavation. These excavated soils may require special management and recycling or disposal during construction. Excess soil materials that are associated with regional background conditions (urban fill, dredge sediment) may be able to be returned to excavations to the extent feasible and in compliance with PA DEP's Management of Fill Policy. Reuse of excess soils associated with background conditions may be able to be accommodated within the Airport and/or stockpiled with the existing soil stockpiles on airport property. A detailed soil management plan would be prepared and reviewed by the PA DEP before construction.

Some contaminated soil that may require excavation because of contamination would require removal from the property in accordance with PA DEP Act 2 regulations. Excavated soils would be appropriately stockpiled, further characterized through sampling and analysis, and transported off-site for recycling (asphalt batch plant, reuse as daily cover in a landfill), treatment, or disposal in accordance with RCRA regulations, PA Solid Waste Disposal Regulations, and PA DEP's Management of Fill Policy.[218]

Contaminated Groundwater Management

Areas of excavation encountering groundwater may be dewatered (pumping of accumulated groundwater) during construction. Any construction dewatering should be designed to minimize the duration and amount of pumping required to achieve the desired result. Design approaches could include closely spaced well points, construction staging, or other applicable methods. If excavation dewatering is to occur in an area of groundwater contamination, the PA DEP Bureau of Watershed Management is likely to require notification. PA DEP will evaluate information regarding the rate of discharge, contaminant concentrations, and dewatering schedule and provide comprehensive conditions for handling potentially contaminated groundwater as a condition within the NPDES Permit. Treatment or off-site disposal of contaminated groundwater (such as a permitted discharge to POTW) may be required.

Demolition Waste

Waste from the demolition of the Exxon Service Station, portions of SR-291, the Economy Parking Lot and other areas, will include concrete, metal, asphalt, brick, and other building materials. These materials must be disposed of in accordance with PA DEP solid waste regulations. Other special waste, including PCB-containing electrical equipment (fluorescent light ballasts, transformers), mercury-containing fluorescent light bulbs, and miscellaneous containers of oil or hazardous materials, if present, will require removal and recycling/disposal.

Asbestos

A survey of the Exxon Station for suspect ACM will need to be performed in accordance with NESHAPS procedures. Sampling procedures include the collection of the AHERA[219]-required number of samples depending on the type and quantity of suspect material. Samples of all identified suspect friable (easily crumbled or crushed to powder by hand pressure) and non-friable ACM will need to be collected. Before any planned demolition of the buildings, all ACM must be properly managed under the supervision of a Pennsylvania-licensed Asbestos Abatement Contractor pursuant to all applicable Federal, state and local asbestos abatement regulations.

In addition, it is possible that asbestos is present in asphalt materials in the aircraft operation areas within the Project Area. A survey for the presence of asbestos in all asphalt areas to be removed should be performed. During construction activities, any identified asbestos-reinforced asphalt must be properly managed under the supervision of a Pennsylvania-licensed Asbestos Abatement Contractor.

218 *Management of Fill Policy, Document No. 258-2182-773*, Pennsylvania Department of Environmental Protection, 24 April 2004.

219 *Asbestos Hazardous Emergency Response Act*, Title 20, Chapter 52, Sec. 4011.

Lead-Based Paint

The presence of lead-based paint within the buildings to be demolished primarily represents a construction worker health and safety exposure issue. The results of pre-demolition lead paint inspection will be provided to demolition contractors to document the locations of lead paint. Work practices will be designed to prevent exposure of lead dust (sawing, cutting, and sanding) and lead fumes (torch cutting, and welding) to contractors. Under certain circumstance, lead-painted building components may require segregation for disposal as a hazardous waste because of leachable lead concentrations within the specific building components.

4.16.6 Light Emissions and Visual Impact

According to *FAA Order 1050.1E,*[220] FAA must consider the extent to which any lighting associated with any action will create an annotance among people in the vicinity or interfere with their normal activities. The lighting associated with the two alternatives presented in this FEIS are described below.

A variety of lighting systems are required by FAA at airports that operate 24 hours a day in all weather conditions. Those lighting systems are designed to permit aircraft to operate safely under all weather conditions, both day and night. Airfield and landside lighting systems at PHL include:

- Rotating beacon
- Taxiway edge and centerline lights
- Runway edge and centerline lights
- Runway threshold lights
- Runway end identifier lights (REIL)
- Precision approach path indicator (PAPI) lights
- Runway approach light system (ALS)
- Lighted runway and taxiway signs
- Obstruction lights
- Aircraft ramp/apron floodlights
- Terminal building lighting
- Parking lot and access road lighting

The existing Runway 17-35, as well as Taxiways D and E, are lighted in compliance with appropriate FAA advisory circulars and design guides, and have the specific lighting systems listed below.

- Runway 17-35:
  - Runway edge lights (high intensity)
  - Runway threshold lights
  - Precision approach path indicator (PAPI) lights
  - Lighted runway signs
- Runway 17 only:
  - Medium intensity approach light system with runway alignment indicator lights (MALSR)
- Runway 35 only:
  - Runway end identifier lights (REIL)
- Taxiways D and E:
  - Taxiway edge lights
  - Lighted taxiway signs

Both alternatives would extend Runway 17-35 as well as Taxiways D and E, and would also require extending the various lighting systems associated with the runway and taxiways. The Proposed Project will not involve installation of any new or expanded lighting systems.

Alternative 1 would extend Runway 17, as well as Taxiways D and E, to the north by 640 feet. The existing lighting systems for each facility would also be relocated or extended by 640 feet. All of the lighting systems, with the exception of portions of the MALSR to Runway 17, discussed below, would remain on airport property. They would not create any additional light emissions on residential land uses because I-95 is lighted, elevated above the runway,

220 *Federal Aviation Administration Order 1050.1E, Environmental Impacts: Policies and Procedures, Federal Aviation Administration*, 8 June 2004.

and is located between the airport and the nearest residential area approximately 2,000 feet to the north.

The MALSR to Runway 17 is a medium intensity approach light system that is a required component of the precision instrument landing system (ILS) to the runway. The MALSR provides visual guidance to approaching aircraft during poor weather conditions, and at night, by clearly indicating the location of the runway. The MALSR is comprised of steady-burning white lights (each one is equivalent to a 150-watt floodlight) on top of seven stations (poles) located along the extended runway centerline, each station separated by 200 feet. At the fifth station there are two additional stations – one on either side of the centerline station. In addition to the steady-burning lights, there are also runway alignment indicator lights (RAILs—sequenced flashing lights) on top of five stations, and each of those stations is separated by 200 feet. The length of the MALSR is a total of 2,400 feet from the Runway 17 threshold to the farthest light station.

Alternative 1 would require moving the existing Runway 17 MALSR to the north by 640 feet. Seven of the nine steady-burning light stations would remain on airport property, and two of the steady-burning light station would be within the I-95 right-of-way north of the runway. The farthest station in the extended MALSR would be located adjacent to the Hertz Rental Car facility on the north side of Bartram Avenue. That light station, a sequenced flashing light, would be 1,500 feet from the nearest residential area. It is not anticipated that the relocated light station would cause annoyance or interfere with normal activities because:

- it is located 1,500 feet from the nearest residential area;
- the elevation of the light station would be 46.3 feet above ground level;
- there is high ambient lighting from the rental car facility, adjacent parking lots, and I-95;
- the SEPTA railroad tracks are also between the light station and the residential area.

Although Alternative 2 differs from Alternative 1 in a number of respects, including the use of displaced thresholds, the Runway 17 MALSR would be relocated to the same location as shown in Alternative 1.[221] As a result, is not anticipated that the relocated light station would cause annoyance or interfere with normal activities for the same reasons that were listed above.

4.17 Construction Impacts

As required by *FAA Order 1050.1E*,[222] this section discusses general Project-related construction activities and mitigation and minimization measures to be taken to reduce environmental impacts during the construction of either Alternative 1 or Alternative 2. This Project has incorporated project specifications in accordance with the provisions of *Advisory Circular 150/5370-10A, Standards for Specifying Construction of Airports*.[223]

The total period for the phased construction of the runway and taxiway improvement components of the Preferred Alternative would be approximately 1.5 years, beginning in mid-2005 and extending through the end of 2006. The first full year of operation of the proposed extended Runway 17-35 would be 2007.

221 *Proposed Lighting and Navigational Aid Plan – End Alternative 2,* DMJM Aviation,19 March 2004.
222 *Federal Aviation Administration Order 1050.1E, National Policy,* United States Department of Transportation, Appendix A, Section 5, 8 June 2004, p. A-18.
223 *Federal Aviation Administration Advisory Circular 150/5370-10A, Standards for Specifying Construction of Airports,* Federal Aviation Administration, Washington, DC, 30 January 2001.

Construction activities would begin with installing erosion and sedimentation controls, followed by demolition, consisting of removing pavement, pipes, structures, topsoil, fences and lightpoles. Demolition would include removing portions of SR 291, the Economy Parking Lot and the Exxon Service Station. Clearing would be minimal, as most of the site is paved or grass. Utility work would include relocating utilities, installing electrical ductbanks, and constructing drainage systems. Earthwork would follow, including grading and cutting the pavement box. Since the site is relatively flat, there would be no deep cuts or fills, or steep slopes. Stone placement would follow the earthwork. Electrical work would be concurrent and would include conduit runs, manholes and handholes, lights, signage, and power and communication feeds to the navigational aids. Construction would end with paving the runway and taxiways.

Standard construction equipment would be used for the Project. Earthwork would be performed by bulldozers and graders, with hauling performed by tri-axle trucks and dump trucks. Utility work would be performed by trenchers, backhoes, and excavators. Pavement removal would be done by milling and by using bulldozers. Paving would be performed using asphalt pavers and rollers. A list of construction equipment is provided in Attachment G of DEIS Appendix A-2, *Air Quality*. The service roads and parking lot add-ons would be constructed concurrently with the taxiway and runway work. After paving, the pavement would be marked and the runway would be grooved. The infields would be seeded following asphalt placement. The parking lot modifications would include installing bus shelters, site lighting, and new fencing.

Alternatives 1 and 2 differ primarily in:

- The length of the runway pavement extension and associated taxiways at the northern end of the Runway 17-35;
- The use of the EMAS for the RSA at the northern end of Runway 17-35; and
- The displaced threshold at the south end of the runway.

When comparing construction impacts between the Alternative 1 and Alternative 2, it is estimated that Alternative 2 would involve a slightly longer construction period to complete paving the additional 500 feet of runway and the EMAS RSA on Runway 17. A greater quantity of fill will be added to the existing ground surface at the end of Runway 35 for Alternative 1 than Alternative 2 because the runway end in Alternative 1, without a displaced threshold, is required to be at a higher elevation.
This is an aggressive construction phasing schedule that coincides with other airport construction projects and therefore represents a conservative scenario for construction-related environmental impacts. These other airport construction projects described in the Airport's 5-year plan include:

- Expanding the airport Employee Parking Lot;
- Extending the Runway 9R Safety Area;
- Rehabilitating Runway 9R/27L; and
- Rehabilitating various cargo aprons, terminal aprons, and taxiways.

Construction of the runway and taxiway improvement components of the proposed Project would occur on the existing airfield of PHL, while airport operations are still underway. Construction of the proposed Project would be managed to minimize construction dust and noise from heavy equipment traffic, air and water pollution, and other impacts.

Resources that may be affected during the short-term construction period of either Alternative include noise, air quality, water quality, hazardous materials and contaminated soils, biotic communities, threatened and endangered species, wetlands, and surface transportation. Those resources that are not expected to be affected by construction of either Build Alternative include Section 4(f) Resources, Compatible Land Uses, and Cultural Resources (Historic, Architectural, and Archaeological Resources). The sections below describe the Project-related minimization and mitigation measures for each potentially affected resource in greater detail.

4.17.1 Noise

An increase in Project-related noise levels would occur during the construction of the proposed improvements to Runway 17-35 with both of the Build Alternatives. Construction noise differs from that generated by aircraft operations because of differences in the spectral and temporal characteristics of the noise. The degree of noise impact during construction will be a function of the number and types of equipment being used, and the distances between the construction equipment and the noise-sensitive areas. Overall construction noise levels are governed primarily by the noisiest pieces of equipment operating at a given time.

Construction noise is considered to be a temporary impact, since the duration of impact is finite. Construction activities related to Runway 17-35 extension are scheduled to begin in mid-2005 and would extend through the end of 2006.

Construction noise impact can be minimized through relatively simple and inexpensive measures that can be incorporated into the construction contract. The following construction noise provisions may be considered for this Project:

- All construction equipment powered by an internal combustion engine would be equipped with a properly maintained muffler.
- Truck idling will be kept to a minimum.
- Construction equipment and vehicles would be routed in areas that will cause the least disturbance to nearby receptors where possible.
- Any air-powered equipment would be fitted with pneumatic exhaust silencers.
- Stationary equipment powered by an internal combustion engine would not be within 150 feet of noise-sensitive sites without portable noise barriers placed between the equipment and the residences. Portable noise barriers most likely would be constructed of plywood or tongue and groove boards and would have a sound absorbing treatment on the surface facing the equipment; however, the nearest residences are approximately 2,000 feet away and north of I-95. This mitigation measure is therefore not likely to be implemented.

Generally, construction activity will occur during night time hours. Construction noise is not anticipated to affect residents, as the nearest residence is approximately 2,000 feet north of the work area and separated from the construction area by I-95. Since Runway 35 is generally not used at night, there will be no changes in the runway utilization. Disruptions to aircraft traffic from runway and taxiway closures are not expected to occur, and, thus, there would be no increases in aircraft noise related to the construction activities.

4.17.2 Air Quality

To address the NEPA requirement to disclose Project-related impacts and to comply with the General Conformity Rule,[224] the emissions of VOC,

224 *40 Code of Federal Regulations 93, General Conformity Rule, Subpart A*, United States Environmental Protection Agency.

NOx, CO, SO_2, PM10, and PM2.5 from the construction of the Project were estimated for each Build Alternative including VOC emissions from asphalt paving. Emissions were calculated for each calendar year during which construction activities would occur. See DEIS Appendix A-2 - *Final Air Quality Analysis Protocol* in the *Air Quality Technical Report* for the detailed methodology.

Emissions from several categories of construction activities were evaluated. These include emissions from on-site construction equipment (pavers, backhoes, bulldozers, and graders); haul vehicles (asphalt trucks and dump trucks); construction company worker vehicles commuting to and from the site; and asphalt paving. Emissions from these activities were identified separately for both of the 2005 and 2006 construction years. Table 4.17-1 summarizes the construction-related emissions for VOC, NOx, CO, SO_2, PM10, and PM2.5 for each alternative. The maximum annual VOC emissions from construction activities for Alternative 1 were estimated to be 1.76 tons per year (tpy) and to occur in 2006. The VOC emissions in 2005 were estimated to be 1.29 tpy. For Alternative 2, the maximum annual VOC emissions from construction activities were estimated to be 1.76 tpy in 2005. The VOC emissions in 2006 for Alternative 2 were estimated to be 2.00 tpy.

The maximum annual NOx emissions for Alternative 1 were estimated to be 13.35 tpy and are expected to occur in 2005. The NOx emissions in 2006 were estimated to be 11.95 tpy. For Alternative 2, the maximum annual NOx emissions from construction activities were estimated to be 15.39 tpy and to also occur in 2005. The NOx emissions in 2006 for Alternative 2 were estimated to be 13.28 tpy. Emissions of CO, PM10, and PM2.5 exhibit similar characteristics to the VOC emissions; and SO_2 emissions follow the same trend as NOx emissions. The emission inventory analysis described in DEIS Appendix A-2 (*Air Quality)* demonstrates that construction emissions would not exceed the General Conformity *de minimis* threshold of 25 tpy of VOC or NOx for any year.

Mitigation Measures

Construction activities may result in short-term impacts on air quality including direct emissions from construction equipment and trucks, fugitive dust emissions from site demolition and earthwork, and increased emissions from motor vehicles and haul trucks on the on-site and off-site roads from traffic disruption. These impacts would be temporary, and would affect only the immediate vicinity of the construction site. A number of regulations and guidelines require mitigation of these potential impacts. All construction would be performed in accordance with the provisions of *FAA Advisory Circular 150/5370-10A*, *Standards for Specifying Construction of Airports*, Change 13, Part 156. [225]

The Sponsor would comply with PA DEP regulations including the prohibition against fugitive emissions which requires that any person responsible for sources that have fugitive emissions take all reasonable actions to prevent particulate matter from becoming airborne, as described in 25 PA Code Section 123.1.

Emissions from Project-related construction equipment and trucks are expected to be insignificant with respect to compliance with the NAAQS. Direct emissions from construction equipment are not expected to produce adverse effects on air quality, provided that all equipment is properly operated and maintained, and excess idling of engines is prohibited. Implementation of proper traffic management techniques during the construction period can mitigate any potential adverse effects from construction vehicles. These

225 *Federal Aviation Administration Advisory Circular 150/5370-10A, Standards for Specifying Construction of Airports*, Change 13, Part P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control. U.S. Department of Transportation, Washington, DC, 30 January 2001.

techniques may include specifying truck routes, establishing staging areas for equipment and materials, designating parking areas for construction workers vehicles, providing traffic control at the site accesses, and minimizing the number of construction vehicles during peak airport traffic periods.

Fugitive dust emissions could occur during ground excavation, material handling and storage, movement of equipment at the site, and transport of material to and from the site. Fugitive dust could be a problem during periods of intense activity and

Table 4.17-1 Pollutant Emissions from Construction Activities by Alternative (tons per year)

Pollutant	2005		2006	
	Alternative 1	Alternative 2	Alternative 1	Alternative 2
Volatile Organic Compounds				
Construction Activities	1.29	1.49	1.28	1.43
Asphalt Paving[1]	None[2]	None	0.48	0.57
Total VOC Emissions	1.29	1.49	1.76	2.00
Nitrogen Oxides				
Construction Activities	13.35	15.39	11.95	13.28
Asphalt Paving	NA[3]	NA	NA	NA
Total NOx Emissions	13.35	15.39	11.95	13.28
Carbon Monoxide				
Construction Activities	7.81	8.94	8.08	8.97
Asphalt Paving	NA	NA	NA	NA
Total CO Emissions	7.81	8.94	8.08	8.97
Sulfur Dioxide				
Construction Activities	1.75	2.02	1.38	1.53
Asphalt Paving	NA	NA	NA	NA
Total SO_2 Emissions	1.75	2.02	1.38	1.53
Particulate Matter – 10 Microns				
Construction Activities	1.00	1.16	0.87	0.97
Asphalt Paving	None	None	5.88	6.94
Total PM10 Emissions	1.00	1.16	6.75	7.91
Particulate Matter – 2.5 Microns				
Construction Activities	1.00	1.16	0.87	0.97
Asphalt Paving	None	None	5.88	6.94
Total PM 2.5 Emissions	1.00	1.16	6.75	7.91

Source: KM Chng Environmental Inc., 2004.
1 Asphalt paving emissions are the emissions from the hot mix pavement itself. Emissions from construction equipment (pavers and rollers) are included in the construction activities category.
2 None means that there are no emissions from the asphalt paving during 2005. All emissions occur in 2006.
3 NA = Not Applicable. Asphalt pavement does not emit this pollutant.

would be aggravated by windy and/or dry weather conditions. BMPs, such as wetting, paving, landscaping, or chemically treating exposed earth areas, covering dust-producing materials during transport, limiting dust-producing construction activities during high wind conditions, and providing street sweeping and tire washes for trucks leaving the site, would be implemented to minimize the impacts from fugitive dust. The air quality impacts during construction activities can be further reduced by retrofitting existing construction equipment with emission controls, keeping truck idling to a minimum and using newly-certified construction equipment that comply with the tiered emission standards listed in 40 CFR Part 89 §89.112.[226]

4.17.3 Water Quality

Temporary water quality impacts potentially caused by construction activities would be minimized by implementing sediment and erosion controls and dewatering during construction of the Project. Permanent impacts would be minimized and mitigated by the measures described in Section 4.7. Construction-period Sediment and Erosion Controls and Dewatering are described in greater detail below.

Sediment and Erosion Control

The construction of the runway extensions, the taxiway extensions, and the new RSAs, could result in soil erosion and deposition of sediment in airport waterways. Both alternatives would disturb greater than one acre of area and therefore would require a NPDES Stormwater General Permit for Construction Activities.

226 *40 Code of Federal Regulations §89.112. Certification Guidance for Engines Regulated Under 40 CFR Part 89 (Nonroad CI Engines)*, Engine Compliance Programs Group, Office of Transportation and Air Quality, United States Environmental Protection Agency, March 1999.

Soils would be tested for contamination prior to construction and excavation. Exposed soil would be controlled to reduce the potential for erosion. Mitigation measures such as those listed below would be implemented:

- Dry soil would be watered to prevent dust production;
- Any highly erosive soils would be stabilized and reinforced with structural methods, such as erosion control blankets, as necessary;
- Slopes would be reinforced using a hydroseed mix with a resin base, native vegetation, or other approved methods;
- During excavation and dewatering, sediment control methods would be employed, such as silt bags to catch silt and sediment, or temporary sediment basins for areas that would receive a large portion of construction runoff from exposed soil; and
- Existing catch basins in the Project Area would be protected with sediment traps to prevent accumulation of sediment in the structure.

Details of the sedimentation and erosion control methods would be included in the SWPPP for construction activities required by the NPDES Construction General Permit.

Dewatering

Construction would likely require dewatering in some areas. Dewatering fluids are typically filled with silt and sediment, which can be harmful to surface waters, if directly discharged. Dewatering can also result in pollutants reaching the surface if the groundwater is contaminated. Appropriate mitigation measures would be used and any applicable permits would be obtained prior to construction activities. It is likely that a Philadelphia Water Department Permit authorizing discharge to the Southwest Water Pollution Control Plan would be obtained and dewatering effluent would be discharged to this POTW.

In past construction projects, PHL has encountered iron levels in dewatering discharge that are higher than the allowable discharge limit to surface waters. It is likely that iron levels may be high in dewatering discharge associated with the Runway 17-35 Extension Project construction. Erosion and sediment controls, and dewatering devices, would be designed to specifically address iron precipitation.

4.17.4 Biotic Communities

Construction impacts from Alternative 1 or Alternative 2 may result in minor temporary impacts to biotic communities. Noise from the construction of Alternative 1 and Alternative 2 may temporarily affect wildlife found within the Project Area. Controls for water pollution and soil erosion would be implemented during construction to minimize or avoid disturbance to fish and wildlife habitat. SWPPP control plans would be implemented as part of the proposed action.
In the absence of mitigation, temporary impacts associated with construction could potentially affect waterways within the Project Area and Study Area. Sediment from earthmoving activities, which could run into the waterways during storm events, would affect water quality by increasing siltation, decreasing benthic macroinvertebrate activity and survival, and decreasing dissolved oxygen within the waterway. An increase in pollutants entering the stream during storm events may also affect water quality. Dust associated with construction may precipitate into the waterway, affecting water quality. These impacts would be temporary and transient and would not result in significant adverse effects to biotic communities. Mitigation would be implemented as described in Section 4.17.3.

4.17.5 Threatened and Endangered Species

Both build alternatives may temporarily impact the State Threatened red-bellied turtle as a result of temporary changes to water quality within the SEPD-2 resulting from increased erosion and sedimentation during construction. Erosion and Sedimentation plans would be implemented as part of the proposed action.

Timing of construction would be important for the protection of the State Threatened red-bellied turtle. During the red-bellied turtle breeding and egg laying seasons, May through July, construction may impact the turtles, their aquatic habitat and their nesting habitat. Preventative measures to minimize disturbance to the turtles during construction include:

- Employing BMPs, such as sediment traps and silt fences, to prevent water quality degradation, minimize water quality and habitat quality losses;
- Timing construction of the culvert in SEPD-2 to avoid the period of highest turtle activity (May – July);
- Monitoring during construction;
- Temporarily relocating turtles if necessary; and,
- Erecting exclusion fencing to protect the red-bellied turtles.

Further coordination with the regulatory agencies will continue during the Project design to determine appropriate mitigation measures for unavoidable temporary impacts.

4.17.6 Wetlands and Waterways

In the absence of mitigation, impacts associated with construction could potentially affect waterways by the discharge of sediment from earthmoving activities, which could run into the waterways during storm events, and could affect water quality by increasing siltation, decreasing benthic macroinvertebrate activity and survival, and decreasing dissolved oxygen within the waterway. An increase in pollutants entering the stream during storm events may also affect water quality. Airborne dust associated with construction may precipitate into the waterway, further affecting water quality. These impacts would be temporary and transient and would not result in significant adverse impacts to wetlands or waterways. Construction BMPs as described in Section 4.17.3 would be implemented to avoid and mitigate any short-term impacts.

4.17.7 Surface Transportation

It is anticipated that all construction activity would be contained within or directly adjacent to the Airport, except for the proposed Bartram Avenue intersection improvements. Construction vehicles would access the airport property on designated haul routes such as SR 291, Island Avenue and Hog Island Road, and would not impact local residential streets near PHL.

Construction traffic from the Project would not add significantly to the existing volume of traffic. No temporary impacts due to additional or rerouted traffic resulting from construction activities are expected. Minor construction impacts are expected to occur during the implementation of intersection/ signal improvements at Bartram Avenue and Tinicum Boulevard. These temporary impacts would be mitigated by controlling traffic signal timing changes, traffic signal phasing changes, lane designation changes (within existing pavement), and physical changes to the intersection that may require widening and/or right-of-way.

4.17.8 Hazardous Materials and Contaminated Soils

The implementation of either Build Alternative has the potential to encounter subsurface contamination or waste materials existing within the disturbed areas. The sections below describe methods to minimize adverse impacts from hazardous materials and contaminated soils during construction. Additional detailed information is provided in DEIS Appendix A-11.

Preliminary Investigations

Many of the potential or confirmed areas of concern within the Project Area include soil and/or groundwater contamination. Because limited sampling and analysis of soil or groundwater has been performed within the limits of the Project Area, the nature and extent of contamination is not known. To further define the level, type, locations and detail related to mitigation measures summarized below, subsurface investigations may be performed during the final design process to collect soil and groundwater samples for laboratory analysis. Identification and characterization of each contamination area prior to construction would reduce potential construction schedule delays, logistical problems, and cost concerns of managing the contamination concurrently with construction activities.

Contaminated Soils Management

Contaminated soils, such as urban fill materials, dredge sediment materials, drainage channel sediment, and petroleum-impacted soil may be encountered during excavation. These excavated soils may require special management and recycling or disposal during construction. Excess soil materials that are associated with regional background conditions (urban fill, dredge sediment) may be able to be returned to excavations to the extent feasible and in compliance with PA DEP's Management of Fill Policy. Reuse of excess soils associated with background conditions may be able to be accommodated within the Airport and/or stockpiled with the existing soil stockpiles on airport property. A detailed soil management plan would be prepared and reviewed by the PA DEP before construction.

Soil contamination is anticipated to be located within the upper 10 to 15 feet of the soil. Excess soil materials that are associated with regional background conditions (urban fill, dredge sediment) may be able to be returned to excavations to the extent feasible. Reuse of excess soils associated with background conditions may be able to be accommodated within the Airport and/or stockpiled with the existing soil stockpiled in the vicinity of Runway 8-26. Any stockpiled soil would be stabilized by seeding, consistent with current Airport practices.

Although it is possible that contaminants in fill materials exceed applicable PA DEP cleanup standards, these concentrations are likely considered by the PA DEP to represent a regional background condition. No further or widespread remedial activities are anticipated if off-site management of excess fill materials generated during construction is necessary.

Contaminated soil that may require excavation due to contamination that is not associated with regional background conditions would require removal from the property in accordance with PA DEP Act 2[227] regulations. The PA DEP has promulgated standards regulating the on-site reuse of fill materials. Excavated soils would be properly stockpiled, further characterized through sampling and analysis, and transported off-site for recycling (e.g., asphalt batch plant, reuse as daily cover in a landfill), treatment, or disposal in accordance with RCRA regulations[228] and with PA DEP's Solid Waste Management Act regulations.

Evidence of petroleum and urban fill has been identified within Church Creek (CMC-3 and CMC-4) and other drainage ditches (SEPD-2). Planned culvert construction work may encounter sediments that contain elevated concentrations of petroleum-related compounds, PAHs, and metals.

Contaminated Groundwater Management

It is possible that areas of contaminated groundwater would be encountered during excavation work for either Build Alternative. Potential contaminants that may be encountered include petroleum-related compounds, PAHs, VOCs, and metals, and VOCs. Areas of excavation encountering the groundwater table may be dewatered (pumped of accumulated groundwater) during construction. If excavation dewatering is to occur in an area of groundwater contamination, the PA DEP Bureau of Watershed Management may require notification. PA DEP will evaluate information regarding the rate of discharge, contaminant concentrations, and dewatering schedule and provide comprehensive conditions for handling potentially contaminated groundwater as a condition within the NPDES Permit. Treatment or off-site disposal of contaminated groundwater may be required.

227 *Land Use Recycling Program (Act 2).* Pennsylvania Department of Environmental Protection.

228 *Resource Conservation and Recovery Act.* Pennsylvania Department of Environmental Protection.

Management of Asphalt and Demolition Debris

For either Build alternative, asphalt and demolition debris would be generated by the demolition of SR 291, the Economy Parking Lot, and the Exxon Service Station. Proper waste management of these materials is required.

Waste from the demolition of the Exxon Service Station, portions of SR 291, the Economy Parking Lot and other areas would include concrete, metal, asphalt, brick, and other building materials. Disposal of these materials must be conducted in accordance with PA DEP solid waste regulations and guidance. In addition, other special waste, including PCB-containing electrical equipment (fluorescent light ballasts, transformers), mercury-containing fluorescent light bulbs, and miscellaneous containers of oil or hazardous materials would require removal and recycling or disposal.

Underground Storage Tank Removals

Fourteen unknown status fuel underground storage tanks may be present within or in the vicinity of the Project Area. Should a UST be encountered during construction activities, assessment and removal would be required. Closure of six USTs at the Exxon Service Station and any unknown USTs encountered during construction would be performed in accordance with the Pennsylvania Storage Tank and Spill Prevention Act (Act 32, 25 PA Code §245). This regulation outlines procedures including hazard recognition and abatement, removal and handling of vapors and product from the UST system, removing the UST system from the ground, excavating soil from around the UST system, on-site staging of excavated soil, waste management and disposal, and site assessment activities to determine if contamination is present around each tank system.[229]

Assessment and Remediation of Known Releases

Five releases currently overseen by the PA DEP would be encountered during construction of either Build Alternative (Section 4.15 *Hazardous Materials and Solid Waste*). To minimize the construction concerns as a result of known release areas, the PA DEP would be contacted prior to any construction to develop procedures and response plans in accordance with PA DEP regulations. Coordination and establishment of project procedures would help reduce potential future delays.

The following measures would be required to maintain compliance and to mitigate impacts to ongoing remediation efforts at the Exxon Service Station. The Exxon Service Station buildings would be demolished and its associated storage tanks would be removed in both Build Alternatives. Prior to demolition, a pre-demolition inspection would be prepared to identify whether asbestos, lead based paint, or regulated waste materials would need to be abated before the demolition of the buildings. Groundwater monitoring wells associated with the on-going monitoring and remediation of the groundwater release at the Exxon Station would likely be destroyed during the demolition activities. A groundwater monitoring well network would need to be re-established.

Unknown Releases

Construction activities during the implementation of either Build Alternative have the potential to generate new releases/spills as a result of the storage and use of hazardous materials including diesel fuel, gasoline, hydraulic oil, and lubricating

229 *Closure Requirements for Underground Storage Tank Systems,* Pennsylvania Department of Environmental Protection, 1 April 1998.

oils associated with the construction equipment. If the quantity of regulated substances released to the environment due to a spill exceeds applicable regulatory criteria, reporting would be required and specific response actions would be implemented.

Construction Worker Health and Safety Planning

The health and safety of construction workers who would come in contact with identified contaminated materials is regulated under the following laws and procedures:

Hazardous Communication Standard

OSHA regulations at 29 CFR 1910.1200 require that information concerning the hazards of chemicals and appropriate protective measures be communicated to workers. Construction contractors would be required to implement a Hazard Communication Program that would include compiling a list of hazardous chemicals used or occurring on the site; using appropriate warning labels; compiling Material Safety Data Sheets, and implementing an employee training and information program.

Contaminated Soils and Groundwater

The HAZWOPER regulations are set forth in 29 CFR 1910.120. These regulations are designed to protect the health and safety of people working with contaminated waste materials. Any work conducted in areas of soil or groundwater contamination would require compliance with these regulations, including training, medical monitoring, and the preparation of a site-specific HASP.

Asbestos

The health and safety of construction workers who may be exposed to asbestos is regulated under 29 CFR 1910.1001 and 29 CFR 1926.58. Any demolition or construction work involving impact to ACM would require compliance under these regulations. Any demolition or asbestos removal activity must also comply with state and local asbestos requirements, including the Philadelphia Asbestos Code and Regulations.

A survey of the Exxon Station for suspect ACM would need to be performed in accordance with *EPA Title 40 CFR*, Part 763, Subpart E (AHERA), 40 CFR Part 61, Subpart M, NESHAPS procedures. Sampling procedures include the collection of the AHERA-required number of samples, depending on the type and quantity of suspect material. Samples of all identified suspect friable (easily crumbled or crushed to powder by hand pressure) and non-friable materials would need to be collected.

Prior to any planned demolition of the buildings, all ACM will be properly managed under the supervision of a Pennsylvania-licensed Asbestos Abatement Contractor pursuant to all applicable federal, state and local regulations governing asbestos abatement.

In addition, it is likely that asbestos is present in asphalt materials on airport. A survey for the presence of asbestos in all asphalt areas to be removed should be performed. During construction activities, any identified asbestos reinforced asphalt must be removed and disposed of by a Pennsylvania-licensed Asbestos Abatement Contractor pursuant to all applicable federal, state and local regulations governing asbestos abatement.

Lead-Based Paint

The health and safety of constructions workers involved in renovation or demolition activities that disturb LBP is regulated under 29 CFR 1926.62. Any demolition or construction work involving impact to LBP would require compliance under these regulations.

The presence of lead-based paint within the buildings to be demolished primarily represents a construction worker health and safety exposure issue. The results of pre-demolition lead paint inspection would be provided to demolition contractors to document the locations of lead paint. Work practices would be designed to prevent exposure of lead dust (sawing, cutting, sanding) and lead fumes (torch cutting, welding) to contractors. Under certain circumstances, lead-painted building components may require segregation for disposal as a hazardous waste due to leachable lead concentrations with the specific building components.

Airborne Soil Contamination (Dust)
Construction activities during the implementation of either Build alternative have the potential to cause contaminated soils to enter the air as dust. The presence of contaminated dusts can pose a threat to human health in areas where contaminated soils are encountered. Mitigation measures to prevent the transport of contaminated soils through the air as dust include measures such as soil hydration with water (misting), avoiding soil excavation during high wind days, covering soil stockpiles, and covering trucks transporting contaminated soil with tarpaulins. An approved Dust Control Plan will be required pursuant to the regulations of the City of Philadelphia Air Management Services.[230]

4.17.9 Summary

Anticipated temporary/transient Project-related impacts during construction, and anticipated mitigation measures include:

- A temporary increase in Project-related noise levels would occur during the construction of the proposed improvements to either of the Build Alternatives. Minimization measures to reduce temporary impacts would include measures to reduce noise from construction vehicle operations, vehicle loading/unloading, and routing construction vehicles on non-residential streets.

  Generally, construction activity will occur during night time hours. Construction noise is not anticipated to affect residents, as the nearest residence is approximately 2,000 feet north of the work area and separated from the construction area by I-95. Since Runway 35 is generally not used at night, there will be no changes in the runway utilization. Disruptions to aircraft traffic from runway and taxiway closures are not expected to occur, and, thus, there would be no increases in aircraft noise related to the construction activities.

- Temporary air quality impacts could result from direct emissions from construction equipment and trucks, fugitive dust emissions from site demolition and earthwork, and increased emissions from motor vehicles and haul trucks on the on-site and off-site roads due to traffic disruption. These impacts would affect only the immediate vicinity of the construction sites and access routes.

  Mitigation measures include specifying truck routes, establishing staging areas for equipment and materials, designating parking areas for construction workers vehicles, minimizing the number of construction vehicles during peak traffic periods, retrofitting existing construction equipment with emission controls, and utilizing newly-certified construction equipment that comply with emission standards. BMPs would be implemented to minimize the impacts from fugitive dust, including providing street

230 City of Philadelphia, Department of Public Health, Air Management Services.

sweeping and tire washes for trucks leaving the site.

- Water Quality impacts (soil erosion, deposition of sediment in airport waterways, discharge of iron-contaminated water) would be minimized by implementing sediment and erosion controls and appropriately designed dewatering measures.
- Subsurface contamination or waste materials encountered during construction would be first identified and then mitigated by implementing preliminary investigations, managing contaminated soil and groundwater, asphalt paving and demolition debris management techniques, erosion and sedimentation controls, construction worker health and safety planning, assessment and remediation of known releases and other BMPs.
- Construction may result in temporary, short-term impacts to the habitat of state-listed wildlife species (red-bellied turtles) due to temporary changes to water quality caused by increased erosion and sedimentation and operation of construction equipment. Mitigation measures would include employing BMPs, such as sediment traps and silt fences, to prevent water quality degradation; timing construction to avoid nesting times (May through July); monitoring during construction; temporarily relocating turtles, if necessary; and, erecting exclusion fencing to protect the red-bellied turtles.
- No temporary impacts due to additional or rerouted traffic resulting from construction activities are expected. Minor construction impacts are expected to occur during implementation of intersection and signal improvements at Bartram Avenue and Tinicum Boulevard. These impacts would be short-term and mitigated by implementing a construction traffic management plan.

4.18 Cumulative Impacts

Under CEQ Regulations (40 CFR 1508.7), cumulative impacts are defined as "the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."[231]

This FEIS considers the potential for the Project, in the context of recent or anticipated projects, to adversely affect the natural environment or the built and social environment. EPA guidance[232] notes that the analysis of cumulative impacts is undertaken to determine whether the combination of the action's impacts with other impacts will result in a serious deterioration of environmental functions. The analysis of cumulative impacts was developed following guidance issued by the CEQ[233] and this EPA guidance. *FAA Order 1050.1E* (paragraph 500c) notes that "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 the one causing the significant impact.

4.18.1 Study Area

The Study Area identified for the analysis of cumulative impacts is defined as the area that

231 *40 Code of Federal Regulations 1508.7, Council for Environmental Quality Regulations for Implementing NEPA.*
232 *Consideration of Cumulative Impacts in EPA Review of NEPA Documents, EPA 315-R-99-002*, United States Environmental Protection Agency, Office of Federal Activities, May 1999.
233 *Considering Cumulative Effects Under the National Environmental Policy Act,* Council on Environmental Quality, January 1997.

includes all direct, physical effects of Alternative 1 and Alternative 2; areas affected by significant changes in noise resulting from Alternatives 1 and 2; areas affected by changes in traffic; census tracts or residential areas affected by these alternatives; and areas affected by changes in air quality attributable to these alternatives. The Study Area was defined based on these criteria and includes the Philadelphia International Airport and surrounding areas within the largest projected DNL 65 dB contour interval as shown on Figure 4.3-1.

4.18.2 Time Frame

The time frame for the analysis of past actions was identified by the chronology of events in the historic context of the Study Area that have had a major effect on population growth, land use, and environmental resources. Although there has been continuous development and land use change in the Study Area since the first European settlement in the 1630s (DEIS Appendix A-4, *Historic Structures*), events that have shaped the existing environment and contributed to major changes in land use and the environment began in the early 1980s.

4.18.3 Past Actions

Past actions within the Study Area in this time frame that have affected land use, noise, and air quality include the actions listed below in addition to growth in the regional population and aircraft operations at PHL. The effects of these actions are reflected in the existing environmental conditions within the Study Area. Generally, these actions have resulted in the loss of undeveloped land, increased ambient noise, increased vehicular traffic, and increased air quality emissions. Past actions which have occurred since the early 1980s include constructing:

- The UPS facility on the south side of the Airport, with relocation of Tinicum Island Road;
- Terminals A, B, and C;
- New parking garages;
- Runway 8-26;
- Terminal F;
- Terminal A-West;
- The Airport Marriot Hotel;
- Hotels in Tinicum and in Philadelphia on Island Road and Bartram Avenue;
- New ramps connecting I-95 with the Airport, Bartram Avenue, SR 291, and Island Avenue;
- The Airport Deicing facility; and
- Demolishing the Tinicum fuel facility.

4.18.4 Reasonably Forseeable Future Actions

Reasonably forseeable future actions are those that are currently planned or proposed within the planning horizon of this FEIS. As documented in the Methodology sections of this FEIS, future conditions are analyzed to the year 2015. Reasonably forseeable future conditions also include forecast growth in aircraft operations and passenger numbers at PHL as well as continued regional population growth.[234] DVRPC's Year 2025 Land Use Plan[235] also provides information on future conditions within the Study Area and the Delaware Valley region.

234 *Delaware Valley Regional Planning Commission Population and Employment Forecasts (2000-2025)*, 9-County DVRPC Region, Regional Data Bulletin, No. 73, March 2002.
235 *Delaware Valley Regional Planning Commission Horizons: The Year 2025 Land Use and Transportation Plan for the Delaware Valley*.

Anticipated future actions at the Airport and in the Study Area within this time period include actions listed in the Airport's 5-Year Capital Plan and actions planned or proposed by others, as well as the CEP currently under study. The FAA is also conducting an EIS on the *Air Traffic Procedural Changes – New York/New Jersey/Philadelphia Metropolitan Airspace Redesign Project.*[236] Forseeable future actions at PHL considered in this analysis of cumulative impacts include:

- Expanding the airport Employee Parking Lot;
- Extending the Runway 9R Safety Area;
- Rehabilitating Runway 9R/27L;
- Rehabilitating cargo aprons, terminal aprons, and taxiways at PHL;
- Renovating Terminal A;
- Expanding Terminal E concourse;
- Expanding the maintenance support building;
- Relocating the ATCT/TRACON facility;
- Implementing the Noise Compatibility Program; and
- Constructing the Capacity Enhancement Program proposed action.

Other actions planned or proposed within the Study Area that could affect the natural or social environment include:

- Philadelphia Naval Shipyard Redevelopment;
- US Postal Service Distribution Center construction and operations; and
- Industrial/Commercial development in Tinicum (Tinicum Industrial Park).

236 Federal Aviation Administration, (http://aea.faa.gov/airspace/NYNJPHL_Airspace_Redesign).

The potential future effects of the CEP are speculative and will be considered in detail in the Environmental Impact Statement currently being prepared for that project. Two alternatives are currently identified in the Airport's Master Plan Update. Both alternatives would require that other facilities on or adjacent to the Airport, including the UPS facility, portions of Cargo City, and other buildings east of the Airport, be relocated. The CEP Parallel Alternative, as described in the MPU, would extend Runways 8-26 and 9L-27R and add a third primary runway. Other actions required for this alternative, including relocating Tinicum Island Road, relocating the UPS facility, constructing an additional berth at the Sunoco facility, relocating a portion of the USACE Fort Mifflin facility, and closing Hog Island Road and the freight railroad track, could also affect the environment. These impacts have not been quantified at this time. As this project proceeds, other alternatives may be identified and would be analyzed appropriately.

The CEP Diagonal Alternative, as described in the MPU, would reconfigure the Airport to include two new runways in the northeast section of the Airport and one new runway in the southwest section, retaining only Runway 9R-27L of the current configuration, and relocating the terminal complex. Although the CEP Diagonal Alternative, if adopted, would eliminate Runway 17-35, this action is not anticipated until approximately 2020, beyond the time frame of this analysis. Other actions required for this alternative, including relocating Tinicum Island Road, constructing an additional berth at the Sunoco facility, relocating a portion of the USACE Fort Mifflin facility, reconfiguring the Island Avenue-Enterprise Avenue roadways, and constructing new ramps for access to I-95, could also affect the environment. These impacts have not been quantified at this time.

The Airspace Redesign EIS will assess the potential environmental impacts resulting from proposed changes to air traffic routings in the New York - New Jersey – Philadelphia area. The EIS will examine ways to develop viable ATC alternatives to current procedures to take advantage of new and emerging ATC technologies, improved performance characteristics of modern aircraft, and improvements in navigational capabilities. Impacts of the alternatives considered in that EIS are speculative at the present time and will be addressed in that project's EIS. Airspace redesign alternatives may result in more or fewer flights over a given area and/or at different altitutdes, resulting in potental increases or decreases to air quality emissions or noise levels within the Study Area of this EIS, but would not alter the physical or natural features of the study area.

4.18.5 Cumulative Impacts

This section examines the cumulative impact of the Proposed Project, considered with the impacts of other past, present, and reasonably forseeable future actions. The analysis of cumulative effects considers "whether the combination of the action's impacts with other impacts will result in a serious deterioration of environmental functions."[237] Consistent with CEQ guidance, the analysis determined whether the resource, ecosystem, or human community will sustain its structure and function when the effects of the alternatives under consideration are added to the effects of other past and future actions. The analysis of cumulative impacts for each affected resource shows whether the incremental effect of the Proposed Project would result in a serious deterioration of the resource, cause the cumulative effect to exceed any regulatory threshold or threshold of significant adverse effect, or affect the structure or function of the human community within the Study Area. Only those resources or categories that are adversely affected by Alternative 1 or Alternative 2 are considered in this section.

237 *Consideration of Cumulative Impacts in EPA Review of NEPA Documents, EPA 315-R-99-002*, United States Environmental Protection Agency, Office of Federal Activities, May 1999.

Noise

Past and reasonably foreseeable future actions within the Study Area are anticipated to result in increases in noise for the No-Action Alternative. Past actions within the Study Area in this time frame that have affected noise levels include growth in aircraft operations at PHL, as well as specific actions that have increased aircraft traffic. In particular, major past actions include:

- Constructing the UPS facility on the south side of the Airport, which increased aircraft traffic, particularly at night; and
- The inception of the US Airways domestic hub and the US Airways international hub.

The effects of these actions are reflected in the environmental conditions within the Study Area as documented in the Affected Environment section of Section 4.2 of this FEIS. These effects have been addressed in the recently completed FAR Part 150 Noise Compatiblity Study, which includes a number of on-going elements such as left turns after takeoff from Runways 27L and 27R; a voluntary nighttime runway use program from midnight to 6:00 AM; limitations on nighttime run-up activity; and a new residential sound insulation program.

Anticipated future actions that may affect the noise environment include actions listed in the Airport's 5-Year Capital Plan and actions planned or proposed by others. In particular, actions that could affect the level of noise in the study area include:

- Implementing the Noise Compatibility Program outlined in the Part 150 Study;
- Constructing the Capacity Enhancement Program proposed action; and
- Implementation of the *Air Traffic Procedural Changes – New York/New Jersey/Philadelphia Metropolitan Airspace Redesign Project.*[238]

The potential future effects of the CEP are speculative and will be considered in detail in the EIS currently being prepared for that project. Either the CEP Parallel or Diagonal Alternative would change the shape of the noise contours and change the noise-affected population. These impacts have not been quantified at this time.

Impacts of the alternatives considered in the Airspace Redesign EIS are speculative and will be addressed in the project EIS. Airspace redesign alternatives may result in more or fewer flights over a given area and/or at different altitudes, resulting in potential increases or decreases to air quality emissions or noise levels.

Past and reasonably forseeable future actions within the Study Area for the 2007 No-Action Alternative are anticipated to result in 191 people included in the DNL 65 dB contour, covering a geographic area of approximately 8 square miles of both on-airport and off-airport land. With the 2015 No-Action Alternative, roughly 1,029 people are predicted to be included in the DNL 65 dB contour, covering a geographic area of approximately 10 square miles of both on-airport and off-airport land.
The Proposed Project is expected to have a minor effect when considered in the context of past and anticipated future actions. Neither Alternative 1 nor Alternative 2 would result in a significant impact. For the 2015 Alternative 1, a total of 1,029 people would be included in the DNL 65 dB contour, the same number of people as with the 2015 No-Action Alternative. With the 2015 Alternative 2, a total of 1,284 people would be included in the DNL 65 dB contour, covering a geographic area that would be slightly larger than that for the No-Action Alternative.

This cumulative impact would not result in a serious deterioration of the noise environment, cause the cumulative effect to exceed any regulatory threshold or threshold of significant adverse effect, or affect the structure or function of the human community within the Study Area.

Social and Economic Effects and Land Use Impacts

The Philadelphia International Airport is in Tinicum Township and the City of Philadelphia and is directly bordered by industrial and commercial development on the east and west. I-95, the SEPTA rail line, Bartram Avenue, and commercial development separate the Airport from the community of Eastwick to the north. The community of Tinicum is west of the airport, separated by undeveloped and industrial land.

Past actions during the time period considered in this analysis, and prior to that period, have had adverse and beneficial social and economic effects. Some of these actions included:

- Acquisition of land in Tinicum for airport construction;
- Construction of I-95 ramps;
- Construction of the UPS facility;
- Development of Cargo City and International Plaza;

238 Federal Aviation Administration, (http://aea.faa.gov/airspace/NYNJPHL_Airspace_Redesign).

- Hotel and commercial development in the vicinity of the Airport;
- Construction of the SEPTA line; and
- Construction of new terminals and parking facilities.

The land acquisitions which occurred prior to the 1980 study period have disrupted communities and displaced residents and businesses. The construction projects have provided economic benefits, through construction jobs and enhanced tax revenues for Tinicum Township and the City of Philadelphia, and have increased jobs in the region. The SEPTA line has enhanced transportation access to downtown Philadelphia and the Airport. Reasonably forseeable future actions that may have social or economic effects include the CEP currently under study by the FAA. The CEP Parallel Alternative as defined in the Master Plan Update would create economic benefits associated with construction jobs and construction spending. Other actions required for this alternative, including relocating Tinicum Island Road, relocating the UPS facility, constructing an additional berth at the Sunoco facility, and relocating a portion of the USACE Fort Mifflin facility, would require acquisition of commercial or industrial property and could adversely affect tax revenues.

The CEP Diagonal Alternative would would create economic benefits associated with construction jobs and construction spending. Other actions required for this alternative, including relocating Tinicum Island Road, constructing an additional berth at the Sunoco facility, and relocating a portion of the USACE Fort Mifflin facility, would require acquisition of commercial or industrial property and could also affect tax revenues. The CEP Diagonal Alternative could also result in changes in noise levels that could affect the recreational or educational use of the John Heinz National Wildlife Refuge.

Depending upon the selected alternatives, relocation of UPS and other facilities may be necessary. Any relocation will be analyzed in the EIS prepared for the CEP. This analysis will include sites in the proximity of the airport. There is also a possibility that businesses will chose to relocate to a site not associated with PHL.

The Proposed Project is not anticipated to have a significant cumulative impact when considered in the context of past and anticipated future actions. Neither Alternative 1 nor Alternative 2 would require the acquisition of any residential or commercial property, nor would either alternative displace residents. Both alternatives are expected to result in a neglible loss of jobs and tax revenues by closing an existing gas station that currently leases land from the Airport. Both alternatives would have a minor economic benefit by creating construction jobs.

Air Quality

Past and reasonably foreseeable future actions within the Study Area are anticipated to result in increases in Airport-related pollutant emissions and estimated pollutant concentrations for the No-Action Alternative. The proposed action will have a beneficial effect when considered in the context of past and anticipated future actions. Emissions of Airport-related criteria pollutants without the proposed Project in place would increase from 2003 to 2007 and increase even more in 2015. With Alternative 1, overall pollutant emissions would decrease compared to the No-Action Alternative in both 2007 and 2015. Similarly for Alternative 2, emissions of all pollutants would decrease in comparison to the No-

Action Alternative in both 2007 and 2015 because of reduced delay and reduced taxi-idle times.

The potential future effects of the CEP Alternatives on air quality are speculative and will be considered in detail in the EIS currently being prepared for that project. Because the purpose of the CEP is to reduce delay, it is likely that it would improve air quality. These impacts have not been quantified at this time.

This cumulative impact is beneficial and would not result in a serious deterioration of air quality, cause the cumulative effect to exceed any regulatory threshold or threshold of significant adverse effect, or affect the structure or function of the human community within the Study Area.

Department of Transportation Section 4(f) Resources

Section 4(f) resources in the vicinity of the Airport include public parks and recreation areas, historic resources, and a national wildlife refuge. As documented in the previous sections for the No-Action Alternative, past and reasonably forseeable future actions are anticipated to result in increases in noise levels at some of these Section 4(f) resources, particularly at Fort Mifflin, the Philadelphia Naval Shipyard Historic District, and Governor Prinz Park in Tinicum.

Anticipated future actions at the Airport and vicinity, other than those associated with the alternatives considered in this FEIS, include the CEP currently under study by the FAA. The CEP Parallel Alternative is not anticipated to require the use of any Section 4(f) property, but could increase noise levels at public parks and recreation areas and historic resources east and west of the Airport. The CEP Diagonal Alternative is not anticipated to require the use of any Section 4(f) property, but could increase noise levels at public parks and recreation areas and historic resources northwest and southeast of the Airport, particularly at the John Heinz National Wildlife Refuge. The extent of the potential impacts have not been quantified.

The Proposed Project is expected to have a minor effect when considered in the context of past and anticipated future actions. Neither Alternative 1 nor Alternative 2 would require the use of any Section 4(f) property or result in a significant impact. Neither alternative would increase noise at Fort Tinicum, the Governor Prinz Park, or the Philadelphia Naval Shipyard Historic District, when compared to the No-Action Alternative.

Historical, Architectural, Archaeological and Cultural Resources

Properties listed on or eligible for listing on the National Register of Historic Places are documented in the vicinity of the Airport. As shown in the previous sections, past and reasonably forseeable future actions are anticipated to result in increases in noise levels at some of these resources, particularly at Fort Mifflin, the Philadelphia Naval Shipyard Historic District, and Governor Prinz Park in Tinicum.

Anticipated future actions at the Airport and vicinity, other than those associated with the alternatives considered in this FEIS, include the CEP currently under study by the FAA. The CEP Parallel Alternative is not anticipated to have an adverse effect on a historic resource, but could increase noise levels at historic resources east and west of the Airport. The extended Sunoco Pier could alter the visual setting of historic Fort Mifflin. The CEP Diagonal Alternative is not anticipated to have an adverse effect on a historic or archaeological resource, but could increase noise levels at historic resources northwest and southeast of the Airport. The CEP Alternatives could affect archaeological resources potentially present within the areas directly affected by construction. The extent of the potential impacts has not been quantified.

The Proposed Project is expected to have a minor effect when considered in the context of past and anticipated future actions. Neither Alternative 1 nor Alternative 2 would have an adverse effect on any historic or archaeological resource and would not result in a significant impact. Neither alternative would increase noise or alter the setting of Fort Mifflin, the Governor Prinz Park, or the Philadelphia Naval Shipyard Historic District when compared to the No-Action Alternative.

Water Quality

The Project Area is within an urbanized, industrial area in which all surface water bodies have impaired water quality. Potential impacts of development to water quality include the discharge of pollutants from roadways or developed areas that may change the clarity, nutrient concentrations, dissolved oxygen, temperature, or chemical composition of surface waters.

Past actions at the Airport or in the vicinity of the Airport that have potentially affected water quality of on-airport wetlands or downgradient surface waters (including Mingo Creek, the Schuylkill River, and the Delaware River) include actions that increased impervious surface and runoff, as well as actions that affect surface and groundwater quality.

These are:

- Constructing the UPS facility, which includes approximately 100 acres of impervious surface;
- Constructing Runway 9R-27L, which includes approximately 50 acres of impervious surface;
- Constructing Runway 8-26, which includes approximately 20 acres of impervious surface;
- Constructing Terminal A-West and Terminal F;
- Modifying the ramps connecting I-95, SR 291, and the airport;
- Discharging water from dewatered sediments at the USACE Fort Mifflin facility;
- Discharging treated wastewater from the Southwest Philadelphia Wastewater Treatment Plant
- Stormwater runoff from industrial facilities adjacent to the Delware or Schuylkill Rivers;
- Maintenance dredging of the Delaware River Shipping Channel; and
- Discharging runoff from I-95, SR 291, and other highways in the vicinity of the airport (approximately five miles of I-95 is adjacent to the Airport).

Because storm drainage from roadways and industrial areas carries pollutants, such as automotive oils, from road surfaces to streams and rivers, it is reasonable to assume that surface water quality in rivers and streams that receive stormwater runoff from these highways and industrial areas has been degraded.

The installation of the new Deicing Facility at the airport has had a beneficial effect on surface waters on-airport as well as downgradient, by substantially reducing the discharge of glycol and other deicing fluids. The remediation of the former Enterprise Avenue Landfill site, east of the airport, may have also had a beneficial effect on groundwater quality by eliminating a source of contaminants.

Anticipated future actions at the Airport and vicinity, other than those associated with the alternatives considered in this FEIS, include the CEP currently under study by the FAA. The CEP Parallel Alternative would increase impervious surface and stormwater runoff by extending Runways 8-26 and 9L-27R and adding a third primary runway. The ponding ditches which currently provide water quality treatment would be relocated and reconfigured. The CEP Diagonal Alternative would reconfigure the Airport to include two new runways in the northeast section of the Airport and one new runway in the southwest section. A second deicing facility would be added to serve the two parallel runways. As with the Parallel Alternative, some wetlands and ponding ditches that store and provide treatment for runoff would be reconfigured. The extent of the potential impact has not been quantified as these projects have not entered design development.

Either alternative would increase the amount of impervious area in the study area, altering stormwater drainage patterns and potentially carrying pollutants to nearby rivers and streams. It is assumed, however, that these and all future projects would be designed and constructed in compliance with all applicable Federal, state, and local regulations to minimize impacts to surface water quality.

Construction and operation of Alternative 1 or Alternative 2 would have a negligible direct effect on surface water resources tributary to Mingo Creek and the Southeast Ponding Ditch by culverting the open channel of Church Creek and by increasing stormwater runoff. The increased pavement would also increase the use and discharge of deicing compounds to surface waters. Neither alternative would adversely affect the SSA. The potential increase in pollutant loadings would be mitigated through the implementation of stormwater BMPs in accordance with state and Federal law and would be minimized through project design.

The cumulative effects of the alternatives considered in this FEIS, considered in the context of past and anticipated future actions, would not significantly affect surface or groundwater quality in the vicinity of the Airport.

Biotic Communities

The Project Area is in an urbanized, industrial area in which most biotic communities are impaired by low water quality, invasive species, or habitat fragmentation. Impacts to biotic communities from development include the direct loss of natural vegetation, the loss of wildlife habitat, and indirect effects to wildlife communities from decreases in habitat size, and quality or increases in fragmentation.

Past actions at the Airport or in the vicinity of the Airport that have affected biotic communities include:

- Incremental construction of the Airport and previous land uses on the Airport site, including the former Hog Island Shipyard, which have filled extensive areas of tidal freshwater wetlands associated with the Delaware River;
- Constructing Runway 8-26;
- Constructing the new Deicing Facility;
- Repaving Runway 17-35, which placed approximately 60 feet of CMC-3 and CMC-4 in a culvert; and
- Constructing the UPS facility.

These actions have primarily resulted in the loss of disturbed upland communities (airport grasslands, *Phragmites*-dominated uplands, brush and shrubland) of low ecological value. Reasonably forseeable future actions at the Airport and vicinity, other than those associated with the alternatives considered in this FEIS, include the CEP currently under study by the FAA. Both CEP alternatives would require that other facilities on or adjacent to the Airport, including the UPS facility, portions of Cargo City, and other buildings east of the Airport, be relocated.

The CEP Parallel Alternative as defined in the Master Plan Update would further affect biotic communities through the loss of airport vegetation and up to 33 acres of wetlands and waterways, of which approximately 17 acres are potentially considered Exceptional Value wetlands. Other actions required for this alternative, including relocating Tinicum Island Road, relocating the UPS facility, constructing an additional berth at the Sunoco facility, and relocating a portion of the USACE Fort Mifflin facility, could also alter upland and wetland communities. These impacts have not been quantified at this time and would primarily affect common species of plants and wildlife. Fish habitat within the ponding ditch drainage system could also be affected by the relocation or culverting of waterways. Construction of the new Runway 9R and RSA in the Delaware River and extension of the pier at the Sunoco facility could also affect riverine and benthic communities.

The CEP Diagonal Alternative would require filling approximately 25 acres of wetlands and waterways, of which approximately 17 acres are potentially considered Exceptional Value wetlands. Noise from aircraft using the new runways could potentially affect wildlife use of the John Heinz National Wildlife Refuge. Other actions required for this alternative, including relocating Tinicum Island Road, constructing an additional berth at the Sunoco facility, relocating a portion of the USACE Fort Mifflin facility, and constructing new ramps for access to I-95 could also alter wetlands. Extending the pier at the Sunoco facility would also affect riverine and benthic communities. These impacts have not been quantified at this time.

It is assumed, however, that all future projects would be designed and constructed in compliance with all applicable Federal, state, and local regulations to minimize and mitigate for impacts to wetlands and waterways.

Construction of the alternatives considered in this FEIS (Alternative 1 or Alternative 2) would have a minor direct effect on biotic communities by the loss of airport grasslands which provide negligible habitat value, by culverting the open channel of Church Creek (a waterway that provides negligible habitat value), and by constructing a new service road crossing over SEPD-2. Neither Alternative 1 nor Alternative 2 would have a significant effect on biotic communities. The cumulative effects of the alternatives considered in this FEIS, considered in the context of past and anticipated future actions, would not significantly affect biotic communities in the vicinity of the Airport.

Threatened and Endangered Species

The Project Area and Local Study Area, as described in the previous sections, are within an urbanized, industrial area. Threatened and Endangered species in the vicinity of the Airport include the Federally-protected bald eagle and the short-nosed sturgeon, which are also protected under state regulations, as well as other species of plants and animals protected by Pennsylvania regulations. Most of these animals and plants are associated with tidal freshwater wetland habitats along the shores of the Delaware River, although some animal species also occur in on-airport wetlands. Impacts to Threatened and Endangered species as a result of development may include the loss of critical habitat used by the species; the direct loss of individuals or populations; or the indirect impairment of habitat quality through changes in water quality, noise, or human activity.

Past actions at the Airport or in the vicinity of the Airport that have affected Threatened and Endangered species include:

- Previous land uses on the Airport site, including the former Hog Island Shipyard, and incremental construction of the Airport, which have filled extensive areas of tidal freshwater wetlands associated with the Delaware River and which have created ditches and waterways used by state-listed species; and
- Construction of Terminal A-West, which resulted both in the loss of habitat for the state-listed red-bellied turtle and the enhancement and creation of habitat.

Anticipated future actions at the Airport and vicinity, other than those associated with the alternatives considered in this FEIS, include the Capacity Enhancement Program currently under study by the FAA. The CEP Parallel Alternative would increase impervious surface and stormwater runoff by extending Runways 8-26 and 9L-27R and adding a third primary runway. Approximately 17 acres of Exceptional Value wetlands, which potentially provide habitat for state-listed wildlife species, would be filled for this alternative. Constructing the new runway end and RSA in the Delaware River, and extending the pier at the Sunoco facility, could also affect tidal wetland communities containing state-listed species, or could potentially affect sturgeon foraging habitat. Other actions required for this alternative, including relocating Tinicum Island Road, relocating the UPS facility, constructing an additional berth at the Sunoco facility, and relocating a portion of the USACE Fort Mifflin facility, could also alter wetlands that may support state-listed species. Noise or proximity to low-altitude aircraft using the new river runway could potentially change the noise environment at an existing bald eagle nest. These impacts have not been quantified at this time.

The CEP Diagonal Alternative would require filling approximately 25 acres of wetlands and waterways, of which approximately 17 acres are considered Exceptional Value wetlands. Other actions required for this alternative, including relocating Tinicum Island Road, constructing an additional berth at the Sunoco facility, relocating a portion of the USACE Fort Mifflin facility, and constructing new ramps for access to I-95 could also alter wetlands. Extending the pier at the Sunoco facility could also affect riverine communities containing state-listed species, or could potentially affect sturgeon foraging habitat. These impacts have not been quantified at this time.

It is assumed, however, that all future projects would be designed and constructed in compliance with applicable Federal and state regulations to minimize and mitigate for impacts to threatened and endangered species.

Construction of Alternative 1 or Alternative 2 would have a minor direct effect on state-listed species. Either alternative would impact approximately 45 linear feet of SEPD-2, a waterway that provides habitat for a red-bellied turtle population (Pennsylvania Threatened), for a new road crossing. The crossing would be designed to minimize habitat loss and fragmentation, and would include habitat enhancement measures. Neither alternative would affect bald eagle nest sites or habitat quality of short-nosed sturgeon. Either alternative would be designed and constructed in compliance with all applicable Federal, state, and local regulations to minimize and mitigate for impacts to state-listed threatened and endangered species.

The cumulative effects of the alternatives considered in this FEIS, considered in the context of past and anticipated future actions, would not significantly affect protected species in the vicinity of the Airport.

Wetlands and Waterways

The Project Area is within an urbanized, industrial area in which most wetlands and waterways are fragmented and impaired by low water quality and invasive species. Impacts to wetlands from development include both the direct loss of wetlands and indirect wetland impacts, including fragmentation of wetland systems and the loss of wetland functions and values.

Past actions at the Airport or in the vicinity of the Airport that have affected on-airport wetlands or downgradient waterways (including Mingo Creek, the Schuylkill River, and the Delaware River) include actions that filled wetlands as well as actions that affected surface and ground water quality:

- Previous land uses on the Airport site, including the former Hog Island Shipyard, and incremental construction of the Airport, which have filled extensive areas of tidal freshwater wetlands associated with the Delaware River;
- Constructing Runway 8-26, which filled several acres of wetland (mitigated by construction of compensatory wetlands at the John Heinz Wildlife Refuge);
- Constructing Terminal A-West, which resulted in the loss of approximately 2 acres of wetland;
- Modifying the ramps connecting I-95, SR 291, and the Airport;
- Constructing the new Deicing Facility, which resulted in the loss of approximately 0.1 acre of wetland; and
- Repaving Runway 17-35, which placed approximately 60 feet of CMC-3 and CMC-4 in a culvert.

The CEP Parallel Alternative would fill approximately 33 acres of wetlands and waterways, of which approximately 17 acres are potentially considered Exceptional Value wetlands. Other actions required for this alternative, including relocating Tinicum Island Road, relocating the UPS facility, constructing an additional berth at the Sunoco facility, and relocating a portion of the USACE Fort Mifflin facility, could also alter wetlands. These impacts have not been quantified at this time. The CEP Diagonal Alternative would require filling approximately 25 acres of wetlands and waterways, of which approximately 17 acres are considered Exceptional Value wetlands. Other actions required for this alternative, including relocating Tinicum Island Road, constructing an additional berth at the Sunoco facility, relocating a portion of the USACE Fort Mifflin facility, and constructing new ramps for access to I-95 could also alter wetlands. These impacts have not been quantified at this time.

It is assumed, however, that all future projects would be designed and constructed in compliance with applicable Federal and state regulations to minimize and mitigate for impacts to wetlands and waterways. Construction of Alternative 1 or Alternative 2 would have a minor direct effect on waterways by culverting the open channel of CMC-3 and CMC-4 and would affect approximately 45 feet of SEPD-2, for a new road crossing. Either of these alternatives would be designed and constructed in compliance with applicable Federal and state regulations to minimize and mitigate for impacts to waterways.

The cumulative effects of the alternatives considered in this FEIS, considered in the context of past and anticipated future actions, would not significantly affect wetlands and waterways in the vicinity of the Airport.

Floodplains

The Project Area is within the Delaware River floodplain, which is an unconstrained tidal floodplain. Impacts to floodplains potentially include the direct loss of flood storage volume, obstructions to flood flow, and the loss of the beneficial and natural values of floodplains.

Past actions at the Airport or in the vicinity of the Airport that have affected floodplains include:

- Previous land uses on the Airport site, including the former Hog Island Shipyard, and incremental construction of the Airport, which have filled extensive areas of floodplain associated with the Delaware River;
- Constructing Runway 8-26; and
- Repaving Runway 17-35, which placed approximately 60 feet of CMC-3 and CMC-4 (within the floodplain) in a culvert.

Anticipated future actions at the Airport and vicinity, other than those associated with the alternatives considered in this FEIS, include the CEP currently under study by the FAA. Both CEP alternatives would require that other facilities on or adjacent to the airport, including the UPS facility, portions of Cargo City, and other buildings east of the Airport, be relocated. Because most of the Airport is within the mapped 100-year floodplain, any anticipated future action would require work and filling within the floodplain.

The CEP Parallel Alternative would place fill in the floodplain to extend Runways 8-26 and 9L-27R and to add a third primary runway. Other actions required for this alternative would also require work within floodplains. These impacts have not been quantified at this time. The CEP Diagonal Alternative would include constructing new runways and terminal facilities within the 100 year floodplain. Other actions required for this alternative could also require work within floodplains. These impacts have not been quantified at this time. It is assumed, however, that future projects would be designed and constructed in compliance with applicable Federal, state, and local regulations to applicable to floodplains.

Construction of the alternatives considered in this FEIS (Alternative 1 or Alternative 2), although requiring work within the floodplain, would not affect the natural and beneficial values of the floodplain. Either of these alternatives would be designed and constructed in compliance with all applicable Federal, state, and local regulations, and would not result in a significant cumulative impact to floodplains

Surface Transportation

This FEIS considers the potential for the project, in the context of recent or anticipated projects, to affect traffic patterns or congestion in the local study area.

Past actions at the Airport or in the vicinity of the Airport that have improved traffic flow and reduced congestion in the study area. These include:

- Constructing (1985) the SEPTA R1 Airport Line, which has 2,000 to 3,000 average daily boardings and diverts approximately five percent of the total airport traffic;
- Constructing a new ramp system connecting I-95 with the Airport and SR 291 (completed in 2002);
- Constructing Runway 8-26, which relocated a portion of Fort Mifflin Road; and
- Constructing a portion of Tinicum Island Road to improve connections to the UPS facility.

Future actions would also affect the transportation network in the Study Area. As shown by the No-Action Alternative, traffic volumes and congestion will increase due to local and regional growth. The CEP Parallel Alternative would close Hog Island Road and relocate a portion of it, changing traffic circulation patterns. The CEP Parallel Alternative would also close the section of freight rail track south of the airport, requiring that freight rail be diverted to other tracks or rail lines. This alternative would also require that any future bicycle facilities constructed or signed along Hog Island Road would be relocated.

The CEP Diagonal Alternative would modify the local transportation network by closing a portion of Hog Island Road, relocating Tinicum Island Road, relocating a portion of Island Road and Enterprise Avenue, and constructing new ramps connecting to I-95 at Enterprise Avenue. This alternative would also require that any future bicycle facilities constructed or signed along Island Avenue or Enterprise Avenue would be relocated. Construction of Alternative 1 or Alternative 2 would have a minor direct effect on surface transportation system by closing a portion of SR 291 and diverting traffic to Bartram Avenue, which would be designated as SR 291. The diversion would increase congestion and delay at some intersections along Bartram Avenue, which would be mitigated through intersection improvements.

The cumulative effects of the alternatives considered in this FEIS, considered in the context of past and anticipated future actions, would not significantly affect traffic or transportation conditions in the vicinity of the Airport.

4.18.6 Summary

This analysis shows that the Proposed Project, in the context of recent or anticipated projects, would not significantly affect the natural, built or social environment. The combination of the action’s impacts with other impacts (the cumulative impacts of the Proposed Project) would not result in a serious deterioration of environmental functions or exceed applicable significant thresholds.

5

Mitigation

Following review of the DEIS by the Federal, state and local regulatory and resource agencies, and by the interested public, the FAA has identified a Preferred Alternative and has identified the mitigation measures that will be incorporated into the design of the Preferred Alternative. This chapter describes the proposed mitigation measures that would be required to mitigate for impacts to water quality, threatened and endangered species, wetlands, and surface transportation.

5.1 Water Quality

Water quality mitigation measures that would be incorporated into the Preferred Alternative include spill prevention and containment measures, source controls, peak runoff rate controls, and construction-period source controls. Section 4.7 of this FEIS provides additional information on water quality impacts and mitigation measures. The use of these mitigation measures will be finalized in coordination with the agencies.

Construction Period

Erosion and Sediment Control Plans would be used for the Runway 17-35 Project to provide the contractor with guidelines to prevent the erosion of soils and sediment deposition into storm drains and surface waters, including sediment and silt resulting from dewatering activities. Erosion and sediment controls, and dewatering devices, would be designed to specifically address iron precipitation. Specific elements of the construction-period mitigation include:

- Soils and groundwater would be tested for contamination and iron content prior to construction and excavation;
- Dry soil would be watered to prevent dust production;
- Any highly erosive soils would be stabilized and reinforced with structural methods, such as erosion control blankets, as necessary;
- Slopes would be reinforced using a hydroseed mix with a resin base, native vegetation, or other approved methods;
- During excavation and dewatering, sediment control methods would be employed, such as silt bags to catch silt and sediment, or temporary sediment basins for areas that would receive a large portion of construction runoff from exposed soil; and
- Existing catch basins in the Project Area would be protected with sediment traps to prevent accumulation of sediment in the structure.

Details of the sedimentation and erosion control methods would be included in the SWPPP for construction activities required by the NPDES Construction General Permit.

Water quality during construction may be affected by the discharge of groundwater high in iron, as iron oxides may precipitate when exposed to air. A treatment or filtration system may be required during construction to remove ferric oxide (iron) solids before discharge to a surface water body or the wastewater treatment plant. During the final design phase of the Proposed Project, the Airport will identify areas where dewatering would be required, and will develop a dewatering control plan.

Spill Prevention and Containment Measures

To prevent and contain spills and other discharges of water quality contaminants, the Airport would

- Implement an appropriate Operation and Maintenance Plan.
- Design and construct the Church Creek culvert to provide access to the culverts for monitoring water quality at Outfall 001.
- Update existing SPCC Plans to reflect changed conditions at Runway 17-35, and continue to use these plans to provide emergency spill response procedures and preventive maintenance for areas at PHL with fuel or hazardous material storage/operations. The potential loss of spill containment and recovery areas in CMC-3 and CMC-4 would require revising the SPCC Plan to include a protocol for containment and recovery in the downstream Mingo Creek Stormwater Basin.
- Update existing Preparedness, Prevention and Contingency Plans and continue to use these for BMPs meant to reduce the discharge of pollutants from industrial activities as part of a long-term operation and maintenance program; and
- Continue to follow current and future NPDES Permits, and continue to monitor Outfalls 001 and 005 and report to the PA DEP.

Source and Runoff Rate Controls

Structural measures would be incorporated into the design of the Preferred Alternative to control the discharge of potential contaminants to surface or ground water, and to control peak runoff rates to reduce erosion. Measures that will be evaluated during the final design phase of the Proposed Project include:

- Installing catchbasins with sumps and hoods in the reconstructed portions of the Economy Parking Lot, unless precluded by high ground water; and
- Designing the stormwater collection system (sheet flow from paved areas to shallow detention areas, where catchbasins convey flows through a system of pipes to either Church Creek or the Southeast Ponding ditch) to maximize detention times and reduce peak discharge rates.

5.2 Threatened and Endangered Species

In their comment letter (see Volume 3, Letter 14) on the DEIS, PFBC noted that the agency has no objections to the Crossing Location B and Crossing Type and Dimension No. 2 for the proposed surface road crossing of SEPD-2. They recommended that the invert of the culvert bottom be depressed at least one foot below the existing channel bottom elevation and that both upstream and downstream culvert headwalls be constructed to minimize culvert length. PFBC also recommended the installation of turtle basking platforms and a turtle nesting beach within the lower reaches of SEPD-2 to help compensate for the wetland habitat impacts.

Section 4.11 of the FEIS provides additional information on impacts to threatened and endangered species habitat, and the proposed mitigation measures. The proposed design for

Alternative 1 includes these measures. The design of each measure is conceptual: engineering designs and specifications will be developed by the Airport's engineering consultant during the final design process. The final design will be prepared in coordination with the Airport's overall management plan for protection of the red-bellied turtle population.

Airfield Service Road Culvert

The Airfield Service Road will be designed to cross SEPD-2 at least 100 feet north of the bend in the ditch. The road will reconnect with the existing service road approximately 800 feet west of the crossing. This location minimizes impacts to aquatic habitat used by the turtles, and keeps the service road (where it parallels SEPD-2) as far from the bank of the ditch as is practicable.

The proposed culvert will be a 45-foot long arched pipe, 65 inches wide and 40 inches high. The bottom of the culvert will be depressed at least one foot below the existing bottom elevation to maintain a natural substrate and habitat connectivity. Headwalls will be constructed on both the upstream and downstream ends of the culvert to minimize habitat loss.

Construction Measures

Exclusion fencing will be installed between the work area and SEPD-2 to prevent turtle movement into the construction zone and protect against unintentional turtle mortality. Exclusion fencing may be installed in conjunction with erosion and sedimentation controls, and will consist of staked, entrenched siltation fencing. The entrenched portion of the fence should be on the outside of the fence (outside the work zone) to discourage turtles from tunneling under the fence.

Siltation fence will be installed across the SEPD-2 channel both upstream and downstream of the proposed culvert crossing. The aquatic area between the siltation fence crossing locations will be searched by a PFBC-approved biologist for turtles and any individuals will be relocated to the lower section of SEPD-2, which will not be disturbed.

Basking Habitat

SEPD-2 is a linear drainage ditch system that provides little opportunity for turtle basking. Basking is essential to maintain turtle metabolic functions and is important to maintaining population viability.

To enhance turtle habitat at the Philadelphia International Airport, a minimum of twenty basking platforms will be installed. These will consist of six-foot long boards, two inches thick by six inches wide, anchored on the bank and extending into the water.

Because of the potential for even small basking platforms to attract birds (such as great blue herons or canada geese), placing basking platforms in proximity to the runway may create a hazardous wildlife attractant. During the final design phase, the Airport will identify appropriate locations within SEPD-2 for basking platforms, in consultation with PFBC and consistent with FAA Advisory Circular AC150/5200-33, *Hazardous Wildlife Attractants on or Near Airports.* A five-year monitoring and maintenance plan will be developed with the DEP and PFBC during the final design phase.

Nesting Habitat Enhancement

Turtle populations are also often limited by the availability of suitable nesting sites. Optimum nesting habitat is provided by open or sparsely vegetated sandy or loamy soils in open, sunny areas. The open, sparsely vegetated, soft substrates facilitate the female turtle's ability to excavate a nest. Open sunny conditions provide optimum temperatures for embryo development. These optimum nesting sites are very limited in the vicinity of SEPD-2, as most areas adjacent to the ditch are densely vegetated with turf grasses and have a clay soil. Some small areas of sandy soil are present at the top of the bank slope or on the steeply sloping banks of the ditch.

During construction, artificial nest habitat will be created to augment the limited natural nesting habitat. Because recent research[1] indicates that clumped nests are more likely to be subject to predation by raccoons, skunks or fox, many (a minimum of 20) small nest sites will be created. Each nest site will be circular, three feet in diameter. Each nest site will be excavated to a depth of 18 inches and filled with a mixture of sand, peat and loam. The nest sites will be located at varying distances from the top of the bank of SEPD-2, with the closest site approximately three feet from the top of the bank. During the final design phase, the Airport will identify the appropriate locations along SEPD-2 for the created nest habitats, in consultation with the PFBC. A five-year monitoring and maintenance plan will also be developed during the final design phase with the DEP and PFBC.

Implementation Schedule

Threatened and endangered species mitigation measures will be implemented as soon as feasible following the completion of design and issuance of all required construction permits. A construction schedule will be developed that includes these actions. All mitigation measures will be completed prior to the end of construction.

- Exclusion fencing will be installed prior to any construction at the south (Runway 35) end of the runway;
- Nest habitat will be created as soon as feasible in the construction schedule;
- Basking platforms will be constructed as soon as feasible in the construction schedule;
- No construction (of the airfield service road culvert) will be done in SEPD-2 during the season when turtles are most active, from May 1 through July 30; and
- Exclusion fencing will be removed at the completion of construction.

5.3 Wetlands and Waterways

There would be no Proposed Project-related impacts to wetlands. The Proposed Project would impact regulated waters of the Commonwealth (i.e. a watercourse which currently serves as a Stormwater Management Facility). The SEPD-2 happens to be a waterway that harbors a threatened and endangered species (the red-bellied turtle), so the activity will require mitigative measures (approved by the PFBC) to assure that the overall impact to the red-bellied turtle will not be adverse. As the joint permit application process proceeds, impacts to the waterway, impacts to the red-bellied turtle, and any mitigative measures will be documented in detail.

5.4 Surface Transportation

The Preferred Alternative (Alternative 1) would close a portion of SR 291 and re-direct traffic to Bartram Avenue from Scott Way to Island Avenue. As a result of the change in traffic patterns and volumes, three intersections would exhibit unacceptable LOS (E or F) during the morning and/or evening peak hour in 2015. These impacts, and mitigation measures, are described in detail in Section 4.14 of this FEIS. Mitigation measures will be incorporated into the final design of the Preferred Alternative as described below.

1 Marchand, Michael N., John A. Litvaitis, Thomas J. Maier, Richard M. DeGraaf. 2002. *Use of artificial nests to investigate predation on freshwater turtle nests.* Wildlife Society Bulletin 2002, 30(4): 1092-1098.

- Bartram Avenue-84th Street intersection: Add one left-turn lane on the 84th Street southbound approach to provide additional left-turn capacity, by redesignating one of the existing through traffic lanes.
- Bartram Avenue – Tinicum Boulevard intersection: Implement signal timing adjustments.
- Bartram Avenue and the I-95 SB on-ramp: install a traffic signal at the intersection.
- SR 291 and Bartram Avenue/Scott Way: add an EB left-turn lane within the existing curb-to-curb width, remove one of the WB through lanes; and change signal phasing, timing, and cycle length.

The design of these mitigation measures would be coordinated with the Philadelphia Department of Streets, PennDOT, and appropriate Federal, local and state agencies to ensure that the proposed improvements were designed to safely accommodate existing and planned bicycle lanes and routes.

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Glossary of Terms

100-year floodplain — An area of land that would be inundated by a flood having a one percent chance of occurring in any given year. Also referred to as the base or 100-year flood.

500-year floodplain — An area of land that would be inundated by a flood having a 0.2 percent chance of occurring in any given year.

A

A-weighted Sound Level — A measure of sound level with weighted frequency characteristics that correspond to human subjective response to noise.

Aboveground Storage Tank (AST) — A structure of any size or capacity that is used or designed to be used for the storage of oil and/or hazardous material above the ground surface.

Act 2 – The Pennsylvania Land Recycling and Environmental Remediation Standards Act of May 18, 1995 (P.L.4, No. 1995-2), 35 P.S. §§6026.101 et seq.

Advisory Circulars — The Advisory Circular (AC) provides a single, uniform, agency-wide system that the Federal Aviation Administration (FAA) uses to deliver advisory material to FAA customers, industry, the aviation community, and the public. They do not create or change a regulatory requirement.

Air Carrier (or Commercial Air Carrier) — Airlines holding an FAA Air Carrier Operating Certificate that operate aircraft for compensation or hire designed to have a maximum seating capacity of more than 60 seats or a maximum total aircraft weight of more than 18,000 pounds or to conduct international operations.

Aircraft Operations — The total number of aircraft movements in terms of landings (arrivals) plus takeoffs (departures) from an airport.

Airport Layout Plan (ALP) — An airport plan is a scaled drawing of existing and proposed land and facilities necessary for the operation and development of the airport. The ALP shows boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes, the location and nature of existing and proposed airport facilities and structures, and the location on the airport of existing and proposed non-aviation areas and improvements thereon. The ALP requires FAA approval.

Air Quality — Ambient air pollutant concentrations and emissions, and their temporal and spatial distribution; and their relationship to health-based standards and criteria.

Air Quality Standard — A legal requirement for air quality, usually expressed in terms of maximum allowable pollutant concentration, averaged over a specified time interval.

Air Taxi — Non-scheduled passenger aircraft with 50 or fewer seats.

Alkalinity — A measure of the capacity of water to neutralize acid. Alkalinity is primarily a function of bicarbonate, carbonate, and hydroxide ions and is typically expressed in parts per million (ppm) of calcium or magnesium ions.

Altitude — Height above a reference point, usually expressed in feet. Reference points are typically sea level, the ground, or airfield elevation in which case mean sea level, above ground level, or airfield elevation further describes the altitude, respectively.

Ambient Concentration — Concentration of a pollutant in the ambient air that can be sensed or measured at a monitoring site, and usually expressed as mass or volume of pollutant in a given volume of air.

Ambient, or Background, Noise Level — The level of noise that is all encompassing within a given environment for which a single source cannot be determined. It is usually a composite of sounds from many and varied sources near to and far from the receiver.

Apron — The defined area of the airport provided for the stationing of aircraft for the embarkment and disembarkment of passengers, the loading or unloading of cargo, and parking.

Aquifer — Rock or sediment that is saturated with water and sufficiently permeable to transmit economically significant quantities of water to wells and springs.

Arrival — The act of an aircraft approaching and landing at an airport.

Arrival Procedure — A series of directions from air traffic control, using fixes and procedures, to guide an aircraft from the en route environment to an airport for landing.

Attainment Area — An area that meets all of the National Ambient Air Quality Standards for a particular pollutant.

B

Background — Levels of oil and hazardous material that would exist in the absence of a release that are 1) ubiquitous and consistently present in the environment due to geologic, ecological, or atmospheric conditions; 2) a result of deposition of industrial process or engine emissions attributable to coal ash or wood ash associated with fill; or 3) material petroleum residues that are incidental to the normal operation of motor vehicles.

Background Concentration — Pollutant concentrations due to natural sources; sources other than the source(s) being evaluated; and unidentified sources.

Biochemical Oxygen Demand (BOD) — The amount of oxygen used by microorganisms per unit volume of water, at a given temperature, for a given time. A measure of pollution or eutrophication.

Block — A subdivision of a block group (or, prior to 2000, a block numbering area), a block is the smallest geographic unit for which the U.S. Census Bureau tabulates 100-percent data. Many blocks correspond to individual city blocks bounded by streets; but blocks – especially in rural areas – may include many square miles and may have some boundaries that are not streets. The U. S. Census Bureau established blocks covering the entire nation for the first time in 1990. Over 8 million blocks are identified for 2000 U.S. Census.

Block Group — A subdivision of a census tract (or, prior to 2000, a block numbering area), a block group is the smallest geographic unit for which the U.S. Census Bureau tabulates sample data and income data. A block group consists of all the blocks within a census tract designated with the same beginning number. Example: Block Group 3 consists of all blocks within a 2000 census tract number from 3000 to 3999.

C

Catchment Areas — The geographical area served by an airport.

Carbon Monoxide — A colorless, odorless toxic gas produced by the incomplete combustion of organic materials used as fuels.

Census Tract — A relatively permanent statistical subdivision of a county delineated by a local committee of census data users for the purpose of presenting data. Census tracts are generally smaller than municipalities or minor civil divisions. The boundaries normally follow visible features, but may follow governmental unit boundaries and other non-visible features. Designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time of establishment, census tracts average about 4,000 inhabitants.

Centerline (of a runway) **—** A line that vertically bisects a runway.

Centroid — The point representing the geographic center of a U.S. Census Bureau census block.

Chemical Oxygen Demand (COD) — The quantity of oxygen used in biological and non-biological oxidation of materials in water; a measure of water quality.

Church-Mingo Creek (CMC) — Within the project limits, the Church-Mingo Creek Watershed includes sections of Church Creek that are culverted and channelized upstream of the confluence with Mingo Creek.

Clean Air Act (CAA) — The Federal law regulating air quality.

Clean Air Act Amendments (CAAA) — The Clean Air Act Amendments of 1990.

Commercial service airports — Airports with public scheduled passenger service and having 2,500 or more enplaned passengers per year.

Commuter Aircraft — Smaller propeller-driven and jet aircraft, including smaller regional jets (*i.e.*, with less than 60 seats) comprising scheduled commercial passenger and cargo airlines as well as "on-demand" commercial operators. A typical commuter flight operates over a trip distance of less than 300 miles.

Conformity — The process of meeting Section 176(c)(1) of the Clean Air Act Amendments that requires Federal Actions to conform to the State Implementation Plan for air quality.

Connecting Passenger — An airline passenger who transfers from an arriving aircraft to a departing aircraft to reach his or her ultimate destination.

Criteria Pollutants — The six pollutants listed in the Clean Air Act that are regulated by the U.S. Environmental Protection Agency through the National Ambient Air Quality Standards (NAAQS) because of their health and/or environmental effects. The criteria pollutants are nitrogen dioxide, sulfur dioxide, carbon monoxide, ozone, particulate matter, and lead.

Critical Aircraft — The most demanding aircraft expected to conduct 500 or more annual operations at an airport or a particular runway.

Critical Runway Departure Length — Critical runway departure length requirements are dictated by the critical aircraft and also by the site conditions at the airport. Ideally, the critical aircraft should be able to operate fully loaded during all weather conditions.

D

Darby Creek —Darby Creek includes a network of manmade drainage channels, impounded waters, and naturally occurring wetlands.

Day-Night Average Sound Level (DNL) — A noise measure used to describe the average sound level over a 24-hour period, typically an average day over the course of a year. In computing DNL, an extra weight of 10 decibels is assigned to noise occurring between the hours of 10 PM and 7 AM to account for increased annoyance when ambient noise levels are lower and people are trying to sleep. DNL may be determined for individual locations or expressed in noise contours.

Decibel (dB) — Sound is measured by its pressure or energy in terms of decibels. The decibel scale is logarithmic. Therefore, a 3-dB increase is about twice as loud (a 100 percent increase), and a 10-decibel increase in sound is approximately a tenfold increase in sound energy.

Declared Distances — Runway-specific procedure to calculate the takeoff run available (TORA) and/or the Landing Distance Available (LDA) which differs from the physical amount of pavement available, for example to compensate for a reduced RSA.

Delaware River (DR) — Within the project limits, the Delaware River Watershed includes all unnamed tributaries to the Delaware River within the PHL Project Area.

Delay — The difference, in minutes, between the scheduled time and actual time of an aircraft arrival or departure. As stated in the FAA National Plan of Integrated Airport Systems, an airport is considered to be congested when the annual average delay exceeds 5 minutes per operation.

Demand — The number of aircraft trying to takeoff or land at an airport in a specified period of time.

***De minimis* —** So small as to be negligible or insignificant.

Demolition Waste — Any waste materials and rubble resulting from the demolition of buildings, pavement, roads or other structures. Demolition waste includes, but is not limited to, concrete, bricks, lumber, masonry, road paving materials, rebar and plaster.

Departure — The act of an aircraft taking flight and leaving an airport.

Dewater — To pump accumulated groundwater out of a soil excavation.

Direct Impacts — The physical effects of a proposed project that would occur in the same place as the project at the time when the project is completed.

Discharge — Any addition, direct or indirect, of oil and/or hazardous material to surface water, groundwater, the sewer system, ground surface, or subsurface.

Displaced Threshold — A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold may be available for takeoffs in both directions and landings from the opposite direction.

Dissolved Oxygen Saturation — The oxygen freely available in water, vital to fish and other aquatic life and for the prevention of odors. Dissolved oxygen levels are considered an important indicator of a water body's ability to support desirable aquatic life.

Dominant Species — A plant species that is abundant and contributes at least 20 percent of a plant community ground cover.

Downgradient — The direction in which water flows (downstream).

Draft Environmental Impact Statement (DEIS) — The document prepared by a federal agency in accordance with National Environmental Policy Act (NEPA) regulations (23 CFR Part 771.123). These regulations require that the EIS evaluate all reasonable alternatives considered, discuss the reasons that alternatives have been eliminated from detailed study, and summarize the studies, reviews, consultations, and coordination required by environmental laws and Executive Orders, and disclose and compare impacts of the alternatives being assessed.

E

Easement — The legal right of one party to use part of the rights of a piece of real estate belonging to another party. This may include, but is not limited to, the right of passage over, on or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity.

East Mingo Creek Watershed (EMC) —The East Mingo Creek Watershed is the eastern portion of the airport that drains toward Mingo Creek. It includes a network of drainage channels, impounded waters, and wetlands.

Effluent — Water discharged, either as surface water or groundwater, from a potential source of pollutants such as a septic system or wastewater treatment facility.

Emission Factor — The rate at which a pollutant is emitted into the atmosphere by a source.

Emission Inventory — A complete list of sources and rates of pollutant emissions within a specific area and time interval.

Endangered Species — An "Endangered" species is one that is in danger of extinction throughout all or a significant portion of its range.

Engineered Material Arresting Systems (EMAS) — Collapsible blocks made of water, foam, and cement that deform readily under the weight of an aircraft tire. As the tires crush the material the drag forces decelerate the aircraft, bringing it to a safe stop. EMAS is proposed for use in Alternative 2 for the Runway Safety Area (RSA).

Enplanements — The number of passengers boarding commercial aircraft at an airport. Enplanements do not include arriving or connecting passengers.

Estuary — A tidal body of water where salt water from an ocean mixes with fresh water from a river.

Ethylene Glycol — An organic compound belonging to the alcohol family. The most common liquid deicer used for aircraft deicing. Is biodegradable and results in an oxygen demand during degradation.

Existing Conditions — The current conditions, prior to future development, that serves as a foundation for analysis. For the purposes of this DEIS, Existing Conditions are 2003.

F

Federal Action — An action initiated by a Federal Agency that has effects that may be major and potentially subject to Federal control and responsibility.

Federal Aviation Administration (FAA) — The FAA constructs, operates, and maintains the National Airspace System and the facilities which are a part of the system; allocates and regulates the use of the airspace; ensures adequate separation between aircraft operating in controlled airspace; and through research and development programs, provides new systems and equipment to improve utilization of the nation's airspace.

Federal Aviation Regulations (FAR) — The body of Federal regulations relating to aviation. Published as Title 14 of the Code of Federal Regulations (CFR).

Feeder Flight — A flight that primarily serves air passengers who want to transfer to a long-haul flight. Feeder flights are usually served by turboprop or regional jet aircraft.

Flight Track — The path along the ground followed by an aircraft in flight.

Floodplain — The lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year (i.e., the area that would be inundated by a 100-year flood).

Floodway — The area of the floodplain that should be reserved (kept free of obstructions) to allow floodwaters to move downstream.

Flora — The plant species that occur in an area.

G

Gate — Locations at the airside terminals at which aircraft park, allowing passengers to enplane and deplane.

General Aviation — Non-commercial airline aviation, primarily privately-owned aircraft and corporate jets, including those making connections to commercial flights.

General Conformity Rule — U.S. Environmental Protection Agency regulations defining the General Conformity process, codified at 40 CFR 93 Subpart A.

Groundwater — Water below the earth's surface in the zone of saturation.

Groundwater Recharge/Discharge — Groundwater recharge refers to the addition of surface water to subsurface groundwater by infiltration through permeable soils. In some locations, groundwater may also discharge to the surface through springs or into lakes, rivers, or streams, particularly where groundwater levels are high and surface soils are permeable.

H

Habitat — The environment occupied by individuals of a particular species, population, or community.

Hazardous Material — Material, including, but not limited to, any material in whatever form which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious, or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or the environment, when improperly stored, treated, transported, disposed of, used, or otherwise managed.

Hazardous Waste — A waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, an increase in serious irreversible, or incapacitating reversible illness, or pose a substantial present or potential hazard to human health, safety, public welfare, or the environment when improperly treated, stored, transported, used, disposed of, or otherwise managed.

Hertz (Hz) — The unit used to designate frequency (or pitch) sound; specifically, the number of cycles per second.

Hub Airport — The FAA uses the term "hub" to identify very busy primary airports that each account for at least 1 percent of total U.S. passenger enplanements. There are 31 large hub airports, including PHL, that together account for 70 percent of all passenger enplanements in the U.S.

Hubbing — A method of airline scheduling that times the arrival and departure of several aircraft in a close period of time to allow the transfer of passengers between different flights of the same airline to reach their ultimate destination. Several airlines may conduct hubbing operations at an airport.

Hydrologic — Pertaining to the properties, distribution, and circulation of water.

Hydrocarbons — Compounds of hydrogen and carbon including methane and ethane. Gases that are generated by unburned and wasted fuel and come from incomplete combustion of fossil fuels and from evaporation of liquid fuels.

Hydrophytic Vegetation — A plant community with greater than 50 percent of the dominant plant species ranked as obligate wetland (OBL), facultative wetland (FACW,) or facultative (FAC or FAC+).

I

Impervious Surface — Relating to hydrology. A surface through which precipitation cannot penetrate, causing direct runoff or perching (examples include asphalt paving roofs, and densely compacted gravel).

Indirect Impacts — The consequences of a project's direct impacts. These impacts are generally not quantifiable and may occur over a larger area or a longer time frame.

Institutional Controls — A measure undertaken to limit or prohibit certain activities that may interfere with the integrity of a remedial action or result in exposure to regulated substances at a site. These include, but are not limited to, fencing or restrictions on the future use of the site.

Instrument Approach — A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

Instrument Flight Rules (IFR) — Flight procedures that govern during limited visibility or other operational constraints. Under IFR, pilots must file a flight plan and fly under the guidance of radar.

Integrated Noise Model (INM) — A computer model developed, updated and maintained by the FAA to predict the noise exposure generated by aircraft operations at an airport.

Inundation — A condition in which water from any source temporarily or permanently covers a land surface.

L

Landing and Takeoff (LTO) Cycle — The time that an aircraft is in operation at an airport. An LTO cycle begins when an aircraft starts its final approach (arrival) and ends after the aircraft has made its climb-out (departure).

Landing Distance Available (LDA) — The length of runway declared available and suitable for satisfying landing distance needed from the threshold to complete the approach, touchdown, and decelerate to a safe stop.

Land Use Compatibility — The ability of land uses surrounding the airport to coexist with airport-related activities with minimum conflict.

Large Narrowbody Aircraft — A narrowbody aircraft with 240 standard seats.

Large Widebody Aircraft — A widebody aircraft with 405 to 418 standard seats.

Leaching — The percolation or draining of liquid through a solid substance, which carries dissolved material.

Level of Service (LOS) — A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers, with LOS "A" being the best rating, and LOS "F" being the worst – generally describes conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience and safety.

Low-Cost Carriers — Airlines such as AirTran, JetBlue, Southwest, and Frontier that have lower operating costs (and fares) compared to the "legacy" air carriers.

Low Income — Department of Transportation (DOT) Order 5610.2 defines Low Income persons as those whose "median household income is below the United States Department of Health and Human Services poverty guidelines." Council on Environmental Quality (CEQ) Guidelines state that Low Income populations should be identified using the annual statistical poverty thresholds developed by the U.S. Census Bureau. Data for Poverty by Age (P87) at the Block Group Level from the 2000 U.S. Census was used to identify low income populations.

M

Maintenance Area — Any geographic area of the United States that had been previously designated by USEPA as a nonattainment area pursuant to the Clean Air Act Amendments of 1990 and subsequently redesignated to attainment.

Metropolitan Planning Organization — Regional planning agency that designates the priority use of federal transportation funding for its service area.

Minority — According to the 2000 U.S. Census, a minority person is defined as an individual who is a member of one of the following population groups: Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian; Other Pacific Islander; some other race alone; and two or more races.

Mitigation — Actions that avoid, minimize, or compensate for potential adverse impacts.

Mitigation Measure — An action taken to alleviate negative impacts.

N

Narrowbody Aircraft — A commercial passenger jet having a single aisle and maximum of three seats on each side of the aisle.

National Airspace System — The common network of U.S. airspace; air navigation facilities, equipment, services, airports, or landing areas; aeronautical charts, information, and services; rules, regulations, and procedures; technical information, manpower, and materials, all which are used in aerial navigation.

National Ambient Air Quality Standard (NAAQS) — Air quality standards established by USEPA to protect human health (primary standards) and to protect property and aesthetics (secondary standards).

National Environmental Policy Act of 1969, as amended (NEPA) — The Federal legislation that requires an interdisciplinary approach in planning and decision-making for federal-aid actions. The Act includes requirements for the contents of environmental impact statements that are to accompany every recommendation for major Federal actions significantly affecting the quality of the human environment. The interdisciplinary study approach includes the analysis of potential impacts to the natural, social, and economic environment.

Nitrogen — A main nutrient for critical survival and essential element for plant growth, comprising 78 percent of the atmosphere. Organisms use nitrogen to form proteins.

Nitrogen Oxides (NOx) — Poisonous and highly reactive gases produced when fuel is burned at high temperatures, causing some of the ambient nitrogen in the air to burn also.

Noise — Unwanted sound.

Noise Abatement Procedure — Procedure followed during either aircraft departures or arrivals to minimize the off-airport impacts of aircraft noise.

Noise Contour — Continuous lines of equal noise level usually drawn around a noise source. Noise contours often are drawn in 5-decibel increments and are generally used in depicting the noise exposure around airports, highways, and industrial plants.

Noise Exposure — The cumulative sound energy affecting a person over a specified period of time.

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.

Nonattainment Area — Any geographic area of the United States that is in violation of any NAAQS and therefore has been designated by USEPA as nonattainment pursuant to the Clean Air Act Amendments of 1990.

Nonprecision Approach — A standard instrument approach procedure providing runway alignment but no glide slope or descent information.

Nonprecision Instrument Runway — A nonprecision instrument runway has visual aids and, at a minimum, a navigation aid that provides at least directional guidance adequate for a straight-in approach.

Non-Scheduled Operations — Operations that are not scheduled in advance. These can include General Aviation operations and charter flights.

Nonwetland — Any area that has sufficiently dry conditions that indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology are lacking. Any area that is neither a wetland, a deepwater aquatic habitat, nor other special aquatic site.

North-South Ponding Ditch Watershed (NSPD) — North-South Ponding Ditch includes a network of manmade drainage channels located on the PHL property and associated depression and naturally occurring wetlands.

NPDES — The National Pollutant Discharge Elimination System (NPDES) permit program as authorized by the Clean Water Act, controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

NURP — The Nationwide Urban Runoff Program included in the 1977 Amendments to the Clean Water Act (PL 95-217) by the United States Environmental Protection Agency (USEPA) to expand the state of knowledge of urban runoff pollution by instituting data collection and applied research Projects in selected urban areas throughout the country. The NURP studies were completed and summarized in 1983 and provided the basis for quantifying the effects of stormwater runoff on water resources nationally.

O

Oil — Insoluble or partially soluble oils of any kind or origin or in any form, including, without limitation, crude or fuel oils, lube oil or sludge, asphalt, insoluble or partially insoluble derivatives of mineral, animal or vegetable oils, and white oil.

Operation — A takeoff or landing by an aircraft. The arrival and subsequent departure of one aircraft is counted as two operations.

Overflight — Aircraft flight originating and terminating outside the controlling facility's area that transits the airspace without landing.

Ozone — A colorless, toxic gas formed by the photochemical reactions in the atmosphere of VOCs with nitrogen oxides.

P

Pacing Airport — An airport that contributes to delays throughout the national airport system.

Parallel Runways — Runway that are parallel. At PHL, Runways 9L-27R and 9R-27L are parallel and therefore are designated as L (left) or R (right).

Particulate Matter (PM) — Particulate matter is made up of small solid particles and liquid droplets (aerosols). Suspended particulates refer to particles of approximately 100 micrometers or less in diameter.

Peak Period Pricing — A market-based approach to reduce delay at airports. This approach is similar to pricing practices in the utilities industry, which often charges higher rates during peak demand periods. It requires defining the peak period, establishing a pricing structure, and implementing a process for monitoring demand and adjusting peak periods and/or pricing.

pH — pH is the measure of the acidity or alkalinity of water. Pure water has a pH of 7.0. Water with a pH less than 7.0 is acidic and water with a pH greater than 7.0 is alkaline. Most marine organisms prefer pH in the range of 6.5 to 8.5. The pH level in water is critical to the survival of aquatic plants and animals.

Phosphorus — A main nutrient for the critical survival of aquatic species. It is necessary for metabolic processes which involve the transfer of energy, but in high levels in water bodies can degrade water quality.

PM2.5 — Particulate matter that is made up of small solid particles and liquid droplets (aerosols), in which particles are 2.5 micrometers or less in diameter.

PM10 — Particulate matter that is made up of small solid particles and liquid droplets (aerosols), in which particles are 10 micrometers or less in diameter.

Point Source — A discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, or vessel from which pollutants may be discharged to surface waters.

Pollutant — Substance in air, water, or soil that can cause disease or harm to the environment.

Pollution — Change in the physical, chemical, radiological, or biological quality of a resource (air, land, or water), caused by people or due to human activities, that is injurious to existing, intended, or potential uses of the resource.

ppm — Parts per million by volume.

Precision Instrument Runway — A precision instrument runway is a runway having an existing instrument approach procedure using a ground-based radio system designed to provide an airplane pilot with precise guidance for a final approach and landing.

Precursor — A chemical compound that leads to the formation of a pollutant, e.g., VOCs and NOx are precursors to ozone formation.

Primary Airports — Commercial service airports in the U.S. that have more than 10,000 enplanements. There are 422 primary airports, including PHL.

Primary Standard — A National Ambient Air Quality Standard set to protect human health.

Propylene Glycol — An organic compound in the alcohol family, used as a liquid deicer.

R

Receiver — The listener or measuring microphone that detects the sound generated by the source.

Receiving Water — A body of water such as a stream, river, lake, or ocean, which receives stormwater and wastewater.

Receptor — A location at which ambient air quality is estimated.

Record of Decision (ROD) — The document that provides the FAA rationale for selecting the preferred alternative and the mitigation requirements to implement the project. The agency uses information in the Final Environmental Impact Statement to prepare the ROD.

Recreation — A value that considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities.

Regional Jet (RJ) — A small turbojet or turbofan powered aircraft with 30 to 90 seats and a range of 1,000 miles or more.

Release — Spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of a regulated substance into the environment.

Reliever Airport — Airports that have been developed by the FAA to provide General Aviation with attractive alternatives to using congested primary commercial airports.

Residual Contamination — The concentrations of oil and/or hazardous material remaining at a site at which further remedial actions are not required by applicable regulations.

Routine Wetland Determination — A type of wetland determination in which office data and/or relatively simple, rapidly applied on-site methods are employed to determine whether or not an area is a wetland. Most wetland determinations are of this type, which usually does not require collection of quantitative data.

Runway — A defined rectangular area on an airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees in the direction of aircraft travel, e.g., Runway 17, Runway 35.

Runway Protection Zone (RPZ) — An area off the runway end to enhance the protection of people and property on the ground.

Runway Safety Area (RSA) — A defined surface surrounding the runway that is suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Runoff — The portion of rainfall, melted snow, or other precipitation that flows across the ground surface to a drain, sewer, stream, lake, pond or river.

S

Secondary Impacts — Reasonably foreseeable indirect consequences to the environment caused by a proposed project that would occur either in the future or in the vicinity of, but not the same location as, the direct impacts associated with the project.

Secondary Runway — A runway on which fewer operations take place compared to the primary runway(s).

Secondary Standard — A National Ambient Air Quality Standard set to protect human property and aesthetics.

Section 404 of the Clean Water Act (Section 404) — The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 401 et seq.) is the enabling legislation for protection of waters of the United States by the Army Corps of Engineers and the U.S. Environmental Protection Agency.

Sediment — Fragmental mineral particles from soil and rock materials created by the process of erosion and transported by water, wind, ice, and gravity.

Sensitive Receptor — Land uses that would require noise mitigation to decrease the impact of noise levels by 25-35 decibels or that have the recommendation that their use be controlled through zoning, property acquisition, or other land use controls to prevent exposure to airport noise. Examples include schools, libraries, hospitals, nursing homes, places of worship, auditoriums, concert halls, outdoor music shells and amphitheaters, parks, and residential uses.

Sewer — An underground pipe or drain used to carry liquid wastes from homes, office buildings, stores, institutions and industries.

Sheen — An iridescent appearance of any oil or waste oil on the surface of any river, stream, lake, pond, spring, impoundment, estuary, coastal water, or groundwater.

Significant Impact Thresholds — Significant impact thresholds are defined in FAA Order 1050.1E, Appendix A. For example, a significant noise impact would occur if analysis shows that the proposed action would 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.

Slag — The vitreous mass left as a residue by the smelting of metallic ore.

Slots — The number of arrivals and departures allowed in a given time frame by an airport. These spaces, known as slots, are then distributed to individual airlines. The total number of operations cannot exceed the allocated number of slots.

Small Narrowbody — A narrowbody aircraft with 100 to 149 standard seats.

Small Widebody Aircraft — A widebody aircraft with 290 to 330 standard seats.

Soil — Unconsolidated mineral and organic material that supports, or is capable of supporting, plants, and which has recognizable properties due to the integrated effect of climate and living matter acting upon parent material, as conditioned by relief over time.

Sole Source Aquifer — An aquifer designated by USEPA as the sole or principal source of drinking water for an area pursuant to § 1424(e) of the Federal Safe Drinking Water Act, as amended. USEPA defines a sole or principal source aquifer as one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water.

South-Central Ponding Ditch (SCPD) — The South-Central Ponding Ditch Watershed includes a network of manmade built drainage channels located on the PHL property and associated depression and naturally occurring wetlands.

Southeast Ponding Ditch (**SEPD)—** The Southeast Ponding Ditch Watershed includes a network of built drainage channels located on the PHL property and associated depression wetlands.

Sound Exposure Level (SEL) — A time-integrated metric (i.e., continuously summed over a time period) that quantifies the total energy in the A-weighted sound level measured during a transient noise event. SEL accounts for both the duration and the loudness of a noise event.

State Implementation Plan — The strategy to be used by a state to control air pollution in order that NAAQS violations will be eliminated.

Stormwater Runoff — The portion of precipitation that flows over land areas toward stream channels, lakes, or other water bodies.

Stage Length — The non-stop distance to be flown.

Sulfur Dioxide (SO_2) — Sulfur dioxide is a corrosive gas produced mainly from the burning of fuels containing sulfur compounds.

Surface Water — Water that is open to the atmosphere and subject to runoff. All waters other than groundwater, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, and vernal pools.

T

Takeoff Run Available (TORA) — The length of runway declared available and suitable for the ground run of an airplane taking off.

Taxiway — A defined path within the airport established for the taxiing of aircraft and intended to provide a link between one part of the airport and the other.

Threatened Species — A "threatened" species is one that is likely to become endangered in the foreseeable future.

Threshold — The beginning of the portion of the runway that is available for takeoff or for landing.

Total Maximum Daily Load (TMDL) — A TMDL is a calculation of the total maximum amount of a pollutant that a body of water can receive each day and still meet water quality standards (i.e., a pollution budget).

Turbojet – An aircraft powered by one or more gas turbine engines in which the exhaust gases provide the propulsive thrust to drive the aircraft.

Turboprop — An aircraft where a propeller is driven by a gas turbine.

U

Underground Storage Tank (UST) — A structure of any size or capacity that is used or designed to be used for the storage of oil and/or hazardous material below the ground surface.

Unknown Source — The original location of a release that has migrated in or on groundwater or surface water to a downgradient or downstream property, where the original location has not been established by a preponderance of credible scientific and technical evidence.

United States Environmental Protection Agency (USEPA) — A federal agency responsible for administering programs that address environmental issues. USEPA works to develop and enforce regulations that implement environmental laws enacted by Congress. All Environmental Impact Statements (EISs) prepared by federal agencies are filed with USEPA. Each week, EPA publishes in the *Federal Register* a Notice of Availability for all of the EISs filed the previous week. The USEPA Notice of Availability is the official start of the public comment/wait periods required under the Council on Environmental Quality's regulations implementing the National Environmental Policy Act. USEPA reviews EISs prepared by other federal agencies.

Upgradient — Upstream, the direction from which water flows for surface and groundwater.

Upland — As used herein, any area that does not qualify as a wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils, and/or hydrologic characteristics associated with wetlands. Such areas occurring within floodplains are more appropriately termed nonwetlands.

Urban Fill — Soil fill materials that contain residuals such as wood ash, coal ash, slag, dredged material, and construction/demolition waste.

Urea — Nitrogen-based compound commonly used for deicing Airport runways, taxiways and ancillary roads.

U.S. Army Corps of Engineers (USACE) — A federal agency that administers Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act; its regulatory programs address wetlands and waterways protection.

V

Vegetation — The sum total of plants that occupy a given area.

Vehicle-Miles-Traveled (VMT) — The sum of distances traveled by all motor vehicles on a specific roadway or in a specific region. VMT is equal to the total number of vehicle trips multiplied by the trip distance (measured in miles).

Very Poorly Drained — Soils that are wet to the surface most of the time. These soils are wet enough to prevent the growth of important crops (except rice) unless artificially drained.

Visual Approach — An approach conducted on an instrument flight rules (IFR) flight plan which authorizes the pilot to proceed visually and clear of clouds to the airport. The pilot must, at all times, have either the airport or the preceding aircraft in sight. This approach must be authorized and under the control of the appropriate air traffic control facility. Reported weather at the airport must be ceiling at or above 1,000 feet and visibility of 3 miles or greater.

Visual Flight Rules (VFR) — Visual Flight Rules refers to a set of regulations that a pilot may operate under when weather conditions meet certain minimum requirements. Under VFR, the pilot generally controls the altitude of the aircraft by relying on what can be seen out the window, although this may be supplemented by referring to the instrument panel. Being in contact with air traffic control is optional in most airspace, and the pilot is usually allowed to select the course and altitude to be flown even when in contact with Air Traffic Control. The pilot may navigate either visually, or by reference to instruments and electronic aids to navigation.

Volatile Organic Compounds (VOCs) — VOCs are a general class of compounds, containing various levels of hydrogen and carbon that are chemically active in the atmosphere. VOCs are created when fuels or organic materials are burned or evaporate into the atmosphere. Most hydrocarbons are presumed to be VOCs in the regulatory context, unless specified otherwise by USEPA.

W

Watershed — The contributing region or area from which surface runoff from precipitation flows into a stream or body of surface water.

Water Table — The upper elevation of the surface of the saturated zone.

Wetland — Those areas that are inundated or saturated by surface or ground water 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. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetland Boundary — The point on the ground at which a shift from wetlands to nonwetlands or aquatic habitats occurs. These boundaries usually follow contours.

Wetland Determination — The process or procedure by which an area is adjudged by the appropriate regulatory authority a wetland or nonwetland.

Wetland Hydrology — The sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation.

Wetland Soil — A soil that has characteristics developed in a reducing atmosphere, which exists when periods of prolonged soil saturation result in anaerobic conditions. Hydric soils that are sufficiently wet to support hydrophytic vegetation are wetland soils.

Wetland Vegetation — The sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. As used herein, hydrophytic vegetation occurring in areas that also have hydric soils and wetland hydrology may be properly referred to as wetland vegetation.

Widebody Aircraft — A commercial jet with a wingspan generally greater than 155 feet and having two aisles with 8 to 11 seats across in a row and from 290 to 418 passenger seats.

Z

Zoning — The designation that a municipality gives to land that controls the type, size, lot coverage, and other characteristics of the site.

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A

Appendix A: DEIS Responses to Comments

BOUND SEPARATELY IN VOLUMES 3 and 4

B

Appendix B: Notice of Intent

Register notices with a 60-day comment period soliciting comments on the following collections of information were published on April 17, 2003 on page 19066.

DATES: Comments must be submitted on or before August 29, 2003.

FOR FURTHER INFORMATION CONTACT: Judy Street on (202) 267–9895.

SUPPLEMENTARY INFORMATION:

Federal Aviation Administration (FAA)

1. Title: Type Certification Procedures for Changed Products.

Type of Request: Extension of a currently approved collection.

OMB Control Number: 2120–0657.

Forms(s): N/A

Affected Public: A total of 2,558 applicants.

Abstract: This collection requires that applicants comply with the latest regulations in effect on the date of application for amended Type Certificates or Supplemental Type Certificates for aeronautical products. They now may incur an additional incremental administrative cost to determine the level of significance of the product change.

Estimated Annual Burden Hours: An estimated 18,815 hours annually.

2. Title: Noise Certification Standards for Subsonic Jet Airplanes and Subsonic Transport Category Large Airplanes.

Type of Request: Extension of a currently approved collection.

OMB Control Number: 2120–0659.

Forms(s) N/A.

Affected Public: A total of 10 applicants.

Abstract: Sections A36.5.2 and A36.5.2.5 of the Federal Aviation Administration (FAA) noise certificate standards for subsonic jet airplanes and subsonic transport category large airplanes (14 CFR part 36) contain information collection requirements. The information collected is needed for the applicant's noise certification compliance report in order to demonstrate compliance with part 36.

Estimated Annual Burden Hours: An estimated 1,350 hours annually.

3. Title: Flight Operational Quality Assurance (FOQA) Program.

Type of Request: Extension of a currently approved collection.

OMB Control Number: 2120–0660.

Forms(s): N/A.

Affected Public: A total of 30 air carriers.

Abstract: FOQA is a voluntary program for the routine collection and analysis of digital flight data from airplane operations. The purpose is to enable early corrective action for potential threats to safety. This NPRM codifies protection from punitive enforcement action based on FOQA information, and requires participating air carriers to provide aggregate FOQA data to the FAA.

Estimated Annual Burden Hours: An estimated 360 hours annually.

ADDRESSES: Send comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th NW., Washington, DC 20503, Attention FAA Desk Officer.

Comments are invited on: Whether the proposed collection of information is necessary for the proper performance of the function of the Department, including whether the information will have practical utility; the accuracy of the Department's estimates of the burden of the proposed information collection; ways to enhance the quality, utility and clarity of the information to be collected; and ways to minimize the burden of the collection of information on responders, including the use of automated collection techniques or other forms of information technology.

Issued in Washington, DC, on July 22, 2003.

Judith D. Street,

FAA Information Collection Clearance Officer, Standards and Information Division, APF–100.

[FR Doc. 03–19400 Filed 7–29–03; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Environmental Impact Statement: Philadelphia International Airport Runway 17–35 Extension Project, Philadelphia, PA

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of Intent.

SUMMARY: The FAA is issuing this notice to advise the public that an Environmental Impact Statement (EIS) will be prepared for the Philadelphia International Airport Runway 17–35 Extension Project. In 2002, although the Philadelphia International Airport (PHL or the Airport) was the 12th busiest airport in the United States in terms of the annual number of aircraft operations (departures and arrivals), it was the 5th most delayed airport in the country. The FAA has also identified PHL as a "pacing" airport—an airport that contributes to delays throughout the national airports system. An airfield modeling and capacity/delay analysis performed during the Airport's on-going Master Plan Update process determined that the average annual delay in 2000 at PHL was nearly 10 minutes per aircraft operation. This level of delay has not abated significantly since that time. Without improvements, the Master Plan Update forecasts that this average annual delay would increase to nearly 20 minutes per operations by 2010. Furthermore, it was determined that one of the major causes of the delay is inadequate airfield capacity because of the current configuration of the airfield. As a result, the City of Philadelphia is proposing major improvements to the Airport to increase airfield capacity at PHL in order to reduce existing and forecast delays. The FAA has concurred that a capacity and delay problem exists at PHL and that projects for alleviating this problem are subject to the preparation of an EIS under the National Environmental Policy Act (NEPA). The City proposes two projects to address immediate and long-term needs. One project, known as the Runway 17–35 Extension Project (the Runway 17–35 Project), which is the subject of this Notice of Intent, would provide a more immediate delay reduction for several years by extending the length of Runway 17–35. The second project, referred to as the Capacity Enhancement Program, is a major airfield redevelopment project that would provide greater relief from delay over a much longer period and is the subject of a separate Notice of Intent. The FAA, as lead federal agency, at the City of Philadelphia's request, has opted to prepare a separate EIS for each project because the Runway 17–35 Project will address the short-term need for delay reduction at PHL while the Capacity Enhancement Program will provide more comprehensive and longer-term delay reduction. The FAA will prepare the EISs concurrently and will take into account the potential cumulative impacts of each project, but a separate Public Scoping Meeting will be held for the Capacity Enhancement Program.

The U.S. Secretary of Transportation has chosen these proposed improvements as one of thirteen high priority transportation projects for expedited environmental review under Executive Order 13274, *Environmental Stewardship and Transportation Infrastructure Project Review.* The FAA and the environmental review agencies will be collaborating to undertake environmental streamlining and stewardship on both the Capacity Enhancement Program and the Runway 17–35 Project.

FOR FURTHER INFORMATION CONTACT: James B. Byers, Environmental Specialist, Federal Aviation

Administration, Harrisburg Airports District Office, 3905 Hartzdale Drive, Suite 508, Camp Hill, PA 17011. Telephone (717) 730–2833.

SUPPLEMENTARY INFORMATION: The FAA, in cooperation with the City of Philadelphia Department of Aviation, will prepare an EIS for the proposed project. The EIS for the Runway 17–35 Project will address a range of alternatives that would reduce existing and forecasted delays at PHL, including a No Build Alternative, a build alternative that would extend Runway 17–35 to the north by 600 feet and to the south by 440 feet, to a total length of 6,500 feet, as well as a range of other alternatives such as demand management alternatives and alternatives that are not within the jurisdiction of PHL or FAA, such as greater use of regional airports or other transportation modes. The EIS will also evaluate alternatives identified during the Scoping process that would reduce existing and forecasted delays at PHL. The FAA intends to use the preparation of this EIS to comply with Section 106 of the National Historic Preservation Act of 1966, as amended and any other applicable laws having public involvement requirements. Comments addressing this issue should be addressed to the listed contact person.

The FAA intends to conduct a Scoping process to gather input from all interested parties to help identify any issues of concern associated with the proposed project. In addition to this notice, Federal, State, and local agencies, which have jurisdiction by law or have special expertise with respect to any potential environmental impacts associated with the proposed project, will be notified by letter of an Agency Scoping Meeting to be held on August 19, 2003 from 8:30 a.m. to 4 p.m. at the Airport Executive Offices in Terminal E at the Philadelphia International Airport in Philadelphia, Pennsylvania. To notify the general public of the Scoping process, a legal notice will be placed in newspapers having general circulation in the project area describing proposed project. The newspaper notice will notify the public that a Scoping Meeting will be held to gain their input concerning the proposed project. The public scoping meeting is scheduled for 5 p.m. to 9 p.m. on August 12, 2003 at the Sheraton Suites and Four Points, Philadelphia Airport Complex, 4101 Island Avenue in Philadelphia, Pennsylvania. The format of the meeting will be an open house with project information displayed and representatives from the FAA and the Airport available to answer questions. A formal presentation will be held at 6 p.m. and repeated at 8 p.m. Written and oral comments will be accepted at each of the meetings. The public comment period on this initial Scoping phase of the EIS will end on September 3, 2003. Written comments will be accepted if postmarked on or before September 3, 2003 and should be sent to the address above.

The purpose of the Scoping Meeting is to receive comments from the public and answer questions regarding the scope and process related to the EIS.

Issued on: July 21, 2003.

James White,

Acting Manager, Airports Division, Eastern Region.

[FR Doc. 03–19402 Filed 7–29–03; 8:45 am]

BILLING CODE 4910–13–M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Environmental Impact Statement: Philadelphia International Airport Capacity Enhancement Program, Philadelphia, PA

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of Intent.

SUMMARY: The FAA is issuing this notice to advise the public that an Environmental Impact Statement (EIS) will be prepared for the Philadelphia International Airport Capacity Enhancement Program (Capacity Enhancement Program). In 2002, although the Philadelphia International Airport (PHL or the Airport) was the 12th busiest airport in the United States in terms of the annual number of aircraft operations (departures and arrivals), it was the 5th most delayed airport in the country. The FAA has also identified PHL as a "pacing" airport—an airport that contributes to delays throughout the national airports system. An airfield modeling and capacity/delay analysis performed during the Airport's on-going Master Plan Update process determined that the average annual delay in 2000 at PHL was nearly 10 minutes per aircraft operation. This level of delay has not abated significantly since that time. Without improvements, the Master Plan Update forecasts that this average annual delay would increase to nearly 20 minutes per operation by 2010. Furthermore, it was determined that one of the major causes of the delay is inadequate airfield capacity because of the current configuration of the airfield. As a result, the City of Philadelphia is proposing major improvements to increase airfield capacity at the Airport to reduce existing and forecast delays. The FAA has concurred that a capacity and delay problem exists at PHL and that projects for alleviating this problem are subject to the preparation of an EIS under the National Environmental Policy Act (NEPA). The City proposes two projects to address immediate and long-term needs. One project, known as the Runway 17–35 Extension Project (the Runway 17–35 Project) would provide a more immediate delay reduction for several years by extending the length of Runway 17–35 and is the subject of a separate Notice of Intent. The second project, referred to as the Capacity Enhancement Program, which is the subject of this Notice of Intent, is a major airfield redevelopment project that would provide greater relief from delay over a much longer period. The FAA, as lead federal agency, at the City of Philadelphia's request, has opted to prepare a separate EIS for each project because the Runway 17–35 Project will address the need for delay reduction at PHL in the short term while the Capacity Enhancement Program will provide a more comprehensive and longer-term delay reduction. The EISs will be prepared concurrently, but a separate Public Scoping Meeting will be held for the Runway 17–35 Project. The U.S. Secretary of Transportation has chosen these proposed improvements as one of thirteen high priority transportation projects for expedited environmental review under Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Review. The FAA and the environmental review agencies will be collaborating to undertake environmental streamlining and stewardship on both the Capacity Enhancement Program and the Runway 17–35 Project.

FOR FURTHER INFORMATION CONTACT: James B. Byers, Environmental Specialist, Federal Aviation Administration, Harrisburg Airports District Office, 3905 Hartzdale Drive, Suite 508, Camp Hill, PA 17011. Telephone (717) 730–2833.

SUPPLEMENTARY INFORMATION: The FAA, in cooperation with the City of Philadelphia Department of Aviation, will prepare an EIS for the proposed project. The EIS for the Capacity Enhancement Program will address a range of alternatives that would reduce existing and forecasted delays at PHL, including demand management alternatives and alternatives that are not within the jurisdiction of PHL or FAA, such as greater use of regional airports or other transportation modes. Within

C

Appendix C: Public Information Materials

Public Scoping Meeting for the
Philadelphia International Airport Runway 17-35 Extension Project
Environmental Impact Statement
Philadelphia, Pennsylvania

The Federal Aviation Administration (FAA), in cooperation with the City of Philadelphia Department of Aviation, will prepare an Environmental Impact Statement (EIS) for the Philadelphia International Airport Runway 17-35 Extension Project (Runway 17-35 Project). An airfield modeling and capacity/delay analysis performed during the Airport's on-going Master Plan Update process determined that the average annual delay in 2000 at the Philadelphia Airport was nearly 10 minutes per aircraft operation. This level of delay has not abated significantly since that time. Without improvements, forecasts predict that this average annual delay would increase to nearly 20 minutes per operation by 2010, and that one of the major causes of the delay is inadequate airfield capacity because of the current configuration of the airfield. As a result, the City of Philadelphia is proposing major improvements to the Airport, to increase airfield capacity at the Airport in order to reduce existing and forecast delays.

The EIS for the Runway 17-35 Project will address a range of alternatives that would reduce existing and forecasted delays at PHL, including demand management alternatives and alternatives that are not within the jurisdiction of PHL or FAA, such as greater use of regional airports or other transportation modes. Within this range, the alternatives being considered for the Runway 17-35 Project include the No Build Alternative and a build alternative that would extend this runway to the north by 600 feet and to the south by 440 feet, to a total length of 6,500 feet. The EIS will also evaluate alternatives identified during the Scoping process that would reduce existing and forecasted delays at PHL.

A separate EIS will also be prepared for another Philadelphia International Airport project, the Capacity Enhancement Program, a major airfield redevelopment project that would provide greater relief from delay over a much longer period. The FAA will prepare the EISs concurrently. A separate Public Scoping Meeting for the Capacity Enhancement Program will be held on a different date, which is listed in the notice for the Capacity Enhancement Program that is appearing concurrently with this notice.

The U.S. Secretary of Transportation has chosen the proposed improvements at PHL as one of thirteen high priority transportation projects for expedited environmental review under Executive Order 13274, *Environmental Stewardship and Transportation Infrastructure Project Review.* The FAA and the environmental review agencies will be collaborating to undertake environmental streamlining and stewardship on both the Capacity Enhancement Program and the Runway 17-35 Project.

The FAA will be conducting a Public Scoping Meeting to gather input from all interested parties to help identify any issues of concern associated with the proposed project. The Scoping Meeting will be held on August 12, 2003 from 5 PM to 9 PM at Sheraton Suites and Four Points, Philadelphia Airport Complex, 4101 Island Avenue in Philadelphia, Pennsylvania. The format of the meetings will be an open house with project information displayed and representatives from the FAA and the Airport available to answer questions. A formal presentation will be held at 6 p.m. and repeated at 8 p.m. Written and oral comments will be accepted at the meeting. The public comment period on this initial Scoping phase of the EIS will end on September 3, 2003. Written comments will be accepted if postmarked on or before September 3, 2003 and should be sent to the address below.

If you are disabled and need special assistance to attend or participate in the Scoping Meetings, please contact Angie Liou at 215-546-1496 or chplanal@voicenet.com at least 5 business days before the meeting you would like to attend.

For further information, please contact:

James B. Byers
Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011
E-mail: jim.byers@faa.gov
Phone: (717) 730-2833

The FAA intends to use the preparation of this EIS to comply with Section 106 of the National Historic Preservation Act of 1966, as amended and any other applicable laws having public involvement requirements. Comments addressing this issue should be addressed to the listed contact person.

The Federal Aviation Administration
announces
Public Scoping Meeting
for the
Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement

The Public Scoping Meeting will be held on August 12, 2003 from 5 p.m. to 9 p.m. with a formal presentation at 6 p.m. and repeated at 8 p.m. at the Sheraton Suites and Four Points, Philadelphia Airport Complex, 4101 Island Avenue in Philadelphia, Pennsylvania.

For further information, please see the legal notice in today's edition or contact James B. Byers, FAA Environmental Specialist at (717) 730-2833.

Prepared by VHB, Inc. (07/11/03)

Public Scoping Meeting

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

The Federal Aviation Administration (FAA), in cooperation with the City of Philadelphia Department of Aviation, will prepare an Environmental Impact Statement for the Philadelphia International Airport Runway 17-35 Extension Project. The primary purpose of this improvement is to extend the length of Runway 17-35 by 1,040 feet. Extending Runway 17-35 would help to free the larger runways for use by larger aircraft, thereby reducing delays.

FAA will conduct a Public Scoping Meeting to gather input from all interested parties to help identify any issues of concern associated with the proposed project. The Scoping Meeting will be held from 5 p.m. to 9 p.m. on: **August 12, 2003 at the Sheraton Suites and Four Points, Philadelphia Airport Complex, 4101 Island Avenue in Philadelphia, Pennsylvania.**

The format of the meeting will be an open house with project information displayed and representatives from the FAA and the Airport available to answer questions. A formal presentation will be held at 6 p.m. and repeated at 8 p.m. Written and oral comments will be accepted at each of the meetings. The public comment period on this initial Scoping phase of the EIS will end on September 3, 2003. Written comments will be accepted if postmarked on or before September 3, 2003 and should be sent to the address below.

If you are disabled and need special assistance to attend or participate in the Scoping Meeting, please contact Angie Liou at 215-546-1496 or chplanal@voicenet.com at least 5 business days before the meeting.

The FAA intends to use the preparation of this EIS to comply with Section 106 of the National Historic Preservation Act of 1966, as amended and any other applicable laws having public involvement requirements. Comments addressing this issue should be addressed to the listed contact person.

For further information, please contact:

James B. Byers
Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011
E-mail: jim.byers@faa.gov
Phone: (717) 730-2833
Project Web site:
www.phlrunway17-35eis.com

Prepared by VHB, Inc. (07/11/03)

RUNWAY 17-35

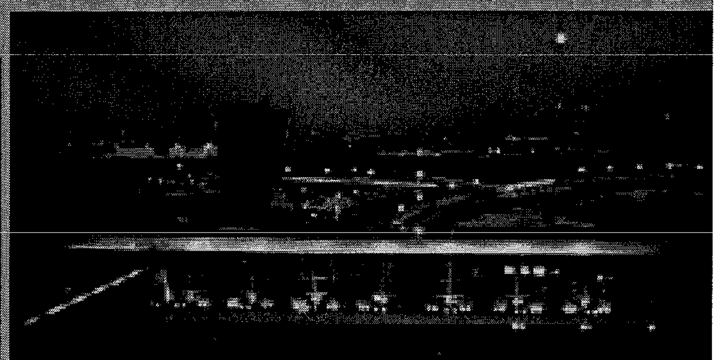
PHLEIS

SCOPING INFORMATION DOCUMENT

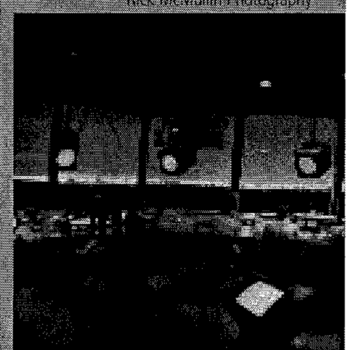
PHILADELPHIA INTERNATIONAL AIRPORT

Runway 17-35 Extension Project

Environmental Impact Statement



Rick McMullin Photography



Contents

Introduction

In 2002, although the Philadelphia International Airport (PHL or the Airport) was the 12th busiest airport in the United States in terms of the annual number of aircraft operations (departures and arrivals),[1] it was the fifth most delayed airport in the country.[2] The Federal Aviation Administration (FAA) has also identified PHL as a "pacing" airport – an airport that contributes to delays throughout the national airports system.

In 1999, the City of Philadelphia Department of Aviation (the City) commenced preparation of a Master Plan Update to address the cause(s) of delays at PHL. The City examined current passenger and aircraft activity levels, and measured them against the capacity of the existing facilities to determine the cause of existing delays. An airfield modeling and capacity/delay analysis determined that the average current (baseline) delay at PHL was nearly 10 minutes per operation. As stated in the National Plan of Integrated Airports Systems (NPIAS), an airport is considered to be congested when average delay exceeds 5 minutes per operation.

In the past, aviation activity has undergone significant, although temporary, reductions in response to economic downturns or security events such as the 1991 Gulf War, but has recovered. When the City examined forecasted passenger and aircraft activity levels, its forecasts assumed that temporary downturns and upswings might occur during the forecast period. The analysis of the forecasted passenger and aircraft activity levels determined that the number of delayed operations at PHL would continue to increase in the foreseeable future, that the delays are likely to increase in duration, and that the cause of the delay is inadequate airfield capacity. PHL is in need of major capacity improvements not only to avoid increasing the current 10-minute delay level, but also to approach the 5-minute NPIAS recommendation as forecasted activity levels increase.

As a result, the City is proposing major improvements to the Airport to increase airfield capacity at PHL in order to reduce existing and forecast delays. The FAA has concurred that a capacity and delay problem exists at PHL and that projects for alleviating this problem are subject to the preparation of environmental impact statements (EIS) under the National Environmental Policy Act (NEPA). The City proposes two projects to address immediate and long-term needs. One project, known as the Runway 17-35 Extension Project (the Runway 17-35 Project), which is the subject of this Scoping Information Document, would provide a more immediate delay reduction for several years by extending the length of Runway 17-35. The second project, referred to as the Capacity Enhancement Program, is a major airfield redevelopment project that would provide greater relief from delay over a much longer period. The FAA, as the lead federal agency, at the City of Philadelphia's request, has opted to prepare a separate EIS for each project because the Runway 17-35 Project will address the need for delay reduction at PHL in the short term while the Capacity Enhancement Program will provide a more comprehensive and longer term delay reduction. The FAA will prepare the EISs concurrently and will take into account the potential cumulative impacts of both projects.

Relationship of the Runway 17-35 Project to the Capacity Enhancement Program

To provide relief from the existing delays as soon as feasible, the proposed improvements to the Airport have been divided into two separate projects, the the Runway 17-35 Project and the Capacity Enhancement Program.
The Capacity Enhancement Program is discussed in a separate Scoping Information Document that can be obtained via *www.phl-cep-eis.com* or by contacting:

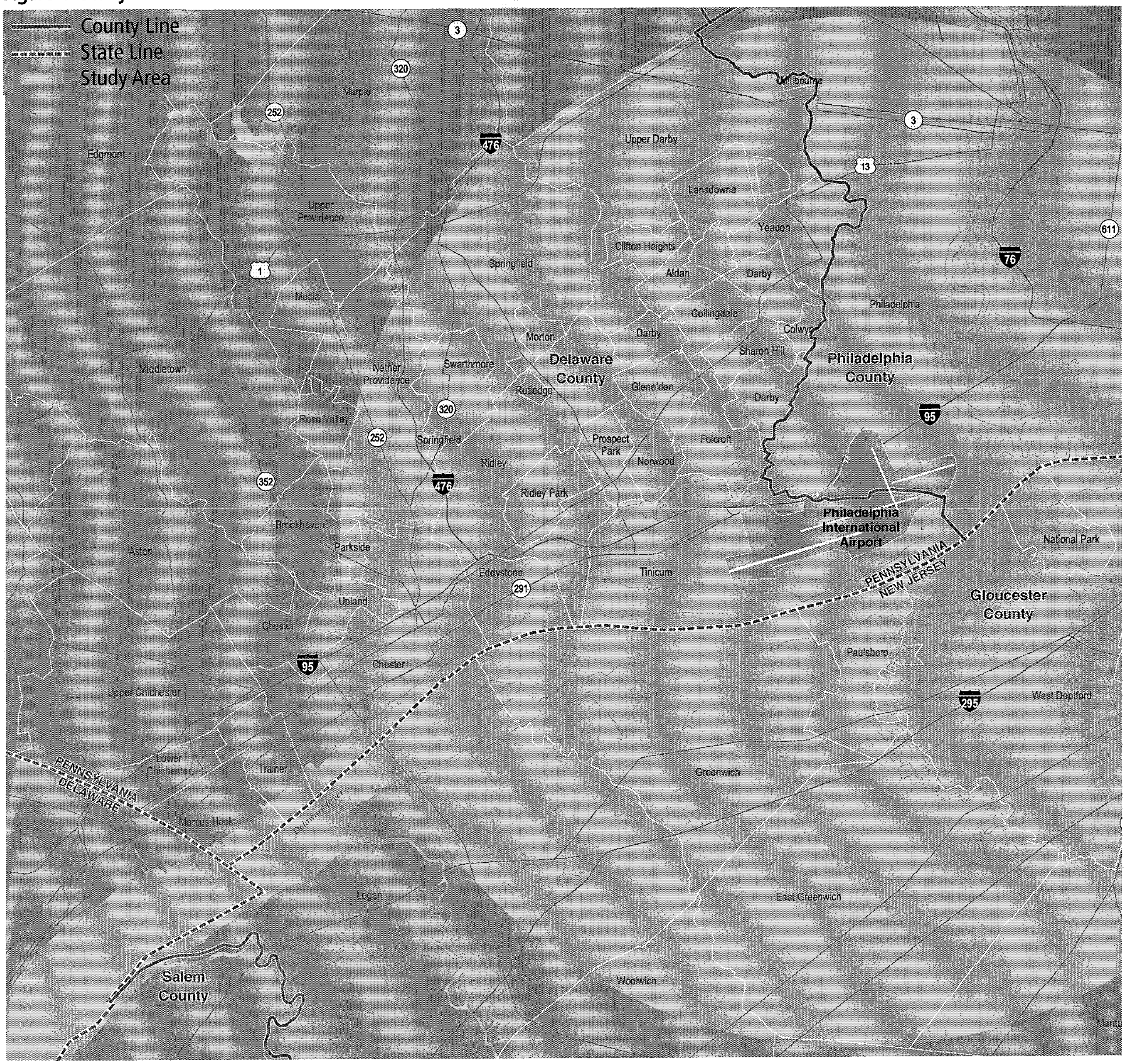
James B. Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011
E-mail: jim.byers@faa.gov

[1] 2002 North American Traffic Report: Total Movements. Airports Council International.
[2] FAA OPSNET Database, 2002

FAA agreed with the City to separate the Runway 17-35 Project and the Capacity Enhancement Program because the Runway 17-35 Project, alone, will provide substantial interim relief from the existing delays at the Airport and would remain in operation for a substantial number of years into the future.

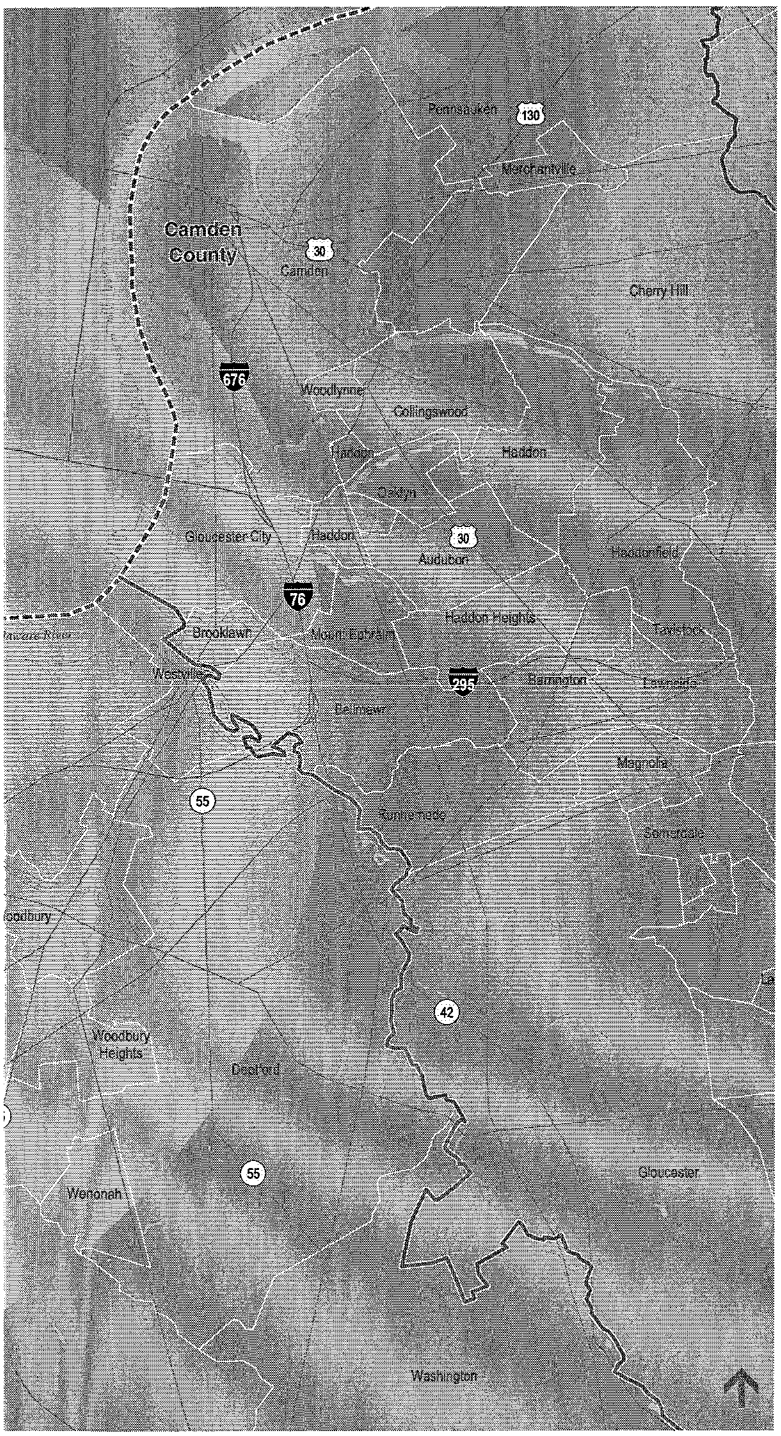
Furthermore, it appears that the Runway 17-35 Project will generate fewer environmental impacts and that the impacts will be of lesser magnitude than the impacts from the Capacity Enhancement Program. The EIS and permitting for the Runway 17-35 Project is, therefore, anticipated to be complete in a much shorter timeframe than the EIS for the Capacity Enhancement Program will be completed.

Figure 1: Study Area



The analysis for each of the projects will be closely coordinated and the cumulative impacts of the projects will be assessed. To the greatest extent possible, agency meetings for the projects would occur jointly.

The purpose of this Scoping Information Document is to provide federal, state, regional and local agencies, as well as other interested parties, with preliminary information on the Runway 17-35 Project.



Preliminary Study Area

PHL is located on approximately 2,400 acres in the City of Philadelphia and Tinicum Township (Figures 1 and 2). It is bounded on the north by Interstate 95 (I-95) and on the south by Sun Oil Company facilities, a United Parcel Service (UPS) facility and the Delaware River. Undeveloped areas in Tinicum Township are to the west, beyond which are residential areas. The City of Philadelphia Water Treatment Plant, wetlands, and Fort Mifflin, a National Historic Landmark, are to the east. The airfield is on the southern portion of the site, with the terminals and other landside facilities situated primarily along the northern edge of the site, between the airfield and I-95.

The study area is defined as broadly as possible to include those locales that the alternatives would affect. Tentatively, FAA has determined that future aircraft noise would affect the most extensive area. As a result, the study area includes portions of Philadelphia and Delaware Counties in Pennsylvania, and Camden and Gloucester Counties in New Jersey, as illustrated in Figure 1. The study area includes those areas within a circular boundary that was based on the outermost estimated preliminary 60 decibel Day-Night Average Sound Level (dB DNL) noise contour. The study area may be adjusted if additional alternatives are identified during Scoping or during the preparation of the Draft EIS. FAA will define it further, as needed, based on the detailed analyses of environmental consequences that FAA will conduct for the Draft EIS.

Existing Facilities

The existing facilities at the Airport include airfield facilities and terminal facilities.

Airfield Facilities

The airfield is comprised of runways and taxiways, as well as ancillary facilities, such as hangars, navigational aids, cargo facilities, general aviation facilities, fuel facilities, fire-fighting facilities, and deicing facilities.

There are four runways on the airfield at PHL. Three parallel runways are oriented in the east-west direction and one runway is in the north-south direction, as shown in Figure 2 on page 4. The three east-west runways are:

Figure 2: Existing Airport Facilities

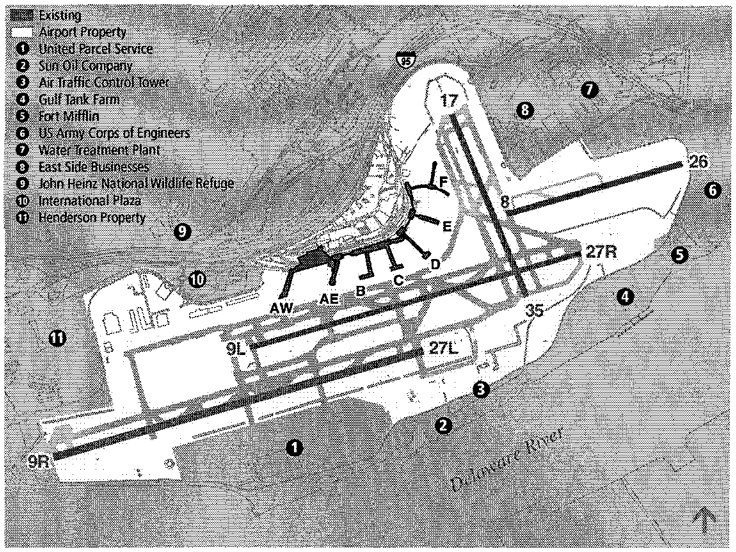
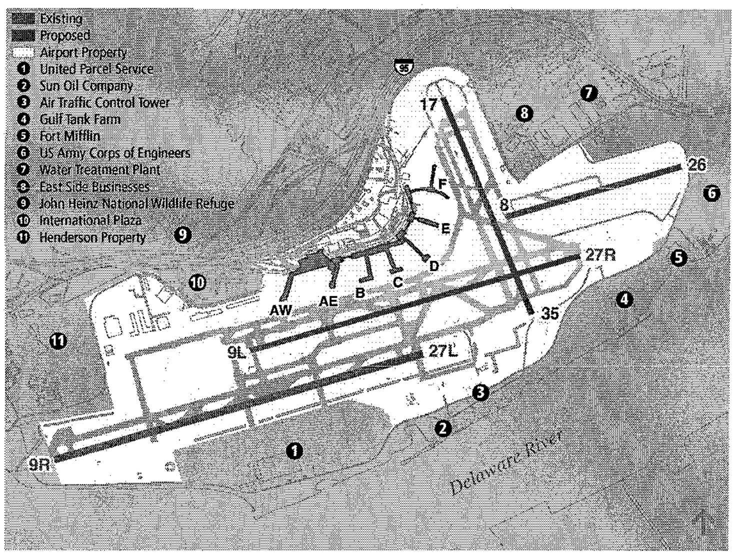


Figure 3: Runway 17-35 Build Alternative



- ▷ Runway 9L-27R, which is just south of the terminal complex, is 9,500 feet long and 150 feet wide;
- ▷ Runway 9R-27L, which is 1,400 feet south of and parallel to Runway 9L-27R, is 10,499 feet long and 200 feet wide.
- ▷ Runway 8-26, which is at the east end of the airfield, is 5,000 feet long and 150 feet wide.

Crosswind Runway 17-35, the subject of this Scoping Information Document, is oriented in the north-south direction, and is 5,459 feet long and 150 feet wide. Several taxiways are parallel to the runway, and others cross the runway to provide access and egress to the airfield from the terminal area.

Terminal Facilities

The passenger terminal area contains seven terminals totaling approximately 3.3 million square feet of passenger space, including the recently opened International Terminal A West. The terminals are connected to each other by second level pedestrian walkways. There are 100 domestic gates and 20 international gates.

Why Improve the Airport?

An analysis for the Master Plan Update determined that the average annual delay in 2000 at PHL was nearly 10 minutes per aircraft operation. This level of delay has not abated significantly since that time. Without improvements, the Master Plan Update forecasts that this average annual delay would increase to nearly 20 minutes per operations by 2010.

The requirements of present and forecasted aircraft fleet mixes limit the use of Runway 17-35. This runway was designed to accommodate turboprop aircraft. Over the past several years, airlines have replaced turboprops with regional jets, which require greater runway length than turboprops. Furthermore, over half the flights at PHL use narrowbody aircraft and forecasts indicate that this condition will continue in the forecast period. Regional jets and the smaller narrowbodies sharing the longer runways with larger aircraft cause delay, not only because of sheer numbers, but also because greater separation distances are required between small and large aircraft than between two large aircraft. Extending Runway 17-35 would help to accommodate both regional jets and the smaller narrowbodies, thereby helping to free the longer runways for use by larger aircraft and reducing delays.

Alternatives Being Considered

The alternatives being considered for the Runway 17-35 Project include the No Build Alternative and a build alternative that would extend this runway. The No Build Alternative assumes that only periodic maintenance and minor enhancements needed to maintain safe operations at the Airport would occur. It serves as the basis for assessing the impacts of the other alternatives being considered. The Build Alternative would extend Runway 17-35 to the north by 600 feet and to the south by 440 feet, to a total length of 6,500 feet, as shown in Figure 3. The Build Alternative potentially requires the discontinuation of State Route 291.

The EIS will also address a range of alternatives that would reduce existing and forecasted delays at PHL, including demand management alternatives and alternatives that are not within the jurisdiction of PHL or FAA, such as greater use of regional airports or other transportation modes. The EIS will also evaluate alternatives identified during the Scoping process that would reduce existing and forecasted delays at PHL.

Environmental Streamlining and Stewardship

The proposed PHL improvements, including the Capacity Enhancement Program and the Runway 17-35 Project, have been chosen as one of 13 transportation projects by the U.S. Secretary of Transportation (the Secretary) as high priority projects for expedited environmental review (environmental streamlining) under *Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Review.* For projects on the Secretary's list, executive departments and agencies are required, to the maximum extent practicable, to expedite their reviews for relevant permits or other approvals.

The FAA and the environmental review agencies will be collaborating to undertake environmental streamlining and stewardship on both the Capacity Enhancement Program and the Runway 17-35 Project. A major endeavor that will occur to initiate environmental streamlining and stewardship is the development and implementation of an interagency agreement. This agreement would establish a mutually agreed upon, single comprehensive environmental review path and schedule. This agreement would also:

- ▷ Identify key consensus points and mutually agreed upon time frames for agency review;
- ▷ Commit to identify environmental agency priorities and explore opportunities to incorporate environmental protection and stewardship into the project, and;
- ▷ Include a mutually acceptable, collaborative problem solving and issue resolution process.

Environmental Analysis Process

The Runway 17-35 Project requires the preparation of an EIS in accordance with NEPA because there are potentially significant impacts. This Scoping Information Document represents the start of FAA's EIS preparation.

Environmental Impact Statement

The purpose of an EIS is to provide government agencies and other interested parties with information about the proposed improvements at PHL so that informed decisions can be made. The Draft EIS will:

- ▷ Explain the purpose of and need for the proposed improvements;
- ▷ Develop and describe the range of alternatives capable of achieving the purpose and need;
- ▷ Identify alternatives that will not achieve the purpose and need;
- ▷ Provide the reasons why certain alternatives are rejected from further consideration and state that they will not be included in the EIS for detailed analyses;
- ▷ Identify those alternatives that are reasonable, practicable, or feasible ways to achieve the purpose and need and state that the EIS will provide detailed analyses of these alternatives, including the No Build Alternative;
- ▷ Identify the airport sponsor's proposed action;
- ▷ Determine the environmental consequences of the No Build Alternative, the proposed action, and each alternative that is capable of achieving the purpose and need;
- ▷ Identify measures to avoid, minimize or mitigate potential environmental consequences for the proposed action and other alternatives that would achieve the purpose and need;
- ▷ Describe the agency and public coordination efforts,
- ▷ Serve as the NEPA document for FAA and the other Federal agencies, as needed; and
- ▷ Serve as the document supporting the Record of Decision that FAA and the other Federal agencies need to prepare.

Scoping

Scoping is an early, open, and on-going process used to determine the range of alternatives, issues, and impacts that the EIS will address in detail. The process includes the general public and appropriate federal, state, regional, and local agencies.

Public and agency meetings are important scoping elements. A Scoping Meeting for the Runway 17-35 Project is scheduled for the general public from 5 PM to 9 PM on August 12, 2003 in the study area. This public meeting will involve interaction with the EIS Team members, as well as a short presentation about the project and the EIS process. Information about the project, the schedule for the EIS, and the purpose of the EIS will also be on display. An Agency Scoping Meeting covering both the Runway 17-35 EIS and the Capacity Enhancement Program EIS will be held during the day on August 19, 2003 at the Airport Executive Offices in Terminal E at the Philadelphia International Airport in Philadelphia, Pennsylvania.

Scoping comments can be submitted at the Scoping Meeting or anytime before **September 3, 2003.** A comment sheet for the EIS is enclosed with this package. The comment sheet may also be downloaded from the project web site, *www.phlrunway17-35eis.com.* Comments may also be submitted to:

> **James B. Byers**, Environmental Specialist
> Federal Aviation Administration
> Airports District Office
> 3905 Hartzdale Drive, Suite 508
> Camp Hill, PA 17011
> E-mail: jim.byers@faa.gov

Upon completing the Scoping Meeting, a Scoping Process Report will be prepared for the EIS. This report will document the issues and concerns raised and will be distributed to those appearing on the distribution list at the end of this document. The report will also be available on the project web site, *www.phlrunway17-35eis.com.*

Environmental Impact Analysis

FAA, in cooperation with many agencies and consultation with others interested in the project, will prepare a detailed evaluation of environmental impacts from the No Build Alternative and from those alternatives that are reasonable, practicable, and feasible ways to achieve the project's purpose and need. FAA will complete the EIS in accordance with FAA Order 1050.1D Change 4, *Policies and Procedures For Considering Environmental Impacts* and with FAA Order 5050.4A, *Airports Environmental Handbook.* These Orders provide instructions to FAA staff to ensure that FAA environmental documents prepared for airport development actions comply with NEPA and other federal and state regulations. Airport sponsors, environmental consultants, and others interested in those actions may also use the Orders as guidance and information.

The EIS will provide analyses covering a full range of technical areas. The EIS will identify and examine key issues, evaluate potential impacts, and develop appropriate conceptual mitigation measures. Some of the issues to be analyzed are listed in the box at the right. Together with input from various agencies and the public, these technical analyses will provide the basis for the assessments and conclusions presented in the EIS.

Environmental Documentation and Review

After completing the environmental impact analysis for affected resources, FAA will prepare a Draft EIS for public review. A public review and comment period of no less than 45 days will occur. Public hearings will be held in the study area for the public to review the proposed conceptual design, environmental impacts and mitigation for each alternative the Draft EIS evaluated in detail. Following the hearings and a review of the public comments received, and balancing a number of factors, the FAA will identify its preferred alternative. FAA will then prepare its Final EIS. The Final EIS will :

- ▷ Summarize the comments received on the Draft EIS and the key issues raised during the public hearings;
- ▷ Provide FAA responses to the key issues and comments noted above;
- ▷ Identify FAA's preferred alternative;
- ▷ Document avoidance and minimization efforts associated with the preferred alternative;
- ▷ Describe conceptual measures and other commitments needed to mitigate the unavoidable environmental impacts that the preferred alternative would cause; and
- ▷ Discuss compliance with applicable federal and state regulations.

The FAA will issue a Record of Decision no sooner than 30 days after FAA releases the Final EIS.

Public Outreach

As part of this NEPA process, a broad array of opportunities will be provided to distribute information about the Draft EIS and Final EIS to relevant federal, state, and local

Some Issues to be Analyzed

- Air Quality
- Construction Impacts
- Cumulative Impacts
- Environmental Justice
- Ground Transportation
- Hazardous Materials
- Land Use Compatibility
- Natural Resources
- Noise
- Sole Source Aquifer
- Water Quality
- Wetlands

agencies and other interested parties, as well as to solicit the input of these parties on those documents. The FAA intends to use the preparation of this EIS to comply with Section 106 of the National Preservation Act of 1966, as amended and any other applicable laws having public involvement requirements. The public outreach actions will also help to obtain public input on any draft general conformity determination on air quality in accordance with General Conformity requirements under the Clean Air Act.

Each of these public outreach opportunities is described briefly below.

Public Meetings

The first public meeting for the project will be held on August 12, 2003 and is intended to serve as an important part of the Scoping process for the EIS. A second meeting is tentatively scheduled for Fall 2003 and will showcase the data and analysis that demonstrate the purpose and need for the project. The meeting will also present the process for identifying alternatives that achieve the purpose and need for the project and will provide descriptions of those alternatives. The meetings will include presentations of information and analyses, opportunities to discuss issues with the EIS Team, and opportunities to comment on the information presented. Additional public meetings will be held, if necessary, to discuss issues of particular concern to the community. These issues will be identified during Scoping.

Public Hearings

After the Draft EIS is made available for public review, public hearings will be held in the study area. The purpose of the hearings is to provide an opportunity for public comment on the Draft EIS.

Newsletters

Newsletters will be developed and distributed at strategic points during preparation of the EIS and will contain information about the EIS. The newsletters will provide brief summaries of progress and the schedule for the EIS, as well as information on upcoming meetings and particular issues or analyses of concern.

Web Site

An EIS information web site will be maintained for the project throughout the development of the EIS. The web site address is *www.phlrunway17-35eis.com*. Information that will be displayed on the site includes meeting locations, dates, and times; EIS status reports and schedules; newsletters; study report highlights; and alternative concepts. The web site will also house technical reports generated during development of the EIS. Interested parties will be able to download the comment form from the web site.

Agency Coordination

As the lead federal agency, the FAA will prepare the Draft EIS and the Final EIS. Federal and state agencies with jurisdiction by law or with special expertise on resources the project may affect have been invited to be Cooperating Agencies.

The FAA will coordinate closely with environmental review agencies with regard to technical issues throughout the development of the Draft EIS and Final EIS as described below. The first agency meeting covering both the Runway 17-35 EIS and the Capacity Enhancement Program EIS will be held on August 19, 2003 and is intended to serve as an important part of the Scoping process.

Additional group agency meetings and/or meetings with individual agencies will be held to discuss:

- Screening criteria for and ways to measure the effectiveness of reasonable, practicable, and feasible alternatives;
- The rationale for eliminating alternatives;
- Finalizing the study area boundaries;
- Data requirements and methodology for data collection for both the Draft EIS and the Final EIS;
- The level of detail and methodology for environmental resource and community impact analysis in both the Draft EIS and the Final EIS;
- The level of detail needed for engineering design in both the Draft EIS and the Final EIS; and
- Conceptual measures to mitigate unavoidable environmental impacts.

Each meeting may address one or more of these topics. The meetings will include presentations of information and analyses, field meetings, opportunities to discuss issues with the EIS Team, and opportunities to comment on the information presented.

EIS Process

The EIS preparation process consists of the following primary tasks:

- ▷ **Scoping:** This initial task defines the study by identifying issues and obtaining comments from the general public, agencies, and jurisdictions.
- ▷ **Purpose and Need:** Defines the problem (delay) that the project is designed to address and the reason for the problem (insufficient airfield capacity).
- ▷ **Alternatives Development/Evaluation/Refinement:** Defines alternatives that will address the delay and the capacity deficiencies at PHL.
- ▷ **Environmental Impact Analysis:** Evaluates the impacts of potential alternatives and develops mitigation measures.
- ▷ **Draft EIS:** Describes the purpose and need, alternatives considered, alternatives rejected or accepted, and a comprehensive, detailed, interdisciplinary evaluation of the environmental impacts that the accepted alternatives would likely cause, and conceptual mitigation.
- ▷ **Public Hearings:** Provides opportunity for the public to discuss the proposed project and provide oral or submit written comments on the Draft EIS.
- ▷ **Public Review Period:** At least a 45-day period during which the public reviews the Draft EIS and submits comments to the lead agency about that document.
- ▷ **Final EIS:** Addresses the comments on the Draft EIS and from the Public Hearings, presents the final evaluation of project-induced environmental impacts and conceptual ways to mitigate unavoidable impacts, identifies the least environmentally damaging alternative, and the FAA's preferred alternative.
- ▷ **Record of Decision (ROD):** The document providing the federal decision maker's rationale for selecting the preferred alternative. The agency uses information in the Final EIS to prepare the ROD.

For additional information contact:
James B. Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

Web Site: *www.phlrunway17-35eis.com*

Prepared by VHB/Vanasse Hangen Brustlin, Inc. - July 2003

Distribution List

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Honorable Arlen Specter

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U.S. Coast Guard, Group Philadelphia
U.S. Department of Interior
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National Park Service
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Region 2 (NJ) and Region 3 (PA)
U.S. Fish and Wildlife Service
Eastern Pennsylvania Field Office
New Jersey Field Office
John Heinz National Wildlife Refuge

Federally Recognized Indian Tribal Entities
Absentee-Shawnee Tribe of Oklahoma
Delaware Nation, Oklahoma
Delaware Tribe of Indians, Oklahoma
Eastern Shawnee Tribe of Oklahoma
Oneida Tribe of Indians of Wisconsin
Onondaga Indian Nation

State Agencies
Pennsylvania Department of Community and
Economic Development
Pennsylvania Department of Environmental Protection
Pennsylvania Department of Health
Pennsylvania Department of Transportation
Pennsylvania Emergency Management Agency
Pennsylvania Fish & Boat Commission,
Division of Fisheries Management –
Non-game & Endangered Species Unit
Pennsylvania Game Commission, Bureau of Land
Management - Division of Environmental
Planning & Habitat Protection
Pennsylvania Historical and Museum Commission
New Jersey Department of Environmental
Protection, Division of Fish and Wildlife –
Endangered & Nongame Species Program
New Jersey Historic Preservation Office
Delaware Division of Historical and Cultural Affairs,
Delaware State Historical Preservation Office

Regional Agencies
Delaware Valley Regional Planning Commission
Southeastern Pennsylvania Transportation Authority

County Agencies
Pennsylvania
Delaware County
Executive Director
County Council
Philadelphia County

New Jersey
Camden County
Freeholder Director
Board of Freeholders
Gloucester County
Freeholder Director
Board of Freeholders

Delaware
New Castle County
County Executive
County Council

Local Governments
Philadelphia City Council
Mayor John Street
Anna Verna, President, City Council
City Councilors

Tinicum Township
Township Manager
William Wasch, Commission President
Commissioners

Pennsylvania Communities
Aldan Borough
Brookhaven Borough
Chester City
Clifton Heights Borough
Collingdale Borough
Colwyn Borough
Darby Borough
Darby Township
East Landsdowne Borough
Eastwick (City of Philadelphia)
Eddystone Borough
Folcroft Borough
Glenolden Borough
Haverford Township
Landsdowne Borough
Millbourne Borough
Morton Borough
Nether Providence Township
Norwood Borough
Parkside Borough
Prospect Park Borough
Ridley Township
Ridley Park Borough
Rutledge Borough
Sharon Hill Borough
Springfield Township
Swarthmore Borough
Upland Borough
Upper Darby Township
Yeadon Borough

New Jersey
Bellmawr Borough
Brooklawn Borough
Camden City
Collingswood Borough
Deptford Township
East Greenwich Township
Gloucester City
Greenwich Township
Haddon Township
Logan Township
Mantua Township
Mount Ephraim Borough
National Park Borough
Paulsboro Borough
Runnemede Borough
Wenonah Borough
West Deptford Township
Westville Borough
Woodbury City
Woodbury Heights Borough
Woolwich Township

Public Information Meetings for the Philadelphia International Airport
Capacity Enhancement Program & Runway 17-35 Extension Project
Environmental Impact Statements
Philadelphia, Pennsylvania

The Federal Aviation Administration (FAA), in cooperation with the City of Philadelphia Division of Aviation, will hold three Public Information Meetings on April 13, 14, and 15, 2004. The meetings will provide the opportunity to learn more about how the Philadelphia International Airport (PHL) operates, including information about the airport layout, flight procedures, and airport operations. The topic of this first group of meetings is based on many of the comments and questions received at the August 2003 scoping meetings.

The meetings will include an open house from 5 p.m. to 7 p.m., where the public can come to view display boards and ask questions of the Environmental Impact Statement (EIS) team, followed by a presentation and a question and answer session from 7 p.m. to 9 p.m. The meeting content at each meeting will be the same. These meetings are a first in a series of public information meetings that will be held throughout the preparation of each of the EISs and are important for those participating in the EIS processes in understanding how the airport operates.

- **April 13, 2004**- Paulsboro High School, Auditorium, 670 N. Delaware St. in Paulsboro, NJ
- **April 14, 2004** – Claymont Community Center, Gymnasium, 3301 Green St. in Claymont, DE
- **April 15, 2004** – Ridley Community Center, Auditorium, 801 Morton Ave. in Folsom, PA

If you are disabled and need special assistance to attend or participate in the meetings, please contact Connerie Cepeda at (215) 546-1496 or chplancc@voicenet.com at least 5 business days before the meeting you would like to attend.

For more information, please visit the following web sites: Capacity Enhancement Program EIS (www.phl-cep-eis.com) and Runway 17-35 Extension Project EIS (www.phlrunway17-35eis.com) or contact: James Byers, Environmental Specialist, Federal Aviation Administration, Airports District Office, 3905 Hartzdale Drive, Suite 508, Camp Hill, PA 17011, (202) 267-3007, jim.byers@faa.gov.

Meeting Notice Newsletter Distribution List

• Philadelphia Inquirer/Daily News	Monday 3/22/04
• South Jersey Courier-Post	Monday 3/22/04
• Wilmington News Journal	Monday 3/22/04
• Delaware County Daily Times	Monday 3/22/04
• Gloucester County Times/Today's Sunbeam	Wednesday 3/24/04
• Town Talk	Wednesday 3/24/04
• Philadelphia Weekly	Wednesday 3/24/04
• Philadelphia Public Record	Thursday 3/25/04
• Al Día	Friday 3/26/04
• Brandywine Community News	Friday 3/26/04

PHILADELPHIA CEPEIS

Philadelphia International Airport
Environmental Impact Statements

RUNWAY 17-35 PHLEIS

March 2004

Dear Elected or Appointed Official:

The Federal Aviation Administration (FAA) is preparing Environmental Impact Statements (EISs) to evaluate the impacts of the Capacity Enhancement Program (CEP) and the Runway 17-35 Extension Project (Runway 17-35 Project) at the Philadelphia International Airport (PHL). The City of Philadelphia, owner and operator of the airport, proposes both projects.

The FAA will hold three public information meetings in the Philadelphia metro area during mid-April (see the next page for more details) for the two EIS studies being conducted at PHL.

The public information meetings will give the public the opportunity to learn more about how the airport operates, including information about the airport layout, air traffic control issues, and airport delays. The topic of these meetings is based on the many comments and questions received during the August 2003 scoping meetings.

We invite you and your staff to join us at these public information meetings. The meetings will include an open house, where display boards, presentations by FAA and PHL staffs on airport operations, and a forum to ask questions of the EIS team, will be available to attendees.

For further information about the EIS studies, please visit the web site for the CEP (http://www.phl-cep-eis.com) and the Runway 17-35 Project (http://www.phlrunway17-35eis.com) or contact me.

We look forward to seeing you at these meetings.

Sincerely,

Jim Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011
E-mail: jim.byers@faa.gov
Phone: (202) 267-3007

Philadelphia International Airport
Environmental Impact Statements

Public Information Meetings*

Topic: How the Airport Operates

Dates: April 13, 14 & 15, 2004

Time: Open House - 5 – 7 p.m. Presentation – 7 - 9 p.m.

Places:**

Paulsboro High School (April 13)
Auditorium
670 North Delaware Street
Paulsboro, NJ 08066

Claymont Community Center (April 14)
Gymnasium
3301 Green Street
Claymont, DE 19703

Ridley Community Center (April 15)
Auditorium
801 Morton Avenue
Folsom, PA 19033

** The agenda content at each meeting will be the same.*
***You can find directions to the above locations on the project web site for the Capacity Enhancement Program EIS (http://www.phl-cep-eis.com) and the Runway 17-35 Extension Project EIS (http://www.phlrunway17-35eis.com).*

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Newsletter No.1 • March 2004

This Newsletter Contains
- Introduction
- Upcoming Public Information Meeting dates
- How the EIS process works
- Scoping meeting results
- How to learn more about the projects

Public Information Meetings*

Topic: "How the Airport Operates"
April 13, 14, 15, 2004
Open House: 5:00 p.m. – 7:00 p.m.
Presentation: 7:00 p.m. - 9:00 p.m.

April 13:
Paulsboro High School
Auditorium
670 N. Delaware Street
Paulsboro, NJ 08066

April 14:
Claymont Community Center
Gymnasium
3301 Green Street
Claymont, DE 19703

April 15:
Ridley Community Center
Auditorium
801 Morton Avenue
Folsom, PA 19033

You can find directions to the above locations on the project web sites:

Capacity Enhancement Program EIS
www.phl-cep-eis.com

Runway 17-35 Extension Project EIS
www.phlrunway17-35eis.com

* The agenda content at each meeting will be the same.

How the Environmental Impact Statement Process Works

Introduction

The Federal Aviation Administration (FAA) is preparing two separate Environmental Impact Statements (EISs), one to evaluate the impacts of the Capacity Enhancement Program (CEP) and another to evaluate the impact of the Runway 17-35 Extension Project (Runway 17-35 Project) at the Philadelphia International Airport (PHL). The City of Philadelphia (the City), owner and operator of the airport, proposes both projects.

This newsletter is the first in a series that the FAA will distribute to those interested in learning more about the CEP EIS and the Runway 17-35 Project EIS. This newsletter explains how the EIS process works and how you can participate in it.

Future newsletters for each EIS will cover topics including the purpose and need for each project, environmental stewardship, the alternatives analysis process and the results of the environmental impact analyses for each project.

The first in a series of public information meetings will apply to both EISs. The FAA will hold them in mid-April 2004 (see meeting details at left). This first group of meetings will give the public the opportunity to learn more about how the airport operates, including information about the airport layout, air traffic control issues, and airport delays. The topic of this first group of meetings is based on many of the comments and questions received during the August 2003 scoping meetings. This meeting will include an open house where the public can come view display boards, ask questions of the FAA's EIS team, and listen to a presentation by FAA and PHL staff on airport operations.

Throughout each of the EIS studies, the FAA will be seeking public input on each project. The informal input received during this time will be used to assist the EIS team in determining and addressing the public's concerns. The FAA will seek formal public comments during the public comment period in the future when the FAA publishes each Draft EIS for comment.

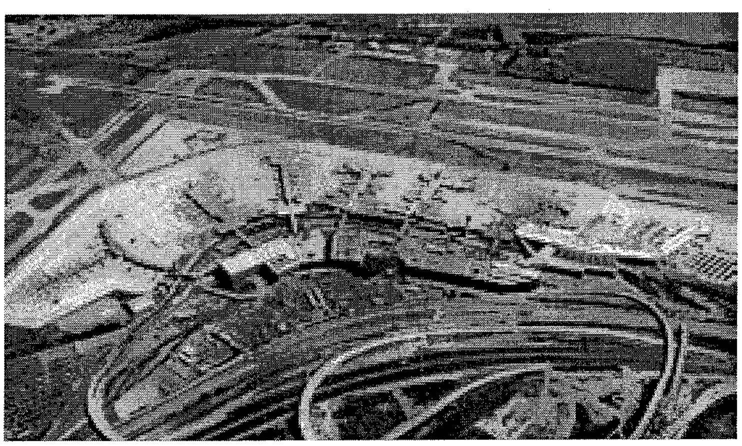


Photo credit: Rick McMullin

Aerial view of the Philadelphia International Airport looking south.

Notices to inform the public of the availability of each EIS will be published in newspapers and sent to those on both EIS mailing lists. To be added to the EIS mailing lists, please indicate the EIS mailing list(s) to which you would like to be added (Runway 17-35, CEP, or both) and either e-mail your contact information to **jim.byers@faa.gov** or complete the form on the back page of this newsletter and either mail it or turn it in at one of the public information meetings.

How the EIS Process Works

The City of Philadelphia Division of Aviation, through its preparation of the Master Plan Update, is proposing major improvements to the airport to increase airfield capacity at PHL to reduce existing and forecast aircraft delays. The FAA has concurred that a capacity and delay problem exists at PHL. After reviewing the proposals and their potential environmental impacts, the FAA determined it must prepare EISs to comply with the National Environmental Policy Act (NEPA).

The following is a summary and flowchart of the primary tasks of the EIS preparation process that the FAA will conduct for the CEP EIS and the Runway 17-35 Project EIS.

Scoping
This initial task defines the study by identifying issues and obtaining comments from the general public, agencies, and relevant jurisdictions. *(The CEP EIS and the Runway 17-35 Project EIS Scoping processes were completed on September 3, 2003.)*

Purpose and Need
Defines the problem that the project is designed to address (delay) and the reason why the problem (insufficient airfield capacity) exists.

Alternatives Development/ Evaluation/Refinement
Defines reasonable alternatives that will reduce aircraft delay and increase capacity at PHL. Eventually, the FAA will select an array of reasonable alternatives the EIS will discuss in great detail. The FAA will also clearly explain why it eliminated alternatives the EIS does not discuss in detail.

Environmental Impact Analyses
Evaluates the impacts of potential alternatives and identifies minimization and mitigation measures. Based on its analyses of scoping comments and other information, the FAA will assess construction and operation effects on:

- Air Quality
- Coastal Resources
- Cultural and Historic Resources
- Cumulative Impacts
- Fish, Wildlife, and Plants
- Floodplains and Floodways
- Ground Transportation
- Hazardous Materials
- Land Use Compatibility
- Light Emissions
- Natural Resources/Energy Supply
- Noise
- Parks, Refuges, and Recreation Areas
- Secondary Impacts
- Solid Waste
- Socioeconomic Impacts
- Water Quality
- Wetlands

Draft EIS
Documents the purpose and need; alternatives considered; alternatives rejected or retained; a comprehensive, detailed, interdisciplinary evaluation of the environmental impacts that the reasonable alternatives would likely cause; and identifies conceptual mitigation measures. If the FAA knows its preferred alternative by the Draft EIS comment period, it will identify it then.

- **Public Hearings**
  Provides opportunity for the public to discuss the proposed project and provide oral or written comments on the Draft EIS to the FAA and the City.

- **Public Review Period**
  A period of at least 45 days during which the public reviews the Draft EIS and submits comments to the FAA about that document.

Final EIS
After the public comment period on the Draft EIS, the Final EIS responds to public and agency comments on the Draft EIS, and presents the final evaluation of project-induced environmental impacts as well as ways to mitigate unavoidable impacts. Here, the FAA must identify its preferred alternative, if it is not done in the Draft EIS.

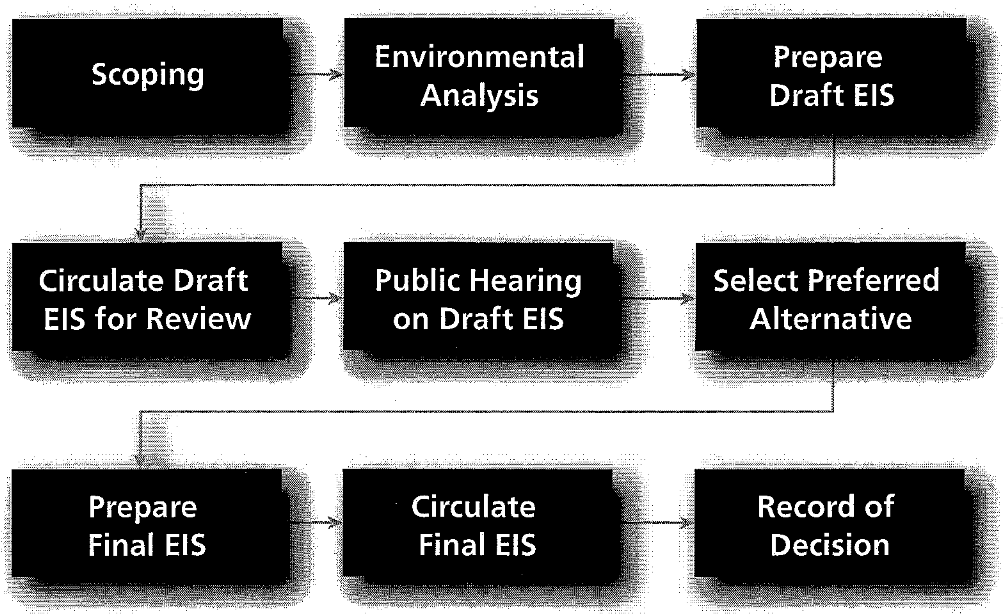
Record of Decision (ROD)
The document providing the FAA decision maker's rationale for selecting the preferred alternative and the mitigation requirements to implement the project. The agency uses information in the Final EIS to prepare the ROD.

Scoping Meeting Results

Scoping is the only part of each EIS process the FAA has completed. The Runway 17-35 Project scoping meeting was held on August 12, 2003, and the CEP scoping meetings were held on August 18, 19, and 20, 2003. Approximately 45 people attended the Runway 17-35 Project scoping meeting and approximately 535 people attended the three CEP scoping meetings. The FAA received 228 (CEP) and 47 (Runway 17-35 Project) individual letters, e-mails or formal oral comments from the public, Federal and state agencies, and elected officials, who were primarily concerned with the alternatives being studied in the EISs; existing and future noise impacts; wetland impacts; and economic issues.

A majority of people commented on the alternatives the FAA would consider for each EIS. Several commentors suggested that the EISs should explore delay and congestion management strategies, including

EIS Process Flow Chart



improved management of airport facilities, control of time slots, flight scheduling to reduce delays, travel disincentive programs, and making the airport responsible for scheduling all flights. Many of the comments were about existing airport operations and flight paths. Many suggested that an important consideration in the alternatives analysis should be flight tracks and altitudes that reduce noise, and that the selected alternative should allow planes to follow the Delaware River. These issues regarding how the airport currently operates will be addressed at the first set of public information meetings (see the side bar on page 1). The EISs will also discuss them.

Noise was another major concern for those who attended the scoping meetings. Many commentors felt that noise from existing airport operations adversely affects their quality of life. They feel that the noise has increased because of increased number of aircraft operations and approaching or departing aircraft at low altitudes. Residents of several areas believed that existing aircraft operations are operating below recommended minimum altitudes. Several people expressed concern with the methodology used for the analysis of noise impacts. Many commentors recommended that noise be considered in the identification and that evaluation of alternatives, and the FAA consider noise reduction as the overriding priority. Several noise reduction mitigation measures were suggested, such as re-routing airplane traffic to avoid sensitive neighborhoods, restricting operating hours to avoid late-night or early morning flights over neighborhoods, soundproofing homes, and purchasing homes adjacent to the airport. How noise impacts from aircraft are evaluated will be addressed in a future newsletter.

Issues involving other environmental issues were also raised, including air quality, wetlands, and wildlife. Commentors expressed concerns about the public health effects of emissions from aircraft, and requested the EIS address this issue. Commentors also requested that the EIS consider impacts to wetlands and water quality of Tinicum Marsh, Delaware River, and Darby Creek.

Several commentors expressed concern of the impacts to the John Heinz National Wildlife Refuge and to migratory geese.

The projects' impacts on local economic issues were concerns expressed by several elected officials. Issues of most concern included the potential adverse effects of the project on tax revenues, property values, businesses, and employment. Commentors recommended that the EISs consider these concerns as well as possible financial burden to area taxpayers from the costs of the projects.

The FAA has revised the scope of each Draft EIS to address these and other concerns raised in scoping. These issues will also be addressed in future newsletters and/or public meetings. More detailed information on the scoping process, the comments received, and how the FAA will address these comments are included in each Scoping Process Report, which you can find on the CEP EIS web site (www.phl-cep-eis.com) and the Runway 17-35 Project EIS web site (www.phlrunway17-35eis.com), respectively, under "Documents".

Additional Information
Please visit the following web sites:

Capacity Enhancement Program EIS
www.phl-cep-eis.com

Runway 17-35 Extension Project EIS
www.phlrunway17-35eis.com

or contact:
James Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011
(202) 267-3007
jim.byers@faa.gov

Mailing List Additions

If you did not receive this newsletter in the mail, you are not on the mailing list for the CEP EIS or the Runway 17-35 Project EIS. To add your name, or make a correction, please indicate the EIS mailing list(s) to which you would like to be added and either email the information below to **jim.byers@faa.gov** or fill out this form and mail it to the address below:

James Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

Please add my name and contact information to the following mailing list(s):

❍ Capacity Enhancement Program EIS
❍ Runway 17-35 Extension Project EIS

Name______________________________________

Address_____________________________________

City________________________ State______ Zip________

Affiliation__________________________________

Phone__________________ E-mail______________________

Once you are on the mailing list, you will automatically receive information from FAA regarding the EIS(s) of interest.

U.S. Department of Transportation
Federal Aviation Administration
Harrisburg Airports District Office
3905 Hartzdale Drive, Ste. 508
Camp Hill, PA 17011

PHILADELPHIA CEPEIS

Philadelphia International Airport
Environmental Impact Statements
Public Information Meetings
April 13, 14, & 15, 2004

RUNWAY 17-35 PHLEIS

Public Input Form

The input provided on this form will provide the Environmental Impact Statement (EIS) team important information about the public's concerns and questions on the Philadelphia International Airport EIS projects (Capacity Enhancement Program & Runway 17-35 Extension Project).

Please also complete the meeting survey on the other side. This will help the EIS team to meet your needs better in future public information meetings. Thank you for participating.

Date:____________________Project (s) Interested in: ☐ **Capacity Enhancement Program**
☐ **Runway 17-35 Extension Project**

Input:____

Additional Page Included ☐ **Yes** ☐ **No**

Please drop off this form at the sign in table before you leave the meeting or mail this form to the following address:

James Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

PHILADELPHIA CEPEIS

RUNWAY 17-35 PHLEIS

Philadelphia International Airport
Environmental Impact Statements
Public Information Meetings
April 13, 14, & 15, 2004

Mailing List Addition

Would you like to be added on the PHL Capacity Enhancement Program EIS mailing list? ☐ Yes ☐ No

Would you like to be added on the PHL Runway 17-35 Extension Project EIS mailing list? ☐ Yes ☐ No

Name:____

Address: ____

City: ____

State: __________________ **Zip Code:** __________________

E-mail Address: ____

Phone Number:____

Meeting Survey

Please circle the best answer. 1 – Excellent to 5 – Poor

1. How would you rank this meeting location?	1	2	3	4	5
2. How would you rank the presenters?	1	2	3	4	5
3. How would you rank the information you received at these meetings?	1	2	3	4	5
4. How would you rank the advertisement for these meetings?	1	2	3	4	5

5. In your opinion, what can be done to make the meetings better?____________________

____

6. Do you have suggestions for the locations of future meetings? ☐ Yes ☐ No

   If so, please list them.____

7. How did you learn about these meetings?____

8. What do you think are the best ways to notify people interested in attending these meetings?

____

Other Comments:____

____

Public Information Meetings for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement Philadelphia, Pennsylvania

The Federal Aviation Administration (FAA), in cooperation with the City of Philadelphia Division of Aviation, will hold Public Information Meetings on May 11, 12, and 13, 2004. Each meeting will provide the opportunity to learn about the purpose and need and the alternatives analysis process for the Runway 17-35 Extension Project. These meetings will be focused specifically on the Runway 17-35 Extension Project and attendees will be requested to limit questions directly to this project and the topics discussed at these meetings.

The meetings will be held from 5 p.m. to 9 p.m. beginning with an **open house from 5 p.m. to 7 p.m.**, where the public can come to view display boards and ask questions of the team working on the Runway 17-35 Project Environmental Impact Statement (EIS). The open house will be followed by a **presentation and a question and answer session, which will begin promptly at 7 p.m. and end at 9 p.m.** The agenda content at each meeting will be the same.

The meetings will be held at the following locations:

- **May 11, 2004** – West Deptford High School Auditorium, 1600 Crown Point Road in Westville, NJ
- **May 12, 2004** – Jewish Community Center, 101 Garden of Eden Road in Wilmington, DE
- **May 13, 2004** – Eastwick at the Meadows, 6630 Lindbergh Boulevard in Philadelphia, PA

If you are disabled and need special assistance to attend or participate in the meetings, please contact Connerie Cepeda at (215) 546-1496 or chplancc@voicenet.com at least 5 business days before the meeting you would like to attend.

For more information and to view the Runway 17-35 Extension Project Purpose and Need Technical Report, please visit the Runway 17-35 Extension Project EIS web site at www.phlrunway17-35eis.com or contact: James Byers, Environmental Specialist, Federal Aviation Administration, Airports District Office, 3905 Hartzdale Drive, Suite 508, Camp Hill, PA 17011, (202) 267-3007, jim.byers@faa.gov.

Meeting Notice Newsletter Distribution List

• Philadelphia Inquirer/Daily News	May 3, 2004
• South Jersey Courier-Post	May 3, 2004
• Wilmington News Journal	May 3, 2004
• Delaware County Daily Times	May 3, 2004
• Philadelphia Daily News	May 3, 2004
• Philadelphia Public Record	May 6, 2004
• Philadelphia Weekly	May 5, 2004
• Gloucester County Times/Today's Sunbeam	May 3, 2004
• Town Talk	May 5, 2004
• Brandywine Community News	April 30, 2004

RUNWAY 17-35

PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

April 2004

Dear Elected or Appointed Official:

The Federal Aviation Administration (FAA) is preparing an Environmental Impact Statement (EIS) to evaluate potential impacts of the Runway 17-35 Extension Project at the Philadelphia International Airport (PHL). The City of Philadelphia, owner and operator of the airport, is proposing the project to alleviate delays at PHL.

The FAA will hold three public information meetings during mid-May (see the next page for more details) for this EIS study being conducted at PHL.

The public information meetings will give the public the opportunity to learn about the Runway 17-35 Extension Project purpose and need and alternatives analysis process. These meetings will be focused specifically on the Runway 17-35 Extension Project and attendees will be requested to limit questions directly to this project and the topics discussed at these meetings.

We invite you and your staff to join us at these public information meetings. We would appreciate it if you and/or your staff members identify yourselves when you sign in so that we can make sure you speak to the appropriate EIS team member to address your concerns or questions about this project.

The meetings will be held from 5 p.m. to 9 p.m. each night and will begin with an **open house from 5 p.m. to 7 p.m.** During the open house, boards containing information on the project's purpose and need and alternatives analysis process will be on display and staff from the FAA and their consultant team will be available to answer questions. This will be followed by a presentation on the project's purpose and need and alternatives analysis process by the FAA and their consultant team and a question and answer session. **The presentation and question and answer session will begin promptly at 7 p.m. and end at 9 p.m.**

For further information about this EIS study and to view the Runway 17-35 Extension Project Purpose and Need Technical Report, please visit the web site at http://www.phlrunway17-35eis.com or contact me.

We look forward to seeing you at these meetings.

Sincerely,

Jim Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011
E-mail: jim.byers@faa.gov
Phone: (202) 267-3007

RUNWAY 17-35

PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

Public Information Meetings

Topic: Purpose and Need and Alternatives Analysis Process*

Dates: May 11, 12 & 13, 2004

Time: **Meetings will run from 5 p.m. to 9 p.m. as follows:**
Open House: 5 p.m. to 7 p.m.
Presentation and Question and Answer Session: 7 p.m. to 9 p.m.

Locations:**

West Deptford High School (May 11)
Auditorium
1600 Crown Point Road
Westville, NJ

Jewish Community Center (May 12)
101 Garden of Eden Road
Wilmington, DE

Eastwick at the Meadows (May 13)
6630 Lindbergh Boulevard
Philadelphia, PA

** The agenda content at each meeting will be the same.*
***You can find directions to the above locations on the Runway 17-35 Extension Project EIS web site (http://www.phlrunway17-35eis.com).*

Newsletter No.2 • May 2004

Purpose and Need and the Alternatives Analysis Process

This Newsletter Contains
- Introduction
- Upcoming Public Information Meeting dates
- Purpose & Need of Project
- Alternatives Analysis Process
- How to learn more about the project

Public Information Meetings*

Topic:
Purpose and Need and the Alternatives Analysis Process

May 11, 12, 13, 2004

Open House:
5:00 p.m. - 7:00 p.m.

Presentation and Q&A Session:
7:00 p.m. - 9:00 p.m.

May 11:
West Deptford High School Auditorium
1600 Crown Point Road
Westville, NJ 08093

May 12:
Jewish Community Center
101 Garden of Eden Road
Wilmington, DE 19803

May 13:
Eastwick at the Meadows
6630 Lindbergh Boulevard
Philadelphia, PA 19142

You can find directions to the above locations on the Runway 17-35 Extension Project EIS web site at:

www.phlrunway17-35eis.com

* The agenda content at each meeting will be the same.

Introduction

This newsletter is the second in a series to inform the public about the Runway 17-35 Extension Project (the Project). Thank you to all who participated in the April 2004 public information meetings on How the Airport Operates. Please visit the Project's web site at *www.phlrunway17-35eis.com* to view the notes, the presentation, and the display boards from those meetings.

This newsletter describes the purpose and need for the Project, including information about existing and future airport operations and current and forecast delays. The Project's alternatives evaluation and screening process is also described in this newsletter. The alternatives that are retained through this process will undergo environmental impact analyses as part of the Draft Environmental Impact Statement (EIS). These alternatives will be discussed at the May public information meetings (see meeting details at left).

Background

The Philadelphia International Airport (PHL or the Airport) is a large hub airport that plays a major role in the national air transportation network. PHL serves both passengers traveling to and from Philadelphia and passengers connecting between flights. The Runway 17-35 Extension Project is needed to address existing and forecasted delays at PHL as soon as feasible.

A number of alternatives for this Project with the potential to alleviate delays were identified by the following parties:
- City of Philadelphia Division of Aviation (the City) in its Master Plan Update (Master Plan);
- Public and review agencies in the National Environmental Policy Act (NEPA) Scoping process; and
- Federal Aviation Administration (FAA).

The FAA is the lead Federal agency responsible for preparing the EIS for this Project. These alternatives have been evaluated ("screened") to determine their ability to meet the Project's purpose and need, and to determine if they are reasonably feasible to implement.

Project Purpose & Need

The purpose of the Runway 17-35 Extension Project is to reduce current and projected airfield delays at PHL as soon as feasible.

For More Information about the Runway 17-35 Extension Project
Please visit the project web site at *www.phlrunway17-35eis.com*

Key Points:

- Airlines are replacing turboprops with regional jets
- Regional jet operations are projected to increase by 144% by 2010
- The lengths of Runways 17-35 and 8-26 (the secondary runways) are not adequate for the regional jet fleet
- Operations on the primary runways are forecasted to increase as the ability to use the secondary runways will decrease
- Delays will increase from an average of 10 minutes in 2003 to an average of 19 minutes in 2010
- These delays are considered severe

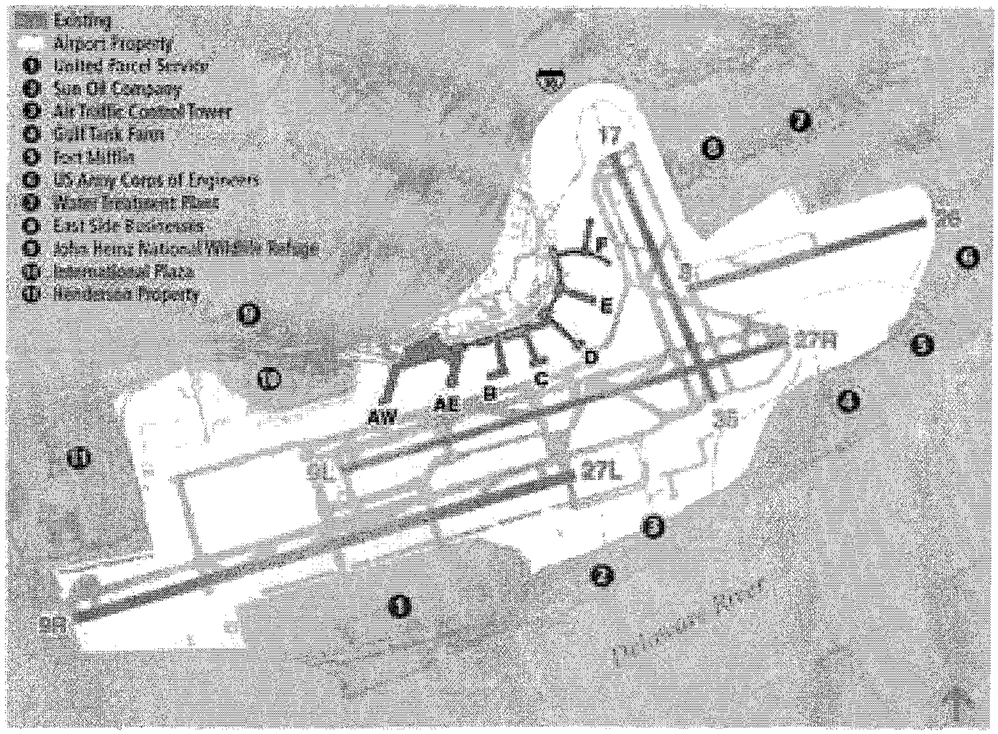
Summary of Purpose and Need

Passenger and aircraft activity data examined during the preparation of the MPU determined that aircraft operations at PHL are currently delayed an average of 10 minutes per operation. As stated in FAA's National Plan of Integrated Airports Systems, an airport is considered to be congested when average delay exceeds 5 minutes per operation.

Delays at the Airport have been made worse by faster than predicted changes in the fleet mix from turboprop aircraft to regional jets. Yearly operations by regional jets are forecast to increase 144 percent between 2002 and 2010 from approximately 73,000 to 178,000 annually. Conversely, operations by turboprop aircraft are forecast to decrease 15 percent between 2002 and 2010.

The use of the four runways at PHL varies among the different types of aircraft depending on runway length and orientation, and weather and traffic conditions. The majority of air carrier jets (widebodies, large narrowbodies, and narrowbodies) and regional jets, along with a smaller percentage of the general aviation and turboprop aircraft, use primary Runways 9R-27L and 9L-27R. Secondary Runways 17-35 and 8-26 are currently used by general aviation, turboprops, and occasional regional jets.

Figure 1: Existing Airport Layout



Aircraft Types

- **Widebody:** Two aisles with from 290 to 418 passenger seats.
- **Narrowbody:** Single aisle with from 100 to 240 passenger seats.
- **Regional:** Single aisle with from 32 to 70 passenger seats.
- **Turboprop:** Single aisle, propeller-driven aircraft.
- **General Aviation:** Primarily privately-owned aircraft and corporate jets.

Runways 17-35 and 8-26, with lengths of 5,459 feet and 5,000 feet respectively, cannot regularly accommodate many of the departures for the regional jets and narrowbody aircraft that serve PHL. This is because narrowbody and most regional jets require runway departure lengths of 6,300 feet or more[1]. As a result, Runways 17-35 and 8-26 are underused. This increases delays at PHL because the growing regional jet and small narrowbody fleets must share the Airport's primary 9,500-foot and 10,500-foot runways (Runways 9L-27R and 9R-27L, respectively) with the large narrowbody and widebody fleets. As a result, most aircraft use the primary runways, which causes delays to occur.

By 2010, combined regional jet and small narrowbody aircraft operations will total approximately 306,000 or 67 percent of PHL's total aircraft operations. This increase is due to the changes that the airlines serving PHL will make to their projected fleets to meet national and international passenger and cargo demands within the next 3 to 7 years. Delays are forecast to increase to 19 minutes per operation by 2010 if no action is taken to reduce delays. Immediate, short-term solutions are, therefore, needed to reduce current and projected airfield delays at PHL.

To view the complete Purpose and Need Technical Report, please visit the What's New section of the Runway 17-35 Extension Project EIS web site at *www.phlrunway17-35eis.com.*

Alternatives Analysis Process

As owner/operator of PHL the City identified a number of alternatives to provide short-term relief for delays in its Master Plan. Federal, state, and local agencies also recommended alternatives to

[1] Both the type of aircraft and the destination factor into the required length because planes going longer distances need to carry more fuel, which adds more weight to the aircraft, thus requiring a longer runway to take off.

the FAA, the lead federal agency responsible for preparing an EIS pursuant to NEPA. These alternatives have been evaluated ("screened") to determine their ability to meet the Project's purpose and need, and to determine if they are reasonable and feasible to implement. These on- and off-airport alternatives involve use of other airports, use of other modes of transportation, demand management[2], and airport infrastructure or technology improvements.

Environmental Alternatives Screening Process
A multi-tiered screening process was established by the FAA for the Runway 17-35 Extension Project to identify those reasonable alternatives that could feasibly achieve the Project's goals. This screening process is described below and is shown in Figure 2.

Candidate Alternatives and Screening
Candidate Alternatives were identified in the Master Plan, through NEPA Scoping, and by the FAA. They were screened based on their potential to meet the Project's purpose and need of reducing runway delay in the short term. The FAA eliminated from further consideration those alternatives incapable of reducing delay by 2007. The FAA retained the remaining alternatives as Preliminary Alternatives for the next round of screening.

The Candidate Alternative screening evaluated and then eliminated alternatives that would not fulfill the Project's purpose and need by using the following criteria:

- Does the Candidate Alternative have the potential to reduce airfield delays at PHL, i.e., does it address the causes of airfield delays through increased efficiency of the airfield, increased capacity, or reduced demand?
- Could the Candidate Alternative be permitted, designed, and implemented in the short term (by the start of 2007)?

This first level of screening considered alternatives that are both within and outside the jurisdiction of the City and the FAA.

Screening of Preliminary Alternatives
The FAA evaluated the alternatives retained from the previous screening to determine if they were feasible and reasonable and if they met the purpose and need. Alternatives that the FAA determined were infeasible or unreasonable in the short term, by 2007, were eliminated from further consideration.

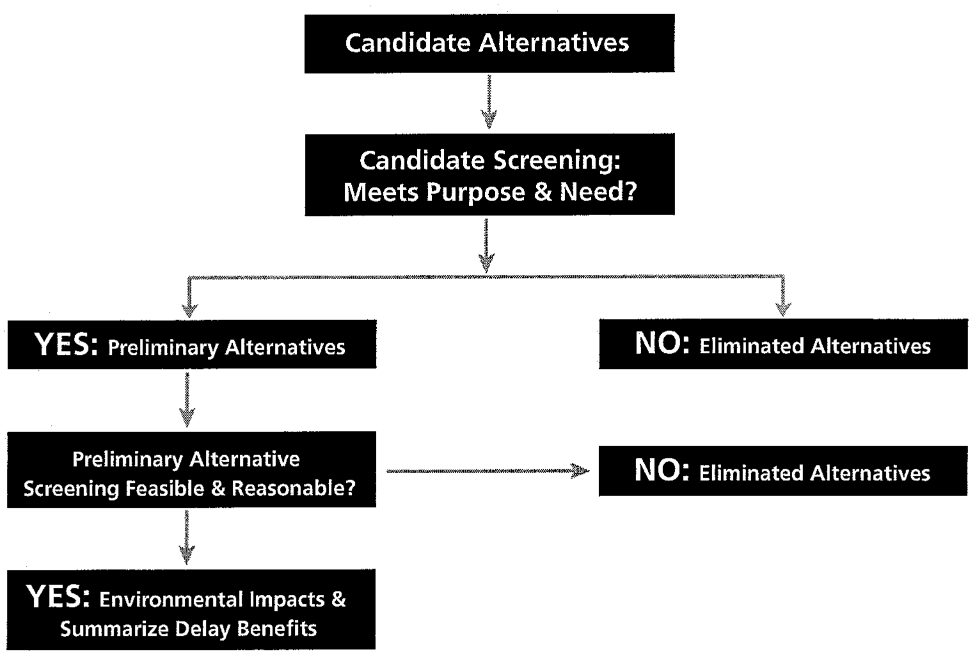
The Preliminary Alternative screening evaluated the feasibility of implementing each alternative in the short term. Feasibility is defined by the following criteria:

- **Implementation:** Can the Preliminary Alternative be implemented, including required permitting, construction and/or policy changes, if applicable?
- **Timing:** Can the Preliminary Alternative be implemented in three years or less?

Environmental Impacts and Delay Benefits Evaluation
The remaining alternatives are analyzed and the results will be documented in the Environmental Consequences Chapter of the Draft EIS. As required under NEPA regulations, the EIS will include a No Action Alternative that will be used to determine the environmental impacts that the reasonable alternatives would cause. The FAA compares these impacts against the future conditions that would exist if the City took no action at PHL. The Draft EIS also will present the delay reduction benefits for each of the retained alternatives and the No Action Alternative. Due to the streamlined nature of the environmental process, the delay simulation analysis is being conducted at the same time as the environmental analysis. Thus, some alternatives may drop out of consideration due to the findings of the delay simulation.

The alternatives that will undergo detailed environmental impact analyses as part of the Project's Draft EIS will be discussed at the May public information meetings (see meeting details on front page).

Figure 2: Environmental Alternatives Screening Process



[2] Including both market-based approaches that reduce demand by raising the price of using the airfield, and administrative approaches, such as slots, that strictly limit the number of flights permitted on an hourly basis.

Mailing List Additions

If you did not receive this newsletter in the mail, you are not on the mailing list for the Runway 17-35 Extension Project EIS. To add your name, or make a correction, please either email the information below to **jim.byers@faa.gov** or fill out this form and mail it to James Byers at the address below:

James Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

Name____

Address______________________________________

City__________________________ State________ Zip__________

Affiliation_____________________________________

Phone____________________ E-mail________________________

Once you are on the mailing list, you will automatically receive information from the FAA regarding the Runway 17-35 Extension Project.

U.S. Department of Transportation
Federal Aviation Administration
Harrisburg Airports District Office
3905 Hartzdale Drive, Ste. 508
Camp Hill, PA 17011

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RUNWAY 17-35
PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement
Public Information Meetings
May 11, 12, & 13, 2004

Public Input Form

The input provided on this form will provide the Environmental Impact Statement (EIS) team important information about the public's concerns and questions on the Philadelphia International Airport EIS Runway 17-35 Extension Project.

Please also complete the meeting survey on the other side. This will help the EIS team to meet your needs better in future public information meetings. Thank you for participating.

Input:____

Additional Page Included ☐ Yes ☐ No

Please drop off this form at the sign in table before you leave the meeting or mail this form to the following address:

James Byers, Environmental Specialist
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

RUNWAY 17-35

PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement
Public Information Meetings
May 11, 12, & 13, 2004

Mailing List Addition

Name: ______________________________

Address: ______________________________

City: ______________________________

State: ____________________ **Zip Code:** ____________________

E-mail Address: ______________________________

Phone Number: ______________________________

Meeting Survey

Please circle the best answer. 1 – Excellent to 5 – Poor

1. How would you rank this meeting location?	1	2	3	4	5
2. How would you rank the presenters?	1	2	3	4	5
3. How would you rank the facilitator?	1	2	3	4	5
4. How would you rank the information you received at these meetings?	1	2	3	4	5
5. How would you rank the advertisement for these meetings?	1	2	3	4	5

6. In your opinion, what can be done to make the meetings better? ______________________________

____

7. Do you have suggestions for the locations of future meetings? ☐ Yes ☐ No

   If so, please list them. ______________________________

8. How did you learn about these meetings? ______________________________

9. What do you think are the best ways to notify people interested in attending these meetings?

____

Other Comments: ______________________________

____

Public Information Meetings for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement

The Federal Aviation Administration will be holding a set of three meetings on the preliminary findings in the Draft Environmental Impact Statement (DEIS) for the Runway 17-35 Extension Project. The purpose of the Project is to reduce delay in the short term at the Philadelphia International Airport. These meetings will give the public the opportunity to learn about the analysis process, preliminary findings of the environmental analyses, the DEIS public review process, and to ask questions about the Project. The meeting content at each meeting will be the same.

These meetings will consist of a presentation followed by a question and answer session. Formal comments on the Project will be accepted after the DEIS is available for public review in October 2004 and at the public hearings on November 16, 17, and 18, 2004.

The public information meetings will be held from 7 PM to 9 PM on each of the following evenings:

- **September 28, 2004** – Paulsboro High School, Auditorium, 670 N. Delaware Street, Paulsboro, NJ
- **September 29, 2004** – Upper Darby High School, Auditorium, 601 N. Lansdowne Avenue, Drexel Hill, PA
- **September 30, 2004** – Mercy Wellness Center at Eastwick, Meeting Room (2nd Floor), 2821 Island Avenue, Philadelphia, PA

For more information, please visit the Runway 17-35 Extension Project EIS web site (http://www.phlrunway17-35eis.com).

PLEASE NOTE: Arrangements can be made for individuals or others in need of special assistance who would like to attend the meetings by contacting Jennifer Price at (215) 751-1400. Requests can also be e-mailed to Jennifer.Price@CHPlanning.com. Requests should be made at least five business days before the meeting you would like to attend.

For more information, please contact Susan McDonald, FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, PO Box 9151, Watertown, MA 02471-9151, (717) 730-2833, smcdonald.faa.17-35@vhb.com.

Workshops to be Held on Preliminary Findings in Draft Environmental Impact Statement for Philadelphia International Airport Runway 17-35 Extension Project

The Federal Aviation Administration will be holding a set of three workshops on the preliminary findings in the Draft Environmental Impact Statement (EIS) for the Philadelphia International Airport Runway 17-35 Extension Project. These workshops will give the public the opportunity to learn about the preliminary findings of various analyses and to ask questions about the Project, which will reduce delay in the short term at the Airport.

These workshops are intended to be informal with a presentation followed by a question and answer session. Formal comments on the Project will be accepted at the November 2004 public hearings,* which will be held in several locations. The Draft EIS will be available for public review in October 2004.*

The workshops will be held from 7 PM to 9 PM on each of the following evenings:

September 28, 2004 – Paulsboro High School, Auditorium, 670 N. Delaware Street, Paulsboro, NJ *(Pending School Board Approval)**

September 29, 2004 – Upper Darby High School, Auditorium, 601 N. Lansdowne Avenue, Drexel Hill, PA

September 30, 2004 – Mercy Wellness Center at Eastwick, Meeting Room (2nd Floor), 2821 Island Road, Philadelphia, PA

*Please visit the Runway 17-35 Project web site (http://www.phlrunway17-35eis.com) for the latest information on meeting dates and locations, the availability of the Draft EIS, to be added to the project mailing list, and Project information.

For more information, please contact:

Susan McDonald
FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151
(717) 730-2833
smcdonald.faa.17-35@vhb.com

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

September 2004

Dear Elected or Appointed Official:

The Federal Aviation Administration (FAA) is preparing a Draft Environmental Impact Statement (DEIS) to evaluate potential impacts of the Runway 17-35 Extension Project at the Philadelphia International Airport. The City of Philadelphia, owner and operator of the Airport, is proposing the project to alleviate delays in the short term at the Airport.

The FAA will be holding a set of three public information meetings on the preliminary findings in the DEIS for the Runway 17-35 Extension Project. These meetings will give the public the opportunity to learn about the analysis process, preliminary findings of the environmental analyses, the DEIS public review process, and to ask questions about the Project.

We invite you and your staff to join us at these meetings. We would appreciate it if you and/or your staff members identify yourselves when you sign in so that we can make sure you speak to the appropriate EIS team member to address any questions you might have about this project.

The meetings will be held from 7 p.m. to 9 p.m. each night. The meetings will include a presentation by the FAA and their consultant team followed by a question and answer session. The meeting content at each meeting will be the same.

Formal comments on the Project will be accepted after the DEIS is available for public review in October 2004 and at the public hearings on November 16, 17, and 18, 2004.

For more information, please visit the Runway 17-35 Extension Project EIS web site (http://www.phlrunway17-35eis.com).

We look forward to seeing you at these meetings.

Sincerely,

Susan McDonald
FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151
(717) 730-2833
Email: smcdonald.faa.17-35@vhb.com

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

Public Information Meetings

Topic: Preliminary Results of the Draft Environmental Impact Statement*

Dates: September 28, 29, & 30, 2004

Time: 7 p.m. to 9 p.m. (Presentation and Question and Answer Session)

Locations:**

Paulsboro High School (September 28)
Auditorium
670 N Delaware St
Paulsboro, NJ 08066-1020

Upper Darby High School (September 29)
Auditorium
601 N. Lansdowne Avenue
Drexel Hill, PA 19026

Mercy Wellness Center at Eastwick (September 30)
Meeting Room (2nd Floor)
2821 Island Avenue
Philadelphia, PA 19153

** The agenda content at each meeting will be the same.*
***You can find directions to the above locations on the Runway 17-35 Extension Project EIS web site (http://www.phlrunway17-35eis.com).*

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

September 2004

Dear Religious Leader:

The Federal Aviation Administration (FAA) is preparing a Draft Environmental Impact Statement (DEIS) to evaluate potential impacts of the Runway 17-35 Extension Project at the Philadelphia International Airport. The City of Philadelphia, owner and operator of the airport, is proposing the project to alleviate delays in the short term at the Airport.

The FAA will be holding a set of three public information meetings on the preliminary findings in the DEIS for the Runway 17-35 Extension Project. These meetings will give the public the opportunity to learn about the analysis process, preliminary findings of the environmental analyses, the DEIS public review process, and to ask questions about the Project.

We invite you and your congregation to join us at these meetings. We would appreciate it if you could let your congregation know about the upcoming meetings described below and on the enclosed flyer.

The public information meetings will be held on September 28, 29, and 30, 2004 from 7 p.m. to 9 p.m. each night. The meetings will include a presentation by the FAA and their consultant team followed by a question and answer session. The meeting content at each meeting will be the same.

Formal comments on the Project will be accepted after the DEIS is available for public review in October 2004 and at the public hearings on November 16, 17, and 18, 2004.

For more information, please visit the Runway 17-35 Extension Project EIS web site (http://www.phlrunway17-35eis.com).

We look forward to seeing you at these meetings.

Sincerely,

Susan McDonald
FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151
(717) 730-2833
Email: smcdonald.faa.17-35@vhb.com

RUNWAY 17-35 PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

Public Information Meetings

The Federal Aviation Administration will be holding a set of three public information meetings on the preliminary findings in the Draft Environmental Impact Statement (DEIS) for the Runway 17-35 Extension Project at the Philadelphia International Airport. These meetings will give the public the opportunity to learn about the analysis process, preliminary findings of the environmental analyses, the DEIS public review process, and to ask questions about the Project.

Formal comments on the Project will be accepted after the DEIS is available for public review in October 2004 and at the public hearings on November 16, 17, and 18, 2004.

Topic: Preliminary Findings of the Draft Environmental Impact Statement

Dates: September 28, 29, & 30, 2004

Time: 7 p.m. to 9 p.m. (Presentation and Question and Answer Session)

Locations: **Paulsboro High School (September 28)**
Auditorium
670 N Delaware St
Paulsboro, NJ 08066-1020

Upper Darby High School (September 29)
Auditorium
601 N. Lansdowne Avenue
Drexel Hill, PA 19026

Mercy Wellness Center (September 30)
Meeting Room (2nd Floor)
2821 Island Avenue
Philadelphia, PA 19153

PLEASE NOTE: Arrangements can be made for individuals or others in need of special assistance who would like to attend the meetings by contacting Jennifer Price at (215) 751-1400. Requests can also be e-mailed to Jennifer.Price@CHPlanning.com. Requests should be made at least five business days before the meeting you would like to attend.

For more information, please visit the Project web site at
http://www.phlrunway17-35eis.com

FAA NEWS

Federal Aviation Administration, Eastern Region, Jamaica, NY 11434

FOR IMMEDIATE RELEASE
Thursday, September 23, 2004
Contact: Arlene Salac or Jim Peters
Phone: 718-553-3015

FAA to Hold Public Information Meetings on Philadelphia International Airport Runway 17-35 Extension Project

The Federal Aviation Administration (FAA) will hold a series of public information meetings to provide the public the opportunity to learn more about the FAA's Draft Environmental Impact Statement (DEIS) for the Runway 17-35 Extension Project at Philadelphia International Airport. The City of Philadelphia, owner and operator of the airport, is proposing this project to alleviate delays at the airport.

The purpose of these meetings will be to present the analysis process, preliminary findings of the environmental analyses, and the DEIS public review process. The meetings will include a presentation by FAA and its consultant team followed by a question and answer session. The content for each meeting will be the same.

The meetings, which will run from 7 to 9 p.m., will be held:

- September 28 at the Paulsboro High School auditorium, 670 N. Delaware Street, Paulsboro, NJ;
- September 29 at the Upper Darby High School auditorium, 601 N. Lansdowne Avenue, Drexel Hill, PA; and
- September 30 at the Mercy Wellness Center at Eastwick meeting room (2nd floor), 2821 Island Avenue in Philadelphia.

Formal comments on the project will be accepted after the DEIS is available for public review in October 2004 and at the public hearings on November 16, 17, and 18, 2004.

For more information, please visit the Runway 17-35 Extension Project EIS web site at www.phlrunway17-35eis.com.

PLEASE NOTE: Arrangements can be made for individuals or others in need of special assistance who would like to attend the meetings by contacting Jennifer Price at (215) 751-1400. Requests can also be e-mailed to Jennifer.Price@CHPlanning.com. Requests should be made at least five business days before the meeting you would like to attend.

###

Newsletter No. 3 • September 2004

This Newsletter Contains

Public Information Meetings

Topic:
Preliminary Findings of the Draft Environmental Impact Statement*

September 28, 29, & 30, 2004
7 p.m. to 9 p.m.
Presentation is followed by a Question and Answer Session

September 28:
Paulsboro High School
Auditorium
670 N. Delaware Street
Paulsboro, NJ 08066-1020

September 29:
Upper Darby High School
Auditorium
601 N. Lansdowne Avenue
Drexel Hill, PA 19026

September 30:
Mercy Wellness Center
Meeting Room, 2nd Floor
2821 Island Avenue
Philadelphia, PA 19153

You can find directions to the above locations on the Runway 17-35 Extension Project EIS web site at:

www.phlrunway17-35eis.com

* The agenda content at each meeting will be the same.

Newsletter Contents

This newsletter includes a brief summary of the alternatives being considered to reduce delay at the Philadelphia International Airport in the short term. Also included is a preliminary summary of the findings of the environmental analyses conducted for each alternative. Detailed information about these findings will be contained in the Draft Environmental Impact Statement (DEIS). The DEIS will discuss the purpose and need; all alternatives considered to meet the purpose and need for the project; how and why alternatives were eliminated or carried forward for further consideration for environmental analysis in the DEIS; the detailed, interdisciplinary evaluation of the environmental impacts that each alternative would likely cause; and it will identify conceptual mitigation measures for significant impacts to reduce them to levels that are compatible with Federal guidelines.

Noise has been a major concern expressed by residents in the vicinity of the Airport during the Project's public outreach process. This newsletter includes an overview of the noise analyses conducted for this Project and defines the procedures that were used in the analyses.

The DEIS is scheduled for release in October 2004 and public hearings on the DEIS are scheduled for November 16, 17, and 18, 2004 in the Greater Philadelphia Area. The FAA will announce the locations and times in October 2004. An overview of the public review process for the DEIS is described in this newsletter.

Summary of Analysis to Date

The Federal Aviation Administration (FAA) has identified the Philadelphia International Airport as one of the airports contributing to delays throughout the national airport system. The Airport is the sixth most delayed airport in the United States. Delays at the Airport are occurring partly because the primary runways are congested, while the secondary runways, including Runway 17-35, are underused. To provide relief from the existing delays as soon as feasible, two separate projects have been proposed by the City of Philadelphia. These projects include the Runway 17-35 Project, which is the subject of this newsletter and which will reduce delays in the short term (2007), and the Capacity Enhancement Program, which will reduce delays in the long term (2015).

Several alternatives were evaluated ("screened") by the FAA to determine their ability to meet the Project's purpose and need, and to determine if they are reasonable and feasible to implement.

Five major types of alternatives were considered:
- Greater use of other airports in the region
- A new airport
- Other modes of transportation, such as automobiles, intercity passenger rail and intercity buses

For More Information about the Runway 17-35 Extension Project
Please visit the project web site at *www.phlrunway17-35eis.com*

- Demand Management, in which administrative or pricing controls are used to reduce the number of operations at the airport
- On-airport infrastructure improvements, such as extending Runways 17-35 or 8-26, and non-runway improvements
- Proven and accepted technology not currently in use at the Airport

It was determined in a detailed alternatives assessment, which is documented in the DEIS, that most of these alternatives are:

- Not likely to reduce delay because neither the FAA nor the Airport can force passengers or airlines to change their travel behavior (other airports, other transportation modes, pricing controls)
- Can not be implemented in the short term (2007) (new airport, administrative controls, Runway 8-26 extension, advanced technology)

The alternatives that were determined to both meet the purpose and need and to be implemented in the short term are discussed in the section below.

Environmental Analysis Categories

The DEIS provides an analysis of the environmental effects of each alternative by comparing the environmental conditions resulting from each alternative to the No-Action Alternative conditions. The environmental categories that are analyzed in the DEIS include:

- Air Quality
- Impacts During Construction (i.e., noise, dust)
- Environmental Justice (impacts to low income and minority populations)
- Fish, Wildlife, and Plants including Threatened and Endangered Species
- Hazardous Materials and Solid Waste
- Historic, Architectural, Archaeological and Cultural Resources
- Noise
- Parks, Refuges, Public Recreation Areas, Residences, and other Sensitive Land Uses
- Secondary and Cumulative Impacts
- Socioeconomic and Social Impacts
- Surface Transportation
- Wetlands, Water Quality, and Floodplains

The DEIS Alternatives

The DEIS will address a range of alternatives that could reduce existing and forecast delays at the Airport in the short term (2007). The alternatives being considered for the Runway 17-35 Project are the No-Action Alternative and two build alternatives. These alternatives were presented at public meetings hosted by the FAA in May 2004.

No-Action Alternative

The No-Action Alternative assumes that only periodic maintenance and minor enhancements needed to maintain safe, efficient operations at the Airport would occur. The No-Action Alternative serves as the basis for comparison in assessing the impacts of the other alternatives being considered.

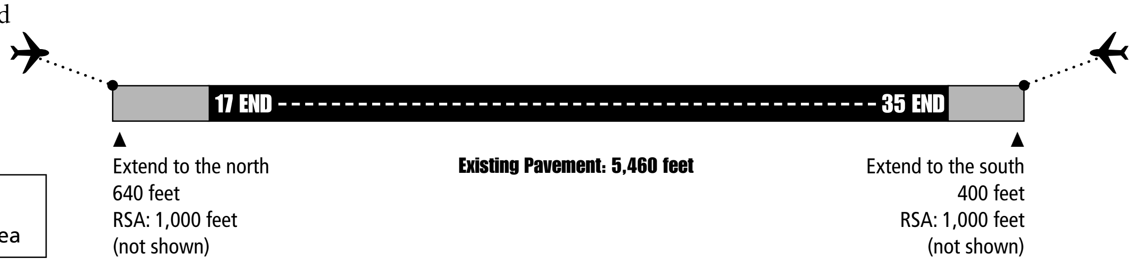
Alternative 1
Standard Runway Safety Areas

Alternative 1 would extend Runway 17-35 to the north by 640 feet and to the south by 400 feet from its existing length of 5,460 feet to a proposed total length of 6,500 feet (see **Alternative 1** below). A new Runway Safety Area, a flat unpaved surface at the end of the runway that allows airplanes that have overrun the runway to stop safely, would extend 1,000 feet beyond the new extensions on both ends. Obstructions periodically caused by tall shipping vessels in the Delaware River channel would be avoided by restricting the use of Runway 35 (south end) for landings when ships are present. This would occur on average four times per day for 15 minutes. The preliminary results of the analysis indicate that Alternative 1 would produce the highest reduction in delays. When compared to the No-Action Alternative, Alternative 1 would reduce the average annual delay per operation by a little over one minute in 2007 and by almost 7 minutes in 2015.

Alternative 2
Engineered Material Arresting System (EMAS) and Displaced Threshold

Alternative 2 would extend Runway 17-35 to the north by 1,140 feet and to the south by 400 feet from its existing length of 5,460 feet to a proposed total length of 7,000 feet. A new Runway Safety Area would extend 500 feet beyond the extension to the north. An Engineered Material Arresting System, collapsible concrete blocks that stop an overrunning aircraft in a shorter distance than a standard unpaved safety area, would be placed in this Runway Safety Area. A new standard Runway Safety Area would extend 1,000 feet beyond the new extension to the

Alternative 1



Glossary	
RSA	Runway Safety Area

south. Alternative 2 would accommodate tall shipping vessel obstructions on the Delaware River by displacing landings from the south by 1,444 feet to the north of the unpaved runway end at all times and would accommodate I-95 by displacing landings from the north by 500 feet to the south of the unpaved runway end as shown in **Alternative 2** below. When compared to the No-Action Alternative, Alternative 2 would reduce the average annual delay per operation by less than one minute in 2007 and by 4 minutes in 2015.

Both Alternative 1 and Alternative 2 would require the relocation of approximately 2,500 feet of State Route 291.

Neither Alternative 1 nor Alternative 2 would result in significant changes in aircraft flight tracks.

Summary of the Noise Analysis Process

The noise analysis for the Runway 17-35 Extension Project EIS was conducted in accordance with FAA regulations and the National Environmental Policy Act. The noise analysis was based upon the Day-Night Average Sound Level (DNL) noise measure using the procedures outlined in FAA Environmental Orders 1050.1E and 5050.4A.

Existing and future aircraft noise levels at the Airport were analyzed by evaluating noise contours, which are continuous lines of equal noise level usually drawn around a noise source. Noise contours are usually drawn to show the DNL 65, 70, and 75 decibel (dB) contours in 5 dB increments. The noise contours were developed and evaluated using the FAA's Integrated Noise Model, a computer program developed, updated, and maintained by the FAA to evaluate aircraft noise exposure in the vicinity of airports. FAA EISs typically show contours at DNL 65 because this is the Federal government's land use standard for airport-compatible noise sensitive land uses such as housing, schools, or churches.

FAA defines a "significant" noise impact as a DNL 1.5 dB noise increase over a noise sensitive land use located in the DNL 65 dB or higher noise contour when comparing the future build scenario to the future no build scenario.

Project Meetings

The FAA has held several public information meetings throughout the Project to give the public the opportunity to ask questions and to provide input on the Project. Public scoping meetings were held in August 2003. Public information meetings were held in April 2004 on how the airport operates. In May 2004, public meetings were held on the Project's purpose and need and alternatives analysis process.

Upcoming Public Information Meetings
Public information meetings are scheduled on September 28, 29, and 30, 2004 (see front page) to present the preliminary findings of the DEIS. Formal comments on the Project will be accepted during the DEIS public review period.

DEIS Public Review Period
After the release of the DEIS in October 2004, the public review period of the DEIS begins. The public review period occurs for at least 45 days during which the public has the opportunity to review the DEIS and submit formal comments to the FAA.

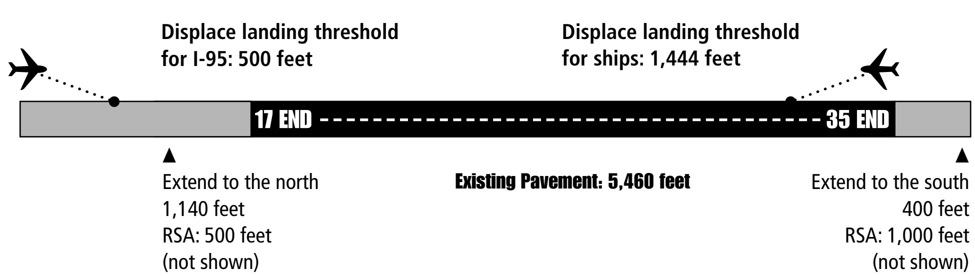
The public will have the opportunity to comment on the DEIS by submitting written comments to the FAA during the public review period and by submitting written or oral comments at the public hearings in November 2004. All comments received during the public review period will be considered and included in the EIS legal record. Substantive comments received during the public review period and FAA's responses to these comments will be included in the Final EIS.

DEIS Public Hearing Dates
The DEIS public hearings, which will provide an opportunity for the public to learn about the proposed project and provide oral or written comments on the DEIS, are scheduled for November 16, 17, and 18, 2004. Notice of the public hearing locations will be sent to those on the project mailing list and will be posted on the project web site (***www.phlrunway17-35eis.com***) in October 2004. To be added to the mailing list, please either complete the form on the back page of this newsletter and send it to the address indicated on the form or visit the project web site (***www.phlrunway17-35eis.com***) and complete the Mailing List form under Public Outreach.

Frequently-Asked-Questions

A list of frequently-asked-questions relating to the project's purpose and need, alternatives analysis process, environmental concerns, airport operations, airport delays, and flight procedures have been compiled and are available on the project web site at ***www.phlrunway17-35eis.com*** under "Public Outreach".

Alternative 2



Mailing List Additions

If you did not receive this newsletter in the mail, you are not on the mailing list for the Runway 17-35 Extension Project EIS. To add your name, or make a correction, please either email the information below to **smcdonald.faa.17-35@vhb.com** or fill out this form and mail it to the address below:

Susan McDonald, FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
Watertown, MA 02471-9151

Name____

Address____

City__________________________ State_______ Zip__________

Affiliation____

Phone____________________ E-mail________________________

Once you are on the mailing list, you will automatically receive information from the FAA regarding the Runway 17-35 Extension Project.

printed on recycled paper

U.S. Department of Transportation
Federal Aviation Administration
Harrisburg Airports District Office
3905 Hartzdale Drive, Ste. 508
Camp Hill, PA 17011

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

Public Information Meetings
September 28, 29, and 30, 2004

Public Input Form

The input provided on this form will provide the Environmental Impact Statement (EIS) team important information about the public's concerns and questions on the Philadelphia International Airport EIS Runway 17-35 Extension Project.

Please also complete the meeting survey on the other side. This will help the EIS team to meet your needs better in future public information meetings. Thank you for participating.

Input:____

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Additional Page Included ☐ Yes ☐ No

Please drop off this form at the sign in table before you leave the meeting or mail this form to the following address:

Susan McDonald, FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

Public Information Meetings
September 28, 29, and 30, 2004

Mailing List Addition

Name:____

Address: ____

City: ____

State: ____________________ Zip Code: ____________________

E-mail Address: ____

Phone Number:____

Meeting Survey

Please circle the best answer. 1 – Excellent to 5 – Poor

1.	How would you rank this meeting location?	1	2	3	4	5
2.	How would you rank the presenters?	1	2	3	4	5
3.	How would you rank the facilitator?	1	2	3	4	5
4.	How would you rank the information you received at these meetings?	1	2	3	4	5
5.	How would you rank the advertisement for these meetings?	1	2	3	4	5

6. In your opinion, what can be done to make the meetings better?____________________

____

7. Do you have suggestions for the locations of future meetings? ☐ Yes ☐ No

   If so, please list them.____

8. How did you learn about these meetings?______________________________

9. What do you think are the best ways to notify people interested in attending these meetings?

   ____

Other Comments:____

____

Legal Ad

Philadelphia International Airport Runway 17-35 Extension Project
Release of Draft Environmental Impact Statement and Public Hearings

The Federal Aviation Administration (FAA) has released a Draft Environmental Impact Statement (DEIS) for the proposed Runway 17-35 Extension Project at the Philadelphia International Airport. The DEIS contains information on the purpose of and need for the proposed project; the range of reasonable alternatives considered; a description of the alternatives evaluated in detail in the DEIS; and an evaluation of the environmental consequences of the proposed project. In addition to the No-Action Alternative, the DEIS evaluates two alternatives which would extend existing Runway 17-35 in order to reduce delay in the short-term. A preferred alternative has not been identified at this time.

FAA encourages all interested parties to provide comments concerning the scope and content of the DEIS. 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 DEIS and related documents. Matters that could have been raised with specificity during the comment period on the DEIS may not be considered if they are raised 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.

The DEIS is available for review on the internet site (www.PHLrunway17-35eis.com) and at libraries in the study area. Comments can be submitted through the web site, or submitted by mail to Susan McDonald (FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, Watertown, MA 02471) or emailed to smcdonald.faa.17-35@vhb.com. Comments must be received by December 1, 2004 in order to be considered.

Public hearings on the DEIS have been scheduled for November 16 (West Deptford High School, 1600 Crown Point Road, Westville, NJ), November 17 (Brandywine High School, 1400 Foulk Road, Wilmington, DE), and November 18 (Eastwick at the Meadows, 6630 Lindbergh Boulevard, Philadelphia, PA). Written notification of the place and time of each hearing will be sent to all interested parties, and will be posted on the project website as well as advertised in local newspapers. Written and verbal comments will be accepted at the public hearings.

FAA NEWS

Federal Aviation Administration, Eastern Region, Jamaica, NY 11434

FOR IMMEDIATE RELEASE
Thursday, October 14, 2004
Contact: Arlene Salac or Jim Peters
Phone: 718-553-3015

FAA Releases Draft Environmental Impact Statement on Philadelphia Airport Runway Extension Project

Federal Aviation Administration has released a Draft Environmental Impact Statement (DEIS) for the proposed Runway 17-35 Extension Project at Philadelphia International Airport. The DEIS is available for review on the internet site (www.PHLrunway17-35eis.com) and at libraries (see attached listing). Comments can be submitted through the website or submitted by mail to Susan McDonald (FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, Watertown, MA 02472) or emailed to smcdonald.faa.17-35@vhb.com. Comments must be received by December 1, 2004 in order to be considered.

The DEIS contains information on the purpose of and need for the proposed project; the range of reasonable alternatives considered; a description of the alternatives evaluated in detail in the DEIS; and an evaluation of the environmental consequences of the proposed project. In addition to the No-Action Alternative, the DEIS evaluates two alternatives which would extend existing Runway 17-35 in order to reduce delay in the short-term. A preferred alternative has not been identified at this time.

Public hearings on the DEIS have been scheduled for November 16 (West Deptford High School, 1600 Crown Point Road, Westville, NJ), November 17 (Brandywine High School, 1400 Foulk Road, Wilmington, DE), and November 18 (Eastwick at the Meadows, 6630 Lindbergh Boulevard, Philadelphia, PA).

Written notification of the place and time of each hearing will be sent to all interested parties, and will be posted on the project website as well as advertised in local newspapers. Written and verbal comments will be accepted at the public hearings.

FAA encourages all interested parties to provide comments concerning the scope and content of the DEIS. 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 DEIS and related documents.

- more -

Matters that could have been raised with specificity during the comment period on the DEIS may not be considered if they are raised 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.

The Complete DEIS is also available for review at these libraries:

Pennsylvania
Aston Free Library
Collingdale Public Library
J. Lewis Crozer Library (Chester)
Darby Free Library
Folcroft Public Library
Free Library of Philadelphia-Central Library
Free Library of Philadelphia-Eastwick Branch
Free Library of Philadelphia- Paschalville Branch
Glenolden Library
Haverford Township Free Library
Lansdowne Public Library
Media-Upper Providence Free Library
Norwood Public Library
Prospect Park Public Library
Ridley Park Public Library
Ridley Township Public Library
Sharon Hill Public Library
Springfield Township Library
Swarthmore Public Library
Tinicum Memorial Public Library
Upper Darby & Sellers Memorial Library (main)
Yeadon Public Library

Delaware
New Castle County - Brandywine Hundred Branch
New Castle County - Claymont Branch

New Jersey
Bellmawr Branch
Camden County Library – Gloucester Township Branch
Camden County Library – Haddon Township Branch
Camden Free Public Library
Collingswood Free Public Library
East Greenwich Library
Gill Memorial Library (Paulsboro)
Gloucester City Library
Gloucester County Library – Logan Township Branch
Greenwich Township Branch
James H. Johnson Memorial Library (Deptford)
Mount Ephraim Public Library
Wenonah Free Public Library
West Deptford Library
Westville Public Library
William G. Rohrer Memorial Library/ Haddon Township Branch
Woodbury Public Library

RUNWAY 17-35

PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

CORRECTION

Please note that the Runway 17-35 Extension Project public hearing dates were incorrectly stated on the announcement that accompanied the copy of the Draft Environmental Impact Statement (DEIS) that you received. Please note below the correct public hearing dates. We apologize for any inconvenience this may have caused. We look forward to seeing you at these public hearings.

November 16, 17, & 18, 2004

Open Display of Information Boards: 5 to 7 p.m.
Public Hearing: 7 to 9 p.m.

Locations:
West Deptford High School (November 16)
Auditorium
1600 Crown Point Road
Westville, NJ

Brandywine High School (November 17)
1400 Foulk Road
Wilmington, DE

Eastwick at the Meadows (November 18)
6630 Lindbergh Boulevard
Philadelphia, PA

Susan McDonald
FAA Protection Specialist
c/o VHB
101 Walnut Street
Watertown, MA 02472

****Correction of Runway 17-35 Extension Project Public Hearing Dates****

****Please see other side****

Public Hearings for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement

The Federal Aviation Administration (FAA) will be holding four sets of an information session and a public hearing on the Runway 17-35 Extension Project Draft Environmental Impact Statement (DEIS) on November 15, 16, 17, and 18, 2004.

The **information session** will be held **from 5 p.m. to 7 p.m.** each night during which you will be able to view display boards that show the results of the analyses which are reported in the DEIS. The information session will be your opportunity to review material and to ask questions of the EIS team.

The **public hearing** will be held **from 7 p.m. to 9 p.m.** each night during which you will have the opportunity to comment on the Project for the formal public record. The EIS team will be present to hear your comments but will not be answering questions. Written comments will also be accepted at the public hearings.

The DEIS is available for review on the web site (www.phlrunway17-35eis.com) and at libraries in the study area. Comments can be submitted through the web site, or submitted by mail to Susan McDonald (FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, Watertown, MA 02471) or emailed to smcdonald.faa.17-35@vhb.com. Comments must be received by **December 1, 2004** in order to be considered.

The public hearings will be held at the following locations:

- **November 15, 2004 –** Ridley Community Center, Auditorium**,** 801 Morton Avenue**,** Folsom, PA
- **November 16, 2004** – West Deptford High School, Auditorium, 1600 Crown Point Road, Westville, NJ
- **November 17, 2004** - Brandywine High School, Auditorium, 1400 Foulk Road, Wilmington, DE
- **November 18, 2004** - Eastwick at the Meadows, 6630 Lindbergh Boulevard, Philadelphia, PA

PLEASE NOTE: Arrangements can be made for individuals or others in need of special assistance who would like to attend the meetings by contacting Jennifer Price at (215) 751-1400. Requests can also be e-mailed to Jennifer.Price@CHPlanning.com. Requests should be made at least five business days before the meeting you would like to attend.

For more information, please visit the Runway 17-35 Extension Project EIS web site (www.phlrunway17-35eis.com) or contact Susan McDonald, FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, PO Box 9151, Watertown, MA 02471-9151, smcdonald.faa.17-35@vhb.com.

RUNWAY 17-35

PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

November 2004

Dear Elected or Appointed Official:

The Federal Aviation Administration (FAA) has prepared a Draft Environmental Impact Statement (DEIS) which evaluates the potential impacts of the Runway 17-35 Extension Project at the Philadelphia International Airport. The City of Philadelphia, owner and operator of the airport, is proposing the project to alleviate delays in the short term at the Airport. The FAA will be holding four sets of an information session and a public hearing on the DEIS on November 15, 16, 17, and 18, 2004.

The information session will be held from 5 p.m. to 7 p.m. during which you will be able to view display boards that show the results of the analyses which are reported in the DEIS. The information session will be your opportunity to review material and to ask questions of the EIS team. The display boards at each meeting will be the same.

The public hearing will be held from 7 p.m. to 9 p.m. each night during which you will have the opportunity to comment on the Project for the formal public record. The EIS team will be present to hear your comments but will not be answering questions. Written comments will also be accepted at the public hearings.

We invite you and your staff to join us at these information sessions and hearings. We would appreciate it if you and/or your staff members identify yourselves when you sign in so that we can make sure you speak to the appropriate EIS team member to address any questions you might have about this project.

The DEIS is available for review on the web site (www.phlrunway17-35eis.com) under "What's New" and at libraries in the study area. Comments can be submitted through the web site, or submitted by mail to Susan McDonald (FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, Watertown, MA 02471) or emailed to smcdonald.faa.17-35@vhb.com. Comments must be received by **December 1, 2004** in order to be considered.

For more information, please visit the Runway 17-35 Extension Project EIS web site (www.phlrunway17-35eis.com).

We look forward to seeing you at these hearings.

Sincerely,

Susan McDonald, FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151
Email: smcdonald.faa.17-35@vhb.com

RUNWAY 17-35 PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

Public Hearings

Topic: Draft Environmental Impact Statement*

Dates: November 15, 16, 17, and 18, 2004

Time: 5 p.m. to 7 p.m. (Information Session)
7 p.m. to 9 p.m. (Public Hearing)

Locations:**

Ridley Community Center (November 15)
Auditorium
801 Morton Avenue
Folsom, PA 19033

West Deptford High School (November 16)
Auditorium
1600 Crown Point Road
Westville, NJ

Brandywine High School (November 17)
Auditorium
1400 Foulk Road
Wilmington, DE

Eastwick at the Meadows (November 18)
6630 Lindbergh Boulevard
Philadelphia, PA

** The display boards at each meeting will be the same.*
***You can find directions to the above locations on the Runway 17-35 Extension Project EIS web site (www.phlrunway17-35eis.com).*

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

November 2004

Dear Religious Leader:

The Federal Aviation Administration (FAA) has prepared a Draft Environmental Impact Statement (DEIS) which evaluates the potential impacts of the Runway 17-35 Extension Project at the Philadelphia International Airport. The City of Philadelphia, owner and operator of the airport, is proposing the project to alleviate delays in the short term at the Airport. The FAA will be holding four sets of an information session and a public hearing on the DEIS on November 15, 16, 17, and 18, 2004.

The information session will be held from 5 p.m. to 7 p.m. during which you will be able to view display boards that show the results of the analyses which are reported in the DEIS. The information session will be your opportunity to review material and to ask questions of the EIS team. The display boards at each meeting will be the same.

The public hearing will be held from 7 p.m. to 9 p.m. each night during which you will have the opportunity to comment on the Project for the formal public record. The EIS team will be present to hear your comments but will not be answering questions. Written comments will also be accepted at the public hearings.

We invite you and your congregation to join us at these information sessions and hearings. We would appreciate it if you could let your congregation know about the upcoming hearings described below and on the enclosed flyer.

The DEIS is available for review on the web site (www.phlrunway17-35eis.com) under "What's New" and at libraries in the study area. Comments can be submitted through the web site, or submitted by mail to Susan McDonald (FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, Watertown, MA 02471) or emailed to smcdonald.faa.17-35@vhb.com. Comments must be received by **December 1, 2004** in order to be considered.

For more information, please visit the Runway 17-35 Extension Project EIS web site (www.phlrunway17-35eis.com).

We look forward to seeing you at these hearings.

Sincerely,
Susan McDonald, FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151
Email: smcdonald.faa.17-35@vhb.com

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

Public Hearings

Topic: Draft Environmental Impact Statement*

Dates: November 15, 16, 17, and 18, 2004

Time: 5 p.m. to 7 p.m. (Information Session)
7 p.m. to 9 p.m. (Public Hearing)

Locations:**

Ridley Community Center (November 15)
Auditorium
801 Morton Avenue
Folsom, PA 19033

West Deptford High School (November 16)
Auditorium
1600 Crown Point Road
Westville, NJ

Brandywine High School (November 17)
Auditorium
1400 Foulk Road
Wilmington, DE

Eastwick at the Meadows (November 18)
6630 Lindbergh Boulevard
Philadelphia, PA

** The display boards at each meeting will be the same.*
***You can find directions to the above locations on the Runway 17-35 Extension Project EIS web site (www.phlrunway17-35eis.com).*

RUNWAY 17-35 PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

Public Hearings

The Federal Aviation Administration (FAA) will be holding four sets of an information session and a public hearing on the Runway 17-35 Extension Project Draft Environmental Impact Statement (DEIS) on November 15, 16, 17, and 18, 2004.

The information session will be held from 5 p.m. to 7 p.m. each night during which you will be able to view display boards that show the results of the analyses which are reported in the DEIS. The information session will be your opportunity to review material and to ask questions of the EIS team.

The public hearing session will be held from 7 p.m. to 9 p.m. each night during which you will have the opportunity to comment on the Project for the formal public record. The EIS team will be present to hear your comments but will not be answering questions. Written comments will also be accepted at the public hearings.

The DEIS is available for review on the web site (www.phlrunway17-35eis.com) and at libraries in the study area. Comments can be submitted through the web site, or submitted by mail to Susan McDonald (FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, Watertown, MA 02471) or emailed to smcdonald.faa.17-35@vhb.com. Comments must be received by **December 1, 2004** in order to be considered.

Topic: Draft Environmental Impact Statement

Dates: November 15, 16, 17, and 18, 2004

Time: 5 p.m. to 7 p.m. (Information Session)
7 p.m. to 9 p.m. (Public Hearing)

Locations:

Ridley Community Center (November 15)
Auditorium
801 Morton Avenue
Folsom, PA 19033

West Deptford High School (November 16)
Auditorium
1600 Crown Point Road
Westville, NJ

Brandywine High School (November 17)
Auditorium
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Wilmington, DE

Eastwick at the Meadows (November 18)
6630 Lindbergh Boulevard
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PLEASE NOTE: Arrangements can be made for individuals or others in need of special assistance who would like to attend the meetings by contacting Jennifer Price at (215) 751-1400. Requests can also be e-mailed to Jennifer.Price@CHPlanning.com. Requests should be made at least five business days before the meeting you would like to attend.

For more information, please visit the Project web site at
www.phlrunway17-35eis.com

FAA NEWS

Federal Aviation Administration, Eastern Region, Jamaica, NY 11434

FOR IMMEDIATE RELEASE
Friday, October 15, 2004
Contact: Arlene Salac or Jim Peters
Phone: 718-553-3015

PHILADELPHIA INTERNATIONAL AIRPORT
RUNWAY 17-35 EXTENSION PROJECT
RELEASE OF DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR PUBLIC REVIEW AND COMMENT

The Federal Aviation Administration (FAA) has released a Draft Environmental Impact Statement (DEIS) for the proposed Runway 17-35 Extension Project at the Philadelphia International Airport. FAA requests that you publish a notice of the availability of this DEIS for public review and comment, on or before October 15th, 2004.

The DEIS contains information on the purpose of and need for the proposed project; the range of reasonable alternatives considered; a description of the alternatives evaluated in detail in the DEIS; and an evaluation of the environmental consequences of the proposed project. In addition to the No-Action Alternative, the DEIS evaluates two alternatives which would extend existing Runway 17-35 in order to reduce delay in the short-term. A preferred alternative has not been identified at this time.

The DEIS is available for review on the internet site (www.PHLrunway17-35eis.com) and at libraries (see attached listing). Comments can be submitted through the web site, or submitted by mail to Susan McDonald (FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, Watertown, MA 02472) or emailed to smcdonald.faa.17-35@vhb.com. Comments must be received by December 1, 2004 in order to be considered.

Public hearings on the DEIS have been scheduled for November 16 (West Deptford High School, 1600 Crown Point Road, Westville, NJ), November 17 (Brandywine High School, 1400 Foulk Road, Wilmington, DE), and November 18 (Eastwick at the Meadows, 6630 Lindbergh Boulevard, Philadelphia, PA). Written notification of the place and time of each hearing will be sent to all interested parties, and will be posted on the project website as well as advertised in local newspapers. Written and verbal comments will be accepted at the public hearings.

FAA encourages all interested parties to provide comments concerning the scope and content of the DEIS. 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 DESI and related documents. Matters that could have been raised with specificity during the comment period on the DEIS may not be considered if they are raised 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.

###

The Complete DEIS is also available for review at these libraries:

Pennsylvania
Aston Free Library
Collingdale Public Library
J. Lewis Crozer Library (Chester)
Darby Free Library
Folcroft Public Library
Free Library of Philadelphia-Central Library
Free Library of Philadelphia-Eastwick Branch
Free Library of Philadelphia- Paschalville Branch
Glenolden Library
Haverford Township Free Library
Lansdowne Public Library
Media-Upper Providence Free Library
Norwood Public Library
Prospect Park Public Library
Ridley Park Public Library
Ridley Township Public Library
Sharon Hill Public Library
Springfield Township Library
Swarthmore Public Library
Tinicum Memorial Public Library
Upper Darby & Sellers Memorial Library (main)
Yeadon Public Library

Delaware
New Castle County - Brandywine Hundred Branch
New Castle County - Claymont Branch

New Jersey
Bellmawr Branch
Camden County Library – Gloucester Township Branch
Camden County Library – Haddon Township Branch
Camden Free Public Library
Collingswood Free Public Library
East Greenwich Library
Gill Memorial Library (Paulsboro)
Gloucester City Library
Gloucester County Library – Logan Township Branch
Greenwich Township Branch
James H. Johnson Memorial Library (Deptford)
Mount Ephraim Public Library
Wenonah Free Public Library
West Deptford Library
Westville Public Library
William G. Rohrer Memorial Library/ Haddon Township Branch
Woodbury Public Library

RUNWAY 17-35

PHLEIS

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

The Federal Aviation Administration (FAA) will be holding four sets of an information session and a public hearing on the Runway 17-35 Extension Project Draft Environmental Impact Statement (DEIS) on **November 15, 16, 17, and 18, 2004**.

The **information session** will be held from **5 p.m. to 7 p.m.** each night during which you will be able to view display boards that show the results of the analyses which are reported in the DEIS. The information session will be your opportunity to review material and to ask questions of the EIS team.

The **public hearing** will be held from **7 p.m. to 9 p.m.** each night during which you will have the opportunity to comment on the Project for the formal public record. The EIS team will be present to hear your comments but will not be answering questions. Written comments will also be accepted at the public hearings.

The DEIS is available for review on the web site (www.phlrunway17-35eis.com) under "What's New" and at libraries in the study area. Comments can be submitted through the web site, submitted by mail to Susan McDonald (FAA Environmental Protection Specialist, c/o VHB, 101 Walnut Street, Watertown, MA 02471-9151), or emailed to smcdonald.faa.17-35@vhb.com. Comments must be received by **December 1, 2004** in order to be considered.

Susan McDonald
FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
Watertown, MA 02471-9151

Runway 17-35 Extension Project Public Hearings

November 15 - Ridley Community Center
Auditorium, 801 Morton Avenue, Folsom, PA

November 16 - West Deptford High School
Auditorium, 1600 Crown Point Road, Westville, NJ

November 17 - Brandywine High School
Auditorium, 1400 Foulk Road, Wilmington, DE

November 18 - Eastwick at the Meadows
6630 Lindbergh Boulevard, Philadelphia, PA

**You can find directions to the above locations on the Runway 17-35 Extension Project EIS web site at www.phlrunway17-35eis.com.*

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement
Public Hearings
November 15, 16, 17, and 18, 2004

Public Comment Form

The Federal Aviation Administration (FAA) encourages all interested parties to provide comments concerning the scope and content of the DEIS. 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 DEIS and related documents. Matters that could have been raised with specificity during the comment period on the DEIS may not be considered if they are raised 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.

Please clearly print your contact information and your comment on the DEIS in the space below. Space is also available on the back page. Please either drop this form off tonight at the sign-in table or mail this form to the contact and address listed at the bottom of the back page. You can also submit your comments via email (smcdonald.faa.17-35@vhb.com) or the Project web site (www.phlrunway17-35eis.com), where the DEIS is available.

Comments must be received by **December 1, 2004** in order to be considered.

Thank you for participating.

Name:____

Address: ______________________________________

City: ____

State: ____________________ Zip Code: __________________

E-mail Address: __________________________________

PLEASE PRINT CLEARLY

Comment:____

Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement
Public Hearings
November 15, 16, 17, and 18, 2004

Comment (cont.)

Please drop off this form at the sign in table before you leave the hearing or mail this form to the following address:

Susan McDonald, FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151

Additional Page Included ☐ Yes ☐ No

Newsletter No. 4 • February 2005

This Newsletter Contains

More Information

For more information about the Runway 17-35 Extension Project, please visit the web site at **www.phlrunway17-35eis.com** or contact:

Susan McDonald
FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151
(717) 730-2833
Email: smcdonald.faa.17-35@vhb.com

Summary of Recent Activities

In October 2004, the Federal Aviation Administration (FAA) released the Draft Environmental Impact Statement (Draft EIS) for the Runway 17-35 Extension Project at the Philadelphia International Airport. The Draft EIS contains detailed findings of the environmental analyses that were conducted for each alternative.

The public review period for the Draft EIS was from October 15, 2004 to December 1, 2004 during which the public had the opportunity to submit comments to the FAA. The public also had the opportunity to provide oral or written comments on the Draft EIS at the public hearings, which were held in November 2004.

A total of 240 people attended the public hearings.

■ November 15 (Ridley Community Center in Folsom, PA)	42 people
■ November 16 (West Deptford High School in Westville, NJ)	95 people
■ November 17 (Brandywine High School in Wilmington, DE)	34 people
■ November 18 (Eastwick at the Meadows in Philadelphia, PA)	69 people

November 18, 2004 Public Hearing at Eastwick at the Meadows: Philadelphia, PA

For More Information about the Runway 17-35 Extension Project
Please visit the project web site at *www.phlrunway17-35eis.com*

Oral Comments Being Given at November 18, 2004 Public Hearing

Release of the Final Environmental Impact Statement

The FAA plans to release the Runway 17-35 Extension Project Final Environmental Impact Statement (Final EIS) in early March 2005.

The Final EIS will be available on the project web site *www.phlrunway17-35eis.com*. An executive summary and a CD of the full Final EIS will be sent to those on the project's mailing list and full printed sets of the Final EIS will be available at area libraries.

If this newsletter was not sent directly to you, you may not be on the project's mailing list. To be added, either complete and mail the form located on the next page of this newsletter, send your mailing address to *smcdonald.faa.17-35@vhb.com*, or visit the project web site *www.phlrunway17-35eis.com* and complete the Mailing List addition form.

Summary of Draft Environmental Impact Statement Comments

A total of 166 letters were received from elected officials, state and federal resource agencies, non-profit organizations, local businesses, and residents of the Pennsylvania-New Jersey-Delaware region during the Draft EIS public review period. Comments were submitted by letter, e-mail, web site, and orally at the public hearings. At the four public hearings, 55 people provided oral comments. Appendix A of the Final EIS will contain copies of all comments received, and provide responses to substantive comments on the Draft EIS. All comments received during the public review period have been considered in preparing the Final EIS.

What Happens Now?

To help answer questions of what will happen next on the Runway 17-35 Extension Project, the following are some frequently-asked-questions (FAQs).

What has been happening on the project since the Draft Environmental Impact Statement (Draft EIS) public review period ended on December 1, 2004?

Following the Draft EIS public review period, the FAA has carefully considered the comments received during the public review period and has selected a Preferred Alternative. The Preferred Alternative will be announced in the Final EIS. The FAA has also been preparing responses to the comments on the Draft EIS.

What is the Final Environmental Impact Statement (Final EIS)?

The Final EIS is a revised version of the Draft EIS that reflects comments received and issues raised during the Draft EIS public review period and the public hearings. Responses to comments on the Draft EIS are part of the Final EIS. The Final EIS provides the reasons the FAA selected the Preferred Alternative. Mitigation measures, or ways to reduce unavoidable environmental impacts resulting from the Preferred Alternative, are also described in the Final EIS. The FAA plans to release the Final EIS in early March 2005.

How does the FAA select the project's Preferred Alternative?

The FAA selects the project's Preferred Alternative based on review of the information presented in the Draft EIS, and on comments provided by the public, elected officials, and state and federal resource agencies. Other issues considered in the selection of the Preferred Alternative are each alternative's environmental impacts and effectiveness in meeting the purpose and need, which is in this case, reducing delay in the short term.

How can I comment on the Final Environmental Impact Statement (Final EIS)?

The FAA will accept comments on the Final EIS, and will consider them in the Record of Decision (ROD). If you wish to submit a comment on the Final EIS, please submit your comment either through mail, email or web site at the following:

Susan McDonald,
FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151
Email: smcdonald.faa.17-35@vhb.com
Web site: www.phlrunway17-35eis.com

Is there a deadline to comment on the Final Environmental Impact Statement (Final EIS)?

Comments will be accepted up to 30 days after publication of the Final EIS.

What happens after the Final Environmental Impact Statement (Final EIS)?

Following the release of the Final EIS, the FAA will make a decision on the proposed action in the Record of Decision (ROD). The ROD presents the FAA's official decision on the proposed action, identifies applicable mitigation and monitoring actions required and may clarify and respond to issues raised on the Final EIS.

The FAA expects to release the ROD in Spring 2005 and will notify the public via the project's web site and area newspapers when the ROD is available.

If a build alternative is selected, when is construction likely to occur?

If a build alternative is selected, the total period for the phased construction of the runway and taxiway improvement components of the Preferred Alternative would be approximately one-and-a-half years, beginning in mid-2005 and extending through the end of 2006.

Mailing List Additions

If you did not receive this newsletter in the mail, you are not on the mailing list for the Runway 17-35 Extension Project EIS. To add your name, or make a correction, please either email the information below to **smcdonald.faa.17-35@vhb.com** or fill out this form and mail it to the address below:

Susan McDonald, FAA Environmental Protection Specialist
c/o VHB
101 Walnut Street
PO Box 9151
Watertown, MA 02471-9151

Name______________________________

Address______________________________

City______________________ State__________ Zip______________

Affiliation______________________________

Phone__________________ E-mail______________________

Once you are on the mailing list, you will automatically receive information from the FAA regarding the Runway 17-35 Extension Project.

printed on recycled paper

U.S. Department of Transportation
Federal Aviation Administration
Harrisburg Airports District Office
3905 Hartzdale Drive, Ste. 508
Camp Hill, PA 17011

D

Appendix D: Agency Correspondence

- Letter, Pennsylvania Department of Transportation to Philadelphia International Airport, 28 December 2004.
- Letter, City of Philadelphia, Department of Streets to Federal Aviation Administration, 22 December 2004.
- Email (Re: Historic Resources), A.D. Marble & Company to Vanasse Hangen Brustlin, Inc., 7 September 2004.
- Letter, Pennsylvania Historical and Museum Commission to Vanasse Hangen Brustlin, Inc., 31 August 2004.
- Letter, Pennsylvania Historical and Museum Commission to Federal Aviation Administration, Airports District Office, 27 August 2004.
- Letter, Pennsylvania Fish & Boat Commission to Federal Aviation Administration, Airports District Office, 17 August 2004.
- Letter, United States Department of the Interior, Fish & Wildlife Service to A.D. Marble & Company, 29 July 2004.
- Letter, Pennsylvania Historical and Museum Commission to Federal Aviation Administration, Airports District Office, 13 July 2004.
- Letter, Pennsylvania Historical and Museum Commission to Federal Aviation Administration, Airports District Office, 1 July 2004.
- Letter, Delaware State Historical Preservation Office to Federal Aviation Administration, Airports District Office, 18 June 2004.
- Letter, Pennsylvania Department of Conservation and Natural Resources to A.D. Marble & Company, 29 April 2004.

- Letter, Pennsylvania Historical and Museum Commission to United States Department of Transportation, Federal Aviation Administration, 7 April 2004.
- Letter, Pennsylvania Fish & Boat Commission to A.D. Marble & Company, 23 March 2004.
- Letter, United States Fish & Wildlife Service to A.D. Marble & Company, 17 March 2004.
- Letter, Pennsylvania Natural Diversity Inventory, Bureau of Forestry to A.D. Marble & Company, 16 March 2004.
- Letter, Pennsylvania Game Commission to A.D. Marble & Company, 10 March 2004.
- Letter, United States Department of Commerce, National Oceanic and Atmospheric Administration to A.D. Marble & Company, 2 March 2004.
- Letter, United States of Department of Transportation to New Jersey States Historic Preservation Office, 24 February 2004.
- Letter, Pennsylvania Department of Conservation and Natural Resources to A.D. Marble & Company, 9 February 2004.
- Letter, Pennsylvania Game Commission to A.D. Marble & Company, 5 January 2004.
- Letter, United States Fish & Wildlife Service, Pennsylvania Field Office to Federal Aviation Administration, Airports District Office, 5 September 2003.
- Interagency Stewardship and Streamlining Agreement for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impacts Statement and Permitting and the Capacity Enhancement Program Environmental Impacts Statement and Permitting, Vanasse Hangen Brustlin, Inc., 2 September 2003.
- Statement of Key Points/Guiding Principles for an Interagency Streamlining Agreement for the Philadelphia International Airports Environmental Impact Statement and Permitting, Vanasse Hangen Brustlin, Inc., 24 July 2003.

OS-2 (4-01)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
www.dot.state.pa.us
7000 Geerdes Boulevard
King of Prussia, PA 19406
December 28, 2004

PENNDOT

Philadelphia Airport
Runway 17-35 Extension
DEIS

Mr. Calvin M. Davenger, Jr., PE
Deputy Director of Aviation
Philadelphia International Airport, Terminal E
Philadelphia, PA 19153

Dear Mr. Davenger:

As requested in your December 20, 2004 letter, we are hereby summarizing our position regarding the Surface Highway Transportation aspects for Alternatives 1 and 2 outlined in the Draft Environmental Impact Statement (DEIS).

- We concur that State Route 291 will be vacated as a state highway from Scott Way to Island Avenue, and that consequently through traffic will not be able to use the roadway and only airport related traffic will be permitted We understand that your legal advisors are researching ownership of the underlying fee title for that section of highway so that clear title can be held by you.
- State Route 291 will be rerouted over Bartram Avenue from Scott Way to Island Avenue. We may require roadway surface and drainage improvements based on the condition of Bartram Avenue. This should be evaluated during the final design phase.
- We have not identified any major issues at this level of project development regarding operational improvements to be made along Bartram Avenue and intersecting streets. While the related mitigation measures are acceptable at this stage, we do need to continue discussions regarding specific design improvements with your staff and with the City of Philadelphia Streets Department.

We look forward to continuing the proactive relationship developed to streamline and implement this transportation improvement.

Sincerely,

Vito A. Genua

Vito A. Genua
Assistant District Executive-Design
Engineering District 6

CITY OF PHILADELPHIA

DEPARTMENT OF STREETS

ENGINEERING DIVISION (SURVEYS AND DESIGN)
1401 KENNEDY BOULEVARD
ROOM 830 MUNICIPAL SERVICES BUILDING
PHILADELPHIA, PA 19102-1676

CLARENA I. W. TOLSON
Commissioner

JOSEPH R. SYRNICK, P.E., P.L.S.
Chief Engineer and Surveyor

December 22, 2004

Susan McDonald
Harrisburg Airports District Office
Federal Aviation Administration
3905 Hartzdale Avenue, Suite 508
Camp Hill, PA 17011

Subject: Philadelphia International Airport
Runway 17-35 Extension Project

Dear Ms. McDonald,

We have reviewed the Draft Environmental Impact Statement (DEIS) for the referenced project. As described in this document, proposed Alternatives 1 and 2 will require that a portion of Industrial Highway (PA Route 291) be abandoned.

The Route 291 designation would be relocated to follow Bartram Avenue and Island Avenue, starting at the intersection of Industrial Highway/Bartram Avenue/Scott Way in Delaware County and ending at the intersection of Industrial Highway/Island Avenue/Penrose Avenue in Philadelphia. This routing is shown on Figure 4.14-4 of the DEIS. Industrial Highway would be closed to through traffic but would remain available for local and Airport-bound traffic.

We agree with the conclusions in the Surface Transportation portion (Section 4.14) of the DEIS and consent to the actions noted to close Industrial Highway and relocate PA 291.

Very truly yours,

for

Joseph R. Syrnick
Chief Engineer and Surveyor

Standley, Lisa

From: Alan Tabachnick [atabach@admarble.com]

Sent: Tuesday, September 07, 2004 10:24 AM

To: Standley, Lisa

Subject: FW: Eligibility and Effect on 17-35 Project

Alan D. Tabachnick
Executive Vice President
A.D. Marble & Company
375 E. Elm Street
Conshohocken, PA 19428

484-533-2540
484-533-2640

cell - 484-343-5264
www.admarble.com
-----Original Message-----
From: Zacher, Susan [mailto:szacher@state.pa.us]
Sent: Friday, September 03, 2004 4:01 PM
To: Alan Tabachnick
Subject: RE: Eligibility and Effect on 17-35 Project

Yes, the list looks okay. Susan

> -----Original Message-----
> **From:** Alan Tabachnick [mailto:atabach@admarble.com]
> **Sent:** Friday, September 03, 2004 9:28 AM
> **To:** szacher@state.pa.us
> **Cc:** Standley, Lisa
> **Subject:** FW: Eligibility and Effect on 17-35 Project
>
> Alan D. Tabachnick
> Executive Vice President
> A.D. Marble & Company
> 375 E. Elm Street
> Conshohocken, PA 19428
>
> 484-533-2540
> 484-533-2640
>
> cell - 484-343-5264
> www.admarble.com
> -----Original Message-----
> **From:** Alan Tabachnick
> **Sent:** Thursday, September 02, 2004 4:37 PM
> **To:** 'Susan Zacher (szacher@state.pa.us)'

Cc: 'Standley, Lisa'
Subject: Eligibility and Effect on 17-35 Project

Susan:

I revised the table below to reflect your comment from yesterday. Blue Bell Tavern is now noted as within Fairmount Park, NHL. Please reply and confirm that all is correct now. Thanks.

I wanted to confirm the eligibility calls made for this project so we can move forward. Since there has been multiple review letters, I thought it would be useful to confirm the results. As I have reviewed all of the PHMC's letters regarding eligibility, the summary of the findings are as follows:

National Register Eligible or Listed Resources within 17-35 APE

Resource	Location
Colwyn School - Eligible	2nd and Pine Streets, Colwyn Borough
Fairmount Park – NHL (includes Blue Bell Tavern)	Philadelphia
George Wolf School – NR	Lyons and 82nd Streets, Philadelphia
John Bartram High School – NR	67th & Elmwood Streets, Philadelphia
Island Avenue Fire Station – Eligible	Island Avenue, Philadelphia
Lincoln and Fairview Avenues Historic District – Eligible	Yeadon Borough, Delaware County
Yeadon Theater – Eligible	Church Lane, Yeadon, Delaware County
Bell Avenue School – Eligible	Bell Avenue, Yeadon, Delaware County

It is the understanding that all other resources surveyed and evaluated as part of the Philadelphia International Airport Runway17-35 Extension Project are Not Eligible for listing on the National Register of Historic Places. It is further understood, based upon previous correspondence dated July 13, 2004, that the project will have No Effect on historic or archaeological resources.

I appreciate all the hard work you and Greg and the others did to expedite the responses. If you could reply to this email and let me know that we are all on the same page with the findings, I would greatly appreciate it. Thanks in advance.

Alan D. Tabachnick
Executive Vice President
A.D. Marble & Company
375 E. Elm Street
Conshohocken, PA 19428

484-533-2540
484-533-2640

cell - 484-343-5264
www.admarble.com

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

August 31, 2004

Vanasse, Hangen, Brustlin, Inc.
Attn: Lisa A. Stanley
101 Walnut Street
P.O. Box 9151
Watertown, MA 02471-9151

RE: ER# 85-1680-101-T
FAA: Draft Phase IA Report, Philadelphia International Airport Runway 17-35 Extension Project

Dear Ms. Stanley:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named report in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999. Our comments are as follows:

We agree with the recommendations of this report, and in our opinion, project activities should have no effect on significant archaeological resources within the surveyed area.

It is our understanding that if potentially significant archaeological resources are encountered in the course of project-related ground disturbing activities, work will halt immediately and any outstanding issues related to archaeological resources will be resolved in accordance with FAA Order 5050.47 (c)3. We appreciate your cooperation in this matter.

Please provide three additional copies of this report (one copy unbound) for our files and for distribution to the other report repositories.

If you have any questions or comments regarding our review of this report, please contact Mark Shaffer at (717) 783-9900.

Sincerely,

Kurt W. Carr, Chief
Division of Archaeology & Protection

cc: Susan McDonald, FAA

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
Harrisburg, Pennsylvania 17108-1026

August 27, 2004

Wayne Heilbeck, Manager
Federal Aviation Administration
Harrisburg Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

Re: ER 85-1680-101-W
FAA: Philadelphia International Airport Runway 17-35 Extension
Project, Delaware and Philadelphia Counties
National Register Eligibility-Fels Naptha Complex, PHiladelphia

Dear Mr. Heilbeck:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999. These requirements include consideration of the project's potential effect upon both historic and archaeological resources.

We are in receipt of the additional information we requested concerning the extant of remaining historic buildings at the Fels Naptha Plant in Philadelphia. Based on this additional information, it is our opinion that the Fels Naptha Complex at 2227, 2230 & 2240 Island Avenue, Philadelphia is not eligible for the National Register of Historic Places. It has suffered a loss of integrity due to demolition of historic buildings and the addition of new intrusions.

If you need further information in this matter please consult Susan Zacher at (717) 783-9920.

Sincerely,

Andrea MacDonald

Andrea MacDonald, Chief
Division of Preservation Services

AM/smz

PENNSYLVANIA FISH & BOAT COMMISSION

established 1866

Pennsylvania Fish & Boat Commission

Executive Office
Division of Environmental Services
450 Robinson Lane
Bellefonte, PA 16823-9620
(814) 359-5147 Fax: (814) 359-5175

August 17, 2004

Susan McDonald
FAA Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

Re: Philadelphia International Airport
Runway 17-35 Extension Project
Wetland SEPD-2 Crossing

Dear Ms. McDonald:

On 11 August 2004 personnel from the Pennsylvania Fish and Boat Commission (PFBC) conducted a field view of Wetland SEPD-2. The purpose of the field view was to evaluate several alternatives that were developed to minimize impacts to red-bellied turtle habitat with the proposed crossing of a vehicle service road. After reviewing the four crossing location alternatives and four structure type alternatives, as described by DMJM Aviation, the PFBC has the following recommendations:

- The service road can cross Wetland SEPD-2 100 feet north (Alternative B) of the bend, which is 60 feet further north than originally proposed within the Wetlands and Waterways Draft Technical Report.
- We support the use of a single 65x40" arched pipe (Alternative 2) for the crossing as long as the invert of the bottom is depressed two feet below the existing wetland bottom elevation and headwalls are incorporated at both ends.
- The installation of the crossing must occur between April 1 and October 31.
- The installation of basking platforms and the potential construction of a nesting beech within the lower reaches of Wetland SEPD-2 would compensate for the habitat impacts associated with the proposed subject project.

Thank you for providing us the opportunity to work with personnel involved with the Runway 17-35 Extension Project and develop a mitigation strategy that should protect and hopefully enhance the red-bellied turtle habitat within Wetland SEPD-2. Please feel free to contact Chris Urban or myself if you have any questions concerning our above mentioned recommendations.

Sincerely,

David E. Spotts

David E. Spotts, Chief
Watershed Analysis Section

c: PFBC - Urban
DEP - Burke
COE - Jenkins
EPA - Arguto

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
http://njfieldoffice.fws.gov

In Reply Refer to:
ES-04/090

JUL 29 2004

David J. Durofchalk, Sr. Environmental Scientist
A. D. Marble & Company
375 East Elm Street, Suite 200
Conshohocken, Pennsylvania 19428

Dear Mr. Durofchalk:

This responds to your March 22, 2004 request to the U.S. Fish and Wildlife Service (Service) for information on the presence of federally listed endangered and threatened species within the vicinity of the Philadelphia International Airport (airport), Philadelphia and Delaware Counties, Pennsylvania. The Service understands this information will be included in the Environmental Impact Statement (EIS) being prepared by the Federal Aviation Administration (FAA) for an airport-wide capacity enhancement program. We apologize for the lateness of this response.

AUTHORITY

This response is provided pursuant to Section 7 of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of federally listed endangered and threatened species. These comments do not address all Service concerns for fish and wildlife resources and do not preclude separate review and comments by the Service pursuant to the December 22, 1993 Memorandum of Agreement among the U.S. Environmental Protection Agency, New Jersey Department of Environmental Protection (NJDEP), and the Service, if project implementation requires a permit from the NJDEP pursuant to the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B *et seq.*); nor do they preclude future comments pursuant to the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712), or comments on any forthcoming environmental documents pursuant to the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

FEDERALLY LISTED SPECIES

Bald Eagle

A known nest site of the federally listed (threatened) bald eagle *(Haliaetus leucocephalus)* is located within 2 miles of the subject property. Additionally, areas along the Delaware River have been identified as foraging habitat for the bald eagle by the New Jersey Department of Environmental Protection, Endangered and Nongame Species Program (ENSP). Bald eagles occur in New Jersey throughout the year. They are opportunistic feeders and will eat carrion or live prey, primarily fish, but also small mammals, reptiles, and waterfowl. Bald eagles prefer forested or open habitats with little human disturbance near large bodies of water, such as lakes, large rivers, reservoirs, and seacoasts. Eagles are often attracted to a water body as they search for food, and frequently roost in dead or mature trees adjacent to water. In winter, bald eagles gather in large numbers near coasts and inland water bodies that remain ice-free, allowing access to fish and other prey. Threats to the bald eagle include environmental contaminants, habitat destruction and degradation, and disturbance of nesting and feeding birds.

Recommendations

The Service can not determine if the bald eagle will be adversely affected by the proposed project by the information provided. Due to the proximity of the proposed project site to an active nest, proposed project activities may adversely affect the bald eagle. Noise and activity associated with enhancements at the Philadelphia Airport or any changes in aircraft activity during the breeding season may disturb nesting birds, negatively impacting reproductive success. The Service recommends that the EIS include an assessment of potential disturbance from noise to bald eagles nests in the vicinity of the airport, especially if airplanes will be flying below 1500 feet within one mile of an active nest. The Service's New Jersey Field Office has provided the Pennsylvania Field Office with updated information concerning seasonal bald eagle nesting locations in the vicinity of the airport. As you are aware, the Service's Pennsylvania Field Office will be the lead contact office for the airport-wide capacity enhancement program.

The bald eagle is also a New Jersey State-listed species; therefore, the Service recommends contacting the ENSP regarding any potential concerns or restrictions that the NJDEP may have and to verify any seasonal changes in location of bald eagle nests within the vicinity of the airport (address enclosed). Pursuant to Section 6 of the ESA, the Service has delegated management responsibility for nesting and foraging bald eagles to the ENSP. The ENSP maintains up-to-date information on bald eagle foraging areas.

Except for the above-mentioned species, no other federally listed or proposed endangered or threatened flora or fauna under Service jurisdiction are known to occur within the vicinity of the proposed project site. If additional information on federally listed species becomes available, or if project plans change, this determination on the occurrence of federally listed threatened and endangered species located within the vicinity of the proposed project may be reconsidered. Please be aware that this determination is valid for 90 days; after this time, the Service should be contacted to verify the accuracy of this information. The Service will review current information to ensure that no federally listed threatened or endangered species will be adversely affected by the proposed project. The Service provides the above determination with respect to federally listed or proposed threatened or endangered flora and fauna under Service jurisdiction only.

RESPONSIBILITIES UNDER THE ESA

For federally funded or licensed projects, federally listed species are afforded protection under the Endangered Species Act pursuant to Section 7(a)(2), which requires every federal agency, in consultation with the Service, to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. An assessment of potential direct, indirect, and cumulative impacts is required for all federal actions that may affect listed species. Therefore, if FAA funded or authorized activities are proposed that may directly or indirectly affect the above species, or other federally listed species under the jurisdiction of the Service, further Section 7 consultation with the Service will be required.

CLOSING REMARKS

Current information regarding federally listed and candidate species occurring in New Jersey is enclosed, as well as addresses of State agencies that may be contacted for current site-specific information regarding federal candidate and State-listed species. The Service encourages federal agencies and other planners to consider federal candidate species in project planning.

Information contained in this letter and additional information obtained from the aforementioned sources represent the public interest for fish and wildlife resources and should warrant full consideration in project planning. The Service is available for further consultation. Please contact Darren Harris of my staff at (609) 646-9310, extension 44, if you have any question about the enclosed material or require further assistance regarding federally listed endangered or threatened species.

Sincerely,

Annette Scherer

for John C. Staples
Assistant Supervisor

Enclosures

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Post Office Box 1026
'isburg, Pennsylvania 17108-1026

July 13, 2004

Wayne Heilbeck, Manager
Federal Aviation Administration
Harrisburg Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

Re: ER 85-1680-101-U
FAA: Philadelphia International Airport Runway 17-35 Extension
Project, Delaware and Philadelphia Counties
National Register Eligibility

Dear Mr. Heilbeck:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999. These requirements include consideration of the project's potential effect upon both historic and archaeological resources.

We concur with the findings of the agency that the following resource is eligible for the National Register of Historic Places.

1. Lincoln & Fairview Avenues Historic District, Yeadon, Delaware County: We agree with the boundaries of the eligible historic district, however, as noted in the field this district may also extend to the north into Lansdowne Borough.

We disagree with the findings of the agency concerning the National Register eligibility of the following resource.

2. Holy Cross Cemetery, Yeadon, Delaware County: While the cemetery has an interesting gatehouse and an impressive row of mausoleums, these are concentrated in one section of the cemetery and they does not possess sufficient significance to carry the whole cemetery. The is not a designed landscape and does not meet the criterion consideration for cemeteries.

We concur with the findings of the agency that upon review of historical information the following areas are not eligible for the National Register of Historic Places.

3. Crucible Steel Casting Company, 20 S. Union Avenue, Upper Darby Township, Delaware County
4. St. Clements Roman Catholic Church and School, 2220 S. 71st Street, Philadelphia
5. Yeadon Borough Hall, Church Lane, Yeadon, Delaware County
6. Stetser and Callahan Avenues Grouping, Yeadon, Delaware County
7. Keystone Avenue Grouping, Colwyn and Darby, Delaware Counties
8. Yeadon Auto Body, 500 Church Lane, Yeadon, Delaware County
9. Love & Jacobs Realty Company Grouping, Bell, Duncan and Yeadon Avenues, Yeadon, Delaware County
10. Enoch Bonsall House, 501 Commerce Drive, Yeadon, Delaware County
11. Serrill Avenue Grouping, Yeadon, Delaware County
12. Nile Swim Club, Yeadon, Delaware County

We are unable to complete our review of the following property until additional information is submitted.

13. Fels Naptha/Island Road Recreation Center, 2227, 2230, 2240 Island Avenue, Philadelphia: Please provide Sanborn Maps to assess if the complex retains enough of the manufacturing buildings to convey its historic function.

If you need further information in this matter please consult Susan Zacher at (717) 783-9920.

Sincerely,

Jean Hutter for
Andrea MacDonald, Chief
Division of Preservation Services

AM/smz

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

July 1, 2004

Wayne Heilbeck, Manager
Federal Aviation Administration
Harrisburg Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

Re: ER 85-1680-101-R
FAA: Philadelphia International Airport Runway 17-35 Extension
Project, Delaware and Philadelphia Counties
Historic Resource Survey and Determination of Eligibility Report

Dear Mr. Heilbeck:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999. These requirements include consideration of the project's potential effect upon both historic and archaeological resources.

Based on a field view held June 23 and 24, 2004 and discussions with our National Register review committee, we concur that the following properties are not eligible for the National Register of Historic Places nor is there an eligible historic district present in the Area of Potential Effect in these communities. There are several properties for which additional information is requested to complete the review for eligibility, see notes below.

Upper Darby Township, Delaware County

Area Not Eligible:

1. Area Bounded by Union Avenue, East Baltimore Avenue and the Railroad, Upper Darby Township, Delaware County: 90 properties as listed on attached pages.

Additional Information Requested:

2. Crucible Steel Casting Company, 814 First Street, Upper Darby, Delaware County: This property is potentially eligible for the National Register of Historic Places, please submit a historic resource form for this resource.

Lansdowne Borough, Delaware County
Area Not Eligible:

3. Southeast Lansdowne Area, bounded by Walnut Avenue, Bartram Avenue, North Nyack Avenue, Union Avenue and Fairview Avenue, Lansdowne, Delaware County: 63 properties on attached pages.

Yeadon Borough, Delaware County

Area Not Eligible:

4. Area bounded by the following excluding the resources listed below: Fairview Avenue, Church Lane, Penn Street, Holly Road, Church Lane, Guenther, Bullock Avenue, Parmley Avenue, Yeadon Avenue, Bullock Avenue, W. Cobbs Creek Parkway, the railroad, Cedar Avenue, and Wycombe Avenue, Yeadon, Delaware County (approximately 1445 properties)

Additional Information Requested:

The following properties or areas are potentially eligible for the National Register of Historic Places. Please prepare historic resource survey forms for these resources.

5. Holy Cross Cemetery, Yeadon, Delaware County
6. Bonsell House, 501 Commerce Drive, Yeadon, Delaware County
7. Gas Station, corner of Myna and Church Lane, Yeadon, Delaware County
8. Yeadon Borough Hall, Church Lane, Yeadon, Delaware County
9. Potential Historic District, bounded by Chester Avenue, Bell Avenue, Duff Street and Callahan Avenue, Yeadon, Delaware County (approx. 42 properties)
10. Potential Historic District, bounded by Stetser Avenue, Allen Drive, West Cobb Creek Parkway, properties on both sides of Duncan Avenue, Yeadon, Delaware County (approximately 80 properties)
11. Potential Historic District, bounded by properties on both sides of Serrill Avenue, West Cobb Creek Parkway, properties on both sides of Bullock and Chester Avenue, Yeadon, Delaware County (approximately 62 properties)
12. Potential Historic District, bounded by properties on both sides of Serrill Avenue to 1030 and 1031 and McDade Blvd., Yeadon, Delaware County (approximately 28 properties)
13. Potential Historic District, bounded by properties facing Lincoln Avenue, next street north, Fairview Avenue, Lansdowne Avenue, Providence Road, Wycombe Avenue, Yeadon, Delaware County (contains properties 100 & 102 Lincoln Avenue-recommended eligible in survey) (approximately 12 properties)

14. Nile Swim Club, corner of Providence Road and Union Avenue, Yeadon, Delaware County

The following buildings in the Area of Potential Effect have already been determined eligible for the National Register of Historic Places.

15. Yeadon Theater, Church Lane, Yeadon, Delaware County
16. Bell Avenue School, Bell Avenue, Yeadon, Delaware County

Darby Borough, Delaware County

Area Not Eligible:

17. Darby Borough, Delaware County: Bounded by Borough line on north, Borough boundary on the east-Holy Cross Cemetery, Cedar Avenue, Borough boundary on the south-Woodland Avenue, Fourth Street; Borough boundary on south to S. 7th Street, Pine Street, properties facing Ridge Avenue, properties facing Spring Valley Road, properties facing Golf Road (Approximately 2331 properties)

Colwyn Borough, Delaware County

Area Not Eligible:

18. There appear to be no eligible resources other than the small potential historic district listed below and the Colwyn School, eligible for the National Register of Historic Places in the Borough of Colwyn.

Additional Information Requested:

19. Potential Historic District along the former railroad spur now named Keystone Street, Colwyn, Delaware County. Please prepare and submit a historic resource survey form for these resources.

The following property in the Area of Potential Effect has been previously determined eligible for the National Register of Historic Places.

20. Colwyn School, 2nd and Pine Streets, Colwyn, Delaware County

Philadelphia, 40^{th} Ward

Not Eligible:

21. Area generally bounded by 71^{st} Street, 72^{nd} Street, 73^{rd} Street, Island Avenue, Brewster Avenue, Hostein Avenue, Bartram Avenue, Island Avenue, Tinicum Township and the City limits on the west, Philadelphia, excluding the following potentially eligible, eligible and listed resources. (Approximately 1553 properties)

Potentially Eligible Resources: Please prepare a historic resource survey form

22. St. Clement of Rome Catholic Church Complex, Woodland Avenue, Philadelphia
23. William Longstreth School (now City of Philadelphia Recreation Center, Island Avenue, Philadelphia

Additional Information Requested:

24. Fels Naptha, 2230 & 2240 Island Avenue, Philadelphia: Please supply additional information for support its significance under Criterion A. Summarize the history of the plant and assess its potential significance for industry. Please supply additional photographs of the complex showing all buildings.

Already Determined Eligible or National Register Listed

25. George Wolf School, Lyons and 82^{nd} Streets, Philadelphia
26. John Bartram High School, 67^{th} & Elmwood Streets, Philadelphia
27. Blue Bell Tavern, 7303 Woodland Ave., Philadelphia
28. Fairmount Park, Philadelphia
29. Fire Station, Island Avenue, Philadelphia

Tinicum Township, Delaware County

30. As previously reviewed, there are no eligible above-ground resources in this area located on the Philadelphia International Airport property.

If you need further information in this matter please consult Susan Zacher at (717) 783-9920.

Sincerely,

Jean H. Cutler

Jean H. Cutler
Bureau Director

Enclosures
JHC/smz

STATE OF DELAWARE
DIVISION OF HISTORICAL AND CULTURAL AFFAIRS
DELAWARE STATE HISTORICAL PRESERVATION OFFICE
21 THE GREEN, SUITE A
DOVER • DE • 19901-3611

TELEPHONE: (302) 739-5685 FAX: (302) 739-5660

Friday, June 18, 2004

Ms. Susan McDonald
Environmental Protection Specialist
Harrisburg Airports District Office
Federal Aviation Administration
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

Re:
Runway 17-35 EIS at Philadelphia International Airport

Dear Ms. McDonald,

Thank you the copies of correspondence between your office and the New Jersey State Historic Preservation Office and the Pennsylvania Historical and Museum Commission. Based on the evidence presented, we do not believe the Area of Potential Effect for the Extension of Runaway 17-35 will be in the State of Delaware. Therefore, we decline to consult on this project.

Sincerely

Daniel Griffith
Director
State Historic Preservation Office

Pennsylvania Department of Conservation and Natural Resources

845 Park Road
Elverson, PA 19520-9523
April 29, 2004

Bureau of Forestry **610-582-9660**

Dorothy A Daly, C.A.
A.D. Marble & Co.
375 East Elm Street
Suite 200
Conshohocken, PA 19428

Dorothy:

We enjoyed meeting with you last Thursday to discuss the proposed Philadelphia International Airport enhancement project and it's potential impact on Little Tinicum Island and the tidal mudflats surrounding it.

From our discussions we understand that you are involved in an environmental review process that will necessitate flora and fauna observations and data collection on and around the island beginning in early May. Little Tinicum Island is a State Forest Natural Area and is accessible to the public for day use recreational activities.

I understand that your visits that may occur anytime from early morning through late evening but you do not plan to camp overnight. We appreciate your ongoing communication with us and look forward hearing from you as your project progresses.

If you have any questions or concerns, please don't hesitate to contact me.

Sincerely,

John Miller
District Forester

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

April 7, 2004

U.S. Department of Transportation, Federal Aviation Administration
Harrisburg Airports District Office
Attn: Wayne Heibeck, Manager
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011

RE: ER# 85-1680-101-O
Philadelphia International Airport, Runway 17-35 Extension Project, Delaware & Philadelphia Counties

Dear Mr. Heibeck:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999. This review includes comments on both historic and archaeological resources. Our comments are as follows:

Historic Resources

We concur with the Area of Potential Effect for this project. Please do historic structures surveys and submit this information to our office. If you have any questions or comments concerning historic resources, please consult Susan Zacher at (717) 783-9920.

Archaeological Resources

The information you submitted indicates there is a potential for undocumented archaeological resources in and around the proposed Area of Potential Effect and that this potential must be assessed prior to any ground disturbances. We recommend this potential be assessed through a geomorphological assessment of the Area of Potential Effect followed by Phase I archaeological testing as warranted. The results of these investigations should be submitted to our office for review and comment. If you have any questions or comments concerning archaeological resources, please contact Mark Shaffer at (717) 783-9900.

Sincerely,

Kurt W. Carr, Chief
Division of Archaeology & Protection

COMMONWEALTH OF PENNSYLVANIA
Pennsylvania Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane
Bellefonte, PA 16823
814-359-5113

March 23, 2004

IN REPLY REFER TO
SIR # 14120

A. D. MARBLE & COMPANY
Dorothy Daly
375 East Elm Street, Suite 200
Conshohocken, PA 19428

RE: **Species Impact Review - Rare, Candidate, Threatened, and Endangered Species**
Airport Capacity Enhancement Program (CEP)
Philadelphia International Airport, Division of Aviation
Tinicum Township, Delaware County, and City of Philadelphia, Pennsylvania

Dear Ms. Daly:

I have examined the map accompanying your recent correspondence which shows the location for the above referenced project. Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files, the following rare or protected species are known from the vicinity of the project site:

Common Name	Scientific Name	PA Status
Coastal plain leopard frog	*Rana utricularia*	endangered
New Jersey chorus frog	*Pseudacris feriarum kalmi*	endangered
Shortnose sturgeon	*Acipenser brevirostrum*	endangered
Threespine stickleback	*Gasterosteus aculeatus*	endangered
Banded sunfish	*Enneacanthus obesus*	endangered
Bridle shiner	*Notropis bifrenatus*	endangered
Eastern mudminnow	*Umbra pygmaea*	candidate
Red-bellied turtle	*Pseudemys rubriventris*	threatened
Triangle floater	*Alasmidonta undulata*	rare
Yellow lampmussel	*Lampsilis cariosa*	rare
Eastern pondmussel	*Ligumia nasuta*	rare
Eastern lampmussel	*Lampsilis radiata*	rare
Tidewater mucket	*Leptodea ochracea*	rare

The coastal plain leopard frog (a.k.a. southern leopard frog) resembles the northern leopard frog, but has a distinguishing whitish spot in the center of its eardrum, fewer dark spots on its sides, and a longer, pointed head. It lives and breeds in shallow, freshwater habitats and slightly brackish coastal marshes, and occurs in southeastern Pennsylvania. Following an early spring mating season, adults may live away from water in summer, when vegetation provides shade and shelter. It is endangered primarily due to loss of its breeding habitat from development and industrial activity.

The New Jersey chorus frog is a small frog species found in a wide variety of habitats including temporary ponds, open wetlands, and nearby grassy upland areas. It is greenish gray to light brown or tan with three broad, well-defined dark stripes that start at the snout and continue along the back and sides. A prominent whitish stripe is present along the upper lip. Breeding occurs from February to June in small, shallow, relatively open water bodies with a mixture of shrubby and herbaceous aquatic vegetation. They sometimes breed in shallow backwater areas of larger bodies of water with similar vegetation. Following breeding and egg laying, adults leave the breeding pools for upland forests or meadows which may be relatively dry. The New Jersey chorus frog occurs in small, isolated populations in southeastern Pennsylvania. These small populations are threatened by pollution, and filling/clearing of wetlands and breeding habitat.

The shortnose sturgeon, which is listed by both Pennsylvania and the National Marine Fisheries Service, occurs in the Delaware River. It may occupy river habitat along the banks abutting the airport. If the proposed project will include any activities that may disturb or impact aquatic habitat within the Delaware River, then potential impacts to the shortnose sturgeon and other fish species should be considered. Depending on the extent of invasive activities into the Delaware River, a fish survey may be requested.

The threespine stickleback prefers clear water that is quiet and weedy. It derives its name from the three distinctly separated dorsal spines. Breeding males have bright-blue eyes and their lower sides are red. The male builds a nest on the stream bottom and performs a courtship dance to entice a female to this nest. Once the female lays her eggs, she is chased away by the male who then guards the eggs and the young. This species is endangered due to habitat destruction and water pollution.

The banded sunfish has been documented in slowly flowing tributaries to the Delaware River. This species has dark vertical bands on its sides, and it rarely grows more than 4 inches long. The male builds a small nest in clean, rocky substrates, and then protects the eggs from fish predators.

The bridle shiner has been historically documented in the Delaware River and associated tributaries thereto, however recent occurrences are rare. This species prefers slow, swampy streams and suitable habitat has been identified on the airport property, but no recent specimens of the bridle shiner have been documented at this site. It feeds on zooplankton, and aquatic insects found along the bottom or among vegetation. In adulthood it rarely exceeds 2 inches in length.

The eastern mudminnow is highly secretive and inhabits very shallow water under vegetation and debris within marshes, weedy shores of lakes, or stagnant streams within the Delaware River drainage. It occasionally leaps from the water while feeding. This species is rare due to habitat destruction and water pollution.

In addition to the aforementioned fish species of special concern, the following game fish are known to inhabit the Delaware River within the vicinity of the project study area: striped bass (*Morone saxatilis*), white perch (*Morone americana*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieui*), American shad (*Alosa sapidissima*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), and Atlantic croaker (*Micropogonias undulatus*). Additional game fish including largemouth bass, white perch, and black crappie (*Pomoxis nigromaculatus*) have been identified as inhabiting wetlands and/or waterways on the airport property.

The red-bellied turtle is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes, and marshes with permanent water and ample basking sites. Red-bellied turtles are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality, and competition with aggressive non-native turtle species that share its range and habitat (e.g., red-eared slider, *Trachemys scripta elegans*).

Although historic records for the aforementioned listed and rare mussel species indicate their occurrence in the Delaware River in the vicinity of the airport, biological surveys for mussels within the Delaware River portion of the project study area have not been performed in recent years to the best of our knowledge. The listing status of mussel species within Pennsylvania is currently under review, and species not currently listed may become protected in the near future. The New Jersey Department of Environmental Protection lists as protected species all of the above referenced mussel species. In addition, the dwarf wedgemussel (*Alasmidonta heterodon*), listed as an endangered species by the U.S. Fish and Wildlife Service as well as by Pennsylvania and New Jersey, has been recently found during mussel surveys in the Upper Delaware River. However, this species is unlikely to be present in the vicinity of the airport due to anthropogenic impacts.

In-stream activities, both temporary and permanent, have the potential to cause severe adverse impacts to mussels through direct crushing or burial, sedimentation, induced riverbed scour, modified flow hydraulics, accidental spills of toxic chemicals, and other means of degrading the existing habitat. Since mussels are relatively immobile, avoidance of impacts requires knowledge, not only of their presence, but also of their location, density or abundance, and preferred suitable habitat. If there will be any disturbance resulting from the proposed project to the Delaware River, then completion of a mussel survey will be requested in order to assess the direct and indirect affects on these species. Such a mussel survey would include an initial Phase 1 qualitative assessment of habitat suitability along with mussel presence and species determinations, followed, if necessary, by a Phase 2 quantitative survey to determine mussel density and catch-per-unit effort (CPUE - i.e., a timed search). Any such mussel survey, as for all other surveys conducted for species protected under our jurisdiction, is to be completed by qualified biologists with the appropriate Scientific Collector's Permit issued by the Pennsylvania Fish and Boat Commission, and in accordance with a survey plan that is first reviewed and pre-approved by this agency.

Given the status and sensitivity of the aforementioned species of special concern and other species valued as game fish, we will need additional information to assess the project's potential for adverse impacts to these species. We understand that preparation of an Environmental Impact Statement in accordance with the National Environmental Policy Act has been requested by the Federal Aviation Administration and is currently underway. In order for us to continue our project review, please provide us with the following information as part of the environmental impact documentation: detailed project plans including a project narrative, aerial photographs and maps of the general area (including a depiction of the underground connections between bodies of water resulting from anthropogenic activities), identification and delineation of wetlands and waterways expected to be impacted (including acreage), stream/river characterization (including seasonal water quality data such as pH, temperature, and dissolved oxygen), a habitat suitability assessment within the project area of effect for all of the aforementioned species of special concern (including presence/absence of pools, type of aquatic vegetation, documented turtle nesting and basking locations), copies of any new biological survey reports completed for species protected under our jurisdiction, hydrology and hydraulic impact assessment reports, proposed impact avoidance measures, and color photographs (dated, labeled, and keyed to a map) of wetlands and any bodies of water expected to be impacted. We look forward to receiving this information.

In any future correspondence with us regarding this specific project, please refer to the SIR tracking number indicated above. Thank you for your cooperation and attention to this matter of aquatic species conservation.

If you have questions regarding this response, please contact me at (814) 359-5113.

Sincerely,

Chris C. Urban

Christopher Urban, Chief
Natural Diversity Section

cc: D. Spotts, PFBC

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

March 17, 2004

Ms. Dorothy Daly
A.D. Marble & Company
375 East Elm Street, Suite 200
Conshohocken, Pennsylvania 19428

Dear Ms. Daly:

In response to your December 23, 2003, request, the Fish and Wildlife Service has the following updated information on federally listed or proposed, endangered or threatened species within the study area for the Philadelphia International Airport Capacity Enhancement Program in Philadelphia and Delaware Counties, Pennsylvania. The following information is provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species.

As described in our September 5, 2003, comments on the Federal Aviation Administration's Notice of Intent to Prepare an Environmental Impact Statement, the proposed project is located within the range of the bald eagle (*Haliaeetus leucocephalus*), a species that is federally listed as threatened. Bald eagles typically occur in the vicinity of aquatic ecosystems; they frequent lakes, reservoirs, large rivers such as the Delaware, and wetland systems. Their nests are usually built in large trees within two miles of these features. Eagles are vulnerable to human disturbance, particularly during the nesting season.

Between 1997 and 2003, at least one bald eagle pair has nested at several locations on Racoon and Mantua Creeks, New Jersey, less than a mile from the Delaware River and approximately one mile south of the project area. Because bald eagles are continuing to recover and expand their breeding range in this region, new eagle nests may be found in other, previously undocumented locations in the project planning area. Therefore, we continue to recommend that mid-winter or early spring aerial surveys be conducted by a qualified biologist to determine where bald eagle nests occur in or near the action area. The search should be focused on areas within two miles of the Delaware River, its tributaries, and adjacent wetlands. You should also continue to evaluate the extent to which the Delaware is used by bald eagles for foraging (summer and winter), and how this use may be affected by project alternatives.

All information gathered on bald eagle use of the project area should be used in your assessment of project effects on this species. This information, and your analysis and conclusions, should be submitted to this office for review and concurrence. If the bald eagle is likely to be adversely affected, additional consultation with the Service will be necessary.

You should also be aware that no new action has been taken on the Service's July 6, 1999, proposal to remove the bald eagle from the federal *List of Endangered and Threatened Wildlife* (*Federal Register*, Vol. 64, No. 128), and this species remains listed under the Endangered Species Act. Changes in the regulatory status of the bald eagle can be monitored by accessing the Service's web site (www.fws.gov). If the bald eagle is de-listed, the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) will become the primary law protecting this species, and the Service is continuing to draft regulations that would authorize disturbance of bald eagles in certain circumstances.

Except for the bald eagle, and occasional transient species, no federally listed or proposed threatened or endangered species under Fish and Wildlife Service jurisdiction are known to occur within the project impact area. This determination is valid for two years from the date of this letter. If the proposed project has not been fully implemented prior to this, an additional review by this office will be necessary. Also, should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

If you have any questions or require further assistance on this matter, please contact me at 814-234-4090.

Sincerely,

David Densmore
Supervisor

PNDI

Pennsylvania Natural Diversity Inventory

Scientific information and expertise for the conservation of Pennsylvania's native biological diversity

March 16, 2004

Fax 717-772-0271
717-772-0258

Bureau of Forestry

David Durofchalk
A.D. Marble & Company
375 E. Elm St., Suite 200
Conshohocken, PA 19428

Re: Pennsylvania Natural Diversity Inventory Review of the Proposed Philadelphia International Airport, Runway 17-35 Extension **PER NO: 15730**

Dear Mr. Durofchalk:

In response to your request on March 2, 2004 the Pennsylvania Natural Diversity Inventory (PNDI) information system was used to gather information regarding the presence of resources of special concern within the referenced site. PNDI records indicate no occurrences of **plant** species of special concern within the project area, therefore we do not anticipate any impact on endangered, threatened, or rare plant species at this location.

Because of the close proximity of the project to species of special concern, our office recommends that you contact of the Pennsylvania Fish & Boat Commission **(814) 359-5113** for recommendations on potential impact on endangered animals in the area.

Pennsylvania Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane
Bellefonte, PA 16823
Fax- (814) 359-5175

This response represents the most up-to-date summary of the PNDI data files and is applicable for one year. However, an absence of recorded information does not necessarily imply actual conditions on site. A field survey of any site may reveal previously unreported populations. Should project plans change or additional information on listed or proposed species become available this determination may be reconsidered. Please phone this office if you have questions concerning this response or the PNDI system.

Sincerely,

Justin P. Newell
Environmental Review Specialist

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA GAME COMMISSION
2001 ELMERTON AVENUE, HARRISBURG, PA 17110-9797

March 10, 2004

Mr. David J. Durofchalk
A.D. Marble & Company
375 East Elm Street
Suite 200
Conshohocken, PA 19428

In re: Philadelphia International Airport
Runway 17-35 Environmental Impact Statement
Species of Special Concern
Philadelphia County, PA

Dear Mr. Durofchalk:

The Pennsylvania Game Commission has reviewed the above referenced project for potential impacts to species of special concern. Our review consisted of an office review based on project area boundaries and known data for species of special concern and a field view conducted with you and your staff on March 9, 2004.

Due to the lack of habitat for species of special concern in the Runway 17-35 project area, our office has determined that no state listed bird or mammal species of special concern should be impacted. Should project plans extend beyond the present study area, or if additional information on endangered or threatened species of birds or mammals becomes available, this review may be reconsidered.

This reply relates only to endangered and threatened species and does not address other concerns of the Pennsylvania Game Commission. If you have any questions, please contact me at (717) 783-5957.

Very truly yours,

Kevin L. Mixon
Division of Environmental
Planning and Habitat Protection
Bureau of Land Management

ADMINISTRATIVE BUREAUS:
PERSONNEL: 717-787-7836 ADMINISTRATION: 717-787-5670 AUTOMOTIVE AND PROCUREMENT DIVISION: 717-787-6594
LICENSE DIVISION: 717-787-2084 WILDLIFE MANAGEMENT: 717-787-5529 INFORMATION & EDUCATION: 717-787-6286 LAW ENFORCEMENT: 717-787-5740
LAND MANAGEMENT: 717-787-6818 REAL ESTATE DIVISION: 717-787-6568 AUTOMATED TECHNOLOGY SYSTEMS: 717-787-4076 FAX: 717-772-2411
WWW.PGC.STATE.PA.US
AN EQUAL OPPORTUNITY EMPLOYER

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

MAR - 2 2004

Dorothy Daly
A.D. Marble & Company
375 East Elm Street
Suite 200
Conshohocken, PA 19428

Dear Ms. Daly,

This is in response to your letter dated February 25, 2004 requesting information on the presence of any rare, threatened or endangered species under the jurisdiction of the National Marine Fisheries Service (NOAA Fisheries) in the vicinity of the proposed Philadelphia International Airport capacity enhancement project.

Federally endangered shortnose sturgeon (*Acipenser brevirostrum*) are known to occur in the Delaware River from the lower bay upstream to at least Lambertville, New Jersey. Tagging studies by O'Herron et al. (1993) found that the most heavily used portion of the river appears to be between river mile 118 below Burlington Island and river mile 137 at the Trenton Rapids. From November through March, adult sturgeon overwinter in dense sedentary aggregations in the upper tidal reaches of the Delaware between river mile 118 and 131. The areas around Duck Island and Newbold Island seem to be regions of intense overwintering concentrations. However, unlike sturgeon in other river systems, shortnose sturgeon in the Delaware do not appear to remain as stationary during overwintering periods. Overwintering fish have been found to be generally active, appearing at the surface and even breaching through the skim ice (O'Herron 1993). Due to the relatively active nature of these fish, the use of the river during the winter is difficult to predict. The overwintering location of juvenile shortnose sturgeon is not known but believed to be on the freshwater side of the oligohaline/fresh water interface (O'Herron 1990). In the Delaware River, the oligohaline/freshwater interface occurs in the area between Wilmington, Delaware and Marcus Hook, Pennsylvania.

Spawning in the Delaware River may occur from late March through early May, dependent on weather conditions. While actual spawning has not been documented in this area, the concentrated use of the Scudders Falls region in the spring by large numbers of mature male and female shortnose sturgeon indicate that this is a major spawning area (O'Herron et al. 1993). After spawning, shortnose sturgeon move rapidly downstream to the Philadelphia area. Historically, sturgeon were relatively rare below Philadelphia due to poor water quality. In the past decade, the water quality in the Philadelphia area has improved leading to an increased use of the lower river by shortnose sturgeon. After adult sturgeon migrate to the area around Philadelphia, many adults return upriver to between river mile 127 and 134 within a few weeks.

while others gradually move to the same area over the course of the summer (O'Herron 1993). By November, adult sturgeon have returned to the overwintering grounds around Duck Island and Newbold Island.

While the area above Philadelphia is of primary importance to shortnose sturgeon in the Delaware River, shortnose sturgeon are present below Philadelphia. Brundage and Meadows (1982) have reported incidental captures in commercial gillnets in the lower Delaware. During a study focusing on Atlantic sturgeon, Shirey et al. (1999) captured 9 shortnose sturgeon in 1998. During the June through September study period, Atlantic and shortnose sturgeon were found to use the area on the west side of the shipping channel between Deep Water Point, New Jersey and the Delaware-Pennsylvania line. The most frequently utilized areas within this section were off the northern and southern ends of Cherry Island Flats in the vicinity of the Marcus Hook Bar.

Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, states that each Federal agency shall, in consultation with the Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Because federally endangered shortnose sturgeon are present in the Delaware River, any discretionary federal action that may affect this species must undergo Section 7 consultation. The federal action agency, in this case the Federal Aviation Administration (FAA), would be responsible for initiating Section 7 consultation, at which time the project details would be submitted to NOAA Fisheries, Northeast Regional Office, Protected Resources Division, One Blackburn Drive, Gloucester, MA 01930. An assessment of the project's impacts to federally endangered shortnose sturgeon should be included with the project details. After reviewing this information, NOAA Fisheries would then be able to conduct a consultation under section 7 of the ESA.

We look forward to your continued cooperation with consultation matters. Should you have any questions about these comments or about the section 7 consultation process in general, please contact Julie Crocker at (978)281-9328 ext. 6530.

Sincerely,

Mary Colligan

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

Cc: Riportella, F/NER4

File Code: Sec 7 (FAA) – spp. present DE River

U.S. Department
of Transportation

**Federal Aviation
Administration**

Harrisburg Airports District Office
3905 Hartzdale Drive, Ste. 508
Camp Hill, PA 17011
(717) 730-2830 phone
(717) 730-2838 FAX

February 24, 2004

Bradley M. Campbell
New Jersey State Historic Preservation Officer
401 East State Street
P.O. Box 402
Trenton, NJ 08625-0402

REFERENCE: Philadelphia International Airport
Runway 17-35 Extension Project
Delaware & Philadelphia Counties, PA

Dear Mr. Campbell:

This letter is to inform you that the Philadelphia International Airport proposes to conduct an undertaking subject to compliance with Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR Part 800. This letter serves to initiate consultation with the NJ SHPO on this matter (800.3(c)).

The undertaking is to provide improvements to the Philadelphia International Airport that would reduce current and projected airfield delays as soon as feasible. Alternatives currently being considered to provide these short-term improvements include extending existing Runway 17-35. The Area of Potential Effect for archaeological and above-ground resources are demarcated on the attached maps and described in the attached narrative.

Please review the information we have provided on this undertaking and contact Jim Byers directly at (202) 267-3007 if you have any questions.

Sincerely,

Wayne Heibeck

Wayne Heibeck, Manager
Harrisburg Airports District Office

Cc: Bureau for Historic Preservation
Pennsylvania Historical and Museum Commission

Enclosure

As proposed, the project will not adversely affect historic properties. Pursuant to 800.5(c), if no consulting parties object to this finding within the 30 day review period, the project may proceed, as proposed, unless resources are discovered during project implementation, pursuant to 800.13.

Dorothy P. Guzzo 4/19/04

Dorothy P. Guzzo **Date**
Deputy State Historic Preservation Officer

* DETERMINATION IS BASED ON FIG.3 APE MAP.

Pennsylvania Department of Conservation and Natural Resources

February 9, 2004

Bureau of Forestry

717-787-7067
Fax 717-783-0271

Dorothy Daly
Environmental Planner/Scientist
A.D. Marble & Company
375 East Elm Street
Suite 200
Conshohocken, PA 19428

Re: Bureau of Forestry, Pennsylvania Natural Diversity Inventory Search for Philadelphia International Airport Capacity Enhancement Program, Philadelphia and Delaware Counties, PA - PNDI # 015452

Dear Dorothy:

After reviewing the information you submitted on December 23, 2003 regarding the above project, we have determined that there may be potential community and plant conflicts.

There is a community of special concern, a freshwater intertidal mudflat, within the study area. Freshwater intertidal mudflats are one of the most rare community types in Pennsylvania and, thus, are given the rank S1 (critically impaired).

Species of special concern found within the project study area include:

Scientific name	Common name	Status	habitat	seen
Amaranthus cannabinus	waterhemp ragweed	PR	uppermost zone of freshwater intertidal marsh	1994
Baccharis halimifolia	Eastern baccharis	PR	tidal marshes	1952
Eleocharis obtusa var peasi	Wright's spike rush	PE	tidal mudflats	1994
Eleocharis parvula	little spike spike-rush	PE	tidal shores and mudflats	1994
Heteranthera multiflora	multiflowered mud-plantain	PE	tidal shores and mudflats	1994
Pluchea odorata	shrubby camphor-weed	PE	tidal mudflats, wet ditches, railroad ballast, nursery beds where salt hay mulch was used	1991
Sagitaria calynia var spongiosa	long-lobed arrow-head	PE	tidal mudflats	1991
Sagitaria subulata	subulate arrowhead	PR	tidal shores and mudflats	1994
Schoenoplectus smittii	Smith's bulrush	PE	moist shores and tidal mudflats	1991
Zizania aquatica	Indian wild rice	PR	tidal and non-tidal marshes	1994

Species observed near the study area include:

Scientific name	Common name	Status	habitat	seen
Bidens bidentoides	swamp beggar-ticks	PE	tidal shores and mudflats	1994
Echinochola walteri	Walter's barnyard-grass	PE	tidal marshes and mudflats	1991
Lyonia mariana	stagger-bush	PE	dry woods and serpentine barrens	1952
Quercus falcata	southern red oak	PE	dry to moist woods	2000
Quercus phellos	willow oak	PE	moist to wet woods	2000
Schoenoplectus fluviatilis	river bulrush	PR	moist, sandy shores and marshes	1991

Changes in channel morphology of the Delaware River within the study area are likely to have devastating impacts on species of special concern and may potentially destroy the community of special concern. As plans for expansion develop, please coordinate further with our office. We will likely recommend that a qualified botanist conduct a botanical survey at the appropriate time of year prior to disturbance. The botanist will be asked to fill out the forms located at http://pndi.state.pa.us/fieldsurvey/fieldsurvey.htm and the survey should be a search for all Pennsylvania listed species, not only the species listed above. Additional extensive studies will likely be needed to examine potential direct or indirect impacts, especially if alterations within the river channel are proposed. Every effort should be made to avoid detrimental impacts to the community and species of special concern or further mitigation measures will be necessary.

If you have not done so already, contact the PA Game Commission and PA Fish and Boat Commission regarding potential animal impacts.

This response represents the most up-to-date summary of the PNDI data files and is applicable for one year. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered.

Please phone Autumn Sabo, Environmental Review Botanist, at 717 787 7067 with any questions concerning this response.

Sincerely,

FOR

Chris Firestone
Wild Plant Program Manager, DCNR

cc: John Miller, Bureau of Forestry, DCNR
Sally Just, Office of Conservation Science, DCNR

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA GAME COMMISSION
2001 ELMERTON AVENUE, HARRISBURG, PA 17110-9797

January 5, 2004

Ms. Dorothy Daly
A.D. Marble & Company
375 East Elm Street
Suite 200
Conshohocken, PA 19428

In re: Philadelphia International Airport
Capacity Enhancement Program
Philadelphia and Delaware Counties, PA

Dear Ms. Daly:

This is in response to your letter of December 23, 2003, requesting information concerning state listed endangered and threatened species of birds and mammals as related to this project.

The PGC has the following recommendations based on observations of great egret (*Ardea alba*, PA endangered) and American bittern (*Botaurus lentiginosus*, PA endangered), past database records, and conversations with Dan Brauning (PGC Avian Specialist).

The study area contains potential habitat for the following species:

Common Name	Scientific Name	State Status
Great Egret	*Ardea alba*	PA Endangered
Black-crowned Night Heron	*Nycticorax nycticorax*	At Risk
Yellow-crowned Night Heron	*Nycticorax Violaceus*	PA Endangered
Short-eared owl	*Asio flammeus*	PA Endangered
King Rail	*Rallus elegans*	PA Endangered
Least Bittern	*Ixobrychus exilis*	PA Endangered
American Bittern	*Botaurus lentiginosus*	PA Endangered
Sedge Wren	*Cistothorus platensis*	PA Threatened

A field view should be held in February to review the potential habitat and determine the survey methods and appropriate areas to survey for each species. As a follow up to the meeting, a plan of study should be sent to the PGC for review. The plan of study should include the area to be surveyed and methods for each species. The PGC will review the plan of study to ensure the survey plans will be sufficient to determine presence or absence of the species and that everyone is in agreement on the methods.

The PGC may participate on a few days of surveying and should be contacted with the survey schedule. It may be necessary to conduct a second year of surveys due to the potential number of species present and the long time frame involved with completing Environmental Impact Statements.

Please contact me directly at (717) 783-5957 if you have any questions.

Very truly yours,

Kevin L. Mixon
Division of Environmental
Planning and Habitat Protection
Bureau of Land Management

Cc: Capouillez, PGC
Killough, PGC
Brauning, PGC
Arway, PFBC
Anderson, DEP, SE Reg. Office
Densmore, USFWS
Jenkins, COE, Philadelphia Dist.
Alper, EPA

Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

September 5, 2003

James B. Byers
Federal Aviation Administration
Airports District Office
3905 Hartzdale Drive, Suite 506
Camp Hill, Pennsylvania 17011

Ref: Notice of Intent to Prepare an Environmental Impact Statement; Philadelphia Airport Runway 17-35 Extension Project and Capacity Enhancement Program **(ER 03/632, 03/633)**

Dear Mr. Byers:

The Fish and Wildlife Service has reviewed the referenced Notice of Intent for two proposed expansion projects at the Philadelphia International Airport (PHL) in Philadelphia and Delaware Counties, Pennsylvania. The following general comments are based on this NOI and the scoping information documents provided at the August 19, 2003, agency scoping meeting. These are the Service's preliminary scoping comments only, and do not represent the views of the Department of the Interior or its other bureaus on the subject projects.

RUNWAY 17-35 EXTENSION PROJECT

The proposed action involves extension of Runway 17-35 to the north and south by a total of 1,040 feet. Based on existing information, we are not aware of any direct or indirect impacts that this project would have on fish, wildlife, or habitats of concern to the Service. Consequently, we would have no objection to this project at this time, nor any recommendations for measures to avoid or minimize its environmental impacts. Should additional information on project impacts or project area natural resources become available during the environmental assessment of this project, we would reconsider this conclusion.

CAPACITY ENHANCEMENT PROGRAM

As currently envisioned, the proposed Capacity Enhancement Program would include at least two "build" alternatives that could have direct or indirect impacts on fish and wildlife resources in the project area. Impacts of one or both alternatives include fills in wetlands or other waters of the U.S. (e.g., the Delaware River); direct or indirect harm to migratory birds in the project area; impacts on federally listed species; and indirect impacts due to overflights of the John Heinz National Wildlife Refuge and Cusano National Environmental Education Center.

Alternatives Being Considered

Environmental documents prepared pursuant to the National Environmental Policy Act must rigorously and objectively evaluate all reasonable alternatives, regardless of whether they are within the jurisdiction of the action agency. Therefore, we would like to emphasize the importance of evaluating both "non-structural" (e.g., system management alternatives), as well as a reasonable range of "build" alternatives.

The scoping documents prepared to date suggest that at least some, as-yet unspecified alternatives that would not involve major construction at the PHL site will be considered, and we encourage a full evaluation of such alternatives. However, at this time only two "build" alternatives are under consideration, either of which could have significant adverse impacts on fish and wildlife resources. We strongly recommend that additional "build" (on-site) alternatives that might involve modifications to the proposed runway and other infrastructure configurations(s) also be evaluated. For example, are there practicable variants of the proposed parallel concept that would reduce fills in wetlands and the Delaware River? If so, consideration of such alternatives will both satisfy the requirements of NEPA and be critical to ensuring compliance with the Clean Water Act section 404(b)(1) Guidelines.

Fills in Wetlands and Other Waters

As cited above, Clean Water Act regulations prohibit issuance of section 404 permits for discharges having less damaging, practicable alternatives. Because this project is not water dependent, the section 404(b)(1) Guidelines presume that practicable alternatives exist that would not involve discharges in wetlands, unless the applicant can clearly demonstrate otherwise. If such impacts are unavoidable, however, and have been minimized to the maximum extent practicable, remaining impacts to the aquatic environment must be offset through appropriate compensatory measures. Appropriate compensation would emphasize in-kind restoration and protection of aquatic habitats on the Delaware River. Therefore, as part of the project evaluation, an inventory of potential compensation sites should be conducted.

In addition to direct project impacts, the EIS should evaluate all potential indirect and secondary impacts of the proposed action on wetlands and other waters, including degradation of habitat and water quality adjacent to proposed development (off-site effects), and growth-induced effects such as the need for increased surface access to the airport, additional parking needs, commercial development, etc.

Water Quality

Proposed "build" alternatives, especially when considered with potential secondary development, may have significant direct and indirect impacts on water quality in the Delaware River and nearby tributaries. The potential effects of all planned and unplanned, point and non-point source discharges to the Delaware and its tributaries should be evaluated. The continued cumulative degradation of wetland and shallow water habitats immediately adjacent to the Delaware should be part of this evaluation.

Migratory Birds

Executive Order 13186 (66 FR 3853; January 10, 2001) outlines the responsibilities that federal agencies have to protect migratory birds. Federal agencies are currently entering into Memoranda of Understanding with the Fish and Wildlife Service to implement the migratory bird conservation measures identified in this Executive Order. To our knowledge, the MOU between the Service and the Federal Aviation Administration is still in draft. Nevertheless, we encourage the FAA to consider the conservation measures contained in this Executive Order in proposed project design, operations, and mitigation.

Federally Listed Species

The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species.

The proposed project is located within the range of the bald eagle (*Haliaeetus leucocephalus*), a species that is federally listed as threatened. Bald eagles typically occur in the vicinity of aquatic ecosystems; they frequent lakes, reservoirs, large rivers (e.g., Delaware River), and wetland systems. Their nests are usually built in large trees within two miles of these features. Eagles are vulnerable to human disturbance, particularly during the nesting season.

The bald eagle population in Pennsylvania has increased substantially from the three nesting pairs found in the State from 1963 through 1980. In 2002, 67 active bald eagle nests were documented. We are aware of at least one nest in the project area -- during the last three seasons (2001-2003), one bald eagle pair nested at three different locations on Mantua Creek, New Jersey, less than a mile from the Delaware River and approximately one mile south of the project area. Because bald eagles are continuing to recover and expand their breeding range in Pennsylvania, new eagle nests may be found in other, previously undocumented locations in the vicinity of the project planning area. For example, Little Tinicum Island has the potential to support nesting bald eagles.

The Service proposed to remove the bald eagle from the federal *List of Endangered and Threatened Wildlife* on July 6, 1999 (*Federal Register*, Vol. 64, No. 128), but final action on that proposal has not been taken. The bald eagle, therefore, continues to be listed under the Endangered Species Act. Any changes in the regulatory status of the bald eagle can be monitored by accessing the Service's web site (www.fws.gov).

If the bald is de-listed, the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) will become the primary law protecting bald eagles. This Act prohibits the take of bald and golden eagles, and provides a statutory definition of "take" that includes "disturb." Currently, there is no regulatory mechanism under the BGEPA to permit disturbance of the bald eagle. However, the Service is in the process of drafting regulations that would authorize disturbance of bald eagles in certain circumstances, provided that the taking is consistent with the preservation of the bald eagle.

Because project activities are proposed near a known nest site, and the Delaware River corridor may be used by foraging eagles, adverse effects on this species may occur. Prior to implementing this project, a "leaf-off" (i.e., mid-winter or early spring) aerial survey should be conducted by a qualified biologist to determine where bald eagle nests occur in or near the action area. The search should be focused on areas within two miles of the Delaware River, its tributaries, and adjacent wetlands. You should also determine to what extent the Delaware is used by bald eagles for foraging (summer and winter), and how this use may be affected by project alternatives. Relevant information may be available from agencies or organizations such as the Pennsylvania Game Commission, their New Jersey counterparts, or groups such as the National Audubon Society. The results of this effort should be submitted to this office for review and concurrence. Your effects analysis and conclusions should also be submitted to this office for review and concurrence. If this species is likely to be adversely affected, additional consultation with the Service will be necessary.

Except for the bald eagle, and occasional transient species, no federally listed or proposed threatened or endangered species under Fish and Wildlife Service jurisdiction are known to occur within the project impact area. This determination is valid for two years from the date of this letter. If the proposed project has not been fully implemented prior to this, an additional review by this office will be necessary. Also, should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

The federally listed, endangered shortnose sturgeon (*Acipenser brevirostrum*), may also be present in the project planning area. This species is under the jurisdiction of the National Marine Fisheries Service. For the several Pennsylvania-listed species present, the FAA should be consulting with the Pennsylvania Fish and Boat Commission, Game Commission, and Department of Conservation and Natural Resources.

<u>John Heinz National Wildlife Refuge and Cusano National Environmental Education Center</u>

Changes in flight patterns or other airport operations also have the potential to adversely affect species, habitats, and human use of the adjacent National Wildlife Refuge and Education Center, and may, therefore, conflict with established refuge uses such as interpretation, education, wildlife observation, photography, and fishing. Potential effects and mitigative measures on the Refuge that should be considered and evaluated in the EIS include:

- Maintenance of minimum overflight altitudes.
- Bird collisions.
- Ground security in currently unpatrolled Refuge backcountry areas where low-altitude overflights may occur.
- Impacts of jet exhaust on wildlife.
- Impacts of increased aircraft noise on nesting and migrant bird species.

- Impacts of potential water quality degradation on Refuge fish, wildlife, and habitats.

- Impacts of regular, frequent overflights on Refuge visitor use, and on Refuge staff.

More than 300 bird species have been recorded on the Refuge, with more than 80 of these nesting. Therefore, it is critical to ensure that adequate and up-to-date baseline information on Refuge bird and other wildlife species susceptible to aircraft noise is considered in your evaluation. Such information and evaluation should include species numbers, distribution, and seasonal use of Refuge habitats, as well as the visitor use associated with these patterns.

If you have any questions regarding these comments, please contact me at 814-234-4090 (x233).

Sincerely,

David Densmore
Supervisor

cc:

Interagency Stewardship and Streamlining Agreement for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement and Permitting and the Capacity Enhancement Program Environmental Impact Statement and Permitting

The FAA commits to foster streamlining of the Philadelphia International Airport Environmental Impact Statement (EIS) and permitting processes. As the lead federal agency for these EISs, FAA will also ensure environmental protection through a coordinated decisionmaking process with our federal, state, and local environmental partners. FAA will also provide excellent information and documentation and opportunities to the public to enhance its involvement.

To provide relief from the existing delays as soon as feasible, the proposed improvements to the Airport have been divided into two separate projects, the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement and the Philadelphia International Airport Capacity Enhancement Program Environmental Impact Statement. It appears that the Runway 17-35 Extension Project will generate fewer environmental impacts and that the impacts will be of lesser magnitude than the impacts from the Capacity Enhancement Program. The EIS and permitting for the Runway 17-35 Project are, therefore, anticipated to be completed in a much shorter time frame than the EIS and permitting for the Capacity Enhancement Program. We agree to expedite the review of each EIS, as well as the permitting decisions and similar decisions for each proposed project.

This *Interagency Stewardship and Streamlining Agreement for the Philadelphia International Airport Environmental Impact Statements and Permitting* is based upon the seven key points that the Agency Streamlining Champions previously agreed to during the Philadelphia International Airport Streamlining Leadership Conference held in Philadelphia on July 24, 2003.

Key Point 1.	We commit to identify environmental agency priorities and to explore opportunities to ensure that the proposed projects incorporate environmental protection and stewardship.

Environmental stewardship incorporates protection and enhancement of the natural and human environment into the planning, development, operation, and maintenance of transportation facilities and services. Environmental protection and stewardship opportunities include, but are not limited to, operational best practices, pollution prevention, conservation of natural resources, green design/technologies, protection of cultural resources and environmental sustainability.

All agencies signing this agreement are responsible for identifying opportunities to enhance and preserve environmental resources in the project areas. They are encouraged to provide recommendations at any time during the study to serve as the basis for a more detailed implementation plan to be prepared following FAA's selection of the preferred alternative for each proposed project. Because of their expertise in airport construction and operations, the EIS Project Team (FAA, its EIS consultant, and the Airport Sponsor) will review and identify measures that may adversely affect the construction and operation of on-airport facilities.

Key Point 2.	We commit to identify our individual roles, responsibilities and statutory authority for these proposed projects.

We recognize our specific roles and responsibilities derived from the statutory authority granted to it by the federal or state legislature. Appendix A presents this information as it applies to NEPA and to potential project permits. As a result, we are responsible for attending interagency review or field meetings, reviewing project technical reports and other documentation addressing our respective fields of expertise. We will also participate in problem solving and issue resolution processes, if necessary, for both the Runway 17-35 Extension Project and the Capacity Enhancement Program.

Key Point 3.	We commit to mutually respect our respective missions, technical expertise, and statutory authority as we work through the environmental analyses of each proposed project and to help each other fulfill our mandates.

Appendix A describes our respective agency statutory authority as it relates to these proposed projects.

Key Point 4.	We will set mutually agreed upon time frames to fulfill our respective roles and responsibilities throughout these proposed projects.

Appendix A presents each agency's roles, responsibilities, and statutory authority for both the Runway 17-35 Extension Project and the Capacity Enhancement Program[1].

Key Point 5.	We will include a method for understandings and agreements we reach throughout the environmental review processes for each proposed project. We will document these consensus points, with provisions, where appropriate, and indicate our agreement by signing a consensus agreement form for each consensus point.

A Consensus Point is a point in the environmental review process where the FAA will work toward obtaining consensus from the appropriate agencies.

[1] The time frames will be established after completion of the Scoping Process Report.

The Philadelphia EIS processes will include a number of consensus points that FAA will document, distribute, solicit comments, and work toward obtaining consensus from the appropriate agencies. Not every agency will need to be involved in every consensus point. The consensus points may include, but are not limited to:

- Project Purpose and Need
- Developing a range of alternatives capable of achieving the purpose and need
- Developing reasonable, possible, and prudent alternatives retained for further evaluation because they meet the purpose and need
- Minimization of impacts
- Mitigation requirements
- Stewardship Opportunities

Appendix B presents a sample agency consensus form that we will use when FAA works toward obtaining consensus for both the Runway 17-35 Extension Project and the Capacity Enhancement Program. The process for resolving conflicts is discussed in Key Point #7 in this agreement.

Key Point 6.	We agree not to revisit any consensus points, unless substantive environmental information, substantial project changes, or changes to laws and regulations warrant reopening an agreed-upon consensus point.

New substantive information or substantive change to the proposed project, the environment, or laws and regulations must result in a substantially different picture of social, economic or environmental impacts compared to the impacts previously analyzed and described in Technical Reports and/or the Environmental Impact Statements.

A consensus point can also be revisited if pertinent conditions and requirements of prior approvals (if any) will not be met because of the new substantive information or substantive change to the proposed project, the environment, or laws and regulations.

Key Point 7.	To quickly address unresolved issues among or between us, we will develop a mutually-acceptable collaborative problem solving and issue resolution framework. The framework will include reasons for initiating issue resolution process, procedures, and time frames.

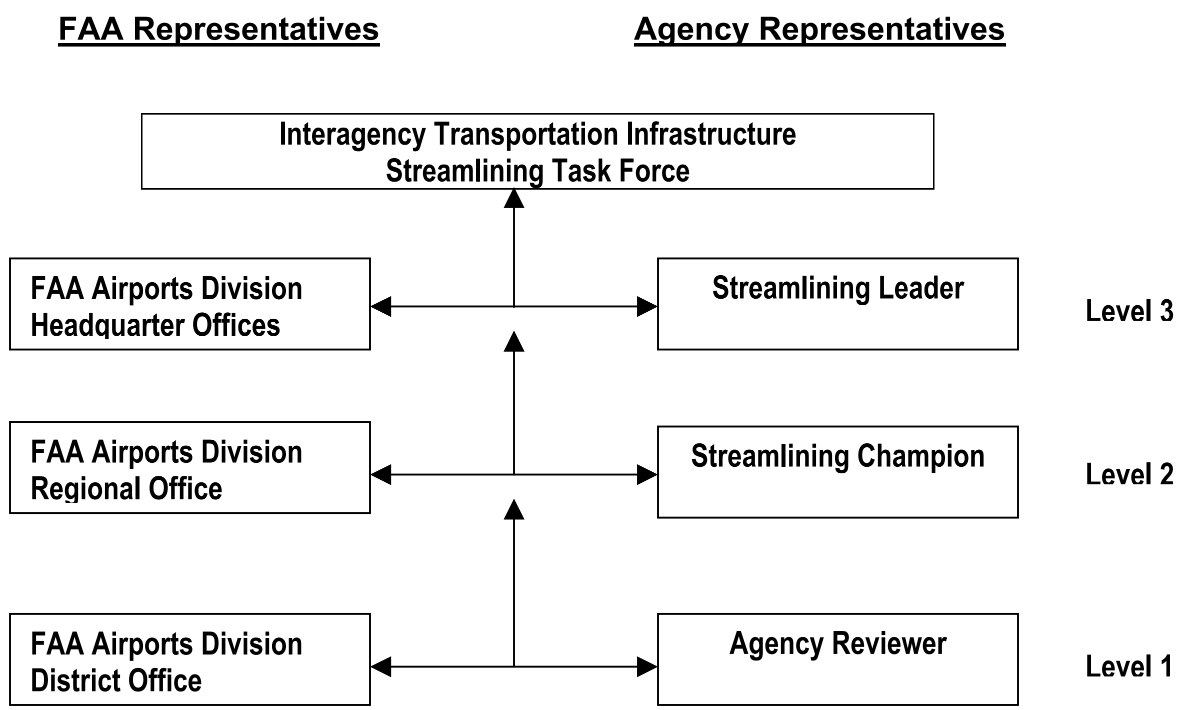
For both the Runway 17-35 Extension Project and the Capacity Enhancement Program, we will attempt to resolve disagreements at the earliest stage possible and at the lowest appropriate organizational level. However, if necessary, we will effectively use higher-level authorities, as appropriate, for negotiating or resolving impasses.

The following steps will occur after the FAA receives agency comments on a consensus point or document per the time frames listed in Appendix A:

1. FAA distributes or presents a revised consensus point or document to the agencies.
2. FAA requests a completed consensus form from each agency on the revised consensus point or document.
3. Within seven calendar days, the reviewing agency(ies) indicates whether or not that it/they can agree to the Consensus Point, and if they do not agree, the objecting agency(ies) must provide written reasons for rejecting the Consensus Point.
4. Within seven calendar days, FAA reviews the rejection. If we cannot reach agreement or if it is not likely we can reach one, FAA provides specific reasons for the disagreement and elevates the issue to the next management level.

Any of us may request the start of the issue resolution process.

This graphical presentation depicts the issue resolution process.



Applicability

Participation in this agreement does not imply endorsement of any aspects of these projects. Nothing in this agreement or its appendices is intended to diminish, modify, or affect the statutory or regulatory authorities of the agencies involved.

This Agreement will be effective for each agency upon its signing of the Agreement. It will apply to the proposed Philadelphia International Airport Capacity Enhancement Program and the Runway 17-35 Extension Project.

Additional agencies having environmental expertise or authority may request joining this Agreement. After we have discussed their request to join this Agreement, they may become a party to it by signing this Agreement.

PHLEIS

Interagency Stewardship and Streamlining Agreement for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement and Permitting and the Capacity Enhancement Program Environmental Impact Statement and Permitting

RUNWAY 17-35

PHLEIS

Signatories

9/3/03

Jim Johnson, Acting Eastern Region Airports Division Manager — Federal Aviation Administration

9/17/03

(for) Karen Theimer Brown, Historic Preservation Specialist — Advisory Council on Historic Preservation

9/3/03

Stan Gorski, Mid-Atlantic Field Office Supervisor — NOAA Fisheries (NMFS)

9/3/03

Frank Cianfrani, Chief Regulatory Division — U.S Army Corps of Engineers - Philadelphia District

David Densmore, Supervisor — U.S. Fish & Wildlife Service - Pennsylvania Field Office

LCDR Patrick Keffler, Supervisor, Port Operations — U.S. Coast Guard – MSO/Group Philadelphia

Stanley Laskowski, Director, Environmental Assessment & Innovation Division — U.S. Environmental Protection Agency - Region III

Shaun Eyring, Manager, Resource Planning & Compliance — National Park Service

9/3/03

David Burke, Water Quality Specialist — Pennsylvania Department of Environmental Protection

9/3/03

Vito Genua, Assistant District Executive - Design — Pennsylvania Department of Transportation - District 6

Susan Zacker — Pennsylvania Historical & Museum Commission

Interagency Stewardship and Streamlining Agreement for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement and Permitting and the Capacity Enhancement Program Environmental Impact Statement and Permitting

David W Cough 9/12/03

David Cough, Director of Operations — Federal Highway Administration

David E. Spotts 9/3/03

David Spotts, Chief, Watershed Analysis Section — Pennsylvania Fish & Boat Commission

Kevin Mixon 9/3/03

Kevin Mixon, Environmental Planning & Habitat Protection — Pennsylvania Game Commission

Kenneth C. Koschek 9/3/03

Ken Koschek — New Jersey Department of Environmental Protection

Dorothy P. Guzzo 9/22/03

Dorothy Guzzo, Deputy State Historic Preservation Specialist — New Jersey State Historic Preservation Office

9/3/2003

Dan Griffith, State Historic Preservation Officer — Delaware State Historic Preservation Office

David Carter, Program Manager II — Delaware Department of Natural Resources and Environmental Control, Delaware Coastal Programs

9-3-03

Charles Isdell, Director of Aviation — City of Philadelphia

Appendix A

Agency Milestones	Approximate Dates	
	Runway 17-35	CEP
Purpose and Need Report Review	March 2004	TBD
Purpose and Need Consensus Point	March 2004	TBD
Alternatives Analysis Report Review	April 2004	TBD
Alternatives Consensus Point	April 2004	TBD
Review of Environmental Impact Technical Reports	May 2004 – June 2004	TBD
Avoidance/Minimization/Mitigation Consensus Points	June 2004	TBD
Stewardship Opportunities	October 2003 through May 2004	TBD
Agency Review of Draft EIS	September 2004 – Mid-October 2004	TBD
Review and Process Permit Applications	September 2004 through October 2004	TBD

Agency Statutory Authority and Roles and Responsibilities

Federal Aviation Administration			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **49 U.S.C. Subtitle VII** ▪ **National Environmental Policy Act (NEPA)** (consider environmental factors through systematic interdisciplinary approach before committing to a course of action)	▪ Publish Notice of Intent in Federal Register ▪ Hold Scoping Meetings ▪ Invite Cooperating Agencies to participate in study and assign roles and responsibilities to those accepting the invitation. ▪ Develop proposed study areas, data requirements, and methodologies to analyze social, economic and environmental impacts and work toward consensus on them ▪ Attend interagency review or field meetings ▪ Prepare Project Purpose and Need Technical Report; circulate to agencies; and work toward consensus on Purpose and Need ▪ Review of Section 404 Basic Project Purpose ▪ Develop and describe the range of alternatives capable of achieving the purpose and need ▪ Develop criteria for determining the reasonable, possible and prudent alternatives; identify alternatives that will	Completed Completed 10 Business Days 20 Business Days Periodically throughout study period 50 Business Days 10 Business Days 10 days 10 days	Completed Completed 10 Business Days 35 Business Days Periodically throughout study period 80 Business Days 10 Business Days 20 days 20 days

Federal Aviation Administration			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	not achieve the purpose and need; provide the reasons why certain alternatives are rejected from further consideration and not be included in the EIS for detailed analyses; and identify reasonable, possible, and prudent alternatives that achieve the purpose and need and will be analyzed in detail in the EIS		
	▪ Prepare Alternatives Analysis Technical Report; circulate to agencies; and work toward consensus on the range of reasonable, possible and prudent alternatives that the EIS will detail.	70 Business Days	80 Business Days
	▪ Propose Section 106 Area of Potential Effect	10 Business Days	10 Business Days
	▪ Make Section 106 Determinations of Eligibility and work toward consensus on them with the appropriate agencies.	20 Business Days	20 Business Days
	▪ Determine the environmental consequences of the No Build Alternative and each reasonable, possible, and prudent alternative that is capable of achieving the purpose and need	60 Business Days	260 Business Days
	▪ Identify measures to avoid, minimize or mitigate potential social, economic and environmental impacts	40 Business Days	140 Business Days

Federal Aviation Administration			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	(mitigation requirements, preferred locations, and level of detail) and work toward consensus on these measures with appropriate agencies		
	▪ Conduct public outreach with project stakeholders (public meetings, newsletters, web site)	Periodically throughout study period	Periodically throughout study period
	▪ Propose Environmental Stewardship opportunities and work toward consensus with appropriate agencies	Periodically throughout study period	Periodically throughout study period
	▪ Prepare, circulate and work toward consensus on Technical Reports with appropriate agencies	90 Business Days	140 Business Days
	▪ Develop Draft General Conformity/Public Review Determination	20 Business Days	20 Business Days
	▪ Prepare Draft EIS	120 Business Days	200 Business Days
	▪ Circulate Draft EIS for public and agency review	45 Calendar Days	45 Calendar Days
	▪ Hold Public Hearings	During Draft EIS comment period	During Draft EIS comment period
	▪ Comment on the Section 404 Least Environmentally Damaging Practicable Alternative	15 Business Days	30 Business Days
	▪ Summarize comments received on the Draft EIS and key issues raised during the public hearings	20 Business Days	20 Business Days

Federal Aviation Administration			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Identify FAA's Preferred Alternative	15 Business Days	30 Business Days
	▪ Provide FAA responses to the key issues and comments	20 Business Days	90 Business Days
	▪ Prepare Final General Conformity Statement and circulate	20 Business Days	20 Business Days
	▪ Make Section 4(f) Determination	10 Business Days	10 Business Days
	▪ Prepare Final EIS	40 Business Days	100 Business Days
	▪ Prepare Record of Decision	40 Business Days	40 Business Days
	▪ Issue Record of Decision	At least 30 Calendar Days after release of Final EIS	At least 30 Calendar Days after release of Final EIS
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary

9/30/03

William Flanagan, Eastern Region Airports Division Manager — Federal Aviation Administration

Advisory Council on Historic Preservation			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Section 106 of the National Historic Preservation Act, as amended: 16 U.S.C. 470f** (Advisory Council on Historic Preservation afforded a reasonable opportunity to comment on federal undertakings.)	▪ Attend Scoping Meeting	Completed	Completed
	▪ Provide comments during Scoping	Comment Period ended September 3, 2003	Comment Period ended September 3, 2003
▪ **Section 110 of the National Historic Preservation Act, as amended: 16 U.S.C. 470H-2** (protect National historic landmarks; record historic properties prior to demolition)	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Historic, Architectural & Archaeological Resources Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days

Advisory Council on Historic Preservation			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse historic, cultural, and archaeological resource impacts from the Preferred Alternative	10 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Karen Theimer Brown, Historic Preservation Specialist — Advisory Council on Historic Preservation

NOAA Fisheries (NMFS)			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Endangered Species Act of 1973, as amended: 16 U.S.C. 1031-1043** (conserve anadromous fish and/or marine mammals facing extinction) ▪ **Fish and Wildlife Coordination Act: 16 U.S.C. 661-666** (conservation, maintenance, and management of wildlife resources) ▪ **Magnuson-Stevens Fisheries Conservation and Management Act**	▪ Attend Scoping Meeting	Completed	Completed
	▪ Provide comments during Scoping	Comment Period ended September 3, 2003	Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze water quality impacts; Federally-listed anadromous fish and/or marine mammal impacts, and impacts to Essential Fish Habitat.	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days

NOAA Fisheries (NMFS)			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Water Quality Technical Report	20 Business Days	30 Business Days
	▪ Review ~~and comment on~~ Biological Assessment + provide biological opinion	20 Business Days	30 Business Days ★
	▪ Review and comment on Biotic Communities Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Wetlands Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse impacts from the Preferred Alternative to water quality; Federally-listed anadromous fish and/or marine mammals; and to Essential Fish Habitat	20 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary

★ may require expanded consultation of 90 days

NOAA Fisheries (NMFS)			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Identify Stewardship opportunities ▪ Review and comment on the Department of the Army Permit Application	Throughout study period 15 Calendar Days	Throughout study period 30 Calendar Days

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Stan Gorski, Mid-Atlantic Field Office Supervisor — NOAA Fisheries (NMFS)

U.S. Army Corps of Engineers, Philadelphia District			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Section 404 of the Federal Water Pollution Control Act (1972), as amended by the Clean Water Act (1977 & 1987): 33 U.S.C. 1251-1376** (restore and maintain chemical, physical, and biological integrity of the Nation's waters through prevention, reduction, and elimination of pollution)	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
▪ **Sections 9 and 10 of the Rivers and Harbors Act of 1899; 33 U.S.C. 401 et seq., as amended and supplemented** (protection of navigable waters in the U.S.)	▪ Work toward consensus on study area, data requirements, and methodology to analyze water quality impacts, wetland impacts, floodplain impacts, and impacts on waterborne navigation.	10 Business Days	10 Business Days
• **Executive Order 11988, Floodplain Management,** (Avoidance of adverse impacts to floodplains and avoidance of support of floodplain development)	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
Fish and Wildlife Coordination Act (16 U.S.C. 661- 666c; 48 Stat. 401), as amended (provides authority for the U.S. Fish and Wildlife Service to review and comment on the effects on fish and wildlife of activities proposed to be undertaken or permitted by the Corps of Engineers)	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Develop Section 404 Basic Project Purpose	5 Business Days	5 Business Days

U.S. Army Corps of Engineers, Philadelphia District			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Water Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Wetlands Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Floodplain Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Waterborne Transportation Technical Report	20 Business Days	20 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Identify the Section 404 Least Environmentally Damaging Practicable Alternative	20 Business Days	30 Business Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days

U.S. Army Corps of Engineers, Philadelphia District			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse water quality impacts; wetland impacts, and floodplain impacts from the Preferred Alternative	20 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period
	▪ Process the Department of the Army Permit Application	45 Calendar Days	90 Calendar Days

9/30/03

Frank Cianfrani, Chief Regulatory Division

U.S Army Corps of Engineers - Philadelphia District

U.S. Fish & Wildlife Service – Pennsylvania Field Office			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Endangered Species Act of 1973, as amended: 16 U.S.C. 1031-1043** (conserve species of fish, wildlife and plants facing extinction) ▪ **Fish and Wildlife Coordination Act: 16 U.S.C. 661-666** (conservation, maintenance, and management of wildlife resources) ▪ **Migratory Bird Treaty Act: 16 U.S.C. 760c-760g** (protection of all migratory birds and their parts) ▪ **National Wildlife Refuge System Administration Act, as amended: 16 U.S.C. 668DD-668EE**	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze water quality impacts; Federally-listed endangered and threatened species impacts, migratory bird impacts; and wetland impacts.	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Concur in Section 404 Basic Project Purpose	5 Business Days	5 Business Days

U.S. Fish & Wildlife Service – Pennsylvania Field Office			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Water Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Biotic Communities Technical Report	20 Business Days	30 Business Days
	▪ Review and ~~comment~~ concur on Biological Assessment	20 Business Days	30 Business Days
	▪ Review and comment on Noise Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Wetlands Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Concur in the Section 404 Least Environmentally Damaging Practicable Alternative	15 Business Days	30 Business Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days

U.S. Fish & Wildlife Service – Pennsylvania Field Office			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse water quality impacts; ~~Federally-listed endangered and threatened species impacts;~~ and wetland impacts from the Preferred Alternative	20 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period
	▪ Review and comment on the Department of the Army Permit Application	15 Calendar Days	30 Calendar Days

9-30-03

David Densmore, Supervisor — U.S. Fish & Wildlife Service - Pennsylvania Field Office

U.S. Coast Guard – MSO/Group Philadelphia			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
Section 10 of the Rivers and Harbors Act of 1899; 33 U.S.C. 401 et seq., as amended and supplemented (protection of navigable waters in the U.S.) **Federal Water Pollution Control Act (1972), as amended by the Clean Water Act (1977 & 1987): 33 U.S.C. 1251-1376**	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Provide appropriate data, or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze waterborne transportation impacts	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Hazardous Materials Technical Report	20 Business Days	30 Business Days

PAK

U.S. Coast Guard – MSO/Group Philadelphia			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review and comment on Water Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Waterborne Transportation Technical Report	20 Business Days	20 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse waterborne transportation impacts from the Preferred Alternative	20 Business Days	20 Business Days
	▪ Review and comment on the Department of the Army Permit Application	15 Business Days	30 Business Days
		THESE SAY CALENDAR DAYS ON THE DRAFT MATRIX PAK	
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Pat a Keffler LCDR, USCG 9/30/03

LCDR Patrick Keffler, Supervisor, Port Operations — U.S. Coast Guard – MSO/Group Philadelphia

U.S. Environmental Protection Agency-Region III			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Sections 401, 402 and 404 of the Federal Water Pollution Control Act (1972), as amended by the Clean Water Act (1977 & 1987): 33 U.S.C. 1251-1376** (restore and maintain chemical, physical, and biological integrity of the Nation's waters through prevention, reduction, and elimination of pollution)	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
▪ **Clean Air Act (as amended), Transportation Conformity Rule: 23 U.S.C. 109(j) 42 U.S.C. 7521 (a)** (to insure that transportation plans, programs and projects conform to the State's air quality implementation plans)	▪ Work toward consensus on study area, data requirements, and methodology to analyze air quality impacts; water quality impacts; wetland impacts; hazardous material impacts, Environmental Justice concerns; and secondary and cumulative impacts	10 Business Days	10 Business Days
▪ **Safe Drinking Water Act: 42 U.S.C. 300F-300J-6** (ensure public health and welfare through safe drinking water)	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
▪ **Resource Conservation and Recovery Act of 1976 (RCRA), as amended: 42 U.S.C. 6901, et seq.** (protect human health and the environment; prohibit open dumping; manage solid wastes; regulate treatment, storage, transportation, and disposal of hazardous waste)	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Concur in Section 404 Basic Project Purpose	5 Business Days	5 Business Days

U.S. Environmental Protection Agency-Region III			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Environmental Justice Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Floodplain Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Noise Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Surface Transportation Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Waterborne Transportation Technical Report	20 Business Days	20 Business Days
	▪ Review and comment on Air Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Water Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Biological Assessment	20 Business Days	30 Business Days

U.S. Environmental Protection Agency-Region III			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review and comment on Biotic Communities Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Wetlands Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Hazardous Materials Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS and on FAA's Draft General Conformity/Public Review Determination	45 Calendar Days	45 Calendar Days
	▪ Concur in the Section 404 Least Environmentally Damaging Practicable Alternative	15 Business Days	30 Business Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse water quality impacts; wetland impacts; and hazardous material impacts from the Preferred Alternative	30 Business Days	30 Business Days
	▪ Review application materials submitted by the airport for a NPDES Permit for Stormwater Discharges Associated with Construction Activities (Chapter 102 Permit).	60 Business Days	90 Business Days

U.S. Environmental Protection Agency-Region III			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period
	▪ Coordinate with EPA Region II	Throughout study period	Throughout study period
	▪ Review and comment on the Department of the Army Permit Application	15 Calendar Days	30 Calendar Days

9/30/03

Stanley Laskowski, Director, Environmental Assessment & Innovation Division U.S. Environmental Protection Agency - Region III

National Park Service			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **PL 88-29, Outdoor Recreation Act of 1963 (Act of May 28, 1963; 77 Stat. 49; 16 U.S.C. 4601 through 4601-3), as amended through December 31, 1996, PL 104-333** (Interior Department's role as coordinator of all federal agencies for programs affecting the conservation and development of recreation resources)	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
▪ **PL 88-578, Land and Water Conservation Fund Act of 1965 (16 U.S.C. §§ 4601-4 through 4601-11, September 3, 1964, as amended 1965, 1968, 1970, 1972-1974, 1976-1981, 1983, 1986, 1987, 1990, 1991, 1993-1996.)** (NPS administered fund "to assist the States and federal agencies in meeting present and future outdoor recreation demands and needs of the American people.") A site that has been acquired, developed, or rehabilitated with this grant money cannot be converted to non-recreational use except where approved by the National Park Service and replaced with lands of equal market and recreational value.	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Environmental Justice Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Noise Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Historic, Architectural & Archaeological Resources Technical Report	20 Business Days	30 Business Days

National Park Service			
Some Relevant Statutory Authorities	**Roles/Responsibilities**	**Time Frames**	
		Runway 17-35	**CEP**
▪ **Public Law 90-543, National Trails System Act, 1968, as amended through PL107-325, December 4, 2002 (16 USC §§ 1241-1251, October 2, 1968, as amended1976, 1978-1980, 1983, 1984, 1986-1988, 1990, 1992, 1993 and 1996)** (Establishes a national system of recreational, scenic, and historic trails and prescribes the methods and standards for adding components to the system.)	▪ Review and comment on Surface Transportation Technical Report	20 Business Days	30 Business Days
▪ **Section 106 of the National Historic Preservation Act, as amended: 16 U.S.C. 470f**	▪ Review and comment on Waterborne Transportation Technical Report	20 Business Days	20 Business Days
▪ **Section 110 of the National Historic Preservation Act, as amended: 16 U.S.C. 470H-2** (protect National historic landmarks; record historic properties prior to demolition)	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse recreational, historic, cultural, and archaeological resource impacts from the Preferred Alternative	10 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Shaun Eyring, Manager, Resource Planning & Compliance National Park Service

Federal Highway Administration			
Some Relevant Statutory Authorities	**Roles/Responsibilities**	**Time Frames**	
		Runway 17-35	**CEP**
▪ 23 U.S.C.	▪ Provide comments during Scoping	Comment Period ended September 3, 2003	Comment Period ended September 3, 2003
	▪ Provide appropriate data or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze surface transportation impacts	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Surface Transportation Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days

Federal Highway Administration			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse surface transportation impacts from the Preferred Alternative	20 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

David W Cough 9/30/2003

David Cough Federal Highway Administration

Pennsylvania Department of Environmental Protection			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Pennsylvania Clean Streams Law** ▪ **Pennsylvania Wild Resources Conservation Act** ▪ **Pennsylvania Air Pollution Control Act** ▪ **Pennsylvania Flood Plain Management Act** ▪ **Stormwater Management Act** (These statutory authorities apply to preventing pollution and protecting endangered plants and animals and air and water resources from pollution and encroachment; reducing flooding hazards by controlling development in streams; and directing communities to adopt flood plain ordinances and prepare stormwater management plans and ordinances.) ▪ **Pennsylvania Dam Safety and Encroachments Act** ▪ **Pennsylvania Solid Waste Management Act** ▪ **Pennsylvania Land Recycling and Environmental Remediation Standards Act**	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze air quality impacts; water quality impacts; state-listed endangered and threatened species impacts, wetland impacts; floodplain impacts; hazardous material impacts; and waterborne transportation impacts.	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days

Pennsylvania Department of Environmental Protection			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Section 401 of the Federal Water Pollution Control Act (1972), as amended by the Clean Water Act (1977 & 1987)**	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Air Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Biological Assessment	20 Business Days	30 Business Days
	▪ Review and comment on Biotic Communities Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Water Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Wetlands Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Floodplain Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Hazardous Materials Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Review FAA's Draft General Conformity/Public Review Determination as to its effects on the Philadelphia 5-County Area State Implementation Plan	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days

Pennsylvania Department of Environmental Protection			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse impacts from the Preferred Alternative relating to water quality; endangered and threatened species, wetlands; floodplains, hazardous material, and waterborne transportation.	30 Business Days	30 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period
	▪ Provide information and feedback, in a Pre-application Process, to help FAA and the project team understand what will be required to submit permit application packages that are administratively complete and reviewable. The Pre-application Process can concurrently address two separate permit requirements: the Water Obstruction and Encroachment Permit (Chapter 105 Permit) and the NPDES Permit for Stormwater Discharges Associated with Construction Activities (Chapter 102 Permit).	Throughout study period	Throughout study period

Pennsylvania Department of Environmental Protection			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review application materials submitted by the airport for a Water Obstruction and Encroachment Permit (Chapter 105 Permit), and finalize the permit as appropriate.	75 Calendar Days (To be extended if public hearing is required)	90-130 Calendar Days (to be refined by PADEP and FAA later)
	▪ Determine consistency under the Coastal Zone Management Act of 1972, as amended.	10 Business Days	20 Business Days
	▪ Review application materials submitted by the airport for a NPDES Permit for Stormwater Discharges Associated with Construction Activities (Chapter 102 Permit), and finalize the permit as appropriate.	60 Calendar Days	90 Calendar Days

David Burke 9.30.03

David Burke, Water Quality Specialist — Pennsylvania Department of Environmental Protection

PennDOT – District 6			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
• **Act 120 of 1970** (PennDOT responsible for the design, construction and maintenance of state highways, bridges, and transportation facilities in Pennsylvania)	▪ Provide comments during Scoping	Comment Period ended September 3, 2003	Comment Period ended September 3, 2003
	▪ Provide appropriate data or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze surface transportation impacts	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Surface Transportation Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days

PennDOT - District 6			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse surface transportation impacts from the Preferred Alternative	20 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Vito Genua 9-30-03

Vito Genua, Assistant District Executive - Design
Pennsylvania Department of Transportation - District 6

Interagency Stewardship and Streamlining Agreement for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement and Permitting and the Capacity Enhancement Program Environmental Impact Statement and Permitting

RUNWAY 17-35

Pennsylvania Historical & Museum Commission			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Section 106 of the National Historic Preservation Act, as amended: 16 U.S.C. 470f** ▪ **Section 110 of the National Historic Preservation Act, as amended: 16 U.S.C. 470H-2** (protect National historic landmarks; record historic properties prior to demolition) ▪ **CFR 800, Protection Of Historic And Cultural Properties** (regulations to assure that effects on historic and archeological resources are considered in the development of Federal undertakings)	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Make available (Provide) appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	10 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze cultural and archaeological resources ~~impacts on or~~ Determination of eligibility for the National Register of Historic Places and/or state or local historical significance.	10 Business Days 30 days *	10 Business Days 30 days *
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days

(* this could possibly be a shorter time)

(Note we cannot accept electronic submissions for eligibility or effect)

Pennsylvania Historical & Museum Commission			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Historic, Architectural & Archaeological Resources Effects Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse historic, cultural, and archaeological resource impacts from the Preferred Alternative	10 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Susan M. Zacher 9/30/03

Susan Zacher Pennsylvania Historical & Museum Commission

Pennsylvania Fish & Boat Commission			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Pennsylvania Fish and Boat Code** (This statutory authority applies to reptiles, amphibians, fishes and aquatic invertebrate species of special concern.)	▪ Provide comments during Scoping	Comment Period ended September 3, 2003	Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze aquatic resource impacts.	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Water Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Biological Assessment	20 Business Days	30 Business Days

Pennsylvania Fish & Boat Commission			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review and comment on Biotic Communities Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Waterborne Transportation Technical Report	20 Business Days	20 Business Days
	▪ Review and comment on Wetlands Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse aquatic resource impacts from the Preferred Alternative	20 Business Days	20 Business Days
	▪ Review and comment on the Department of the Army Permit Application	15 Business Days	30 Business Days
	▪ Review application materials submitted by the airport for a Water Obstruction and Encroachment Permit (Chapter 105 Permit), and finalize the permit as appropriate.	60 Business Days	90 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Pennsylvania Fish & Boat Commission			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP

David S. Spotts 9/30/03
David Spotts, Chief, Watershed Analysis Section
Pennsylvania Fish & Boat Commission

Pennsylvania Game Commission			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Pennsylvania Game and Wildlife Code** (This statutory authority applies to bird and mammal species of special concern and their critical or unique wildlife habitat.)	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze state-listed terrestrial endangered and threatened species impacts and other terrestrial species impacts.	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Concur in Section 404 Basic Project Purpose	5 Business Days	5 Business Days
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days

Pennsylvania Game Commission			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Work with FAA on avoiding and minimizing impacts to streams, wetlands, terrestrial resources and state-listed birds and mammals.	10 Business Days	20 Business Days
	▪ Review and comment on Biological Assessment	20 Business Days	30 Business Days
	▪ Review and comment on Biotic Communities Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Noise Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Wetlands Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on mitigating impacts from the Preferred Alternative to streams, wetlands, terrestrial resources and state-listed birds and mammals.	10 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Kevin Mixon 9/30/03

Kevin Mixon, Environmental Planning & Habitat Protection Pennsylvania Game Commission

New Jersey Department of Environmental Protection			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **New Jersey Noise Control Act of 1971** ▪ **New Jersey Air Pollution Control Act** (1954)	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze air quality impacts and noise impacts.	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days

New Jersey Department of Environmental Protection			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Biological Assessment	20 Business Days	30 Business Days
	▪ Review and comment on Biotic Communities Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Air Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Noise Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse environmental impacts from the Preferred Alternative	20 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Kenneth C. Koschek

Ken Koschek New Jersey Department of Environmental Protection

New Jersey State Historic Preservation Office			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Section 106 of the National Historic Preservation Act, as amended: 16 U.S.C. 470f**	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
▪ **Section 110 of the National Historic Preservation Act, as amended: 16 U.S.C. 470H-2** (protect National historic landmarks; record historic properties prior to demolition)	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	10 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze cultural and archaeological resource impacts on or eligible for the National Register of Historic Places and/or state or local historical significance.	10 Business Days	10 Business Days
▪ **CFR 800, Protection Of Historic And Cultural Properties** (regulations to assure that effects on historic and archeological resources are considered in the development of Federal undertakings)	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days

RUNWAY 17-35

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New Jersey State Historic Preservation Office			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review and comment on Historic, Architectural & Archaeological Resources Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse historic, cultural, and archaeological resource impacts from the Preferred Alternative	10 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

Dorothy J. Guzzo 11/12/03

Dorothy Guzzo, Deputy State Historic Preservation Specialist New Jersey State Historic Preservation Office

Delaware State Historic Preservation Office			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Section 106 of the National Historic Preservation Act, as amended: 16 U.S.C. 470f**	▪ Attend Scoping Meeting	Completed	Completed
	▪ Provide comments during Scoping	Comment Period ended September 3, 2003	Comment Period ended September 3, 2003
▪ **Section 110 of the National Historic Preservation Act, as amended: 16 U.S.C. 470H-2** (protect National historic landmarks; record historic properties prior to demolition)	▪ ~~Provide~~ Make available appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	10 Business Days
▪ 36 **CFR 800, Protection Of Historic And Cultural Properties** (regulations implementing Section 106 to assure that effects on historic and archeological resources are considered in the development of Federal undertakings)	▪ Work toward consensus on study area, data requirements, and methodology to analyze cultural and archaeological resource impacts on or eligible for the National Register of Historic Places and/or state or local historical significance.	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Purpose and Need Technical Report	10 Business Days	20 Business Days
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable,	5 Business Days	5 Business Days

Delaware State Historic Preservation Office			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	possible and prudent alternatives; and alternatives retained for further evaluation		
	▪ Review and comment on Historic, Architectural & Archaeological Resources Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse historic, cultural, and archaeological resource impacts from the Preferred Alternative	10 Business Days	20 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period

9/30/2003

Dan Griffith, State Historic Preservation Officer

Delaware State Historic Preservation Office

Delaware Department of Natural Resources and Environmental Control			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
▪ **Coastal Zone Management Act of 1972: 16 U.S.C. 145 et. seq.** (preserve, protect, develop, and (where possible) restore and enhance resources of the coastal zone)	▪ Attend Scoping Meeting ▪ Provide comments during Scoping	Completed Comment Period ended September 3, 2003	Completed Comment Period ended September 3, 2003
	▪ Provide appropriate data, identifications, resources, or studies completed in the study area	5 Business Days	5 Business Days
	▪ Work toward consensus on study area, data requirements, and methodology to analyze water quality impacts; endangered and threatened species impacts, wetland impacts; floodplain impacts, hazardous material impacts and waterborne transportation impacts, as they relate to the Commonwealth's approved Coastal Zone Management Plan.	10 Business Days	10 Business Days
	▪ Attend interagency review or field meetings	Periodically throughout study period	Periodically throughout study period
	▪ Review and comment on Purpose and Need Technical Report ▪	10 Business Days	20 Business Days

Delaware Department of Natural Resources and Environmental Control			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work toward consensus on Project Purpose and Need	5 Business Days	5 Business Days
	▪ Review and comment on Alternatives Analysis Technical Report	15 Business Days	20 Business Days
	▪ Work toward consensus on range of alternatives; criteria for determining reasonable, possible and prudent alternatives; and alternatives retained for further evaluation	5 Business Days	5 Business Days
	▪ Review and comment on Biological Assessment	20 Business Days	30 Business Days
	▪ Review and comment on Water Quality Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Wetlands Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Floodplain Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Hazardous Materials Technical Report	20 Business Days	30 Business Days
	▪ Review and comment on Waterborne Transportation Technical Report	20 Business Days	20 Business Days
	▪ Review and comment on the Draft EIS	45 Calendar Days	45 Calendar Days
	▪ Provide input to FAA on selection of the Preferred Alternative	15 Business Days	30 Business Days

Interagency Stewardship and Streamlining Agreement for the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement and Permitting and the Capacity Enhancement Program Environmental Impact Statement and Permitting

Delaware Department of Natural Resources and Environmental Control			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Work with FAA on avoiding, minimizing, or mitigating adverse impacts from the Preferred Alternative relating to water quality; endangered and threatened species, wetlands; floodplains, hazardous material, and waterborne transportation, as they relate to the Commonwealth's approved Coastal Zone Management Plan	30 Business Days	30 Business Days
	▪ Participate in problem solving and issue resolution process	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Identify Stewardship opportunities	Throughout study period	Throughout study period
FEDERAL CONSISTENCY PROJECTS MUST BE PLACED ON PUBLIC	▪ Determine consistency under the Coastal Zone Management Act of 1972, as amended.	10 Business Days	20 Business Days

NOTICE. WE WILL TRY TO KEEP THESE TIMEFRAMES AS CLOSE AS POSSIBLE. [signature] 9/30/03.

~~David Carter,~~ Program Manager II
TRICIA COSBEY, ENVIRONMENTAL SCIENTIST II

Delaware Department of Natural Resources and Environmental Control, Delaware Coastal Programs

City of Philadelphia			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Review and comment on all EIS-related studies, reports, and permit applications, as needed	5 to 10 Business Days	15 to 20 Business Days
	▪ Assist in cooperation of City regulatory agencies, as needed.	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Fulfill requirements of the Memorandum of Understanding between FAA and the City including, but not limited to, contracting and procurement responsibilities	Throughout study period	Throughout study period
	▪ Attend interagency review or field meetings	Throughout study period, if necessary	Throughout study period, if necessary
	▪ Assist in identifying and obtaining appropriate City permits	5 to 20 Business Days	5 to 30 Business Days
	▪ Facilitate access to Airport and adjacent properties	Throughout study period	Throughout study period
	▪ Facilitate access to existing environmental and historical records of City agencies and consultants	Throughout study period	Throughout study period
	▪ Meet NEPA responsibilities of Federal-City grant agreements	Throughout study period	Throughout study period
	▪ Attend Streamlining, Scoping, and related planning meetings	Throughout study period	Throughout study period
	▪ Review and comment on Draft EIS	20 Business Days	20 Business Days

City of Philadelphia			
Some Relevant Statutory Authorities	Roles/Responsibilities	Time Frames	
		Runway 17-35	CEP
	▪ Participate in problem solving and issue resolution process ▪ Identify Stewardship opportunities	Throughout study period, if necessary Throughout study period	Throughout study period, if necessary Throughout study period

9-30-03

Charles Isdell, Director of Aviation City of Philadelphia

RUNWAY 17-35

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Philadelphia International Airport
Runway 17-35 Extension Project
Environmental Impact Statement

AGENCY CONSENSUS/REVIEW FORM

Agency: ______________________

Name: ______________________

Signature: ______________________ Date: __________

Consensus Point ______________________
or
Agency Review of: ______________________

Please check one:

☐ My agency concurs with the findings presented in this report as written

☐ My agency concurs with the findings presented in this report, and offers the following comments[1]:

☐ My agency concurs with the findings presented in this report, provided the following comments are addressed[2]:

☐ My signature indicates that my agency has been provided an opportunity to review and comment on this report and that there are no major issues within the jurisdiction or authority of this agency, at this phase of the project. Concurrence with this report does not bias or predetermine any future actions by this agency.

Please return to Susan McDonald by (date) through email (smcdonald@faa.gov) or fax (717-730-2838

[1] Minor comments or suggestions for clarification/enhancement

[2] Comments that must be addressed for accuracy of the report or analysis

Statement of Key Points/Guiding Principles for an Interagency Streamlining Agreement for the Philadelphia International Airport Environmental Impact Statements and Permitting

We the undersigned agree to commit "Streamlining Champions," senior representatives with decision-making power for our agencies, to collaborate on an *Interagency Streamlining Agreement for the Philadelphia International Airport Environmental Impact Statements and Permitting* that will:

1. Commit to identify environmental agency priorities and explore opportunities to ensure that the projects incorporate environmental protection and stewardship into the project.
2. Identify the individual roles and responsibilities and statutory authority of each agency that is a party to the Agreement.
3. Commit each agency to mutually respect the mission, technical expertise, and statutory authority of the other agencies and to help each other fulfill their mandates.
4. Identify mutually agreed upon time frames within which each agency will fulfill their roles and responsibilities on the project.
5. Include a method for understandings and agreements reached along the way (consensus points) to be documented, with provisions, where appropriate, for signing by all participants. These consensus points include, but are not limited to, study area boundaries, criteria for selection of alternatives, data and analysis requirements, and mitigation.
6. Include a provision for ensuring that the consensus points will not be revisited, unless there is substantive information or substantial changes that warrants reconsideration.
7. Include a mutually acceptable, collaborative problem solving and issue resolution process to resolve issues among agencies that are parties to the Agreement.

Furthermore, the "Streamlining Champions," will expedite the review of the *Philadelphia International Airport Capacity Enhancement Program Environmental Impact Statement* and the *Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement*, as well as the permitting decisions and similar decisions for each project.

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RUNWAY 17-35 PHLEIS

Statement of Key Points/Guiding Principles for an Interagency Streamlining Agreement for the Philadelphia International Airport Environmental Impact Statements and Permitting

We the undersigned agree to commit "Streamlining Champions," senior representatives with decision-making power for our agencies, to collaborate on an *Interagency Streamlining Agreement for the Philadelphia International Airport Environmental Impact Statements and Permitting*. Furthermore, the Streamlining Champions will expedite the review of the *Philadelphia International Airport Capacity Enhancement Program Environmental Impact Statement and the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement*, as well as the permitting and similar ~~approvals~~ for each project.
decisions decisions

Woodie Woodward, Associate Administrator for Airports	Federal Aviation Administration
Don Klima, Director Office of Federal Agency Programs	Advisory Council on Historic Preservation
David Cough, Director of Operations	Federal Highway Administration - Pennsylvania Division
Peter Colosi, Asst. Regional Administrator Chris Mantzaris	National Marine Fisheries Service - Northeast Region
Roy Denmark, Chief Operations Division	U.S Army Corps of Engineers - Philadelphia District
Gary Stolz, Acting Manager John Heinz National Wildlife Refuge	U.S. Fish & Wildlife Service - Northeast Region
LCDR Patrick Keffler	U.S. Coast Guard
Michael Chezik, Regional Environmental Administrator Office of Environmental Compliance	U.S. Department of Interior - Philadelphia Region
Barbara D'Angelo, Deputy Director, EAID	U.S. Environmental Protection Agency - Region III

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Statement of Key Points/Guiding Principles for an Interagency Streamlining Agreement for the Philadelphia International Airport Environmental Impact Statements and Permitting

RUNWAY 17-35 PHLEIS

We the undersigned agree to commit "Streamlining Champions," senior representatives with decision-making power for our agencies, to collaborate on an *Interagency Streamlining Agreement for the Philadelphia International Airport Environmental Impact Statements and Permitting*. Furthermore, the Streamlining Champions will expedite the review of the *Philadelphia International Airport Capacity Enhancement Program Environmental Impact Statement and the Philadelphia International Airport Runway 17-35 Extension Project Environmental Impact Statement*, as well as the permitting decisions and similar ~~approvals~~ decisions for each project.

Eric Conrad, Deputy Secretary Field Operations	Pennsylvania Department of Environmental Protection
Vito Genua, Assistant District Executive - Design	Pennsylvania Department of Transportation - District 6
David Spotts, Chief, Watershed Analysis Section	Pennsylvania Fish & Boat Commission
Doug Killough, Southeast Region Director	Pennsylvania Game Commission
Joseph Corleto, Environmental Specialist	New Jersey Department of Environmental Protection
Dorothy Guzzo, Deputy State Historic Preservation ~~Specialist~~	New Jersey Historic ~~Commission~~ Pres. Office
Dan Griffith, State Historic Preservation Officer	Delaware Division of Historical & Cultural Affairs
Mark DelVecchio, Acting Director	Delaware Coastal Management Program