



GATEWAY NATIONAL RECREATION AREA

Jamaica Bay Unit
Development of Outdoor Athletic Fields
And
Food Service Facility
Environmental Assessment
- DRAFT -

April 25, 2006

**U.S. Department of the Interior
National Park Service
Gateway National Recreation Area
Jamaica Bay Unit
New York City, New York**

**Development of Outdoor Athletic Fields And
Food Service Facility
Environmental Assessment
April 25, 2006**

Proposed Action: Centered geographically in the highly developed urban environment of New York City, Gateway National Recreation Area (Gateway NRA) is administered by the National Park Service (NPS) as a recreational, cultural and natural resource. The NPS is proposing to authorize the development of two adjacent outdoor playing fields north of Hangars 7 and 8 at Floyd Bennett Field (FBF) within the Jamaica Bay Unit of Gateway NRA. The new fields would consist of two full size artificial turf football/soccer/lacrosse fields as well as a running/walking track around the perimeter of the fields. In addition, authorization would be given for the renovation of an existing building at the north end of the fields to provide restroom facilities, and renovation of Building 129 in the southeast portion of FBF to function as a food service facility.

Currently, Aviator Sports and Recreation, Inc., a NPS concessionaire, is transforming Hangars 5, 6, 7, and 8 (north of the Ryan Visitor Center) and the tarmac area between these hangars into an indoor sports complex that includes two ice rinks for hockey and skating, two indoor soccer fields, a basketball court and a gymnastics training area. The addition of the outdoor fields at this site would complement the indoor sports complex that is scheduled to open for public use in September 2006. Aviator Sports and Recreation also desires to rehabilitate a former Job Corps cafeteria to serve as a food preparation area in connection with food services that will be available within the complex currently under construction and to provide a dining facility for their employees.

For Further Information Contact: Superintendent, Jamaica Bay Unit
Gateway NRA
Building 69, Floyd Bennett Field
Brooklyn, NY 11234

Note to Reviewers and Respondents:

If you wish to comment on this Outdoor Playing Field and Food Service Facility Environmental Assessment you may mail comments by May 25, 2006 to the name and address below or you may post them electronically at <http://parkplanning.nps.gov>. Please note that names and addresses of people who comment become part of the public record. If you wish for us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations, businesses, and individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Superintendent
Jamaica Bay Unit
Building 69
Floyd Bennett Field
Brooklyn, NY 11234

CONTENTS

Introduction.....	1
Description of the Park and Study Area	1
Gateway National Recreation Area.....	1
Jamaica Bay Unit	2
Purpose Of and Need For Action	6
Previous and Related Planning Studies	6
Scoping	7
Planning Issues and Concerns	7
Impact Topics Considered.....	7
Impact Topics Evaluated.....	8
Impact Topics Dismissed from Further Analysis	9
Alternatives	15
Alternatives Considered	15
Alternative 1 — No Action Alternative	15
Alternative 2 – Develop Outdoor Athletic Fields at North Hangar Area/Building 129 Rehabilitation (Proposed Action)	15
Mitigation Measures included in the Action Alternatives.....	18
Alternatives Considered but Eliminated.....	18
Community Garden Alternative.....	19
Building 129 Alternative.....	19
Alternative Comparison	21
Environmentally Preferred Alternative	22
Environmental Analysis: Affected Environment and Environmental Consequences.....	23
Methodology for Assessing Impacts	23
Methodology for Cumulative Impacts Analysis	24
Methodology for Impairment Analysis.....	24
Cultural Resources	25
Affected Environment.....	25
Environmental Consequences	28
Wildlife and Wildlife Habitat	34
Affected Environment.....	34
Environmental Consequences	37
Soils and Topography.....	39
Affected Environment.....	39
Environmental Consequences	40
Lightscapes	41
Affected Environment.....	41
Environmental Consequences	42
Visitor Use and Experience	45
Affected Environment.....	45
Environmental Consequences	46

Operations	47
Affected Environment.....	47
Environmental Consequences	48
Cumulative Impact Analysis	49
Methodology	49
Cultural Resources	51
Natural and Physical Resources	52
Visitor Use and Experience	54
Operations	55
Relationship between Short-Term Uses and Long-Term Impacts	55
Conclusion.....	56
Consultation and Coordination	57
Agencies and Organizations	57
Federal Agencies.....	57
State Agencies.....	57
City Agencies.....	57
Bibliography	58
List of Preparers	60
Appendix A: Consultation	61

Figures

Figure 1: Project Location	4
Figure 2: Alternative Locations	5
Figure 3: Alternative 2 – Proposed Action Site Plan	17
Figure 4: Contributing Historic Resources	26

Tables

Table 1: Comparative Summary of Environmental Impacts.....	21
Table 2: List of Classified Structures (significant cultural resources) at Floyd Bennett Field	25
Table 3: Select mammals, amphibians, reptiles & birds that may be within/adjacent to Alternative 2.....	34
Table 4: Selected migratory birds known to occur within the Jamaica Bay Unit.	36

INTRODUCTION

Gateway National Recreation Area (Gateway NRA) in New York City was authorized by Congress in October 1972 (Public Law 92-592, 85 Stat. 1308) as part of an effort to bring the national park system and its ethic of preserving and protecting outstanding resources closer to major urban areas. Gateway NRA's mission statement is based on its mandated purpose and its primary significance:

Gateway encompasses the largest collection of natural systems, wildlife habitats, historic resources, and recreational opportunities in the New York City/New Jersey metropolitan area. We maintain, improve, and make these resources and opportunities available to the public for inspiration, education, and recreation. These areas include numerous sites of critical natural and cultural importance: to the health of local ecosystems; to the life of migratory and native species; and to the military, navigational, and aviation history of the region and the nation, especially in the context of coastal defenses of New York Harbor. The responsibilities and attendant activities are inescapably shaped by the intense urban cultural and value systems of the region. The park in turn endeavors to incorporate the NPS conservation ethic into those values. Established with the express purpose of bringing the "National Park Service Experience" to the urban population, we are truly the gateway to all National Parks for millions of people.

Gateway NRA's three units, Staten Island, Sandy Hook, and Jamaica Bay, have been the subject of numerous, large-scale planning efforts by the National Park Service (NPS). Over the last three years, Gateway NRA has received an average 8.5 million visitors annually. These visitors come from the communities immediately surrounding the park, from other parts of the city, areas throughout the region, from throughout the United States, and from foreign countries. These guests represent the diverse socioeconomic, racial, cultural, and religious communities that inhabit the metropolitan New York City area. In an effort to improve visitor services for this diverse visitor population, the NPS is developing plans for a number of new opportunities and facilities throughout Gateway. New opportunities and facilities include the future addition of the former Pennsylvania and Fountain Avenue landfills as undeveloped areas of the Park; planned transportation improvements; the development of an indoor sports and recreation complex through the rehabilitation and adaptive use of Hangars 5, 6, 7, and 8 at Floyd Bennett Field (FBF), currently under construction; and the planned development of outdoor athletic fields adjacent to the indoor sports and recreation complex (the subject of this Environmental Assessment). FBF is located within the Jamaica Bay Unit of Gateway NRA. A general description of Gateway NRA, the Jamaica Bay Unit, and the existing/proposed facilities at FBF are provided in the following section.

DESCRIPTION OF THE PARK AND STUDY AREA

GATEWAY NATIONAL RECREATION AREA

Sparked by environmental, fitness and recreational movements of the 1960's, National Recreation Areas were designed and developed by the NPS to provide space for a variety of recreational activities, while protecting natural and cultural resources. Established in 1972, Gateway NRA consists of approximately 26,645 acres of land previously owned by the states of New York and New Jersey, as well as Army and Navy installations, and private land owners. It includes a mix of developed and undeveloped land, including: nationally significant historic and cultural resources relating to aviation, military, navigational and recreation history; and a wide range of natural resources such as estuaries, beaches, dunes, wetlands, forests, and a wildlife refuge, and their attendant flora and fauna, much of which has also been determined

to be of national significance. The park offers urban dwellers opportunities for environmental, historical, educational, and recreational experiences that are not available in other parts of New York City.

As a “gateway” to New York City, Gateway NRA is located at the southern end of New York Harbor and consists of three administrative units. The Sandy Hook Unit, located in Monmouth County, New Jersey, is situated on the western side of the outer harbor; the Staten Island Unit, which stretches between Raritan Bay and the Verrazano Narrows, is positioned at the northern end of the outer harbor; and the Jamaica Bay Unit, located in the Boroughs of Brooklyn and Queens in New York City, is on the eastern side of the outer harbor (Figure 1). The park can be accessed from the water by ferries and other boats; by air at Newark Liberty International, La Guardia, or John F. Kennedy (JFK) Airports; or by land on the New Jersey Turnpike (Interstate 95), the Garden State Parkway, New Jersey State Route 36, New York State Route 27 (Belt Parkway), and Interstates 78, 495, and 678.

JAMAICA BAY UNIT

The Jamaica Bay Unit is located along the southwestern tip of Long Island, and includes the Bay, the Jamaica Bay Wildlife Refuge, and the surrounding acres of land (Figure 1). It is bound by the Belt Parkway to the north, JFK Airport to the east, Sheepshead Bay to the west, and the Atlantic Ocean to the south. In addition to the Bay and the Wildlife Refuge, other well known sites contained within the park include: Floyd Bennett Field, Jacob Riis Park, Fort Tilden, Canarsie Pier, Breezy Point, Plumb Beach, and Bergen Beach. Tours and ranger-led talks about the park’s natural and cultural features are available throughout the year. Other visitor activities include ocean swimming, nature walks, sailing, bicycling, bird watching, gardening, camping, astronomy, and fishing. The Jamaica Bay Unit also hosts a wide range of team sports, cultural activities, and ethnic festivals.

Floyd Bennett Field

FBF was the first commercial airport in New York City and later became an important World War II military airfield (Naval Air Station New York). . Floyd Bennett Field Historic District was placed on the National Register of Historic Places in 1980 and currently includes the buildings and structures that contribute to the significance of the field when it was operating as a municipal airport. When the NPS was granted control of the airfield in 1972, it sought to preserve this history while providing a wide variety of educational, recreational, and cultural activities. The total land area of FBF covers more than 1,000 acres along Flatbush Avenue on the northern shore of the Rockaway Inlet.

Most of the NPS-managed area of FBF east of Flatbush is presently occupied by the historic airfield, its hangars and other structures; the North Forty Natural Area; the Grassland Management Areas; and a permit camping area. Used and unused buildings of various ages are also located in the southeastern portion of FBF, including those used for park administration and Park Police activities, and environmental studies (the Gateway Environmental Study Center and Ecology Village). Unused buildings include a former military barracks and a Job Corps dormitory and cafeteria. In addition, the New York Police Department (NYPD), the New York City Department of Sanitation (NYCDOS), and the United States Marine Corps (USMC) utilize the eastern edge of FBF, along Jamaica Bay, for operations independent of the NPS (Figure 2). There is also an Armed Forces Reserve Center and a Federal Aviation Administration (FAA) Doppler radar site on the field. The FBF area west of Flatbush Avenue is shared by two concessionaires who run a golf driving range and a marina.

Current visitor activities at FBF include camping in designated areas (e.g., Camp Marshhawk); hiking in the North Forty; radio-controlled airplanes, land sailing, and bicycling along the historic runways; and bird watching in the maintained Grassland Management Areas. Additional recreation and educational programs are offered in some of the historic structures, such as the Ryan Visitor Center, which once served as the terminal and air traffic control tower of the former airport.

Currently, Aviator Sports and Recreation, Inc (Aviator S&R), a NPS concessionaire, is transforming Hangars 5, 6, 7, and 8 (north of the Ryan Visitor Center) and the tarmac area between these hangars (hereafter referred to as the North Hangar Area, or NHA) into an indoor sports complex that includes two ice rinks for hockey and skating, two indoor soccer fields, a basketball court, and a gymnastics training area. In addition to the sports facilities, the NHA will house a café and a sports bar. Hereafter, this facility is referred to as the FBF Aviator Sports Complex. This rehabilitation and adaptive use of these hangars in conjunction with private sector involvement is consistent with the strategy outlined in the *Gateway National Recreation Area General Management Plan/ Final Environmental Statement* (GMP)(NPS 1979) and the *Development Concept Plan Environmental Assessment* prepared for FBF that evaluated alternative uses of existing resources at FBF for recreation and other visitor services (NPS 1983) and the environmental impact of such uses.

To maximize the recreation opportunities that can be provided through the FBF Aviator Sports Complex and provide services to employees and users of the complex, three additional components have been added that were not previously evaluated relative to NEPA compliance:

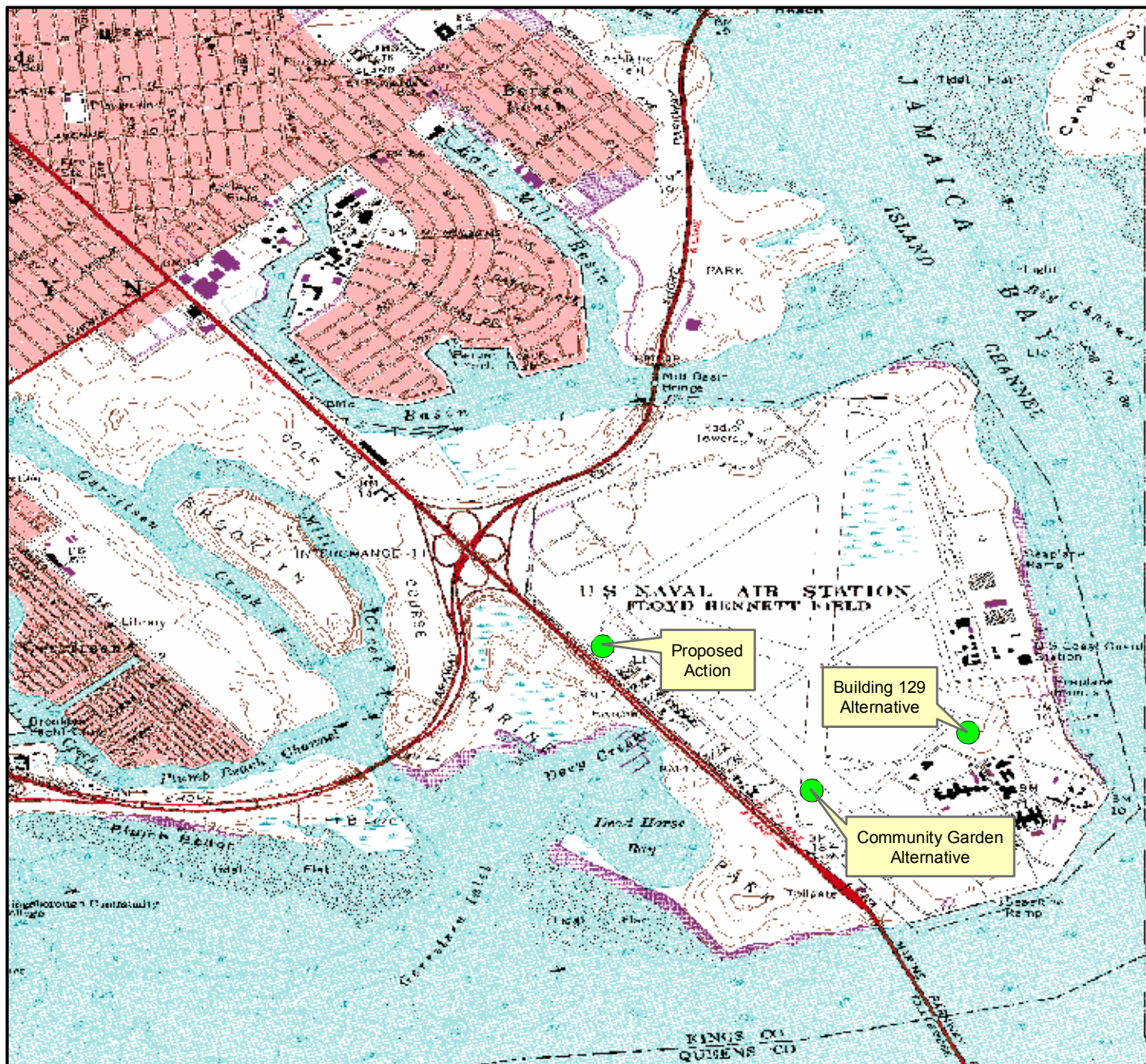
1. Rehabilitation of an area of approximately 10.1 acres of tarmac north of Hangars 7 and 8 to accommodate two outdoor athletic fields;
2. Rehabilitation of an existing pumping station within the tarmac area to serve as a restroom facility; and

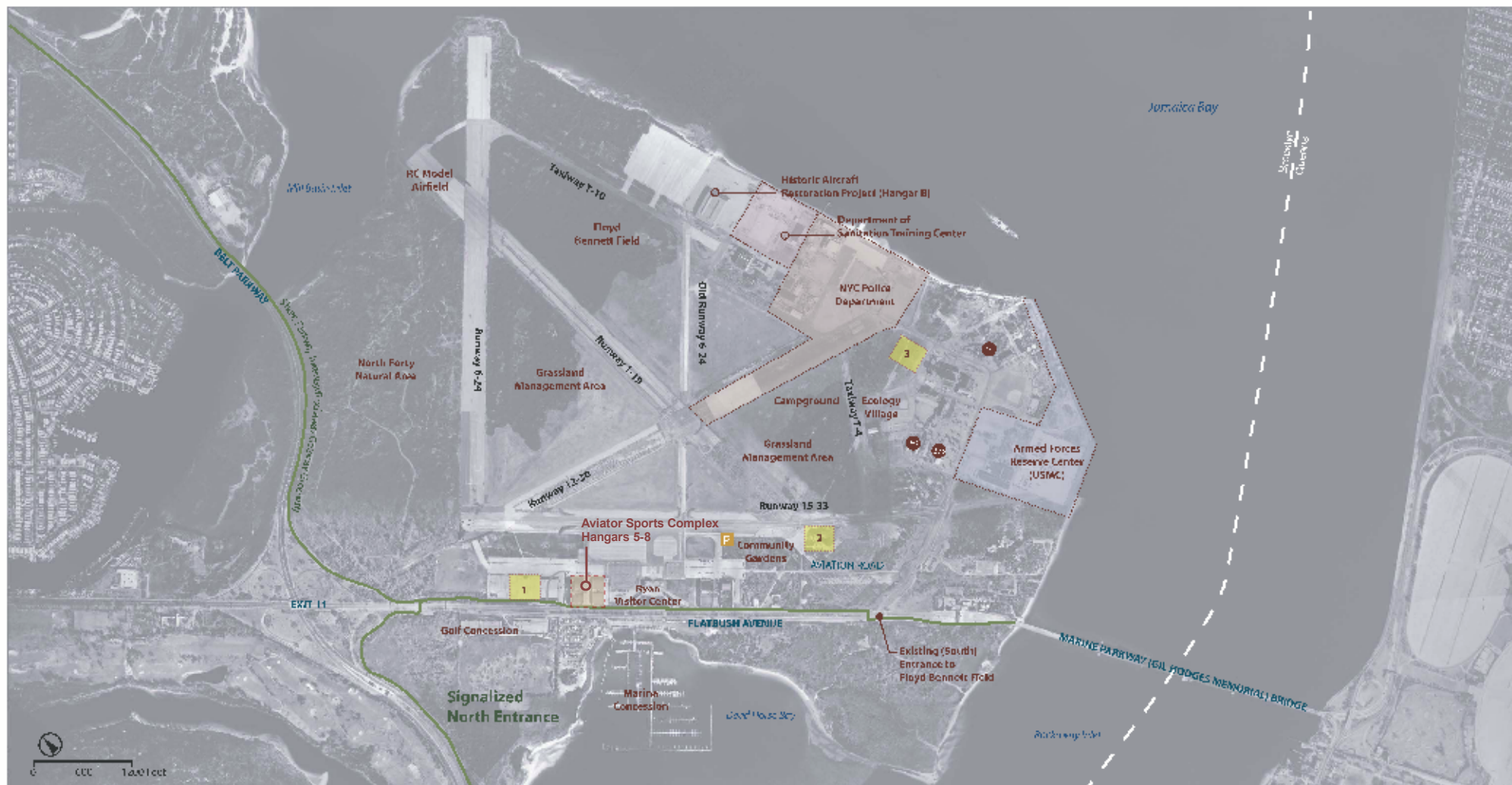
Rehabilitation of a former Job Corps cafeteria (Building 129) to serve as a food preparation area to support the restaurants in the FBF Aviator Sports Complex and as a dining facility for Aviator S&R employees.

These additional rehabilitations of currently unused or underutilized facilities at FBF as components of the overall Aviator S&R commercial operations at FBF represent the Proposed Action evaluated in this EA.

Figure 1: Project Location

Gateway National Recreation Area - New York / New Jersey
Jamaica Bay Unit, Floyd Bennett Field, New York City





- | | |
|--------------------------------|--|
| 1 Proposed Action | PA Park Administration |
| 2 Community Garden Alternative | GES Gateway Environmental Study Center |
| 3 Building 129 Alternative | USP US Park Police |

GATEWAY

NATIONAL RECREATION AREA

Floyd Bennett Field

Gateway Sites: Jamaica Bay Unit
Floyd Bennett Field

Figure 2: Alternative Locations

PURPOSE OF AND NEED FOR ACTION

The purpose of the proposed action is to construct outdoor recreation facilities at FBF and thereby increase the recreational opportunities available to New York City residents, as well as other Park visitors; and to provide an onsite facility for food preparation and employee dining in association with the overall operation of the FBF Aviator Sports Complex. Areas for outdoor recreation are lacking in the urban community; their addition to FBF would be an innovative use of park space and would expand park services. As the development of the adaptive use of the North Hangar Area has progressed with the ongoing efforts of Aviator S&R, the addition of an outdoor playing field amenity has become paramount to the quality of experience for users of the FBF Aviator Sports Complex and the Aviator S&R business goals for the project. The rehabilitation of the former Job Corps cafeteria to serve as a food preparation area in connection with food services that will be available within the FBF Aviator Sports Complex currently under development will use a suitable existing facility for the benefit of park visitors, as well as Aviator S&R employees. The FBF Aviator Sports Complex will include a café on the ground floor and a sports bar/restaurant on the mezzanine level. There is not sufficient area for on-site food preparation within the FBF Aviator Sports Complex; therefore an offsite location within FBF is needed to support these integral components of the operation.

PREVIOUS AND RELATED PLANNING STUDIES

Several previous plans and studies anticipate the development of intensive recreational facilities at FBF, such as the proposed action. They include the *Gateway National Recreation Area General Management Plan/Final Environmental Statement*, the *Development Concept Plan Environmental Assessment*, the *Floyd Bennett Field Traffic Circulation Study*, and the *Jamaica Bay Transportation Studies Development Concept Plan/Environmental Assessment/Assessment of Effect*.

The *Gateway National Recreation Area General Management Plan/ Final Environmental Statement* (GMP)(NPS 1979) was completed seven years after the creation of the park to provide the NPS with a framework for visitor use and resource management. The GMP states that the interior space within the hangars at FBF should be part of a recreational/educational/cultural complex where the interior space in the hangars and attendant buildings as well as adjacent open space on and near the runways will be adaptively used and rehabilitated.

The *Development Concept Plan Environmental Assessment* (DCP)(NPS 1983) was prepared to evaluate plans for the implementation of concepts identified in the GMP given the budget constraints imposed on the park. The DCP identified potential partnerships with private sector and governmental and nongovernmental institutions and evaluated various recreational opportunities. The goal of the DCP was to identify implementable options to utilize park resources and provide enhanced recreational opportunities to park visitors. The option of using the NHA for indoor recreational facilities was evaluated in the DCP. The proposed action is complementary to alternatives evaluated in the DCP.

The *Floyd Bennett Field Traffic Circulation Study* (NPS 2003) represents recent efforts by the NPS to address circulation and access issues at FBF. The study identified several problems with access, circulation, and safety and provided guidance to improve these issues while maintaining the park like atmosphere. The proposed action is consistent with the findings of this study.

The *Jamaica Bay Transportation Studies Development Concept Plan/Environmental Assessment/Assessment of Effect* (NPS 2006) evaluated alternatives to: 1) provide safe and efficient travel to and circulation around the different components of the Jamaica Bay Unit, considering planned growth and developments; 2) improve transportation operating conditions; and 3) improve the overall visitor “approach” experience at these sites. These improvements are necessary to address existing or developing access deficiencies in the Jamaica Bay unit’s transportation routes, access points, internal circulation networks, and parking lots that would hinder its goal of providing safe and efficient public access to park resources to meet the needs of the growing regional and visitor population and to provide access to the park’s resources for recreational purposes. Because the Jamaica Bay unit is comprised of a variety of different installations scattered around the Bay, including Floyd Bennett Field, Jacob Riis Park, Riis Landing, and the new NPS Sites at the former Pennsylvania and Fountain Avenues landfills, there are a vast number of transportation routes and modes that need to be accommodated into the park’s internal access and circulation network. Alternatives for each installation were evaluated.

SCOPING

At the initiation of the study, an Environmental Screening Form was completed to identify issues and resource constraints that are contained within and surround the four sites. This information was used by the NPS to develop alternatives.

PLANNING ISSUES AND CONCERNS

NPS Identity. Because the Jamaica Bay Unit is spread out across a relatively large, developed area, maintaining the NPS park-like look and feel has been a challenge. In some cases, visitors are not aware that the park they are in is part of the national park system, while in other cases passersby are unaware that the park exists. The project must consider the NPS identity and improve the park-like atmosphere of FBF.

Adjacent Neighborhoods. Gateway NRA’s location within New York City makes it easily accessible for many local neighborhoods. This also means that actions taken by the NPS can affect its residential neighbors. In order to fulfill its goal of providing a positive park experience, as well as its desire to be a good neighbor, Gateway NRA continually works to ensure that its presence in the New York City environment is a positive one for its neighbors, as well as its visitors. This is important at FBF, where the only access to the site is via Flatbush Avenue/ Marine Parkway, since vehicles traveling to the site could affect traffic on adjoining roadways.

IMPACT TOPICS CONSIDERED

Impact topics are resources of concern that could be affected, either beneficially or adversely, by the range of alternatives presented in this EA. They were identified based on federal laws, regulations, and Executive Orders; *NPS Management Policies 2001* (NPS 2000); *NPS Director’s Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making (DO-12)* and its accompanying handbook; and an analysis of the existing resources at the Jamaica Bay Unit. A brief rationale for the selection or dismissal of each impact topic is provided below. The Environmental Analysis section of this EA presents a more detailed information and impact analysis for the impact topics evaluated.

IMPACT TOPICS EVALUATED

Cultural Resources

The National Historic Preservation Act (NHPA), the NPS Organic Act (16 USC 1-4), *NPS Management Policies 2001*, DO-12, and DO-28, “Cultural Resources Management Guideline” require consideration of impacts on cultural resources either listed on or eligible for listing on the National Register of Historic Places (National Register). The proposed action has the potential to impact archeological resources, historic structures, and cultural landscapes.

Historic Structures. The NPS defines a historic structure as “a constructed work, usually immovable by nature or design consciously created to serve some human act” (DO-28). The project area at FBF includes historic districts which contain buildings and other man-made features listed on or eligible for listing on the National Register. Because the proposed action has the potential to impact these resources, historic structures is evaluated as an impact topic.

Cultural Landscapes. As described in DO-28, a cultural landscape is “a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values.” The project area at FBF has or contributes to known cultural landscapes that are listed on or eligible for listing on the National Register. The proposed action could alter these landscapes by altering the viewshed and changing circulation patterns and infrastructure. Therefore, cultural landscapes is evaluated as an impact topic.

Archeological Resources. The NPS defines an archeological resource as any material remains or physical evidence of past human life or activities that are of archeological interest, including the record of the effects of human activities on the environment. Archeological resources are capable of revealing scientific or humanistic information through research (DO-28). Known archeological resources within the study area are based on a park wide archeological survey, undertaken in 1977 (JMA 1978). Based on the history of development in the area in and around Jamaica Bay, it is anticipated that no additional archeological resources remain intact. However, because the proposed action would result in some ground disturbance and could impact the integrity of unknown archeological resources, archeological resources is evaluated as an impact topic.

Natural and Physical Resources

Wildlife and Wildlife Habitat. NEPA calls for an examination of the impacts on all components of affected ecosystems. NPS policy is to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants and animals (NPS Management Policies 2001). Wildlife inventories and documented observations have been performed within Gateway NRA, including the Jamaica Bay Unit. Based on these inventories and observations, Jamaica Bay is home to a number of mammals, reptiles, amphibians, and resident birds, as well as migrating bird species, which inhabit coastal forests, coastal scrubs, upland meadows, and tidal marshes. The Proposed Action includes the installation of exterior lighting, which has the potential to adversely affect wildlife. Therefore, wildlife and wildlife habitat is included as an impact topic.

Soils and Topography. The high level of development within FBF has been made possible by the suitability of naturally occurring soils, as well as those placed as fill material. These soils have the composition, drainage, and a deep enough water table to support most types of development.

The soil conditions also influence local topography. The Jamaica Bay Unit is situated along the northern edge of the Mid-Atlantic Coastal Plain. As such, the topography in the area is relatively flat, ranging from at or below sea level to 18 feet National American Vertical Datum of 1988 (NAVD 88).

The alternatives proposed by this EA would require soils to be placed over existing impervious surfaces, and could result in limited disturbance to underlying soils; therefore, soils and topography is evaluated as an impact topic.

Lightscares. In accordance with *NPS Management Policies 2001* (NPS 2000), the NPS strives to preserve natural ambient landscapes and other values that exist in the absence of man-made light. The Jamaica Bay Unit is located in New York City, one of the largest, busiest cities in the world. As a result, there are constant impacts to the lightscape, even in some of the most obscure areas, so no natural lightscares exist within the study area. The proposed action would introduce additional light sources from the overhead lighting for the fields; therefore, lightscares is included as an impact topic.

Visitor Use and Experience

The NPS Organic Act states that a fundamental purpose of the national park system is to provide opportunities for the public enjoyment of park resources as long as the resources are conserved unimpaired for the enjoyment of future generations. The NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks, and it will maintain an atmosphere that is open, inviting, and accessible to every segment of American society. Visitor use, however, is limited to those activities that can be sustained without causing unacceptable impacts to park resources or values (*NPS Management Policies 2001*). The action alternatives include the development of exterior playing fields and an associated food concession, which could influence visitor activities and visitor use. Therefore, visitor use and experience is evaluated as an impact topic.

Operations

Among the many activities performed by Gateway NRA staff, current operations at the Jamaica Bay Unit include maintenance of existing parking lots, traffic control during special events, and operation of toll booths at Jacob Riis Park. The proposed project could affect the use of existing infrastructure and add new infrastructure that would require changes in operations. Therefore, operations is evaluated as an impact topic.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

The following impact topics were initially considered but were determined to not be relevant to the action being considered. Consequently, they have been dismissed from consideration, as described in the following paragraphs.

Cultural Resources

Ethnographic Resources. Ethnographic resources are defined as any “site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it” (DO-28). An ethnographic resource eligible for listing on the National Register is known as a traditional cultural property. No evidence of

ethnographic resources has been identified. Because it is unlikely that ethnographic resources would be impacted, it was dismissed as an impact topic. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001) would be followed.

Museum Objects. The NPS defines a museum object as “a material thing possessing functional, aesthetic, cultural, symbolic, and/or scientific value, usually movable by nature or design. Museum objects include prehistoric and historic objects, artifacts, works of art, archival material, and natural history specimens that are part of a museum collection” (DO-28). The proposed action would not include any design for storage and/or display of museum collections, and potential objects discovered at the site would be addressed under the impact topic of “Archeological Resources.” Therefore, museum objects was dismissed as an impact topic.

Natural and Physical Resources

Geologic Resources. The geology of Long Island, which includes the Jamaica Bay area, is the result of glacial activity. The geologic formations that underlie the area are not considered unique, and they consist of till, gravel, sand, and mud. The history of development in the Jamaica Bay area has resulted in these resources being buried by additional fill material or being cut into through ground-disturbing activities. The proposed action would be confined to the surface or upper layers of soil and would not reach any geologic formations. Therefore, geologic resources was dismissed as an impact topic.

Vegetation. The Jamaica Bay Unit consists of a variety of upland, wetland, and coastal vegetative communities surrounded by heavy development. However, the project area is limited to upland areas with existing impervious surfaces; therefore, vegetation was dismissed as an impact topic.

Water Resources. NPS policies require the protection of water quality consistent with the Clean Water Act. Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, the discharge of dredged or fill material, or excavation within U.S. waters. The project alternatives would not result in an increase in impervious surfaces with associated increases in stormwater runoff nor do they involve dredging, filling or excavation in U.S. waters. Stormwater from the project area would be collected and directed to the existing stormwater drainage system. Since the fields would be covered with artificial turf, pesticides will not be required for turf maintenance; therefore, there would be no associated impact to stormwater runoff. Stormwater runoff during construction would be managed to prevent erosion from affecting water quality. No impacts on water resources are expected; therefore, water resources was dismissed as an impact topic.

Floodplains. Executive Order 11988, “Floodplain Management” and NPS DO #77-2, “Floodplain Management” establish policy to maintain natural floodplain functions by avoiding modification, occupancy, or development within a floodplain. Most of FBF is above the 100- and 500-year floodplains. The Federal Emergency Management Agency (FEMA) has defined the 100-year floodplain in and around the project area to be approximately 8.0 feet NAVD 88, and the 500-year floodplain rises to an elevation of 11.0 feet NAVD 88. These elevations are isolated to the edges of the FBF and immediate vicinity, covering most of the marina, USMC property, portions of the far eastern edge of FBF, and the west side of Flatbush Avenue. Because the proposed project would not include construction of new infrastructure within the floodplain, floodplains was dismissed as an impact topic.

Air Quality. Section 118 of the Clean Air Act (42 U.S.C. 7401 et seq.) requires a park unit to meet all federal, state, and local air pollution standards. The Jamaica Bay Unit is located within the U.S. Environmental Protection Agency's (EPA) New York – New Jersey – Connecticut Air Quality Control Region. The Clean Air Act (42 USC 7401-7661) defines this region as a contiguous area where air quality is relatively uniform. This specific area has attained acceptable levels for many air pollutants but is still lacking in some categories. Some of the pollutants that are still problematic for the region are those associated with vehicular exhaust. While the proposed project would result in an increase in visitors to the park it is anticipated that most of the additional visitors will travel from local communities. Vehicular use associated with visits to the playing fields is not expected to impact regional air quality. During construction, fugitive dust and equipment exhaust could also influence air quality; however these would be short term activities and are not expected to impact regional air quality. Therefore, air quality was dismissed as an impact topic.

Noise/Soundscape Management. In accordance with NPS *Management Policies 2001* and *Director's Order #47: Sound Preservation and Noise Management*, natural soundscapes are to be preserved within national park system units. The Jamaica Bay Unit, as well as other parts of Gateway NRA, provides a quiet escape from the hustle and bustle of New York City life. The existing noise level in the vicinity of the project area includes vehicle traffic on Cross Bay Boulevard, air traffic in and out of JFK Airport, and other sounds of visitor use, refuge maintenance and operations. The NPS strives to maintain or reduce existing noise impacts within Gateway NRA, so the park can continue to serve as a refuge from the surrounding urban environment. The proposed project could result in short term construction related noise, as well as an increase in visitors to the FBF portion of the park and associated in increased traffic and crowd noise associated with spectator sports. However, the project would be located adjacent to a busy road (Flatbush Avenue) 1,000 feet or more from the more natural, quieter areas of the park, and would not adversely affect the soundscape of the refuge over the long term. Therefore, noise/soundscape management was dismissed as an impact topic.

Prime and Unique Farmlands. In accordance with NEPA implementing regulations of the Council on Environmental Quality (CEQ) (40 CFR 1500-1508) all federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resource Conservation Service as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as fruits, vegetables, and nuts. This project area contains no prime and unique farmlands and therefore, prime and unique farmlands was dismissed as an impact topic.

Wild and Scenic Rivers. In 1968, Congress passed the Wild and Scenic Rivers Act to identify and protect those rivers that were deemed to possess "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values" (16 USC 1271). The NPS incorporated this law into its management policies with DO-46A, "Wild and Scenic Rivers within the National Park System", which directs the NPS in addressing and managing waterways within its boundaries that are classified as wild and scenic. Although there are a number of waterways within the boundaries of the Jamaica Bay Unit, none are classified as wild or scenic rivers. Therefore, wild and scenic rivers was dismissed as an impact topic.

Wetlands. Executive Order 11990, "Protection of Wetlands," requires federal agencies to avoid, where possible, adversely impacting wetlands. Proposed actions that have the potential to adversely impact wetlands must be addressed in a statement of findings. The project would be located in an upland area that is covered with impervious surfaces. There are no wetlands present in the project area; therefore, wetlands was dismissed as an impact topic.

Special Status Species. The Endangered Species Act of 1978, as amended, sets rules for the protection of endangered and threatened species of plants and animals and establishes penalties for harming them or their habitat. Most of the listed species which may occur in the Jamaica Bay Unit are aquatic animals, including: the northern right whale (*Eubalaena glacialis*), the humpback whale (*Megaptera novaeangliae*), the fin whale (*Balaenoptera physalus*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), and the loggerhead sea turtle (*Caretta caretta*). There are no aquatic habitats within the project area. Two avian species are found within Jacob Riis Park portion of the Jamaica Bay Unit: the federally threatened piping plover (*Charadrius melodus*) and the federally endangered roseate tern (*Sterna dougallii*). However, both of these species utilize dune habitats, which are not present in the project area. The seabeach amaranth (*Amaranthus pumilus*) is the only federally listed vegetation found within the Jamaica Bay Unit. However, it is found only on dunes, beaches, and dredge spoil, which are not present in the project area.

In addition to the federally listed sea turtle and avian species, the following wildlife species, which may be present within the Jamaica Bay Unit, are listed species in New York State.

State-listed endangered

short-eared owl (*Asio flammeus*)
peregrine falcon (*Falco peregrinus*)

State-listed threatened

least tern (*Sterna antillarum*)
northern harrier (*Circus cyaneus*)
common tern (*Sterna hirundo*)
least bittern (*Ixobrychus exilis*)
upland sandpiper (*Bartramia longicauda*)

State-listed special concern

osprey (*Pandion haliaetus*)
sharp-shinned hawk (*Accipiter striatus*)
Cooper's hawk (*Accipiter cooperii*)
black skimmer (*Rynchops niger*)
grasshopper sparrow (*Ammodramus savannarum*)
eastern spadefoot toad (*Scaphiopus holbrookii*)
eastern box turtle (*Terrapene carolina*)
eastern hognose snake (*Heterodon platyrhinos*)
checkered white (*Pontia protodice*)

Five state-listed vegetative species are also found within the Jamaica Bay Unit. These species are all found in marshy habitats or along the edge of dunes where water is abundant. They include the threatened red pigweed (*Corydalis aurea*) and dune sandspur (*Cenchrus tribuloides*); as well as the endangered globose flatsedge (*Cyperus echinatus*), the narrow-leaf sea-blite (*Suaeda linearis*), Roland's sea blite (*Suaeda rolandii*) and willow oak (*Quercus phellos*).

Suitable habitat does not exist on the project site for any state or federal listed species. Therefore, the project would not impact these species and the impact topic of special status species was dismissed.

Visual Resources

Many of New York City's visual resources are known throughout the world. In many ways, these views define the city and give perspective to its various boroughs and regions. For example, people living in Brooklyn may associate their neighborhood with a view of the Manhattan skyline to the north. These resources are also an important part of the park and its benefits to the community. The Jamaica Bay Unit is no different, with its views of the ocean, the Manhattan skyline, and its own internal viewsheds. The project would introduce fencing and light posts which could alter viewsheds. The predominant features which would be affected by these additions are the historic aviation hangars just south of the playing fields. Therefore, viewsheds are addressed in a cultural context under the cultural landscapes impact topic and visual resources was dismissed as an impact topic.

Hazardous Materials and Waste

Records and previous use indicate that there are no known hazardous materials or waste in the project area. Therefore, hazardous materials and waste was dismissed as an impact topic.

Socioeconomic Resources

The project would not alter local population densities or distribution nor result in any increased development. Short-term employment and income impacts are expected due to project construction. Staffing of the food concession stand would create long-term employment for several people; however these jobs would be insignificant in the context of the overall employment opportunities available in the New York City area. These impacts are beneficial but due to the short duration of construction and limited nature of long-term employment opportunities would have negligible impact on the economic conditions in the region. Therefore, socioeconomic resources were dismissed as an impact topic.

Environmental Justice

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires that all federal agencies address the effects of policies on minorities and low-income populations and communities. There would be no disproportionately high and adverse human health or environmental effects to minority or low-income populations or communities in the area. The project would be beneficial since it would provide recreational opportunities for communities in the area which have high proportions of minority populations. Therefore, environmental justice was dismissed as an impact topic.

Infrastructure

A large, urban park like Gateway NRA requires a great deal of infrastructure to provide heat, light, water, sewage, and other utilities. Infrastructure elements also consist of the buildings, roads, parking lots, and other structures that make up the park. Utility services are in place to service the project and additional roads and parking lots are not proposed. In proportion to infrastructure requirements for the FBF Aviator Sports Complex, visitor use and associated infrastructure support attributable to the athletic fields would be expected to be minimal. The athletic fields would not be expected to create an increased demand on, or call for improvement to, existing infrastructure. In addition, an existing building would be renovated

to house the food concession stand; therefore this component of the project will not affect existing infrastructure. Therefore, infrastructure was dismissed as an impact topic.

ALTERNATIVES

Two alternatives are considered in this environmental assessment — the no action alternative and one action alternative (the Proposed Action). Other alternatives that were considered but eliminated are discussed on page 18.

ALTERNATIVES CONSIDERED

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, the outdoor playing fields would not be developed and the existing transformer vault would not be renovated to provide restroom facilities. No changes or improvements would be made to either the existing tarmac north of Hangars 7 and 8 or the existing transformer vault. In addition, Building 129 would not be rehabilitated and used as a food preparation and dining facility. The No Action Alternative provides a baseline for comparison with the Proposed Action and is analyzed in accordance with the CEQ regulations for implementing NEPA.

ALTERNATIVE 2 – DEVELOP OUTDOOR ATHLETIC FIELDS AT NORTH HANGAR AREA/BUILDING 129 REHABILITATION (PROPOSED ACTION)

Under Alternative 2, two athletic fields would be located adjacent to Flatbush Avenue, approximately 235-feet north of Hangars 7 and 8 and would occupy approximately 10.1 acres. The location of Alternative 2 is shown on Figures 1 and 2 and details of the field layout are provided on Figure 3. This alternative represents the greatest opportunity for direct synergy with the main sports complex. Users would be able to take advantage of all of the amenities of the main sports complex, including shared programming, lockers, bathroom and shower facilities, food service, and parking, all within walking distance.

The fields, with a perimeter running track/access lane, would be constructed over existing tarmac by placement of fill, drainage pipes, and an artificial surface over the tarmac. Drainage through the field surface would be intercepted by the drain pipes and discharged to the existing drainage system. An existing transformer vault located between the two proposed fields would be renovated/retrofitted to provide restroom facilities. Building 129, located in the southeast area of FBF, would also be renovated to function as a food service area.

The outdoor field area would be enclosed with decorative security fencing, chosen to blend well historically and to identify the project through a series of low-key integrated free-standing banner elements. This fence feature would also incorporate low-level lighting and low-profile landscape planters, designed to avoid impact to the existing tarmac. The security fence posts, which would be grouted in place, would require a 4-inch diameter, 12-inch deep, hole cored through the tarmac. Two shade screens would be located at the east ends of the fields to provide an area for players to get out of the sun and bleacher seating would be located between the two fields.

The two 617 x 484-foot main playing areas would be encompassed within a large field of artificial turf and bounded by 18-foot wide asphalt running tracks/vehicle access lane. The athletic fields are intended to be flexible, accommodating both athletic activities and special events. These fields would be striped

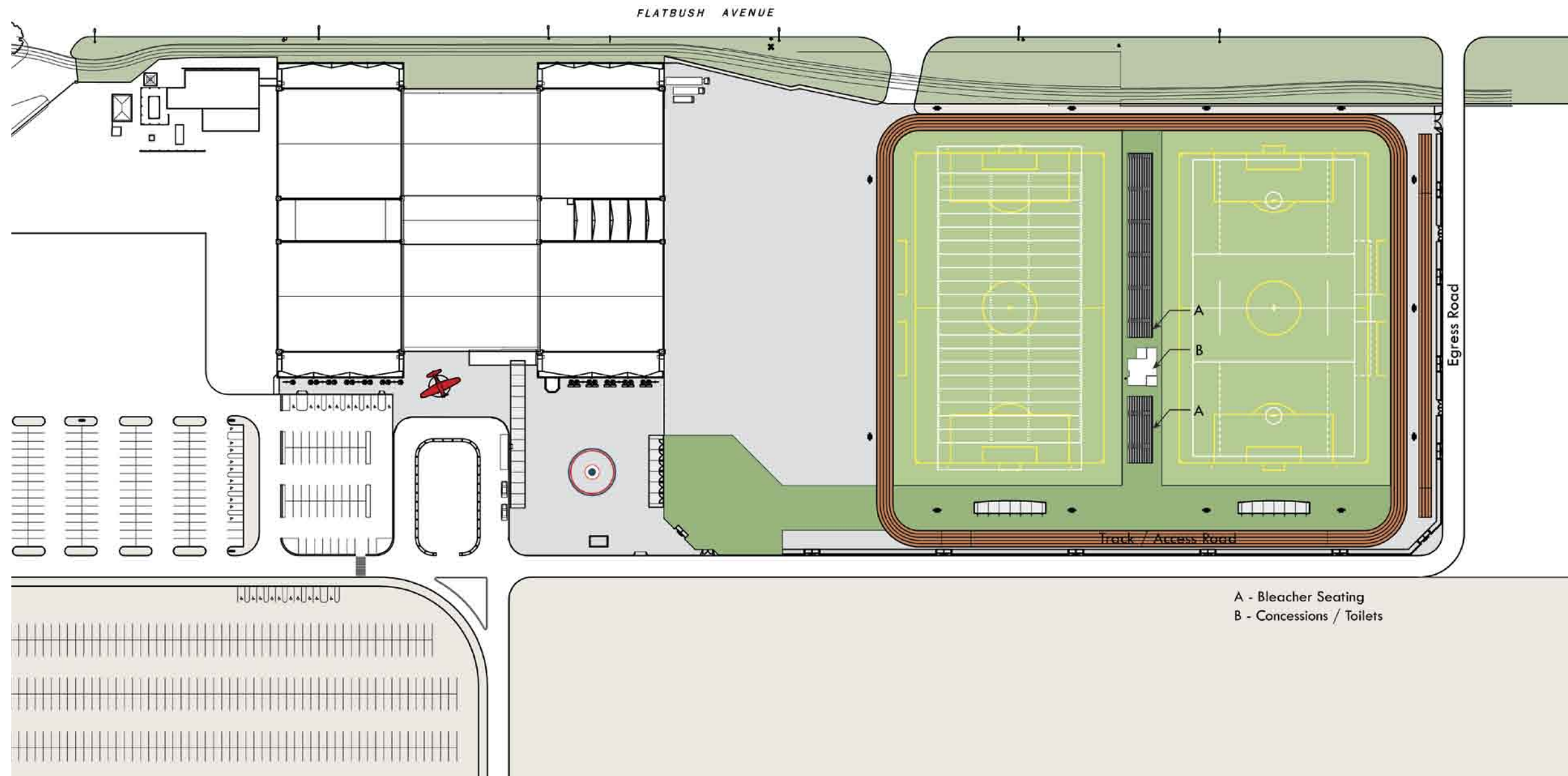
for two regulation size soccer ‘pitches’ that would each have the capacity to accommodate mini-fields oriented perpendicularly within the larger field. A 328-foot (100-meter) running track would be located at the north end of the field, and an asphalt running track would frame the entire synthetic turf area and also provide service vehicle access.

With the exception of the light poles and fence posts, all of the improvements associated with the athletic fields would be installed, and could be removed, without disturbance to underlying material or structures.

The fields would be encircled by event lights to allow the facility to be used at night. The average light level at the playing surface, provided by four 80-foot tall and nine 70-foot tall pole mounted fixtures, would be 35 foot candles/square foot. The fixtures themselves would be fully shielded to focus the light at the playing surface and reduce ambient spillover and spread. The light poles, which would taper toward the top, would have a base diameter ranging from 18 to 22-inches. The 13 light pole foundations would be concrete caissons that penetrate the historic tarmac. The concrete caissons would be 6-feet square and 4-feet deep. The light poles would be supported by a piling, approximately 12-inches in diameter, driven to a depth of approximately 30-feet.

The main entrance to the fields would be located at the northeast corner of the facility. Entrance to the fields would be through a series of low key lightweight fabric structure gates that recall aviation forms. These gate structures utilize a ‘deadman’ foundation system that would allow them to rest on the tarmac without penetrating it. Sufficient egress has been incorporated into the design to allow for increased occupancy during special events.

Building 129, a former Jobs Corps Cafeteria, would also be renovated to provide a food service area to support the FBF Aviator Sports Complex. Building 129 is located in the southeast portion of FBF adjacent to dormitories which were used to house Job Corps participants during the 1970’s. Building 129 served as the cafeteria for the Job Corps and would be renovated to provide the same function to the Aviator employees. It would also be used as a food preparation area to support the café and sports bar within the FBF Aviator Sports Complex.



MITIGATION MEASURES INCLUDED IN THE ACTION ALTERNATIVES

Overall, the project design has considered the historic characteristics of FBF and has incorporated measures to minimize impacts to historic structures and cultural landscapes. The design is intended to be subtle and non-obtrusive. Design details have been selected to blend with the site characteristics to the extent practicable. Specific mitigation measures include:

- Site selection: In the effort to minimize the impact the new playing fields would have on the historic fabric and character of the area, the area to the north of Hangars 7 and 8 was selected as it located away from the more important views of the hangar complex. The field areas would be located 235 feet to the north of the hangars to create a visual buffer to maintain an unobstructed view of the north elevation of the hangars and maintain a sense of the historic use of the area.
- To avoid disturbance to the historic tarmac, the turf and associated drainage sub base would be installed directly on top of tarmac. Disturbance of the tarmac would be limited to the locations of the field lighting and fence posts. The size of these unavoidable disturbances would be the minimum necessary to install the project features.
- The foundation selected for the field lighting would achieve structural stability while maintaining a minimal footprint, thereby minimizing disturbance to the historic tarmac.
- Subsurface testing at the light pole and fence post locations for the presence of archaeological resources would be required prior to construction. Testing would involve taking controlled samples from several of the light pole and fence post locations. Monitoring during construction of the remaining locations would also be required. Such a program would constitute mitigation of adverse impacts/effects.
- Field lighting was carefully designed to achieve minimum allowable light levels to safely illuminate the playing field while minimizing the impact to surrounding areas by limiting the number and height of the field lights.

Standard mitigation measures would include the implementation of best management practices during construction, including erosion and sediment control and dust suppression.

If previously unknown cultural resources are discovered during construction, all work in the immediate vicinity of the discovery will be halted until the resources can be identified and documented and an appropriate mitigation strategy developed, if necessary, with the New York State Historic Preservation Office (SHPO).

ALTERNATIVES CONSIDERED BUT ELIMINATED

Siting of the two athletic fields over the area of existing tarmac north of Hangars 7 and 8 without damaging a significant area of the historic concrete is advantageous from the standpoint of the overall operation of the FBF Aviator Sports Complex as well as minimizing environmental impact. Alternative locations for these fields within FBF were considered, but were dismissed from further consideration for the reasons described in the following paragraphs. Attempting to make use of other possible locations for the field development would not meet project goals and would not be functional. Common to both dismissed alternatives is the distance from the FBF Aviator Sports Complex which detracts from the

synergy of these related and complimentary uses. The loss of direct proximity to the indoor sports complex would decrease the quality of user experience and have a negative effect on the Aviator business model. Additional facilities, including restrooms, lockers, food concessions and parking, would need to be created adjacent to the alternative locations in order to create the same intended quality of experience for the user. These duplicative facilities would result in obvious adverse impacts, including additional buildings, additional traffic as users drive from the sports complex to the fields, and additional impact to the FBF historic fabric and existing infrastructure.

Since it is essential for the food service area to be located near the FBF Aviator Sports Complex, and no other buildings at FBF would be suitable for this purpose, either because of insufficient size, lack of availability, or historic significance, no alternatives to the renovation of Building 129 for use as the food service area were identified. Both of the alternative athletic fields described below would retain the Building 129 food service component of the Proposed Action.

COMMUNITY GARDEN ALTERNATIVE

One alternative location for the outdoor athletic fields is southeast of the Community Gardens at FBF. The layout of the fields and all appurtenant features would be the same as with Alternative 2. The existing environment at this location consists of a mixture of concrete tarmac and early successional vegetation that has developed on areas where shallow soils have developed over the impervious tarmac. Approximately half of the area is vegetated, with dominant species including spotted knapweed (*Centaurea stoebe*) and various grasses and mosses. Additional vegetation observed in this area includes early successional species such as: eastern red cedar (*Juniperus virginiana*), choke cherry (*Prunus virginiana*), multiflora rose (*Rosa multiflora*), and common mugwort (*Artemisia vulgaris*).

Proximity to the FBF Aviator Sports Complex is a key factor of the preferred alternative; the Community Garden Alternative is approximately ½ mile south of the sports complex. This distance would detract from visitor use of both recreation facilities. The presence of the athletic fields may also detract from visitor experience at the Community Gardens.

While there is some parking in the area, it is likely insufficient for users of both the community gardens and the athletic fields; therefore, additional parking areas may be needed. Utilities such as water, sewer and electric, which would be required to enable the construction of restroom facilities, would need to be brought to the area. In addition, storm drains, which would be needed to direct drainage from the fields off of the impervious tarmac, are also not present. The installation of these essential infrastructure elements would result in additional disturbance to the historic tarmac in this location and would add significantly to the cost of implementation; therefore, the Community Garden Alternative is not reasonable and has been dismissed from further consideration.

BUILDING 129 ALTERNATIVE

Under this alternative the outdoor athletic fields would be located just north of Building 129 in the southeast portion of FBF. The layout of the fields and all appurtenant features would be the same as with Alternative 2. The existing environment at this location consists of early successional vegetation. Dominant species include eastern red cedar, choke cherry, smooth sumac (*Rhus glabra*), multiflora rose, broom sedge (*Andropogon virginicus*) and miscellaneous grasses and forbs. Based on the reasons presented in the following paragraphs, the Building 129 Alternative is not reasonable and has been dismissed from further consideration.

Proximity to the FBF Aviator Sports Complex is a key factor of the preferred alternative; the Building 129 Alternative is an approximately 1.25 mile drive south of the sports complex. This distance would detract from visitor use of both recreation facilities. The Building 129 Alternative is near the FBF group camping areas; the introduction of lighting to the area could detract from the camping experience.

There is no parking in the area; therefore, parking areas would need to be built, adding to the impact and cost associated with this alternative. Utilities such as water, sewer and electric, which would be required to enable the construction of restroom facilities, are in the vicinity and could be extended. However, storm drains, which would be needed to direct drainage from the fields, are not present. The installation of storm drains would result in additional disturbance to the historic tarmac in this location and would add significantly to project cost.

The NYPD facility and FAA Doppler radar station are also just to the east of the Building 129 Alternative. Considering the proximity of these facilities, the addition of visitors to this area of FBF may pose a security concern.

Therefore, the Building 129 Alternative is not reasonable and has been dismissed from further consideration.

ALTERNATIVE COMPARISON

Table 1 summarizes the effects of the alternatives based on the impact analysis. The terms used to define the magnitude or intensity of the effects (e.g., negligible, minor) are described in the evaluation for each impact topic found in Section 3.

TABLE 1: COMPARATIVE SUMMARY OF ENVIRONMENTAL IMPACTS

Impact Topic	Alternative 1 — No Action	Alternative 2 — Proposed Action
Historic Structures	Negligible impacts to historic structures. No change to existing conditions.	Impacts would be site specific, direct, long term, moderate and adverse.
Cultural Landscapes	No impacts to cultural landscapes. No change to existing conditions.	Site specific, long term, direct, moderate, and adverse impacts on the cultural landscape in the National Register Historic District.
Archaeological Resources	No direct or indirect impacts to archaeological resources. No change to existing conditions.	Impacts would be long term, direct, minor, and adverse.
Wildlife and Wildlife Habitat	No direct or indirect impacts to wildlife or wildlife habitat. No change to existing conditions.	Impacts would be negligible, direct, long term and localized. Construction related impacts would be negligible, indirect, short term and localized.
Soils and Topography	No direct or indirect impacts to soils or topography. No change to existing conditions.	Impact to soils would be negligible, short term and direct. Impact to topography would be minor, long term, and direct.
Visitor Use and Experience	No direct or indirect impacts to visitor use or experience. No change to existing conditions.	Impacts would be direct, beneficial, moderate and long term. Construction-related impacts would be indirect, minor, adverse, and short term.
Lightscapes	No direct or indirect impacts to lightscapes. No change to existing conditions.	Impacts to sensitive receptors of the natural environment would be adverse, long term, localized and indirect, with impacts to nocturnal migrants and animals being negligible and impacts to nocturnal insects and diurnal animals being minor. Impacts to local citizens would be negligible, long-term, localized and direct.
Operations	No direct or indirect impacts to park operations. No change to existing conditions.	Impacts would be moderate, direct, adverse, and long term.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with DO-12, The NPS is required to identify the “environmentally preferred alternative” in all environmental documents including environmental assessments. The environmentally preferred alternative is determined by applying the criteria suggested in NEPA, which is guided by CEQ regulations. The environmentally preferable alternative is the alternative that will promote the national environmental policy, as expressed in Section 101 of the Act, which considers:

1. fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assuring for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserving important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities; and
6. enhancing the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The No Action Alternative (Alternative 1) does not meet criteria 2, 3, 4 or 5 listed above. With Alternative 1, the project area would remain underutilized and would not provide beneficial uses or enhance the opportunities of park visitors. The Environmentally Preferred Alternative in this document is Alternative 2, which is also the NPS’ preferred alternative. This alternative provides a better environmental approach than Alternative 1, with the following advantages:

- Fully promotes safe, healthful, productive, and aesthetically and culturally pleasing surroundings though the sensitive design of the outdoor athletic fields (NEPA Criteria 1, 2, 3, and 4);
- Integrates resource protection with opportunities for an appropriate range of visitor uses (NEPA Criteria 1, 3, and 4);
- Enhances visitor experience by providing increased recreational opportunities (NEPA Criteria 2 and 5); and
- Converts under utilized space to active recreational areas which will attract additional visitors to the park (NEPA Criteria 2, 3, 4, 5 and 6).

After review of potential resources and other impact topics, and developing appropriate mitigation measures, the NPS preferred alternative best ensures the preservation of NPS resources and values. The NPS preferred alternative is also consistent with existing NPS planning for FBF.

ENVIRONMENTAL ANALYSIS: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the existing conditions in the project area for the various impact topics that could potentially be impacted by the proposed action. Impact topics were selected based on agency concerns, regulatory and planning requirements, and known resource issues. They include cultural resources (archeological resources, historic structures, and cultural landscapes); natural and physical resources (soils and topography, wildlife and wildlife habitat, and lightscapes); visitor use and experience; and operations. Impact topics dismissed from further consideration are discussed in “Chapter 1: Purpose and Need.” For each impact topic evaluated, basic information about current conditions to be used as context for evaluating the potential impacts of each alternative is provided.

Following each resource description, the environmental consequences associated with the two alternatives are discussed. The methodology for assessing and defining impacts is uniform for all impact topics and is presented at the beginning of the section. NEPA requires consideration of context, intensity, and duration of adverse and beneficial impacts (direct, indirect, and cumulative) and measures to mitigate those impacts. The level of intensity of the impact is defined for each impact topic. NPS policy also requires that impairment of resources be evaluated in all environmental documents; therefore, this discussion is also included for each impact topic. Cumulative impact assessments are presented at the end of this section.

METHODOLOGY FOR ASSESSING IMPACTS

As required by NEPA, potential impacts are described in terms of type (beneficial or adverse), context (site-specific, local, or regional), duration (short-term or long-term), and level of intensity (negligible, minor, moderate, or major). Overall, these impact analyses and conclusions were based on the review of existing literature and Gateway NRA studies, professional judgments and park staff insight. General descriptions of the types of impacts, the context in which they may occur, their duration and level of intensity are listed below:

Type

- | | |
|-------------|--|
| Beneficial: | A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition. |
| Adverse: | A change that moves the resource away from a desired condition or detracts from its appearance or condition. |
| Direct: | An impact that is caused by an action and occurs at the same time and place. |
| Indirect: | An impact that is caused by an action but is later in time or farther removed in distance, but still reasonably foreseeable. |

Context

Context is the setting within which an impact is analyzed.

- | | |
|----------------|--|
| Site-specific: | The impact would affect the study area. |
| Local: | The impact would affect Gateway NRA. |
| Regional: | The impact would affect localities, cities, or towns surrounding Gateway NRA |

Duration

For all resources and values, the duration of impacts in this document is defined as follows:

- Short-term: Impacts that occur only during construction or last less than one year.
Long-term: Impacts that last longer than one year.

Level of Intensity

Level of intensity is measured by severity and magnitude of impact, i.e. negligible, minor, moderate, or major. Intensity definitions were developed for each resource considered for analysis in this study, and are described in the following sections. These definitions were developed through review of current and previous NPS projects, discussions with NPS representatives, as well as professional judgments made by the study team.

METHODOLOGY FOR CUMULATIVE IMPACTS ANALYSIS

The CEQ regulations require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions” (40 CFR 1508.7).

Cumulative impacts were determined by combining the incremental impacts of each alternative with other past, present, and reasonably foreseeable future actions. The projects that were considered in the analysis of cumulative impacts are listed in the “Cumulative Impact Analysis” on page 49 of this section.

METHODOLOGY FOR IMPAIRMENT ANALYSIS

The *NPS Management Policies 2001* require the determination of whether or not actions would impair park resources or values. The fundamental purpose of the national park system, as established in the Organic Act and reaffirmed by subsequent legislation, is to conserve park resources and values unimpaired for the enjoyment of future generations. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, actions that would adversely affect park resources and values.

These laws give NPS managers the discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute impairment.

In this document, impairment is a major, adverse impact to a resource or value whose conservation is:

1. necessary to fulfill specific purposes identified in the establishing legislation for Gateway NRA or Jamaica Bay Wildlife Refuge;
2. key to the natural or cultural integrity of the area; or

3. identified as a goal in the area's *General Management Plan* or other relevant NPS planning document.

A discussion of the affected environment and environmental consequences associated with the development of outdoor athletic fields on the tarmac area north of Hangars 7 and 8 and the renovation of Building 129 for each of the impact topics considered is provided in the following sections.

CULTURAL RESOURCES

AFFECTED ENVIRONMENT

Historic Structures

The notable historic eras for FBF were those of early commercial aviation and World War II. FBF was New York City's first municipal airport, open from 1931 to 1941, and was the site of several record-breaking flights and technological advances in aviation. During World War II Floyd Bennett Field was the busiest Naval Air Station in the United States in terms of number of flights. Antisubmarine patrol flights flown from the field protected vital convoys bound for Europe, and as the headquarters for the Naval Air Ferry Squadrons, the pilots delivered aircraft to every theater of the war. The site retains a great deal of its original buildings, structure, and landscape.

Historic aboveground resources located in FBF include original hangars and support structures that date from the airport's period of significance, when it was a municipal airport, and later, when it had been commissioned by the Navy. Floyd Bennett Field Historic District was placed on the National Register of Historic Places in 1980 and currently includes the buildings and structures that contribute to the significance of the field when it was operating as a municipal airport. World War II period structures are currently under evaluation for their contribution to that significance. Significant historic aboveground resource located in FBF are included in the List of Classified Structures (LCS) provided by the NPS.

**TABLE 2: LIST OF CLASSIFIED STRUCTURES (SIGNIFICANT CULTURAL RESOURCES)
AT FLOYD BENNETT FIELD**

Name	Construction Date	Name	Construction Date
Entrance Drive	circa 1935	Gasoline Pump Station	circa 1936
Apron drainage system	circa 1932	Hangars 1 & 2	1929-1931
Circular Concrete Feature	pre-1937	Hangars 3 & 4	1929-1931
Compass Rose	1944	Hangars 5 & 6	1929-1931
Runways	1929-1931	Hangars 7 & 8	1929-1931
Runways	1937-1938	Pump House	1928-1938
Seaplane Ramp	1937-1938	Transformer Building	circa 1936
Taxiway	1929-1931	Cast Iron Light Standards	circa 1936
Administration Building	1931	Light Beacon	1957
Passenger Tunnel	1935	Steel Flagpole	circa 1935
Electrical Vault	1928-1938	Water tank	Post 1941
Fire Pump House	circa 1936	Wood light standard	circa 1935
Garage and Maintenance Shop	circa 1931		

Figure 4 Floyd Bennett Field Contributing Historic Resources

Contributing Resources

Contributing Structures

- Status to be determined (Light gray)
- Civil Aviation Period (Red)
- World War II Period (Blue)
- Possible contributors (Light blue)
- Non-contributing (Orange)

Other Contributing Facilities

- National Historic Landmark runways and roads (Dark gray)
- National Register runways and roads (Light gray)

The map shows the layout of Floyd Bennett Field, including runways, taxiways, and various buildings. Key buildings labeled include Barn Owls Bldg, Bldg 106, Bldg 273, Bldg 274, Bldg 168, Bldg 205, Bldg 20, Bldg 29, Bldg 30, Bldg 31, Bldg 32, Bldg 33, Bldg 34, Bldg 35, Bldg 36, Bldg 37, Bldg 38, Bldg 39, Bldg 40, Bldg 41, Bldg 42, Bldg 43, Bldg 44, Bldg 45, Bldg 46, Bldg 47, Bldg 48, Bldg 49, Bldg 50, Bldg 51, Bldg 52, Bldg 53, Bldg 54, Bldg 55, Bldg 56, Bldg 57, Bldg 58, Bldg 59, Bldg 60, Bldg 61, Bldg 62, Bldg 63, Bldg 64, Bldg 65, Bldg 66, Bldg 67, Bldg 68, Bldg 69, Bldg 70, Bldg 71, Bldg 72, Bldg 73, Bldg 74, Bldg 75, Bldg 76, Bldg 77, Bldg 78, Bldg 79, Bldg 80, Bldg 81, Bldg 82, Bldg 83, Bldg 84, Bldg 85, Bldg 86, Bldg 87, Bldg 88, Bldg 89, Bldg 90, Bldg 91, Bldg 92, Bldg 93, Bldg 94, Bldg 95, Bldg 96, Bldg 97, Bldg 98, Bldg 99, Bldg 100, Bldg 101, Bldg 102, Bldg 103, Bldg 104, Bldg 105, Bldg 106, Bldg 107, Bldg 108, Bldg 109, Bldg 110, Bldg 111, Bldg 112, Bldg 113, Bldg 114, Bldg 115, Bldg 116, Bldg 117, Bldg 118, Bldg 119, Bldg 120, Bldg 121, Bldg 122, Bldg 123, Bldg 124, Bldg 125, Bldg 126, Bldg 127, Bldg 128, Bldg 129, Bldg 130, Bldg 131, Bldg 132, Bldg 133, Bldg 134, Bldg 135, Bldg 136, Bldg 137, Bldg 138, Bldg 139, Bldg 140, Bldg 141, Bldg 142, Bldg 143, Bldg 144, Bldg 145, Bldg 146, Bldg 147, Bldg 148, Bldg 149, Bldg 150, Bldg 151, Bldg 152, Bldg 153, Bldg 154, Bldg 155, Bldg 156, Bldg 157, Bldg 158, Bldg 159, Bldg 160, Bldg 161, Bldg 162, Bldg 163, Bldg 164, Bldg 165, Bldg 166, Bldg 167, Bldg 168, Bldg 169, Bldg 170, Bldg 171, Bldg 172, Bldg 173, Bldg 174, Bldg 175, Bldg 176, Bldg 177, Bldg 178, Bldg 179, Bldg 180, Bldg 181, Bldg 182, Bldg 183, Bldg 184, Bldg 185, Bldg 186, Bldg 187, Bldg 188, Bldg 189, Bldg 190, Bldg 191, Bldg 192, Bldg 193, Bldg 194, Bldg 195, Bldg 196, Bldg 197, Bldg 198, Bldg 199, Bldg 200, Bldg 201, Bldg 202, Bldg 203, Bldg 204, Bldg 205, Bldg 206, Bldg 207, Bldg 208, Bldg 209, Bldg 210, Bldg 211, Bldg 212, Bldg 213, Bldg 214, Bldg 215, Bldg 216, Bldg 217, Bldg 218, Bldg 219, Bldg 220, Bldg 221, Bldg 222, Bldg 223, Bldg 224, Bldg 225, Bldg 226, Bldg 227, Bldg 228, Bldg 229, Bldg 230, Bldg 231, Bldg 232, Bldg 233, Bldg 234, Bldg 235, Bldg 236, Bldg 237, Bldg 238, Bldg 239, Bldg 240, Bldg 241, Bldg 242, Bldg 243, Bldg 244, Bldg 245, Bldg 246, Bldg 247, Bldg 248, Bldg 249, Bldg 250, Bldg 251, Bldg 252, Bldg 253, Bldg 254, Bldg 255, Bldg 256, Bldg 257, Bldg 258, Bldg 259, Bldg 260, Bldg 261, Bldg 262, Bldg 263, Bldg 264, Bldg 265, Bldg 266, Bldg 267, Bldg 268, Bldg 269, Bldg 270, Bldg 271, Bldg 272, Bldg 273, Bldg 274, Bldg 275, Bldg 276, Bldg 277, Bldg 278, Bldg 279, Bldg 280, Bldg 281, Bldg 282, Bldg 283, Bldg 284, Bldg 285, Bldg 286, Bldg 287, Bldg 288, Bldg 289, Bldg 290, Bldg 291, Bldg 292, Bldg 293, Bldg 294, Bldg 295, Bldg 296, Bldg 297, Bldg 298, Bldg 299, Bldg 300, Bldg 301, Bldg 302, Bldg 303, Bldg 304, Bldg 305, Bldg 306, Bldg 307, Bldg 308, Bldg 309, Bldg 310, Bldg 311, Bldg 312, Bldg 313, Bldg 314, Bldg 315, Bldg 316, Bldg 317, Bldg 318, Bldg 319, Bldg 320, Bldg 321, Bldg 322, Bldg 323, Bldg 324, Bldg 325, Bldg 326, Bldg 327, Bldg 328, Bldg 329, Bldg 330, Bldg 331, Bldg 332, Bldg 333, Bldg 334, Bldg 335, Bldg 336, Bldg 337, Bldg 338, Bldg 339, Bldg 340, Bldg 341, Bldg 342, Bldg 343, Bldg 344, Bldg 345, Bldg 346, Bldg 347, Bldg 348, Bldg 349, Bldg 350, Bldg 351, Bldg 352, Bldg 353, Bldg 354, Bldg 355, Bldg 356, Bldg 357, Bldg 358, Bldg 359, Bldg 360, Bldg 361, Bldg 362, Bldg 363, Bldg 364, Bldg 365, Bldg 366, Bldg 367, Bldg 368, Bldg 369, Bldg 370, Bldg 371, Bldg 372, Bldg 373, Bldg 374, Bldg 375, Bldg 376, Bldg 377, Bldg 378, Bldg 379, Bldg 380, Bldg 381, Bldg 382, Bldg 383, Bldg 384, Bldg 385, Bldg 386, Bldg 387, Bldg 388, Bldg 389, Bldg 390, Bldg 391, Bldg 392, Bldg 393, Bldg 394, Bldg 395, Bldg 396, Bldg 397, Bldg 398, Bldg 399, Bldg 400, Bldg 401, Bldg 402, Bldg 403, Bldg 404, Bldg 405, Bldg 406, Bldg 407, Bldg 408, Bldg 409, Bldg 410, Bldg 411, Bldg 412, Bldg 413, Bldg 414, Bldg 415, Bldg 416, Bldg 417, Bldg 418, Bldg 419, Bldg 420, Bldg 421, Bldg 422, Bldg 423, Bldg 424, Bldg 425, Bldg 426, Bldg 427, Bldg 428, Bldg 429, Bldg 430, Bldg 431, Bldg 432, Bldg 433, Bldg 434, Bldg 435, Bldg 436, Bldg 437, Bldg 438, Bldg 439, Bldg 440, Bldg 441, Bldg 442, Bldg 443, Bldg 444, Bldg 445, Bldg 446, Bldg 447, Bldg 448, Bldg 449, Bldg 450, Bldg 451, Bldg 452, Bldg 453, Bldg 454, Bldg 455, Bldg 456, Bldg 457, Bldg 458, Bldg 459, Bldg 460, Bldg 461, Bldg 462, Bldg 463, Bldg 464, Bldg 465, Bldg 466, Bldg 467, Bldg 468, Bldg 469, Bldg 470, Bldg 471, Bldg 472, Bldg 473, Bldg 474, Bldg 475, Bldg 476, Bldg 477, Bldg 478, Bldg 479, Bldg 480, Bldg 481, Bldg 482, Bldg 483, Bldg 484, Bldg 485, Bldg 486, Bldg 487, Bldg 488, Bldg 489, Bldg 490, Bldg 491, Bldg 492, Bldg 493, Bldg 494, Bldg 495, Bldg 496, Bldg 497, Bldg 498, Bldg 499, Bldg 500, Bldg 501, Bldg 502, Bldg 503, Bldg 504, Bldg 505, Bldg 506, Bldg 507, Bldg 508, Bldg 509, Bldg 510, Bldg 511, Bldg 512, Bldg 513, Bldg 514, Bldg 5

The following FBF historic structures are located in the immediate area of the proposed athletic fields:

Hangar Complex 7 and 8. The first and most noteworthy buildings erected at FBF were the complex of four pairs of hangars built between 1929 and 1931 that comprise what is known as Hangar Row. Hangars 7 and 8 are the northernmost pair of the eight hangars here. The Hangars are of steel frame construction with steel trussed arched roofs and wooden decks. The hangars include a concrete pile foundation and a concrete slab floor. Service wings are located adjacent to each structure. Service wings that connected the then separate hangars into pairs were erected in the Works Progress Administration (WPA) era.

Floyd Bennett Field Runways. The original reinforced concrete runways at FBF were constructed during 1929-1931. Two runways, located east of Hangar Row, form a T shape, intersecting just south of the administration building, northeast of hangars 3 and 4. As the Field grew, the runways and taxiways were extended, widened and likely resurfaced. The original two runways do not intersect the project area. However important runways and support surfaces are located in the immediate project area.

Cultural Landscapes

As defined by DO-28, a cultural landscape is “a reflection of human adaptation and use of natural resources and is often expressed in a way land is organized and divided, patterns of settlement, land use, systems of circulation, and types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, vegetation, and by use reflecting cultural values and traditions.”

The current Floyd Bennett Field Historic District includes the buildings and structures as well as the runways and taxiways that were part of the municipal airport. Since a great deal of the original fabric of the airfield still exists, FBF provides a significant cultural landscape. The arrangement of the buildings, the placement of the roads, runways, and taxiways, and the overall plan of the airfield all communicate the use of the landscape as an early municipal airport. Expansion of the runway system, additions of more modern structures, as well as deterioration of some of the early structures and buildings is evident in the landscape. However, FBF remains a cultural landscape.

Archaeological Resources

Prior to the construction of FBF in 1928-29 by the deposition of fill, the area was primarily marshland or shallow bay, as indicated in a Phase IA Archaeological Study of Floyd Bennett Field (Wuebber and Morin 2005). The depth of fill in this area is uncertain, although according to calculations made by Dana Linck, former archaeologist for the Gateway National Recreation Area, at least nine feet of fill deposits overlie the former marshland (Wuebber and Morin 2005). The likelihood of encountering prehistoric archaeological resources is low as long as subsurface construction activities do not extend to more than nine feet below present ground surface (Wuebber and Morin 2005). Below this approximate depth there is the potential for uncovering resources associated with resource procurement (i.e., the exploitation of plants, aquatic and shorebirds, fish, shellfish, etc.), although the evidence might be scant.

In regard to historic archaeological resources, the subsurface consists of fill deposits. However, as noted by Wuebber and Morin (2005:31), historical documentation alone has not provided sufficient information on a number of data gaps and questions relating to the fill deposits that were utilized in the creation of FBF. These consist of the vertical and horizontal extent of the fill, the types of fills (i.e. refuse from New York City environs, dredge material, etc.) that were used, the significance of the fill deposits, whether or

not the fill deposits are stratified and questions concerning New York City material culture and waste disposal patterns over time. The only way to determine the significance of these deposits and if they have the potential to answer these questions is through archeological investigations.

ENVIRONMENTAL CONSEQUENCES

The CEQ regulations that implement NEPA require assessment of impacts to cultural as well as natural resources. In this EA, impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with CEQ regulations. These impact analyses are also intended, however, to comply with the requirements of both NEPA and Section 106 of the NHPA. In accordance with the Advisory Council on Historic Preservation (ACHP) regulations implementing Section 106 of the NHPA (36 CFR Part 800, *Protection of Historic Properties*), impacts to cultural resources were also identified and evaluated by (1) determining the area of potential effect; (2) identifying cultural resources present in the area of potential effect that were either listed in or eligible for listing in the National Register; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible for listing in the National Register; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the ACHP's regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected National Register listed or eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, a characteristic of a cultural resource that qualifies it for inclusion in the National Register, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance) of the resource's location, setting, design, feeling, association, workmanship, or materials. Adverse effects also include reasonably foreseeable effects caused by the alternatives that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means that there is an effect, but the effect would not diminish the characteristics of the cultural resource that qualify it for inclusion in the National Register.

CEQ regulations and NPS DO-12 also call for a discussion of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Cultural resources are non-renewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss of the integrity of the resources that can never be recovered. Therefore, although actions determined to have an adverse effect under Section 106 may be mitigated, the effect remains adverse. The NPS has entered into a Memorandum of Agreement (MOA) with the New York State Historic Preservation Office (NYSHPO) regarding the Adaptive Reuse of Hangars 5, 6, 7, 8. This MOA addresses the FBF Aviator Sports Complex and outdoor athletic fields and details stipulations required to minimize effects of the proposed action on the features and characteristics that qualify FBF for listing on the National Register of Historic Places. A copy of the MOA is provided in Appendix A.

A discussion of the environmental consequences of the No Action Alternative and the Proposed Action on historic structures, the cultural landscape and archaeological resources are provided in the following paragraphs.

Historic Structures

Impact Intensities

- Negligible:** Impact is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for §106 would be no adverse effect.
- Minor:** Adverse impact — alteration of a feature(s) would not diminish the overall integrity of the resource. The determination of effect for §106 would be no adverse effect.
- Beneficial impact — stabilization/preservation of features in accordance with the Secretary of the Interior's Standards for the Treatment of historic properties. The determination of effect for Section 106 would be no adverse effect.
- Moderate:** Adverse impact — alteration of a feature(s) would diminish the overall integrity of the resource. The determination of effect for §106 would be adverse effect. A memorandum of agreement (MOA) is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate.
- Beneficial impact — rehabilitation of a structure in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. The determination of effect Section 106 would be no adverse effect.
- Major:** Adverse impact — alteration of a feature(s) would diminish the overall integrity of the resource. The determination of effect for §106 would be adverse effect. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).
- Beneficial impact — restoration of a structure in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. The determination of effect for Section 106 would be no adverse effect.

Alternative 1 – No Action Alternative

Under Alternative 1, no project related construction would take place to impact the tarmac north of Hangars 7 and 8. The food service building, located in the southeastern portion of FBF, is not historic, dating from the 1970s. The NPS would continue in its current efforts for preservation and protection of FBF. Deterioration of the historic tarmac, as well as continued use, likely would occur. The environmental consequences of Alternative 1 would be site specific, long term, and negligible

Conclusion. There would be negligible impact on historic structures as a result of Alternative 1.

Because there would be no major, adverse impacts to the historic structures, there would be no impairment of the park's resources or values.

Alternative 2 – Outdoor Athletic Fields North Hangar Area (Proposed Action)

Alternative 2 includes construction of two athletic fields over a portion of the historic tarmac at FBF. The fields would be constructed over the historic tarmac, with fill materials placed directly on the tarmac. With the exception of the light poles and fence posts, all of the improvements associated with the athletic fields would be installed, and could be removed, without disturbance to underlying material or structures. Construction would physically impact the tarmac as a result of the installation of 13 light poles that would require that approximately six-foot square cuts be made through the historic concrete at each light location. Fence post installation would require 4-inch diameter holes through the historic tarmac. Additionally, the field would be located in the immediate vicinity (i.e., within 235 feet) of Hangars 7 and 8, which are contributing elements of the National Register Historic District. The proposed food service building (Building 129), located in the southeastern portion of FBF, is not historic, dating from the 1970s; therefore the renovation of Building 129 would not impact historic structures.

Mitigation measures incorporated to address historic structures include limiting the number and size of all cuts in the tarmac to the minimum necessary to install project features. Due to the direct and indirect disturbance to the historic tarmac for the light poles and fence posts, the overall impact of Alternative 2 on historic structures would be site specific, direct, long term, moderate and adverse.

Conclusion. Alternative 2 would result in site specific, direct, long term, moderate and adverse impacts on historic structures.

Because there would be no major, adverse impacts to the historic structures, there would be no impairment of the park's resources or values.

Cultural Landscape

Impact Intensities

Negligible: Impact(s) is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for §106 would be no adverse effect.

Minor: Adverse impact — alteration of a pattern(s) or feature(s) of the landscape would not diminish the overall integrity of the landscape. The determination of effect for §106 would be no adverse effect.

Beneficial impact — preservation of landscape patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. The determination of effect for §106 would be no adverse effect.

Moderate: Adverse impact — alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for §106 would be adverse effect. A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate.

Beneficial impact — rehabilitation of a landscape or its patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. The determination of effect for §106 would be no adverse effect.

Major: Adverse impact — alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for §106 would be adverse effect. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a MOA in accordance with 36 CFR 800.6(b).

Beneficial impact — restoration of a landscape or its patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. The determination of effect for §106 would be no adverse effect.

Alternative 1 – No Action Alternative

Under Alternative 1, no project related construction would take place to impact the existing cultural landscape of FBF. There would be no project related introduction of landscape features or modification of the existing views of the North Hangar Area, which would impact the existing cultural landscape. Deterioration of the tarmac with continued use for other activities would likely continue. There would be no impact on the cultural landscape of FBF.

The food service building, located in the southeastern portion of FBF, is not historic, dating from the 1970s.

Conclusion. There would be no impact on the cultural landscape as a result of Alternative 1.

Because there would be no major, adverse impacts to the cultural landscape, there would be no impairment of the park's resources or values.

Alternative 2 – Outdoor Athletic Fields North Hangar Area (Proposed Action)

With the construction of the recreation fields, Alternative 2 would alter the cultural landscape that is evident along Flatbush Avenue and the overall FBF. The altered landscape and viewshed will have an impact on the integrity of the existing cultural landscape of the historic airfield. Views from the north end of Hangars 7 and 8 would take in the athletic fields, light poles and security fence, as opposed to the existing historic tarmac. Alternative 2 would minimize this modification in the cultural landscape by locating the athletic fields approximately 235-feet north of the hangars and maintaining the existing tarmac over this distance. Due to the altered landscape and viewshed, the overall impact of Alternative 2 on the cultural landscape would be site specific, long term, direct, moderate and adverse.

The food service building, located in the southeastern portion of FBF, is not historic, dating from the 1970s. The adaptive use of this structure for food service would not impact the cultural landscape, as it is located in a portion of the field with other modern structures and non- historic uses.

Conclusion. There would be site specific, long term, direct, moderate, and adverse impacts on the cultural landscape as a result of Alternative 2.

Because there would be no major, adverse impacts to historic structures, there would be no impairment of the park's resources or values.

Archaeological Resources

Certain important research questions about human history can only be answered by the actual physical material of cultural resources. Archaeological resources have the potential to answer, in whole or in part, such research questions. An archaeological site(s) can be eligible for listing in the National Register if the site(s) has yielded, or is likely to yield, information important in prehistory or history in one of three historic contexts or levels of significance: local, state, or national (see National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation*). For purposes of analyzing impacts to archaeological resources, thresholds of change for the intensity of an impact are based on the potential of the site(s) to yield information important in prehistory or history, as well as the probable historic context of the affected site(s):

Negligible: Impact is at the lowest level of detection with neither adverse nor beneficial consequences. For the purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact: disturbance of a site(s) results in little, if any, loss of integrity. For the purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact: maintenance and preservation of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact: disturbance of a site(s) results in loss of integrity. For the purposes of Section 106, the determination of effect would be *adverse effect*. A MOA is executed among the NPS and applicable state and/or tribal historic preservation officer, and if the necessary, the ACHP in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from moderate to minor.

Beneficial impact: stabilization of a site(s). For the purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact: disturbance of a site(s) results in loss of integrity. For the purposes of Section 106, the determination of effect would be *adverse effect*. Measures to minimize or mitigate adverse cannot be agreed upon and the NPS and applicable state and/or tribal historic preservation officer and/or the ACHP are unable to negotiate and execute a MOA in accordance with 36 CFR 800.6(b).

Beneficial impact: active intervention to preserve a site(s). For the purposes of Section 106, the determination of effect would be *no adverse effect*.

Alternative 1 – No Action Alternative

Analysis. Under Alternative 1, no project-related construction would take place that would impact archaeological resources. As a result, the overall impact of Alternative 1 to archaeological resources would be non-existent. For purposes of Section 106, the proposed action would have no effect on archaeological resources.

Conclusion. There would be no impact on archaeological resources as a result of the No Action Alternative.

Because there would be no major, adverse impacts to archaeological resources, there would be no impairment of the park's resources or values.

Alternative 2 – Outdoor Athletic Fields North Hangar Area (Proposed Action)

Under Alternative 2, the tarmac and underlying soils would be disturbed, as would any archaeological resources that may be present, during installation of the light poles and security fence for the proposed athletic fields. Each light pole would involve the excavation of a six-foot by six-foot opening to a depth of approximately 4-feet and piles driven within the excavation to a depth of approximately 30 feet. The diameter of the piles would be approximately 12-inches and the base diameter of the light poles would be approximately 18 to 22-inches. Because of these activities and the potential for disturbance to subsurface archaeological resources, the overall impact of Alternative 2 to archaeological resources would be long term, direct, minor, and adverse.

Because the nature of the historic fill episodes is unclear, and due to the location of Alternative 2 within the Hangar Row Historic District, subsurface testing prior to construction would be required. Testing would involve taking controlled samples from several of the light pole and fence post locations. Monitoring during construction of the remaining locations would also be required. Such a program would constitute mitigation of adverse impacts/effects. Therefore, for the purposes of Section 106, the proposed action under Alternative 2 would have no adverse effects on archaeological resources.

Conclusion. There would be long term, direct, minor, and adverse impacts on archaeological resources as a result of Alternative 2.

Because there would be no major, adverse impacts to archaeological resources, there would be no impairment of the park's resources or values.

WILDLIFE AND WILDLIFE HABITAT

AFFECTED ENVIRONMENT

The undeveloped non-active landscape of FBF, which includes the Grassland Management Area, the forested and shrub thickets of the North Forty and other areas which are at various stages of vegetated succession, provides habitat for many birds and other types of wildlife. In addition, by being located between the open waters and wetlands associated with Jamaica Bay and the Rockaway Inlet, FBF attracts a variety of species which use the area for feeding, breeding and resting.

The Jamaica Bay Unit is known to provide habitat for over 300 migratory and resident bird species and several species of reptiles, amphibians, fish and invertebrates. Many of these species have adapted to urban settings such as those surrounding the natural areas of the Jamaica Bay Unit. However, the existing impervious surfaces and the limited vegetation within many sections of FBF limit the wildlife habitat in many areas and consequently the wildlife that may be utilizing these areas. The absence of aquatic habitats at all of the alternative locations eliminates the potential for any fish, most amphibians and many birds and insects to be within these locations. A select group of mammals, amphibians, reptiles and birds that may occur within or near to the alternative areas are summarized in Table 3.

**TABLE 3: SELECT MAMMALS, AMPHIBIANS, REPTILES & BIRDS
THAT MAY BE WITHIN OR ADJACENT TO ALTERNATIVE 2**

GROUP	
Common Name	Scientific Name
MAMMALS	
Cottontail rabbit	<i>Sylvilagus floridanus</i>
Eastern chipmunk	<i>Tamias striatus</i>
Gray squirrel	<i>Sciurus carolinensis</i>
House mouse	<i>Mus musculus</i>
Norway rat	<i>Rattus norvegicus</i>
Opossum	<i>Didelphis virginiana</i>
Raccoon	<i>Procyon lotor</i>
White-footed mouse	<i>Peromyscus leucopus</i>
AMPHIBIANS	
American toad	<i>Bufo americanus</i>
Fowler's toad	<i>Bufo woodhouse fowleri</i>
REPTILES	
Eastern box turtle†	<i>Terrapene Carolina</i>
Eastern garter snake	<i>Thamnophis sirtalis</i>
Eastern milk snake	<i>Lampropeltis triangulum</i>
Northern black racer	<i>Coluber constrictor constrictor</i>
Northern hognose snake†	<i>Heterodon platyrhinos</i>

TABLE 3: (CONTINUED)

GROUP	
Common Name	Scientific Name
BIRDS	
American crow	<i>Corvus brachyrhynchos</i>
American kestrel	<i>Falco sparverius</i>
American robin	<i>Turdus migratorius</i>
Barn swallow	<i>Hirundo rustica</i>
Black-capped chickadee	<i>Parus atricapilla</i>
Bluejay	<i>Cyanocitta cristata</i>
Brant	<i>Branta bernicula</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Brown thrasher	<i>Toxostoma rufum</i>
Canada goose	<i>Branta Canadensis</i>
Common flicker	<i>Colaptes auratus</i>
Dark-eyed junco	<i>Junco hyemalis</i>
European starling	<i>Sturnus vulgaris</i>
Fish crow	<i>Corvus ossifragus</i>
Gray catbird	<i>Dumetella carolinensis</i>
Greater black-backed gull	<i>Larus marinus</i>
Herring gull	<i>Larus marinus</i>
House finch	<i>Carpodacus mexicanus</i>
House sparrow	<i>Passer domesticus</i>
Killdeer	<i>Charadrius vociferous</i>
Laughing gull	<i>Larus atricilla</i>
Mourning dove	<i>Zenaidura macroura</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Northern mockingbird	<i>Mimus polyglottis</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Rock dove	<i>Columba livia</i>
Tree swallow	<i>Iridoprocne bicolor</i>

†State-listed species of special concern

Since the Jamaica Bay Unit is located in the coastal area of the Atlantic Flyway, many migratory bird species may utilize this area during fall and spring migrations. For example, the Jamaica Bay Unit has been identified as an important migratory stopover for shorebirds (USFWS 1997). A select group of migratory species known to occur with the Jamaica Bay Unit are provided in Table 4. Note that some avian species listed in Table 3 are also migratory and were not included in Table 4. Many of the bird species that occur within the Jamaica Bay Unit also breed there.

TABLE 4: SELECTED MIGRATORY BIRDS KNOWN TO OCCUR WITHIN THE JAMAICA BAY UNIT

Common Name	Scientific Name	Common Name	Scientific Name
American redstart	<i>Setophaga ruticilla</i>	Magnolia warbler	<i>Dendroica magnolia</i>
Barn owl	<i>Tyto alba</i>	Northern harrier†	<i>Circus cyaneus</i>
Black and white warbler	<i>Miniotilta varia</i>	Northern oriole	<i>Icterus galbula</i>
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	Olive-sided flycatcher	<i>Contopus cooperi</i>
Blackburnian warbler	<i>Dendroica fusca</i>	Ovenbird	<i>Seiurus aurocapillus</i>
Blackpoll warbler	<i>Dendroica striata</i>	Parula warbler	<i>Parula americana</i>
Black-throated green warbler	<i>Dendroica virens</i>	Pine warbler	<i>Dendroica pinus</i>
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	Prairie warbler	<i>Dendroica discolor</i>
Boblink	<i>Dolichonyx oryzivorus</i>	Red crossbill	<i>Loxia curvirostra</i>
Brown creeper	<i>Certhia americana</i>	Red-breasted nuthatch	<i>Sitta canadensis</i>
Canada warbler	<i>Wilsonia canadensis</i>	Red-eyed vireo	<i>Vireo olivaceus</i>
Cape May warbler	<i>Dendroica tigrina</i>	Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>
Cerulean warbler‡	<i>Dendroica cerulea</i>	Ruby crowned kinglet	<i>Regulus calendula</i>
Chipping sparrow	<i>Spizella passerina</i>	Ruby-throated hummingbird	<i>Archilochus colubris</i>
Common grackle	<i>Quiscalus quiscula</i>	Saw-whet owl	<i>Aegolius acadicus</i>
Common redpoll	<i>Carduelis flammea</i>	Scarlet tanager	<i>Piranga olivacea</i>
Cooper's hawk‡	<i>Accipiter cooperii</i>	Sharp-shinned hawk‡	<i>Accipiter striatus</i>
Downy woodpecker	<i>Picoides pubescens</i>	Solitary vireo	<i>Vireo solitarius</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>	Swainson's thrush	<i>Catharus ustulatus</i>
Eastern phoebe	<i>Sayornis phoebe</i>	Tennessee warbler	<i>Vermivora peregrina</i>
Eastern wood pewee	<i>Contopus virens</i>	Tree sparrow	<i>Passer montanus</i>
Evening grosbeak	<i>Coccothraustes vespertinus</i>	Veery	<i>Catharus fuscescens</i>
Field sparrow	<i>Spizella pusilla</i>	White-throated sparrow	<i>Zonotrichia albicollis</i>
Golden-crowned kinglet	<i>Regulus satrapa</i>	White-winged crossbill	<i>Loxia leucoptera</i>
Great crested flycatcher	<i>Myiarchus crinitus</i>	Wilson's warbler	<i>Wilsonia pusilla</i>
Hermit thrush	<i>Catharus guttatus</i>	Wood thrush	<i>Hylocichla mustelina</i>
Hooded warbler	<i>Wilsonia citrina</i>	Worm-eating warbler	<i>Helmitheros vermivora</i>
Indigo bunting	<i>Passerina cyanea</i>	Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Kentucky warbler	<i>Oporornis formosus</i>	Yellow-rumped warbler	<i>Dendroica coronata</i>
Long-eared owl	<i>Asio otus</i>	Yellow-throated vireo	<i>Vireo flavifrons</i>

†State-listed as Threatened

‡ State-listed as Special Concern

Several insects, including migratory species, occur within the Jamaica Bay Unit. For example, fifty-four species of butterflies and skippers have been recorded (USFWS 1997). Butterfly habitat includes the open fields, shrub thickets, developing woodlands, and wetlands. However, the species richness and number of insects within FBF is not anticipated to be high compared to the remainder of the refuge. The existing surface at Alternative 2 consists of impervious tarmac. Therefore, the project area within Alternative 2 provides minimal habitat for wildlife.

The areas adjacent to this alternative location consist of buildings (i.e., Hangars 7 and 8) impervious areas, open fields, and some shrubs and trees which provide marginal habitat for wildlife. The quality of wildlife habitat is also limited by the proximity to and fragmentation caused by Flatbush Avenue and the existing runways and buildings. Vegetation observed in adjacent areas to the east includes a mix of native and non-native species such as: choke cherry (*Prunus virginiana*), autumn olive (*Elaeagnus umbellata*), hawthorne (*Crataegus sp.*), bayberry (*Merella pensylvanica*), multiflora rose (*Rosa multiflora*), little bluestem (*Schizachyrium scoparium*) and panic grass (*Panicum virgatum*).

Given the limited wildlife habitat that is provided by Alternative 2, few of the species listed in Tables 3 and 4 are expected to be using this area. Wildlife species that may be utilizing this area are likely to be highly adapted to urban environments. Furthermore, these species are likely using the area for short periods of time (i.e., resting, basking and/or eating or traveling through) and then move to the more natural and protected areas for the remainder of the time.

ENVIRONMENTAL CONSEQUENCES

Potential environmental consequences related to wildlife and wildlife habitat could include changes in the nature of the habitat or changes in the behavior, species richness, abundance and/or distribution of the wildlife within the area.

Impact Intensities

- Negligible:** There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be of short duration and well within natural fluctuations. Impacts would have no measurable or perceptible changes to the size, integrity, or continuity of wildlife habitat.
- Minor:** Impacts would be detectable, but they would not be expected to be outside the natural range of variability and would not be expected to have any long-term effects on native species, their habitats, or the natural processes sustaining them. Impacts would be measurable or perceptible but would be localized within a relatively small area. The overall viability of wildlife habitat would not be affected and, if left alone, would recover.
- Moderate:** Breeding animals of concern are present; animals are present during particularly vulnerable life-stages, such as migration or juvenile stages; mortality or interference with activities necessary for survival can be expected on an occasional basis, but is not expected to threaten the continued existence of the species in the park unit. Impacts would cause a change in wildlife habitat (e.g. abundance, distribution, quantity, or quality); however, the impact would remain localized.

Major: Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability for long periods of time or be permanent. Impacts to wildlife habitat would be substantial, highly noticeable, and permanent.

Alternative 1 – No Action Alternative

Analysis. The No Action Alternative would not cause any direct or indirect impacts to wildlife or wildlife habitat. There would be no changes to the existing impervious surface or other site conditions. Those birds and other wildlife that have habituated to the current situation would continue to utilize the area, and no impacts would occur.

Conclusion. There would be no impact on wildlife or wildlife habitat as a result of the No Action Alternative.

Because there would be no major, adverse impacts to wildlife or wildlife habitat, there would be no impairment of the park's resources or values.

Alternative 2 – Outdoor Athletic Fields North Hangar Area (Proposed Action)

Analysis. Activities under Alternative 2 that would potentially impact the wildlife and wildlife habitat include converting approximately 10.1 acres of existing impervious surface to artificial turf surface and installation of fencing around the recreational fields. Construction staging would be located on impervious surfaces and would not necessitate disturbance to vegetation in adjacent areas.

Note that the proposed night lighting for the recreational fields under Alternative 2 could affect certain wildlife within these locations (i.e., birds that migrate at night, insects and nocturnal/diurnal animals). For the purposes of this EA, these groups of wildlife have been identified as sensitive receptors to light pollution and potential environmental consequences are addressed in a later section of this report (see LIGHTSCAPES, page 41). Therefore, wildlife impacts due to field lighting are not discussed in this section of this EA.

As discussed, the existing tarmac provides minimal habitat to wildlife and species that use this area are likely highly adapted to urban environments and utilize this area for short periods of time. Terrestrial species, other than insects, would no longer be able to access this area due to the fencing. Avian species and insects, especially those adapted to urban settings (gull and dove species and house sparrows) would continue to travel through the area and utilize the resulting landscape (i.e, fenceline and light posts) for perching habitat. Since the existing area does not provide ideal wildlife habitat, as compared to the surrounding refuge, impacts would be negligible long-term, localized and direct. Project impacts to the behavior and distribution of wildlife would also be negligible, long-term, localized, and indirect and would not affect the richness or abundance of wildlife species.

Wildlife utilizing this area would likely move away from the adjacent areas during disturbance activities related to construction and would move back into the adjacent areas following construction. Therefore, impacts to wildlife habitat as a result of construction activities would be negligible, short-term, localized and direct. Construction phase related impacts to wildlife behavior and distribution would be negligible, short-term, localized and indirect and would not affect species richness or abundance.

Conclusion. There would be negligible, long-term, localized, direct impacts to wildlife habitat within the footprint of the project area as a result of Alternative 2. There would be negligible, short-term, localized, indirect impacts to wildlife in the project area as a result of construction activities associated with Alternative 2.

Because there would be no major, adverse impacts to wildlife or wildlife habitat, there would be no impairment of the park's resources or values.

SOILS AND TOPOGRAPHY

AFFECTED ENVIRONMENT

Based on guidance from *NPS Management Policies 2001* (NPS 2000), Gateway NRA and all other NPS units seek to protect soil conditions within their boundaries. This includes maintaining naturally occurring soils where possible and taking action to prevent erosion or contamination of these resources. *NPS Management Policies 2001* also directs parks to maintain and protect natural topographic features. Because of the history of development in New York City and the Jamaica Bay area specifically, naturally existing soils have already been excavated, covered with fill material, compressed, or covered by impervious surfaces. Similarly, the topography of the region has been altered by development: cut and fill activities have created many new, man-made topographic features.

The Natural Resource Conservation Service (NRCS) has classified all of the soils within the region. Soils within the developed areas of FBF are comprised of the Bigapple-Fortress complex, the Bigapple-Verrazano-Pavement and Buildings Complex, Gravesend and Oldmill coarse sands, and Flatland-Fishkill sandy loams (NRCS 2001). Many of these soils are related to fill or development activities, and like the naturally occurring soils in the area, lack any manmade or natural debris. The lack of debris allows for easy cut, fill, or grading activities that are required for many construction projects, as any large amount of debris would either require significant work to remove or careful planning to avoid these disruptions. The lack of debris also contributes to the soils ability to absorb water. The soils at FBF have moderate to rapid permeability and a water table that is at least 18 inches below the surface. These conditions allowed for the construction of and continued use of the large amount of impervious surface that covers much of the site.

As mentioned previously, the history of development within the region, along with its location in the coastal plane, has left the area relatively flat. This is especially true at FBF where the land was specifically manicured to support the airfield, which was made possible by the soil attributes described above. Most developed areas within FBF have very little variability in their topography, ranging from 12.0 to 15.0 feet based the North American Vertical Datum of 1988 (NAVD 88)². The lowest elevations are found along the shoreline that surrounds the site. Elevations within the center of the Field are higher than those along the shoreline, but have been flattened to support the airfield. Areas that have not been developed, like the North Forty, have not been flattened and achieve higher elevations, reaching 17.0 feet NAVD 88. The higher elevations continue northwards to the Belt Parkway and surrounding residential neighborhoods. Heading south, however, elevations remain constant and then begin to decrease as the peninsula gives way to the Rockaway Inlet.

The outdoor athletic fields would be located on the western, developed portion of FBF. The project consists of a large tarmac where the fields would be placed and an existing transformer vault which would be renovated to provide restroom facilities. Topography in the project area is flat, with an elevation of

approximately 14.5-feet NAVD88. The proposed food service area would utilize existing Building 129 which is located in the south eastern portion of FBF. Elevation in the vicinity of Building 129 is approximately 13-feet NAVD88. There are no exposed native soils with in the project area.

ENVIRONMENTAL CONSEQUENCES

Available information on soils and topography potentially impacted in various areas of the Jamaica Bay Unit was compiled and evaluated for this document. Predictions about short- and long-term impacts were based on previous projects with similar soils and topographic conditions, as well as professional judgment. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensities

Negligible: The impacts to soils and topography would be below levels of detection.

Minor: The impacts to soils and/or topography would be detectable but small. Disruption and/or displacement of existing soils would be relatively slight. Changes in the amounts and locations of impervious surfaces would be measurable but would not be at a great enough scale to noticeably alter existing natural conditions. Similarly, topographic changes may be noticeable but would not constitute a change in the local terrain. Mitigation may be needed to offset adverse impacts and would be relatively simple to implement and likely be successful.

Moderate: The impacts to soils and/or topography would be readily apparent, as disruption and/or displacement would be noticeable and changes in the amounts and locations of impervious surfaces could alter existing conditions. Topographic changes would be noticeable and could alter the terrain within a confined area. Mitigation measures would be necessary to offset adverse impacts and likely be successful.

Major: The impacts to soils and/or topography would be readily apparent and would result in substantial changes to existing soils and impervious cover. Changes to topography would also be readily apparent and could alter the terrain on a regional scale. Mitigation measures to offset adverse impacts would be needed, extensive, and their success could not be guaranteed.

Alternative 1 – No Action Alternative

Analysis. Under the No Action Alternative, no changes would be made to the existing soil or topographic conditions at FBF. Conditions that currently exist would remain as is, continuing to improve or degrade at their current rates.

Conclusion. There would be no impact to either soils or topographic conditions as a result of the No Action alternative.

Because there would be no major, adverse impacts to soils or topography, there would be no impairment to the park's resources or values.

Alternative 2 – Outdoor Athletic Fields North Hangar Area (Proposed Action)

Analysis. Under Alternative 2, the outdoor athletic fields would be placed on an approximately 10.1 acre site about 235-feet north of Hangars 7 and 8 at FBF. Construction of the athletic fields would incorporate approximately 7,000 cubic yards of fill, an under-drain drainage system that would be installed directly on top of the historic tarmac, 13 light pole foundations, and a security fence. The light pole installation would involve cutting a 6-foot by 6-foot hole in the tarmac and excavating to a depth of 4-feet within the hole, driving a piling down an estimated 30 feet and sealing the hole with a concrete foundation for each of the 13 locations. The diameter of the light poles will range from 18 to 22-inches and the diameter of the pilings would be approximately 12-inches. The posts for the security fence, which would be grouted in place, would require a 4-inch diameter hole through the tarmac to a depth of 1-foot. Since existing soils are currently covered by tarmac, and following project construction would be covered by the light foundations and fence posts, impacts to soils would be negligible. Since the drainage system would direct storm water runoff to existing drains, drainage patterns would remain unchanged; erosion of the fill material would be controlled by the artificial turf, and erosion of existing soils would be controlled by the light pole foundations and tarmac. Topography in the area would be raised by approximately 9-inches, to an elevation of approximately 15.25 ft NAVD88, resulting in a direct, long-term minor impact to topography in the project area.

The proposed restroom facilities would utilize the existing transformer vault and have no affect on existing soil and topographic conditions. The proposed concession stand would utilize existing Building 129 and would not impact existing soil and topographic conditions.

Conclusion. There would be direct, minor, long-term, impact to site-specific topography as a result of the athletic fields construction. These impacts would be limited to the location of the two outdoor athletic fields. There would also be a negligible, short-term, direct impact to site-specific soils as a result of the athletic fields lighting foundations. These impacts would be limited to the location of the lighting fixtures.

Because there would be no major, adverse impacts to soils or topography, there would be no impairment to the park's resources or values.

LIGHTSCAPES

AFFECTED ENVIRONMENT

Artificial night lighting has a potential to affect sensitive receptors of both the natural and urban environments. FBF is located in a densely populated urban area. Light sources in the vicinity include 24-hour highway and street lighting along the Belt Parkway and Flatbush Avenue, lighting at JFK Airport, and lighting associated with the residences, local streets and retail stores of surrounding communities. Light effects are influenced by the type of residential housing, which in the surrounding communities ranges from single family homes to high rise apartment buildings.

Natural Environment. As discussed previously, the natural areas, including the Grassland Management Area, the North Forty, other areas which are at various stages of vegetation succession and the open waterfront of FBF, provide habitat for many birds and other types of wildlife. In addition, by being located between the open waters and wetlands associated with Jamaica Bay and the Rockaway Inlet, FBF attracts a variety of species. Sensitive receptors of the natural environment to light pollution that may be

within the alternative project areas include birds that migrate at night, insects and nocturnal/diurnal animals.

Urban Environment. The urban environment surrounding FBF includes an existing recreational facility that is part of Marine Park (located across Flatbush Avenue), the Belt Parkway (located north of the project site) and the Rockaways (located south of the project site). The closest sensitive receptors of the urban environment to light pollution to the alternative project sites include the following:

- New York Police Department (NYPD) Air Operations Heliport: eastern side of FBF;
- JFK Airport: located approximately seven miles northeast;
- Coney Island Hospital: located approximately 3 miles west;
- Night-time boat traffic of Rockaway Inlet and Jamaica Bay and the Barren Island Marina;
- Mill Island residential community: located approximately 2 miles north ;
- Roxbury residential community: located approximately 2 miles south; and
- Gerritsen Beach residential community: located approximately 2 miles west.

ENVIRONMENTAL CONSEQUENCES

Potential environmental consequences related to artificial night lighting to sensitive receptors of the natural environment could include changes in behavior, species richness, abundance and/or distribution.

Potential environmental consequences related to artificial night lighting to sensitive receptors of the urban environment could include interferences in the ability to navigate and communicate and changes in the aesthetic value of the night sky (star visibility).

Impact Intensities

- Negligible:** Sensitive receptors of the natural and/or urban environments would not likely be aware of the effects associated with proposed alternative. There would be no observable or measurable impacts to sensitive receptors of the natural and/or urban environments. Impacts would be of short duration and well within natural fluctuations.
- Minor:** Sensitive receptors of the natural and/or urban environments would be aware of the effects associated with the proposed alternative. Impacts would be detectable, but they would not be outside the natural range of variability and would not be expected to have any long-term effects on the sensitive receptors of the natural and/or urban environments. Impacts would be localized within a relatively small area. The overall condition of natural and/or urban environments would not be affected and, if left alone, would recover.
- Moderate:** Impacts would cause a noticeable and measurable change in the condition of the natural and/or urban environments. Impacts would remain localized.
- Major:** Impacts would be noticeable and measurable and they would be outside the natural range of variability for long periods of time or be permanent. Impacts to the natural and/or urban environments would be substantial, highly noticeable, and permanent and the condition of the natural and urban environments has a potential to change.

Alternative 1 – No Action Alternative

Analysis. There would be no changes to the existing lighting conditions. The No Action Alternative would not cause any direct or indirect impacts to sensitive receptors to light pollution in the natural or urban environment. Those sensitive receptors that have habituated to the current situation of the existing night lighting within the area would continue to function as they currently do and no impacts would occur.

Conclusion. There would be no impact to sensitive receptors to light pollution in the natural or urban environment as a result of the No Action Alternative.

Because there would be no major, adverse impacts to sensitive receptors of the natural and urban environment, there would be no impairment of the park's resources or values.

Alternative 2 – Outdoor Athletic Fields North Hangar Area (Proposed Action)

Analysis. The field lighting has been designed to limit the number and height of lights and the spillover of light in order to achieve the objective of safely lighting the field while minimizing lightscape impacts to the environment. Under this alternative, five 80-foot tall and eight 70-foot tall light poles would be installed. Each pole would have five fixtures that hold 1,000 watt incandescent lamps. Constant illumination tests provided by Musco Sports Lighting, LLC (March 2006) indicated that when all fixtures per pole are lighted on the fields, lights would emit an average of 38 foot candles per square foot. The generated light would be within the recommended levels of 20 to 50 foot candles per square foot for social or recreational sports (IDA 2002).

Consistent with applicable guidelines for athletic fields (IDA 2002), the fixtures would be fully shielded to focus the light at the playing surface, reducing direct uplight and spillover. This would effectively minimize the radius of the affected area. Spillover tests within 150 feet of the lighting fixtures (Musco 2006) indicated that horizontal spillover light, when all fixtures per pole are powered, would range between 0.02 and 0.23 foot candle per square foot. Guidelines for athletic fields recommend a design goal of 0.5 foot candle per square foot at any location on non-residential property (IDA 2002). The proposed lighting would be consistent with this guideline. The field lights would only be powered during times of scheduled night-time events and only the field in use would be lit. It is estimated that lights would be powered for approximately 200 hours annually.

Natural Environment. As stated, sensitive receptors of the natural environment to light pollution that may be within the alternative project areas include birds that migrate at night, insects and nocturnal/diurnal animals.

A list of select migratory birds known to occur at the Jamaica Bay Unit was provided in Table 3 in the Wildlife and Wildlife Habitat section (page 34). Examples of nocturnal migratory birds include rails, shorebirds, flycatchers, orioles, sparrows, warblers, vireos, and thrushes (Lincoln et al 1998). These birds can be strongly attracted to sources of artificial light, especially during poor weather conditions (Longcore and Rich 2004; McAdams 2003; Jones and Francis 2003). Once inside the light, birds can become disoriented and entrapped which can result in collisions, exhaustion and predation (Longcore and Rich 2004). Most nocturnal migratory birds fly at between 500 and 1,000 feet (Lincoln et al 1998; Longcore and Rich 2004), which is well above the height of the light structures. In addition, bird collisions with structures usually occur with tall structures such as skyscrapers, communication towers

and lighthouses (Jones and Francis 2003). Therefore bird collisions with the field lighting would not be expected. Nocturnal migratory birds are known to fly lower during times of inclement weather and later at night (Longcore and Rich 2004). Since the field lights would only be powered during times of scheduled night-time events which would likely not occur during inclement weather, the likelihood for nocturnal migratory birds to be attracted to the light is decreased. Furthermore, peaks in scheduled night-time events (summer seasons) would not coincide with peak migratory periods (April through May and August through October). Shielded lights would minimize upright and spillover effects, making it less likely for migratory birds to be attracted to the lights.

Negative effects to nocturnal migratory birds would not affect species richness. The proposed lighting would result in minimal impacts to the abundance and distribution of nocturnal migrants. Changes in the lightscape due to field lighting would result in negligible, adverse, long-term, localized and indirect impacts to nocturnal migrants.

Insects such as moths can be attracted by lights. Artificial lighting has been attributed to decreases in population sizes, mating, dispersal and migration of moths (Frank 2002). Moths are more likely to be attracted to white lights and lights that emit ultraviolet wavelengths (Longcore and Rich 2004). Since the light fixtures are designed with incandescent light bulbs, very little to no ultraviolet light would be given off, lessening the potential for attraction. Peak activity for scheduled night-time events would coincide with peak activity periods for insects (i.e., summer). Therefore, negative impacts to the distribution and abundance of insects would be expected; however species richness would not be affected. Impacts would be minimized since lights would only be on during times of scheduled night-time events and only the field in use would be lit. Changes in the lightscape due to field lighting would result in minor, adverse, long-term, localized and indirect impacts to nocturnal insects.

Diurnal animals, including birds and mammals, have been found to extend the duration of activities such as foraging or territorial behaviors under artificial lights (Longcore and Rich 2004; Miller 2006). Since the lighted area would be limited to the fenced areas of the athletic fields, non-avian species would not be able to access these areas. Diurnal avian species may be attracted to the lighted area, resulting in minor, long-term, negative, indirect impacts due to alteration of behavior patterns.

Nocturnal animals such as owls, rodents, raccoons and opossums would likely decrease regular activities or avoid lighted areas. Nocturnal avian species, such as owls would likely avoid this area regardless, given the absence of suitable foraging habitat. Therefore, lightscape changes associated with Alternative 2 would result in negligible, adverse, indirect, long-term, and localized impacts to nocturnal animals (other than migratory birds and insects as addressed above). Lightscape changes associated with Alternative 2 would minimally affect the distribution of certain nocturnal species would not affect species richness or abundance.

Urban Environment. Since the field lighting would emit white light that would be shielded, and upright and spillover light would be minimized, the proposed lighting would not influence the ability of sensitive receptors to navigate or communicate. Though white lights are used as running lights for navigating watercraft, these lights would be high enough from the ground so they would not confuse night-time boaters. Steady white lights are not considered obstruction lights by the Federal Aviation Administration (FAA 2000). The height of the proposed lighting structures is well below the FAA height notification requirements (structures above 200 feet of ground level) (Federal Regulation Title 14 Part 77). Therefore, there would be no impact to sensitive receptors, such as the NYPD Air Operations, JFK Airport and hospital facilities, or night-time boaters.

The amount of light that emanates from the surrounding urban areas already creates a perpetual glow on the night sky. Furthermore, since shielded lights would minimize upright light pollution, adverse impacts to the aesthetic quality of the night sky would be negligible, long-term, direct, and localized.

Conclusion. Impacts to sensitive receptors of the natural environment would be adverse, long term, localized and indirect, with impacts to nocturnal migrants and animals being negligible and impacts to nocturnal insects and diurnal animals being minor.

There would be no negative impacts to sensitive receptors of the urban environment, except for negligible, long-term, localized direct impacts to local citizens due to changes in the aesthetic value of the night sky.

Because there would be no major, adverse impacts to sensitive receptors of the natural and urban environment due to changes in the lightscape, there would be no impairment of the park's resources or values.

VISITOR USE AND EXPERIENCE

AFFECTED ENVIRONMENT

Along with resource management and protection, the NPS works to provide its visitors with a high-quality experience at its parks. The visitor experience starts before visitors reach their destination and continues throughout their stay at the park. *NPS Management Policies 2001* (NPS 2000) addresses some of these elements specifically, and relates many others to the specific resources that make up the visitor experience.

FBF offers one of the most consolidated centers of recreational and educational activities in Gateway NRA. The Ryan Visitor Center, hangars, and runways offer interpretation of the historic airport; the Ecology Village, Environmental Study Center, and historic airplane restoration offer different educational opportunities; and active and passive recreational opportunities are available across the site including hiking, bird watching, fishing, boating, bicycling, jogging, land sailing, and remote control airplane operation.

In 2003, approximately 1,997,760 people visited the FBF. However, this number includes those visitors traveling to one of the non-NPS sites. In 2003, concessionaires at the FBF reported visitation to be approximately 350,500. Therefore, the remaining 1,647,200 visitors' destination cannot be determined; it may be assumed that most of them were NPS visitors. These visitors come to the site throughout the year, although there are several large events during the spring and summer months which attract large crowds to the site. Currently, the NPS planning to modify four existing hangars, along the FBF's northern border with Flatbush Avenue, to support a new sports complex that would include ice rinks and other indoor activities. This new facility would attract new visitors to the already well-visited site. The action alternatives, the outdoor athletic fields and other facilities, would further increase visitation and augment the new sports complex center.

Prior to reaching the FBF, there is limited signage along Flatbush Avenue to inform the visitor they are passing an NPS site. The lone entrance to the site is located south of the Ryan Visitor Center and other structures that are visible from the road. This entrance serves visitors that use the FBF for recreational activities, as well as those that visit the site for its educational programs. The visitors to the proposed

athletic fields would also use this entrance. Tenants of the FBF, including, the USMC, NYPD, and NYCDOS, also use the same entrance.

Once visitors have entered the FBF, there is still little visual recognition of the park structures seen from the road, other than a few small signs directing drivers towards different locations within the FBF. From the FBF entrance, visitors may use a variety of small roads or wide runways to reach their destination.

ENVIRONMENTAL CONSEQUENCES

NPS Management Policies 2001 (NPS 2000) states that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks, and that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks. One of the greatest challenges to maintaining a high-quality park environment at Jamaica Bay is making the park visible and easily accessible in the growing urban environment. To accomplish this, the NPS must ensure that its sites within the city are easily recognizable and accessible. As the city continues to grow, the visitor experience may consequently be diminished. The following intensity levels measure the impact the growing urban environment and/or the proposed action would have on the visitor experience at Jamaica Bay.

Impact Intensities

- Negligible:** The visitor use or experience within the study area would not be affected or changes would not be noticeable to visitors. Any impacts would be short-term and the visitor would not likely be aware of the impacts associated with the alternative.
- Minor:** The impacts to visitor use and experience would be detectable. Although the visitor would be aware of changes, they would not find it necessary to alter current practices.
- Moderate:** The impacts to visitor use and experience would be readily apparent and likely long-term. The visitor would be aware of changes and could find it necessary to alter current practices.
- Major:** The impacts to visitor use and experience would be readily apparent and would have important long-term consequences. The visitor would be aware of the impacts associated with the alternative and would find it necessary to alter current practices.

Alternative 1 – No Action Alternative

Analysis. There would be no change to existing conditions and no construction-related impacts to visitor experiences. The No Action Alternative would not cause any direct or indirect impacts to visitors. Visitors would continue to function as they currently do and no impacts would occur.

Conclusion. The visitor experience, in this area of the FBF, would be focused on the new indoor sports complex. There would be no impacts to visitor use from Alternative 1.

Because there would be no major, adverse impacts to visitor use or experience, there would be no impairment of the park's resources or values.

Alternative 2 – Outdoor Athletic Fields North Hangar Area (Proposed Action)

Analysis. During construction, the project area would be closed to the public; however, due to the limited items of interest in this area, it is not anticipated that the project area currently attracts many visitors. The surrounding areas of the FBF would remain open to the public throughout construction. Construction activities would also introduce temporary visual, audible, and atmospheric intrusions into the refuge setting due to the noise and exhaust associated with construction equipment and incidental dust associated with fill placement. Such intrusions would temporarily reduce the quality of visitor experiences. Construction-related impacts would be indirect, minor, adverse, and short term.

The athletic fields and associated restrooms would provide enhanced recreational opportunities for visitors which are not currently available at FBF. The athletic fields would provide opportunities for soccer, soft ball, lacrosse and other team sports. The perimeter track would provide opportunities for walking, jogging, and running. These types of recreational facilities are limited in the community. The field lighting would allow use of the fields after daylight hours, enabling schools and other groups increased opportunities for use. Shade structures are also proposed adjacent to the athletic fields; thus enhancing the user's experience. The athletic fields would attract visitors from throughout the region. Alternative 2 would result in direct, beneficial, long term, moderate impacts to visitor use.

The use of Building 129 as a food service building (not open to the public) would have no impact on visitor use. Building 129 is located approximately 1-¼ miles of the new sports complex and proposed athletic fields. Only supply vehicles would travel to and from the building, as well as the employees; however, the vehicles would be limited; therefore, blending into the normal traffic patterns of the FBF.

Conclusion. Overall, the athletic fields, restrooms, shade structures and reconstruction of Building 129 would result in direct, beneficial, moderate, and long-term impacts to visitor use and experience. Construction-related impacts would be indirect, minor, adverse, and short term.

Because there would be no major, adverse impacts to visitor use or experience, there would be no impairment of the park's resources or values.

OPERATIONS

AFFECTED ENVIRONMENT

Compared to many other NPS facilities, the Jamaica Bay Unit has a large number of employees; however, the size of the staff is in line with the size of the area and the number of services offered. In some cases, operations are uniform across the unit, while in other cases they are site-specific. Most operations at the Jamaica Bay Unit are focused in areas that offer the most visitor services and/or attract the most visitors, as described below.

Floyd Bennett Field

Operations at FBF cover a wide variety of activities that occur on a year-round basis. Operations at the Field include security patrols, issuing of special use permits, overseeing special events, and conducting interpretive and environmental education programs (such as camping programs, guided walks, and historic interpretation). Operations also require staffing the visitor center, resource management, and maintenance and administrative functions. Resource management activities include mowing grasslands to

support bird habitats, as well as managing other lawns and the trails along the North Forty. To support all of these activities, the equivalent of 25 full time employees are dedicated to the site. The new outdoor athletic fields would be located on the northern developed portion of FBF and utilize existing roads and parking on site. The facility would also have a drop-off circle for bus and car access, allowing direct entrance to the athletic field area.

ENVIRONMENTAL CONSEQUENCES

Operations, for the purpose of this analysis, refers to the effectiveness and efficiency of park staff's ability to carry out all tasks necessary to operate and maintain access, circulation, and parking within FBF. This includes operating toll booths, traffic control, concession management, landscaping, garbage collection, and infrastructure maintenance.

Impact Intensities

- Negligible:** Changes would be at a level of importance that would not require noticeable alterations in current park operations.
- Minor:** Changes would be at a level of importance that would require some alteration in current operations. These changes would be simple to make and could be easily incorporated into current operation procedures.
- Moderate:** Changes would be at a level of importance that would require a noticeable alteration in current park operations. These alterations would necessitate changes in current staffing and/or operating procedures to ensure the park was appropriately maintained.
- Major:** Changes would be at a level of importance that would require a noticeable change in current park operations. These alterations would necessitate changes in FTEs or funding dedicated to the site.

Alternative 1 – No Action Alternative

Analysis. Under the No Action Alternative, no changes would be made to the existing site conditions which would require modification of operations at FBF. Operations would continue as is. The renovation of Building 129 would be conducted by Aviator S&R and once operational, this food service area would be operated by Aviator S&R. The food service area would not interfere with, nor impact, park operations.

Conclusion. There would be no impact to operations at FBF as a result of the No Action Alternative.

Because there would be no major, adverse impacts to resources or values, there would be no impairment of the park's resources or values.

Alternative 2 – Outdoor Athletic Fields with Lighting (Proposed Action)

Analysis. The development of the outdoor athletic fields would require the NPS to focus on accommodating the new user group. While the location of the athletic fields would not conflict with current operations, the increased visitor use would necessitate added NPS staff for traffic control, visitor

entrance, visitor safety and security. This increased demand on NPS staff would result in moderate, direct, long term adverse impacts to FBF operations. The concessionaire would be responsible for all field operations and maintenance limiting the need for NPS staffing and impact on park operations.

The proposed Aviator S&R employee cafeteria and food service area would utilize existing Building 129 and be staffed by the concessionaire, and would have no affect on park operations.

The proposed restroom facilities would utilize the existing transformer vault and be maintained by the concessionaire, and would have no affect on park operations.

Waste management from each facility would be provided by the concessionaire, and would have no affect on park operations.

Conclusion. There would be minor, direct, long term, adverse impacts to FBF operations as a result of the outdoor athletic field due to increased visitor use and associated logistic and security issues.

Because there would be no major, adverse impacts to resources or values, there would be no impairment of the park's resources or values.

CUMULATIVE IMPACT ANALYSIS

The CEQ regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as impacts which result when the impact of the proposed action is added to the impacts of other present and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7).

METHODOLOGY

To determine potential cumulative impacts, existing and anticipated future projects at Gateway NRA and in the surrounding area were identified. These included lands administered by the NPS, the state of New York, New York City, and the boroughs of Brooklyn and Queens. Potential projects identified as cumulative actions included any planning or development activity that was currently being implemented or that was expected to be implemented in the reasonably foreseeable future.

These cumulative actions are evaluated in the cumulative impact analysis in conjunction with the impacts attributable to the project alternatives for each impact topic. Because some of these cumulative actions are in the early planning stages, the evaluation of cumulative impacts was based on a general description of the project. Cumulative impacts are considered for all alternatives and are presented in the following paragraphs. These impacts are categorized by impact topic. The projects identified for analysis include: the FBF Aviator Sports Complex, the Jamaica Bay Transportation Studies, New York City Traffic Congestion and Air Quality Improvements, and the Drainage and Pavement Improvement Projects at Jamaica Bay. In defining the contribution of each alternative to the overall cumulative impact, the following terminology was used:

Imperceptible: The contribution by the alternative to the cumulative impact is impossible or difficult to discern.

Noticeable: The contribution by the alternative to the cumulative impact is minimally evident and observable.

Appreciable: The contribution by the alternative to the cumulative impact is readily apparent and may result in a change over a wide area or long-term duration.

FBF Aviator Sports Complex

As described earlier in this document, Gateway NRA is working with a concessionaire to convert two existing hangars at FBF into a sports complex. The complex will include ice rinks, athletic courts, and space for other active recreational activities. The ice rinks, in particular, are in high demand by the regional population and are expected to attract high numbers of new visitors to the site. This project is consistent with the strategy outlined in the *Gateway National Recreation Area General Management Plan/ Final Environmental Statement* (GMP)(NPS 1979) and the *Development Concept Plan Environmental Assessment* prepared for FBF that evaluated alternative uses of existing resources at FBF for recreation and other visitor services (NPS 1983) and the environmental impact of such uses. The project has the potential to impact historic structures, visual resources, visitor use and experience, and operations.

FBF Building Demolition Project

The NPS has proposed to demolish the Sewage Treatment Plant (Building 60) and the Former Base Laundry (Building 85) at FBF. While these buildings are National Register eligible, their removal is necessary due to age, deterioration and hazardous conditions. The Sewage Treatment Plant and Laundry are located at the southern end of FBF. In order to comply with the National Historic Preservation Act (NHPA), the NPS has coordinated with the New York State Office of Parks, Recreation and Historic Preservation (NYSHPO) regarding the demolition of these buildings. Copies of agency coordination, including a Memorandum of Agreement (MOA), are provided in Appendix A.

Jamaica Bay Transportation Improvement Project

The NPS and the Federal Highway Administration (FHWA) Eastern Federal Lands Highway Division (EFLHD) propose to enhance transportation in the Jamaica Bay Unit of Gateway NRA, in New York City, New York. The study evaluated transportation improvements for four target locations within the unit, all located in the Brooklyn and Queens Boroughs: FBF, Jacob Riis Park, Riis Landing, and the New NPS Sites at the former Pennsylvania and Fountain Avenues landfills. The project purpose is to provide safe and efficient travel to and circulation around the different target locations, considering planned growth and developments; improve transportation operating conditions; and improve the overall visitor “approach” experience at these sites. To achieve this, the project would require a combination of modifications to existing parking lots and roadways, new parking lots and roadways, and new signage. This project has the potential to impact a variety of resources, including: soils and topography, water resources, vegetation, wildlife and wildlife habitat, air quality, noise, visitor use and experience, transportation, visual resources and cultural landscapes, and operations.

Drainage and Pavement Improvement Projects at Jamaica Bay

Along with the transportation studies proposed in this document, EFLHD and the NPS are working on other improvement projects at the Jamaica Bay Unit of Gateway NRA. These projects consist of drainage

and pavement improvements at Floyd Bennett Field, Jacob Riis Park, and Fort Tilden. At FBF, drainage improvements will be focused on increasing the drain system on Runway A. Pavement improvements will consist of patching and overlaying of the Community Garden parking lot and repaving the Ryan Visitor Center parking area. Finally, at Fort Tilden, drainage problems at Barrett Road and at the post office parking lot will be addressed, while Heinzelman Road and Davis Road will be overlaid and reconstructed, respectively. These projects are designed to improve conditions at the site to better serve visitors, improve safety, and protect surrounding resources. These projects have the potential to impact soils and topography, vegetation, wildlife and wildlife habitat, water resources, archeological resources, visual resources, visitor use and experience, as well as operations.

CULTURAL RESOURCES

Historic Structures

Present and reasonably foreseeable future actions have and continue to contribute cumulative impacts to historic structures in and around the Outdoor Athletic Field study area. These impacts include:

- The FBF Aviator Sports Complex,
- The FBF Building Demolition Project,
- The Jamaica Bay Transportation Improvement Project, and
- The Drainage and Pavement Improvement Projects at Jamaica Bay.

Aviator S&R is currently converting Hangars 5, 6, 7, and 8 into a sports complex. These hangars are considered contributing resources to the Floyd Bennett Field Historic District and are listed on the National Register of Historic Places. As part of the project, Aviator S&R is improving the condition of the hangars by repairing damage that has been sustained in the last 50 years. The FBF Building Demolition project consists of the demolition of two National Register eligible buildings at FBF, with adverse impact to the cultural landscape; however, neither of these buildings is within the viewshed of the athletic field project. The Jamaica Bay Transportation Improvement Project will impact traffic patterns and circulation as well as alter primary viewsheds for visitors to the area. The Drainage and Pavement Improvements project would have immeasurable impacts on historic structures.

The projects above, along with the No Action Alternative, would have a long-term, moderate adverse cumulative impact to historic structures at FBF. The No Action Alternative alone would not contribute to the cumulative impact on historic structures. These actions, along with Alternative 2, would contribute a long-term, moderate adverse cumulative impact. Cumulative impacts to historic structures attributable to Alternative 2 would be noticeable.

Cultural Landscapes

Present and reasonably foreseeable future actions have and continue to contribute cumulative impacts upon cultural landscapes in and around the Outdoor Athletic Field study area. These impacts include:

- The FBF Aviator Sports Complex,
- The FBF Building Demolition Project,
- The Jamaica Bay Transportation Improvement Project, and
- The Drainage and Pavement Improvement Projects at Jamaica Bay.

Aviator S&R is currently converting Hangars 5, 6, 7, and 8 into a sports complex. These hangars are considered contributing resources to the Floyd Bennett Field National Register Historic. As part of the project, Aviator S&R is improving the condition of the hangars by repairing damage that has been sustained in the last 50 years. The FBF Building Demolition project consists of the demolition of two National Register eligible buildings at FBF, with adverse impact to the cultural landscape; however, neither of these buildings is within the viewshed of the athletic field project. The Jamaica Bay Transportation Improvement Project will impact traffic patterns and circulation as well as alter primary view sheds for visitors to the area. It is likely that the Drainage and Pavement Improvements project would have an imperceptible adverse cumulative impact on the cultural landscape at Floyd Bennett Field.

The projects above, along with the No Action Alternative, would have a long-term, moderate adverse cumulative impact upon cultural landscapes. The No Action Alternative alone would not contribute to the cumulative impact upon cultural landscapes at FBF. The actions listed above, along with Alternative 2, would contribute toward long-term, moderate adverse cumulative impacts upon cultural landscapes. The alteration of the cultural landscape, including impact to viewsheds, and the additions of modern elements as a result of Alternative 2 would contribute noticeably to this cumulative impact.

Archeological Resources

Present and reasonably foreseeable future actions have and continue to contribute cumulative impacts to archeological resources in and around the Jamaica Bay study area. These impacts include:

- The FBF Aviator Sports Complex,
- The Jamaica Bay Transportation Improvement Project, and
- The Drainage and Pavement Improvement Projects at Jamaica Bay.

Based on the history of development throughout the region, many of the potential archeological resources have been lost. In other areas, such as those areas owned by the NPS, resources may still exist but have not been investigated. For the properties owned and operated by the NPS, an archeological survey was completed for the entire Gateway NRA area in 1977 (JMA 1978)

Because the No Action Alternative would have no impact to archeological resources, in conjunction with present and reasonably foreseeable future actions, there would be no contribution to the cumulative impact to archeological resources. At FBF, it is possible that archeological resources exist associated with early human occupation of the site, and, more likely, use of the site during the modern period. These projects, along with Alternative 2, would have a long-term, minor, adverse cumulative impact on archeological resources. Cumulative impacts to archaeological resources attributable to Alternative 2 would be imperceptible.

NATURAL AND PHYSICAL RESOURCES

Soils and Topography

Present and reasonably foreseeable future actions have and continue to contribute cumulative impacts to soils and topography in and around the vicinity of FBF. These actions include:

- The FBF Aviator Sports Complex,
- The Jamaica Bay Transportation Improvement Project, and
- The Drainage and Pavement Improvement Projects at Jamaica Bay.

These projects would all involve the removal or installation of impervious surfaces. New impervious surfaces would eliminate those areas of soils from absorbing and filtering stormwater runoff and would contribute to soil compaction. Water could be collected on these surfaces and runoff in higher velocities, causing increased erosion upon reaching natural soils. Impervious surfaces also prevent soils from supporting vegetation. The topography would also be modified when impervious cover is added to the landscape or excavation/grading or filling activities occur. Soils would be bulldozed, compacted, and leveled for the new development. On the other hand, when removing impervious surfaces and re-establishing original topography, soils would again be able to absorb stormwater and support vegetation.

Because the No Action Alternative would have no impact to soils or topography, in conjunction with present and reasonably foreseeable future actions, there would be no contribution to the cumulative impact to these resources. At FBF, these projects, when combined with the impacts associated with the proposed action would have a long-term, minor, adverse impact on soils and topography. Alternative 2 would contribute an imperceptible, adverse increment to the cumulative impact.

Wildlife and Wildlife Habitat

Present and reasonably foreseeable future actions have and continue to contribute cumulative impacts to wildlife and wildlife habitat in and around the vicinity of FBF. These impacts include:

- The FBF Aviator Sports Complex, and
- The Drainage and Pavement Improvement Projects at Jamaica Bay.

These projects are all relatively small in comparison to the size of the metropolitan area. Also, based on the high levels of development in the region, existing wildlife has adapted, to some extent, to human intrusions. Projects like those proposed by the NPS can bring increased physical and noise threats into pockets of undisturbed habitat; however, these projects are located in areas of existing structures and/or impervious surface which do not provide suitable wildlife habitat. However, with increased visitor use of the projects, particularly the sports complex, increased human use of the area could interfere with existing wildlife usage of the surrounding areas. This interference is, however, relatively common throughout the urban environment.

At FBF, the changes to wildlife and wildlife habitat would be minimally measurable within the Field. The No Action Alternative would not contribute to the cumulative impact. Alternative 2 would contribute imperceptible negative impacts to cumulative impacts of wildlife and wildlife habitat.

Lightscapes

Present and reasonably foreseeable future actions have and continue to contribute cumulative impacts to lightscapes in and around the vicinity of FBF. These impacts include:

- The FBF Aviator Sports Complex.

The sports complex is planned to be open up to 20 hours a day. Parking area lighting would contribute to the artificial light sources in the area. Based on the history of development throughout the region, lightscapes have been lost and light pollution continues to be a concern in this heavily urban environment. The amount of light that emanates from the surrounding urban areas already creates a perpetual glow on the night sky which reduces the aesthetic quality of the night sky.

Artificial light sources could pose threats to the behavior and well-being of wildlife. Tall-lighted structures can pose a threat to nocturnal migratory birds. In addition, lights could obstruct navigation and communication abilities of air and boat traffic. Therefore, these resources are termed as sensitive receptors to light pollution.

In accordance with *NPS Management Policies 2001* (NPS 2000), the NPS strives to preserve natural ambient landscapes and other values that exist in the absence of man-made light. The Jamaica Bay Unit is located in one of the largest, busiest cities in the world. As a result, there are constant impacts to the lightscape, even in some of the most obscure areas, so no completely natural lightscapes exist within the study area.

At FBF, the No Action Alternative would not contribute to the cumulative impact on lightscapes or sensitive receptors of lightscapes. While in use, the field lighting associated with Alternative 2 would contribute noticeable cumulative impact to lightscapes and associated effects to sensitive receptors of both the natural and urban environments.

VISITOR USE AND EXPERIENCE

Present and reasonably foreseeable future actions have and continue to contribute cumulative impacts to visitor use and experience in and around FBF. These impacts include:

- The FBF Aviator Sports Complex,
- The Jamaica Bay Transportation Improvement Project,
- The Drainage and Pavement Improvement Projects at Jamaica Bay, and

By improving access through public transportation options or by making existing routes more efficient, transportation enhancements can have a noticeable effect on the initial visitor experience. Transportation improvements can also improve the on site visitor experience. As the urban environment is cluttered with traffic and vehicular noise, reducing these elements in and around attractions would improve the visitors' appreciation of a given site.

Finally, by creating additional visitor attractions in or around existing sites, projects can enhance the quality of an individual visit. These projects may build on existing opportunities or offer an entirely new activity that would attract new visitors while providing existing visitors with more opportunities. These projects would result in a long-term, moderate, beneficial impact.

The No Action Alternative would not contribute to the cumulative impact. When combined with these actions, Alternative 2 would contribute appreciably to the beneficial cumulative impact to visitor use and experience.

OPERATIONS

Present and reasonably foreseeable future actions have and continue to contribute cumulative impacts to operations in and around the Jamaica Bay study area. These impacts include:

- The FBF Aviator Sports Complex,
- The Jamaica Bay Transportation Improvement Project, and
- The Drainage and Pavement Improvement Projects at Jamaica Bay.

Because of large size, Gateway NRA's staff and funding are spread thinly across the entire park. Therefore, any change made in operations could have an impact on the entire park. Because Gateway NRA is comprised of numerous historic structures and aging infrastructure, much of the park operations is focused on regular maintenance of these elements. Projects aimed at improving roads, buildings, and other structures provide a permanent solution to these on-going problems. As a result, staff efficiency and productivity can be increased.

Other projects bring new structures or activities into the park. When these activities are operated by a concessionaire, the NPS staff commitment is minimal. A new concessionaire can be added to the existing concession management activities without greatly changing existing operations.

Finally, when a new activity or structure is under NPS operation, additional staff may be required. The additional staffing needs may be met by reassigning staff from existing operations or by hiring new staff. Either way, the result is additional activities for NPS staff and a greater opportunity for the NPS to expand its mission at Gateway NRA.

At FBF, these actions would have a long-term, minor, beneficial impact. With the addition outdoor athletic fields and the improved traffic patterns proposed, FBF would benefit from improved access and site security. The No Action Alternative would not contribute to the cumulative impact. When combined with these actions, Alternative 2 would contribute noticeably to adverse cumulative impacts to operations.

RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM IMPACTS

Project alternatives presented in this document are based on park goals and objectives to increase visitor opportunities and maximize use of under utilized outdoor space within FBF for outdoor recreation. The relationship between short-term uses of the environment and long-term improvements within FBF is discussed in this section. Short-term impacts and uses of the environment are generally associated with the construction phase of the project. During construction, the proposed athletic field location would be off limits to visitors. Since there currently is little in the area to attract visitors, these impacts would be negligible and would be offset by the long-term benefit of increased recreational opportunities that the new athletic fields would provide once they are complete. Other impacts anticipated during the construction phase, including noise, dust and truck traffic, would be minor and would not carry over beyond the initial construction phase. Although localized and temporary impacts would occur during construction, they would be consistent with the goals for improved long-term, recreational use of the area.

CONCLUSION

Under **Alternative 1, No Action**, there would be no impact to wildlife and wildlife habitat, soils and topography, lightscapes, visitor use and experience, or operations and negligible impact to cultural resources. The No Action Alternative would not contribute to cumulative impacts. Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values.

Under **Alternative 2, Outdoor Athletic Fields North Hangar Area**, there would be long term moderate and adverse impacts to historic structures and the cultural landscape. Impacts to archaeological resources would be long term, minor and adverse. There would be long term, negligible impact to wildlife and wildlife habitat and lightscape for urban receptors. Alternative 2 would also have a long term, minor impact on topography. Impact to lightscape for natural resources receptors would be long term, minor and adverse. This alternative would have a short-term, negligible impact on soils. There would also be a long term, moderate, beneficial impact to visitor use and experience. . Impact to operations would be long term, moderate and adverse. Alternative 2 would contribute imperceptible, adverse increments to cumulative impacts related to soils and topography and wildlife and wildlife habitat. Alternative 2 would contribute noticeable adverse, increments to cumulative increments related to lightscapes and operations. It would also contribute appreciable, beneficial increments to cumulative impacts related to visitor use and experience. Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the park's establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values.

CONSULTATION AND COORDINATION

The NPS has coordinated with the New York State Office of Parks, Recreation and Historic Preservation (NYSHPO) regarding compliance with the National Historic Preservation Act and implementing regulations. The culmination of this coordination effort was the finalization of a Memorandum of Agreement between NPS and NYSHPO that addresses the Aviator Sports Complex, including the outdoor athletic fields. The MOA stipulations conditions that shall be implemented to take into account project effects on historic properties. A copy of the MOA is provided in Appendix A.

AGENCIES AND ORGANIZATIONS

In addition to NYSHPO, agencies and organizations that will be invited to review and comment upon the EA include:

FEDERAL AGENCIES

US Fish and Wildlife Service
Federal Aviation Administration
US Marine Corps – Armed Forces Reserve Center

STATE AGENCIES

New York State Department of Environmental Conservation
New York State Office of Parks, Recreation and Historic Preservation

CITY AGENCIES

New York City Department of City Planning
New York City Police Department
New York City Department of Parks and Recreation
New York City Department of Environmental Protection
New York City Department of Sanitation

BIBLIOGRAPHY

FAA 2000. United States Department of Transportation Federal Aviation Authority Air Traffic Air Space Management: Advisory Circular for Obstruction Marking and Lighting. AC 70/7460-1K. Effective August 1, 2000.

Frank, K.D. 2002. Impact of artificial lighting on moths. Presented at: The Urban Wildlands Group and UCLA Institute of the Environment Ecological Consequences of Artificial Night Lighting, February 23-24 2002, Los Angeles, CA.

IDA 2002. International Dark-sky Association Outdoor Lighting Code Handbook. September 2002. Available on-line: <http://www.darksky.org/ordsregs/lchintro>

Jones, J. and C.M. Francis 2003. The effects of light characteristics on avian mortality at lighthouses. *Journal of Avian Biology* 34: 328-333.

Lincoln, Frederick C., Steven R. Peterson, and John L. Zimmerman. 1998. Migration of birds. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Washington, D.C. Circular 16. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. Available online: <http://www.npwrc.usgs.gov/resource/othrdata/migratio/migratio.htm>

Longcore, T. and C. Rich 2004. Ecological light pollution. *Front Ecol Environ* 2(4): 191-198.

McAdams, E.J. 2003. Rebuilding Lower Manhattan: A Bird's Eye View. Presented by the New York City Audubon to the Lower Manhattan Development Corporation, December 1, 2003.

Miller, M.W. 2006. Apparent effects of light pollution on singing behavior of American robins. *The Condor* 108: 130-139.

Musco Sports Lighting, LLC. 2006. Project Submittal: Aviator Sports Soccer Field Lighting Project, Brooklyn, New York.

Natural Resources Conservation Service, United States Department of Interior, 2001. Soil Survey of Gateway National Recreation Area, New York and New Jersey

NYSDEC 2006. New York State Department of Environmental Protection List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State. Available online: www.dec.state.ny.us

U.S. Department of the Interior, National Park Service

1979 *Final Environmental Impact Statement / General Management Plan: Gateway National Recreation Area*. Denver Service Center.

1983 *Development Concept Plan and Environmental Assessment: Floyd Bennett Field, Gateway National Recreation Area, New York/New Jersey*. Denver Service Center

2001 *Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making and Handbook*. Washington, DC.

U.S. Department of the Interior, National Park Service and U.S. Federal Highway Administration Eastern Federal Lands Highway Division. 2006. Jamaica Bay Transportation Studies Development Concept Plan/Environmental Assessment/Assessment of Effect: Gateway National Recreation Area, Jamaica Bay Unit, New York City, New York

USFWS 1997. United States Fish and Wildlife Service Significant Habitat and Habitat Complexes of the New York Bight Watershed: Jamaica Bay and Breezy Point Complex #16. Available online: http://training.fws.gov/library/pubs5/web_link/text/jb_form.htm

USFWS 2006. United States Fish and Wildlife Service Threatened and Endangered Animals and Plants Species List. Available online: <http://www.fws.gov/endangered/wildlife.html>

Wuebber and Morin. 2005. Phase IA Archaeological Study of Floyd Bennett Field.

Young, Stephen M. and Troy W. Weldy. 2005. New York Rare Plant Status List. New York Natural Heritage Program, Albany, NY. June 2005. 87 pages.

LIST OF PREPARERS

John Hnedak, National Park Service, Gateway NRA, Chief, Strategic Planning

Pete McCarthy, National Park Service, Gateway NRA, Jamaica Bay Unit, North Shore District Ranger

Raymond Hinkle, URS Corporation, Project Manager and Technical Reviewer

Sherri Albrecht, URS Corporation, Principal Author

Jennifer Zorn, URS Corporation, Contributing Author

Laura Morales, URS Corporation, Contributing Author

David Hinchey, URS Corporation, Contributing Author and Graphics

Zana Wolf, URS Corporation, Contributing Author

Richard Affleck, URS Corporation, Contributing Author

APPENDIX A: CONSULTATION

The following documents are included herein :

March 2006 – Memorandum of Agreement – NPS and NYSHPO regarding the Adaptive Reuse of Hangers 5, 6, 7, and 8 at Floyd Bennett Field.

January 18, 2006 Letter from NPS to Ruth Pierpont, Director, Historic Preservation Field Services Bureau.

Dec. 19, 2005 letter from NYS Office of Parks, Recreation & Historic Preservation to J. Hnedak, NPS.

December 20, 2005 – Memorandum of Agreement – NPS and NYSHPO regarding the Removal of the Sewage Treatment Plant and Former Base Laundry at Floyd Bennett Field.

July 29, 2005 letter from NYS Office of Parks, Recreation & Historic Preservation to J. Hnedak, NPS.

October 27, 2004 letter from NYS Office of Parks, Recreation & Historic Preservation to P. McCarthy, NPS.

August 18, 2003 letter from NYS Office of Parks, Recreation & Historic Preservation to K. Soller, NPS.

July 2003 – Memorandum of Agreement – NPS and NYS HPO.