

Environmental Assessment

Managing Flight Obstructions to Preserve Safety

at

Andrews Air Force Base

Prepared by Tetra Tech NUS, Inc.

for

U.S. Air Force Air Mobility Command

And

National Park Service, National Capital Parks-East

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14. ABSTRACT

The United States Air Force has identified a need to manage trees which adversely affect safe flight operations at Andrews Air Force Base (AFB) in Prince George's County Maryland. Andrews AFB is home to the 89th Airlift Wing and provides worldwide airlift and logistical support for the President of the United States, the Vice President, cabinet members, and other high-ranking United States and foreign officials. Many of the trees requiring management are located on Suitland Parkway, which is managed by the National Park Service and listed on the National Register of Historic Places. Other trees requiring management are located on Andrews AFB and on lands within an industrial park immediately north of Suitland Parkway and lands adjoining the southern base perimeter. The EA describes a no-action alternative (Alternative 1), a preferred alternative (Alternative 2) involving vegetation management to manage obstructions without reconfiguring the runways, and a third alternative (Alternative 3) involving reconfiguring the runways to reduce the severity of required vegetation management. The EA assesses potential impacts from each alternative to land use and infrastructure (land use flight operations and safety, vehicular transportation, and utilities); the biological environment (trees and vegetation, terrestrial wildlife, threatened and endangered species, wetlands, streams and aquatic biota, and floodplains); the cultural environment (archaeological resources, historic resources, Cold War structures, and aesthetics); the physical environment (climate and air quality, surface water and groundwater, soils and geology and prime farmland, noise, and waste management); and socioeconomics (employment, housing, and environmental justice). The EA demonstrates that, with appropriate mitigation, none of the alternatives would result in significant environmental impacts. Relative to Alternative 2, Alternative 3 would reduce the extent of vegetation management on Suitland Parkway. However reconfiguring the runways as called for under Alternative 3 would have required Congressional appropriation of more than 30 million dollars of military construction (MILCON) funds, a process that would have delayed effective management of obstructions for several years.

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FINDING OF NO SIGNIFICANT IMPACT
Actions to Manage Flight Obstructions to Preserve Safety at Andrews Air Force Base

The United States Air Force (AF), Air Mobility Command (AMC), has identified a need to manage trees that have become obstructions because they are tall enough to adversely affect safe flight operations at Andrews Air Force Base (AFB) in Prince George's County, Maryland. Andrews AFB is home to the 89th Airlift Wing, which provides worldwide airlift and logistical support for the President of the United States, the Vice President, cabinet members, and other high-ranking United States and foreign officials. Many of the trees requiring management to preserve flight safety at Andrews AFB are located on Suitland Parkway, a property listed on the National Register of Historic Places and managed by the National Capital Parks – East unit of the United States Department of the Interior, National Park Service (NPS). Other trees requiring management are located on Andrews AFB itself and on other lands directly north and south of Andrews AFB.

The Suitland Parkway is a 9.18-mile divided highway constructed by the Bureau of Public Roads during World War II to connect Andrews AFB to the District of Columbia and other federal installations. The parkway begins at Maryland Route 4 (Pennsylvania Avenue), proceeds west directly north of the two runways on Andrews AFB, passes under the Capital Beltway, and continues through the Washington suburbs to Interstate Route 295 in the District of Columbia. Segments of the roadway are bordered on both sides by narrow strips of mature deciduous forest that provide a scenic, park-like driving experience despite traversing areas of dense urban development. In 1995, Suitland Parkway was listed on the National Register of Historic Places (NRHP). The nomination form concluded that Suitland Parkway displays historic significance with respect to the history and landscape architecture typical of the system of parkways developed in many urban areas during the first half of the 20th Century. The mature deciduous trees in forestlands within the Suitland Parkway corridor are a cultural element that contributed to the parkway's eligibility for the NRHP.

In compliance with the *National Environmental Policy Act of 1969* (NEPA; 42 U.S.C. § 4321 *et seq.*), the AF prepared an Environmental Assessment (EA) evaluating the potential environmental consequences from reasonable alternatives for managing the trees to preserve safety of flight operation. The EA conforms with the Council on Environmental Quality and the U. S. Air Force regulations for implementing NEPA (40 CFR §§ 1500 – 1508 and 32 CFR § 989, respectively). The AF is the lead agency for the EA, and NPS is a cooperating agency. Alternative 1 in the EA is a no-action alternative under which trees would continue to be periodically trimmed only to preserve existing instrument landing system capabilities but no action would be taken to provide sufficiently unobstructed airspace necessary to ensure current flight operations are safe. Alternative 2 would involve trimming, removing, and replacing trees as necessary to bring the runways into compliance with airspace clearance requirements established to

ensure safe operation of Class B military runways by the Unified Facilities Criteria (UFC) 3-260-01 and Federal Aviation Regulations (FAR) Part 77. Alternative 3 would involve extending the western of the two parallel runways (Runway 01L/19L) by 500 feet to allow displacement of its thresholds, followed by trimming, removing, and replacing trees as necessary to bring the runways into compliance with UFC 3-260-01 and FAR Part 77. The threshold displacement would increase the distance between that runway and Suitland Parkway, thereby reducing the impact of tree trimming and removals on NPS property.

In addition to the three alternatives evaluated in detail, the EA also discusses four other alternatives considered but rejected from further analysis because they do not adequately ensure safe continuation of current flight operations, are not logistically or economically feasible, or would result in significant environmental impacts that could not be readily mitigated. The rejected alternatives include three alternatives for reconfiguring the runways to a greater extent than proposed under Alternative 3, as well as an alternative involving trimming and removing trees to a lesser degree that would not meet the safety criteria required by UFC 3-260-01 and FAR Part 77.

The AF and NPS jointly held a public scoping meeting at a location near Andrews AFB and Suitland Parkway on February 6, 2001 to present alternatives to interested parties and to receive comments regarding the range of issues requiring consideration in the EA. Based on issues discussed at the scoping meeting, the EA addresses potential impacts from each alternative to land use and infrastructure (including land use, flight operations and safety, vehicular transportation, and utilities); the biological environment (including trees and other vegetation, terrestrial wildlife, threatened and endangered species, wetlands, streams and aquatic biota, and floodplains); the cultural environment (including archaeological resources, historic resources, Cold War structures, and aesthetics); the physical environment (including climate and air quality, surface water and groundwater, soils and geology and prime farmland, noise, and waste management); and socioeconomics (including employment, housing, and environmental justice). The EA also identifies the potential regulatory requirements for each alternative, includes a separate discussion of potential cumulative impacts, and discusses potential mitigation measures possible for each alternative.

To comply with the National Historic Preservation Act, as specifically implemented by 36 CFR 800.2(d)(3), the Air Force and National Park Service sought public involvement for Section 106 purposes as part of the public comment period for the EA prepared under NEPA. Public input was requested from interested parties regarding potential impacts to cultural resources and was properly considered as part of the EA decision process and the Section 106 consultation process. Both the Advisory Council on Historic Preservation and the Maryland State Historic Preservation Office (SHPO) were informed of the intent to use agency NEPA procedures and concurred that these procedures provided adequate opportunities for public involvement. The EA generated four comments from the public and local agencies, which have

been addressed by responses appended to the EA and available at Appendix B. None of the comments required substantive changes to the EA.

The analysis of the EA leads to the conclusion that neither Alternative 2 nor Alternative 3 will result in significant direct, indirect, or cumulative environmental impacts provided specific mitigation measures are implemented. Both alternatives will result in visible changes to trees contributing to the historic integrity of Suitland Parkway. Because both alternatives will require repeated rounds of tree trimming and removal to maintain continued safe operation of the runways, the changes will be permanent as long as the Andrews AFB flying mission continues at present levels (there presently are no plans to substantially curtail or increase the flying mission in the foreseeable future). To implement either alternative, the AF and NPS will jointly prepare a vegetation management plan and supplemental implementation plan specific to Suitland Parkway detailing what trees will be trimmed and removed during each round of tree work conducted over the next several years and will update the plan as necessary over the service life of the runways. The management plan will call for trimming rather than removing trees that can be adequately trimmed to provide the necessary airspace clearance without being permanently harmed. All tree trimming and removal work called for by supplemental implementation plan will be performed using state-of-the-art arboricultural practices under the supervision of arborists approved by NPS. Appropriate professionals with the AF and NPS will approve all updates to the supplemental implementation plan and all tree trimming and removal.

Mitigation measures identified in the EA for Alternatives 2 and 3 consist of planting replacement trees and shrubs wherever trees must be removed on Suitland Parkway. Suitable replacement trees and shrubs are regionally indigenous deciduous and evergreen species whose mature height is less than 30 feet or whose growth rate is exceptionally slow. While the replacement plantings cannot exactly duplicate the existing cultural setting on the affected segment of Suitland Parkway even after the planted saplings have an opportunity to mature, the EA indicates the replacement plantings will help restore the aesthetic screening properties of the vegetation and the natural setting experienced by users of Suitland Parkway. The EA includes a list of suitable replacement species although other species might be selected if agreed upon by the AF and NPS. The details for replacement planting will be developed as part of the supplemental implementation plan developed by the AF and NPS.

Both alternatives will also require trimming or removing trees on parts of Andrews AFB and other land close to the southern perimeter of the base. The specific trees on the base and south of the base requiring attention will be determined prior to implementation of the work at the respective sites. The AF will preferentially remove rather than trim affected trees on the base. The AF will coordinate with affected landowners before initiating any work south of the base. Although the AF concludes that the potential environmental impacts from tree work on or south of the base as part of either alternative is not

significant, it will offer to trim trees south of the base or perform replacement planting if requested by affected landowners. The actions that will be taken regarding these trees would be subject to the Andrews AFB Integrated Natural Resource Management Plan, Urban Tree Management Plan and applicable provisions identified in the EA, as referenced by the vegetation management plan, and do not impact Suitland Parkway and would not be subject to the consultations underway with the SHPO.

The AF has selected Alternative 2 as the preferred alternative. Implementation of Alternative 3 would require closing one of the two runways for 4 to 6 months to accommodate construction necessary to displace the thresholds. The costs of construction could exceed 30 million dollars and would require Congressional appropriation of military construction (MILCON) funds. The soonest possible appropriation date for MILCON funds not yet requested is Fiscal Year (FY) 2005, and a more probable appropriation date would be FY 2006 or later. Implementation of Alternative 3 would therefore delay compliance with UFC 3-260-01 and FAR Part 77 for 3 or more years and have a continuing negative impact on flight safety. In contrast, under Alternative 2, actions will be taken on base as soon as the vegetation management plan is completed, on Suitland Parkway when the supplemental implementation plan is completed and other areas off base when the appropriate agreements with affected landowners are concluded.

To lessen the visual impacts of Alternative 2 on the cultural landscape of Suitland Parkway, the AF will pursue a limited waiver to UFC 3-260-01 allowing trees on Suitland Parkway to grow as high as permitted for non-living obstructions rather than meet the usual requirement of an additional 10 feet of clearance imposed to account for short-term height increases resulting from ongoing growth. HQ AMC/CEV, Environmental Programs Division and HQ AMC/DOA, Airfield Operations Division have agreed to support the waiver provided that there is active oversight and implementation of a suitable vegetation management plan. The supplemental implementation plan will ensure that there is adequate trimming or removal conducted to provide and maintain uniform obstacle protection to aircraft operating at low altitudes in close proximity to the airfield. The active oversight and implementation of the plan will ensure standardized, unobstructed airspace for aircraft operating at night under visual flight rules, as well as *provide obstacle clearance for safe operation of heavy-weight aircraft or emergency aircraft experiencing seriously degraded performance.* The waiver will apply only to trees occurring on Suitland Parkway.

Because the AF has selected Alternative 2 as its preferred alternative, the actions needed to bring the runways into conformance with UFC 3-260-01 and FAR Part 77 will not involve filling wetlands or physically altering floodplains. It will still be necessary to selectively trim and remove trees in state protected forested wetlands and in forestlands in the 100-year floodplains of Hensen and Piscataway Creeks. The precise acreage of impact will be determined as part of the vegetation management plan and supplemental implementation plan. No federal permits will be required, but the State of Maryland

requires a permit and appropriate mitigation for actions that substantially modify the vegetative composition of wetlands. The vegetation management plan and supplemental implementation plan will specify appropriate mitigation measures, which could include enhancement (such as afforestation) of wetlands in suitable areas on Andrews AFB or Suitland Parkway, purchasing wetland mitigation bank credits, or payment into a wetland mitigation fund. The AF has prepared a Finding of No Practicable Alternative (FONPA) attesting that there are no practicable alternatives that would bring the runways into conformance with UFC 3-260-01 and FAR Part 77 with fewer impacts to wetlands and floodplains.

The AF concludes that Alternative 1, the no action alternative, will result in significant adverse impacts to flight operations and safety. The no action alternative will not bring the runways into compliance with flight operations safety criteria established in UFC 3-260-01 for Class B military runways. Because these alternatives are not selected, the AF will not have to decide between allowing present flight operations at Andrews AFB to continue despite conditions not meeting minimum safety standards and curtailing use of the runways by many larger aircraft critical to the Andrews AFB mission.

To summarize, I have reviewed the attached EA, which is hereby incorporated by reference, and conclude that the direct, indirect, and cumulative environmental impacts potentially resulting from implementation of Alternatives 2 or 3 are not significant in the context of NEPA. It is unnecessary, therefore, to prepare an environmental impact statement. Alternative 2 meets the purpose and need outlined in the EA while offering substantial logistical and economic advantages not offered by Alternative 3. I am committing the AF to specific mitigation measures proposed in the EA to reduce the potential effects of Alternative 2 to trees contributing to the historic integrity of Suitland Parkway and to trees on private property south of the base. The AF may, therefore, proceed to implement Alternative 2.


JOHN R. BAKER
Lieutenant General, USAF
Vice Commander

25 Apr 1 '03
DATE

Attachment: Environmental Assessment

FINDING OF NO PRACTICABLE ALTERNATIVE
Actions to Manage Flight Obstructions to Preserve Safety at Andrews Air Force Base

The following Finding of No Practicable Alternative (FONPA) applies to the actions of the United States Air Force (AF) Air Mobility Command (AMC) to manage trees, which have or will become obstructions adversely affecting safe flight operations at Andrews Air Force Base (AFB) in Prince George's County, Maryland. The FONPA documents the Air Force's compliance with both Executive Order 11988, Floodplain Management (May 24, 1977) and Executive Order 11990, Protection of Wetlands (May 24, 1977).

Andrews AFB is home to the 89th Airlift Wing, which provides worldwide airlift and logistical support for the President of the United States, the Vice President, cabinet members, and other high-ranking United States and foreign officials. Trees on base and off base have grown to heights, which present obstructions to the operation of aircraft taking off and landing at the base. Many of the trees requiring management to preserve flight safety at Andrews AFB are located on Suitland Parkway, a property listed on the National Register of Historic Places and managed by the National Capital Parks – East unit of the United States Department of the Interior, National Park Service (NPS). Other trees requiring management are located on Andrews AFB itself and other off-base lands directly north and south of the base.

In compliance with the *National Environmental Policy Act of 1969* (NEPA; 42 USC § 4321 *et seq.*), the AF prepared an Environmental Assessment (EA) evaluating the potential environmental consequences from a range of reasonable alternatives for managing the trees to preserve safety of flight operations. The EA complies with the Council on Environmental Quality and Air Force regulations for implementing NEPA (40 CFR §§ 1500 - 1508 and 32 CFR § 989, respectively). The AF is the lead agency for the EA, and NPS is a cooperating agency. Alternatives considered in the EA include the following:

- Alternative 1: This is a no-action alternative under which trees would continue to be periodically trimmed only to preserve existing instrument landing system capabilities but no action would be taken to provide sufficiently unobstructed airspace necessary to ensure current flight operations are safe.
- Alternative 2: This alternative would involve trimming, removing, and replacing trees as necessary to bring the runways into compliance with airspace clearance requirements established to ensure safe operation of Class B military runways in Unified Facilities Criteria (UFC) 3-260-01 and Federal Aviation Regulations (FAR) Part 77.

- Alternative 3: The final alternative analyzed would involve extending the western of the two parallel runways (Runway 01L/19L) by 500 feet to allow displacement of its thresholds, followed by trimming, removing, and replacing trees as necessary to bring the runways into compliance with UFC 3-260-01 and FAR Part 77. The threshold displacement would increase the distance between that runway and Suitland Parkway, thereby reducing the impact of tree trimming and removals on NPS property.

The EA concludes that none of the alternatives will result in significant direct, indirect, or cumulative environmental impacts provided that specific mitigation measures are implemented. Based upon the information contained in the EA and upon consideration of cost and schedule factors, the AF selected Alternative 2 as its preferred alternative. Alternative 2 does not involve filling wetlands or physical alteration of floodplains. The alternative does, however, require selectively trimming and removing trees in state protected forested wetlands and in forestlands in the 100-year floodplains of Hensen and Piscataway Creeks. The impacts are described in more detail in the EA. As much as 6 acres of state protected forested wetlands on Suitland Parkway will be subject to selective tree trimming and removals, as will additional forested wetland acreage on Andrews AFB and other off-base land. The exact acreage of impact will be determined once the AF and NPS complete a vegetation management plan and supplemental implementation plan identifying which trees require trimming or removal.

Because Alternative 2 will not involve the introduction of dredged or fill material into wetlands or other waters of the United States, no federal permit is required. However, the State of Maryland requires a permit and appropriate mitigation for actions that substantially modify the vegetative composition of wetlands. The vegetation management plan, as supplemented with implementation plans, will specify appropriate mitigation measures, which could include enhancement (such as afforestation) of wetlands in suitable areas on Andrews AFB or Suitland Parkway, purchasing wetland mitigation bank credits, or payment into a wetland mitigation fund.

Under Alternative 1, a small number of trees growing in wetlands will be subjected to periodic light trimming for the purpose of maintaining existing conditions but no trees will be removed. Alternative 1, however, will not meet the purpose and need described in the EA, which is to bring the runways into conformance with Unified Facilities Criteria (UFC) 3-260-01 and Federal Aviation Regulations (FAR) Part 77. Alternative 3 will reduce the number of trees requiring removal from wetlands and reduced the severity of trimming necessary for the remaining trees. However, implementation of Alternative 3 will require closing one of the two runways for 4 to 6 months to accommodate runway construction activities. Construction costs are expected to exceed 30 million dollars and will require Congressional appropriation of military construction (MILCON)

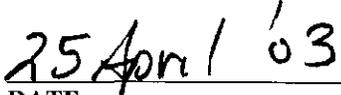
funds. The soonest possible appropriation date for MILCON funds will be Fiscal Year (FY) 2005, and a more probable appropriation date will be FY 2006 or later. Alternative 3 will, therefore, delay compliance with UFC 3-260-01 and FAR Part 77 for three or more years and have a continuing negative impact on flight safety. In addition, implementation of alternative 3 will require the filling of up to 15 acres of emergent wetlands on Andrews AFB as the result of runway relocation.

To lessen the visual impacts of Alternative 2 on the cultural landscape of Suitland Parkway, the AF will pursue a limited waiver to UFC 3-260-01. This waiver will allow trees on Suitland Parkway to grow as high as permitted for non-living obstructions rather than the usual requirement for an additional 10 feet of clearance imposed to account for short-term height increases resulting from ongoing growth. The waiver will reduce the number of trees requiring removal and the degree of trimming necessary for trees remaining in forested wetlands on Suitland Parkway. HQ AMC/CEV, Environmental Programs Division and HQ AMC/DOA, Airfield Operations Division have agreed to support the waiver provided there is active oversight and implementation of a suitable vegetation management plan. This plan will ensure there is adequate trimming or removal conducted to provide and maintain uniform obstacle protection to aircraft operating at low altitudes in close proximity to the airfield. The active oversight and implementation of the plan will ensure standardized, unobstructed airspace for aircraft operating at night under visual flight rules as well as provide obstacle clearance for safe operation of heavy-weight aircraft or emergency aircraft experiencing seriously degraded performance.

Upon reviewing the EA, I conclude that there are no practicable alternatives to Alternative 2 that will promptly and effectively bring the runways into conformance with UFC 3-260-01 and FAR Part 77 to ensure the safety of flight operations at Andrews AFB. The wetland and floodplain impacts resulting from Alternative 2 are practicably unavoidable and will be minimized by virtue of the waiver described above and the mitigation measures described in the vegetation management plan and supplemental implementation plan.



JOHN R. BAKER
Lieutenant General, USAF
Vice Commander



DATE

Attachment: Environmental Assessment

COVER SHEET

PROPONENT: United States Air Force, Air Mobility Command

COOPERATING AGENCY: United States Department of the Interior, National Park Service

PROPOSED ACTION: Vegetation management to allow the continued safe operation of the runways at Andrews Air Force Base in accordance with obstacle clearance requirements established by the United States Department of Defense in Unified Facilities Criteria 3-260-01 and by the Federal Aviation Administration in Federal Aviation Requirements Part 77, without having to reconfigure the runways. The program of vegetation management would affect lands on Andrews Air Force Base, a segment of the historic Suitland Parkway corridor directly north of the base, and small areas of private property directly north of Suitland Parkway and directly south of the base.

REPORT DESIGNATION: Environmental Assessment

ABSTRACT: The United States Air Force has identified a need to manage trees which adversely affect safe flight operations at Andrews Air Force Base (AFB) in Prince George's County, Maryland. Andrews AFB is home to the 89th Airlift Wing and provides worldwide airlift and logistical support for the President of the United States, the Vice President, cabinet members, and other high-ranking United States and foreign officials. Many of the trees requiring management are located on Suitland Parkway, which is managed by the National Park Service and listed on the National Register of Historic Places. Other trees requiring management are located on Andrews AFB and on lands within an industrial park immediately north of Suitland Parkway and lands adjoining the southern base perimeter.

The EA describes a no-action alternative (Alternative 1), a preferred alternative (Alternative 2) involving vegetation management to manage obstructions without reconfiguring the runways, and a third alternative (Alternative 3) involving reconfiguring the runways to reduce the severity of required vegetation management. The EA assesses potential impacts from each alternative to land use and infrastructure (land use, flight operations and safety, vehicular transportation, and utilities); the biological environment (trees and vegetation, terrestrial wildlife, threatened and endangered species, wetlands, streams and aquatic biota, and floodplains); the cultural environment (archaeological resources, historic resources, Cold War structures, and aesthetics); the physical environment (climate and air quality, surface water and groundwater, soils and geology and prime farmland, noise, and waste management); and socioeconomics (employment, housing, and environmental justice).

The EA demonstrates that, with appropriate mitigation, none of the alternatives would result in significant environmental impacts. Relative to Alternative 2, Alternative 3 would reduce the extent of vegetation management on Suitland Parkway. However, reconfiguring the runways as called for under Alternative 3 would have required Congressional appropriation of more than 30 million dollars of military construction (MILCON) funds, a process that would have delayed effective management of obstructions for several years.

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EXECUTIVE SUMMARY

The *Environmental Assessment (EA) for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base (AFB)* evaluates environmental impacts potentially resulting from implementation of reasonable alternatives for managing trees that are flight obstructions affecting the safety of flight operations at Andrews AFB. Andrews AFB is a 4,346-acre installation located in suburban Prince George's County, Maryland approximately 10 miles southeast of Washington, DC. The main tenant at Andrews AFB is the 89th Airlift Wing (89 AW), which provides worldwide airlift and logistical support for the President of the United States, the Vice President, cabinet members, and other high-ranking United States and foreign officials. Flight operations at Andrews AFB use two parallel Class B runways oriented north and south, each allowing approaches and departures in northerly or southerly directions. The western of the two runways (Runway 01L/19R, designated more simply as the West Runway) provides 9,300 feet of hardened primary pavement with 1,000-foot overrun surfaces at each end. The eastern runway (Runway 01R/19L, or the East Runway) provides 9,755 feet of hardened primary pavement with 1,000-foot overrun surfaces at each end.

Since construction of the runways, trees in several nearby areas have grown tall enough to penetrate one or more "imaginary surfaces" to the north, south, and sides of the runways. Imaginary surfaces define the lower bounds of airspace that must be free of obstructions to allow safe approaches and departures by military aircraft. The imaginary surfaces, which are each described in Chapter 1 of the EA, rise in height with increasing distance from the runways and therefore allow trees of greater height at greater distance from the runways. Continued growth by trees close to the runways will result in even larger numbers of obstructions than occur at present. If action is not immediately taken, many aircraft that routinely use the runways will no longer be able to safely operate on Andrews AFB. Included among the affected aircraft is "Air Force One," a VC-25A aircraft that is a modified Boeing 747 specially equipped to meet the needs of the President.

Some of the trees requiring management are located in forested and landscaped areas on Andrews AFB. Other trees are located in forested areas north and south of Andrews AFB, including the historic Suitland Parkway corridor. Suitland Parkway is a 9.18-mile scenic divided road constructed by the Bureau of Public Roads during World War II to connect Andrews AFB to the District of Columbia and other federal installations. The parkway begins at Maryland Route 4 (Pennsylvania Avenue), proceeds west directly north of the runways, passes under the Capital Beltway, and continues through the Washington suburbs to Interstate Route 295 in the District of Columbia. The roadway is bordered on both sides by narrow strips of mature deciduous forest that provide a scenic, park-like driving experience despite traversing areas of dense suburban development. Since 1949, Suitland Parkway has been managed by the National Park Service (NPS) as a unit of the National Park System in a manner consistent with the NPS

Organic Act of 1916. In 1995, Suitland Parkway was listed on the National Register of Historic Places (NRHP). The nomination form concluded that Suitland Parkway displays historic significance with respect to the history and landscape architecture typical of the system of parkways developed in many urban areas during the first half of the 20th Century.

Three alternatives selected for evaluation in the EA are described in Chapter 2. One, Alternative 1, is the no-action alternative. Those few trees that grow tall enough to limit present instrument landing capabilities would continue to be trimmed under Alternative 1. But no effort would be made to perform the heavier trimming and tree removals necessary to provide the clear airspace required under Air Force and Federal Aviation Administration (FAA) policies for Class B military runways such as those at Andrews AFB. Implementation of the no-action alternative would leave trees and forest cover near the runways mostly intact but would result in having to immediately limit use of the runways by certain types of aircraft. Even further limitations would be required in the future, once trees have an opportunity to grow taller. Alternative 1 would be the environmentally preferable alternative and the alternative most consistent with the NPS mission for managing Suitland Parkway. However, Alternative 1 would place unacceptable limitations on use of the runways on Andrews AFB that would compromise the mission of multiple tenants using the base.

Under Alternative 2, which is identified in the EA as the preferred action, trees growing tall enough to penetrate the imaginary surfaces defined for the runways by Air Force and FAA policies would be trimmed or cut down (removed) to provide the requisite clearance. On Andrews AFB, the Air Force would seek to accomplish the work immediately and to remove rather than trim the trees to reduce the potential for recurrence of obstructions. The Air Force could elect to trim rather than remove a few trees in aesthetically sensitive locations on the base such as near Belle Chance, a historic residence; the Base Lake Recreation Area; or in parts of the golf course that adjoin off-base residential neighborhoods to the south.

Work affecting trees on Suitland Parkway would be performed under the direction of professionals from the NPS. Trees on Suitland Parkway would be trimmed rather than removed wherever possible. However, many trees would have to be trimmed so severely to provide the required vertical clearance that preservation would be impossible. Those trees would be removed and replaced by other species of regionally indigenous trees and shrubs whose mature height is low or whose growth rate is slow. Work would be performed in a manner that minimizes disturbance to the forest understory, ground cover, and leaf litter. The net result would be regionally indigenous vegetation that is dense and dominated by a mixture of low deciduous and evergreen trees and shrubs rather than by tall deciduous trees.

To minimize the visual impacts on the cultural landscape of Suitland Parkway, the Air Force would pursue a waiver to trimming requirements of 10 feet below the Air Force and FAA imaginary surfaces for trees on Suitland Parkway. Within the Air Force, HQ AMC/CEV, Environmental Programs Division and HQ AMC/DOA, Airfield Operations Divisions have agreed to support such a waiver provided that there is active oversight and implementation of a vegetation management plan. The Air Force, NPS, Maryland Historic Trust, and the Advisory Council on Historic Preservation are preparing a Programmatic Agreement to guide the preparation and implementation of the plan. The plan would ensure there is adequate trimming or removal conducted to provide and maintain uniform obstacle protection to aircraft operating at low altitudes in close proximity to the airfield while minimizing impacts on the historic properties of the Suitland Parkway. The active oversight and implementation of such a plan would have to ensure standardized, unobstructed airspace to aircraft operating at night under visual flight rules as well as provide obstacle clearance for safe operations of heavyweight aircraft or emergency aircraft experiencing seriously degraded performance. The waiver would apply only to trees occurring on Suitland Parkway.

Work required on privately owned land off of Andrews AFB would be performed in cooperation with the landowners. Most of the affected privately owned land consists of forest remnants in an industrial park north of Suitland Parkway and undeveloped forest land bordering Piscataway Creek immediately southeast of the base. A few trees in residential areas directly south of the golf course could also require light trimming. Mitigation would be tailored to the specific desires of the affected landowners.

Alternative 3 would be similar to Alternative 2, except that the northern end (threshold) to the West Runway would be displaced (moved) south by 500 feet. The pavement at the north end of the runway would not be physically contracted, but aircraft departing to the north would be required to leave the ground 500 feet before reaching the present threshold. Because the imaginary surfaces are positioned relative to the runway thresholds, trees on Suitland Parkway could be trimmed less severely than if the threshold were not displaced. The 500-foot threshold displacement would allow trees on Suitland Parkway to be trimmed 10 feet higher than would be required under Alternative 2. Some trees that would have to be trimmed so severely as to require removal under Alternative 2 could instead be successfully trimmed and retained under Alternative 3. As for Alternative 2, the Air Force would pursue a waiver to the requirement to trim trees on Suitland Parkway to an additional 10 feet below the 50:1 imaginary surface.

To offset the loss of 500 feet of usable primary pavement at the north end of the West Runway, Alternative 3 calls for extending the primary pavement by 500 feet at the south end. The extension would be accomplished by hardening the first 500 feet of the overrun pavement. The taxiways serving the south end of the runway would also have to be extended, and an additional 500 feet of overrun pavement would have to be added to offset the overrun surface converted to primary pavement. The runway extension

would be a military construction (MILCON) project costing in excess of 30 million dollars. It is expected that Congressional appropriation of the funds could require three or more years following a decision to implement Alternative 3. Construction would then require periodic temporary closures of the West Runway during a six month construction period. Logistical problems resulting from the funding delay and temporary closure of the West Runway during the construction period would have to be resolved before deciding to implement Alternative 3. The high construction costs, substantial unavoidable delays, and need for temporary runway closures are reasons why Alternative 3 was not selected as the preferred action.

Three other runway reconfiguration alternatives were evaluated in the early planning stages for the EA but were subsequently rejected. Upon subsequent analysis, the rejected alternatives were discovered to not be operationally or financially feasible or to result in significant environmental impacts that could not be successfully mitigated. The first rejected alternative, termed Alternative 3-Old, was conceptually similar to Alternative 3 but consisted of multiple options for displacing the northern thresholds to both runways (not just the West Runway) as much as 1,800 feet south. The second rejected alternative, termed Alternative 4, consisted of multiple options for increasing the net operational length of both runways as well as addressing flight obstructions. A third rejected alternative, termed Alternative 5, called for displacing the northern thresholds of both runways south by distances even greater than 1,800 feet to completely eliminate the need for any tree trimming or removal on Suitland Parkway. Each of the rejected alternatives required even greater MILCON funding and/or presented even greater logistical challenges than described for Alternative 3. Furthermore, the rejected alternatives would have involved runway and taxiway construction in the area of two abandoned landfills that are undergoing investigation as part of the Air Force's Installation Restoration Program. The rejected alternatives would have also required relocation of a base roadway (South Perimeter Road) that passes directly south of the airfield. The relocation would have required a new road crossing of the Piscataway Creek stream channel and permanently filling a large area of adjacent wetlands in the southern part of the base.

A fourth rejected alternative, termed Alternative 6, is briefly discussed in the EA. It resembled Alternative 2 except that it called for eliminating only those tree penetrations affecting a less rigorously defined airspace than required by Air Force and FAA policies. Relative to Alternative 2, fewer trees on Suitland Parkway would have required severe trimming or removal. However, the alternative was rejected because it would not have provided enough tree clearance to meet minimum aviation safety requirements needed to continue the current mission at Andrews AFB.

The purpose and need and descriptions for Alternatives 1, 2, and rejected Alternatives 3-old, 4, and 5 were presented to the public in a meeting conducted close to Andrews AFB and Suitland Parkway on February 6, 2001. Alternative 3, which represents a modification to the original rejected Alternative 3,

was developed subsequent to the meeting. As a result of the meeting and preliminary planning, it was decided that the EA should address the issues of land use; flight operations and safety; vehicular transportation; utilities; trees and other vegetation; terrestrial wildlife; threatened and endangered species; wetlands; aquatic biota; archaeological resources; historic resources; Cold War structures; aesthetics; air quality; surface water and groundwater; soils, geology, and prime farmland; noise; waste management; employment; housing; and environmental justice.

Alternative 1, the no action alternative, would not potentially result in adverse environmental impacts to the aesthetic, historical, or biological environment of Suitland Parkway and the environs of Andrews AFB but would adversely affect the ability of the 89 AW and other tenants at Andrews AFB to carry out their current missions. Because Alternative 1 could result in the curtailment of mission-related flight operations at Andrews AFB, it could indirectly result in adverse socioeconomic impacts in the form of reduced long-term employment levels on the base.

Although the impacts caused by tree removals and other vegetation changes on Andrews AFB as part of Alternative 2 would be minor, the proposed tree trimming and removals within the deciduous forest cover on Suitland Parkway would permanently alter the scenic qualities and cultural landscape values that contributed to inclusion of the parkway on the NRHP. Alternative 2 would effectively convert the deciduous forest adjoining both sides of the parkway to natural vegetation dominated by low-growing deciduous and evergreen shrubs and low trees. Some of the tree removals could increase the visibility of an industrial park located north of the affected segment of Suitland Parkway. Vegetation presently dominated by tall-growing but widely spaced deciduous trees such as tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), and white oak (*Quercus alba*) would instead be dominated by densely spaced shrubs such as mountain laurel (*Kalmia latifolia*) and highbush blueberry (*Vaccinium corymbosa*) and low growing trees such as American holly (*Ilex opaca*), eastern redbud (*Cercis canadensis*), and flowering dogwood (*Cornus florida*). However, the vegetation would remain natural and typical of that found on many rural roadsides in central Maryland, and the dense shrubs and low trees would at least soften if not completely block the view of urban areas from the roadway. It is therefore concluded that Alternative 2 would alter but not eliminate the scenic qualities of the affected segment of Suitland Parkway.

The impacts resulting from Alternative 3 would be similar to those resulting from Alternative 2. However, it is expected some trees on Suitland Parkway requiring removal under Alternative 2 could instead be trimmed and retained. Because the northern threshold to the West Runway would only be displaced 500 feet farther south from Suitland Parkway, many of the trees on that portion of Suitland Parkway north of the West Runway would still require removal. Because Alternative 3 would not displace the threshold of the East Runway, the impacts to trees on Suitland Parkway north of the East Runway would be the same

as for Alternative 2. Thus, while Alternative 3 might result in trimming rather than removing certain individual trees on Suitland Parkway, the overall aesthetic impact to the parkway would be the same as Alternative 2.

1.0 PURPOSE AND NEED

The following environmental assessment (EA) evaluates the potential environmental consequences of implementing alternative actions for managing flight obstructions to preserve safety at Andrews Air Force Base (AFB) in Prince George's County, Maryland. Trees in forested areas close to the runways on Andrews AFB constitute obstructions that, if left untreated, could jeopardize the safety of ongoing flight operations and ultimately compromise the unique mission of Andrews AFB. That mission includes serving as a travel and support center for the President of the United States and other distinguished Federal and foreign dignitaries. The runways on Andrews AFB fail to meet U.S. Air Force and Federal Aviation Administration (FAA) flight safety criteria because of trees that have grown tall enough to become flight obstructions.

An EA is a concise planning document, prepared in the context of the *National Environmental Policy Act of 1969* (42 USC 4321 *et seq.*), that analyzes the potential environmental consequences from a proposed action and reasonable alternatives. The information presented in an EA is used as the basis for a decision to prepare a Finding of No Significant Impact (FONSI) or a more detailed environmental analysis termed an environmental impact statement (EIS). The following EA has been prepared by the U.S. Air Force, Air Mobility Command (AMC), serving as the lead agency, with input from the U.S. Department of the Interior, National Park Service (NPS) serving as a cooperating agency. The EA has been prepared in accordance with the *Department of the Air Force Environmental Impact Analysis Process* (32 Code of Federal Regulations [CFR 989]); the NPS Director's Order 12 - *Conservation Planning, Environmental Impact Analysis, and Decision Making*; and the *President's Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500-1508). The AMC and NPS will independently review the information in this EA and will issue separate FONSI or recommend that an EIS should be performed.

1.1 BACKGROUND

The alternative actions addressed in the EA affect Andrews AFB, the historic Suitland Parkway, and surrounding areas. Andrews AFB is a 4,346-acre installation located approximately 10 miles southeast of Washington, DC. The base is bounded to the north by Suitland Parkway, a property listed on the National Register of Historic Places and managed by the NPS (Figure 1-1). Andrews AFB and Suitland Parkway are each described below.

Figure 1-1

1.1.1 Andrews AFB

Andrews AFB was established as the Camp Springs Army Airfield in 1942 and renamed as Andrews AFB in 1947. The host unit at Andrews AFB is the 89th Airlift Wing (89 AW), part of the U.S. Air Force Air Mobility Command (AMC). The 89 AW provides worldwide airlift and logistical support for the President of the United States, the Vice President, cabinet members, and other high-ranking United States and foreign government officials. The most notable aircraft based at Andrews AFB is the presidential aircraft, designated "Air Force One," a VC-25A aircraft that is specially equipped to meet the President's needs. Andrews AFB serves as a frequent embark/disembark location for the President, foreign heads of state, and other military and diplomatic officials.

Table 1-1 lists each flying unit of the 89 AW or its tenants and the primary aircraft type(s) operated by those units at Andrews AFB. The 89 AW is host to more than 60 tenant units. Tenant organizations residing at Andrews AFB include (among others) the Air Force Reserve Command 459th Airlift Wing (USAFRC 459 AW), the Air National Guard (ANG) Readiness Center, the District of Columbia Air National Guard (DCANG) 113th Wing, the U.S. Army Priority Air Transport (PAT), the Civil Air Patrol (CAP), the Maryland State Police, and the Naval Air Facility (NAF) Washington. Several other organizations utilize space at Andrews AFB and rely on the base's runways to carry out part of their operations.

Current flight operations at Andrews AFB require runways capable of use by large heavy lift aircraft such as the VC-25A, a modified Boeing 747 that serves as Air Force One. The Air Force designates runways capable of handling such aircraft as Class B runways. Table 1-2 lists the typical dimensions established by the Air Force for Class B runways, including those at Andrews AFB.

Andrews AFB includes two parallel Class B runways oriented north and south (Figure 1-2). The western runway (Runway 01L/19R) provides a 9,300-foot hard primary pavement with 1,000-foot soft overrun pavements at the north and south ends. The width of the primary and overrun pavements is 200 feet, and the primary pavement is bordered on both sides by 25-foot wide paved shoulders. The eastern runway (Runway 01R/19L) provides a 9,755-foot hard primary pavement with no shoulders and with 1,000-foot soft overrun pavements at the north and south ends (the lack of shoulders does not affect whether or not there are obstructions). The width of the primary and overrun pavements is 150 feet. The western runway is designated as Runway 01L when used for approaches from the south or departures to the north or as Runway 19R when used for approaches from the north or departures to the south. The eastern runway is designated as Runway 01R when used for approaches from the south or departures to

Table 1-1

Primary Aircraft Based at Andrews Air Force Base (1998)¹

| Unit ² | Primary Aircraft | Quantity |
|---|------------------------|----------|
| DC Air National Guard | | |
| 113 th Wing | F-16C/D Falcon | 15 |
| 201 st Airlift Squadron | C-22B (Boeing 727) | 3 |
| 201 st Airlift Squadron | C-21A Learjet | 4 |
| Maryland State Police | | |
| Maryland State Police | EH-365N Dauphin | 1 |
| U.S. Air Force | | |
| 1 st Airlift Squadron/89 th Aircraft Generation Squadron | C-32A (Boeing 757) | 4 |
| 1 st Helicopter Squadron | UH-1N Iroquois | 19 |
| 99 th Airlift Squadron/89 th Aircraft Generation Squadron | C-37 Gulfstream | 3 |
| 99 th Airlift Squadron/89 th Aircraft Generation Squadron | C-20B/H Gulfstream | 7 |
| 457 th ALS | C-21A Learjet | 8 |
| Civil Air Patrol | C-182 Skylane (Cessna) | 3 |
| Flight Standards Agency | C-21A Learjet | 2 |
| Presidential Pilot's Office | VC-25A (Boeing 747) | 2 |
| U.S. Air Force Reserve Command | | |
| 459 th Airlift Wing | C-141A StarLifter | 8 |
| U.S. Army | | |
| Priority Air Transport | C-20 Gulfstream | 3 |
| Priority Air Transport | C-21A Learjet | 6 |
| U.S. Department of Energy | | |
| U.S. Department of Energy | C-12 Huron | 1 |
| U.S. Marine Corps | | |
| Marine Air Support Detachment | C-20 Gulfstream | 1 |
| Marine Air Support Detachment | C-12 Huron | 2 |
| Squadron VMFA-321/AIMD | F/A-18A Hornet | 12 |
| Squadron VAQ-209/AIMD | EA-6B Prowler | 4 |
| U.S. Navy | | |
| Naval Air Facility Washington | C-12 Huron | 1 |
| Squadron VR-48 | C-20G Gulfstream | 4 |
| Squadron VR-1 | C-20D Gulfstream | 2 |
| Squadron VR-53/ Naval Air Facility Washington | C-130T Hercules | 4 |

¹Modified from: 89 AW, 1998. Updated through personal communication with 89th Operation Support Squadron.

²Units listed in alphabetical order.

Table 1-2

Selected U.S. Air Force Class B Runway Design Criteria¹

| Parameter | Requirement | Notes |
|--|--|---|
| Pavement Length | Minimum determined by the Air Force Major Command for the most critical aircraft in support of the mission | Refers to the length of primary pavement available for use in approaches and departures. At Andrews AFB, the West Runway is 9,300 feet long and the East Runway is 9,755 feet long. |
| Pavement Width | 150 Feet (Minimum) | Excludes paved and unpaved shoulders. At Andrews AFB, the West Runway is 200 feet in width and the East Runway is 150 feet in width. |
| Shoulder Width (paved and unpaved) | 200 Feet (Minimum) | None |
| Paved Shoulder Width | 25 Feet (Minimum) | None |
| Longitudinal Grade of Runway and Shoulders | 1.0 Percent (Maximum) | Parallel to runway centerline |
| Longitudinal Runway Grade Changes | No grade change is to occur less than 3,000 feet from the runway end. | Parallel to runway centerline |
| Rate of Longitudinal Runway Grade Changes | 0.167 Percent per 100 Linear Feet of Runway (Maximum) | Parallel to runway centerline |
| Longitudinal Site Distance | 5,000 Feet (Minimum) | Any two points 8 feet above the pavement, within a 5,000-foot linear stretch, must be visible from each other. |
| Transverse Grade of Runway | 1.0 Percent (Minimum) 1.5 Percent (Maximum) | Perpendicular to runway centerline |
| Transverse Grade of Paved Shoulder | 2.0 Percent (Minimum) 3.0 Percent (Maximum) | Perpendicular to runway centerline |
| Transverse Grade of Unpaved Shoulder | See Table 3.2 of UFC 3-260-01 | Perpendicular to runway centerline |
| Runway Lateral Clearance Zone | 1,000 Feet (Minimum) | Refers to the distance from the runway centerline that must be clear of fixed or mobile objects and must meet specific grade requirements. |
| Longitudinal Grades within Runway Lateral Clearance Zone | 10.0 Percent (Maximum) | Parallel to runway centerline |
| Transverse Grades within Runway Lateral Clearance Zone | 2.0 Percent (Minimum) 10.0 Percent (Maximum) | Perpendicular to runway centerline |
| Distance Between Centerlines of Parallel Runways | 2,500 Feet (Minimum) | For Instrument Flight Rules (IFR) with simultaneous departures on each runway or a simultaneous approach and departure. A greater minimum distance is specified for simultaneous approaches on each runway. |

¹Modified from Table 3.2 of Unified Facilities Criteria (UFC) 3-260-01.

Figure 1-2

the north or as Runway 19L when used for approaches from the north or departures to the south. For simplicity, the runways will be referred to as the West Runway and the East Runway for the remainder of the EA.

Current flight operations at Andrews AFB require Category II instrument landing system (ILS) capabilities for aircraft landing (in either direction) on the West Runway but not on the East Runway. ILS capabilities enable pilots to land aircraft using precision instruments under conditions of reduced visibility (fog, rain, etc.) that prevent direct visual observation of the runway during approach. Category II ILS capabilities allow pilots to decide whether to proceed with or abort a landing under reduced visibility conditions at an altitude (decision height) of 200 feet above the runway elevation.

The Andrews AFB runways are used for military, general aviation, air carrier, and air taxi flight operations. Table 1-3 summarizes annual flight operation data available from the 89th Operations Support Squadron (89 OSS) for 1999 and 2000. Each flight operation counted in Table 1-3 consists of a departure, approach, or one half of a closed flight pattern. Many military flight activities at Andrews AFB consist of aircraft departing the airfield, completing a closed flight pattern in the immediate vicinity of the base, and then returning to the airfield.

Approaches and departures at Andrews AFB are conducted to the north or to the south depending upon wind direction and the need to synchronize air traffic with nearby Ronald Reagan Washington National Airport. According to 89 OSS, roughly 60 percent of recent flight operations (approaches and departures) at Andrews AFB have been to the north and roughly 40 percent have been to the south.

Table 1-4 provides modeled average busy-day flight operation data for individual aircraft types at Andrews AFB for 1994 and 1996. Most aircraft use the West Runway (Runway 01L/19R) and some aircraft can use the East Runway (Runway 01R/19L) when the West Runway is not available. However, Air Force One (VC-25A), Boeing 747s, and Airbuses can use only the West Runway because the East Runway lacks necessary shoulders. Aircraft flying in weather conditions requiring Category II ILS can use only the West Runway. Data segregated by aircraft type has not been summarized for years subsequent to 1996. The general level of flight operation activity has not substantially changed in recent years.

Table 1-3

**Calendar Year 1999 and Calendar Year 2000 Air Traffic Data
Andrews Air Force Base¹**

| Type | Number of Flight Operations² | | | |
|------------------|--|--------------|------------------|--------------|
| | 1999 | | 2000 | |
| | Itinerant | Local | Itinerant | Local |
| Air Carrier | 138 | 0 | 63 | 0 |
| Air Taxi | 7 | 0 | 4 | 0 |
| General Aviation | 5,662 | 4,345 | 6,099 | 5,080 |
| Military | 50,645 | 39,861 | 49,301 | 43,096 |
| Total | 100,658 | | 103,643 | |

¹Source: Personal communication with the 89th Operations Support Squadron.

²Each flight operation constitutes a departure, arrival, or one half of a closed flight pattern.

Table 1-4

Calendar Years 1994 and 1996 Modeled Average Busy-Day Flight Operations
Andrews Air Force Base¹

| Flight Unit | Aircraft Type | 1994 ² | 1996 ² |
|--|------------------------------|-------------------|-------------------|
| Aircraft Based at Andrews Air Force Base | | | |
| 113 Wing | F-16C/D Falcon | 56 | 39 |
| Squadron VMFA-321 | F/A-18A Hornet | 32 | 11 |
| Squadron VAQ-209 | EA-6B Prowler | 4 | 5 |
| 459 th Airlift Wing | C-141A StarLifter | 44 | 45 |
| 201 st Airlift Squadron | C-22B (Boeing 727) | 16 | 6 |
| 99 th Airlift Squadron | C-9 (DC-9) | 32 | 9 |
| Presidential Pilot's Office | C-25A (Boeing 727) | 2 | 3 |
| 1 st Airlift Squadron | C-32A (Boeing 757) | 0 | 62 |
| 1 st Airlift Squadron | C-137 (Boeing 707) | 14 | 46 |
| 99 th Airlift Squadron | C-20B/H/C Gulfstream | 50 | 19 |
| Squadron VR-48 | C-20G Gulfstream | | 9 |
| Squadron VR-1 | C-20D Gulfstream | | 6 |
| Marine Air Support Detachment | C-20 Gulfstream | | 3 |
| Priority Air Transport | C-20 Gulfstream | | 4 |
| 457 th ALS | C-21A Learjet | 30 | 12 |
| 201 st Airlift Squadron | C-21A Learjet | | 9 |
| Flight Standards Agency | C-21A Learjet | | 14 |
| Priority Air Transport | C-21A Learjet | | 4 |
| Squadron VR-53 | C-130T Hercules | 4 | 26 |
| Naval Air Facility Washington | C-12 Huron | 44 | 10 |
| Marine Air Support Detachment | C-12 Huron | | 6 |
| Department of Energy | C-12 Huron | | 1 |
| 1 st Helicopter Squadron | UH-1N Iroquois | 36 | 91 |
| Maryland State Police | EH-365N Dauphin | 22 | 7 |
| Unknown | P-3C | 10 | 0 |
| Unknown | CT-39G | 10 | 0 |
| Total Based | | 406 | 447 |
| Transient Aircraft Using Andrews Air Force Base | | | |
| N/A ³ | C-5A | 1 | 1 |
| | C-9A | 4 | 4 |
| | C-135B | 1 | 1 |
| | C-141A | 5 | 5 |
| | T-43A | 1 | 1 |
| | F-15A | <1 | <1 |
| | F-16A | 1 | 1 |
| | A-10A | <1 | <1 |
| | C-21A | 11 | 11 |
| | T-1 | <1 | <1 |
| | C-130E | 4 | 4 |
| | C-12 | 3 | 3 |
| | Boeing B-707 | 1 | 1 |
| | Boeing B-727 | 1 | 1 |
| | Twin Piston Propeller Driven | 1 | 1 |

Table 1-4

Calendar Years 1994 and 1996 Modeled Average Busy-Day Flight Operations
Andrews Air Force Base¹ (Continued)

| Flight Unit | Aircraft Type | 1994 ² | 1996 ² |
|--|---------------|-------------------|-------------------|
| Transient Aircraft Using Andrews Air Force Base (Continued) | | | |
| Total Transient | | 34 | 34 |
| GRAND TOTAL | | 440 | 481 |

¹Source: 89 AW, 1998.

²The average busy-day flight operation numbers represent the annual average weekly number of flight operations for each aircraft type divided by the number of flying days per week. For most aircraft types based at Andrews AFB, the number of flying days per week is 5. For most transient aircraft, the number of flying days per week is 7.

³Not applicable.

1.1.2 Suitland Parkway

The histories of Andrews AFB and Suitland Parkway, which passes immediately north of the base, are closely interconnected. Suitland Parkway is a historic 9.18-mile scenic divided road built by the Bureau of Public Roads during the early months of World War II as a military highway to connect the District of Columbia with Andrews AFB. In 1949, Public Law 81-242, 63 Stat. 613-614 (1949) transferred the parkway from the Department of War to the administrative authority of the NPS. That legislation provided for “a limited access road primarily to provide a dignified, protected, safe and suitable approach for passenger-vehicle traffic to the National Capital and for an uninterrupted means of access between the several Federal establishments adjacent thereto and the seat of government in the District of Columbia.” For dignitaries arriving by plane at Andrews AFB, the drive along Suitland Parkway is their entrance to the nation’s capital.

Suitland Parkway is managed by the NPS National Capital Parks-East unit (NACE) in Washington, D.C. Because Suitland Parkway is an NPS property, it must be managed in a manner consistent with the National Park Service Organic Act of 1916. The act directs the NPS to “conserve the scenery and the natural and historic objects and the wild life (*sic*) therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 USC 1).” Although Suitland Parkway functions as a commuter corridor linking the Prince George’s County suburbs to downtown Washington, it is managed as a park. Most of the corridor supports mature deciduous forest and informal landscaping that provide a scenic driving experience despite the densely developed suburban surroundings.

Suitland Parkway was listed on the National Register of Historic Places (NRHP) in 1995. The nomination form stated that “Suitland Parkway represents a utilitarian roadway with design features intended to move traffic expeditiously, but with elements of design intended to convey a scenic driving experience characteristic of earlier parkways.” The form concludes that Suitland Parkway displays historic significance with respect to the history and landscape architecture typical of the system of parkways developed in many urban areas during the first half of the 20th century.

1.2 PURPOSE AND NEED FOR ACTION

To ensure the safety of flight operations, runways at Air Force installations such as Andrews AFB must comply with Unified Facilities Criteria (UFC) 3260-01, *Airfield and Heliport Planning and Design* (May 1999) and with the Federal Aviation Regulations (FAR) Part 77. Both documents provide criteria for unobstructed airspace and safe and efficient ground movements. UFC 3260-01 specifically addresses criteria for unobstructed airspace around Air Force runways, while FAR Part 77 addresses criteria for

unobstructed airspace for all airports in the United States. Section 1.2.1, below, describes those areas surrounding Air Force Class B runways that must be free of trees and other obstructions to comply with UFC 3-260-01 and FAR Part 77. Section 1.2.2 describes how the growth of trees close to the Andrews AFB runways has resulted in a large number of obstructions violating criteria in UFC 3-260-01 and FAR Part 77. Section 1.2.3 describes specific actions that must be taken at Andrews AFB to eliminate obstructions and bring the Andrews AFB runways into conformance with airspace clearance requirements in UFC 3-260-01 and FAR Part 77.

Section 1.2.4 discusses actions that should be taken to eliminate a specific category of obstructions, as defined by terminal instrument procedures (TERPS), that interfere with the Category II ILS capabilities on the West Runway. The requirements for managing TERPS obstructions (outlined in Air Force Manual [AFMAN] 11-230) differ from those established in UFC 3-260-01 for managing other obstructions. In March 2001, 89 AW trimmed 19 trees north of the airfield to eliminate TERPS obstructions that caused the loss of Category II ILS capability. 89 AW conducted a subsequent maintenance trimming effort in October 2001 to address new tree growth since March. Trimming was again required in January 2002 to trim tree penetrations not identified by the preceding survey. These interim rounds of tree trimming were the subject of an “emergency” trimming EA completed by NPS in March 2001.

Eliminating TERPS obstructions is not the primary focus of this EA. Flight obstructions do include the TERPS obstructions, which were subject to “emergency” actions in the past. Until the airfield can be brought into compliance with UFC 3-260-01 and FAR Part 77, those actions would continue such that those trees close to the West Runway would be managed to eliminate TERPS obstructions. Once the airfield is in compliance, long-term conformance with UFC 3-260-01 would ensure long-term Category II ILS (TERPS) capability without the need for future rounds of “emergency” tree trimming. This EA also notes that trimming for the purpose of eliminating TERPS obstructions will continue even under the no-action alternative.

1.2.1 Obstructions Defined by UFC 3-260-01 and FAR Part 77

UFC 3-260-01 identifies six imaginary surfaces surrounding Air Force Class B runways that define airspace which must be kept free of obstructions such as trees, buildings, towers, poles, and smokestacks in order to ensure safe use of the runways. These surfaces include the:

- Primary Surface,
- Approach-Departure Surface,
- Inner Horizontal Surface,
- Conical Surface,

- Outer Horizontal Surface, and
- Transitional Surface.

The imaginary surfaces are defined geometrically with respect to the runway ends (thresholds) and runway pavement centerline. They do not correspond to the edges of pavements or other physical surfaces; hence the term “imaginary.” The imaginary primary surface defines an area on the ground immediately adjacent to the runway pavement which must be kept completely free of trees and other physical objects unrelated to air navigation. The other five imaginary surfaces define airspace above the ground that must be free of obstructions that could interfere with the movement of aircraft while airborne.

Figure 1-3 depicts conceptually the six imaginary surfaces for any given Air Force Class B runway that must be free of obstructions according to UFC 3260-01. Table 1-5 lists each imaginary surface and indicates whether trees close to or on Andrews AFB penetrate, or could potentially penetrate, the surfaces and become flight obstructions. Of the surfaces listed in Table 1-5, those susceptible to penetration by trees include the primary, approach-departure, and transitional surfaces. The others are too high off the ground for penetration by even the tallest of trees known to occur in Maryland, which grow to heights of roughly 110 to 130 feet.

Table 1-6 lists the dimensions defined by UFC 3260-01 for imaginary primary, approach-departure, and transitional surfaces associated with Air Force Class B runways. Figures 1-4 and 1-5 present elevation views of the imaginary approach-departure and transitional surfaces, depicting the vertical relationship between those surfaces and the runway pavement.

Because trees grow at unpredictable rates, UFC 3260-01 requires that tree tops do not extend vertically within 10 feet of approach-departure, transitional, or other imaginary surfaces defined in terms of height. Thus, trees whose tops come within 10 feet vertically of the imaginary approach-departure or transitional surfaces associated with the Andrews AFB runways constitute flight obstructions which must be addressed. It is noted that the Air Force will pursue a waiver to the requirement for the additional 10 feet of tree clearance for trees on Suitland Parkway (but not elsewhere). The purpose of this waiver is to reduce impacts to trees that form part of the historic landscape of Suitland Parkway and formed part of the basis for the Parkway's inclusion on the NRHP. Trees on Suitland Parkway will be monitored closely to ensure that they do not ever penetrate the imaginary surfaces.

Figure 1-3

Table 1-5

Airspace Imaginary Surfaces Addressed in Unified Facilities Criteria 3-260-01

| Surface | Trees Capable of Obstruction (Flat Landscape Setting) | Trees Obstruct the Surface at Andrews Air Force Base¹ |
|---|--|---|
| Primary Surface | Yes | Yes ² |
| Approach-Departure Surface (Sloped Portion) | Yes | Yes ² |
| Approach-Departure Surface (Horizontal Portion) | No ³ | No |
| Inner Horizontal Surface | No ³ | No |
| Conical Surface | No ³ | No |
| Outer Horizontal Surface | No ³ | No |
| Transitional Surface | Yes | Yes ² |

¹A tree penetrates (and is therefore classified as a flight obstruction) if it is present within the primary surface or if its top elevation is within 10 feet of any other imaginary surface.

²A "Yes" in this column indicates that trees on Andrews Air Force Base, Suitland Parkway, or off-base private land presently penetrate the indicated surface and therefore constitute obstructions.

³A tree attaining the maximum potential height for any species occurring in central Maryland (roughly 110–130 feet) would not penetrate within 10 feet of these surfaces in a relatively flat landscape such as that surrounding Andrews Air Force Base.

Table 1-6

**Dimensions of Imaginary Primary, Approach-Departure, and Transitional Surfaces
Air Force Class B Runways¹**

| Parameter | UFC 3-260-01 Requirement (Class B Runways)² | FAR Part 77 Requirement³ (Part 77.28: Military Runways) |
|---|---|---|
| Primary Surface | | |
| Width | 2,000 feet (centered on runway centerline) | 2,000 feet (centered on runway centerline) |
| Length | Length of runway plus 200 feet at each end (beyond threshold) | Length of runway plus 200 feet at each end (beyond threshold) |
| Elevation | The elevation of any point is the same as that of the nearest point on the runway centerline (ground level if airfield is flat) | The elevation of any point is the same as that of the nearest point on the runway centerline (ground level if airfield is flat) |
| Sloped Portion of Approach-Departure Imaginary Surface | | |
| Start | 200 feet from threshold | 200 feet from threshold |
| Length of Sloped Portion | 25,000 feet (measured horizontally from start position) | 50,000 feet (measured horizontally from start position) |
| Slope | 50H:1V | 50H:1V |
| Width at Start of Sloped Portion | 2,000 feet (centered on extended runway centerline) | 2,000 feet (centered on extended runway centerline) |
| Width at End of Sloped Portion | 9,000 feet (centered on extended runway centerline) | 16,000 feet (centered on extended runway centerline) |
| Elevation at Start of Sloped Portion | Same as runway centerline elevation at threshold | Same as runway centerline elevation at threshold |
| Elevation at End of Sloped Portion | 500 feet (above the established airfield elevation) | 1,000 feet (above the established airfield elevation) |
| Transitional Surface | | |
| Start | 1,000 feet to side of runway centerline | 1,000 feet to side of runway centerline |
| Slope | 7H:1V, beginning at ground level | 7H:1V, beginning at ground level |
| End | Where 7H:1V slope attains elevation of 150 feet | Where 7H:1V slope attains elevation of 150 feet |

¹Only those surfaces indicated in Table 1-5 as susceptible to penetration by trees growing on or near Andrews Air Force Base are addressed in this table.

²UFC – Unified Facilities Criteria

³FAR – Federal Aviation Regulation

Figure 1-4

Figure 1-5

The FAA likewise defines a series of imaginary surfaces in FAR Part 77 that define airspace that must be kept free of obstructions. These imaginary surfaces are conceptually similar to those defined by UFC 3-260-01, although some of the dimensions differ. Table 1-6 lists the dimensions defined in FAR Part 77 for the primary, approach-departure, and transitional surfaces (i.e., for each of the imaginary surfaces subject to obstruction by trees growing on or near Andrews AFB). For those surfaces, the UFC 3-260-01 dimensions are roughly equivalent to or more restrictive than the corresponding FAR Part 77 dimensions. Therefore, elimination of obstructions in the context of UFC 3-260-01 will automatically ensure elimination of obstructions in the context of FAR Part 77.

1.2.2 Presence of Obstructions Defined by UFC 3-260-01 and FAR Part 77 at Andrews AFB

The East Runway was constructed in 1943 and the West Runway was constructed in 1961 while the landscape surrounding Andrews AFB was predominantly rural. By the late 1960's, the area surrounding Andrews AFB had become predominantly suburban, and the Air Force was unable to acquire additional land needed to facilitate vegetation management close to the expanded airfield. Furthermore, suburban development had rendered the forest cover bordering Suitland Parkway critical to preserving the park-like aesthetics experienced by drivers.

A survey performed in 1993 identified numerous trees on Suitland Parkway that are obstructions penetrating the imaginary approach-departure and transitional surfaces associated with the Andrews AFB runways. It is expected that several trees in forested areas on the base and on private property directly north of Suitland Parkway and directly south of the base may also constitute flight obstructions. Figure 1-6 depicts all forested areas containing potential tree obstructions penetrating the approach-departure and transitional surfaces associated with the Andrews AFB runways. The EA addresses the need to manage any trees that are obstructions affecting the Andrews AFB runways regardless of location.

Additionally, the surveys indicated that forest growth had encroached on approximately 15 acres of the primary surface (see Table 1-5) and graded areas of the Clear Zones at the ends of the runways. The Clear Zones are areas on the ground, located at the ends of each runway, that possess a high potential for accidents. UFC 3-260-01 defines Clear Zones measuring 3,000 feet by 3,000 feet extending beyond each threshold on Class B Air Force Runways. UFC 3-260-01 does not require that all land within the Clear Zones be free of trees and other obstructions. However, it does require that the portion of the Clear Zone closest to the threshold be graded and free of trees and other obstructions. That portion, termed the Clear Zone graded area, is defined by UFC 3-260-01 as measuring 2,000 feet in width, centered on a 1,000-foot extension of the runway centerline. Figure 1-7 depicts locations where woody vegetation has

Figure 1-6

Figure 1-7

encroached on the primary surface and Clear Zone graded surfaces. The Clear Zone graded surfaces are located entirely within Andrews AFB.

If current flight operations at Andrews AFB are to continue, immediate action is needed to eliminate trees that have become flight obstructions and bring the runways into conformance with airspace clearance requirements in UFC 3-260-01 and FAR Part 77. The elimination of obstructions to air navigation at Andrews AFB is both an Air Force and an FAA requirement. A memorandum dated 14 February 2000 from the Headquarters of the U.S. Air Force (HQ USAF) acknowledges the urgent need to eliminate hazards to air navigation at Air Force installations nationwide. The memorandum states that airfield design and layout must comply with UFC 3-260-01 and FAR Part 77.

Failure to maintain proper, obstacle free, clearances of airspace in and around Andrews AFB has forced the Air Force to implement waivers to both FAA and Air Force flight safety criteria. Waivers may be granted for obstacles to air navigation on a temporary basis. "Temporary Waivers" are for a specified period during which additional actions to mitigate the danger must be initiated and maintained until the hazard can be corrected. For example, a temporary waiver has been granted for tree penetrations both on and off-base at Andrews AFB under the condition that this EA was under way and mitigation actions were put into place until compliance with UFC 3260-01 is obtained. The mitigation actions placed on essential mission activities at Andrews AFB entailed raising the precision instrument landing weather minimums from 100 feet and ¼ mile visibility to 200 feet and ½ mile visibility, significantly impacting support of the President and other dignitaries, and limiting the cargo or fuel capacity of aircraft to compensate for obstructed surfaces. In some cases, this mitigation has required Air Force One to add an enroute fuel stop because tree obstacles at Andrews prevented a non-stop fuel load. The Air Force has experienced adverse mission impacts while operating under the temporary waiver. Air Force and NPS collaboration is key to avoiding future impacts. To comply with FAA and Air Force standards, as well as to avoid additional emergency responses, expeditious action is needed.

1.2.3 Actions Needed for Andrews AFB to Comply with UFC 3-260-01 and FAR Part 77

Actions needed to bring the Andrews AFB runways into conformance with UFC 3260-01 and FAR Part 77 and thereby ensure the safety of flight operations are summarized as follows:

- Eliminate obstructions caused by trees that penetrate into the airspace defined by the imaginary approach-departure surfaces (50H:1V) at each end of each runway,
- Eliminate obstructions caused by trees that penetrate into the airspace defined by the imaginary transitional surfaces (7H:1V) at the sides of each runway,

- Eliminate tree growth that extends to within 10 feet below the imaginary approach-departure and transitional surfaces (this action is necessary to prevent imminent obstruction by future tree growth),
- Selectively remove or trim trees capable of growing to penetrate the imaginary approach-departure and transitional surfaces and replace those removed trees with lower-growing species (this action is necessary to ensure long-term conformance with UFC 3-260-01), and
- Remove any trees growing in the imaginary primary surface and Clear Zone graded area (Figure 1-7) associated with each runway and convert those areas to a mowable lawn.

As noted previously, the Air Force will pursue a waiver to the requirement for the additional 10 feet of clearance below imaginary surfaces overlying Suitland Parkway. The trees requiring attention may be broadly classified as occurring in the following general areas:

- On Andrews AFB north and to the sides of the runways,
- On land north of Andrews AFB administered by the NPS as part of the historic Suitland Parkway,
- On private property north of the historic Suitland Parkway,
- On Andrews AFB south of the runways, including the Base Lake Recreation Area and part of a base golf course, and
- On private property south of Andrews AFB.

1.2.4 Actions Needed to Retain Category II ILS TERPS Capability at Andrews AFB

As noted previously, the principal subject of this EA is eliminating flight obstructions as defined by the imaginary surfaces in UFC 3260-01 and FAR Part 77, not eliminating TERPS obstructions. However, some trees have also penetrated into the airspace that must be free of obstructions to operate the Category II ILS equipment used to land aircraft on the West Runway when pilots are unable to visually see the runway due to inclement weather. This latter airspace is defined by imaginary surfaces termed Category II TERPS surfaces, and trees that penetrate that airspace will be described as trees obstructing the TERPS surface for the remainder of the EA. Where necessary to distinguish between the two categories of obstructions, trees that penetrate the airspace defined by UFC 3-260-01 and/or FAR Part 77

will be termed civil engineering (CE) obstructions. The term “obstruction” used without further specification in the EA will indicate a CE obstruction.

For aircraft approaching the West Runway from the north (i.e. landing on Runway 19R) using Category II ILS, no tree can penetrate the airspace above a 3-degree glide slope, which corresponds to a 34Horizontal:1Vertical (34H:1V) sloped imaginary surface, beginning at ground level 200 feet beyond the runway threshold. For aircraft approaching the West Runway from the south (i.e. landing on Runway 01L) using Category II ILS, no tree can penetrate the airspace above a 2.5-degree glide slope, which corresponds to a 50H:1V sloped imaginary surface. Aircraft landing on the East Runway do not use Category II ILS.

The loss of Category II ILS capability would immediately prevent many types of mission-critical aircraft, including Air Force One, from landing at Andrews AFB during a wide range of low-visibility weather conditions. The NPS therefore prepared an EA in March 2001 and authorized 89 AW to conduct an “emergency” round of tree trimming affecting as many as 24 trees on Suitland Parkway for the purpose of eliminating obstructions caused by top growth that penetrated into the imaginary 34H:1V Category II ILS TERPS surface north of the West Runway. The authorization also allowed 89 AW to conduct a round of maintenance trimming in October 2001 to eliminate new growth that had penetrated the surface during the preceding growing season. 89 AW also removed several trees on Andrews AFB south of the West Runway in March 2001 to prevent the loss of Category II ILS capabilities for aircraft landing from the south. In January 2002, 89 AW trimmed several additional trees on Suitland Parkway that had been identified in an updated survey as penetrating the TERPS surface north of the West Runway. Because the height limitations used to define TERPS obstructions are less restrictive (i.e., higher) than those used in UFC 3-260-01 and FAR Part 77 to define CE obstructions, elimination of all CE obstructions will automatically ensure elimination of all TERPS obstructions.

Preventing TERPS obstructions at Andrews AFB is actually somewhat more complex than just ensuring that nothing penetrates the 34H:1V glide slope north of the West Runway and the 50H:1V glide slope south of the West Runway. The glide slopes do define criteria for identifying most TERPS obstructions. However, an exception is the need to remove any trees growing within the “light plane” surrounding lines of approach lights extending north and south from the West Runway (parallel to the runway centerline). For runways with Category II ILS capabilities, the light plane is defined by AFMAN 32-1076 as a rectangular ground area 400 feet in width, centered on the line of approach lights, beginning at the runway threshold and extending 200 feet beyond the most distant approach light. The light plane south of the West Runway is free of trees, but the light plane north of the West Runway extends into forested lands on and north of Suitland Parkway. 89 AW has worked for many years in cooperation with the NPS and other landowners to periodically remove trees that become established within the light plane. 89 AW

will need to continue these rounds of tree removal from the light plane even once compliance with UFC 3-260-01 is achieved. Previous rounds of tree removals from the light plane did not require EAs because of the small numbers of trees involved and because Suitland Parkway had not yet been listed on the National Register of Historic Places. Future rounds of tree removal are addressed in the cumulative impacts section of this EA (Section 4.7) and will be addressed in future NEPA documentation whenever appropriate.

1.3 SELECTION CRITERIA FOR ALTERNATIVE ACTIONS

The alternatives evaluated in the EA are described in Section 2.0. Several factors were considered when selecting alternatives for evaluation in the EA. For an alternative to satisfy the purpose and need described above, it had to:

1. manage all trees that are CE obstructions and bring the Andrews AFB airfield into conformance with airspace clearance requirements in UFC 3-260-01 and FAR Part 77 (continued waivers are not acceptable),
2. manage vegetation near the runways so that continued growth of trees would not bring the airfield out of conformance with UFC 3-260-01 or FAR Part 77 in the future,
3. eliminate any TERPS obstructions caused by growth of trees until conformation with UFC 3260-01 and FAR Part 77 is achieved,
4. not interfere with or impose additional limitations upon current Andrews AFB flight operations or its overall mission,
5. not interfere with sites on Andrews AFB undergoing environmental investigation or cleanup as part of the Air Force's Installation Restoration (IR) Program (because Andrews AFB is on the National Priorities List, investigation and cleanup activities under the IR Program constitute long-term projects that have placed indefinite limitations on two former landfill sites located directly south of the airfield),
6. not result in substantial changes to flight tracks that could alter noise levels experienced by properties off of Andrews AFB or result in a need for substantial further limitations on the use of off-base property,

7. not require rerouting of South Perimeter Road, a construction activity that would require an individual permit under Section 404 of the Clean Water Act to construct a new bridge and road crossing Piscataway Creek and its bordering wetlands, and
8. be consistent with NPS objectives for managing the natural, cultural, and aesthetic resources of Suitland Parkway, which was listed on the NRHP in 1995.

1.4 ORGANIZATION OF THE EA

Section 1.0 of the EA is this introduction, which serves to explain the purpose and need for the actions under evaluation. Section 2.0 is a description of each alternative evaluated in the EA. Section 3.0 is a description of the existing environmental conditions in areas potentially affected by one or more of the alternatives. Section 4.0 is a description of the potential environmental consequences that could result from implementation of each alternative. Section 5.0 is a summary of measures considered as possible mitigation for environmental impacts from each alternative. Section 6.0 is a list of agencies and individuals consulted during the preparation of the EA, and Section 7.0 is a list of persons contributing to the preparation of the EA or to significant technical background papers used in preparing the EA.

1.5 CHAPTER 1 REFERENCES

89 AW (89th Airlift Wing). 1998. *Air Installation Compatible Use Zone (AICUZ) Study, United States Air Force Andrews Air Force Base, Maryland.*

2.0 DESCRIPTION OF ALTERNATIVES

The environmental assessment (EA) will evaluate three alternatives for managing flight obstructions to preserve safety at Andrews Air Force Base (AFB). The alternatives include: (1) No Action, (2) Vegetation Management, and (3) Limited Vegetation Management with 500-Foot Runway Threshold Displacement on the West Runway. The alternatives differ with respect to management of forest vegetation affecting flight operations and with respect to displacement (movement) of the West Runway thresholds to increase the distance separating forest vegetation from the runway. Except for Alternative 1 (No Action), each alternative brings the Andrews AFB runways into conformance with airspace clearance requirements in Unified Facilities Criteria (UFC) 3-260-01 and Federal Aviation Regulation (FAR) Part 77 and enables them to remain in conformance for the foreseeable future, ensuring the safety and successful continuation of the current mission. Each alternative strives to minimize impacts to the natural, cultural, and aesthetic properties of Suitland Parkway and other forested land near Andrews AFB but acknowledges that some vegetation changes are necessary to allow continued safe use of the runways.

As used in the EA, the term “vegetation management” refers to tree removal, trimming, and other practices intended to eliminate or prevent encroachment by trees onto the Andrews AFB airfield or into airspace that must be free of obstructions as defined by the imaginary surfaces described in UFC 3-260-01 and FAR Part 77. The term “runway threshold” refers to the farthest point on a runway where a departing aircraft may remain in contact with the pavement or the closest point on a runway where an approaching aircraft may touch down onto the pavement. Figure 1-2 indicates the locations of the thresholds at the north and south ends of each runway at Andrews AFB.

Alternative 1, the No Action Alternative, would not involve vegetation management for the purpose of bringing Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77 (see Section 1.2) and would not involve displacement of the runway thresholds shown in Figure 1-2. Alternative 2 would involve vegetation management necessary to bring Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77 without displacing the runway thresholds. Alternative 3 would involve vegetation management necessary to bring Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77 but also would involve displacing the threshold at the northern end of the West Runway 500 feet to the south. The displaced threshold would be 500 feet farther south from the forest vegetation on Suitland Parkway, reducing the severity of the necessary tree trimming and tree removal needed in that area. Five hundred feet of the 1,000-foot soft overrun surface at the south end of the West Runway would be hardened (repaved with thicker, stronger concrete meeting specifications for active portions of a runway) as part of Alternative 3 to maintain the original length of primary runway pavement available for aircraft approaches from and departures to the north.

Alternatives 1 and 2 were presented at a public meeting held on February 6, 2001, sponsored by the Air Force Air Mobility Command (AMC) and the National Park Service (NPS), National Capital Parks–East (NACE, the unit responsible for managing Suitland Parkway) at a location near Andrews AFB. Alternative 3 was developed by AMC and NACE after the meeting, following review of public comments and further consideration of the potential environmental impacts from other alternatives. It represents a modification of another alternative presented at the meeting (see Section 2.4, below). Two other alternatives were also presented at the meeting but were later eliminated from consideration because they placed unacceptable limitations on flight operations at Andrews AFB or resulted in potentially significant environmental impacts. Each rejected alternative is discussed below in Section 2.4.

The three alternatives are summarized in Table 2-1 and described in greater detail in Sections 2.1, 2.2, and 2.3. Section 2.4 discusses the alternatives that were considered in the initial stages of planning the EA and presented at the public scoping meeting but were later eliminated from further consideration.

2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE

Under Alternative 1, the no action alternative, no measures would be taken to bring Andrews AFB into conformance with UFC 3260-01 or FAR Part 77. Trees would continue to be trimmed as necessary to prevent penetration of the imaginary 34-foot horizontal to 1-foot vertical (34H:1V) surface required to maintain Category II instrument landing system (ILS) capabilities (see discussion in Section 1.2.4), but no action would be taken to ensure clearance of the lower 50H:1V imaginary surface and other imaginary surfaces required in UFC 3-260-01 or FAR Part 77. Many trees on Andrews AFB, Suitland Parkway, and other off-base land would continue to penetrate the imaginary 50H:1V approach-departure surfaces and the 7H:1V transitional surfaces associated with the parallel runway system. Continued growth of other trees in forested areas near the runways would result in a steadily increasing number of obstructions penetrating the surfaces defined in UFC 3260-01 and FAR Part 77. Additionally, small areas of forest vegetation would remain in the primary surfaces and Clear Zone graded areas defined by UFC 3260-01 for the runways. To ensure safe aircraft operation and conform with Air Force and Federal Aviation Administration (FAA) guidance, the Air Force would have to curtail or discontinue flight operations at Andrews AFB.

The tops of several trees in forested areas at the northern perimeter of Andrews AFB and on Suitland Parkway are as much as 60 feet higher than the elevation of the northern runway thresholds. These trees are located within approximately 1,700 feet north of the thresholds (1,500 feet north of the point

Table 2-1

**Summary Description of Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base**

| Alternative | Vegetation Management | Threshold Displacement | | | | | |
|-------------|---|---|-------|-------------------------|-------------------------|-----------|-----------|
| | | West Runway | | East Runway | | | |
| | | North | South | North | South | | |
| 1 | No Action | None | | No Change | No Change | No Change | No Change |
| 2 | Vegetation Management | Immediate program of tree trimming and removal to provide 10 feet vertical clearance beneath imaginary surfaces as defined in ¹ UFC 3-260-01. Phased program of replacing trimmed trees with slow growing indigenous trees and shrubs with a low mature height. Involves forested areas on Andrews Air Force Base, as well as along Suitland Parkway and on other off-base land ² . | | No Change | No Change | No Change | No Change |
| 3 | Limited Vegetation Management with 500-Foot Runway Threshold Displacement | Similar to Alternative 2, but the intensity of tree trimming and tree removal would be reduced on Suitland Parkway and in other forested areas north of Andrews Air Force Base. | | Displace 500 Feet South | Displace 500 Feet South | No Change | No Change |

¹UFC - Unified Facilities Criteria

²As discussed in Section 2.2, the Air Force will pursue a waiver to the requirement for the additional 10 feet of vertical clearance for trees on Suitland Parkway.

where the imaginary 50H:1V approach-departure surfaces begin). If no action is taken to trim or remove trees on Suitland Parkway, the northern threshold of each runway would have to be displaced as much as 1,500 feet to the south to provide approach-departure surfaces free of tree obstructions. The thresholds would have to be displaced as much as 2,000 feet to the south to also provide the 10 feet of vertical tree clearance beneath the imaginary approach-departure surfaces called for in UFC 3260-01. That would leave less than 7,300 feet of usable runway pavement length on the West Runway and less than 7,755 feet of usable length on the East Runway for approaches from and departures to the north (i.e., approximately 60 percent of flight operations).

The 89th Operations Support Squadron (89 OSS) states that the existing runway lengths (9,300 feet for the West Runway and 9,755 feet for the East Runway) already limit the conditions under which larger aircraft such as Air Force One and other Boeing 747s can use the runways. For example, Air Force One may require as much as 11,500 feet of usable runway pavement length to carry the President of the United States to any world destination under any conditions without refueling. Any shortening of the usable length of either runway due to obstructions would further constrain the already limited conditions under which Air Force One and other aircraft operate at Andrews AFB. Many of the larger aircraft, including Air Force One, would be substantially limited in the amount of fuel and other weight that they could carry, thereby rendering operation out of Andrews AFB infeasible.

Alternative 1 would not involve tree trimming or removal for the purpose of bringing Andrews AFB into conformance with UFC 3260-01 or FAR Part 77. However, selected trees in the forested areas directly north and south of the runways would still have to be periodically trimmed in order to maintain Category II instrument landing system (ILS) capabilities in conformance with terminal instrument procedures (TERPS) requirements (see Section 1.2.4). Any trees that establish within the light plane surrounding the lines of approach lights at the ends of the West Runway (i.e., within 200 feet of the approach lights) would still have to be removed or trimmed below the height of the lights. In March 2001, October 2001, and again in January 2002, the Air Force cooperated with the NPS to trim 19 trees on Suitland Parkway that penetrated a 34H:1V sloped surface north of the West Runway which must be kept free of obstructions to provide Category II ILS capabilities. The NPS authorized that limited program of tree trimming in an EA completed in February 2001. If Alternative 1 is selected, the Air Force would continue to cooperate with NPS to conduct future rounds of selective tree trimming for the sole purpose of maintaining Category II ILS capabilities. While these rounds of trimming would preserve Category II ILS capabilities, they would not bring the airfield into compliance with UFC 3260-01 or FAR Part 77 and would therefore not ensure the safety of flight operations at Andrews AFB.

Despite the fact that Alternative 1 would best preserve the historic forested character of Suitland Parkway, it would place severe limitations on the operation of Air Force One and other large aircraft

critical to the Andrews AFB mission. Alternative 1 is therefore not a practicable and feasible alternative in the context of 40 Code of Federal Regulations (CFR) 1502.14. However, 40 CFR 1502.14(d) specifically directs agencies preparing environmental impact statements (EISs) and EAs to evaluate a no action alternative. The potential environmental consequences of Alternative 1 therefore are discussed in detail in Chapter 4.

2.2 ALTERNATIVE 2: VEGETATION MANAGEMENT

Alternative 2 consists of a program of vegetation management in forested areas near the runways to bring Andrews AFB into conformance with UFC 3260-01 and FAR Part 77 (see Section 1.2) and then remain in conformance. The approximate extent of these forested areas is shown in Figure 1-6. The Air Force would work with NPS to identify the exact extent of affected areas as part of a vegetation management plan prepared prior to initiation of any work. Any vegetation management affecting Suitland Parkway would be conducted under the direction of NPS and in a manner consistent with objectives established by NPS for managing the natural, cultural, and aesthetic values of Suitland Parkway, which is listed on the National Register of Historic Places (NRHP).

The program of vegetation management will be detailed in a management plan prepared by the Air Force and NPS prior to initiation of work. It may be summarized as follows:

1. Small areas of deciduous forest (totaling approximately 15 acres) that have encroached into the primary surface and Clear Zone graded area would be clearcut (see Figure 1-7). UFC 3260-01 requires that these areas be free of trees and other obstructions, regardless of height. All trees and shrubs growing in the primary surface would be cut close to ground level using a chain saw and removed for sale, use, or disposal. The cut-over areas would then be seeded with perennial grasses and managed as mowable lawn. The affected areas are located entirely on Andrews AFB, inside Perimeter Road.
2. Except on Suitland Parkway, trees whose tops penetrate the imaginary 50H:1V approach-departure surfaces for the runways would be removed or selectively trimmed to at least 10 feet below the imaginary surface height by a tree care expert licensed by the State of Maryland. Other trees whose tops extend to within 10 feet of the imaginary surface height would also be removed or trimmed to provide at least 10 feet of vertical clearance. Because trees grow, UFC 3-260-01 requires an additional 10 feet of clearance below imaginary surfaces for trees (but not for nonliving obstructions such as poles or towers). Before trimming any tree, the tree care expert would determine whether the tree could survive the trimming necessary to provide the required clearance. If the tree care expert determines that a tree likely would not survive the trimming, or would be so severely

disfigured as to be aesthetically unattractive, the tree would be removed. All removed trees would be offered for sale, recycled through the ecosystem where practical, or disposed of. Providing necessary tree clearance under the approach-departure surfaces would require tree trimming and/or tree removals on portions of Andrews AFB, Suitland Parkway, and other off-base land.

3. Trees on Suitland Parkway whose tops penetrate the imaginary 50:1V approach-departure surfaces for the runways would be selectively removed or trimmed below the imaginary surface height by a tree care expert licensed by the State of Maryland and acting under the direction of NPS. Other trees whose tops extend to within a few feet of the imaginary surface height would also be trimmed to provide continued vertical clearance throughout the growing season. If the tree care expert determines that a tree likely would not survive trimming, or would be so severely disfigured as to be aesthetically unattractive, the tree would be removed. Each removed tree would be replaced with a low-growing tree or shrub sapling of a regionally indigenous species incapable of growing within 10 feet of the imaginary approach-departure surface height. To minimize the visual impacts on the cultural landscape of the Suitland Parkway, the Air Force would pursue a waiver to trimming requirements of 10 feet below the 50:1 imaginary surface. HQ AMC/CEV, Environmental Programs Division and HQ AMC/DOA, Airfield Operations Division have agreed to support such a waiver provided that there is active oversight and implementation of a vegetation management plan. This plan would have to ensure that adequate trimming or removal is conducted to provide and maintain uniform obstacle protection to aircraft operating at low altitudes in close proximity to the airfield. The active oversight and implementation of such a plan would have to ensure standardized, unobstructed airspace to aircraft operating at night under visual flight rules as well as provide obstacle clearance for safe operation of heavy-weight aircraft or emergency aircraft experiencing seriously degraded performance. The Air Force would ensure proper notification is provided alerting all aircrews to the waiver to the 10-foot trimming requirement.

4. Trees whose tops penetrate the imaginary 7H:1V transitional surfaces to the sides of the runways would be removed or selectively trimmed to at least 10 feet below the imaginary surface height by a tree care expert licensed in the State of Maryland. As described for the approach-departure surfaces (except on Suitland Parkway), other trees whose tops extend to within 10 feet of the imaginary surface height would also be removed or trimmed to provide at least 10 feet of vertical clearance. Before trimming any tree, the tree care expert would determine whether the tree could survive the trimming necessary to provide the required clearance. If the tree care expert determines that a tree likely would not survive the trimming, or would be so severely disfigured as to be aesthetically unattractive, the tree would be removed. Only areas on Andrews AFB would require selective tree trimming or removal to provide appropriate clearance under the imaginary transitional surfaces.

5. After bringing the runways into conformance with UFC 3-260-01, AMC would work with NPS to remove or trim in phases certain trees on Suitland Parkway capable of growing back to penetrate the imaginary approach-departure or transitional surfaces. The removed trees would be replaced with trees or tall shrubs whose mature height is not expected to penetrate any imaginary surface height. The affected forested areas are presently dominated by tall, fast-growing tree species such as oaks (*Quercus* sp.), tulip poplar (*Liriodendron tulipifera*), Virginia pine (*Pinus virginiana*), and sweetgum (*Liquidambar styraciflua*). Many of these trees would be removed and replaced by slower-growing, lower-growing indigenous tree and shrub species such as American holly (*Ilex opaca*), mountain laurel (*Kalmia latifolia*), redbud (*Cercis canadensis*), and flowering dogwood (*Cornus florida*). Especially on Suitland Parkway and other off-base land, the removal program would be conducted in stages over two to three years to minimize sudden aesthetic changes to the forested areas.

Figure 2-1 shows the approximate locations of forested areas that would be subject to tree trimming and/or tree removal as part of the vegetation management program conducted under Alternative 2. It is estimated that as much as 110 acres of forest land on Andrews AFB, 35 acres of forest land on Suitland Parkway, and 40 acres of off-base private land would require selective tree trimming or removal to provide appropriate clearance.

As indicated above, the Air Force would work with NPS and other affected off-base landowners to develop a management plan identifying the exact bounds of forested areas requiring management and presenting a more specific course of action and schedule. The management plan would identify the specific location of each tree requiring selective trimming or removal and a timetable for addressing each tree. The management plan would also specify replacement species and locations for planting replacements. The management plan would be developed in close coordination with the Maryland Department of Natural Resources (MDNR) and the Maryland Historic Trust (MHT; office of the State Historic Preservation Officer).

Alternative 2 would effectively bring Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77 and would allow current flight operations to continue safely. Alternative 2 would also ensure that continued growth of trees does not cause the runways to go out of conformance. Alternative 2 does not require the displacement of runway thresholds, does not shorten the length of runway available to aircraft for approaches or departures, does not require moving navigational aids, does not require changes to flight tracks, and does not require grading or new construction of runway pavement, taxiways, roads, or other airfield facilities. Although Alternative 2 would result in the clearcutting and loss of up to 15 acres of forest cover on Andrews AFB, it would not result in the loss of forest cover on Suitland Parkway or elsewhere off base. It would alter the appearance and species composition of forested areas on Suitland

Figure 2-1

Parkway and some other off-base lands but would not result in the loss of forest cover in those areas. Alternative 2 is reasonable in the context of 40 CFR 1502.14, and it is therefore carried forward for detailed environmental analysis in Chapter 4 of the EA.

2.3 ALTERNATIVE 3: LIMITED VEGETATION MANAGEMENT WITH 500-FOOT THRESHOLD DISPLACEMENT OF THE WEST RUNWAY

Under Alternative 3, the Air Force would displace (relocate) the northern threshold of the West Runway 500 feet to the south, and extend the West Runway 500 feet to the south, in an effort to reduce the extent of vegetation management necessary on Suitland Parkway to bring Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77 (see Section 1.2) without reducing the net runway length. The trees on Suitland Parkway closest to the existing northern threshold are as much as 60 feet or more in height (relative to the threshold elevation) and approximately 1,500 feet from the point where the imaginary 50H:1V approach-departure surface currently begins. If the thresholds are not displaced, the trees would have to be trimmed to a height of approximately 20 feet to provide 10 feet of vertical clearance under the imaginary 50H:1V approach-departure surface (30 feet if the AF pursues a waiver to the requirement for the 10 additional feet of clearance). If the West Runway threshold is displaced 500 feet to the south, the trees would have to be trimmed only to a height of approximately 30 feet to provide the same clearance (40 feet if the waiver is issued). The vegetation management required under Alternative 3 for the East Runway would be identical to that required for the East Runway under Alternative 2 (section 2.2).

Trimming a 60-foot tree to a height of 20 or 30 feet would kill or severely disfigure most trees. They would have to be removed immediately. However, some 60-foot trees could be trimmed to a height of 30 or 40 feet without being harmed. Those trees could be trimmed and left standing until replacement trees grow to a modest size. Ultimately, some of the 30- to 40-foot trees would be replaced to avoid the need for repeated trimming, which can progressively weaken trees and can physically disturb adjoining vegetation. However, temporary preservation of the trimmed trees would preserve a forest canopy until the replacement trees have an opportunity to form a lower canopy that can be more easily managed to prevent the future recurrence of obstructions.

Alternative 3 would render the northernmost 500 feet of primary pavement on the West Runway unavailable for aircraft approaches from and departures to the north. To compensate, the Air Force would harden 500 feet of the overrun surface on the south end of the West Runway and move the southern threshold 500 feet to the south. The net length of primary pavement available for approaches from and departures to the north on the West Runway would remain 9,300 feet. The net length of primary pavement available for departures to the south would be increased to 9,800 feet. The Air Force would have to construct an additional 500 feet of extended overrun surface at the south end of the West

Runway to compensate for the loss of overrun converted to primary pavement. The total length of overrun surface at the south end of the West Runway would therefore remain 1,000 feet.

Figure 22 shows how the airfield would be reconfigured under Alternative 3. The overall extent of the airfield would not change appreciably. However, new taxiways would have to be constructed to the south to provide access to the extended primary pavement. Additionally, 500 feet of new overrun pavement would have to be constructed at the south end to compensate for the loss of overrun. The fill soil at the south end of the West Runway would have to be evaluated to determine whether it could support primary pavement. If not, the fill soil might have to be further compacted or replaced. As much as 60 acres of land at the south end of the West Runway would have to be graded to accommodate the new primary pavement, overrun pavement, taxiways, and an adjusted Clear Zone graded area.

The construction time for extending the West Runway and taxiways and other airfield facilities to properly service the extended runways would be 4 to 6 months. The West Runway would have to be periodically closed during that time to accommodate construction work and equipment, temporarily interfering with flight operations.

The program of vegetation management would be tailored to the displaced West Runway threshold but would generally resemble that summarized for Alternative 2. Trees would be selectively trimmed or removed to provide at least 10 feet of vertical clearance under the imaginary approach-departure and transitional surfaces. As for Alternative 2, the Air Force would pursue a waiver to the requirement that trees on Suitland Parkway be trimmed an additional 10 feet below the imaginary 50:1 surface. Trees on that part of Suitland Parkway north of the West Runway would not have to be trimmed as extensively as under Alternative 2. It is expected that several trees could be more moderately trimmed under Alternative 3.

The Air Force would work closely with NPS to ensure that any vegetation management affecting Suitland Parkway is conducted in a manner consistent with the objectives established by NPS for managing the parkway's natural, cultural, and aesthetic values. Before initiating the vegetation management program, the Air Force would work with NPS and other affected off-base landowners to develop a management plan identifying a more specific course of action and schedule. The plan would identify the specific location of each tree requiring trimming or removal and a timetable for addressing each tree. The plan would also identify species and locations for planting replacement trees and shrubs, and it would be developed in close coordination with MDNR. The plan would be periodically updated to reflect future trimming requirements resulting from continued growth of trees.

Figure 2-2

Alternative 3 would effectively bring Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77 and would allow current flight operations to continue safely. It also would address the safety of future flight operations at Andrews AFB and ensure that continued growth of trees does not cause the runways to go out of conformance. Alternative 3 would require a short displacement of the West Runway threshold and would require recalibrating or relocating some navigational aids within the airfield, but it would not shorten the net length of runway available to aircraft for approaches or departures and would not grossly alter the overall footprint of the airfield. The displaced threshold would require at most minor changes to flight tracks. Vegetation management would change the appearance and species composition of forested areas on Suitland Parkway and other off-base lands, but to an extent somewhat less than required under Alternative 2.

Alternative 3 is reasonable in the context of 40 CFR 1502.14, and it is therefore carried forward for detailed environmental analysis in Chapter 4 of the EA. However, Alternative 3 may be difficult to implement because it poses several operational impacts and logistical challenges not posed by Alternative 2. As noted above, the West Runway would have to be temporarily closed to accommodate construction work and equipment. Additionally, the construction costs could exceed 30 million dollars not including design costs. Construction would require Congressional appropriation of military construction (MILCON) funds. The soonest possible appropriation date for MILCON funds for a project not already under review would be Fiscal Year (FY) 2005; a more realistic appropriation date would be FY 2006 or later. Implementation of Alternative 3 would therefore delay compliance with UFC 3-260-01 and FAR Part 77 for multiple years, until the appropriation could be obtained and construction completed.

Implementation of Alternative 3 would also require an individual permit from the U.S. Army Corps of Engineers to fill as much as 15 acres of emergent wetlands located near the south overrun surface of the West Runway. Alternative 3 would not, however, disturb two abandoned landfills, both located south of the airfield, that are undergoing investigation as part of the Installation Restoration Program (IRP) at Andrews AFB.

2.4 ALTERNATIVES CONSIDERED BUT REJECTED FOR NOT MEETING PURPOSES OF EA

The following section discusses a previous version of Alternative 3 and two other alternatives that were considered in the initial stages of planning the EA but subsequently eliminated from further consideration because they do not meet the purpose and need outlined in Section 1.2. The eliminated alternatives involved displacing the northern and/or the southern thresholds for one or both runways to an even greater extent than proposed under Alternative 3. The eliminated alternatives were presented as Alternatives 3, 4, and 5 at the public scoping meeting. To avoid confusion, the eliminated version of Alternative 3 is termed Alternative 3-Old for the remainder of the EA. One additional alternative was

considered at the request of NPS and subsequently eliminated from further consideration; this alternative (Eliminated Alternative 6) is described in Section 2.4.4.

2.4.1 Eliminated Alternative 3-Old: Runway Reconfiguration with Limited Vegetation Management

Eliminated Alternative 3-Old called for reconfiguring the runways to substantially reduce the severity of tree trimming and removal required in forested areas off of the base, including Suitland Parkway, to bring the runways into conformance with UFC 3260-01 and FAR Part 77. Three options were considered, termed Options A, B, and C (Table 2-2; Figures 2-3 to 2-5). All involved displacing the northern threshold of the West Runway south by 1,800 feet and displacing the northern threshold of the East Runway south by 2,000 feet. The options varied with respect to displacing the southern threshold of each runway. One option did not involve extending the runways south to offset for the loss of usable pavement at the north end. Other options involved extending the West Runway as much as 4,000 feet south, extending the footprint of the airfield into land presently occupied by the golf course and of the Base Lake Recreation Area, a manmade lake and picnic area.

Eliminated Alternative 3-Old would have effectively brought Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77. It would have resulted in milder impact to forested areas on Suitland Parkway and other off-base lands. However, analysis performed after the public scoping meeting demonstrated that the options were not operationally feasible or would have resulted in significant environmental impacts. Options A and B would have substantially reduced the length of primary runway pavement available to aircraft using either runway, and Option C would have substantially reduced the length of primary runway pavement available to aircraft using the East Runway. The 89 OSS has indicated that the existing runway lengths limit the conditions under which larger aircraft such as the VC-25A (Air Force One) and other Boeing 747s can use the runways. Any reduction in the length of either runway would so limit the conditions under which such aircraft can operate that the mission of Andrews AFB would be compromised.

Another concern is that the extent of threshold displacement proposed under any of the options could have substantially altered the flight tracks over the suburban landscape surrounding Andrews AFB, which includes several widely scattered schools, churches, and other noise-sensitive receptors. Detailed noise modeling would have been necessary to assess whether significant impacts would have resulted from the changes in the pattern of aircraft noise. Some off-base navigational aids could have required relocation.

Table 2-2

Summary of Threshold Displacements Under Eliminated Alternative 3-Old
 Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base

| Option | West Runway | | | | | | East Runway | | | | | |
|--------|---------------------------|---------------------------|---|--|---|-------------------|---------------------------|---------------------------|---------------------------|---|---|-----------------|
| | Threshold | | Runway Pavement | | Usable Pavement for Departures (Percent Operational Capability for Boeing 747) ¹ | | Threshold | | Runway Pavement | | Usable Pavement for Departures (Percent Operational Capability for Boeing 747) ¹ | |
| | North | South | North End | South End | To North | To South | North | South | North End | South End | To North | To South |
| | A | Displace 1,800 feet south | No change | No change | No change | 7,500 feet (58) | 9,300 feet (86) | Displace 2,000 feet south | Displace 1,150 feet north | No change | No change | 7,755 feet (62) |
| B | Displace 1,800 feet south | Displace 1,200 feet south | No change | Extend primary pavement 1,200 feet south and add new 1,000-foot overrun pavement | 8,700 feet (72) | 10,500 feet (98) | Displace 2,000 feet south | Displace 1,150 feet north | No change | No change | 7,755 feet (62) | 8,605 feet (75) |
| C | Displace 1,800 feet south | Displace 1,200 feet south | Convert 1,000-foot overrun pavement to primary pavement | Extend primary pavement 4,000 feet south. No overrun pavement | 11,500 feet (100) | 11,500 feet (100) | Displace 2,000 feet south | Displace 1,150 feet north | No change | Extend primary pavement 2,000 feet south. No overrun pavement | 9,755 feet (92) | 8,605 feet (75) |

¹Operational capability estimates provided by 89th Operations Support Squadron and apply to Air Force One. An estimate of 100 percent refers to the ability to fly Air Force One fully loaded to any global location without having to stop to refuel.

Figure 2-3

Figure 2-4

Figure 2-5

Grading to extend the West Runway and associated taxiways south under Options B and C would have affected an abandoned landfill designated under the Andrews AFB IRP as LF06. Grading under Option C would have also affected a second abandoned landfill designated as LF07. Both landfills, which were used to dispose of construction debris and other materials, are currently under investigation as part of the defined Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. This investigation, as well as any remediation determined to be necessary by the investigation, must be completed to the satisfaction of the U.S. Environmental Protection Agency and state agencies before any runway construction can proceed in the vicinity of the landfills. The CERCLA process includes completing a Remedial Investigation (RI) and a Feasibility Study (FS) to support a Record of Decision (ROD), defining remedial action and ultimately long-term monitoring. As part of the ongoing investigation, the specific materials and extent of contamination are under study. The schedule and process used to manage and execute this work requires the collective approval and collaborative authority of the U.S. Environmental Protection Agency, Maryland Department of the Environment, Prince George's County, and the U.S. Air Force. This is a regulatory process, as defined by CERCLA, which must be adhered to and which does not support deviations.

Although some work already has been performed for these sites, the RI and FS are estimated to be completed in FY 2006, and the results will be used to support a ROD defining remedial actions and necessary long-term monitoring. Actual cleanup activities will depend on the ROD and are estimated to be in place and operational by 2011.

Additionally, the grading required to extend the runways under Option B would have filled over 10 to 20 acres of wetlands and other waters of the United States associated with the headwaters of Piscataway Creek in the southern part of Andrews AFB, and grading under Option C would have filled as much as 30 or more acres of wetlands and other waters of the United States. Option C would have also required realigning South Perimeter Road, including construction of a new bridge across Piscataway Creek and its bordering wetlands. An individual permit would have been required under Section 404 of the Clean Water Act.

In summary, Eliminated Alternative 3Old would have effectively brought Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77 while reducing the need for vegetation management on Suitland Parkway. It would also, however, have substantially limited current flight operations and jeopardized the overall mission of Andrews AFB. Detailed investigation would have been necessary to determine whether altered flight tracks could significantly increase noise levels experienced by noise-sensitive receptors off of the base. Grading to extend the airfield south and to realign South Perimeter Road could have encroached onto abandoned landfills close to Piscataway Creek and filled as much as 30 acres of wetlands in the headwaters of Piscataway Creek. It is additionally noted that Options B or C would have

constituted MILCON projects with funding requirements and delays at least as severe as described for Alternative 3. Based on these considerations, Eliminated Alternative 3Old is impracticable and thus not reasonable in the context of 40 CFR 1502.14, and it is therefore not carried forward for detailed environmental analysis in the EA.

2.4.2 Eliminated Alternative 4: Runway Reconfiguration with Vegetation Management

Eliminated Alternative 4 involved reconfiguring the runways, but with the objective of increasing runway length. Three options were considered, termed Options D, E, and F (Table 2-3; Figures 2-6 to 2-8). Each option would have increased the length of primary runway pavement available to aircraft using one or both runways. As noted earlier, the 89 OSS has indicated that the existing runway lengths limit the conditions under which larger aircraft can use the runways. Air Force One requires at least 11,500 feet of primary runway pavement to depart from Andrews AFB and travel to any global location without refueling. Each option provided 11,500 feet of usable primary pavement for aircraft departing in at least one direction on the West Runway. Option D also provided 11,500 feet of usable primary pavement for aircraft departing in either direction on the East Runway, and Option F provided 11,500 feet for aircraft departing to the south on the East Runway. Option E did not lengthen or shorten the East Runway, and Option F increased the usable length of the East Runway to 10,045 feet.

All the options under Eliminated Alternative 4 would have effectively brought Andrews AFB into conformance with UFC 3260-01 and FAR Part 77. The degree of vegetation management needed on Suitland Parkway for Options D and E would have been comparable to Alternative 2. The degree of tree trimming and removal needed on Suitland Parkway for Option F would have been somewhat less than for Alternative 3. All options would have allowed current flight operations to continue without further limitations. In fact, all would have substantially reduced the limitations experienced by current flight operations.

However, all the options under Eliminated Alternative 4 would have extended the footprint of the airfield into one or both of the abandoned landfills described above in Section 2.4.1. All options would have also involved changes in flight tracks that could have significantly increased noise levels experienced by off-base noise sensitive receptors. All options might have required the relocation of some off-base navigational aids. All options would have encroached into parts of the Andrews AFB golf course and/or Base Lake Recreation Area.

Table 2-3

**Summary of Threshold Displacements Under Eliminated Alternative 4
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base**

| Option | West Runway | | | | | | East Runway | | | | | |
|--------|---------------------------|---------------------------|---|--|---|-------------------|---------------------------|---------------------------|---------------------------|--|---|-------------------|
| | Threshold | | Runway Pavement | | Usable Pavement for Departures (Percent Operational Capability for Boeing 747) ¹ | | Threshold | | Runway Pavement | | Usable Pavement for Departures (Percent Operational Capability for Boeing 747) ¹ | |
| | North | South | North End | South End | To North | To South | North | South | North End | South End | To North | To South |
| | D | No Change | Displace 2,200 feet south | No change | Extend primary pavement 2,200 feet south and add new 1,000-foot overrun pavement | 11,500 feet (100) | 11,500 feet (100) | No change | Displace 1,745 feet South | No change | Extend primary pavement 1,745 feet south and add new 1,000-foot overrun pavement | 11,500 feet (100) |
| E | No change | Displace 1,200 feet south | Convert 1,000-foot overrun pavement to primary pavement | Extend primary pavement 1,200 feet south and add new 1,000-foot overrun pavement | 10,500 feet (98) | 11,500 feet (100) | No change | No change | No change | No change | 9,755 feet (92) | 9,755 feet (92) |
| F | Displace 1,000 feet south | Displace 1,200 feet south | Convert 1,000-foot overrun pavement to primary pavement | Extend primary pavement 1,200 feet south and add new 1000-foot overrun pavement | 10,500 feet (98) | 11,500 feet (100) | Displace 1,455 feet south | Displace 1,745 feet south | No change | Extend primary pavement 1,745 feet south and add new 1,000-foot overrun pavement | 10,045 feet (96) | 11,500 feet (100) |

¹Operational capability estimates provided by 89th Operations Support Squadron and apply to Air Force One. An estimate of 100 percent refers to the ability to fly Air Force One fully loaded to any global location without having to stop to refuel.

Figure 2-6

Figure 2-7

Figure 2-8

Additionally, any of the options would have required filling at least 10 to 15 acres of wetlands and other waters of the United States. Options D and F would also have required realigning South Perimeter Road, including constructing a new roadway bridge across Piscataway Creek and its bordering wetlands. Either option would have required an individual permit under Section 404 of the Clean Water Act.

In summary, Eliminated Alternative 4 would have effectively brought Andrews AFB into conformance with UFC 3-260-01 and FAR Part 77 without placing further limitations on current flight operations. In fact, all the options would have substantially reduced the limitations presently experienced by Air Force One and other large aircraft that use the Andrews AFB runways. However, grading to extend the airfield south and to realign South Perimeter Road would have encroached onto abandoned landfills close to Piscataway Creek and filled several acres of wetlands in the headwaters of Piscataway Creek. Additionally, detailed investigation would have been necessary to determine whether changed flight tracks could significantly increase noise levels experienced by off-base noise-sensitive receptors. It is additionally noted that any of the options would have constituted MILCON projects with funding requirements and delays even more severe than described for Alternative 3. Based on these considerations, Eliminated Alternative 4 is impracticable and thus not reasonable in the context of 40 CFR 1502.14, and it is therefore not carried forward for detailed environmental analysis in the EA.

2.4.3 Eliminated Alternative 5: Runway Reconfiguration with No Action on NPS Lands

Eliminated Alternative 5 involved reconfiguring the runways with the objective of completely eliminating the need for any tree trimming or tree removal on Suitland Parkway to achieve conformance with UFC 3-260-01. The exact distance south that the northern thresholds would require displacement to avoid vegetation management on Suitland Parkway had not been determined. However, it was known that the thresholds would have had to be moved south by a greater distance than for any other reconfiguration option. Eliminated Alternative 5 called for extending the runways south by a distance equal to the displacement of the northern thresholds. However, further design would have been necessary to assess the availability of land.

Eliminated Alternative 5 would have effectively brought Andrews AFB into conformance with UFC 3-260-01. There would have been no impacts to forest vegetation on or north of Suitland Parkway. If adequate land had been available on base, Eliminated Alternative 5 would have allowed flight operations to continue without further limitations. However, because the land was not available on base, Eliminated Alternative 5 would have imposed unacceptable limitations on flight operations.

Eliminated Alternative 5 would have extended the footprint of the airfield into one or both of the abandoned landfills, undergoing investigation under CERCLA. It would have involved changes in flight

tracks that could have significantly increased noise levels experienced by off-base noise-sensitive receptors. It might have required the relocation of some off-base navigational aids. Eliminated Alternative 5 would have resulted in encroachment into parts of the Andrews AFB golf course and Base Lake Recreation Area and would have required realigning South Perimeter Road, including constructing a new roadway bridge across Piscataway Creek and its bordering wetlands. It would have required an individual permit under Section 404 of the Clean Water Act.

In summary, Eliminated Alternative 5 would have effectively brought Andrews AFB into conformance with UFC 3-260-01 without impacting forest vegetation on Suitland Parkway. Additional design and investigation would be required to determine whether it would further limit on current flight operations. However, it is known that grading to extend the airfield south and to realign South Perimeter Road would have encroached onto two abandoned landfills close to Piscataway Creek and filled several acres of wetlands in the headwaters of Piscataway Creek. Changes in flight tracks caused by the displaced thresholds could have significantly increased noise levels experienced by noise-sensitive receptors off of the base. It is additionally noted that Eliminated Alternative 5 would have constituted a MILCON project with funding requirements and delays even more severe than described for Alternative 3. Based on these considerations, AMC concluded that Eliminated Alternative 5 is not reasonable in the context of 40 CFR 1502.14, and it is therefore not carried forward for detailed environmental analysis in the EA.

2.4.4 Eliminated Alternative 6: 40:1 Approach – Departure Slope Surface

This eliminated alternative involved changing the approach – departure surface to 40 feet horizontal to 1 foot vertical with the objective of lessening the need for any tree trimming or tree removal on Suitland Parkway. This alternative does not allow Andrews AFB to achieve conformance with UFC 3260-01 without interfering with or imposing additional unacceptable limitations upon current Andrews AFB flight operations and its overall mission. It would also reduce the capability and class of the existing airfield.

The landing and take-off design considerations for an airfield include mission requirements, expected type and volume of air traffic, traffic patterns such as the arrangement of multidirectional approaches and takeoffs, ultimate runway length, runway orientation required by local wind conditions, local terrain, restrictions due to airspace obstacles or surrounding community, noise impact, and aircraft accident potential.

Runways are classified as either Class A or Class B, based on aircraft type as shown in Table 2-4. This table uses the same runway classification system established by the Office of the Secretary of Defense as a means of defining accident potential areas (zones) for the Air Installations Compatible Use Zone (AICUZ) Program. The aircraft listed provide examples of aircraft that fall into these classifications and may not be all-inclusive.

Class A runways are primarily intended for small light aircraft. These runways do not have the potential or foreseeable requirement for development for use by high performance and large heavy aircraft. Ordinarily, these runways are less than 8,000 feet long and have less than 10 percent of their operations that involve aircraft in the Class B category. Class B runways are primarily intended for high performance and large heavy aircraft, as shown in Table 2-4.

This eliminated alternative would have effectively brought Andrews AFB into conformance with UFC 3-260-01 only for Class A runways; however, it would also require significant mission change and eliminate current operational capability on Andrews AFB. Current flight operations at Andrews AFB also require Class B runways capable of use by large heavy lift aircraft such as the VC-25A, a modified Boeing 747 that serves as Air Force One. There would have been lessened impacts to forest vegetation on or north of Suitland Parkway. It therefore is impracticable and thus not reasonable in the content of 40 CFR 1502.14, and is therefore not carried forward for detailed environmental analysis in the EA.

2.5 COMPARISON OF ALTERNATIVES

Table 25 is a matrix indicating how each alternative selected for detailed assessment in Chapter 4 of the EA satisfies the purpose and need outlined in Section 1.2 and meets the selection criteria presented in Section 1.3. Table 26 demonstrates how each of the rejected alternatives does not meet the selection criteria. Table 27 summarizes the potential environmental impacts from each of the alternatives selected for detailed assessment. The basis for the information presented in Table 27 is the text provided in Sections 3 and 4 of the EA.

2.6 IDENTIFICATION OF PREFERRED ALTERNATIVE

The comparison of potential environmental impacts presented in Table 2-7 for the three alternatives indicates that the environmentally preferred alternative is Alternative 1, the no action alternative. Alternative 1 would not result in noticeable changes to the forest vegetation visible from Suitland Parkway or to the cultural landscape of Suitland Parkway. In contrast, tree trimming and tree removals performed as part of Alternatives 2 or 3 would unavoidably alter the appearance of the natural landscape visible to

Table 2-4

**Runway Classification by Aircraft Type
Environmental Assessment for Managing Flight Obstructions to
Preserve Safety at Andrews Air Force Base**

| Class A Runways | | Class B Runways | | |
|------------------------|--------|------------------------|----------|-------|
| C-1 | OV-1 | A-6 | C-141 | P-3 |
| C-2 | T-28 | A-10 | E-3 | S-3 |
| C-12 | T-34 | AV-8 | E-4 | SR-71 |
| C-20 | T-44 | B-1 | E-6 | T-1 |
| C-21 | U-21 | B-2 | R/F-4 | T-2 |
| C-23 | UV-18 | B-52 | F-5 | T-6 |
| C-26 | DASH-7 | C-5 | F-14F-15 | T-37 |
| E-1 | DASH-8 | C-9 | F-16 | T-38 |
| E-2 | | KC-10 | F/A-18 | T-39 |
| | | C-17 | F-22 | T-42 |
| | | C-130 | FB-111 | T-45 |
| | | C-135 | F-117 | TR-1 |
| | | C-137 | | U-2 |

Table 2-5

**Alternatives Screening Matrix
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base**

| Alternative | Limited to Managing Obstructions | Allows Current Operations to Continue¹ | Requires Further Investigation of IR Sites² | Requires Noise Modeling³ | Land Use Conflicts⁴ | Requires Reroute of South Perimeter Road | Carry Forward for Detailed Analysis |
|--------------------|--|--|---|---|--|---|--|
| 1 | Yes | No. Continued growth of tree obstructions could force closure or significant curtailment of operations on both runways. | No | No. No changes to flight tracks. | None. No expansion of airfield footprint and no repositioning of Clear Zones or Accident Potential Zones (APZs). | No | Yes. Required under 40 CFR 1502.14(d). |
| 2 | Yes | Yes. Effectively manages obstructions without reducing runway lengths available for takeoffs in either direction on either runway. | No | No. No changes to flight tracks. | None. No expansion of airfield footprint and no repositioning of Clear Zones or APZs. | No | Yes |
| 3 | Yes. Reconfigures runway solely to raise the imaginary approach-departure surface at Suitland Parkway. | Yes. Effectively manages obstructions without reducing runway lengths available for takeoffs in either direction on either runway. | No | No. Minor changes to flight tracks would not affect additional noise-sensitive receptors. | None. As much as 23 acres of residential land north of the base that are presently encompassed by APZ II would no longer be encompassed by any APZ. Additionally, as much as 15 acres of wetlands could have to be filled. | No | Yes |

¹The 89th Operations Support Squadron has indicated any reduction in runway length will jeopardize its mission.

²Andrews Air Force Base is on the National Priorities List for environmental cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act. The U.S. Environmental Protection Agency has indicated that it will require further remedial investigation of two landfills south of the airfield if disturbed by grading. If that investigation indicates that the landfills must be excavated and disposed to protect human health and the environment, the excavation will have to be completed prior to use of the landfill sites for runway construction.

³A need for noise modeling does not necessarily render an alternative unfeasible. The potential for substantial increases in exposure of residential areas to aircraft noise could preclude issuance of a Finding of No Significant Impact, triggering a requirement for an environmental impact statement.

⁴According to Unified Facilities Code (UFC) 3-260-01, Clear Zones are areas on the ground, located at the end of each runway, that possess a high potential for accidents. At Andrews Air Force Base, the Clear Zones are located entirely within the base and measure 3,000 by 3,000 feet. Accident Potential Zones (APZs) are areas on the ground beyond the Clear Zones within which land use must be partially restricted for purposes of aircraft safety. At Andrews Air Force Base, the APZs extend off of the base onto Suitland Parkway and private lands. The Clear Zones and APZs for Andrews Air Force Base are shown in Figure 3-2 and are discussed further in Section 3.2.2.

Table 2-6

**Screening Matrix For Eliminated Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base**

| Eliminated Alternative | Limited to Managing Obstructions | Allows Current Operations to Continue¹ | Requires Further Investigation of IR Sites² | Requires Noise Modeling³ | Land Use Conflicts⁴ | Requires Reroute of South Perimeter Road | Carry Forward for Detailed Analysis |
|-------------------------------|--|--|---|---|---|---|--|
| 3-Old Option A | Yes. Reconfigures runway for sole purpose of raising the imaginary approach-departure surface at Suitland Parkway. | No. Effectively manages obstructions but would not allow takeoffs of VC-25A (Air Force One) to north on West Runway or in either direction on East Runway. | No | No. Minor changes to flight tracks would not affect additional noise-sensitive receptors. | None. No expansion of airfield footprint. Clear Zones and Accident Potential Zones (APZs) would be repositioned closer to the airfield and would not affect additional off-base property. | No | No |
| 3-Old Option B | Yes. Reconfigures runway for sole purpose of raising the approach-departure surface at Suitland Parkway. Southward extension of West Runway serves only to compensate for loss of usable surface at the north end. | No. Effectively manages obstructions but would not allow takeoffs of VC-25A (Air Force One) to north on West Runway or in either direction on East Runway. | Yes. Requires grading of LF06. | No. Minor changes to flight tracks would not affect additional noise-sensitive receptors. | Minor. Repositioning of APZ I south of Andrews Air Force Base would encompass a school presently located in APZ II. Small area of private land would be added to APZs. | No | No |

Table 2-6

**Screening Matrix For Eliminated Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base (Continued)**

| Eliminated Alternative | Limited to Managing Obstructions | Allows Current Operations to Continue¹ | Requires Further Investigation of IR Sites² | Requires Noise Modeling³ | Land Use Conflicts⁴ | Requires Reroute of South Perimeter Road | Carry Forward for Detailed Analysis |
|-------------------------------|---|---|---|---|--|---|--|
| 3-Old Option C | No. Raises imaginary approach-departure surface at Suitland Parkway but also involves substantial land use changes south of the airfield for the purpose of increasing the operating length of the runways. | Yes. Effectively manages obstructions and increases runway length available for takeoffs to south on the East Runway and takeoffs in either direction on West Runway. No change in length available for takeoffs to north on East Runway. | Yes. Requires grading of LF06 and LF07. | Yes. Could affect additional noise-sensitive receptors south of the base. | Yes. Would fill Base Lake and eliminate part of golf course. Repositioning of APZ I would encompass a school presently located in APZ II. Substantial area of private land would be added to APZs. | Yes | No |
| 4 Option D | No. Increases the operating length of both runways without raising the imaginary approach-departure surface at Suitland Parkway. | Yes. Effectively manages obstructions and increases runway length available for takeoffs in either direction on either runway. | Yes. Requires grading of LF06 and LF07. | Yes. Could affect additional noise-sensitive receptors south of the base. | Yes. Would interfere with the use of Base Lake. Repositioning of APZ I would encompass a school presently located in APZ II. Substantial area of private land would be added to APZs. | Yes | No |

Table 2-6

**Screening Matrix For Eliminated Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base (Continued)**

| Eliminated Alternative | Limited to Managing Obstructions | Allows Current Operations to Continue¹ | Requires Further Investigation of IR Sites² | Requires Noise Modeling³ | Land Use Conflicts⁴ | Requires Reroute of South Perimeter Road | Carry Forward for Detailed Analysis |
|-------------------------------|---|---|---|---|--|---|--|
| 4 Option E | No. Increases the operating length of the West Runway without raising the imaginary approach-departure surface at Suitland Parkway. | Yes. Effectively manages obstructions and increases runway length available for takeoffs in either direction on West Runway. No change in length available for takeoffs in either direction on East Runway. | Yes. Requires grading of LF06. | Yes. Could affect additional noise-sensitive receptors south of the base. | Yes. Repositioning of APZ I south of Andrews Air Force Base would encompass a school presently located in APZ II. Substantial area of private land would be added to APZs. | No | No |
| 4 Option F | No. Raises imaginary approach-departure surface at Suitland Parkway but also involves substantial land use changes south of the airfield for the purpose of increasing the operating length of the runways. | Yes. Effectively manages obstructions and increases runway length available for takeoffs in either direction on either runway. | Yes. Requires grading of LF06 and LF07. | Yes. Could affect additional noise-sensitive receptors south of the base. | Yes. Repositioning of APZ I south of Andrews Air Force Base would encompass a school presently located in APZ II. Substantial area of private land would be added to APZs. | Yes | No |
| 5 | Yes | No. Preliminary design not as advanced as the other alternatives. But not expected to provide adequate runway length for takeoffs of VC-25A (Air Force One). Would eliminate obstructions. | Yes. Requires grading of LF06 and LF07. | Yes. Could affect additional noise-sensitive receptors south of the base. | Yes. Repositioning of APZ I south of Andrews Air Force Base would encompass a school presently located in APZ II. Substantial area of private land would be added to APZs. | Yes | No |

Table 2-6

**Screening Matrix For Eliminated Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base (Continued)**

| Eliminated Alternative | Limited to Managing Obstructions | Allows Current Operations to Continue¹ | Requires Further Investigation of IR Sites² | Requires Noise Modeling³ | Land Use Conflicts⁴ | Requires Reroute of South Perimeter Road | Carry Forward for Detailed Analysis |
|--|---|--|---|--|---------------------------------------|---|--|
| 6 (40H:1V Approach-Departure Surface Alternative) | Yes | No. Steeper approach-departure surface would prevent use of the runways by several types of aircraft requiring Class B military runways and critical to the Andrews AFB mission. Included among the excluded aircraft would be the VC-25 aircraft used as Air Force One. | No | Yes. Steeper approach-departure surface would require changes to take-off and approach patterns, and hence noise contours. | No | No | No |

¹The 89th Operations Support Squadron has indicated any reduction in runway length will jeopardize its mission.

²Andrews Air Force Base is on the National Priorities List for environmental cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act. The U.S. Environmental Protection Agency has indicated that it will require further remedial investigation of two landfills south of the airfield if disturbed by grading. If that investigation indicates that the landfills must be excavated and disposed to protect human health and the environment, the excavation will have to be completed prior to use of the landfill sites for runway construction.

³A need for noise modeling does not necessarily render an alternative unfeasible. The potential for substantial increases in exposure of residential areas to aircraft noise could preclude issuance of a Finding of No Significant Impact, triggering a requirement for an environmental impact statement.

⁴According to Unified Facilities Code (UFC) 3-260-01, Clear Zones are areas on the ground, located at the end of each runway, that possess a high potential for accidents. At Andrews Air Force Base, the Clear Zones are located entirely within the base and measure 3,000 by 3,000 feet. Accidental Potential Zones (APZs) are areas on the ground beyond the Clear Zones within which land use must be partially restricted for purposes of aircraft safety. At Andrews Air Force Base, the APZs extend off of the base onto Suitland Parkway and private lands. The Clear Zones and APZs for Andrews Air Force Base are shown in Figure 3-2 and are discussed further in Section 3.2.2.

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|--|--|
| | Land Use and Infrastructure (See Section 4.2 for detailed discussion) | | |
| Land Use (Section 4.2.1) | AAFB ¹ : No land use changes or conflicts. | AAFB: Changes to vegetation but no land use changes or conflicts. | AAFB: Changes to vegetation but no land use changes or conflicts. |
| | SP ² : No land use changes or conflicts. | SP: Changes to vegetation but no land use changes or conflicts. | SP: Changes to vegetation but no land use changes or conflicts. |
| | OL ³ : No land use changes or conflicts. | OL: Changes to vegetation but no land use changes or conflicts. | OL: Changes to vegetation but no land use changes or conflicts. |
| Flight Operations and Safety (Section 4.2.2) | AAFB: Runways would not meet operational safety requirements established by Air Force in UFC ⁴ 3-260-01 and by the FAA ⁵ in FAR ⁶ Part 77. | AAFB: Runways would meet operational safety requirements established by Air Force in UFC 3-260-01 and by the FAA in FAR Part 77. | AAFB: Runways would meet operational safety requirements established by Air Force in UFC 3-260-01 and by the FAA in FAR Part 77. |
| | SP: No impact. | SP: No impact. | SP: No impact. |
| | OL: No impact. | OL: No impact. | OL: Amount of off-base land in Clear Zones would be reduced, a beneficial impact. |
| Vehicular Transportation (Section 4.2.3) | AAFB: Little or no impact. | AAFB: Equipment used to trim and remove trees would have to be briefly staged on the sides of roadways. Could cause brief period of minor, localized traffic congestion. | AAFB: Equipment used to trim and remove trees would have to be briefly staged on the sides of roadways. Could cause brief period of minor, localized traffic congestion. |
| | SP: Little or no impact. | SP: Equipment used to trim and remove trees would have to be briefly staged on the sides of roadways. Could cause brief period of minor, localized traffic congestion. | SP: Equipment used to trim and remove trees would have to be briefly staged on the sides of roadways. Could cause brief period of minor, localized traffic congestion. |
| | OL: Little or no impact. | OL: Equipment used to trim and remove trees would have to be briefly staged on the sides of roadways. Could cause brief period of minor, localized traffic congestion. | OL: Equipment used to trim and remove trees would have to be briefly staged on the sides of roadways. Could cause brief period of minor, localized traffic congestion. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|--|---|---|---|
| Land Use and Infrastructure (See Section 4.2 for detailed discussion) | | | |
| Utilities (Section 4.2.4) | AAFB: No impact. | AAFB: No impact. | AAFB: No impact. |
| | SP: No impact. | SP: No impact. | SP: No impact. |
| | OL: No impact. | OL: No impact. | OL: No impact. |
| Biological Environment (See Section 4.3 for detailed discussion) | | | |
| Trees and Other Vegetation (Section 4.3.1) | AAFB: Occasional trees trimmed lightly to maintain Category II ILS. | AAFB: Approximately 15 acres of forest vegetation that has encroached upon the Primary Surfaces and Clear Zone graded surfaces would be cleared. Selective tree trimming and removal would be performed within approximately 100 forested acres elsewhere on base. Understory vegetation in these areas would not be affected. | AAFB: Approximately 15 acres of forest vegetation that has encroached upon the Primary Surfaces and Clear Zone graded surfaces would be cleared. Selective tree trimming and removal would be performed within approximately 100 forested acres elsewhere on base. Construction to extend the West Runway southward would require the removal of roughly 2.5 acres of forest cover located directly south of the West Runway. |
| | SP: Occasional trees trimmed lightly to maintain Category II ILS. | SP: Selective tree trimming and removal would be performed in phases within approximately 35 acres of parkland north of Andrews Air Force Base. Understory vegetation in these areas would not be affected. The Air Force would pursue a waiver to UFC 3-260-01 allowing trees on Suitland Parkway to be managed to provide clearance under the imaginary surfaces only rather than the required additional 10 feet under the surface. | SP: Selective tree trimming and removal would be performed in phases within approximately 35 acres of parkland north of Andrews Air Force Base. More trees would be trimmed and fewer trees would be removed than under Alternative 2. Understory vegetation in these areas would not be affected. The same waiver described for Alternative 2 would apply. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|--|---|
| Biological Environment (See Section 4.3 for detailed discussion) | | | |
| | OL: Occasional trees north of Suitland Parkway trimmed to maintain Category II ILS. | OL: Selective tree trimming and removal would be performed in cooperation with private landowner(s) within approximately 20 acres of forest cover in undeveloped areas of the Penn Belt Industrial Park and an undetermined extent of undeveloped land bordering Piscataway Creek directly southeast of the base. There could also be a need to trim occasional trees on private residential property immediately south of the base. | OL: Selective tree trimming and removal would be performed in cooperation with private landowner(s) within approximately 20 acres of forest cover in undeveloped areas of the Penn Belt Industrial Park and an undetermined extent of undeveloped land bordering Piscataway Creek directly southeast of the base. More trees would be trimmed and fewer trees would be removed than under Alternative 2. There could also be a need to trim occasional trees on private residential property immediately south of the base. |
| Biological Environment (See Section 4.3 for detailed discussion) | | | |
| Terrestrial Wildlife (Section 4.3.2) | AAFB: No impact. | AAFB: Tree trimming and removal would result in an increase in habitat for species favoring open forest, grassland, and scrub cover. There would be a corresponding loss of habitat for species favoring dense forest cover. | AAFB: Tree trimming and removal would result in an increase in habitat for species favoring open forest, grassland, and scrub cover. There would be a corresponding loss of habitat for species favoring dense forest cover. The degree of habitat change would be less than under Alternative 2. |
| | SP: No impact. | SP: Tree trimming and removal would result in an increase in habitat for species favoring open forest, grassland, and scrub cover. There would be a corresponding loss of habitat for species favoring dense forest cover. | SP: Tree trimming and removal would result in an increase in habitat for species favoring open forest, grassland, and scrub cover. There would be a corresponding loss of habitat for species favoring dense forest cover. The degree of habitat change would be less than under Alternative 2. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|--|--|---|
| Biological Environment (See Section 4.3 for detailed discussion) | | | |
| | OL: No impact. | OL: Tree trimming and removal in forested areas in the Penn Belt Industrial Park and in undeveloped land bordering Piscataway Creek directly southeast of the base would result in an increase in habitat for species favoring open forest, grassland, and scrub cover. There would be a corresponding loss of habitat for species favoring dense forest cover. | OL: Tree trimming and removal would result in forested areas in the Penn Belt Industrial Park and in undeveloped land bordering Piscataway Creek directly southeast of the base would result in an increase in habitat for species favoring open forest, grassland, and scrub cover. There would be a corresponding loss of habitat for species favoring dense forest cover. The degree of habitat change would be less than under Alternative 2. |
| Biological Environment (See Section 4.3 for detailed discussion) | | | |
| Threatened and Endangered Species (Section 4.3.3) | AAFB: Possible that one or more Chinquapin trees would require very light trimming to maintain Category II ILS. | AAFB: No impact on Federal or state listed threatened or endangered species. However, on-base forest areas northwest of the West Runway are known to contain chinquapin trees, which Maryland has listed on an unregulated "Watch List" of regionally rare species. Chinquapin trees would be trimmed as necessary to prevent penetration of surfaces defined in UFC 3-260-01 and FAR Part 77, but would not be removed. | AAFB: No impact on Federal or state listed threatened or endangered species. However, on-base forest areas northwest of the West Runway are known to contain chinquapin trees, which Maryland has listed on an unregulated "Watch List" of regionally rare species. Chinquapin trees would be trimmed as necessary to prevent penetration of surfaces defined in UFC 3-260-01 and FAR Part 77, but would not be removed. |
| | SP: Would not adversely affect specimens of midland sedge (state rare) known to occur on the Parkway corridor. No other potential impacts. | SP: Would not adversely affect specimens of midland sedge (state rare) known to occur on the Parkway corridor. No other potential impacts. | SP: Would not adversely affect specimens of midland sedge (state rare) known to occur on the Parkway corridor. No other potential impacts. |
| | OL: No impact to known occurrences. | OL: No impact to known occurrences. | OL: No impact to known occurrences. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| Biological Environment (See Section 4.3 for detailed discussion) | | | |
| Wetlands (Section 4.3.4) | AAFB: No impact. Light trimming of occasional trees in forested wetlands would not alter the forested character of those wetlands or require any state or Federal permit. | AAFB: There would be no net loss or filling of areas regulated under Section 404 of the Clean Water Act and no requirement for Section 404 permit. However, tree removal from forested wetlands would require a permit from Maryland Department of the Environment. | AAFB: Extending the West Runway 500 feet southward would require permanent filling of as much as 15 acres of wetlands immediately southeast of West Runway and would require an individual Section 404 permit and a permit from Maryland Department of the Environment. |
| | SP: No impact. Light trimming of occasional trees in forested wetlands would not alter the forested character of those wetlands or require any state or Federal permit. | SP: There would be no net loss or filling of areas regulated under Section 404 of the Clean Water Act and no requirement for Section 404 permit. However, tree removal from forested wetlands would require a permit from Maryland Department of the Environment. | SP: There would be no net loss or filling of areas regulated under Section 404 of the Clean Water Act and no requirement for Section 404 permit. However, tree removal from forested wetlands would require a permit from Maryland Department of the Environment. |
| | OL: No impact. Light trimming of occasional trees in forested wetlands would not alter the forested character of those wetlands or require any state or Federal permit. | OL: There would be no net loss or filling of areas regulated under Section 404 of the Clean Water Act and no requirement for Section 404 permit. However, tree removal from forested wetlands would require a permit from Maryland Department of the Environment. | OL: There would be no net loss or filling of areas regulated under Section 404 of the Clean Water Act and no requirement for Section 404 permit. However, tree removal from forested wetlands would require a permit from Maryland Department of the Environment. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|--|--|--|
| Biological Environment (See Section 4.3 for detailed discussion) | | | |
| Streams and Aquatic Biota (Section 4.3.5) | AAFB: No impact. | AAFB: It would be necessary to trim or remove selected trees bordering the Piscataway Creek channel south of South Perimeter Road. This could result in increased exposure of the channel to sunlight. Although tree roots would not be disturbed, there would be a very slight increased potential for bank erosion or siltation. | AAFB: It would be necessary to trim or remove selected trees bordering the Piscataway Creek channel south of South Perimeter Road. This could result in increased exposure of the channel to sunlight. Although tree roots would not be disturbed, there would be a very slight increased potential for bank erosion or siltation. |
| | SP: One or more trees adjoining Hensen Creek channel would require light trimming to maintain Category II ILS. Forested character of riparian vegetation would not be altered. | SP: It would be necessary to trim or remove selected trees bordering the Hensen Creek channel on the north side of the parkway. This could result in increased exposure of the channel to sunlight. Although tree roots would not be disturbed, there would be a very slight increased potential for bank erosion or siltation. | SP: It would be necessary to trim or remove selected trees bordering the Hensen Creek channel on the north side of the parkway. Fewer trees would be removed than under Alternative 2. This could result in increased exposure of the channel to sunlight. Although tree roots would not be disturbed, there would be a very slight increased potential for bank erosion or siltation. |
| | OL: No impact. | OL: No impact. | OL: No impact. |
| Floodplains (Section 4.3.6) | AAFB: No impact. | AAFB: There would be no grading in the 100-year floodplain. But there would be selective trimming and removal of trees in the Piscataway Creek floodplain south of South Perimeter Road. | AAFB: There would be no grading in the 100-year floodplain. But there would be selective trimming and removal of trees in the Piscataway Creek floodplain south of South Perimeter Road. |
| | SP: Possible light trimming of occasional trees in Hensen Creek floodplain to maintain Category II ILS. | SP: There would be no grading in the 100-year floodplain, but there would be selective trimming and removal of trees in the Hensen Creek floodplain. | SP: There would be no grading in the 100-year floodplain, but there would be selective trimming and removal of trees in the Hensen Creek flood plain. |
| | OL: No impact. | OL: No impact. | OL: No impact. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|------------------|---|---|
| Cultural Environment (See Section 4.4 for detailed discussion) | | | |
| Archaeological Resources (Section 4.4.1) | AAFB: No impact. | AAFB: Work would not be conducted in areas of Andrews Air Force Base containing archaeological resources identified by the Maryland State Historic Preservation Officer in 1993. | AAFB: Work would not be conducted in areas of Andrews Air Force Base containing archaeological resources identified by the Maryland State Historic Preservation Officer in 1993. |
| | SP: No impact. | SP: No grading and little mechanized disturbance to soil surface during tree trimming and removal activities. Planting replacement trees could result in light physical disturbance to surface and subsurface archaeological resources. | SP: No grading or mechanized disturbance to soil surface during tree trimming and removal activities. Planting replacement trees could result in light physical disturbance to surface and subsurface archaeological resources. |
| | OL: No impact. | OL: No grading or mechanized disturbance to soil surface. Planting replacement trees could result in light physical disturbance to surface and subsurface archaeological resources. | OL: No grading or mechanized disturbance to soil surface. Planting replacement trees could result in light physical disturbance to surface and subsurface archaeological resources. |
| Historic Resources (Section 4.4.2) | AAFB: No impact. | AAFB: Selective tree trimming and removal work northeast of West Runway could increase the visibility of the airfield from Belle Chance but would not substantially alter the rural character of the Belle Chance grounds. | AAFB: Selective tree trimming and removal work northeast of West Runway could increase the visibility of the airfield from Belle Chance, a historic residence on the base, but would not substantially alter the rural character of the Belle Chance grounds. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|--|--|--|--|
| | Cultural Environment (See Section 4.4 for detailed discussion) | | |
| Historic Resources (Section 4.4.2) | SP: No impact. Light trimming of occasional trees to maintain Category II ILS would not alter the character of the cultural landscape on Suitland Parkway. | SP: Suitland Parkway has been listed on the National Register of Historic Places since 1995. There would be no alteration to road surfaces, stone walls, wooden guardrails, or other physical components of Suitland Parkway. Vegetation changes would alter the character of the cultural landscape but would retain much of the rural character of the affected segment of the Suitland Parkway. | Suitland Parkway has been listed on the National Register of Historic Places since 1995. There would be no alteration to road surfaces, stone walls, wooden guardrails, or other physical components of Suitland Parkway. Vegetation changes would alter the character of the cultural landscape but would retain much of the rural character of the affected segment of the Suitland Parkway. There would be fewer vegetation changes than under Alternative 2. |
| | OL: No impact. | OL: No impact. | OL: No impact. |
| Cold War Structures (Section 4.4.3) | AAFB: No impact. | AAFB: No impact. | AAFB: No impact. |
| | SP: No impact. | SP: No impact. | SP: No impact. |
| | OL: No impact. | OL: No impact. | OL: No impact. |
| Aesthetics (Section 4.4.4) | AAFB: Light trimming of occasional trees to maintain Category II ILS would not be visually apparent. | AAFB: There would be a reduction in the extent of areas on base with a forested appearance. | AAFB: There would be a reduction in the extent of areas on base with a forested appearance. |
| | SP: Light trimming of occasional trees to maintain Category II ILS would not be visually apparent. | SP: There would be visible changes to forest vegetation bordering the roadway. Developed areas north of parkway would be more visible to drivers. Drivers would still see roadside vegetation dominated by regionally indigenous woody plants, but the vegetation would be dominated by low woody plants rather than tall trees. | SP: There would be visible changes to forest vegetation bordering the roadway, but to a lesser degree less than would occur under Alternative 2. Developed areas north of parkway would be more visible to drivers. Drivers would still see roadside vegetation dominated by regionally indigenous woody plants, but the vegetation would be dominated by low woody plants rather than tall trees. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|--|---|---|
| Cultural Environment (See Section 4.4 for detailed discussion) | | | |
| Aesthetics (Section 4.4.4) | OL: Light trimming of occasional trees to maintain Category II ILS would not be visually apparent. | OL: No impact. | OL: No impact. |
| Physical Environment (See Section 4.5 for detailed discussion) | | | |
| Climate and Air Quality (Section 4.5.1) | AAFB: Emissions from the internal combustion engines for equipment used to trim occasional trees to maintain Category II ILS would be minimal. | AAFB: No impact. Emissions from the internal combustion engines of tree maintenance equipment would be minimal. Routine measures would be taken to control fugitive dust. | AAFB: Emissions from the internal combustion engines of tree maintenance equipment would be minimal. But grading of as much as 60 acres in the southern part of the airfield could generate fugitive dust until exposed soils are stabilized. Routine measures would be taken to control fugitive dust. |
| | SP: Emissions from the internal combustion engines for equipment used to trim occasional trees to maintain Category II ILS would be minimal. | SP: No impact. Emissions from the internal combustion engines of tree maintenance equipment would be minimal. No potential for fugitive dust generation. | SP: No impact. Emissions from the internal combustion engines of tree maintenance equipment would be minimal. No potential for fugitive dust generation. |
| | OL: Emissions from the internal combustion engines for equipment used to trim occasional trees to maintain Category II ILS would be minimal. | OL: No impact. Emissions from the internal combustion engines of tree maintenance equipment would be minimal. No potential for fugitive dust generation. | OL: No impact. Emissions from the internal combustion engines of tree maintenance equipment would be minimal. No potential for fugitive dust generation. |
| Surface Water and Groundwater (Section 4.5.2) | AAFB: No impact. | AAFB: No impact. | AAFB: The extended West Runway and taxiways would add as much as 5 acres of impervious surface draining to the headwaters of Piscataway Creek. |
| | SP: No impact. | SP: No impact. | SP: No impact. |
| | OL: No impact. | OL: No impact. | OL: No impact. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| Physical Environment (See Section 4.5 for detailed discussion) | | | |
| Soils, Geology, and Prime Farmland (Section 4.5.3) | AAFB: No impact. | AAFB: No impact. | AAFB: Grading to extend the West Runway and taxiways would disturb as much as 60 acres of soil in the southern part of airfield. There is no prime farmland on Andrews Air Force Base. |
| | SP: No impact. | SP: No impact. | SP: No impact. |
| | OL: No impact. | OL: No impact. | OL: No impact. |
| Noise (Section 4.5.4) | AAFB: Operation of tree maintenance equipment would generate brief periods of noise audible to residential and administrative facilities on the base. | AAFB: Operation of tree maintenance equipment would generate brief periods of noise audible to residential and administrative facilities on the base. | AAFB: Operation of construction equipment used to extend the runways and operation of tree maintenance equipment would generate brief periods of noise audible to residential and administrative facilities on the base. |
| | SP: Operation of tree maintenance equipment would generate brief periods of noise, which would not likely be noticed by motorists using the parkway. | SP: Operation of tree maintenance equipment would generate brief periods of noise, which would not likely be noticed by motorists using the parkway. | SP: Operation of tree maintenance equipment would generate brief periods of noise, which would not likely be noticed by motorists using the parkway. |
| | OL: Operation of tree maintenance equipment would generate brief periods of noise audible to residential areas south of the base. Such noise would not likely disturb occupants of the Penn Belt Industrial Park north of Suitland Parkway. | OL: Operation of tree maintenance equipment would generate brief periods of noise audible to residential areas south of the base. Such noise would not likely disturb occupants of the Penn Belt Industrial Park north of Suitland Parkway. | OL: Operation of tree maintenance equipment would generate brief periods of noise audible to residential areas south of the base. Such noise would not likely disturb occupants of the Penn Belt Industrial Park north of Suitland Parkway. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|--|--|--|
| Physical Environment (See Section 4.5 for detailed discussion) | | | |
| Waste Management (Section 4.5.5) | AAFB: Trimming occasional trees to maintain Category II ILS would generate minor amounts of solid waste in form of chips and slash. | AAFB: Tree clearing and removal would generate minor amounts of solid waste in the form of wood chips, small branches (slash), and logs. | AAFB: Tree clearing and removal would generate minor amounts of solid waste in the form of wood chips, small branches (slash), and logs. |
| | SP: Trimming occasional trees to maintain Category II ILS would generate minor amounts of solid waste in form of chips and slash. | SP: The selective tree trimming and removal would generate minor amounts of solid waste in the form of wood chips, small branches (slash), and logs. | SP: The selective tree trimming and removal would generate minor amounts of solid waste in the form of wood chips, small branches (slash), and logs. |
| | OL: Trimming occasional trees to maintain Category II ILS would generate minor amounts of solid waste in form of chips and slash. | OL: The selective tree trimming and removal would generate minor amounts of solid waste in the form of wood chips, small branches (slash), and logs. | OL: The selective tree trimming and removal would generate minor amounts of solid waste in the form of wood chips, small branches (slash), and logs. |
| Socioeconomics (See Section 4.6 for detailed discussion) | | | |
| Employment (Section 4.6.1) | AAFB: Failure to maintain Air Force and FAA operational safety criteria in UFC 3-260-01 could result in a reduction in the scope of the base's flying mission, resulting in decreased employment affiliated with the base. | AAFB: There would be brief, minor, increases in employment for tree maintenance and nursery contractors. | AAFB: There would be brief, minor, increases in employment for tree maintenance and nursery contractors. |
| | SP: No impact. | SP: There would be brief, minor, temporary increases in employment for tree maintenance and nursery contractors. | SP: There would be brief, minor, increases in employment for tree maintenance and nursery contractors. |
| | OL: No impact. | OL: There would be brief, minor, increases in employment for tree maintenance and nursery contractors. | OL: There would be brief, minor, increases in employment for tree maintenance and nursery contractors. |

Table 2-7

**Comparison of Potential Environmental Impacts from Alternatives
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at
Andrews Air Force Base (Continued)**

| Resource | Alternative 1 | Alternative 2 | Alternative 3 |
|---|----------------------|----------------------|----------------------|
| Socioeconomics (See Section 4.6 for detailed discussion) | | | |
| Housing (Section 4.6.2) | AAFB: No impact. | AAFB: No impact. | AAFB: No impact. |
| | SP: No impact. | SP: No impact. | SP: No impact. |
| | OL: No impact. | OL: No impact. | OL: No impact. |

¹Andrews Air Force Base

²Suitland Parkway

³Other land (land, other than Suitland Parkway, north or south of Andrews Air Force Base)

⁴Unified Facilities Criteria

⁵Federal Aviation Administration

⁶Federal Aviation Regulations

⁷Accident Potential Zone

motorists using that part of Suitland Parkway north of Andrews AFB. Suitland Parkway is listed on the NRHP and its historic setting relies on natural forest vegetation that forms a key component of the Parkway's setting and that obscures the visibility of the parkway's densely developed suburban surroundings to motorists.

Although the overall impact to areas other than Suitland Parkway would be minimal, tree trimming and tree removal performed as part of Alternatives 2 or 3 would also alter forest vegetation and some trees in landscaped areas on Andrews AFB, in an industrial park immediately north of Suitland Parkway, and in undeveloped lands directly southeast of the base. A few trees in a residential area directly south of the base could also require light trimming.

However, Alternative 1 would result in the persistence of numerous trees that constitute flight obstructions at one of the Nation's largest military flight installations and the base of Air Force One. Only Alternatives 2 or 3 would bring Andrews AFB into compliance with aviation safety standards recognized by the Air Force and the FAA.

The overall environmental impacts resulting from Alternatives 2 or 3 are minimal and comparable. Neither would require clearcutting or complete removal of forest vegetation from Suitland Parkway or off-base lands. Both would require removal of most canopy (taller) trees; such as oaks (*Quercus* sp.), sweetgums (*Liquidambar styraciflua*) and tulip poplars (*Liriodendron tulipifera*); from approximately 35 acres on the Suitland Parkway right-of-way, 20 acres of forested lands in an industrial park directly north of Suitland Parkway, and a small area of undeveloped land directly southeast of Andrews AFB. Most lower growing trees; such as American hollies (*Ilex opaca*), redbuds (*Cercis canadensis*), and flowering dogwoods (*Cornus florida*); would be retained. Other forest components, including woody shrubs, herbaceous groundcover, and leaf litter would be left intact. Stumps and roots would not be disturbed and would continue to protect against erosion and slow the movement of overland runoff. Soil disturbance would, however, result from tree and scrub replanting efforts performed as mitigation. Increased exposure of affected areas to sunlight would encourage the retained vegetation to develop into a dense thicket of shrubs and low trees. The affected areas would be managed to prevent the establishment of invasive alien species.

The dense growth of shrubs and low trees that would replace the taller forest vegetation affected by Alternatives 2 or 3 would still be natural vegetation. The lower vegetation height would increase the ability of motorists to view portions of the industrial park situated directly north of Suitland Parkway. However, the industrial park is currently visible to motorists through several existing gaps in the forest. Like the existing forest vegetation, the resulting dense vegetation will maintain a generally rural appearance to Suitland Parkway and at least soften, if not obscure, the industrial park. Although the

dense growth described above would develop naturally, additional shrubs and low growing trees would be planted as a supplement.

Alternative 3 would reduce the number of trees requiring removal from that part of the Suitland Parkway right-of-way directly north of the West Runway. Impacts north of the East Runway would be identical. However, Alternative 3 would not allow for complete preservation of canopy trees north of the West Runway. Many of the canopy trees would still require removal and the overall character of the vegetation would still be altered from forest to a thicket or a sparse, open forest. The effects of Alternative 3 on the visual properties and historic setting of Suitland Parkway would not be substantially reduced relative to Alternative 2.

Alternatives that involved displacing the West Runway (or both runways) farther south than 500 feet were considered early in the planning process but rejected. The longer runway displacements would have imposed unacceptable limitations on current flight operations and/or resulted in significant environmental impacts. In particular, extending either of the runways south by more than 500 feet would have required lengthy delays of several years because of the need to coordinate with ongoing efforts to investigate and clean up two abandoned landfills located directly south of the runways. Extending the East Runway south by any distance would require relocation of South Perimeter Road, an arterial road traversing the southern part of the base. Any such relocation would have required constructing a new road fill across a broad zone of wetlands adjoining Piscataway Creek in the southeastern part of the base.

It is concluded that Alternative 2 and 3 do not substantially differ with respect to potential environmental impacts. With respect to the range of possible alternatives that bring Andrews AFB into conformance with safety criteria established by the Air Force and FAA, either Alternative 2 or Alternative 3 may be considered to be the environmentally preferred alternative.

The preferred alternative of this EA is Alternative 2, Vegetation Management. Designation of a preferred alternative considered not only environmental impacts but also non-environmental issues such as cost and schedule. Regulatory agency consultation and coordination requirements (e.g., consultation requirements under the Endangered Species Act and National Historic Preservation Act) will be met through distribution of the EA and consideration of comments received. Applications for permits (e.g., permits authorizing wetland impacts under the *Clean Water Act* and *Maryland Nontidal Wetlands Protection Act*) will be submitted only after a FONSI is issued.

2.7 ENVIRONMENTAL PERMITTING, REGULATORY COMPLIANCE, AND COORDINATION REQUIREMENTS

Table 2-8 lists each environmental permit, regulatory compliance requirement, and regulatory agency coordination requirement for each of the three alternatives evaluated in the EA. The table lists only those requirements that are potentially applicable to one or more of the alternatives or that require an explanation to demonstrate non-applicability to any of the alternatives. The table groups the requirements by corresponding statute. For each requirement, the table provides regulatory citations, states the administering agency(ies), presents a brief description, and discusses how the requirement applies to the alternatives. The table also indicates which sections of the EA contain technical information relevant to each of the requirements.

Regulatory agency consultation and coordination requirements (e.g. consultation requirements under Section 7 of the *Endangered Species Act* and *National Historic Preservation Act*) will be met through distribution of the EA and consideration of comments received over the subsequent 30 days. Applications for permits (e.g. permits authorizing wetland impacts under the *Clean Water Act* and *Maryland Nontidal Wetlands Protection Act*) will be submitted only after an alternative is selected and a FONSI is issued. No work will proceed under any alternative until all of the applicable requirements listed for that alternative in Table 2-8 have been met.

Table 2-8

**Environmental Permitting, Regulatory Compliance, and Coordination Requirements
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base**

| Statute | Requirement | Agency | Description | Applicability | | | Notes | For More Information See Section |
|---|---|--|--|---------------|---|---|--|----------------------------------|
| | | | | Alternative | | | | |
| | | | | 1 | 2 | 3 | | |
| National Environmental Policy Act (42 USC 4321 et seq.) | Environmental Impact Statement (EIS), Environmental Assessment (EA), or Categorical Exclusion (CATEX) (40 CFR 1500 et seq.) | Lead Agency: U.S. Air Force, Air Mobility Command (AMC) Cooperating Agency(s): U.S. Department of the Interior, National Park Service (NPS) | All Federal actions must be reviewed to determine if they fall under a CATEX, qualify for a Finding of No Significant Impact (FONSI), or require an EIS. | | X | X | The EA is prepared in compliance with NEPA. The Air Force and NPS will issue separate decision notices and FONSI based on information in the EA. | 1.0 2.0 |
| Clean Air Act (42 USC 7401 et seq.) | Air Conformity Determination (40 CFR 93) | Maryland Department of the Environment (MDE) | Federal agencies must demonstrate that actions in nonattainment areas conform to the applicable State Implementation Plan. | | X | X | Andrews is located within a nonattainment area for ozone. An air conformity analysis is therefore required. However, potential emissions from work proposed under any of the alternatives is clearly <i>de minimis</i> . | 3.5.1 4.5.1 |
| Clean Water Act (33 USC 1251 et seq.) | National Pollutant Discharge Elimination System (NPDES) Permit (40 CFR 122 et seq.; COMAR 26.08.01 et seq.) | MDE (Delegated from U.S. Environmental Protection Agency [EPA]) | Required for point source discharges to waters of the United States. Approval under a General NPDES Permit for Construction Activity is required for stormwater discharges from new construction activities disturbing more than 5 acres. | | X | X | None of the alternative involves point source discharges. Alternatives 2 or 3 would disturb greater than 5 acres of land. Either alternative would require submission of a notice-of-intent (NOI) requesting approval under the General Permit for Construction Activity. Conditions of the General Permit include compliance with approved soil erosion and sediment control plans and stormwater management plans approved by MDE. | 3.5.2 4.5.2 |
| | Section 404 Permit and Section 401 Water Quality Certification (33 CFR 320 et seq.) | 404 - U.S. Army Corps of Engineers, Baltimore District (COE) 401 – MDE (Delegated from EPA) | A Section 404 permit is required for discharges of dredged or fill materials to waters of the United States. The COE can not issue a Section 404 permit for an action in Maryland unless the MDE first issues a Water Quality Certification. | | | X | Alternative 2 would involve cutting trees within wetlands but not discharge of dredged or fill material, and therefore would not require a Section 404 permit. Alternative 3 would involve discharges of fill material to as much as 15 acres of wetlands directly south of the West Runway and would therefore require a Section 404 permit. | 3.3.4 4.3.4 |

Table 2-8

**Environmental Permitting, Regulatory Compliance, and Coordination Requirements
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base (Continued)**

| Statute | Requirement | Agency | Description | Applicability | | | Notes | For More Information See Section |
|---|---|---|---|---------------|---|---|--|----------------------------------|
| | | | | Alternative 1 | 2 | 3 | | |
| Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.) Environmental Article Title 9, Subtitle 2, ACM | Refuse Disposal Permit (40 CFR 257-258; COMAR 26.04.07) | MDE (Delegated from EPA) | Permits are required for facilities that accept solid or hazardous waste. | | | | No Refuse Disposal Permits would be required for any of the alternatives. Small quantities of logs, wood chips, and stumps generated by tree cutting under Alternatives 2 or 3 would be sold, used for landscaping projects, or disposed of in county landfills. None of the alternatives would generate hazardous waste. | 3.5.5 4.5.5 |
| National Historic Preservation Act (16 USC 470 et seq.) | Section 106 Consultation (36 CFR 800) | Maryland Historic Trust (State Historic Preservation Officer [SHPO] for Maryland) | Actions sponsored, funded, or permitted by Federal agencies must be reviewed by the SHPO for possible impacts to historic or archaeological resources eligible or potentially eligible for the National Register of Historic Places (NRHP). The SHPO may recommend appropriate modifications and/or mitigation to reduce impacts. | | X | X | Alternatives 2 or 3 would alter the appearance of trees on the Suitland Parkway, which is listed on the NRHP. An archaeological study is being performed for affected areas on Suitland Parkway. A draft of the EA was provided to the Maryland Historic Trust, who has agreed to aid the Air Force and NPS in the development of programmatic agreement in accordance with 36 CFR 800.13. | 3.4.2 4.4.2 |
| Endangered Species Act (16 USC 688 et seq.) | Section 7 Consultation (50 CFR 17) | U.S. Fish and Wildlife Service (FWS) | Actions sponsored, funded, or permitted by Federal agencies must be reviewed by the FWS for possible impacts to threatened or endangered species. The FWS may recommend appropriate modifications and/or mitigation to reduce impacts. | | X | X | None of the alternatives would impact known occurrences of threatened or endangered species or critical habitats. However, Alternatives 2 or 3 would affect naturally vegetated areas off of Andrews AFB that have not been inventoried for threatened or endangered species. The EA will be circulated to the FWS, who will have an opportunity to comment. | 3.3.3 4.3.3 |
| Fish and Wildlife Coordination Act (16 USC 661 et seq.) | Consultation | FWS | Federal actions that modify water bodies greater than 10 acres in surface area must be reviewed by the FWS, who may recommend modifications and/or mitigation. | | X | X | Alternatives 2 or 3 would modify forest vegetation in the upper reaches of Henson Creek and Piscataway Creeks, both tributaries to the Potomac River. The EA will be circulated to the FWS, who will have an opportunity to comment. | 3.3.5 4.3.5 |

Table 2-8

**Environmental Permitting, Regulatory Compliance, and Coordination Requirements
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base (Continued)**

| Statute | Requirement | Agency | Description | Applicability | | | Notes | For More Information See Section |
|---|---|--|---|---------------|---------------|---------------|---|----------------------------------|
| | | | | Alternative 1 | Alternative 2 | Alternative 3 | | |
| Executive Order 11988, Floodplain Management | Compliance | AMC and NPS | Directs Federal agencies to consider the potential effects of flood hazards and potential impacts to floodplains for actions that take place in a floodplain. | | X | X | Alternatives 2 or 3 would modify vegetation in the 100-year floodplains of Hensen Creek and Piscataway Creek. However, neither alternative would involve grading or construction within floodplains. | 3.3.6 4.3.6 |
| Executive Order 11990, Protection of Wetlands | Compliance | AMC and NPS | Directs Federal agencies to consider protection of wetlands in the decision-making process for actions affecting wetlands. NPS complies with the Executive Order by preparing Wetlands Statements of Findings. | | X | X | Alternative 2 would modify vegetation in forested wetlands but not result in loss of wetland area. In addition to modifying vegetation in forested wetlands, Alternative 3 would require filling and permanent loss of emergent wetlands immediately south of the West Runway. The NPS will prepare a Wetlands Statement of Findings regarding unavoidable wetland impacts. | 3.3.4 4.3.4 |
| Farmland Protection Policy Act (7 USC 4201 et seq.) | Compliance (7 CFR 658) | Natural Resources Conservation Service | Directs Federal agencies to consider opportunities to minimize adverse effects on prime and unique farmland. | | | | None of the alternatives would affect farmland or land capable of agricultural use. | 3.5.3 4.5.3 |
| Maryland Nontidal Wetlands Protection Act (Environmental Article 5-901 to 5-911, ACM) | Nontidal Wetlands Permit (COMAR 26.23) | MDE | Required for actions that alter a nontidal wetland or a 25-foot buffer immediately adjoining a nontidal wetland. Note: the law recognizes a 100-foot expanded buffer adjoining certain nontidal wetlands, but none in the area affected by any of the alternatives. | | X | X | Alternatives 2 or 3 would involve modifications to vegetation in forested wetlands, and Alternative 3 would also require filling as much as 15 acres of wetlands immediately south of the West Runway. | 3.3.4 4.3.4 |
| Maryland Waterway Construction Act (Environmental Article 5-501 to 5-514, ACM) | Waterway Construction Permit (COMAR 26.17.04) | MDE | Required for construction in a floodplain or for actions that otherwise alter a stream channel or floodplain. | | | | None of the alternatives would require a Waterway Construction Permit. Alternatives 2 or 3 would involve tree cutting within floodplains, but tree cutting is not a regulated activity under the Maryland Waterway Construction Act. | 3.3.6 4.3.6 |

Table 2-8

**Environmental Permitting, Regulatory Compliance, and Coordination Requirements
Environmental Assessment for Managing Flight Obstructions To Preserve Safety at Andrews Air Force Base (Continued)**

| Statute | Requirement | Agency | Description | Applicability | | | Notes | For More Information See Section |
|---|--|---|--|---------------|---------------|---------------|---|----------------------------------|
| | | | | Alternative 1 | Alternative 2 | Alternative 3 | | |
| Environmental Article Title 4, Subtitle 1, ACM | Soil Erosion and Sediment Control Plan Approval (COMAR 26.17.01) | MDE (Note: local agencies handle this function for private development projects, but MDE handles it for state and Federal projects.) | Required for actions that disturb greater than 5,000 square feet of land. | | X | X | Alternatives 2 or 3 would disturb topsoil in approximately 15 acres in the Primary Surface and Clear Zone Graded Area for the East Runway. Alternative 3 would also require grading of as much as 20 acres at the south end of the West Runway. Both alternatives would therefore require submittal and approval of a plan. | 3.5.3 4.5.3 |
| Environmental Article Title 4, Subtitles 2, ACM | Stormwater Management Plan Approval (COMAR 26.17.02) | MDE (Note: local agencies handle this function for private development projects, but MDE handles it for state and Federal projects.) | Required for actions that disturb greater than 5,000 square feet of land. | | X | X | Alternatives 2 or 3 would disturb topsoil in approximately 15 acres in the Primary Surface and Clear Zone Graded Area for the East Runway. Alternative 3 would also require grading of as much as 20 acres at the south end of the West Runway. Both alternatives would therefore require submittal and approval of a plan. | 3.5.2 4.5.2 |
| Maryland Forest Conservation Act (Natural Resources Article, Title 5, Subtitle 16, ACM) | Forest Stand Delineation (FSD) and Forest Conservation Plan (FCP) Approval (COMAR 08.19) | Maryland Department of Natural Resources | Required for new subdivisions or for actions on parcels of land greater than 40,000 square feet that require approval of a Soil Erosion and Sediment Control Plan or Stormwater Management Plan. | | X | X | Tree cutting <i>per se</i> does not result in a compliance requirement. But the fact that Alternatives 2 or 3 require a Soil Erosion and Sediment Control Plan and Stormwater Management Plan results in a compliance requirement. Forest on and north of Andrews AFB affected by either alternative has already been the subject of approved FSDs. Affected forest south of base has not been addressed in a FSD. No FCP yet prepared. | 3.5.1 4.5.1 |

Regulatory Citation Abbreviations:

USC-United States Code, CFR-Code of Federal Regulations, ACM-Annotated Code of Maryland, COMAR-Code of Maryland Regulations

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3.0 AFFECTED ENVIRONMENT

The following sections describe the environmental conditions of areas potentially affected by one or more of the alternatives. These areas include the Andrews Air Force Base (AFB) airfield, portions of the base adjoining the airfield, National Park Service (NPS) lands north of the base on the historic Suitland Parkway, and privately owned lands immediately north of Suitland Parkway and immediately south of the base. The area discussed for each topic includes, at a minimum, the airfield and lands where trees might be expected to penetrate (or to eventually penetrate) within 10 feet of the imaginary approach-departure or transitional surfaces (as defined in Unified Facilities Criteria [UFC] 3-260-01) associated with the runways under one or more of the alternatives. Other areas potentially affected by aviation noise, aviation hazards, or other effects from use of the runways under one or more alternatives are addressed as appropriate.

3.1 INTRODUCTION

Separate sections address land use and infrastructure (Section 3.2), the biological environment (Section 3.3), the cultural environment (Section 3.4), the physical environment (Section 3.5), and socioeconomics (Section 3.6).

3.2 LAND USE AND INFRASTRUCTURE

Issues addressed as part of land use and infrastructure include land use (Section 3.2.1), flight operations and safety (Section 3.2.2), vehicular transportation (Section 3.2.3), and utilities (Section 3.2.4).

3.2.1 Land Use

Andrews AFB: In accordance with Air Force Instruction (AFI) 32-7062, *Air Force Comprehensive Planning*, Andrews AFB developed a *Base General Plan* in 1996, which outlines existing and anticipated future land use on the base (USAF, 1996). Andrews AFB is presently preparing a five-year update to the *Base General Plan* (USAF, 2001a). Land use on the base as of 2001 is shown in Figure 3-1.

According to the *Base General Plan*, Andrews AFB encompasses 4,346 acres (excluding remote sites), most of which are occupied by the airfield and 1,342 buildings. Flight lines immediately east and west of the airfield support aircraft operations and maintenance facilities. Most areas outside of the airfield are occupied by administrative buildings, military housing, medical facilities, industrial facilities, service

Figure 3-1

buildings such as the base exchange and military dining halls, and outdoor recreation facilities. A golf course with 54 holes is located south and southwest of the airfield. Undeveloped open space is generally limited to small areas near the periphery of the base. Little undeveloped land suitable for future development remains (USAF, 1996, 2001a).

The only land use changes presently anticipated for the base are the proposed conversion of family housing near the East Gate (now closed, located on the northeast perimeter) to administrative use and the proposed conversion of family housing near the Pearl Harbor Gate (now closed, located on the east perimeter) to industrial use. Neither area adjoins the airfield. Most capital improvement projects proposed in the 2001 *Base General Plan* update are renovations, demolitions, and construction of modest-sized buildings and other structures in the developed areas west and east of the airfield. No capital improvement projects are proposed for areas directly north or south of the airfield (USAF, 2001a).

Suitland Parkway: The Suitland Parkway corridor is approximately 800 feet wide north of Andrews AFB and includes forested land and landscaped areas in the median and to the sides of the roadway pavement. The NPS National Capital Parks–East (NACE) manages land within the corridor for its aesthetic contribution to the parkway, its contribution to the historic setting of the parkway, and for conservation of natural resources. Suitland Parkway was originally graded as four lanes, but the last two lanes were not completely paved until the mid 1990s. Completion of the parkway paving was implemented in part to accommodate increased traffic resulting from increased regional development. Also in the mid 1990s, a portion of the Suitland Parkway corridor near Branch Avenue, several miles west of Andrews AFB, was used to construct structures associated with the Washington Regional Rapid Rail System (Metro Rail) Green Line Extension. No additional construction projects are presently contemplated for Suitland Parkway.

Other Off-Base Land: A light industrial park (Penn Belt Industrial Park) is located directly north of Andrews AFB and the Suitland Parkway corridor. The industrial park is roughly triangular, bound to the south by the Suitland Parkway corridor, to the northwest by the Capital Beltway, and to the northeast by Maryland Route 4 (Pennsylvania Avenue). That area is zoned light industrial (I-1). It is mostly developed, although narrow forested areas remain in low areas bordering a headwater to Hensen Creek (MNCPPC, 1994; CH2M Hill, 1996).

Off-base land south of the airfield is a mixture of residential, light industrial, and commercial land and undeveloped forest and small fields. Zoning is a matrix of various residential, commercial, and light industrial designations. The approved Master Plan for that region of Prince George's County recommends using undeveloped land directly south of the runways for industrial and other nonresidential development that is compatible with high levels of aircraft noise (MNCPPC, 1993a; CH2M Hill, 1996).

Land close to Andrews AFB will likely continue to experience new development in the near future. Prince George's County assembled a broad-based advisory panel of county residents, businesses, and other representatives (termed Commission 2000) to develop a comprehensive growth management plan. The plan, released in 2000, recommends development strategies for three tiers of land in the county:

- An inner tier that has already experienced dense development,
- A central “developing” tier that will experience the majority of development in the near future, and
- An outer rural tier where the county seeks to limit future development.

Andrews AFB and surrounding land are located in the central tier where the county seeks to direct most new development (Commission 2000, 2000).

3.2.2 Flight Operations and Safety

Andrews AFB: Based on analyses of more than 800 major aviation accidents at several Air Force bases between 1968 and 1995, the Air Force has defined three planning zones, extending beyond the thresholds of active runways, within which land uses must be considered in the context of aviation safety. The planning zones are termed the Clear Zone, Accident Potential Zone (APZ) I, and APZ II. Table 3-1 presents the dimensions currently specified in UFC 3260-01 for each planning zone. Figure 3-2 depicts the locations for each planning zone for the runways at Andrews AFB. A complete sequence of the three planning zones occurs beyond each active runway threshold. Thus for Andrews AFB, there are four complete sequences, one extending northward from each of the two parallel runways, and one extending southward from each of the two parallel runways. Because the planning zones are 3,000 feet in width (centered on the runway centerline) and the parallel runways are only 2,000 feet apart, parallel sequences of the planning zones north and south of the airfield overlap. The total width of the overlapping zones north and south of the airfield is 5,000 feet.

Table 3-1

Class B Runway Clear Zone Dimensions and Compatible Land Uses

| Zone ¹ | Start Point | Dimensions ² | | Expected Percentage of Accidents Occurring in Zone ⁴ | Land Use Compatibility ⁵ | | | | | |
|-------------------|----------------------------|-------------------------|---------------------------|---|-------------------------------------|------------------|------------------|----------------------|------------------|---------------------------------|
| | | Length (Feet) | Width ³ (Feet) | | Residential | Commercial | Industrial | Public/ Quasi-Public | Recreational | Open/ Agricultural/ Low Density |
| Clear Zone | At Runway Threshold | 3,000 | 3,000 | 27 | No | No | No | No | No | No ⁶ |
| APZ I | At Outer End of Clear Zone | 5,000 | 3,000 | 10 | No | No | Yes ⁷ | No | Yes ⁷ | Yes ⁷ |
| APZ II | At Outer End of APZ I | 7,000 | 3,000 | 5 | Yes ⁸ | Yes ⁷ | Yes ⁷ | No | Yes ⁷ | Yes ⁷ |

¹ Separate sets of clear zones and accident potential zones (APZs) are located at the south end and at the north end of the West Runway and of the East Runway. There are therefore 4 separate sets of clear zones and APZs for Andrews Air Force Base Air Force Base.

² Dimensions are for U.S. Air Force Class B runways, as stated in Unified Facilities Criteria 3-260-01.

³ Widths are centered on extensions of the runway centerline. The runways are located approximately 2,000 feet apart and the clear zones and APZs are 3,000 feet in width. Therefore, the parallel sets of clear zones and APZs at the north and south ends of the airfield overlap by approximately 1,000 feet, resulting in a combined width of approximately 5,000 feet.

⁴ Source: Page 4-7 of the *Andrews Air Force Base AICUZ Study* (89 AW, 1998).

⁵ This table provides generalized land use compatibility information only. For more detailed information, consult Table 4-2 of the *Andrews Air Force Base AICUZ Study* (89 AW, 1998).

⁶ Some limited agricultural uses are considered to be compatible.

⁷ Only low density, low intensity forms of these land uses are considered to be compatible.

⁸ Maximum compatible residential density in APZ II is one dwelling unit per acre.

Figure 3-2

According to Air Force Air Installation Compatible Use Zones (AICUZ) guidelines (as outlined in 89 AW, 1998), few land uses unrelated to aviation are compatible within the Clear Zones, which have the highest potential for experiencing accidents. One exception is that agricultural use is compatible if it does not involve structures or livestock. The Air Force strives to acquire property rights to the Clear Zones through fee purchase or easements. On Andrews AFB, the Clear Zone south of the airfield is located entirely within the base perimeter. Much of the southern Clear Zone is mowed grassland devoted exclusively to airfield use. However, a portion is used for part of the golf course. Recreational land uses within a Clear Zone are incompatible with AICUZ guidelines. The base maintains waivers authorizing use of the Clear Zone for golf because of the limited availability of other land on the base for recreation.

The Clear Zone areas north of the airfield extend off of base property to include part of the Suitland Parkway corridor and part of the Penn Belt Industrial Park (zoned light industrial). Those portions of the Clear Zone areas inside the northern base perimeter, south of North Perimeter Road, consist of open space permanently dedicated to airfield use only and are compatible. Existing land uses in those portions of the Clear Zones north of the base perimeter are incompatible (see below).

Suitland Parkway: As indicated above, the Suitland Parkway corridor north of Andrews AFB traverses the Clear Zones. According to Air Force AICUZ guidelines (89 AW, 1998), a public highway is an incompatible land use within a Clear Zone. Suitland Parkway was constructed prior to the development of modern airfield planning concepts. Despite the name “Clear Zone,” UFC 3260-01 does not require that a Clear Zone be completely clear of trees or forest cover. Forest land dedicated to conservation is a compatible land use within a Clear Zone, but the tops of the trees must not be allowed to grow to penetrate any overhead imaginary approach-departure or transitional surfaces.

Other Off-Base Land: According to the most recent AICUZ study for Andrews AFB (89 AW, 1998), approximately 25 acres of light industrial development (in the Penn Belt Industrial Park) and two residential dwellings are located within those parts of the Clear Zones extending north of Suitland Parkway. These land uses are incompatible according to Air Force AICUZ guidelines (89 AW, 1998).

The APZs north and south of Andrews AFB encompass large areas of a predominantly suburban landscape and include large areas of incompatible residential use (any residential use is considered incompatible in APZ I, while only residential development denser than one dwelling unit per acre is considered incompatible in APZ II). According to the most recent AICUZ study for Andrews AFB (89 AW, 1998), approximately 30 acres of incompatible residential use are located in APZ I areas north of the base and approximately 155 acres of incompatible residential use are located in APZ I areas south of the base. Approximately 370 acres of incompatible residential use are located within APZ II areas north of the base and approximately 385 acres of incompatible residential use are located in APZ II areas south of

the base. The APZ I areas, especially north of Andrews AFB, also contain a substantial amount of incompatible commercial land use. Based on the zoning and future land use projections discussed in Section 3.2.1, the amount of incompatible residential and commercial land use in the Clear Zones and APZs associated with Andrews AFB is expected to increase substantially in the future (89 AW, 1998).

Facilities that involve large gatherings of people, such as churches and schools, are particularly worrisome in areas subject to aviation accidents. No such facilities are located in the Clear Zones associated with Andrews AFB. Only one church and one school are located in the APZs south of the base. Four churches, two meeting halls for veterans organizations, and two preschool education facilities are located in the APZs north of the base (89 AW, 1998).

3.2.3 Vehicular Transportation

Andrews AFB: A network of major and minor roads provides for vehicular circulation on Andrews AFB (Figure 3-3). The major on-base arterial roads include Perimeter Road, Patrick Avenue, Arnold Drive, Virginia Avenue, and Menoher Drive. Of these, only Perimeter Road (as North Perimeter Road and as South Perimeter Road) crosses the airfield. The other main roads are located within the built-up areas west and east of the airfield (USAF, 1996, 2001a).

Perimeter Road forms a loop divided into North, East, South, and West segments. North Perimeter Road is a two-lane paved road that crosses the northern part of the airfield just north of the overrun surfaces for the runways. South Perimeter Road is a two-lane paved roadway that crosses the southern part of the airfield just south of the overrun surfaces for the runways. These two segments of Perimeter Road provide the only on-base routes for vehicles to cross from the western to the eastern part of the base. Vehicles are generally allowed to traverse either segment without regard to airfield activities. However, because of the proximity of North and South Perimeter Roads to the thresholds for the runways, certain vehicles using the roads penetrate the approach-departure surfaces and therefore constitute flight obstructions. Because use of the two roads is unrestricted, and traffic is therefore similar in character to a public roadway, vehicular heights are limited to no more than 15 feet.

Vehicular entry onto Andrews AFB is controlled. Visitors lacking passes must report to the visitors' center at the Main Gate (Figure 33) and receive a pass. Others may enter at any of three guarded gates, although not all gates are open at all times (USAF, 1996). Of the gates, only the North Gate is located

Figure 3-3

near the airfield. The North Gate is located approximately 1,000 feet northeast of the northern terminus of the East Runway. The North Gate allows vehicles traveling north on Patrick Avenue, a major collector road serving the northeastern quadrant of the base, to exit the base onto Suitland Parkway.

Suitland Parkway: Suitland Parkway provides a four-lane route used by commuters and maintained by NPS and Washington, DC Public Works Department that extends east to west for 9.18 miles from Maryland Route 4 to the Anacostia River in Washington. Use of the road by commercial vehicles is prohibited. Suitland Parkway was designed as a “limited access road to provide a dignified, protected, safe and suitable approach for passenger-vehicle traffic to the National Capital.” Maintenance of parkway character and natural habitat are key factors in the management of Suitland Parkway (NPS, 2001).

Other Off-Base Land: Andrews AFB is located close to several major commuter routes. Immediately west of Andrews AFB is the Capital Beltway, a 66-mile freeway that circles the close-in suburbs of Washington, DC. In Prince George’s County, the Capital Beltway is also part of Interstate Route 95, the principal north-south route for trucking and interstate travel on the East Coast. Maryland Route 4 (Pennsylvania Avenue) links Calvert County to the east with Washington, DC, to the west. Route 4 adjoins the northeast corner of Andrews AFB. Maryland Route 5 (Branch Avenue) links St. Mary’s and Charles counties to the southeast with Washington, DC, to the northwest. Route 5 adjoins the southwest corner of the base.

The Maryland State Highway Administration (SHA) has published traffic volume data for the Capital Beltway and for Maryland Route 4. For a station on the Capital Beltway at the interchange with Maryland Route 214, approximately five miles north of Andrews AFB, the average daily traffic (ADT) figure published by SHA for 1999 is 178,745. The ADT is the average number of vehicles passing the station over 24 hours. The ADT published for 1999 for Maryland Route 4 is 43,688 (SHA, 1999).

3.2.4 Utilities

Andrews AFB: Electric power is supplied to Andrews AFB by the Potomac Electric Power Company (PEPCO). Electrical distribution lines on the base are a mix of underground and overhead conductors. Three 69 kilovolt (kV) feeders originating from the PEPCO Kingswood substation enter the base from the west near the Main Gate. From there, a network of distribution lines spreads over the base. One underground primary feeder crosses the central part of the airfield west to east (USAF, 1996, 2001a). A project is currently under way to construct a new underground primary feeder across the northern part of the airfield to link the west substation to the east switching station.

Andrews AFB facilities are heated by natural gas or served by two Central Heating Plant Buildings (Buildings 1732 and 3409) that are fired by natural gas with Number 2 heating oil as backup fuel. Natural gas is supplied by the Washington Gas Light Company. All natural gas lines and heating lines on the base are underground. No natural gas lines or heating lines cross the airfield (USAF, 1996, 2001a).

Drinking water is supplied to the base by the Washington Suburban Sanitary Commission (WSSC). A 14-inch water main makes a loop around the base following Perimeter Road. It crosses the airfield just north of the northern overrun surfaces and again just south of the southern overrun surfaces. Domestic sewage generated on the base is collected in a series of sanitary sewers that connect to off-base WSSC treatment facilities (USAF, 1996, 2001a). Additional water is stored for emergency use and fire protection in three elevated water storage tanks (water towers) located near the western, eastern, and northern perimeters of the base respectively. This water is treated specifically for use in fire fighting.

Suitland Parkway: No overhead electric lines (or other overhead conductors) or other utilities follow the Suitland Parkway corridor.

Other Off-Base Lands: Overhead distribution lines are present in the off-base landscapes north of Suitland Parkway and south of the base. These off-base overhead electric lines are too distant from the runways to constitute flight obstructions. Residential, commercial, light industrial, and public facilities (such as churches and schools) in the landscape surrounding Andrews AFB are served by local utilities such as PEPCO, Washington Gas Light, and WSSC. Some rural residences south and east of the base may still utilize private well and septic systems.

3.3 BIOLOGICAL ENVIRONMENT

Issues addressed as part of the biological environment include trees and other vegetation (Section 3.3.1), terrestrial wildlife (Section 3.3.2), threatened and endangered species (Section 3.3.3), wetlands (Section 3.3.4), streams and aquatic biota (Section 3.3.5), and floodplains (Section 3.3.6).

3.3.1 Trees and Other Vegetation

Andrews AFB: Areas of existing forest cover on Andrews AFB are shown in Figure 3-4. Andrews AFB is located in a part of Maryland characterized by a forest formation known as the chestnut-post-blackjack oak association. Climax vegetation (i.e., vegetation in areas lacking recent land disturbance) in this part of Maryland is characterized by the discrete presence of any two of the following: chestnut oak (*Quercus*

Figure 3-4

pinus), post oak (*Quercus stellata*), or blackjack oak (*Quercus marylandica*). Other common canopy trees include other oaks, red maple (*Acer rubrum*), blackgum (*Nyssa sylvatica*), sweetgum (*Liquidambar styraciflua*), Virginia pine (*Pinus virginiana*), American holly (*Ilex opaca*), American beech (*Fagus grandifolia*), black cherry (*Prunus serotina*), sassafras (*Sassafras albidum*), and eastern redcedar (*Juniperus virginiana*). The other oaks include white oak (*Quercus alba*), willow oak (*Quercus phellos*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), and scarlet oak (*Quercus coccinea*). Mockernut hickory (*Carya tomentosa*) and pignut hickory (*Carya glabra*) are sometimes present. Tulip poplar (*Liriodendron tulipifera*) is often dominant in areas of richer soil, on low slopes, and on alluvial flats. The shrub layer is composed mainly of acid-loving plants such as blueberries (*Vaccinium* sp.), huckleberries (*Gaylussacia* sp.), mountain laurel (*Kalmia latifolia*), arrowwood (*Viburnum dentatum*), and flowering dogwood (*Cornus florida*) (Brush *et. al.*, 1980).

The forested areas north of the airfield, including areas on the base, Suitland Parkway, and the industrial park, were quantitatively described in a forest stand delineation (FSD) completed in 1997 (EQR, 1997). The Maryland Forest Conservation Act requires applicants for grading permits to prepare detailed inventories of existing trees, vegetation, and other natural resources and to prepare plans for conserving and restoring those resources during construction. The baseline inventory is the FSD, and the subsequent conservation plan is termed a forest conservation plan (FCP). Procedures for performing FSDs and FCPs are prescribed by the Maryland Department of Natural Resources (MDNR) (MDNR, 1997).

Table 3-2 and Figure 35 summarize the results of the FSD for land north of the airfield. Most of the forest stands are dominated by oaks or other upland hardwoods, but stands in low-lying swales associated with headwaters of Hensen Creek are dominated by red maple. The average tree diameter (diameter at breast height, DBH) in each of the stands is less than 14 inches. The estimated tree density ranges from 79 trees per acre for a stand with predominantly large diameter trees to 490 trees for a stand with predominantly small diameter trees. All of the stands are estimated to be less than 75 years old (EQR, 1997).

A separate FSD report completed (MDNR, 2000) in March 2000 characterizes forest cover in the relatively undeveloped southeast corner of the base, generally south and east of the East Runway. The report identified 11 stands, totaling about 108 acres (Table 33 and Figure 36). Stand 1 comprises a block of approximately 69 acres of contiguous forest in the southeastern corner of the base. It contains white oak, red maple, southern red oak (*Quercus falcata*), sweetgum, and tulip poplar. Most trees are

Table 3-2

Forest Stand Delineation Areas North of Andrews Air Force Base Airfield¹

| Stand | Description | Location | Dominant Species | Acres | Approximate Trees Per Acre | Average Diameter (DBH²) (inches) | Estimated Age (years) |
|--------------|----------------------------------|--|-------------------------|--------------|-----------------------------------|--|------------------------------|
| 1 | Hardwood Woodlot | AAFB ³ (Belle Chance Area) | Tulip Poplar | 1.4 | 267 | 5.6 | 47 |
| 2 | Pole Stocked Mixed Hardwoods | AAFB (Belle Chance Area) | White Oak | 4.4 | 360 | 5.3 | 51 |
| 3 | Riparian Buffer | South Side of Suitland Parkway, Extending onto AAFB | Red Maple | 8.3 | 214 | 8.0 | 30 |
| 4 | Mature Mixed Oak Hardwoods | AAFB (East of East Runway Overrun) | Northern Red Oak | 14.0 | 171 | 8.2 | 67 |
| 5 | Maturing Bottomland Floodplain | North Side of Suitland Parkway, Extending into Penn Belt Industrial Park | Red Maple | 14.9 | 113 | 9.4 | 52 |
| 6 | Virginia Pine Monoculture | North Side of Suitland Parkway, Extending into Penn Belt Industrial Park | Virginia Pine | 1.8 | 300 | 6.9 | 30 |
| 7 | Pole Stocked Mixed Oak Hardwoods | North Side of Suitland Parkway, Extending into Penn Belt Industrial Park | White Oak | 5.7 | 96 | 10.7 | 71 |
| 8 | Maple Bottomland | North Side of Suitland Parkway, Extending into Penn Belt Industrial Park | Red Maple | 7.2 | 79 | 10.6 | 28 |
| 9 | Mixed Oak Hardwoods | North and South Sides Suitland Parkway and AAFB (north of Allentown Rd.) | Northern Red Oak | 11.8 | 130 | 8.9 | 44 |
| 10 | Mixed Hardwoods | South Side Suitland Parkway, extending into AAFB | White Oak | 8.6 | 163 | 9.1 | 67 |

Table 3-2

Forest Stand Delineation Areas North of Andrews Air Force Base Airfield (Continued)

| Stand | Description | Location | Dominant Species | Acres | Approximate Trees Per Acre | Average Diameter (DBH²) (inches) | Estimated Age (years) |
|--------------|---------------------------|--|-------------------------|--------------|-----------------------------------|--|------------------------------|
| 11 | Stream Valley Woodlot | Penn Belt Industrial Park | Tulip Poplar | 3.8 | 66 | 14.1 | 52 |
| 12 | Sapling Stocked Hardwoods | North Side of Suitland Parkway, Extending into Penn Belt Industrial Park | Sweet-gum | 6.0 | 491 | 4.6 | 39 |

¹Source: EQR, 1997. Estimated stand ages adjusted to 2001.

²DBH - diameter at breast height

³AAFB - Andrews Air Force Base

Figure 3-5

Table 3-3

**Forest Stand Delineation Areas
Southeast Quadrant of Andrews Air Force Base¹**

| Stand | Location | Dominant Species | Acres | Size Class of Dominant Species (DBH²) (inches) |
|--------------|---|--|--------------|--|
| 1 | Southeast Corner of AAFB ³ | White Oak Red Maple Southern Red Oak Sweetgum Tulip Poplar | 69.3 | 6-11.9 |
| 2 | Inclusion within Stand 1 | Virginia Pine Red Maple | 1.3 | 2-5.9 |
| 3 | Inclusion within Stand 1 | Virginia Pine Eastern Redcedar | 1.4 | 6-11.9 |
| 4 | Inclusion within Stand 1 | Loblolly Pine (Planted) | 1.0 | 6-11.9 |
| 5 | East of East Perimeter Road | Virginia Pine Red Maple | 2.7 | 6-11.9 |
| 6 | East of East Perimeter Road | Loblolly Pine (Planted) | 0.5 | 6-11.9 |
| 7 | West of East Perimeter Road, Adjoining Airfield | Virginia Pine | 3.8 | 6-11.9 |
| 8 | West of East Perimeter Road, Adjoining Airfield | Southern Red Oak Virginia Pine White Oak Sweetgum | 12.2 | 6-11.9 |
| 9 | West of East Perimeter Road, Adjoining Airfield | Loblolly Pine (Planted) | 1.0 | 6-11.9 |
| 10 | East of East Perimeter Road | Southern Red Oak Virginia Pine Pin Oak Sweetgum | 2.0 | 6-11.9 |
| 11 | East of East Perimeter Road | Pin Oak Chestnut Oak White Oak Willow Oak Red Maple | 12.6 | 6-11.9 |

¹Source: MDNR, 2000

²DBH - diameter at breast height

³AAFB - Andrews Air Force Base

Figure 3-6

between 6 and 12 inches DBH. Its understory contains American holly, mountain laurel, devil's walkingstick (*Aralia spinosa*), mosses (*Sphagnum* sp.), greenbrier (*Smilax* sp.), blueberry, pipsissewa (*Chimaphila* sp.), and Japanese honeysuckle (*Lonicera japonica*). The other stands consist of small inclusions of differing forest vegetation within Stand 1 or of isolated stands, generally similar in composition to Stand 1, located elsewhere in the southeastern part of the base (MDNR, 2000).

The 89 CES and MDNR prepared an Urban Forestry Management Plan in January 2001 that outlines a program of ornamental tree planting for 42 areas on the base. The objectives of the plan include offsetting the heavy losses of ornamental trees on the base during a 1999 drought and ameliorating the pattern of uniform rows of trees that is prevalent in landscaping on the base. The plan calls for planting new trees in several areas just east and west of the flight lines but does not call for planting any new trees north or south of the airfield (89 CES, 2001).

Suitland Parkway: NPS strives to maintain natural forest cover on as much of Suitland Parkway as possible. As shown in Figure 35, that segment of Suitland Parkway north of Andrews AFB includes portions of Stands 3, 5, 6, 7, 8, 9, 10, and 12 described in Table 3-2. Each of those stands is dominated by regionally indigenous hardwood tree species, except for Stand 6, which is dominated by the regionally indigenous Virginia pine (*Pinus virginiana*). Forest cover on Suitland Parkway overall is somewhat fragmented by areas of scrub-shrub vegetation, grass areas, and landscaped plantings. However, the forest cover helps to reduce the visibility of urban areas to drivers on the parkway. The trees are also important to screening to protect the pleasant natural view enjoyed by users of the parkway and to maintain the historic landscape of the parkway. The NACE has planted several regionally indigenous trees in grassed landscaped areas in the median and on the sides of the road surfaces, and NACE has also established some areas of reforestation on the parkway using small trees. Many of the taller (canopy) trees directly north of the runways have been trimmed in the past to maintain approach lighting and instrument landing system (ILS) capability for the runways.

Table A-1 in Appendix A lists each plant species recorded by NACE in a database of plants known to occur on Suitland Parkway (Steury, 2002). The list includes native and introduced (exotic) species of trees, shrubs, forbs, grasses, sedges, rushes, and ferns. Most of the species listed in Table A-1 could potentially inhabit the upland forest, wetland forest, scrub-shrub (thicket), and grassy lawn habitats present on Suitland Parkway north of Andrews AFB. However, the presence of each of these species north of Andrews AFB has not been confirmed. A few would be expected to inhabit only certain habitat types not found on that part of Suitland Parkway north of Andrews AFB.

Other Off-Base Lands: Portions of Stands 5, 6, 7, 8, and 12 described in Table 3-2 extend into the industrial park north of Suitland Parkway, and all of Stand 11 is located within the industrial park

(Figure 3-5). Each of those stands is dominated by regionally indigenous hardwood tree species, except for Stand 6, which is dominated by the regionally indigenous Virginia pine (*Pinus virginiana*). Forest cover within the industrial park may be characterized as fragmented, consisting of narrow areas of forested wetlands and lowlands and small patches of upland deciduous forest amid the buildings and parking lots. Much of the forest cover within the industrial park is contiguous to Suitland Parkway and may support many of the same plant species listed in Table A-1 of Appendix A.

Residential areas south of the base include small patches of deciduous forest cover and numerous mature landscape trees. The floodplain of Piscataway Creek southeast of the base supports mature deciduous forest, and some areas of abandoned farmland near Piscataway Creek support scrub-shrub vegetation typical of recently abandoned open spaces. Forest cover south of the base has not been quantitatively described as part of an FSD.

3.3.2 Terrestrial Wildlife

Andrews AFB: The diversity and abundance of terrestrial wildlife, especially large mammals and other fauna requiring large areas free of human activity, in the vicinity of Andrews AFB are limited by the urban setting. Naturally vegetated areas on the base are generally fragmented, small, or narrow and experience substantial noise from airfield operations and other human activity. A natural resources survey of Andrews AFB completed in 1998 includes the results of a wildlife survey conducted in 1996 and 1997 (Parsons, 1998). The only rare, threatened, or endangered wildlife species observed on Andrews AFB during the survey was the bald eagle (*Haliaeetus leucocephalus*), which was observed near Base Lake. The bald eagle is federally listed as threatened and listed by the State of Maryland as endangered (See Section 3.3.3).

Resident and migratory birds have created a Bird Aircraft Strike Hazard (BASH) at Andrews AFB. Approximately 86 to 90 bird strikes occurred at Andrews AFB between 1986 and 1995. A BASH Reduction Plan was implemented at Andrews AFB in 1993 to minimize the potential for bird strikes. The plan specifies grass height management and other land management practices to reduce conditions that attract birds to the area near the airfield. Areas with the greatest potential to attract large numbers of birds are Base Lake and the two borrow pit lakes in the golf course south of the airfield and the ponds at the Belle Chance estate northwest of the airfield (USAF, 1996, 2001a; Margolis, 1997). As a BASH reduction measure, Kevlar[®] line grids have been placed over two ponds on Andrews AFB to deter use by waterfowl. Wire grids have been shown to be effective in reducing use of water areas in northern Virginia by nonmigratory Canada geese (*Branta canadensis*) (Lowney, 1995). Other measures have also been used to discourage the congregation of large numbers of birds near the runways.

Suitland Parkway: Suitland Parkway is a refuge for urban wildlife. The forest cover on Suitland Parkway north of Andrews AFB provides good habitat for terrestrial wildlife favoring small patches of forest cover and forest edges. Viewed as a whole, the 9.18-mile Suitland Parkway provides a linear corridor of natural terrestrial habitat crossing a predominantly urban landscape. That corridor provides habitat for wildlife otherwise unsuited to the urban areas traversed by the parkway and may facilitate the migration of wildlife between the more rural landscape east of Andrews AFB and tracts of urban park land bordering the Anacostia River and its tributaries in Washington, DC.

Table A-2 in Appendix A lists each bird species recorded for Suitland Parkway in a checklist of bird species prepared for nine parks under NACE administration. The list includes species in 10 orders and 31 families. Most of the species listed in Table A-2 could at least transiently visit, during one or more seasons, the upland forest, wetland forest, scrub-shrub (thicket), and grassy lawn habitats present within Suitland Parkway north of Andrews AFB. However, the presence of each of these species north of Andrews AFB has not been confirmed. A few would be expected to visit only certain habitat types not found on that part of Suitland Parkway north of Andrews AFB.

Table A-3 in Appendix A lists each mammal species listed as occurring within the study area for a recently completed extension of Metro Rail (USDOT and WMATA, 1992). That segment of Suitland Parkway between the Capital Beltway (just west of Andrews AFB) and the District of Columbia boundary traverses the Metro study area. The list includes the white-tailed deer (*Odocoileus virginianus*), beaver (*Castor canadensis*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), skunk (*Mephitis mephitis*), opossum (*Didelphis marsupialis*), eastern cottontail rabbit (*Sylvilagus floridanus*), chipmunk (*Tamias striatus*), long-tailed weasel (*Mustela frenata*), and various squirrels, bats, shrews, voles, mice, rats, and moles. The NACE has also stated that red fox (*Vulpes vulpes*) occurs on the parkway. Most of the species listed in Table A-3 could at least transiently visit during one or more seasons the upland forest, wetland forest, scrub-shrub (thicket), and grassy lawn habitats present within Suitland Parkway north of Andrews AFB. However, the presence of each of these species north of Andrews AFB has not been confirmed. A few would be expected to visit only certain habitat types not found on that part of Suitland Parkway north of Andrews AFB.

Table A-4 in Appendix A lists each amphibian and reptile species listed as occurring within the study area for a recently completed extension of Metro Rail (USDOT and WMATA, 1992). That segment of Suitland Parkway between the Capital Beltway (just west of Andrews AFB) and the District of Columbia boundary traverses the Metro study area. The list includes 10 amphibians (including various salamanders, frogs, and newts) and 21 reptiles (including various snakes, turtles, skinks, and lizards). Most of the species listed in Table A-4 could inhabit the upland forest, wetland forest, scrub-shrub (thicket), and grassy lawn habitats present within that part of Suitland Parkway north of Andrews AFB. However, the actual

presence of each of these species north of Andrews AFB has not been confirmed. A few would be expected to visit only certain habitat types not found on that part of Suitland Parkway north of Andrews AFB.

Other Off-Base Lands: Much of the forest cover within the industrial park north of Suitland Parkway is contiguous to the parkway and may support many of the same bird, wildlife, amphibian, and reptile species listed in Table A-2, A-3, and A-4 of Appendix A. The predominantly suburban landscape south of Andrews AFB provides habitat for species tolerant of human activity and urban settings with small patches of forest or scrub-shrub (thicket) cover. Examples include the eastern cottontail rabbit; raccoon; certain mouse, rat, and shrew species; European starling (*Sturnus vulgaris*); American robin (*Turdus migratorius*); blue jay (*Cyanocitta cristata*); northern cardinal (*Cardinalis cardinalis*); and species of small snake such as the garter snake (*Thamnophis sirtalis*). Larger blocks of forest near the southeast corner of Andrews AFB and in the floodplain of Piscataway Creek southeast of the base (see Section 3.3.6) may provide some habitat for wildlife favoring larger tracts of forest. Other than wetland areas associated with the floodplains of Piscataway Creek and Hensen Creek, the suburban landscape surrounding Andrews AFB does not offer much habitat for amphibians.

3.3.3 Threatened and Endangered Species

Andrews AFB: A survey for Federal and state rare, threatened, and endangered species was conducted on Andrews AFB in 1993 and 1996/1997 (Parsons, 1998). As noted in Section 3.3.2, the bald eagle (listed as threatened under the Federal *Endangered Species Act* and as endangered by the State of Maryland) was observed at Base Lake south of the airfield. The sandplain gerardia (listed as endangered under the Federal *Endangered Species Act* and also as endangered by the State of Maryland) was observed south of the airfield and east of Piscataway Creek at the edge of the recently completed golf course addition. No other federally or state listed plant or animal species was observed on Andrews AFB during the survey.

Seven unlisted but rare plants lacking protection under either Federal or Maryland regulations were also observed on Andrews AFB during the survey (Parsons, 1998). Table 34 provides a complete summary of the rare, threatened, and endangered species found during the survey and Figure 3-7 shows the locations of the observations.

Table 3-4

Summary of Rare Species Data for Andrews Air Force Base¹

| Common Name | Scientific Name | Federal Status ² | State Status ³ | Global Rank ⁴ | State Rank ⁵ | Habitat | Approximate Location Sighted |
|---------------------|---------------------------------|-----------------------------|---------------------------|--------------------------|-------------------------|--|--|
| Chinquapin | <i>Castanea pumila</i> | NS | NS | G5, T5 | S3 | Dry open woods and edges, in sandy or rocky, acid soil | Wooded area between North Perimeter Road and Allentown Road, approximately 1500 feet west of northern threshold of West Runway |
| Curtiss' Three-awn | <i>Aristida curtissii</i> | NS | NS | G5,T5 | SU | Open dry ground of fields, roadsides | Approximately 1000 feet east of southern threshold of East Runway |
| Honeyvine | <i>Cynanchum laeve</i> | NS | WL | G5 | S3 | Low moist woods, forest margins, thickets, swales, stream banks, roadsides | Grassy area at eastern edge of midsection of East Runway |
| Sandplain Gerardia | <i>Agalinus acuta</i> | LE | E | G1 | S1 | Dry sandy short grass plains, roadsides and openings in oak scrub | Golf course south of airfield |
| Spiral Pondweed | <i>Potamogeton spirillus</i> | NS | NS | G5 | S1 | Quiet waters | Borrow pits in Golf Course south of airfield |
| Swollen Bladderwort | <i>Utricularia gibba</i> | NS | WL | G5 | S3 | Shallow pools and spring heads | Around Belle Chance ponds |
| Tall nutrush | <i>Scleria triglomerata</i> | NS | NS | G5 | S1, S2 | Dry to wet, open to partly open situations, often on sandy soil | Forested wetlands in golf course south of airfield |
| Bald Eagle | <i>Haliaeetus leucocephalus</i> | LT | E | G4 | S2, S3 | Edge of waters | Base Lake |

¹Adapted from Parsons, 1998

²Federal Status: NS - No Status; LE - Listed as Endangered; LT - Listed as Threatened

³State Status: NS - No Status; E - Endangered; WL - Watch List

⁴Global Ranks: G1 - Highly rare globally; G4 - Apparently secure globally; G5 - Demonstrably secure globally; T5 - Intraspecific taxon is demonstrably secure globally

⁵State Ranks: S1 - Highly state rare; S2 - State rare; S3 - Watch List; SU - Status uncertain, possibly rare

Figure 3-7

Of the plants, the only woody species is the chinquapin (*Castanea pumila*), a low-growing tree typically attaining heights between 10 and 15 feet and trunk diameters of 1 to 2 inches, although larger specimens may rarely attain heights up to 50 feet and trunk diameters up to 36 inches (Petrides, 1972; Brockman, 1986). This upland tree is botanically similar to the American chestnut (*Castanea dentata*), with similar foliage and husked nuts, but its populations have not been substantially affected by Chestnut Blight, a fungal disease that has killed most mature American chestnuts. Chinquapin was observed in a forested area directly north of North Perimeter Road across from Belle Chance, northwest of the airfield.

The other plants are herbaceous grasses, sedges, and forbs (wildflowers) that grow in wetlands and open uplands. One species, honeyvine (*Cynanchum laeve*) was found within the airfield in a grassy area just east of the East Runway. Curtiss' three-awn was observed in a mowed area near the southeast corner of the airfield. Swollen bladderwort (*Utricularia gibba*) was observed at the ponds just south of Belle Chance, northwest of the airfield. Spiral pondweed was seen adjoining one of the borrow pits within the golf course extension south of the airfield. Tall nutrush (*Scleria triglomerata*) was observed in a forested wetland area at the base perimeter south of the golf course addition. Since completion of the survey in 1997, an additional occurrence of honeyvine has also been observed along Nevada Avenue (Gerrard, 2001).

The survey also noted that Carolina foxtail (*Alopecurus carolinianus*) was observed northeast of the airfield. Since completion of the survey in 1997, the MDNR rescinded the state rare status previously applied to Carolina foxtail. At the present time, Carolina foxtail has no Federal or Maryland special status designations (Davidson, 2001).

Suitland Parkway: The NPS consulted the U.S. Fish and Wildlife Service in regard to the presence of species that are federally listed or proposed for listing as endangered or threatened in the affected portion of the Suitland Parkway corridor. In a July 10, 2002 letter, the U.S. Fish and Wildlife Service reported that except for occasional transient individuals, no federally listed endangered or threatened species, or species proposed for listing, are known to exist within the project impact area. Therefore, no further consultation with the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act is required. The affected segment of the Parkway corridor lacks open water and therefore does not provide favorable habitat for the bald eagle (listed as federally threatened and Maryland endangered), which has been observed in the vicinity of Base Lake in the southern part of Andrews AFB.

NACE conducted a preliminary survey of the project area to look for occurrences of rare, threatened or endangered vascular plants. One population of a state listed species was found, *Carex mesochorea*, midland sedge, which is listed as S2 (State rare). Midland sedge reportedly favors dry open woods and

grasslands (Fernald, 1970). This finding was reported to the Maryland Wildlife and Heritage Division of the Maryland Department of Natural Resources. In a letter dated July 24, 2002, the Division responded that they had no other records of rare, threatened, or endangered species. The Division recommended that the midland sedge population be conspicuously fenced during work on Suitland Parkway to protect it against inadvertent damage. The Parkway corridor lacks the dry, sandy habitat favored by the sandplain gerardia (federally and state endangered), which has been observed in the southern part of Andrews AFB.

Other Off-Base Lands: The industrial park north of Suitland Parkway and the predominantly residential landscape south of the base have not been surveyed for threatened or endangered species but are unlikely to provide habitat for such species.

3.3.4 Wetlands

Andrews AFB: Wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3). Approximately 104 acres of wetlands (and other waters of the United States such as stream channels, ponds, and lakes) were delineated on Andrews AFB using U.S. Army Corps of Engineers (COE) wetland delineation methodology (Environmental Laboratory, 1987) in 1996. Figure 38 depicts those areas on Andrews AFB that have been delineated as wetlands. These areas include several low-lying, mostly grassy areas and drainage ditches within the airfield, including an area directly south of the West Runway; a small forested wetland bordering the ponds near the Belle Chance house northwest of the airfield; narrow wetlands bordering stream channels near the perimeter of the base; and various other small occurrences. A broad zone of forested wetlands more than 200 feet in width borders the channel of Piscataway Creek south of South Perimeter Road.

Suitland Parkway: Figure 39 depicts a wetland delineation that was conducted in 1997 using the COE wetland delineation methodology (Environmental Laboratory, 1987) for the Suitland Parkway corridor north of the base and for forested areas in the industrial park to the north. Narrow zones of Palustrine Forested wetlands border the headwaters of Hensen Creek and several small patches of Palustrine Forested wetlands occur elsewhere within the Parkway corridor. Some of the trees in the forested wetlands lining the Hensen Creek channel have been killed due to flooding caused by beavers.

Figure 3-8

Figure 3-9

Other Off-Base Lands: Other than that part of the Penn-Belt Industrial Park directly adjoining Suitland Parkway, the only source of information for wetlands off of the base is the National Wetlands Inventory (NWI). Figure 3-10 depicts NWI map data for Andrews AFB and vicinity. The NWI map data for the base itself and for Suitland Parkway are less precise than that presented in Figures 3-8 and 3-9, respectively. However, the NWI map data indicate that there is a wide band of forested wetlands adjoining Piscataway Creek southeast of the base but few wetlands in other areas south of the base. Off-base wetlands in the vicinity of Andrews AFB may be broadly characterized as limited to narrow strips of forested wetlands adjoining stream channels.

3.3.5 Streams and Aquatic Biota

Andrews AFB: Aquatic habitat on Andrews AFB is limited to shallow headwater stream channels that have not been the subject of biological investigation. Flows are likely too low to provide habitat for large fish, but small fish and communities of benthic organisms are likely present. The quality of aquatic habitats on the base has likely been adversely affected by losses of riparian vegetation to urban and airfield development and by urban runoff.

Suitland Parkway: A survey of fish in Hensen Creek and its tributaries was conducted in the spring and summer of 1981 and reported in the comprehensive watershed management plan published in 1986 (Prince George's County, 1986a). The survey involved seining at 11 stations, seven on the main nontidal stem of Hensen Creek, three on nontidal tributaries of Hensen Creek, and one in tidal waters at the mouth of Hensen Creek (in Broad Creek, a tidal inlet of the Potomac River). A total of 35 species were observed, of which 30 were observed at nontidal stations. Most of the observed fish were shiners, minnows, and other small fish but several sport fish were observed. These included largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), white catfish (*Ictalurus catus*), yellow bullhead (*Ictalurus natalis*), and brown bullhead (*Ictalurus nebulosus*). One of the stations displaying the greatest diversity was located only about 2 miles downstream from Andrews AFB. The survey concluded that the fish population in the watershed was generally good and had not suffered significantly from human activity. However, it did note that one of the stations displaying the least diversity had been partially channelized, experienced heavy sediment accumulation, and lacked riparian tree cover.

A macroinvertebrate and physical habitat assessment was performed for Hensen Creek in 1991 and reported in a supplemental environmental impact statement published by the U.S. Department of Transportation and Washington Metropolitan Area Transit Authority in 1992 for the proposed construction of the Metro Green Line, which traverses Suitland Parkway west of the Capital Beltway. The assessment

Figure 3-10

was performed at a station on Hensen Creek within Suitland Parkway approximately 1.5 miles west of Andrews AFB. The assessment scored the station with respect to 9 parameters related to the quality of the stream channel as habitat for fish and macroinvertebrates (Table 3-5). The station was rated good or excellent for each of the parameters.

Other Off-Base Land: A biological and physical habitat assessment was completed for the Piscataway Creek watershed by Prince George's County in 1999 (Prince George's County, 1999). The assessment focused on fish and on macroinvertebrates living in the substrate of the stream. Twenty-six stream sites within the watershed were sampled. Stream site conditions were ranked on a 4-point scale using a biological integrity index (good, fair, poor, and very poor). The physical habitat assessment rated the capacity of a stream to support a variety of organisms on a 4-point scale (comparable, supporting, partially supporting, and nonsupporting). Of the sites sampled in the Piscataway Creek watershed, the majority (55 percent) were rated "poor" for fish and macroinvertebrates, and "supporting" for physical habitat quality. Many sites in the watershed were affected by sedimentation, poor substrate quality, and bank failures. Numerous housing developments were being constructed throughout the watershed at the time of the assessment.

3.3.6 Floodplains

Andrews AFB: Floodplains have not been formally mapped on Andrews AFB. The draft 2001 update to the *Andrews AFB General Plan* (USAF, 2001a) calls for delineating floodplains on the base and reserving those areas for compatible land uses such as open space and recreation. Andrews AFB lies in an area of rolling topography in the headwaters of several watersheds. Floodplains on the base are likely to be limited to narrow zones of low-lying land immediately adjacent to stream channels.

South Perimeter Road crosses the headwaters of Piscataway Creek directly south of the airfield. Flood modeling performed as part of a comprehensive watershed management plan for Piscataway Creek (Prince George's County, 1986b) showed that South Perimeter Road is susceptible to inundation by the 100-year flood. The modeling projects that a 100-year flood would inundate South Perimeter Road to a depth of 2.5 feet at the point where it crosses Piscataway Creek. The projected maximum water velocity over the road in a 100-year flood is 4.8 feet per second. The modeling also projected that a 10-year flood would inundate the road to a depth of 1.5 feet, and a 2-year flood would inundate the road to a depth of 0.7 feet.

Table 3-5

**Physical Aquatic Habitat Assessment¹
Hensen Creek at Meadowview Drive
On Suitland Parkway Approximately 1.5 Miles West of
Andrews Air Force Base²**

| Habitat Parameter | Score |
|----------------------------------|---------------|
| Bottom Substrate/Available Cover | 3 (Good) |
| Embeddedness | 3 (Good) |
| Flow Variability | 4 (Excellent) |
| Channel Alteration | 3 (Good) |
| Bottom Scouring and Deposition | 3 (Good) |
| Pool/Riffle, Run/Bend Ratio | 4 (Excellent) |
| Bank Stability | 3 (Good) |
| Bank Vegetative Stability | 3 (Good) |
| Streamside Cover | 3 (Good) |

¹Adapted from USDOT and WMATA, 1992.

²Conducted October 25, 1991

Suitland Parkway: Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency as part of the National Flood Insurance Program show that the stream channel of Hensen Creek north of Andrews AFB is bordered by lands designated as 100-year floodplain (Figure 3-11). The 100-year floodplain encompasses areas subject to inundation by a flood projected to occur once per 100 years. Areas within the 100-year floodplain are modeled to have a flooding probability of at least 0.01 in any given year.

The 100-year floodplain for Hensen Creek includes portions of the Suitland Parkway corridor north of the West Runway but does not include any land north of the East Runway. It is more than 100 feet in width north of the West Runway and encompasses the eastbound lanes of Suitland Parkway and forested areas close to the stream channel. It does not encompass the westbound lanes of Suitland Parkway and does not extend onto Andrews AFB. Flood modeling performed as part of a similar watershed management plan for Hensen Creek (Prince George's County, 1986a) projected that Suitland Parkway would experience 0.9 feet of inundation with a velocity of 2.9 feet per second during a 100-year flood.

Other Off-Base Lands: Flood Insurance Rate Maps show that the stream channel of Piscataway Creek south and southeast of the base is bordered by lands designated as 100-year floodplain (Figure 3-11). The mapped floodplain is more than 300 feet wide at the base boundary and extends southeast along the course of Piscataway Creek. The Piscataway Creek floodplain is predominantly forested close to Andrews AFB, although it includes some rural residential areas.

3.4 CULTURAL ENVIRONMENT

Issues addressed as part of the cultural environment include archaeological resources (Section 3.4.1), historic resources (Section 3.4.2), Cold War structures (Section 3.4.3), and aesthetics (Section 3.4.4).

3.4.1 Archaeological Resources

Andrews AFB: The Air Force completed a Phase II archaeological survey for Andrews AFB in 1999 (Bienenfeld and Leininger, 1999). A previous Phase I archaeological survey and consultations in 1993 with the Maryland Historic Trust (MHT), Maryland State Historic Preservation Officer (SHPO) identified six sites on the base that required further evaluation to determine eligibility for the National Register of Historic Places (NRHP). The sites are identified as 18PR443 through 18PR448 (Figure 3-12). Site 18PR447, located approximately 1,000 feet west of the northern threshold for the West Runway, constitutes the grounds surrounding the Belle Chance mansion (discussed as a historic resource in Section 3.4.2). It was investigated for possible subsurface artifacts related to Belle Chance and predecessor structures. Site 18PR448, located approximately 1,000 feet northwest of the northern

Figure 3-11

Figure 3-12

threshold for the West Runway, is a foundation to a small building in a cluster of trees just north of Belle Chance. The other investigated sites are located close to the eastern and western perimeters of Andrews AFB, away from the airfield.

Following Phase II excavation of each of the six sites, the archaeologists performing the survey concluded that Sites 18PR443 through 18PR446 and 18PR448 were not eligible for the NRHP. The survey states that the sites lack integrity and do not demonstrate a capacity to yield otherwise unobtainable information important to prehistory or history. The prehistoric component of Site 18PR447 (the Belle Chance grounds) was determined to not be eligible, but the historic component of this area adjoining the Belle Chance mansion was determined to be eligible (Bienenfeld and Leininger, 1999).

Suitland Parkway: The Air Force, in cooperation with the NPS, recently completed a Phase IA archaeological survey of that segment of the Suitland Parkway corridor potentially affected by vegetation management activities associated with one or more of the alternatives investigated in this EA. Two regionally experienced archaeologists conducted a literature review and a pedestrian survey on approximately 57 acres of land within the Parkway corridor. The report recommended Phase IB testing consisting of a grid of shallow shovel tests over approximately 27 acres of the surveyed area (JMA, 2002). The Phase IB testing and any necessary follow-on testing will be completed to the satisfaction of the MHT prior to initiation of any vegetation management work on Suitland Parkway as part of Alternatives 2 or 3 (any future rounds of “emergency” trimming to maintain Category II ILS would not have any potential to affect archaeological resources).

Other Off-Base Lands: Lands north of Suitland Parkway or south of Andrews AFB have not been the subject of an archaeological investigation. The Maryland-National Capital Park and Planning Commission (MNCPPC) recognized five archaeological sites in Prince George’s County as of 1993 (MNCPPC, 1993b). The exact locations of these sites are not available to the public but none is in the immediate vicinity of Andrews AFB.

3.4.2 Historic Resources

Andrews AFB: Structures built before 1947 on Andrews AFB were evaluated in 1996 to determine whether they meet the eligibility criteria for inclusion on the NRHP (COE, 1996). Only two sites on Andrews AFB, both containing structures predating establishment of Andrews AFB, were found to meet the eligibility criteria. One site is Belle Chance, a country estate and outbuildings constructed in 1912 on the site of previous residences dating to the 17th century. The estate is located just northeast of the airfield in a wooded setting only about 1,400 feet west from the north threshold of the West Runway. The Air Force maintains the rural setting of the estate and uses the main house as a residence for a high-

ranking officer. Although determined to be eligible for the NRHP, Belle Change has not yet been actually listed on the NRHP. It is, however, listed as a County Historical Site by the Prince George's County Historic Preservation Commission (MNCPPC, 1992).

The other site is Chapel II (the Forest Grove Methodist Episcopal Church), located on Fetchet Avenue near the eastern perimeter of the base, approximately 2,700 feet east of the East Runway. It is a one-story frame structure described as a good example of Gothic Revival ecclesiastical architecture. The original church building was constructed on the site in 1854 and was rebuilt from the foundation up in 1880. It was again rebuilt in 1986 by the Air Force after it was gutted by a fire. The building is surrounded by a graveyard with gravestones dating from 1874 to 1938.

Although the evaluation report (COE, 1996) concluded that Chapel II met the eligibility criteria for the NRHP, the MHT subsequently stated that the building was not eligible because the 1986 fire compromised its historic integrity. However, the chapel is identified as a County Historical Site in the *Historic Sites and District Plan* for Prince George's County (MNCPPC, 1992). The MNCPPC also identifies the former site of St. Luke's Church and cemetery on the base in the plan (MNCPPC, 1992).

No structures constructed after establishment of Andrews AFB were recommended for inclusion on the NRHP (COE, 1996). The report notes that Andrews AFB and its facilities have undergone significant changes because of changing mission requirements and improvements and that these changes have resulted in an overall loss of historic and architectural integrity. The report notes that Andrews AFB does not represent an important site in the World War II air defense system, that the base does not still contain structures with standardized World War II temporary building designs, and that a number of the early structures on the base have been removed.

Suitland Parkway: Suitland Parkway was added to the NRHP in 1995 (NPS, 2001; Cole, 1997). It is not mentioned in the *Historic Sites and District Plan* for Prince George's County because that plan was completed before 1995. It was included on the NRHP because of its contribution to the system of parkways developed in the Washington, DC region in the first half of the 20th century and because of its landscape architecture and rural scenery (NPS, undated; NPS, 2001).

Two of the forest stands on the affected segment of Suitland Parkway (Stands 7 and 10) are estimated to be between 67 to 71 years old (Table 3-2) and to have been present during the construction of the Parkway. The preservation of at least a portion of these historic stands is necessary to retain the feeling of a mature canopy that is part of the historic character of the Parkway. Likewise, Stand 5, with an estimated age of 52 years, contains trees that were present during construction of the Parkway. The NPS has managed the Parkway for the character established in the 1940s. The NRHP nomination form

states, "Landscaping along the Parkway corridor commanded attention from the beginning. Journalists reporting the opening noted how the scenery was enhanced because larger trees were left standing in the medians, grass was planted after topsoil dressing on cuts and fills, and developments were screened where necessary to present a rural-like setting."

Before the Parkway was constructed in the 1940s the area adjacent to what is now Andrews AFB was agricultural property. The Parkway designers used the existing woodlands to enhance the scenic value and character of the roadway shoulders and medians. It is not known if other trees or shrubs were added to supplement the existing vegetation. When the Parkway opened in 1944 only the eastbound lanes ("A road") were paved, leaving the westbound lanes ("B road") only graded. The B road was made available for use as a trail for hiking/pedestrian and horseback riding until funds could be secured to finish paving it. Even though the paving was not complete for the westbound lanes until the 1990's, the character of the median, shoulders and alignment was set.

Since 1949 the NPS has managed the shoulders and median of the parkway to allow native stands of trees and shrubs to grow, screening adjacent development to limit negative views along the Parkway corridor. During the 1990s the NPS further enhanced the edges of the woodlands by planting additional native flowering trees and shrubs.

The MHT has recommended in the past that the tree density and height along the Parkway remain undisturbed. The objectives of the NPS are to minimize the damage to trees and to preserve the cultural and natural landscape of the Parkway. The objectives of the Air Force are to preserve flight safety at Andrews AFB. The MHT in recognition of the importance of both agencies' missions is working with the Air Force and NPS to prepare a vegetation management plan that allows for an obstruction free airspace as well as preserves that historic landscape character along the Suitland Parkway. The Air Force, NPS, MHT, and Advisory Council on Historic Preservation are preparing a Programmatic Agreement to guide the preparation and implementation of the vegetation management plan.

Other Off-Base Lands: The MNCPPC does not identify any off-base historic sites within 0.5 mile of the northern perimeter of Andrews AFB. The only historic site identified within 0.5 mile of the southern perimeter of the base is the Marshall Walters House. This site is located in a rural residential area approximately 0.5 mile southeast from the southeast corner of the base (MNCPPC, 1992).

3.4.3 Cold War Structures

Andrews AFB: A report completed in October 1996 evaluated structures on Andrews AFB for exceptional historic significance from association with the Cold War era (1946-1989) (AMC, 1996). Structures less

than 50 years old that meet criteria for exceptional historic significance from association with a significant historic event, such as the Cold War, may still qualify for inclusion on the NRHP. Twenty-eight structures with potentially Cold War significance were evaluated. None had been previously listed on or formally evaluated for the NRHP. Only one of the structures, Building 3032 (Hangar 17), an Air National Guard (ANG) alert hangar, was found during the evaluation to be potentially eligible for inclusion on the NRHP because of Cold War significance. Following additional investigation and documentation, Building 3032 was subsequently razed.

Suitland Parkway: Suitland Parkway was in use throughout the Cold War, but its listing on the NRHP does not derive from affiliation with the Cold War.

Other Off-Base Lands: There are no military installations with structures dating from the Cold War structures within a one-mile radius of Andrews AFB.

3.4.4 Aesthetics

Andrews AFB: The aesthetic character of Andrews AFB is predominantly urban. Natural landscapes are limited to small areas of forest cover near the perimeter of the base. Most open spaces outside of the airfield are landscaped with regularly mowed turf and scattered amenity trees and hedges of ornamental shrubs. Most flight line buildings and industrial buildings are utilitarian in appearance, and areas adjoining the airfield visually resemble an airport. Many newer administrative and residential buildings have been designed to be aesthetically pleasing. An architectural compatibility guide has been developed for Andrews AFB to promote uniformity and visual compatibility of future construction and renovation projects on the base (USAF, 1996).

Of particular importance is maintaining and enhancing the aesthetic quality of the National Executive Route, which follows portions of Arnold Avenue and Westover Drive and exits the base at the Main Gate (see Figure 3-3). The National Executive Route connects the aircraft passenger terminal to the main gate of Andrews AFB. This route provides the first or last visual impression of the base and Washington, DC region for dignitaries traveling into or out of Andrews AFB. Vehicles exiting the base via the National Executive Route may then proceed to Suitland Parkway for an aesthetically pleasing connection to downtown Washington, DC.

Suitland Parkway: Much of Suitland Parkway provides low-speed travel through a landscape of rolling hills with tall native trees, shrubs, and wildflowers (NPS, 2001). Part of the basis for Suitland Parkway's nomination to the NRHP (see Section 3.4.2) is its scenic qualities provided by mature forest and large

trees (NPS, 2001; NPS, undated). The forests bordering the segment of Suitland Parkway north of Andrews AFB generally conceal developed areas on Andrews AFB and the business park to the north.

Trees in the forests bordering that stretch of Suitland Parkway north of Andrews AFB were periodically trimmed from the 1940s to 1991 as a part of earlier efforts to manage the runways. Unlike trees in forested areas bordering other stretches of Suitland Parkway, many of the trees in the subject area have already experienced at least some trimming and no longer display a natural and aesthetically pleasing branching structure.

Other Off-Base Lands: Other than Suitland Parkway, off-base lands surrounding Andrews AFB do not possess special aesthetic attributes. As is true in most residential settings, trees in the residential areas directly south of Andrews AFB contribute to the aesthetic qualities of those areas.

3.5 PHYSICAL ENVIRONMENT

Issues addressed as part of the physical environment include climate and air quality (Section 3.5.1); surface water and groundwater (Section 3.5.2); soils, geology, and prime farmland (Section 3.5.3); noise (Section 3.5.4); and waste management (Section 3.5.5).

3.5.1 Climate and Air Quality

Andrews AFB: The climate of Andrews AFB and environs is described as humid, temperate, and semicontinental, with mild winters and generally warm and humid summers. Portions of the greater Washington, DC metropolitan area, including Andrews AFB, have been designated as nonattainment areas for ozone. Ambient air quality has not been regularly monitored at the base (IT, 1997). Currently, Andrews AFB operates under a Title V Air Permit issued by the Maryland Department of the Environment (MDE). This permit covers 60 regulated sources operated by 89 AW and includes heating plants, boilers, paint booths, and emergency generators. In addition, several tenants on Andrews AFB operate regulated sources under the authority of construction permits issued by MDE.

Suitland Parkway: The regional climate and air quality description provided above applies to the environs of Andrews AFB, including Suitland Parkway, as well as the base itself.

Other Off-Base Lands: The regional climate and air quality description provided above applies to the environs of Andrews AFB as well as the base itself.

3.5.2 Surface Water and Groundwater

Andrews AFB: Andrews AFB is located on the drainage divide separating the watersheds of the Potomac River and the Patuxent River (IT, 1997; USAF, 1996, 2001a). Both rivers flow to the Chesapeake Bay. Cabin Branch and Charles Branch, two small streams that ultimately drain to the Patuxent River, originate as headwaters in the northeastern part of the base. The remainder of the base drains into the Potomac River.

The southern part of the base drains into Piscataway Creek. Piscataway Creek originates on the base in the southern part of the airfield and flows south for approximately 20 miles to its confluence with the Potomac River. The central and southeastern parts of the base drain directly into the headwaters of Piscataway Creek, while the southwestern part of the base drains into the headwaters of Tinkers Creek, a major tributary that flows into Piscataway Creek a few miles upstream from the Potomac River (Prince George's County, 1986b). The northeastern part of the base drains into Hensen Creek. Hensen Creek originates just north of Andrews AFB, crosses Suitland Parkway near the Capital Beltway, and flows southwesterly for approximately 11.5 miles and enters into the Potomac River (Prince George's County, 1986a).

Groundwater within the surficial/water table aquifer is under unconfined conditions throughout the base, with depth to groundwater ranging from less than 10 feet to greater than 20 feet below ground surface (bgs) (IT, 1997).

Suitland Parkway: Surface water within the Suitland Parkway corridor north of Andrews AFB is limited to the channel of Hensen Creek (less than 10 feet in width) plus drainage ditches that parallel the road surfaces of the parkway. Most of the right-of-way north of Andrews AFB drains westward into Hensen Creek, which flows southwesterly for approximately 11.5 miles before entering the Potomac River. The easternmost part of the right-of-way, near the Andrews AFB North Gate (see Figure 3-3), drains eastward into Cabin Branch, a tributary of the Patuxent River.

Other Off-Base Lands: Off-base lands north of the airfield drain into Hensen Creek and off-base lands south of the airfield drain into Piscataway Creek (Prince George's County, 1986a, 1986b). The headwaters of Hensen Creek originate in a remnant area of forest vegetation within the Penn Belt Industrial Park north of Suitland Parkway. Piscataway Creek flows southeastward from the base through a largely undeveloped floodplain and stream valley. There are no streams or other surface water features in the residential areas directly south of the base, in the vicinity of Old Alexandria Ferry Road.

3.5.3 Soils, Geology, and Prime Farmland

Andrews AFB: Andrews AFB is located near the western margin of the Coastal Plain physiographic province. Coastal Plain land surfaces are typically level upland plateaus interspersed among gently rolling hills. Elevations in the vicinity of Andrews AFB range from approximately 215 to 280 feet above mean sea level (msl). Areas of maximum relief are the result of stream channel incision. Coastal Plain sediments in Maryland consist of unconsolidated sands, silts, and clays that, in the vicinity of Andrews AFB, are approximately 1,300 feet thick. Surface sediments may be characterized as gravel and sand grading upward to silt and fine sands (IT, 1997).

The U.S. Department of Agriculture Soil Conservation Service (SCS) mapped three soil associations have been mapped on Andrews AFB. Most of the northern part of the base is mapped in the Beltsville-Leonardtown-Chillum association, characterized by moderately deep, well-drained to poorly drained, dominantly gently sloping soils that have a compact subsoil or substratum. Most of the southern part of the base is mapped in Sassafras-Croom association, characterized by gently sloping to steep, well-drained, dominantly gravelly soils, some with a compact subsoil and substratum. Small areas near the eastern perimeter are mapped in the Westphalia-Evesboro-Sassafras association, characterized by deep, well-drained to excessively drained soils of uplands that are mostly moderately sloping to steep (SCS, 1966).

The SCS completed a detailed soil survey of Andrews AFB in 1974 (SCS, 1974). Soils on most of the airfield and base lands north and south of the airfield are mapped as Udorthents, defined as soils that have been altered by cutting, filling, or urban development. Soils throughout the airfield were graded during construction of the runways, taxiways, and overrun surfaces. Most soils south of the airfield constitute cuts and fills associated with the two abandoned landfills discussed in Section 3.5.5 and construction of South Perimeter Road, Base Lake, a series of borrow pits, and (more recently) an extension to the base golf course. Soils in the narrow floodplain bordering the channel of Piscataway Creek (see Section 3.3.6) are mapped as luka fine sandy loam, a soil mapping area known to contain inclusions of poorly drained hydric soils.

Prime farmland, which is regulated under the Farmland Protection Policy Act, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Most soils on Andrews AFB have been substantially altered by cutting and filling to construct the airfield and other developed areas and therefore do not constitute prime farmland. The soil survey maps small areas of soil in the golf course, near Belle Chance, and in other less densely developed areas on Andrews AFB in soil mapping units designated by the SCS as prime

farmland soils (SCS, 1985). However, the small size of these areas and their position among dense urban development precludes economically viable agricultural use.

Suitland Parkway: Soils within the Suitland Parkway corridor north of Andrews AFB are mapped in the Beltsville-Leonardtown-Chillum association. Specific soils mapped by the SCS in the subject area of the right-of-way include various phases of the Sassafras, Matapeake, Westphalia, and Bibb series. An area of the right-of-way directly north of the West Runway is mapped as Bibb silt loam, which is listed by the SCS as a hydric soil (SCS, 1986). The area of Bibb silt loam generally corresponds to an area of wetlands bordering the channel of Hensen Creek (see Section 3.3.4). Most of the soils in the right-of-way are either too steep or too poorly drained to constitute prime farmland.

Other Off-Base Lands: Soils directly north of Andrews AFB are mapped in the Beltsville-Leonardtown-Chillum association. Most soils in the industrial park are mapped in the Matapeake, Beltsville, Sassafras, and Westphalia soil series. No soils in these series are on the list of hydric soils for Prince George's County, although the SCS notes that small or narrow inclusions of hydric soil may exist in these areas (SCS, 1986).

Soils directly south of the airfield are mapped in the Sassafras-Croom association. Most soils in that area are mapped in the Beltsville and Sassafras soil series. Two large areas south and east of the base are mapped as gravel pits. No soils in these series are on the list of hydric soils for Prince George's County, although unresolved inclusions of hydric soil may occur. Low areas in the floodplain of Piscataway Creek are mapped as Bibb silt loam and narrow areas adjoining other stream channels are mapped as Fallsington sandy loam. Both of these soil series are hydric (SCS, 1966, 1986).

Certain relatively level and well-drained areas north and south of the base are mapped as prime farmland soils. Most of these areas are mapped in the Matapeake, Sassafras, and Westphalia soil series (SCS, 1966, 1985). However, urban development in areas close to the base precludes economically viable agricultural use of most of these areas.

3.5.4 Noise

Andrews AFB: Figure 313 illustrates noise zones resulting from average busy-day flight operations at Andrews AFB in 1997 (the most recent year for which data are published). Each noise zone is defined by contours representing day-night average sound levels (DNLs) calculated and plotted using NOISEMAP 6.5 software. Most of the central part of the base, including the airfield, flightlines, Base Lake Recreation

Figure 3-13

Area, eastern extension of the golf course, and some of the administrative areas in the eastern part of the base, lie within the 80+ decibel (dB) DNL or the 75-80 dB DNL noise zones. The remainder of the eastern part of the base and areas close to the western flightline lie within the 65-75dB DNL noise zone. Noise zones associated with Andrews AFB are generally asymmetrical, reflecting higher noise levels east of the runways because of the greater number of closed pattern flight operations conducted over the more rural landscape east of the base (89 AW, 1998).

Suitland Parkway: Segments of the Suitland Parkway corridor directly north of the runways lie within the 80+ dB DNL noise zone. Most of the remainder of the right-of-way north of the base lies within the 75-80 dB DNL noise zone. Parks and land uses devoted to outdoor recreation are generally not compatible in the 75-80 dB DNL noise zone or higher (89 AW, 1998). However, that part of the Suitland Parkway corridor north of Andrews AFB serves primarily to provide a scenic driving experience and does not include noise-sensitive recreational facilities such as trails, picnic tables, or ballfields.

Other Off-Base Lands: Table 3-6 quantifies off-base land uses within the 65-70 dB DNL or higher noise zones associated with Andrews AFB. As a general rule, residential land uses are incompatible in the 65-70 dB DNL noise zone or higher, public and quasi-public land uses such as schools and churches are incompatible in the 70-75 dB DNL noise zone or higher, recreational land uses are incompatible in the 75-80 dB DNL noise zone or higher, and commercial and industrial land uses are incompatible in the 80+ dB DNL noise zone. Most of the Penn Belt Industrial Park north of Suitland Parkway is therefore compatible with noise levels generated by Andrews AFB operations, but some portions closest to Suitland Parkway are not. However, large areas of residential development north of the industrial park, south of the base, and east of the base are not compatible.

3.5.5 Waste Management

Andrews AFB: Andrews AFB is a large quantity generator of hazardous waste permitted under the Resource Conservation and Recovery Act (RCRA). In the biennial reporting year of 2001, the Air Force reported generating approximately 31,808 pounds of hazardous waste regulated under RCRA (Franz, 2002). The 89th Civil Engineering Squadron Environmental Flight is responsible for compliance with the base's RCRA permit.

The Environmental Flight also manages a program for collecting, handling, and disposing of solid waste generated on the base (including construction debris). Solid waste generated on the base is collected and hauled by a contractor to commercial landfills in Prince George's County. From January through

Table 3-6

**Existing Generalized Off-Base Land Use in Noise Zones¹
Andrews Air Force Base**

| Noise Zone (dB DNL) ² | Acreage in Land Use Category | | | | | | |
|-------------------------------------|------------------------------|------------|------------|--|--------------|--|-------|
| | Residential ³ | Commercial | Industrial | Public/ Quasi- Public ⁴ | Recreational | Open/ Agricultural/ Low Density ⁵ | Total |
| 65-70 | 1,442 | 73 | 141 | 306 | 298 | 3,478 | 5,738 |
| 70-75 | 482 | 41 | 149 | 32 | 21 | 642 | 1,367 |
| 75-80 | 79 | 24 | 141 | 9 | 0 | 121 | 374 |
| 80+ | 0 | 0 | 17 | 0 | 0 | 8 | 25 |
| Total | 2003 | 138 | 448 | 347 | 319 | 4,249 | 7,504 |
| Total Incompatible | 2003 | 0 | 17 | 41 | 0 | 0 | 2,061 |

¹Source: Modified from Table 5-1 in Air Installation Compatible Use Zone (AICUZ) Study prepared for Andrews Air Force Base in 1998 (89 AW, 1998).

²Day-Night Average Sound Levels in decibels.

³Density greater than one dwelling unit per acre.

⁴Includes military grounds (other than Andrews Air Force Base), public buildings, schools, churches, cemeteries, and hospitals.

⁵Includes undeveloped areas, agricultural and grazing lands, and residential areas with a density less than one dwelling unit per acre.

August 1996, 5,185 tons of solid waste were generated on Andrews AFB. This total includes 487 tons of construction debris (USAF, 1996; Labat, 1997). Two permitted incinerators on the base are used for disposal of medical waste, classified waste, and waste from foreign flights (USAF, 1996).

Andrews AFB was formally added to the National Priorities List (NPL) in June 1999. Several sources of contamination are located in areas of the base that drain to Piscataway Creek, a tributary to the Potomac River. Lead and numerous semivolatile organic compounds have been detected at substantially elevated concentrations in Piscataway Creek, possibly threatening downstream wetlands and fisheries (USEPA, 2000).

The Environmental Restoration Program (ERP), formally known as the Installation Restoration Program (IRP) and referred to as such throughout the EA, was established by the DoD to protect human health and the environment by addressing sites where past activities led to releases of hazardous substances to the environment. These sites are addressed based on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as well as the National Oil and Hazardous Substances Contingency Plan (NPC).

Andrews AFB is responsible for 22 IRP Sites and 11 Areas of Concern (AOCs) on the base and on remote sites located in Brandywine and Davidsonville, Maryland. Numerous cleanup actions have taken place at Andrews AFB, including the removal of hundreds of underground storage tanks, installation of groundwater treatment systems at key locations, and removal of residual waste from areas to decrease the risk to human health and the environment.

Andrews AFB was formally added to the National Priorities List (NPL) by the USEPA in June 1999. The CERCLA sites are managed under the Partnering Program set up as a result of USEPA placing Andrews AFB on the NPL. Some AOCs will likely be regulated under the CERCLA Program. Additionally, petroleum sites exempted from regulation under CERCLA are delegated by USEPA to the State of Maryland for management under the RCRA Program. Petroleum sites that contain petroleum releases are managed by the MDE Waste Management Administration (Oil Control Program).

Most of the IRP sites and AOCs are located in the developed areas east and west of the airfield. The fire training areas are located along the sides of the airfield (Figure 3-14). One AOC, AOC 29, consists of two former sludge disposal areas located in the grassy area between the two parallel runways. Sludge from a

Figure 3-14

former on-base sewage treatment plant (since closed) was disposed in these areas during the 1960s and 1970s. One of the abandoned landfills (termed LF 06 by the IRP) is located directly south of the southern overrun surface of the West Runway, and another abandoned landfill (termed LF 07) is located directly south of the airfield in the golf course. Both landfills were used to dispose of construction debris (USAF, 1996, 2001a; 89 CES/CEVR, 2000; ES, 1985).

Suitland Parkway: Other than small quantities of landscaping waste, NPS does not routinely generate solid or hazardous waste in the operation of Suitland Parkway.

Other Off-Base Lands: The landscape north and south of Andrews AFB includes numerous commercial and light industrial properties that are registered as large or small quantity generators of hazardous waste or that have, or formerly had, underground storage tanks used to store gasoline, heating oil, or other petroleum products. In 1999, a computerized search for environmental records related to waste management was performed for lands within a 1-mile radius of the Andrews AFB perimeter. Table 3-7 is a list of each off-base property identified by the search and mapped within lands under the approach-departure surfaces (as defined in UFC 3260-01) north and south of the runways. Properties listed in Table 3-7 include service stations, warehouses and distribution centers, construction companies, convenience stores, dry cleaners, printing centers, and other enterprises typical of most older, densely developed suburban settings. Most of the 65 properties listed in Table 3-7 for lands north of the runways are located in the Penn Belt Industrial Park and other lands bounded by Pennsylvania Avenue (Maryland Route 4) and the Capital Beltway. Most of the 47 properties listed in Table 3-7 for lands south of the runways consist of strip development on Old Alexander Ferry Road.

3.6 SOCIOECONOMICS

Issues addressed as part of socioeconomics include employment (Section 3.6.1), housing (Section 3.6.2), and local services (Section 3.6.3). Prince George's County, Maryland, constitutes 487 square miles of land and 12 square miles of water surface in the Washington, DC, metropolitan area. The county population in January 2000 was 787,112. The county has experienced rapid growth in recent years, with a population growth of 10,688 between 1998 and 2000 and 58,559 between 1990 and 2000 (MNCPPC, 2000a). The population is forecast to grow to more than 940,000 by 2025 (MNCPPC, 2000b).

Table 3-7

**Environmental Records Pertaining to Hazardous Waste and Petroleum Products
Off-Base Lands near Andrews Air Force Base¹**

| Property | Address | Environmental Records² |
|--|------------------------------|--|
| Lands North of Andrews Air Force Base Airfield and Suitland Parkway | | |
| Potomac Electric Power Co. Product Ser. Ctr. | 8711 Westphalia Rd. | RCRIS-LQG |
| Production Service Center | 8711 Westphalia Rd. | UST |
| ANA Inc. | 7820 Marlboro Pike | UST |
| PG County – Forestville Bus Location | 3414 Forest Edge Road, South | FINDS |
| PG County – Police Academy | 3415 Forest Edge Road | FINDS |
| Marlo Furniture | 7801 Marlboro Pike | LUST |
| Marlo Furniture | 7801 Marlboro Pike | UST |
| N & N Construction | 8500 Westphalia Road | FINDS |
| Crocker's Auto Service Center | 8405 Westphalia Road | UST |
| Miller & Long Maintenance Yard | 8415 Westphalia Road | FINDS |
| Miller & Long, Inc. | 8415 Westphalia Road | UST |
| Kelly Electrical Construction | 8421 Westphalia Road | FINDS |
| Berkshire Elementary School | 7699 Forestville Road | FINDS |
| Forestville Barrack L | 3500 Forestville Road | UST |
| MD State Police Barrack L | 3500 Forestville Road | RCRIS-SQG, FINDS |
| Westland Enterprises | 3621 Steward Road | FINDS |
| Shell – 3617 Forestville Road | 3617 Forestville Road | FINDS |
| Forestville Shell Servicenter | 3617 Forestville Road | UST |
| Murray's Incorporated | 8300 Pennsylvania Avenue | UST |
| Entwistle's Concrete Block, Inc. | 3709 Forestville Road | UST |
| Entwistle's Concrete Block | 3709 Forestville Road | FINDS |
| Forestville Service Center | 8300 Old Marlboro Road | UST |
| Potomac Electric Power Company Forestville | 8300 Old Marlboro Pike | FINDS, RCRIS-LQG |
| Tower Printing Services Inc. | 8329 Old Marlboro Pike | RCRIS-LQG, FINDS |
| District Moving | 3850 Penn Belt Place | FINDS |
| District Moving & Storage, Inc. | 3850 Penn Belt Place | UST |
| Flippo Construction Co., Inc. | 3820 Penn Belt Place | RCRIS-SQG |
| Flippo Construction Co., Inc. | 3820 Penn Belt Place | UST |
| Flippo Construction | 3820 Penn Belt Place | FINDS |
| R. M. P. National | 7620 Penn Belt Drive | UST |
| Ionpure Tech. Corp. | 7600 Penn Belt Drive | FINDS |
| Baker & Kerr | 8151 Penn Randall Place | RCRIS-SQG, FINDS |
| Medallion Security Door & Wind | 8181 Penn Randall Place | FINDS |
| Murray's Steaks | 8210 Penn Randall Place | FINDS |
| Goodyear Tire & Rubber Company | 7700 Penn Belt Drive | FINDS |
| Pepsi-Cola Company | 3900 Penn Belt Place | UST |
| Penn Belt Place, 3900 | 3900 Penn Belt Place | FINDS |
| Emory Worldwide | 7910 Penn Randall Place | FINDS |
| AW Steven & Sons Disposal Systems | 7910 Penn Randall Place | RCRIS-SQG, FINDS |
| A. W. Steven & Son | 7910 Penn Randall Place | UST |
| IPI Graphics | 7925 Penn Randall Place | FINDS, RCRIS-LQG |
| H. R. E. Automotive, Inc. | 7943 Penn Randall Place | RCRIS-SQG, FINDS |
| McQuay Service | 7937 A Penn Randall Place | RCRIS-SQG, FINDS |

Table 3-7

**Environmental Records Pertaining to Hazardous Waste and Petroleum Products
Off-Base Lands near Andrews Air Force Base¹ (Continued)**

| Property | Address | Environmental Records² |
|---|------------------------------------|--|
| Forestville Auto Body | 7960 Penn Randall Road | RCRIS-SQG, FINDS |
| 7979 Penn Randall Place | 7979 Penn Randall Place | ERNS |
| 7979 Penn Randall Place | 7979 Penn Randall Place | ERNS |
| Church of Jesus Christ of Latter Day Saints | 7979 Penn Randall Place | FINDS |
| Quarles | 8331 Old Marlboro Pike | FINDS |
| Gilbert's Service Station | 8331 Old Marlboro Pike | UST |
| Diehl Signs | 8325 Old Marlboro Pike | FINDS |
| Forestville VFD – Company 23 | 8321 Old Marlboro Pike | UST |
| PG County Fire Co. #23 | 8321 Old Marlboro Pike | LUST |
| Beltway Movers | 4020 Penn Belt Place | FINDS |
| Beltway Movers, Inc. | 4020 Penn Belt Place | UST |
| Hertz Equipment Rental Corp. | 4017 Penn Belt Place | UST |
| Loomis Armored, Inc. | 4000 Penn Belt Place | UST |
| District Lithograph | 4000 Penn Belt Place | FINDS |
| Arrow Comm. Ping. Centers Inc. | 8302 Grey Eagle Drive | UST |
| A. W. Steven & Sons Disposal | 8215 Grey Eagle Drive | FINDS |
| Washington Gas | 4000 Forestville Road | LUST |
| Southeast Station | 4000 Forestville Road | UST |
| PEPCO Forestville Service Center | 8400 Old Marlboro Pike | FINDS |
| Maaco Auto Paint & Bodyworks | 8411 Old Marlboro Pike | RCRIS-SQG, FINDS |
| U-Haul Center of Allentown | 4599 Allentown Road | UST |
| Classic III Supper Club | 4591 Allentown Road | UST |
| Lands South of Andrews Air Force Base Airfield | | |
| Mills, James E. Jr. & Sue V. | 7424 Old Alexander Ferry Road | UST |
| Visions Ink | 7451 Old Alexander Ferry Road | FINDS |
| Apex Plumbing & Heating, C/O M | 7516 Old Alexander Ferry Road | FINDS |
| Diehl & Morauer | 7508-7532 Old Alexander Ferry Road | UST |
| Jowett | 7077 Delano Drive | UST |
| A. B. & W. Roofing | 7601 Poplar Hill Lane | UST |
| Delano Drive Warehouses | 7701-7703-7705 Delano Drive | UST |
| Toole, Toole, & Elrod | 7610 Old Alexander Ferry Road | UST |
| D & D Copier | 7709 Delano Drive | UST |
| Phillips Automotive | 7711 Delano Drive | UST |
| J. A. Optronics | 7713 Delano Drive | UST |
| Resurrection Cemetery | 8000 Woodyard Road | UST |
| Maryland Garage Doors | 7730 Old Alexander Ferry Road | UST |
| Deere Signs | 7728 Old Alexander Ferry Road | UST |
| Computerland | 7726 Old Alexander Ferry Road | UST |
| All-Pro, Inc. | 7724 Old Alexander Ferry Road | UST |
| All-Pro, Inc. | 7722 Old Alexander Ferry Road | UST |
| Morris Blacksmith | 7720 Old Alexander Ferry Road | UST |
| Clinton Awning Co. | 7716 Old Alexander Ferry Road | UST |
| Beach Bros Auto Body Inc. | 7710 Old Alexander Ferry Road | RCRIS-SQG |
| Mid-Atlantic Waste Systems | 7700 Old Alexander Ferry Road | UST |

Table 3-7

**Environmental Records Pertaining to Hazardous Waste and Petroleum Products
Off-Base Lands near Andrews Air Force Base¹ (Continued)**

| Property | Address | Environmental Records² |
|--------------------------------------|-------------------------------|--|
| Steve's Auto Body | 7700 Old Alexander Ferry Road | FINDS |
| General Sheet Metal Fabricator | 8044 Old Alexander Ferry Road | FINDS |
| Parco. Inc. | 8040 Old Alexander Ferry Road | UST |
| Warder, Jerry M. | 8016 Old Alexander Ferry Road | UST |
| Hawk Welding Company, Inc. | 8018 Old Alexander Ferry Road | UST |
| Southern MD Printing & Graphics Inc. | 8008 Old Alexander Ferry Road | RCRIS-SQG, FINDS |
| Clyde Performance Engineering | 8006 Old Alexander Ferry Road | UST |
| Cycle Performance Engineer | 8006 Old Alexander Ferry Road | RCRIS-SQG, FINDS |
| Texaco – 8228 Woodyard Road | 8228 Woodyard Road | FINDS |
| Clinton Dash-in 098 | 8228 Woodyard Road | UST |
| 8208 Woodyard Rd | 8208 Woodyard Road | HMIRS |
| Jones Texaco SMN 305 | 8102 Old Alexander Ferry Road | UST |
| Mobil Oil Corp. SS #HY4 | 8301 Woodyard Road | RCRIS-SQG, UST |
| Clinton Mobil | 8301 Woodyard Road | FINDS |
| Tanglewood Special Education | 8333 Woodyard Road | UST |
| Bell Atlantic – Maryland Inc. | 8424 Woodyard Road | RCRIS-SQG, FINDS |
| Clinton Wire Center (01009) | 8505 Woodyard Road | UST |
| Tanglewood Elementary School | 8622 Woodyard Road | FINDS |
| Clinton Baptist Church | 8701 Woodyard Road | UST |
| Kmart #7282 | 8827 Woodyard Road | UST |
| Kmart #7282 | 8827 Woodyard Road | RCRIS-SQG, FINDS |
| Coyles Cleaners | 8818 Woodyard Road | RCRIS-SQG, FINDS |
| SMO Texaco | 8810 Woodyard Road | LUST |
| EPG 097 | 8810 Woodyard Road | UST |
| Clinton Park Cleaners | 8809 Woodyard Road | RCRIS-SQG |
| Clinton Park Cleaners | 8809 Woodyard Road | FINDS |

¹Source: *The EDR Area Study Report, Inquiry Number 366602.1s, Andrews Air Force Base, Maryland* (EDR, 1999). Report lists all environmental records within a 1-mile radius of the perimeter of Andrews Air Force Base. Table 3-8 lists only records for those properties within a 1-mile radius of Andrews Air Force Base and mapped by EDR within ground areas under the 50H:1V approach-departure surfaces for the Andrews Air Force Base runways.

²Codes for environmental records:

- ERNS - Emergency Response Notification System
- FINDS - Facility Index System
- HMIRS - Hazardous Materials Incident Report System
- LQG - large quantity generator
- LUST - leaking underground storage tank
- RCRIS - Resource Conservation and Recovery Information System
- SQG - small quantity generator
- UST - underground storage tank (registered)

3.6.1 Employment

Andrews AFB: Andrews AFB is a major source of employment in Prince George's County. Table 38 summarizes military and civilian employment at Andrews AFB for Fiscal Year (FY) 1996. At that time, the installation employed 13,490 appropriated fund military personnel, 2,201 appropriated fund civilian personnel, and 1,292 non-appropriated fund contract civilians and employees of on-base private businesses such as the credit union (89 AW, 1998). The total Andrews AFB workforce is currently reported as 16,983 persons. The base was responsible for \$116 million in contract obligations in Fiscal Year (FY) 1998. Military salaries at the base were \$327 million in FY 1998 and civilian salaries were \$97 million (USAF, 2001b).

Suitland Parkway: The NACE unit of the NPS employs a staff of approximately 200 persons. In addition to Suitland Parkway, the staff administers and maintains several NPS facilities in the Washington, DC, metropolitan area, including the Baltimore-Washington Parkway, Greenbelt Park, Anacostia Park, Kenilworth Aquatic Gardens, Fort Circle Parks, Oxon Run Parkway, Oxon Run Park, Harmony Hall, Fort Washington Park, and Piscataway Park.

Other Off-Base Land: According to the Maryland Department of Labor, Licensing, and Regulation, Office of Labor Market Analysis and Information, the civilian labor force in Prince George's County was 461,699 in the third quarter of 2000. The unemployment rate at that time was 3.5 percent. The largest sources of civilian employment in the county are in the service, trade, and government sectors (MNCPPC, 2000a).

Some of the largest civilian employers in the county include (MNCPPC, 2000c):

- Prince George's County Board of Education (15,904 employees),
- University of Maryland (10,885 employees),
- Giant Food, Inc. (5,761 employees),
- Prince George's County Government (5,732 employees),
- U.S. Bureau of the Census (4,423 employees),
- U.S. Postal Service (4,218 employees),
- U.S. Internal Revenue Service (3,500 employees), and
- National Aeronautics and Space Administration (NASA) Goddard Space Flight Center (3,354 employees).

Table 3-8

Andrews Air Force Base Personnel in Fiscal Year 1996¹

| Classification | Residence | | Total |
|--|--------------|---------------|---------------|
| | On-Base | Off-Base | |
| Appropriated Fund Military | | | |
| Active Duty | 2,582 | 4,723 | 7,305 |
| Air Force Reserve/Air National Guard | 98 | 3,903 | 4,001 |
| Non-Extended Active Duty Reserve/Air National Guard | 0 | 1,308 | 1,308 |
| Trainees/Cadets | 268 | 608 | 876 |
| Subtotal | 2,948 | 10,542 | 13,490 |
| Appropriated Fund Civilians | | | |
| General Schedule | | | 1,539 |
| Federal Wage Board | | | 563 |
| Other | | | 99 |
| <i>Subtotal</i> | | | 2,201 |
| Non-Appropriated Fund Contract Civilians and Private Business | | | |
| Civilian Non-Appropriated Fund | | | 705 |
| Civilian Base Exchange | | | 527 |
| Private Business Employees: Branch Banks and Credit Union | | | 60 |
| Subtotal | | | 1,292 |
| Grand Total | | | 16,983 |

¹Source: Modified from Table 2-4 in Air Installation Compatible Use Zone (AICUZ) Study prepared for Andrews Air Force Base in 1998 (89AW, 1998). Data on active duty military dependents included in the original table are not included in this modified table.

3.6.2 Housing

Andrews AFB: Andrews AFB provides on-base housing only for military personnel and their families. Approximately 7,000 military personnel and their dependents reside on-base (89 AW, 1998).

Suitland Parkway: Suitland Parkway does not include any housing units.

Other Off-Base Land: Prince George's County included 303,611 dwellings as of 2000, including 195,472 single-family dwellings and 108,139 multifamily dwellings. The median price for existing single family home sales in the second quarter of 2000 was \$138,800 (MNCPPC, 2000a). The number of dwellings is expected to grow to 383,531 by 2025 (MNCPPC, 2000b).

3.7 CHAPTER 3 REFERENCES

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4.0 ENVIRONMENTAL CONSEQUENCES

The following section describes the potential environmental consequences from each of the alternatives presented in Section 2.0. The baseline environmental conditions in areas affected by each alternative are described in Section 3.0. The discussion of environmental consequences provided below addresses adverse and beneficial direct, indirect, and cumulative impacts for each environmental resource potentially affected by one or more of the alternatives. The discussion for each environmental resource concludes with a consideration of possible mitigation measures. Selection of environmental resource areas for analysis followed a public scoping meeting on February 6, 2001.

4.1 INTRODUCTION

Separate sections address land use and infrastructure (Section 4.2), the biological environment (Section 4.3), the cultural environment (Section 4.4), the physical environment (Section 4.5), and socioeconomics (Section 4.6), cumulative impacts (Section 4.7).

4.2 LAND USE AND INFRASTRUCTURE

Issues addressed as part of land use and infrastructure include land use (Section 4.2.1), flight operations (Section 4.2.2), vehicular transportation (Section 4.2.3), and utilities (Section 4.2.4).

4.2.1 Land Use

Section 4.2.1 addresses the potential for land use conflicts (except as related to aviation safety and noise) resulting from each alternative. The potential for land use conflicts related to aviation safety planning zones defined in Unified Facilities Criteria (UFC) 3-260-01 and Federal Aviation Regulations (FAR) Part 77 (Clear Zones and Accident Potential Zones) is discussed in Section 4.2.2. The potential for land use conflicts related to aviation noise zones is discussed in Section 4.5.4. None of the alternatives would involve changes to existing land uses on Andrews Air Force Base (AFB), Suitland Parkway, and other off-base land even though Alternatives 2 and 3 would involve permanent changes to vegetation. None of the alternatives would conflict with current land use policies or with anticipated future land use changes.

Alternative 1

No land use changes or conflicts on Andrews AFB, Suitland Parkway, or other off-base land would occur as a result of Alternative 1. Trimming occasional trees to preserve Category II ILS would not affect existing land uses or limit future land use options in any area.

Alternative 2

Andrews AFB: No land use changes or conflicts would occur as a result of Alternative 2. Alternative 2 is limited to tree trimming, tree removal, and other modifications to vegetation. Although the vegetation changes would be considerably more extensive than under Alternative 1, none of these activities would conflict with existing land uses, future land uses, or any of the capital improvement projects identified in the 2001 update to the *Base General Plan* (U.S. Air Force, 2001).

Approximately 15 acres of forest cover adjoining the airfield would require clearing and stump removal to eliminate trees from the primary surfaces and Clear Zone graded areas defined for the runways by UFC 3-260-01. Figure 1-7 depicts those surfaces and where forest cover has encroached. The encroaching forest cover occurs only on the north eastern edge of the airfield. The areas of encroachment have already been designated as semi-improved (as part of the airfield) in the *Base General Plan* (U.S. Air Force, 2001). Their land use would not change following the clearing of forest vegetation.

Selective tree trimming and removal under the imaginary approach-departure and transitional surfaces could affect the composition of vegetation in more than 100 acres of additional forest cover on Andrews AFB, but no land use changes would result. The exact extent of forest cover disturbance would be determined as part of a management plan prepared prior to work. Most of the affected forest cover is located in the central part of the base, directly adjoining or north and south of the airfield. Trees and patches of forest within the military housing areas in the western and eastern parts of the base (Figure 3-1) would not be affected. No trees would be affected in Yuma Park, a wooded area with nature trails that adjoins military housing in the southwestern part of the base. Several trees in the eastern part of the golf course and in the landscaped areas surrounding Base Lake (the Base Lake Recreation Area) could require trimming or removal. The appearance of those recreational facilities could be altered but it would not interfere with their use or enjoyment.

Suitland Parkway: Selective tree trimming and removal needed to manage the approach-departure surfaces extending north from the airfield would affect as much as 35 acres of forest cover on Suitland Parkway. These activities would change the appearance of the land but not alter its status as natural vegetation bordering a scenic highway. The affected land would continue to be parkland supporting

natural vegetation, even though much of the vegetation would be dominated by shrubs and low trees rather than by tall trees. The affected land does not include trails, picnic areas, campgrounds, or other recreational facilities, whose enjoyment can depend on shade from tall trees.

Other Off-Base Lands: Selective tree trimming and removal where the approach-departure surfaces extend over private land north of Suitland Parkway or south of Andrews AFB could affect as much as 40 acres of forest cover. The exact extent of forest cover disturbance would be determined as part of the management plan. Most of that forest cover consists of remnant patches within the Penn Belt Industrial Park or in undeveloped lands adjoining Piscataway Creek. These activities would not interfere with existing or reasonably foreseeable future industrial or commercial land uses. Landscaping in some residential areas south of the base could be modified as a result of selective tree trimming and/or removal, but the landscaping changes would be minor and would not substantially interfere with the use or enjoyment of residential property.

Alternative 3

Andrews AFB: No land use changes or conflicts would occur as a result of Alternative 3. Construction to extend the West Runway and its south overrun would affect only land already designated as part of the airfield and would not conflict with other land uses, with anticipated future land uses, or any of the capital improvement projects noted in the 2001 update to the *Base General Plan* (U.S. Air Force, 2001). The extension would not encroach upon any sites under investigation by the Installation Restoration Program (IRP) (see Figure 3-14 and Section 4.5.5). The extension would not require the closure or realignment of South Perimeter Road or other roads (see Section 4.2.3).

Other impacts would generally be as described for Alternative 2. The same 15 acres of forest cover that has encroached into the primary surface and Clear Zone graded area associated with the East Runway would require clearing and stump removal. As much as 2.5 acres of additional forest cover south of the West Runway would have to be cleared because of the southward shift of the Clear Zone graded area south of the runway. Selective tree trimming and removal under the imaginary approach-departure and transitional surfaces would generally affect the same areas of forest cover on the base as would Alternative 2.

Suitland Parkway: Selective tree trimming and removal needed to manage the approach-departure surfaces extending north from the airfield would affect as much as 35 acres of forest cover on Suitland Parkway. As described for Alternative 2, these activities would change the appearance of the land but not its status. The land would continue to be parkland supporting natural vegetation, even though much of that vegetation would be dominated by shrubs and low trees rather than by tall trees. There are no

trails, picnic areas, campgrounds, or other recreational facilities in the affected area. The extent of tree trimming and removal, especially removal, on Suitland Parkway would be reduced relative to Alternative 2.

Other Off-Base Lands: Selective tree trimming and removal could affect forest land north of Suitland Parkway and south of Andrews AFB, although the effects north of Suitland Parkway would be somewhat reduced relative to Alternative 2 and the effects south of Andrews AFB could be slightly increased. Similar to Alternative 2, Alternative 3 would not interfere with existing or future land uses. Landscaping in some residential areas south of the base could be modified as a result of selective tree trimming and/or removal, but the landscaping changes would be minor and would not substantially interfere with the use or enjoyment of residential property.

Mitigation

No land use changes or conflicts would result from any of the alternatives. Replacement planting efforts described below in Section 4.3.1 would reduce the aesthetic impacts to the natural setting of Suitland Parkway.

4.2.2 Flight Operations and Safety

By bringing the runways into conformance with obstruction clearance requirements established by the Air Force in UFC 3-260-01 and by the Federal Aviation Administration (FAA) in FAR Part 77, Alternatives 2 or 3 would result in a beneficial impact to flight operations and safety. Taking no action (Alternative 1) to bring the runways into conformance with obstruction clearance requirements established in UFC 3-260-01 and FAR Part 77 would constitute an adverse impact jeopardizing the ability of the 89th Airlift Wing (89 AW) and other tenants on Andrews AFB to safely conduct the aviation component of their mission.

Alternative 1

Alternative 1 would not bring the runways into conformance with obstruction clearance requirements established in UFC 3260-01 and FAR Part 77. The purpose and need described in Section 1.2 would not be satisfied. The Air Force would have to decide between issuing waivers allowing flight operations to continue despite conditions that do not meet minimum safety standards prescribed by Air Force and FAA policies or placing limitations on use of the runways by many larger aircraft, including Air Force One. Examples of such limitations could include the inability to operate certain aircraft with full fuel loads or under certain slippery runway pavement conditions. It would not be possible for Air Force One to safely transport the President to any currently capable world location without refueling, an ability that is critical to

national security. Continued growth of trees would result in increasing numbers of obstructions each year, further decreasing safety and imposing increased operational limitations. Alternative 1 would still allow for trimming trees north of the West Runway, including trees within parts of Suitland Parkway and private lands to the north, solely for the purpose of maintaining Category II instrument landing system (ILS) capabilities on the West Runway.

Alternative 2

Andrews AFB: Alternative 2 would immediately bring the runways into conformance with obstruction clearance requirements established in UFC 3260-01 and FAR Part 77. The extent of the Clear Zones and Accident Potential Zones (APZs) (shown in Figure 3-2) would remain the same. Alternative 2 would not result in land use changes within the Clear Zones or APZs. Alternative 2 would automatically ensure maintenance of Category II ILS on the West Runway.

Suitland Parkway: The Suitland Parkway corridor would continue to traverse the Clear Zones associated with the runways. Because Suitland Parkway is a highway open to public use, it constitutes an incompatible land use according to Air Force Air Installation Compatible Use Zone (AICUZ) guidelines (See Table 3-1, which lists Class B Runway Clear Zone dimensions and compatible land uses). However, this existing condition is not an impact associated with Alternative 2.

Other Off-Base Lands: Section 3.2.2 notes that much off-base land within the northern Clear Zones and within the APZs north and south of the base is occupied by land uses that are incompatible according to Air Force AICUZ guidelines (89 AW, 1998). However, this existing condition is not an impact associated with Alternative 2.

Alternative 3

Andrews AFB: Alternative 3 would bring the runways into conformance with obstruction clearance requirements established in UFC 3-260-01 and FAR Part 77. However, the time required for appropriation of military construction (MILCON) funds could be as much as five years, during which waivers allowing unsafe flight activities to continue would be necessary. An estimated six months of additional time would be needed to perform the construction. During the construction period, the West Runway would have to be temporarily closed for extended periods to accommodate construction activity. Alternative 3 would automatically ensure maintenance of Category II ILS on the West Runway.

Suitland Parkway: Despite the southward displacement of the Clear Zone for the West Runway, Suitland Parkway would continue to traverse the Clear Zones associated with both runways. Because

Suitland Parkway is a highway open to public use, it constitutes an incompatible land use according to Air Force AICUZ guidelines (89 AW, 1998). However, this existing condition is not an impact associated with Alternative 2.

Other Off-Base Lands: A beneficial impact of Alternative 3 is that it would reduce the area of privately-owned land encompassed by the Clear Zones north of Andrews AFB (Figure 41). The Clear Zones presently encompass approximately 50 acres of industrially zoned private land north of Suitland Parkway. Industrial development is an incompatible land use within Clear Zones (see Figure 41 and Table 31). Alternative 3 would shift the Clear Zones for the West Runway 500 feet to the south. The Clear Zones would no longer encompass any private land north of the base. The Clear Zone south of the West Runway would be shifted approximately 500 feet south, encompassing more of the on-base golf course but not encompassing any off-base land. The Clear Zone for the East Runway would, however, remain unchanged and still encompass approximately 45 acres of industrially zoned private land.

Mitigation

No mitigation is possible for Alternative 1 and no mitigation is necessary for any of the other alternatives. Alternatives 2 and 3 both provide the minimum level of safety specified by Air Force and FAA policies for Class B runways. Alternatives 1 or 2 would not affect the extent of the Clear Zones and APZs associated with the Andrews AFB runways or the existing land use conflicts affecting those zones. Alternative 3 would reduce the extent of off-base land affected by the Clear Zones, which is a beneficial rather than adverse impact.

4.2.3 Vehicular Transportation

None of the alternatives would substantially affect vehicular transportation. It would be necessary to briefly stage equipment and workers engaged in tree work on the sides or shoulders of Suitland Parkway and other on-base and off-base roads. However, it would not be necessary to close lanes or otherwise interfere with traffic even for brief periods.

Alternative 1

Alternative 1 would not affect vehicular transportation on Andrews AFB, Suitland Parkway, or elsewhere. Trucks, chippers, and other equipment used to trim trees as necessary to maintain Category II ILS would be briefly staged (for less than 12 days at a time) on the sides of Suitland Parkway and other roads but would not interfere with traffic flow.

Figure 4-1

Alternative 2

Andrews AFB: Alternative 2 would have little potential to affect vehicular transportation on Andrews AFB. Trucks, chippers, and other equipment used in tree work would be temporarily staged on the sides of North and South Perimeter Road and other roads on the base. The equipment is not expected to interfere with traffic flow. Temporary lane closures would not be necessary.

Suitland Parkway: Trucks and other equipment used in tree work would have to be temporarily staged on the sides and median of Suitland Parkway while working within the parkway corridor. The equipment could have to remain present for several days. Suitland Parkway is one of several roads used by commuters traveling between Prince George's County, Maryland, and Washington, DC. The visibility of workers or equipment could cause commuters to briefly reduce their speed ("rubbernecking"), creating brief periods of minor, localized congestion.

Other Off-Base Land: Equipment could have to be briefly and temporarily staged on the sides or medians of public highways such as Maryland Route 4, Old Alexandria Ferry Road, and adjacent residential streets. The equipment would not remain at any single location for more than a few days. As noted for Suitland Parkway, the visibility of workers or equipment could cause motorists to briefly reduce their speed ("rubbernecking"), creating brief periods of minor, localized congestion.

Alternative 3

Andrews AFB: Construction to extend the West Runway would not interfere with any roads presently open to vehicular traffic. Other impacts would be as described for Alternative 2.

Suitland Parkway: Trucks, chippers, and other equipment used for tree work would have to be briefly staged for several days on the sides and median of Suitland Parkway. The potential effect on traffic would be as described for Alternative 2.

Other Off-Base Land: Equipment would have to be temporarily staged on the sides or medians of public highways such as Maryland Route 4, Old Alexandria Ferry Road, and adjacent residential streets. It is unlikely that equipment would be staged at any one location for more than 2 or 3 days. The potential effect on traffic would be as described for Alternative 2.

Mitigation

To minimize disruption to traffic flow on Suitland Parkway and other arterial roadways used by commuters, equipment used in tree trimming and removal would not be set up on the Parkway during the morning or evening rush hours. If lane closures are necessary on other arterial roads such as Maryland Route 4, the closures would likewise not be scheduled during morning or evening rush hours.

4.2.4 Utilities

None of the alternatives would interfere with the operation of utilities or require substantial consumption of water, electricity, or other resources provided by utilities. Any work involving the trimming or removal of trees near overhead electric conductors would be performed by qualified line-clearance arborists, as defined in American National Standards Institute (ANSI) A300 (ANSI, 2001).

Alternative 1

Alternative 1 would not involve consumption of resources provided by utilities or interfere with the operation of any utilities serving Andrews AFB or the surrounding area.

Alternative 2

Andrews AFB: Work performed under Alternative 2 would not require substantial amounts of electricity, water, or other resources supplied by the base or by regional utilities. No utility hookups would be required. A below-ground electrical feeder crossing the midsection of the airfield, water mains crossing the northern and southern parts of the airfield, and above-ground and below-ground equipment providing lighting to the airfield would not be disturbed. Areas subject to grading (limited to approximately 15 acres adjoining the eastern part of the airfield) would be inspected for underground utilities before ground disturbance.

Suitland Parkway: Work performed under Alternative 2 would not require substantial amounts of electricity, water, or other resources supplied by the base or by regional utilities. There are no overhead electric conductors or other overhead utilities on the Suitland Parkway corridor.

Other Off-Base Land: Alternative 2 could require tree work close to overhead electric distribution lines. That work would be performed by qualified line-clearance arborists, as defined in ANSI A300 (ANSI, 2001). 89 AW would coordinate activities with local utilities before initiating any work near overhead conductors.

Alternative 3

Andrews AFB: Construction to extend the West Runway southward would require grading as much as 60 acres in the southwestern part of the airfield. As for Alternative 2, clearing approximately 15 acres of forest cover that has encroached on the eastern part of the airfield also would require grading. These areas would be inspected for underground utilities prior to grading. Work performed under Alternative 3 would not consume large quantities of electricity, water, or other resources and no utility hookups would be required.

Suitland Parkway: No work performed under Alternative 3 on Suitland Parkway would consume large amounts of electricity, water, or other resources. No work performed within the Suitland Parkway right-of-way would require special precautions related to overhead electric conductors.

Other Off-Base Land: As discussed for Alternative 2, Alternative 3 could require tree work close to overhead electric distribution lines. That work would be performed by qualified line-clearance arborists, as defined in ANSI A300 (ANSI, 2001). 89 AW would coordinate activities with local utilities before initiating any work near overhead conductors.

Mitigation

Before ground disturbance, areas subject to grading would be inspected for existing underground utilities by the 89th Airlift Wing Civil Engineering Squadron (89 CES). In the unlikely event that a utility had to temporarily disrupt service to accommodate work, the outage would be timed to minimize inconvenience. 89 AW would coordinate activities with local utilities before initiating any work near overhead conductors.

4.3 BIOLOGICAL ENVIRONMENT

Issues addressed as part of the biological environment include trees and other vegetation (Section 4.3.1), terrestrial wildlife (Section 4.3.2), threatened and endangered species (Section 4.3.3), wetlands (Section 4.3.4), streams and aquatic biota (Section 4.3.5), and floodplains (Section 4.3.6).

4.3.1 Trees and Other Vegetation

Alternatives 2 and 3 would effectively transform as much as 200 acres of forest cover on Andrews AFB, the Suitland Parkway right-of-way, and private land from dominance by tall-growing trees to dominance by shrubs and low-growing trees. Work performed on base would emphasize immediate removal of tall-

growing species under the approach-departure and transitional surfaces so that the trees can not rapidly grow back into obstructions. The 89 AW could hold a timber sale for removing trees from certain areas of land on Andrews AFB. Work performed on Suitland Parkway would be performed in cooperation with the National Park Service, National Capital Parks–East (NACE), and work performed on other off-base land would be performed in cooperation with private landowners. Work on Suitland Parkway would emphasize trimming followed by phased removal of tall-growing species, and would include replacement plantings of shrubs and low-growing trees to offset the impacts caused by removal of taller trees. All tree trimming and removal would be performed by licensed arborists, and trimming would conform to state-of-the-art pruning practices specified ANSI Standard A300 (ANSI, 2001).

Alternative 1

No trees on Andrews AFB, Suitland Parkway, or private land would be trimmed or removed for the purpose of bringing the runways into compliance with UFC 3260-01 or FAR Part 77. However, 89 AW, which has already trimmed selected trees on Suitland Parkway to maintain the Category II ILS capabilities on the West Runway, would continue to pursue future rounds of trimming for the purpose of maintaining Category II ILS capabilities even if Alternative 1 is selected. Impacts would be limited only to trimming, and not removal; and trees would only be trimmed as necessary to eliminate penetrations into the higher imaginary 34H1V surface, not penetrations into the lower 50H1V surface or other imaginary surfaces.

Alternative 2

Andrews AFB: Approximately 15 acres of deciduous forest on the eastern edge of the airfield would be cleared of trees and stumps, graded, and permanently converted to mowed grass. Figure 1-7 depicts the affected areas, which correspond to the western portion of Stand 4 (shown in Figure 3-5 and described in Table 3-2) and to three smaller patches of woody vegetation, each too small to be delineated as a “forest stand”) scattered along the eastern flight line (see Figure 1-7). It would be necessary to remove all woody vegetation from these areas to maintain the imaginary primary surface and Clear Zone graded areas associated with the East Runway in the condition required by UFC 3-260-01. The imaginary primary surface and Clear Zone graded areas associated with the West Runway are currently free of trees and other woody vegetation.

Trees would be selectively removed from more than 100 additional acres of forest on the base to provide at least 10 feet of vertical clearance below the imaginary approach-departure and transitional surfaces associated with the runways. These areas include roughly 30 acres north of the airfield (including all or part of Stands 1, 2, 3, 4, 9 and 10 in Figure 3-5) and roughly 75 acres south of the airfield (including all or

part of Stands 1, 2, 3, and 4 in Figure 36). However, no grading or stump removal would be performed in these areas. Shrubs and low-growing trees with little potential to grow within 10 vertical feet of any imaginary surface would be left in place. Some individual trees in the Base Lake Recreation Area and the eastern part of the golf course could also require trimming or removal. Trees in the older (western) part of the golf course, housing areas, and most of the administrative areas would not be affected.

Suitland Parkway: No clearcutting, grading, or stump removal would be performed within the Suitland Parkway corridor. However, trees would have to be selectively trimmed or removed from approximately 35 acres of deciduous forest within the corridor and approximately 29 additional acres of deciduous forest visible from the parkway to provide clearance below the imaginary approach-departure surfaces extending north from the runways. It is noted that 89 AW would pursue a waiver allowing trees on Suitland Parkway to be trimmed only to provide clearance to the approach-departure surface, not 10 feet below the surface as required by UFC 3260-01. The affected forest cover includes all or part of Stands 3, 5, 6, 7, 8, 9, and 10 (Figure 3-5). All of the stands are dominated by tall-growing deciduous hardwood trees (Table 32). Table 41 illustrates the average potential reduction in canopy height by stand. The affected stands would become further fragmented by the trimming and removal work, resembling a managed woodland more than a natural forest. The changes would alter the value of the stands as habitat for wildlife, benefiting wildlife favoring open or edge habitat at the expense of wildlife favoring forest interior habitats (explained and discussed further in Section 4.3.2). Developed areas north of the affected segment of Suitland Parkway would be more visible to users of the parkway (discussed in Section 4.4.4).

The Air Force 89 AW and NACE would jointly develop and implement a management plan consisting of a phased program of tree trimming and removal designed to eliminate trees penetrating the approach-departure surface and to prevent trees from doing so in the future. To minimize the visual impacts on the cultural landscape of Suitland Parkway the Air Force will pursue a waiver to trimming requirements of 10 feet below the 50:1 imaginary approach-departure surface. The Air Force's HQ AMC/CEV, Environmental Programs Division and HQ AMC/DOA, Airfield Operations Division have agreed to support such a waiver provided that there is active oversight and implementation of a vegetation management plan. This plan would have to ensure there is adequate trimming or removal conducted to provide and maintain uniform obstacle protection to aircraft operating at low altitudes in close proximity to the airfield. The active oversight and implementation of such a plan would have to ensure standardized, unobstructed airspace to aircraft operating at night under visual flight rules as well as provide obstacle clearance for safe operation of heavy-weight aircraft or emergency aircraft experiencing seriously degraded performance. The Air Force will ensure proper notification is provided

Table 4-1

**Potential Reduction in Canopy Height in Forest Stands On and Visible From
Suitland Parkway Under Alternative 2.^{1,2}**

| Stand Number | Acres³ | Percent of Stand Impacted | Number of Trees in Impacted Area | Number of Trees Potentially Impacted | Average Reduction in Canopy Height (feet) | Tree Height Reduction Range – Dependent On Individual Tree Height |
|---------------------|--------------------------|----------------------------------|---|---|--|--|
| 3 | 8.3 | 92 | 1630 | 588 | 18 | 2-45 |
| 5 | 14.9 | 100 | 1687 | 1236 | 25 | 2-54 |
| 6 | 1.8 | 100 | 540 | 457 | 18 | 3-50 |
| 7 | 5.7 | 100 | 548 | 548 | 17 | 1-38 |
| 8 | 7.2 | 100 | 569 | 569 | 10 | 4-22 |
| 9 | 11.8 | 93 | 1426 | 975 | 8 | 1-24 |
| 10 | 8.6 | 80 | 1127 | 487 | 17 | 1-31 |
| 12 | 6 | 100 | 2944 | 121 | 6 | 2-14 |
| Total | 64.3 | | 10471 | 4981 | | |

¹ Stands are shown in Figure 3-5 and described in Table 3-2.

² Data based on GIS modeling effort by Loyola Enterprises (2002).

³ Acres data includes approximately 35 acres of forest cover on Suitland Parkway and roughly 30 acres of additional forest cover adjoining Suitland Parkway.

alerting all aircrews of the waiver to the 10 foot trimming requirement. Trees that can be trimmed to provide the required clearance without being killed or severely deformed would be immediately trimmed. Other trees would be removed in a phased manner agreed upon by the 89 AW and NPS.

Most canopy (tall) trees would have to be removed or heavily trimmed. Shrubs and trees not expected to attain tall mature heights would be left intact or lightly trimmed as necessary. Based on data summarized in Table 32, the affected stands are dominated by red maple (*Acer rubrum*), white oak (*Quercus alba*), northern red oak (*Quercus rubra*), and Virginia pine (*Pinus virginiana*). Most of the dominant trees would be removed. Low-growing trees and shrubs that would generally be retained include American holly (*Ilex opaca*), mountain laurel (*Kalmia latifolia*), flowering dogwood (*Cornus florida*), eastern redbud (*Cercis canadensis*), blueberries (*Vaccinium* sp.), and southern arrowwood (*Viburnum dentatum*).

Tree removal would be performed manually by licensed arborists using chain saws, climbing spurs, and other manual equipment. Bulldozers and other heavy equipment would not be used. No temporary or permanent access roads would be established in any forested areas on Suitland Parkway. The work would be accomplished without the use of chemicals except that herbicides would be manually applied to cut stump surfaces to prevent sprouting. Disturbance to shrubs and saplings would be minimized. The result would be conversion of forest cover to a wooded area dominated by many of the same shrubs and sapling species presently occurring in the forest understory. The increased sunlight resulting from removal or heavy trimming of canopy trees would encourage the natural development of an exceptionally dense tangle of shrubs, saplings, and vines.

To the extent possible, trees would be trimmed rather than removed. Heavy trimming can kill or deform trees, resulting in unnaturally shaped trees, and induce accelerated regrowth that could rapidly reach the approach-departure surface. Most tall trees in the affected areas would have to be trimmed too severely to successfully allow retention. All or a substantial portion of the crown (aboveground stems and leaves) would have to be removed. The International Society of Arboriculture recommends against removing more than one-fourth of the crown of any tree (ISA, 2000a). American beech and Virginia pine are especially sensitive to heavy trimming. Regardless of species, heavy trimming can kill or severely deform most trees (Harris, 1983).

The 89 AW and NPS would work together to determine which trees could be successfully trimmed without damage rather than requiring removal. Tree species most suited for trimming include:

- Taller specimens of low-growing species such as American holly, eastern redcedar, flowering dogwood, and eastern redbud. These trees would require only light trimming and would not require frequent repeat trimming.

- Exceptionally attractive specimens of species that grow tall but slowly. Examples might include white oaks or American beeches (*Fagus grandifolia*), especially if growing in areas of low topography.

Disturbances to natural forest cover sometimes encourage the establishment of exotic (non-native) and/or invasive vegetation. However, actions would be taken to avoid physical disturbance of the vegetative understory and groundcover underlying the tree canopy. The increased sunlight resulting from the trimming and removal of canopy trees will encourage rapid dense growth of the existing native understory. This understory will help discourage the establishment of invasive or exotic plants. The management plan will include specific actions to eliminate invasive or exotic vegetation that establishes as a result of the tree trimming and removals.

Other Off-Base Land: No clearcutting, grading, or stump removal would be performed off of Andrews AFB. However, trees would have to be selectively trimmed or removed from approximately 40 acres of deciduous forest north of Suitland Parkway and south of Andrews AFB to provide 10 feet of vertical clearance below the imaginary approach-departure surfaces extending north and south from the runways. The affected forest cover includes all or part of Stands 5, 6, 7, 8, 11, and 12 (Figure 3-5) and an area of deciduous forest in bottomlands bordering Piscataway Creek southeast of the base.

89 AW would work with the landowners to develop and implement a phased program of tree trimming and removal similar to that described for Suitland Parkway. Trees that can be trimmed to provide the required clearance without being killed or severely deformed would be immediately trimmed. Other trees would be removed in a phased manner agreed upon by 89 AW and the landowner.

Alternative 3

Andrews AFB: Impacts would generally be as described for Alternative 2. Because of the southward displacement of the north threshold to the West Runway, some trees in Stands 1 and 2 requiring removal under Alternative 2 might withstand trimming instead. However, moving the south threshold to the West Runway south by 500 feet would require clearing roughly 2.5 acres of forest cover south of the runway in order to eliminate woody vegetation from the re-positioned Clear Zone graded surface. The southward displacement of the south threshold and associated approach-departure surface could also require that some additional trees in the Base Lake Recreation Area or eastern part of the Golf Course be removed.

Suitland Parkway: Impacts would generally be as described for Alternative 2, but fewer trees would be removed from those forest stands north of the West Runway (Stands 8, 9, 12, and part of Stand 5 in Figure 3-5). As for Alternative 2, 89 AW would pursue a waiver allowing trees on Suitland Parkway to be

trimmed only to clear the approach-departure surface, not 10 feet below the surface. Some areas in those stands that would be converted to a thicket of shrubs and low trees under Alternative 2 would instead be converted to an open forest of widely spaced trees and dense shrubs under Alternative 3. Impacts on stands north of the East Runway (Stands 3, 6, 7, 10, and part of Stand 5 in Figure 3-5) would be as described for Alternative 2. Despite a reduction in the severity of alteration to certain stands relative to Alternative 2, Alternative 3 would still change the overall character of vegetation on Suitland Parkway north of Andrews AFB from forest to a low-growing managed woodland.

Other Off-Base Land: Impacts would generally be as described for Alternative 2. However, fewer trees in Stands 8 and 12 (Figure 3-5), which are affected only by the approach-departure surface for the West Runway, would require removal or severe trimming. Impacts south of the base would be as described for Alternative 2.

Mitigation

For Alternatives 2 or 3, new forest would be planted at a ratio of 1:1 to offset the clearing of forest that has encroached on the primary surface or Clear Zone graded areas for the East Runway (Figure 1-7). Forest planting would follow procedures developed by the Maryland Department of Natural Resources (MDNR) (MDNR, 1997). Planting would be performed on Andrews AFB to the extent possible, although due to the scarcity of undeveloped land on the base, some planting could likely be performed on the Air Force's Brandywine GLOBECOM Receiving Station (Brandywine) in southern Prince George's County, approximately 9 miles south of Andrews AFB. If desired by NPS, mitigation plantings could be directed to grassy areas within the Suitland Parkway corridor that are not influenced by the approach-departure surfaces for Andrews AFB. Low growing trees and shrubs could also be planted in grassed areas on Suitland Parkway beneath the approach-departure surfaces, provided they would not be expected to grow close to the approach-departure surface when mature.

For each tree exceeding 2 inches in diameter at breast height (DBH) that is selectively removed from forested areas on Suitland Parkway, at least two seedlings of a woody shrub or a low-growing tree would be planted. The most likely choices for replanting would include American holly, mountain laurel, eastern redcedar, flowering dogwood, and various blueberry species. American holly, mountain laurel, and eastern redcedar are attractive evergreens that provide year-round visual screening in urban landscapes. When trees are mature, their shade discourages establishment of other trees. Flowering dogwood would be included but on a limited basis because of its susceptibility to dogwood anthracnose, a fungal disease (Forest Service, 2001).

The management plan that AMC and NPS will prepare prior to initiating work will include measures for eliminating any exotic or invasive vegetation that might establish as a result of tree trimming or removal work.

4.3.2 Terrestrial Wildlife

Removal or heavy trimming of forest canopy trees increases sunlight penetration and encourages dense growth by shrubs and saplings. Tables A-2 through A-4 indicate that while certain wildlife species prefer dense forest interiors and are adversely affected by activities that open the canopy, other species prefer scrub or open forest and are benefited by activities that open the canopy. Examples of the former include forest-interior birds (FIBs) such as the ovenbird (*Seiurus aurocapillus*), American redstart (*Setophaga ruticilla*), and scarlet tanager (*Piranga olivacea*); gray fox (*Urocyon cinereoargenteus*); and red-backed salamander (*Plethodon cinereus*). Fragmentation of large, contiguous blocks of forest has been implicated in observed population declines in Maryland of several FIB species (CBCAC, 1986). Examples of species benefited by reduced tree canopy include the blue jay (*Cyanocitta cristata*), Northern cardinal (*Cardinalis cardinalis*), indigo bunting (*Passerina cyanea*), eastern cottontail (*Sylvilagus floridanus*), chipmunk (*Tamias striatus*), spring peeper (*Hyla crucifer*), and fence lizard (*Sceloporus undulatus*). Wildlife such as squirrels and woodpeckers that depend on mature trees for food and/or specialized habitat can also be adversely affected by tree removal.

Because the remaining forest cover on Andrews AFB, Suitland Parkway, and the suburban landscape surrounding the base has already been substantially fragmented by urban development, the additional impact on forest-interior species caused by any of the alternatives is expected to be minimal.

Alternative 1

No substantial changes to wildlife habitat on Andrews AFB, Suitland Parkway, or other off-base land would occur under Alternative 1. Occasional trees in forested areas north and south of the West Runway would still require trimming to maintain Category II ILS. The habitat qualities of the affected forested areas would however, remain substantially unchanged.

Alternative 2

Andrews AFB: Alternative 2 would convert approximately 15 acres of forest habitat on the eastern edge of the airfield to grassland and as much as 100 additional acres of forest habitat north and south of the airfield to open forest or scrub habitat. Alternative 2 would also fragment a block of nearly 75 acres of upland forest in the southeastern corner of the base (Stands 1-4 in Figure 3-6). That forest could provide

habitat for some species of wildlife favoring forest interiors, but it is generally recognized that upland forests must comprise at least 100 acres to provide optimum habitat for most FIB species. Forest cover elsewhere on the base has already been fragmented by development. It consists of small patches and narrow strips that do not provide optimal habitat for forest-interior wildlife. The incremental impact of Alternative 2 on the overall quality of wildlife habitat on the base is therefore expected to be minimal.

Implementation of Alternative 2 would not affect the potential for bird aircraft strike hazard (BASH) incidents. The two areas with the greatest BASH potential are Base Lake and the Belle Chance ponds. These waters would remain largely unchanged. Base Lake is surrounded by lawns with few trees. Reducing forest cover around the Belle Chance ponds could increase the attractiveness of the ponds to flocks of hazardous waterfowl such as Canada geese (*Branta canadensis*). However, most trees bordering the ponds would not be removed. There would be no interference with ongoing BASH control efforts.

Suitland Parkway: Alternative 2 would convert approximately 35 acres of forested habitat on Suitland Parkway to open forest or scrub habitat. It would render the affected portion of Suitland Parkway less attractive to wildlife favoring forest interior habitats and more attractive to species favoring open forest and scrub habitat. However, forest cover in the affected area has already been fragmented by construction of the divided roadway, the landscaped median, and development to the north and south. The additional impact on forest interior wildlife is therefore expected to be minimal.

The portion of Suitland Parkway north of Andrews AFB does not contain substantial areas of open water or marsh that would attract large numbers of geese, ducks, or other waterfowl posing substantial BASH potential. Changes to the forest vegetation there therefore present little concern with respect to BASH potential. Open forests and scrub sometimes better attract large flocks of terrestrial birds such as starlings (*sturnus vulgaris*) than do forests with an intact canopy. The 89 AW would have to monitor bird behavior on Suitland Parkway to ensure that an increased BASH hazard does not result.

Other Off-Base Land: Alternative 2 would convert small patches of forested habitat in the suburban landscapes north of Suitland Parkway and south, especially southeast, of the base to sparse, open forest or scrub habitat. It would render those areas less attractive to wildlife favoring forest interior habitats and more attractive to species favoring open forest and scrub habitat. However, forest cover in those suburban landscapes has already been fragmented by development. The incremental effect of the tree trimming and removal resulting from Alternative 2 on wildlife habitat within those landscapes is therefore expected to be minimal.

Lands surrounding Andrews AFB do not contain substantial areas of open water or marsh that would attract large numbers of geese, ducks, or other waterfowl posing substantial BASH potential. As described for Suitland Parkway, conversion of forest to scrub could attract larger numbers of terrestrial birds posing some BASH potential.

Alternative 3

Andrews AFB: The impact from Alternative 3 to wildlife habitats on the base would generally be as described for Alternative 2. Roughly 2.5 acres of additional forest cover consisting of a small, fragmented patch directly south of the West Runway, would be converted to grassland. Otherwise constructing the extension to the West Runway and associated taxiways would affect only mowed grassland that are already part of the airfield and of low value to most wildlife.

Suitland Parkway: Alternative 3 would involve less tree trimming and removal in forested areas north of the West Runway but would still fragment the forest canopy, reducing the attractiveness of the affected habitat to forest interior wildlife and increasing its attractiveness to wildlife favoring open forest and scrub habitats. As described for Alternative 2, the affected segment of Suitland Parkway does not provide habitat for waterfowl of greatest BASH concern, but opening the forest canopy could attract flocks of terrestrial birds such as starlings.

Other Off-Base Land: Alternative 3 would result involve less tree trimming and removal in some forest remnants within the Penn Belt Industrial Park but would still decrease the density of the forest canopy in those areas, reducing its attractiveness to forest-interior wildlife and increasing its attractiveness to wildlife favoring open forest and scrub habitats. The impact to forest habitat south of the base would generally be as described for Alternative 2. As described for Alternative 2, the landscape surrounding Andrews AFB does not provide habitat for waterfowl of greatest BASH concern, but opening the forest canopy could attract flocks of terrestrial birds such as starlings.

Mitigation

As mitigation for the loss of habitat for forest wildlife, tree seedlings would be planted (or natural tree regeneration would be allowed) in grassy areas adjoining other forest on Andrews AFB or other Air Force property in the vicinity of Andrews AFB. If changes to the landscape result in an increased presence of hazardous birds, traditional BASH remedies such as artificial sound generation would be implemented.

4.3.3 Threatened and Endangered Species

None of the alternatives are likely to adversely affect federally designated or state designated threatened or endangered species or critical habitats. Alternatives 2 or 3 could result in trimming or removal of chinquapin (*Castanea pumila*) trees known to occur in an area of upland deciduous forest on Andrews AFB immediately northwest of the airfield. Forested uplands would be inspected for chinquapin trees prior to tree trimming or removal work so that the trees can be protected, if possible. However, chinquapin is a globally secure species that is not formally designated as threatened or endangered at the federal or state level. Chinquapins that are identified as obstructions will be trimmed or removed in the same manner as other tree species.

Alternative 1

Alternative 1 would not potentially affect rare, threatened, or endangered species. Trees requiring trimming to maintain the 34H:IV glide slope for Category II ILS would be identified prior to each trimming round. Chinquapins are generally understory rather than canopy trees. If chinquapin was found to penetrate the 34H:IV surface, the trimming would not to adversely affect the health or appearance of the tree.

Alternative 2

Andrews AFB: Clearing the areas of forest encroachment into the primary surfaces and Clear Zone graded areas (Figure 1-7) would not affect any of the rare species locations (Figure 3-7) identified in the basewide survey completed in 1997 (Parsons, 1998). Selective tree removal and trimming work would have to be conducted in the vicinity of where the survey identified a chinquapin tree (Figure 3-7). Chinquapins are a regionally rare understory tree that may attain maximum heights up to 50 feet (Petrides, 1972). They are slow growing trees that rarely exceed 30 feet (Hightshoe, 1988). Any chinquapins located in the approximate vicinity shown in Figure 3-7 would affect the imaginary transitional surface only and would require at most a light trimming to provide 10 vertical feet of clearance. Such a trimming would not likely weaken or disfigure the trees or adversely affect their ability to reproduce. Although regionally rare, the chinquapin is not listed or proposed for listing as threatened or endangered at the Federal or state level. Regulatory approval under the Endangered Species Act or state regulations would therefore not be required for work affecting chinquapin trees.

Sandplain gerardia (*Agalinus acuta*), a Federal and state endangered herb, was located by the survey in an open area in the golf course south of the airfield (Figure 3-7). Two regionally rare herbaceous plants, honeyvine (*Cynanchum laeve*) and Curtiss' three-awn (*Aristida curtissii*), were identified by the survey in

mowed grassland adjoining the taxiways in the eastern part of the airfield. These open areas would not be affected by work performed under Alternative 2.

Spiral pondweed (*Potamogeton spirillus*), a rare aquatic herb, was identified in one of the abandoned borrow pits in the golf course south of the airfield (Figure 3-7). That borrow pit is not surrounded by trees and therefore would not be affected by nearby tree work. Swollen bladderwort (*Utricularia gibba*), another rare aquatic herb, was identified in the Belle Chance ponds. Removal or heavy trimming of mature trees on the shores of the ponds could increase sunlight reaching the water, possibly increasing competition between swollen bladderwort and other aquatic plants. However, it is unlikely that tree work would be necessary as far west of the airfield as the Belle Chance ponds.

Tall nutrush (*Scleria triglomerata*) was identified in a forested wetland immediately south of the golf course at the base perimeter, more than 5,000 feet south of the runways. Trees in this area could be as tall as 80 to 100 feet and still be at least 10 feet below the approach-departure surfaces. Few trees would require removal, and the overall characteristic of this area would remain unchanged. Furthermore, the habitat data provided in Table 34 indicates that tall nutrush favors open to partly open habitat rather than dense forests. Any specimens would therefore likely survive selective removal of trees in this area.

Removal of scattered trees adjoining Base Lake could eliminate roosting sites for bald eagles that transiently visit the lake. However, the quality of habitat surrounding Base Lake for the bald eagle has already been reduced by the 1998 opening of new golf facilities. Bald eagles generally prefer areas with limited noise and human activity.

Suitland Parkway: As indicated in Section 3.3.3, the NPS has observed midland sedge (*Carex mesochoria*) on the affected segment of Suitland Parkway. This species is recognized by the State of Maryland as rare. Because it is a low growing herbaceous species, it will be possible to avoid physically disturbing it during tree trimming or removal work. It might be exposed to increased sunlight and reduced shade. Because it reportedly favors open woods and grassland (Fernald, 1970) reduced shade should not adversely affect existing specimens of this plant or discourage its growth or reproduction.

Other Off-Base Land: As indicated in Section 3.3.3, the off-base lands north of Suitland Parkway and south of Andrews AFB have not been surveyed for threatened or endangered species but are unlikely to support such species.

Alternative 3

Andrews AFB: The basewide survey of rare species completed for Andrews AFB in 1997 (Parsons, 1998) did not identify any locations of rare, threatened, or endangered species or critical habitats close to the south end of the West Runway where construction of the runway and taxiway extensions would occur. Displacing the threshold at the north end of the West Runway by 500 feet could reduce the severity of required trimming for any chinquapin trees in the forest northwest of the West Runway. The potential for impacts on other species from clearing, trimming, and removing trees would generally be as described for Alternative 2.

Suitland Parkway: Impacts would generally be as described for Alternative 2. Midland sedge in affected areas might experience less shade reduction than under Alternative 2 but is not a species that favors shady locations.

Other Off-Base Land: As indicated in Section 3.3.3, the off-base lands north of Suitland Parkway and south of Andrews AFB have not been surveyed for threatened or endangered species but are unlikely to support such species.

Mitigation

Before tree trimming or removal work is performed under any alternative, any chinquapin trees in the forested areas northwest of the West Runway would be clearly marked in the field. As recommended by the Maryland Wildlife and Heritage Division of the Maryland Department of Natural Resources (see Section 3.3.3), any midland sedge in the affected segment of Suitland Parkway would be temporarily fenced so that workers do not inadvertently disturb it. If any tree removal or trimming is necessary in forested wetlands near the southeastern corner of the base, the wetlands would be re-inspected for tall nutrush and any specimens would be marked. Workers in those areas would be instructed to use care to avoid inadvertent disturbance to marked plants. Because neither species is formally listed by Federal or state agencies as threatened or endangered, no formal consultation is required. 89 AW would inform the MDNR Natural Heritage Program prior to initiating work in those areas.

4.3.4 Wetlands

There would be no net loss of wetlands under Alternative 1 or 2. No wetlands would be graded, filled, or otherwise subject to loss under those alternatives. For Alternative 3, grading to extend the taxiways in the southern part of the airfield would result in the permanent filling of as much as 15 acres of emergent wetlands located immediately southwest of the West Runway. Only Alternative 3 would require a permit

under Section 404 of the Clean Water Act (Section 404). However, Alternative 2 would substantially alter vegetation in forested wetlands and would therefore still require a permit from the Maryland Department of the Environment (MDE) under the Maryland Nontidal Wetlands Protection Act. The Air Force would issue a Finding of No Practicable Alternative (FONPA) prior to initiating any work filling or substantially altering wetlands. A FONPA is a statement stating that no practicable alternatives exist to an action that adversely impacts wetlands or floodplains. The FONPA must be supported by information contained in an EA or other technical document. NPS would likewise document that no practicable alternative exists. To do so, NPS would independently prepare a Wetlands Statement of Findings (SOF) addressing the impacts to vegetation in wetlands and floodplains on Suitland Parkway.

Alternative 1

No wetlands on Andrews AFB, Suitland Parkway, or other off-base land would be affected by Alternative 1. Although occasional trees in forested wetlands north of the West Runway could be trimmed in order to maintain Category II ILS, the predominantly forested character of those wetlands would remain unchanged. No FONPA would be required.

Alternative 2

Andrews AFB: No wetlands would be graded or filled as part of Alternative 2. No net loss of wetland area would result. The 15 acres of forest cover that has encroached on the primary surface and Clear Zone graded area for the East Runway (Figure 1-7) does not contain any wetlands. Several depressions and ditches within the central part of airfield contain wetlands but are free of trees and therefore would not be impacted by Alternative 2. However, selected trees would be removed from forested wetlands south of the runways in the southern part of the base. These wetlands are associated with the headwaters of Piscataway Creek.

Modifying wetland vegetation does not require a permit under Section 404 of the Clean Water Act if it does not disturb the soil surface. The Baltimore District of the U.S. Army Corps of Engineers (COE), who administers Section 404 in Maryland, has indicated that tree removal would not require a permit unless the soil is disturbed (Harrison, 2001). However, substantial modification of vegetation in forested wetlands is regulated under the Maryland Nontidal Wetlands Protection Act. A permit application would therefore be submitted to the MDE requesting authorization for the tree removal work. The exact area of forested wetlands affected by Alternative 2 would be determined in the management plan, which will be prepared prior to submission of the permit application. A FONPA would also be issued.

Suitland Parkway: No wetlands on the right-of-way would be graded, filled, or otherwise lost. Tree trimming or removal would affect approximately 5.3 acres of palustrine forested (PFO) wetlands identified in a formal wetland delineation completed in 1997 for the right-of-way in accordance with the 1987 Manual (see Figure 39). Those wetlands would be converted from PFO wetlands to palustrine scrub-shrub (PSS) wetlands. Approximately 0.1 acre of palustrine emergent (PEM) wetlands within the right-of-way would not be affected. No permit under Section 404 of the Clean Water Act would be required. The permit application submitted to MDE requesting authorization under the Maryland Nontidal Wetlands Protection Act to alter vegetation in forested wetlands on the base would also request authorization for alterations in wetlands on the Suitland Parkway right-of-way. The FONPA issued by the Air Force would also address any impacts to wetlands on Suitland Parkway. NPS would issue a Wetlands SOF addressing the impacts to forest vegetation in wetlands and floodplains on Suitland Parkway.

Other Off-Base Lands: No wetlands on off-base property would be graded, filled, or otherwise lost. Tree trimming or removal would affect approximately 4.8 acres of PFO wetlands identified in a formal wetland delineation completed in 1997 in accordance with the 1987 manual for forested remnants in the Penn Belt Industrial Park north of Suitland Parkway in 1997 (see Figure 39). Those wetlands would be converted, at least in part, from PFO wetlands to PSS wetlands. National Wetland Inventory (NWI) maps also suggest that additional forested wetlands bordering Piscataway Creek southeast of the base would likewise be subject to tree trimming or removal. These wetlands would be formally delineated in accordance with the 1987 manual (Environmental Laboratory, 1987) as part of the management plan prepared prior to submission of permit applications.

No permit would be required under Section 404 of the Clean Water Act. The permit application submitted to MDE requesting authorization under the Maryland Nontidal Wetlands Protection Act to alter vegetation in forested wetlands on the base would also request authorization for alterations in wetlands on off-base property. The FONPA would address an wetland impacts on off-base lands.

Alternative 3

Andrews AFB: Construction to extend the West Runway southward would require the permanent filling of as much as 15 acres of wetlands in an airfield depression immediately southwest of the West Runway. Like other wetlands within the mowed airfield, most of these wetlands support predominantly turfgrasses and exotic grasses such as *Phragmites* and may have originally resulted from grading to construct the airfield. Roughly 2.5 acres of these wetlands may support fragmented forest vegetation. The basewide survey of rare, threatened, or endangered species completed in 1998 (Parsons, 1998; rare species locations shown in Figure 37) did not identify any occurrences in the wetlands immediately south of the West Runway. However, even wetlands of artificial origin or of low functional value are still regulated

under Section 404 and the Maryland Nontidal Wetlands Protection Act. Impacts on other wetlands on the base would be limited to vegetation disturbance, as described for Alternative 2. A FONPA issued by the Air Force would also be issued.

Suitland Parkway: Impacts would be as described for Alternative 2. Fewer trees would be removed from the portions of the forested wetlands on the right-of-way north of the West Runway. However those PFO wetlands would still be converted to PSS wetlands or to more open PFO wetlands with a sparser canopy. The Air Force FONPA would address these impacts. NPS would issue a Wetlands SOF addressing impacts to forest vegetation in wetlands and floodplains on Suitland Parkway.

Other Off-Base Land: Impacts would generally be as described for Alternative 2, but fewer trees would be removed from some of the affected wetlands north of Suitland Parkway. The wetlands bordering the headwaters to Hensen Creek originating within the Penn Belt Industrial Park lie under the approach-departure surface for the East Runway and would be affected to the same degree as under Alternative 2. Impacts on wetlands associated with Piscataway Creek south of the base would generally be the same as for Alternative 2. As for Alternative 2, the FONPA would address any wetland impacts off base as well as on base.

Mitigation

Wetland mitigation in Maryland is usually specified in permits issued by Baltimore COE and MDE. The Alternative 2 impacts are not regulated under the Clean Water Act, and the COE would therefore not request mitigation. However, MDE generally requires mitigation for conversion of forested wetlands to other wetlands. MDE usually expects that 1 acre of new or restored forested wetland be established for each acre of forested wetland converted to another type of wetland (a 1:1 ratio) (MDE, 1998).

Both MDE and Baltimore COE would require mitigation for wetlands filled due to Alternative 3. These agencies usually request 1 acre of new or restored wetland for each acre of emergent wetland filled (a 1:1 ratio). They usually impose higher mitigation ratios for filling scrub-shrub or forested wetlands. The ratio for scrub-shrub wetlands is usually 1.5:1 and the ratio for forested wetlands is usually 2:1 (MDE, 1998).

It may not be possible to accomplish the wetland mitigation on Andrews AFB. Little undeveloped land remains on the base, and wetland mitigation projects can increase the bird aircraft strike hazard (BASH). Other types of mitigation that might be considered include: 1) enhancement of onsite wetlands (on Suitland Parkway or Andrews AFB), 2) enhancement of wetlands off of Suitland Parkway or Andrews AFB, or 3) purchasing of credits from a wetland mitigation bank and/or payment into a compensation fund.

4.3.5 Streams and Aquatic Biota

No stream banks or channels would be physically altered by any of the alternatives. Alternatives 2 and 3 would involve trimming or removing trees growing on stream banks and riparian lands bordering Hensen and Piscataway Creeks. Reducing the tree canopy near streams can increase the exposure of the channel to sunlight. The increased water temperature can reduce the quality of the stream as habitat for aquatic organisms such as trout that favor cold water. However, neither Hensen Creek nor Piscataway Creek are known to support trout populations, and the existing conditions of both waterways are not likely to favor cold-water biota. Only Alternative 3 would have a potential to result in increased sediment and stormwater runoff, and routine practices would be adequate to protect streams against those increases.

Alternative 1

Streams and aquatic biota would not be affected by Alternative 1. Although occasional trees near Hensen Creek north of the West Runway would lightly be trimmed to maintain Category II ILS, the overall character of riparian habitat on the affected segment of stream channel would remain unaffected.

Alternative 2

Andrews AFB: Many trees bordering the headwaters to Piscataway Creek in the southeastern quadrant of the base would be trimmed or removed. The headwater channels would be exposed to increased sunlight, which could possibly elevate the water temperature. The quality of the streams as habitat for biota favoring shaded, colder water could be reduced. However, all of the affected channels originate as unshaded ditches within the airfield. Runoff entering from the ditches has already rendered the streams unlikely as habitat for cold-water biota. Any additional impact caused by reduced shading is therefore expected to be minimal.

No lands adjoining the banks of Piscataway Creek or its tributaries would be graded as part of Alternative 2. The stumps, shrubs, and saplings remaining following tree removal would continue to stabilize the stream banks, prevent sedimentation, and slow surface runoff. The dense thicket of shrubs that would proliferate following reduced shading could provide more effective soil stabilization and runoff control than the existing vegetation, benefiting the quality of aquatic habitat.

Suitland Parkway: Trees bordering approximately 1,700 linear feet of Hensen Creek would be subject to trimming or removal. No grading or other physical disturbance to the banks would occur. The physical properties of the Hensen Creek channel that contribute its aquatic habitat quality (Table 3-5) would not be

substantially altered. The channel would be exposed to increased sunlight, which could elevate the water temperature. However, many of the trees bordering the channel have already been killed, most likely due to flooding caused by beavers. Any additional elevation in water temperature would therefore be minimal. The remaining stumps, shrubs, and saplings would continue to stabilize the stream banks, prevent sedimentation, and slow surface runoff.

Other Off-Base Land: Trees bordering approximately 900 linear feet of the Hensen Creek channel, which originates within forested lowlands in the Penn Belt Industrial Park, would be subject to trimming or removal. Impacts would be as described for Suitland Parkway. Trees bordering as much as 2,000 linear feet of Piscataway Creek traversing forested land southeast of the base could require trimming or removal. The predominantly forested character of riparian lands bordering this segment of Piscataway Creek should not, however, be lost.

Alternative 3

Andrews AFB: Implementation of routine soil erosion and sediment control practices during construction of the extended runway and taxiways in the southern part of the airfield would effectively prevent increased sedimentation of various ditches flowing into the headwaters of Piscataway Creek. Routine stormwater management practices would effectively manage the increased stormwater generated by the extended pavement. Other impacts would be as described for Alternative 2.

Suitland Parkway: Fewer trees bordering Hensen Creek would be removed, and trimming would generally be less severe, than under Alternative 2. The channel could still be exposed to increased sunlight, possibly elevating water temperature in the stream. As noted for Alternative 2, many of trees bordering the channel have already been killed. Any additional elevation in water temperature would therefore be minimal. The stumps, shrubs, and saplings remaining in areas where trees are removed would continue to stabilize the stream banks, prevent sedimentation, and slow surface runoff.

Other Off-Base Land: Fewer riparian trees bordering the upper reach of Hensen Creek within the Penn Belt Industrial Park would be removed, and trimming would generally be less severe, than under Alternative 2. Especially near the border to the Suitland Parkway corridor, the channel could still be exposed to increased sunlight. As described for Alternative 2, impacts are expected to be minimal. Impacts to Piscataway Creek southeast of the base would generally be as described for Alternative 2.

Mitigation

As described in Section 4.3.1, trees of low-growing and slow-growing species would be planted in areas experiencing heavy tree removal. For Alternatives 2, or 3, replanting would be designed to include heavy tree planting along affected banks of Hensen Creek. New trees would also be planted in riparian areas of Piscataway Creek experiencing heavy tree removal.

If Alternative 3 is implemented, a soil erosion and sediment control plan would be developed in compliance with Maryland and Prince George's County requirements to reduce the potential for siltation of Piscataway Creek during airfield construction work. A stormwater management plan would also be developed in compliance with Maryland and Prince George's County regulations to manage stormwater runoff generated by the expanded pavement in the southern part of the airfield.

4.3.6 Floodplains

None of the alternatives would involve grading or construction within the 100-year floodplain. Alternatives 2 and 3 would involve tree trimming and tree removal in the 100-year floodplains for Hensen Creek and Piscataway Creek, but those activities would have no potential to affect the 100-year flood. All of the alternatives would be consistent with the objectives of Executive Order 11988, *Floodplain Management*.

Alternative 1

The 100-year floodplain would not be affected by Alternative 1. A few trees in the Hensen Creek floodplain within Suitland Parkway north of the West Runway could require trimming to maintain Category II ILS. However, the general character of the vegetative cover in the floodplain would not be altered.

Alternative 2

Andrews AFB: Alternative 2 would not involve any grading or filling in the 100-year floodplain. No wetlands would be filled (see Section 4.3.4) and no impervious surfaces would be constructed. No vegetation would be cleared from the 100-year floodplain, but several trees would be trimmed or removed from the 100-year floodplain adjoining Piscataway Creek in the southeastern part of the base. The affected vegetation would be converted from tree dominance to dominance by shrubs and saplings. The modified vegetation would be denser than the existing forest vegetation and thus even more capable of slowing the flow of flood waters.

Suitland Parkway: No grading, filling, or construction would take place in the 100-year floodplain. Several trees within the 100-year floodplain adjoining Hensen Creek would be trimmed or removed. The affected vegetation would be converted from tree dominance to dominance by shrubs and saplings. The modified vegetation would be denser than the existing forest vegetation and thus even more capable of slowing the flow of flood waters.

Other Off-Base Land: No grading, filling or construction would take place in the 100-year floodplain. Several trees within the 100-year floodplain of Hensen Creek in the Penn Belt Industrial Park and in the 100-year floodplain adjoining Piscataway Creek southeast of the base would be trimmed or removed. The affected vegetation would be converted from tree dominance to dominance by shrubs and saplings. The modified vegetation would be denser than the existing forest vegetation and thus even more capable of slowing the flow of flood waters.

Alternative 3

Andrews AFB: The construction to extend the West Runway and associated taxiways would not affect areas potentially within the 100-year floodplain. Other impacts would be as described for Alternative 2.

Suitland Parkway: Impacts would be as described for Alternative 2.

Other Off-Base Land: Impacts would be as described for Alternative 2.

Mitigation

None of the alternatives would involve construction or grading within the 100-year floodplain or otherwise alter flood flow characteristics. Therefore, no mitigation is proposed.

4.4 CULTURAL ENVIRONMENT

Issues addressed as part of the cultural environment include archaeological resources (Section 4.4.1), historic resources (Section 4.4.2), Cold War structures (Section 4.4.3), and aesthetics (4.4.4).

4.4.1 Archaeological Resources

Alternative 1 would have little potential to disturb archaeological resources. Alternatives 2 and 3 would result in soil disturbance when clearing and grading the estimated 15 acres of forest encroachment in the eastern edge of the airfield (all on Andrews AFB) (Figure 1-7). Alternative 3 would also involve grading

as much as 50 acres on Andrews AFB at the south end of the West Runway. But neither area encompasses any archaeological sites identified by the Phase II Archaeological Survey of Andrews AFB (depicted in Figure 3-12).

Tree trimming and removal elsewhere under Alternatives 2 and 3 would not disturb the soil surface using mechanized equipment and would therefore have little impact on archaeological resources. Planting trees on Suitland Parkway, as proposed as mitigation under Alternatives 2 and 3, could disturb surface and shallow subsurface archaeological resources to a minor degree. Because the affected segment of the Suitland Parkway corridor had not been subject of a previous archaeological survey, the Air Force and NPS recently completed a Phase IA archaeological survey (JMA, 2002). The Air Force and NPS plan to complete a Phase IB survey and take other measures required by the MHT prior to initiating work on Suitland Parkway as part of Alternatives 2 or 3.

Alternative 1

No substantial soil disturbance capable of affecting archaeological resources would be conducted.

Alternative 2

Andrews AFB: The only work involving mechanical soil disturbance would be clearing and stump removal necessary to eliminate the estimated 15 acres of forest encroachment into the primary surface and Clear Zone graded area for the East Runway. The affected area (shown in Figure 17) does not include any archaeological sites (see Figure 312) identified by the Phase II Archaeological Survey of Andrews AFB. Archaeological resources could occur in other areas subject to tree trimming or removal without grading. Because the stumps and roots would be left intact, any archaeological resources would remain undisturbed.

Suitland Parkway: The only potential for disturbance of archaeological resources on Suitland Parkway would result from digging holes to plant replacement trees as mitigation for tree removals. The Air Force, in cooperation with the NPS, recently completed a Phase IA archaeological survey of that segment of the Suitland Parkway corridor potentially affected by vegetation management activities associated with one or more of the alternatives investigated in this EA (JMA, 2000). Two regionally experienced archaeologists conducted a literature review and a pedestrian survey on approximately 57 acres of land within the Parkway corridor. The report recommended Phase IB testing consisting of a grid of shallow shovel tests over approximately 27 acres of the surveyed area. The Phase IB testing and any necessary follow-on testing would be completed to the satisfaction of the MHT prior to initiation of any vegetation management work on Suitland Parkway as part of Alternatives 2 or 3 (any future rounds of “emergency” trimming to

maintain Category II ILS would not have any potential to affect archaeological resources). Any artifact curation requirements or other recommendations to minimize impacts to archaeological resources recommended by the archaeological survey reports would be implemented to the satisfaction of the MHT as part of Alternatives 2 or 3.

Other Off-Base Land: The off-base property subject to tree trimming or removal as part of Alternative 2 has not been surveyed for archaeological resources. However, Alternative 2 would not mechanically disturb soil off of Andrews AFB. As on Suitland Parkway, trees would be trimmed or felled above the soil line, leaving stumps and roots intact. Seedling trees planted as mitigation would be hand planted without the use of mechanized tree spades or other mechanized equipment. There would therefore be some potential, although a small potential, for disturbance of archaeological resources.

Alternative 3

Andrews AFB: Grading and construction to extend the south end of the West Runway and associated taxiways (shown in Figure 22) would not disturb any archaeological sites (see Figure 3-12). The only other area subject to soil disturbance would be where forest has encroached on the primary surface and Clear Zone graded area for the East Runway. That area also does not encompass any of the archaeological sites identified by the Maryland SHPO. Tree trimming and removal performed would not disturb stumps or roots and would have no potential to affect archaeological resources.

Suitland Parkway: As noted for Alternative 2, the segment of Suitland Parkway north of Andrews AFB has been the subject of a Phase IA archaeological survey (JMA, 2000), and all Phase IB and other follow-on archaeological investigations would be completed prior to implementation of Alternative 3. Alternative 3, like Alternative 2, would result in ground disturbance related to the mitigation plantings. Any curation or other protective or mitigation measures recommended by the archaeological investigations would be conducted.

Other Off-Base Land: The off-base property subject to tree trimming or removal as part of Alternative 3 has not been surveyed for archaeological resources. However, tree trimming and removals performed as part of Alternative 3 would not mechanically disturb soil off-base. Trees would be trimmed or felled above the soil line, leaving stumps and roots intact. Any tree planting would be by hand, as described for Alternative 2. There would therefore be some potential, but a small potential, to disturb archaeological resources.

Mitigation

As stated previously, a Phase IB archaeological survey of affected areas of forest cover on Suitland Parkway would be completed prior to initiation of either Alternative 2 or 3. The survey would indicate whether trees planted as mitigation would disturb previously undocumented archaeological resources on Suitland Parkway, and if so what mitigation is required. If potential archaeological resources are encountered substantially during work anywhere on or off of Andrews AFB or Suitland Parkway, work would cease until a professional archaeologist determines that work may resume without adversely affecting the resource or until the affected resources can be properly documented and curated in accordance with the National Historic Preservation Act. As an example of possible archaeological mitigation, tree planting locations might be shifted to avoid archaeological resources identified by the survey.

4.4.2 Historic Resources

Tree trimming and tree removal performed as part of Alternatives 2 or 3 would be visible from Suitland Parkway and Belle Chance, an older rural estate situated on base approximately 500 feet west of the West Runway. Suitland Parkway is listed on the NRHP; Belle Chance is eligible for listing. The historic character of Belle Chance depends on forest vegetation that reduces the visibility of adjacent development. Because Belle Chance is situated to the side of the runways instead of at the ends, it would be possible to retain enough trees to effectively preserve its historic setting. In the historic Suitland Parkway corridor, the trees are cultural landscape elements that contribute to the qualities that made the parkway eligible for inclusion on the NRHP. Trimming and removal of trees on Suitland Parkway would alter the character of the historic landscape. To preserve the historic landscape character of Suitland Parkway, which passes directly in front (north) of the runways, new trees and shrubs would be planted to replace removed vegetation and offset the visual alteration resulting from Alternatives 2 or 3.

In compliance with Section 106 of the National Historic Preservation Act, coordination has been undertaken with the MHT. Early in the development of the project, as a result of decisions made with the Trust, the Air Force received letters from the MHT on June 10, 1997 and June 26, 1997. In conjunction with the current EA, the Air Force and NPS resumed the coordination with a letter on May 16, 2002. The MHT responded on June 5, 2002. The Air Force and NPS will continue to discuss the proposed work with the MHT while developing a vegetation management plan that minimizes visual impacts to Suitland Parkway and preserves the historic scene to the extent possible. The Air Force, NPS, MHT, and the Advisory Council on Historic Preservation are preparing a Programmatic Agreement to guide the preparation and implementation of the vegetation management plan.

Alternative 1

Alternative 1 would have no potential to affect historic resources. Occasional trees in the vicinity of Belle Chance and on Suitland Parkway would require light trimming to maintain Category II ILS. However, the trimming would be light enough not to alter the overall appearance of the trees and their contribution to the historic setting of Belle Chance and Suitland Parkway.

Alternative 2

Andrews AFB: Tall (canopy) trees in a forested area separating the historic Belle Chance grounds from the airfield would require trimming or removal to provide 10 feet of vertical clearance below the transitional surface for the West Runway. This forested area, depicted as Stand 2 in Figure 3-5, encompasses approximately 4.4 acres of mixed hardwood forest. Stand 2 forms a visual buffer preserving the rural ambiance essential to the historic character of Belle Chance.

Trees at the eastern edge of Stand 2, closest to the airfield, would have to be trimmed to a height of less than 30 feet to provide the required clearance. Trees at the western edge of Stand 2, closest to Belle Chance, could be trimmed to a height of as much as 65 feet and still provide the required clearance. Trimming the eastern trees would likely result in their death or deformation. But many trees at the western edge could be successfully trimmed and preserved. The preserved western trees, together with the shrubs and saplings retained elsewhere, would help maintain a visual buffer between Belle Chance and the airfield. Supplemental planting of additional low-growing shrubs and saplings, especially evergreens such as American holly and mountain laurel, could be performed to supplement the buffer and better protect the rural ambiance of Belle Chance.

Suitland Parkway: Suitland Parkway is listed on the NRHP and its wooded landscape is an element that contributes to the qualities that make the parkway eligible for listing on the NRHP. However, Suitland Parkway passes under the approach-departure surfaces for the runways, which rise more gradually with distance than do the transitional surfaces. Many trees on the south side of Suitland Parkway, which screen the parkway from the airfield, would have to be trimmed to heights between 40 and 50 feet (depending on exact position and topography) to provide clearance below the approach-departure surface (as noted elsewhere, the Air Force would pursue a waiver allowing trimming only to clear the surface, not 10 feet below the surface). Trees would be preserved wherever possible, but the required trimming would result in their death or deformation of some canopy trees, therefore necessitating removal. Some trees on the north side of Suitland Parkway could be trimmed to heights between 50 and 60 feet (depending on exact position and topography) and still provide the required clearance. A greater

number of trees on the north side could likely be trimmed successfully and retained, but even there many trees would require removal.

Other Off-Base Land: Off-base areas subject to tree trimming or removal do not contain any historic sites listed on the NRHP or identified in the Maryland National Capital Park and Planning Commission's inventory of historic sites in Prince George's County (MNCPPC, 1992). No trees would be affected in the immediate vicinity of the Marshall Walters House, which is located approximately 0.5 miles southeast of the base.

Alternative 3

Andrews AFB: Impacts would generally be as described for Alternative 2. The position of the transitional surface for the West Runway would not substantially change following displacement of the threshold. The extent of tree trimming required near Belle Chance would be similar to Alternative 2. Construction at the south end of the West Runway would not be visible from Belle Chance, Suitland Parkway, or other historic sites.

Suitland Parkway: Changes to the position of the approach-departure surface north of the West Runway would allow trees where Suitland Parkway passes north of the West Runway to be trimmed 10 feet higher compared to Alternative 2. Certain trees that would have to be trimmed to a height between 40 and 50 feet under Alternative 2 could be trimmed to a height between 50 and 60 feet. More trees could be trimmed and retained than under Alternative 2. Additionally, replanted trees could be allowed to grow taller than under Alternative 2. However, the approach-departure surface north of the East Runway would be the same as under Alternative 2, and impacts to that part of Suitland Parkway would be the same.

Other Off-Base Land: As for Alternative 2, off-base areas subject to tree trimming or removal (other than Suitland Parkway) do not contain any historic sites listed on the NRHP or identified in the Maryland National Capital Park and Planning Commission's inventory of historic sites in Prince George's County (MNCPPC, 1992). No trees would be affected in the immediate vicinity of the Marshall Walters House, which is located approximately 0.5 miles southeast of the base.

Mitigation

Mitigation for potential impacts to Suitland Parkway and Belle Chance would consist of planting indigenous shrubs and low-growing trees to preserve as best feasible, the historic landscape character of Suitland Parkway originally provided by the taller trees requiring removal. Use of indigenous rather than

introduced or ornamental species would help preserve the rural ambiance of both historic features. Including a large number of indigenous evergreens, such as American holly, eastern redcedar, and mountain laurel, in the replacement plantings would help provide year-round visual screening even in winter, when deciduous vegetation is less effective. With mitigation, the effects of Alternatives 2 or 3 would be to alter the arboreal vegetation bordering Belle Chance and the affected segment of Suitland Parkway but to still preserve much of the rural character of the affected segment. The Air Force and NPS will coordinate closely with the MHT to develop mitigation that restores as much of the historic appearance of Suitland Parkway as possible while still meeting Air Force vegetation management objectives.

4.4.3 Cold War Structures

None of the alternatives have any potential to affect structures eligible for listing on the NRHP based on association with the Cold War.

Alternative 1

Alternative 1 would not affect any structures eligible for listing on the NRHP based on association with the Cold War.

Alternative 2

Andrews AFB: No structures dating from the Cold War would be altered. Vegetation management has no potential to affect the interior or exterior function or appearance of Cold War military structures. These generally utilitarian structures were usually surrounded by minimal landscaping during the Cold War. Trimming or removal of nearby trees would not detract from the Cold War setting for these utilitarian airbase structures.

Suitland Parkway: Suitland Parkway was constructed during World War II, prior to the Cold War, and its basis for inclusion on the NRHP is not based on affiliation with the Cold War (Krakow, 1990; NPS, 1993). Changes affecting Suitland Parkway therefore do not represent an impact on Cold War structures.

Other Off-Base Land: There are no military installations with structures dating from the Cold War within the off-base areas affected by Alternative 2.

Alternative 3

Andrews AFB: As for Alternative 2, no structures dating from the Cold War would be affected.

Suitland Parkway: As noted for Alternative 2, Suitland Parkway was not constructed during the Cold War, and changes affecting Suitland Parkway do not represent an impact on Cold War structures.

Other Off-Base Land: There are no military installations with structures dating from the Cold War within the off-base areas affected by Alternative 3.

Mitigation

No mitigation is proposed. None of the alternatives would potentially affect to Cold War structures.

4.4.4 Aesthetics

The following section addresses the potential for visual impacts. The potential for noise (acoustic) impacts is addressed in Section 4.5.4. None of the alternatives have a potential for aesthetic impacts not related to visual or acoustic effects (for example, odor).

As discussed in Section 4.3.2, changes to forest vegetation resulting from Alternatives 2 or 3 would alter the aesthetic characteristics of two sites: Suitland Parkway (which is listed on the NRHP) and Belle Chance (which has been determined to be eligible for listing on the NRHP). Visual impacts to these historic sites would be softened by planting shrubs and low-growing trees to replace taller trees requiring removal.

None of the alternatives would affect trees or the landscape characteristics of residential areas on or off of the base. Changes to forest vegetation north of Suitland Parkway would affect an industrial park but not any visually sensitive areas. Changes to forest vegetation south of the base would only affect undeveloped lands. Because of the distance separating the residential areas south of the golf course from the runways, Alternatives 2 or 3 would require at most light tree trimming in those areas. The overall appearance of those areas, including their landscaping, would not be altered.

Alternative 1

Alternative 1 would not involve any aesthetic changes to Andrews AFB, Suitland Parkway, or other off-base areas. Light trimming of occasional trees to maintain Category II ILS would not be visibly conspicuous.

Alternative 2

Andrews AFB: As discussed in Section 4.4.2, many trees in the forested area separating the historic Belle Chance grounds from the airfield (Stand 2 in Figure 3-5) would have to be removed or heavily trimmed. However, the many of the trees closest to Belle Chance would require only a light trim. Additional low growing trees could be planted at the western edge of Stand 2 to reduce the visibility of the airfield from Belle Chance. Planting low-growing or slow-growing indigenous evergreens such as American holly, eastern redcedar, and mountain laurel at the western edge of Stand 2 would provide enhanced, year-round visual screening between Belle Chance and the airfield.

Most work performed as part of Alternative 2 would not be visible from residential, administrative, and public spaces on the base. Some tree removal necessary northeast of the East Runway (Stand 4 in Figure 3-5) could be visible from a housing area east of East Perimeter Road. However, no trees in the housing area itself, or in wooded areas directly north and south of the housing, would be affected. No areas visible from housing in the eastern part of the base would be affected.

The central part of the base is already visually dominated by the open expanses of the airfield. Therefore, removal of trees from lands north, south, or at the side edges of the airfield should not result substantially alter the overall appearance of those areas. An exception is that tall hardwood trees form a component to the landscaping in the Base Lake Recreation Area and the eastern part of the golf course, both of which lie directly south of the West Runway. Visually, the trees function to provide spatial separation between adjoining fairways and between the fairways and the picnic area surrounding Base Lake. These aesthetic functions can be readily restored by planting a mixture of low-growing replacement hardwoods and evergreens wherever taller trees must be removed.

Suitland Parkway: The visual experience enjoyed by motorists using Suitland Parkway north of Andrews AFB would be altered in the following ways:

1. the forest vegetation visible to the motorists would appear sparser and lower than is typical for deciduous forests in the region,

2. especially in the short term, some buildings in the Penn Belt Industrial Park could be more visible to motorists,
3. there would be less continuity in the strip of forest vegetation seen by motorists driving the parkway, and
4. the crowns (upper parts) of some trees that are trimmed rather than removed would assume an unnatural shape.

When evaluating the severity of these visual impacts, it is important to recognize that the affected segment of Suitland Parkway is not uniformly bordered by dense, unaltered forest vegetation. Figure 3-5 shows that a gap ranging in width from roughly 200 to 300 feet separates Stands 8 and 9 (to the west) from Stands 10 and 12 (to the east). A warehouse in the Penn Belt Industrial Park is visible to motorists through an unforested area. A similar area separates Stands 3 and 10. These unforested areas break the visual continuity of the forest. Additionally, many of the trees in Stand 8 have been recently killed, most likely by flooding caused by beavers. This decreases the density of trees visible to motorists. Several trees in Stands 5, 8, 9, and 10 have been trimmed in the past to maintain the Category II ILS capabilities on the West Runway.

The rapid growth of the shrubs and low trees remaining after Alternative 2 is implemented would rapidly soften many of the resulting visual impacts. The resulting dense growth of shrubs and low trees would not provide motorists with the visual continuity of an unbroken forest, but such vegetation is a common feature on many rural roadways in central Maryland that are commonly regarded as “scenic” or “quaint.” It is not expected that the lower vegetation would ever completely hide the Penn Belt Industrial Park from view of Suitland Parkway motorists. But the lower vegetation, like the fragmented forest presently lining the roadway, would soften the appearance of the industrial park.

The planting of shrubs and low-growing replacement trees that is proposed as mitigation would further enhance the visual softening effects of the lower vegetation. Frequent use of regionally indigenous evergreens such as American holly, eastern redcedar, and mountain laurel for replacements would render the mitigation even more effective. The evergreens would provide strong visual screening during the winter months when the prevalent deciduous vegetation is less effective. Inclusion of regionally indigenous trees with attractive flowering and/or fruiting properties; such as flowering dogwood, eastern redbud, and mountain laurel; would further enhance the visual experience. All of the species discussed above are common components of rural roadways in central Maryland and would enhance rather than detract from the rural ambiance of the parkway.

Other Off-Base Land: Work performed north of Suitland Parkway would affect a predominantly industrial setting that is not visually sensitive. Most work performed south of Andrews AFB would affect undeveloped land that is not visually sensitive. Some light trimming of occasional trees could be necessary in a residential area south of the golf course. The effects of such light trimming would not be visually obvious and would not alter the landscape characteristics of any residence.

Alternative 3

Andrews AFB: The extension to the West Runway would be visible only from areas directly adjoining the airfield and would be visually consistent with other parts of the airfield. Other impacts would be as described for Alternative 2.

Suitland Parkway: The visual impact to that part of Suitland Parkway passing north of the West Runway would be reduced relative to Alternative 2, but impacts elsewhere would be the same. But even north of the West Runway, the overall visual appearance of the vegetation would be changed from forest to a dense growth of shrubs and low trees. Alternative 3 would rely on the same mitigation approach as does Alternative 2.

Other Off-Base Land: Impacts would be as described for Alternative 2. Even though forested areas in the Penn Belt Industrial Park north of the West Runway (Stands 8 and 12 in Figure 3-5) would not be as severely disturbed, those areas are not visually sensitive.

Mitigation

Mitigation for aesthetic impacts would involve planting indigenous, low-growing trees and shrubs in areas where taller trees are removed. Planting efforts would focus primarily on Suitland Parkway, Belle Chance, areas visible from off-base residences, the Base Lake Recreation Area, and the golf course. Tree trimming would use modern techniques that maximize preservation of natural tree shapes. With mitigation, the effects of Alternatives 2 or 3 would be to alter arboreal vegetation while still retaining the visibly rural character of Suitland Parkway and Belle Chance and the manicured, landscaped appearance of Base Lake, the golf course, and areas visible from off-base residences.

4.5 PHYSICAL ENVIRONMENT

Issues addressed as part of physical environment include climate and air quality (Section 4.5.1) surface water and groundwater (Section 4.5.2), soils, geology, and prime farmland (Section 4.5.3), noise (Section 4.5.4), and waste management (Section 4.5.5).

4.5.1 Climate and Air Quality

Under the Clean Air Act of 1970 (42 U.S.C. 7401), the United States Environmental Protection Agency (USEPA) has set the National Ambient Air Quality Standards (NAAQS) for several criteria pollutants to protect human health and welfare (40 CFR 50). The criteria pollutants include particulate matter less than 10 microns in diameter (PM₁₀), sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), lead (Pb), and ozone (O₃). Primary standards are adopted to protect human health. Secondary standards are adopted to protect public welfare.

Alternatives 2 and 3 could potentially generate very small amounts of fugitive dust emissions during brief periods that soils are exposed during grading. Grading would be limited to less than 15 acres under Alternative 2 and less than 35 acres under Alternative 3 and would be limited to areas on Andrews AFB only. Tree trimming and removal work performed as part of Alternatives 2 or 3 would also involve brief periods of operation of equipment containing internal combustion engines. Such equipment includes trucks, chippers, and chain saws. Because of the small area of grading and brief period of emissions resulting from equipment operation, the potential emissions are clearly *de minimis*. An air conformity analysis in accordance with 40 CFR 93.153 would be performed as necessary before Alternatives 2 or 3 are implemented.

Alternative 1

No changes to air quality would result from Alternative 1. Minor trimming work needed to maintain Category II ILS would result in clearly *de minimis* emissions due to operation of chain saws, chippers, and other equipment with internal combustion engines for brief periods of time. No soils would be exposed in a manner capable of generating fugitive dust. Because of the very limited scope of work under Alternative 1, the *de minimus* status of potential emission is obvious, and an air conformity analysis would not be necessary.

Alternative 2

Andrews AFB: Clearing forest vegetation that has encroached into the primary surface and Clear Zone graded area associated with the East Runway (Figure 17) would result in the temporary exposure of approximately 15 acres of soil. Soil would be immediately seeded with one of the seed mixes recommended by the MDE for permanent stabilization of soil (MDE, 1994). A straw mulch would be applied over the seeded area to provide temporary stabilization until the seed germinates. Tree trimming and removal conducted elsewhere on Andrews AFB would not involve removal of understory vegetation or groundcover and would therefore not result in any potential fugitive dust emissions.

Tree trimming and removal requires the operation of chainsaws, chippers, trucks, and other equipment containing internal combustion engines. Under Alternative 2, fewer than 5 to 10 such pieces of equipment would be operated for less than 10 to 15 days each year. The emissions would be *de minimis* and not substantially contribute to the generation of ozone or other criteria air pollutants in the region. 89 AW would prepare an air conformity analysis to document that the potential emissions are *de minimis*.

Suitland Parkway: Tree trimming and removal conducted on Suitland Parkway would not involve removal of understory vegetation or groundcover and would therefore not result in any potential fugitive dust emissions. As noted for Andrews AFB, tree trimming and removal requires the operation of chainsaws, chippers, trucks, and other equipment containing internal combustion engines. Under Alternative 2, fewer than 5 to 10 such pieces of equipment would be operated for less than 10 to 15 days each year. The emissions would be *de minimis* and not substantially contribute to the generation of ozone or other criteria air pollutants in the region. Work on Suitland Parkway would be included in the air conformity analysis.

Other Off-Base Land: Tree trimming and removal conducted on other off-base land would not involve removal of understory vegetation or groundcover and would therefore not result in any potential fugitive dust emissions. As noted for Andrews AFB, tree trimming and removal requires the operation of chainsaws, chippers, trucks, and other equipment containing internal combustion engines. Under Alternative 2, fewer than 5 to 10 such pieces of equipment would be operated for less than 10 to 15 days each year. The emissions would be *de minimis* and not substantially contribute to the generation of ozone or other criteria air pollutants in the region. Off-base work would be included in the air conformity analysis.

Alternative 3

Andrews AFB: As for Alternative 2, clearing forest vegetation that has encroached into the primary surface and Clear Zone graded area associated with the East Runway (Figure 1-7) would result in the temporary exposure of approximately 15 acres of soil. Additionally, as much as 60 acres of soil would be exposed near the south end of the West Runway to construct the extended runway and associated taxiways. Soil would be immediately seeded with one of the seed mixes recommended by the MDE for permanent stabilization of soil (MDE, 1994). A straw mulch would be applied over the seeded area to provide temporary stabilization until the seed germinates. Tree trimming and removal conducted elsewhere on Andrews AFB would not involve removal of understory vegetation or groundcover and would therefore not result in any potential fugitive dust emissions.

As described for Alternative 2, potential emissions from the operation of equipment with internal combustion engines would be clearly *de minimis*. 89 AW would prepare an air conformity analysis to document this fact. It is noted that Alternative 3 would involve, in addition to the air emissions sources described for Alternative 2, emissions from construction equipment such as graders, concrete trucks, loaders, etc. used to construct the West Runway extension. The air conformity analysis would have to account for these additional emission sources.

Suitland Parkway: As for Alternative 2, tree trimming and removal on Suitland Parkway would not involve removal of understory vegetation or groundcover and would therefore not result in any potential fugitive dust emissions. Emissions from the operation of equipment would be *de minimis* and not substantially contribute to the generation of ozone or other criteria air pollutants in the region. Work on Suitland Parkway would be included in the air conformity analysis.

Other Off-Base Land: As for Alternative 2, tree trimming and removal off of Andrews AFB would not involve removal of understory vegetation or groundcover and would therefore not result in any potential fugitive dust emissions. Emissions from the operation of equipment would be *de minimis* and not substantially contribute to the generation of ozone or other criteria air pollutants in the region. Off-base work would be included in the air conformity analysis.

Mitigation

The primary focus of air quality mitigation would be control of fugitive dust emissions. Soils left exposed following the limited forest clearing proposed for the eastern edge of the airfield as part of Alternatives 2 or 3 would be immediately mulched and seeded with one of the permanent seed mixes recommended by the MDE for permanent vegetation stabilization. Soils exposed by grading to construct the southern extension to the West Runway would be similarly stabilized as soon as the final grade is established. Temporary stabilization measures would be taken as necessary to prevent fugitive dust emissions during the construction period. Dust suppression measures would be taken if soils experience strong winds and/or desiccating conditions while left exposed. Such measures could include spraying loose, dry soil with water (wet suppression), reducing vehicle speed when traversing areas of exposed soils, or treatment of exposed soils with dust control chemicals (chemical stabilization).

4.5.2 Surface Water and Groundwater

None of the alternatives would consume substantial quantities of water. No water would be consumed by Alternative 1. Small quantities of water would be provided from a watering truck to new tree and shrub seedlings planted as mitigation for Alternatives 2 or 3 (see Section 4.3.1). Small quantities of water could

also be sprayed for fugitive dust control in areas of soil exposed by work performed as part of Alternative 2 or 3 (see Section 4.5.1). Water would also be used to mix concrete poured to extend the West Runway and taxiways as part of Alternative 3. All of the water would be obtained from the Washington Suburban Sanitary Commission (WSSC), and none would be obtained from onsite groundwater sources.

Neither Alternative 1 nor Alternative 2 would create additional areas of impervious surface, and neither would therefore generate increased stormwater runoff. Extension of the West Runway and associated taxiways as part of Alternative 3 would create approximately 4 acres of new impervious surface in the southern part of the base, in the watershed for Piscataway Creek. Routine stormwater management practices would be implemented to manage the increased stormwater runoff.

Small areas of soil would be temporarily exposed following clearing and grading operations on Andrews AFB as part of Alternative 2 or 3. No soils would be exposed for any time on Suitland Parkway or elsewhere off of the base. Routine sediment control practices prescribed by the MDE in the *Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE, 1994) would be implemented to prevent the introduction of sediment into any streams. Alternatives 2 and 3 involve more than 5,000 square feet of soil disturbance. The State of Maryland would therefore require a soil erosion and sediment control plan and storm water management plan for either of these alternatives.

Alternative 1

No water would be consumed under Alternative 1. No soil disturbance would result, and there would be no potential for increased sedimentation of streams or other waterways. No impervious surfaces would be created, and there would therefore be no potential for increased stormwater runoff.

Alternative 2

Andrews AFB: Water consumption under Alternative 2 would be limited to 1) providing water to new trees and shrubs planted as mitigation and 2) spraying water for fugitive dust control. Water applied to new plantings would be purchased from the WSSC, obtained from existing taps on Andrews AFB, and carried to the plants by a water truck. Trees and shrubs would be watered immediately following planting. Additional watering rounds would be performed during the first year after planting if dry conditions threaten survival. The water applied to each tree or shrub during each round would be less than 10 gallons. The water demand for watering activities under this alternative are expected to be minimal.

The maximum area potentially requiring water application for fugitive dust control would be 15 acres. Water would be obtained from WSSC. Spraying the equivalent of a half-inch of water over 15 acres for

fugitive dust control would consume roughly 200,000 gallons. Even if multiple applications are required, the overall demand placed on WSSC would be minimal.

Clearing 15 acres of forest vegetation would temporarily result in exposed soil capable of generating sediment-laden runoff. However, there are no streams, wetlands, or other waterways adjoining the subject areas. But routine sediment control practices prescribed by the MDE in the *Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE, 1994) would still be implemented. These would include installation of silt fences prior to clearing and immediate mulching and seeding after clearing. In accordance with requirements established by the State of Maryland, a soil erosion and sediment control plan and storm water management plan would be submitted to and approved by MDE and followed during all work.

Work performed under this alternative elsewhere on the base would not involve soil disturbance and would not provide for increased sedimentation. Trees would be removed by cutting the trunks above the soil line and leaving the stumps, roots, understory, and leaf litter intact. But to be conservative, silt fences would still be erected wherever trees are removed within 50 feet of any stream, wetland, or floodplain.

Suitland Parkway: Water consumption would be limited to minimal quantities necessary to water newly planted trees and shrubs. No work resulting in soil disturbance would be performed on the Parkway corridor. Trees would be removed by cutting the trunks above the soil line and leaving the stumps, roots, understory, and leaf litter intact. Trucks and other heavy equipment would be staged on the shoulder of the roadway and not in areas of natural vegetation. To be conservative, silt fences would still be erected wherever trees are removed within 50 feet of Hensen Creek or its associated wetlands and floodplain.

Other Off-Base Land: Water consumption would be limited to minimal quantities necessary to water newly planted trees and shrubs. No work resulting in soil disturbance would be performed off of Andrews AFB. Trees would be removed by cutting the trunks above the soil line and leaving the stumps, roots, and understory intact. Trucks and other heavy equipment would be staged on paved or grassy areas, not in areas of natural vegetation. To be conservative, silt fences would still be erected wherever trees are removed within 50 feet of any stream, wetlands, or floodplain.

Alternative 3

Andrews AFB: Impacts would be as described for Alternative 2. However, additional water would be needed for fugitive dust control in as many as 50 acres at the south end of the West Runway. Additional water would also be needed to mix concrete used to pave the extension to the West Runway and taxiways. Quantities of water used for concrete would be similar to local construction requirements within

the area. That construction would result in approximately 5 acres of increased impervious surface. Small quantities of additional stormwater would be generated by this new area of impervious surface. For example, a 1-inch rainfall event would result in the generation of more than 100,000 gallons of stormwater attributable to the new area of impervious surface. Routine stormwater management practices would be implemented to manage the increased stormwater generation. These practices would be documented in a storm water management plan approved by MDE.

Suitland Parkway: Impacts would be as described for Alternative 2.

Other Off-Base Land: Impacts would be as described for Alternative 2.

Mitigation

The quantities of water potentially consumed by any of the alternatives would not warrant mitigation. Routine measures to control sedimentation, as prescribed by the MDE in the *Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE, 1994), would be implemented wherever soil disturbance results. These measures would effectively prevent sedimentation of any streams, wetlands, or other waterways. At a minimum, silt fences would be installed at the edges of any area subject to soil disturbance, and the exposed soils would be mulched and seeded as soon as possible using a seed mixes recommended by the MDE. Soil disturbances under any alternative would be limited to areas on Andrews AFB.

To be conservative, silt fences would also be installed in any forested area where trees would be removed within 50 feet of any stream, wetland, or floodplain. This measure would be taken even though the trees would be removed by cutting above the soil line, leaving stumps, roots, and the soil surface intact.

4.5.3 Soils, Geology, and Prime Farmland

None of the alternatives would affect prime farmland. Soil disturbance under Alternative 2 would be limited to roughly 15 acres on Andrews AFB. Soil disturbance under Alternative 3 would include that 15 acres plus as much as 60 acres on Andrews AFB directly south of the West Runway. Elsewhere, tree trimming and tree removal would be conducted in a manner that does not disturb the soil surface. No disturbances to the soil surface would occur on the Suitland Parkway right-of-way or elsewhere off of Andrews AFB. No prime farmland would be lost.

Alternative 1

Alternative 1 would not disturb the soil surface anywhere on Andrews AFB, Suitland Parkway, or other off-base land.

Alternative 2

Andrews AFB: Soil disturbance would be limited to approximately 15 acres adjoining the eastern edge of the airfield (the forest encroachment shown in Figure 1-7). The topsoil and other surface soils in those areas would be completely or partially stripped away using a bulldozer in order to remove stumps and create a mowable surface. The exposed subsoil would be covered with topsoil to create a seedbed for planting permanent grass. To prevent soil erosion, this area would be permanently stabilized using one of the permanent seed mixes recommended in the *Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE, 1994).

Elsewhere, tree trimming and tree removal would be conducted in a manner that does not disturb the understory vegetation, leaf litter, or soil surface. Trucks and other heavy equipment would be staged in paved or grassy areas to avoid compacting soil in naturally vegetated areas.

Suitland Parkway: Except for the installation of replacement trees, no soil disturbance would result. Equipment would be staged on paved shoulders or grassy areas to avoid compacting soil supporting natural vegetation. Trees would be removed by cutting the trunk above the soil line, leaving stumps, roots, understory vegetation, and the leaf litter intact. The stumps and roots of removed trees would persist for several years and continue to provide effective soil stabilization. In the meantime, the retained understory would grow denser and develop expanded root systems that would effectively stabilize the soil against erosion once the stumps have decomposed.

Other Off-Base Land: No disturbance to the soil surface would occur. Equipment would be staged on paved shoulders or grassy areas to avoid compacting soil supporting natural vegetation. Trees would be removed by cutting the trunk above the soil line, leaving stumps, roots, understory vegetation, and the leaf litter intact. The stumps and roots of removed trees would persist for several years and continue to provide effective soil stabilization. In the meantime, the retained understory would grow denser and develop expanded root systems that would effectively stabilize the soil against erosion once the stumps have decomposed.

Alternative 3

Andrews AFB: It would be necessary to conduct a geotechnical analysis of the soils adjoining the south end of the West Runway if Alternative 3 is selected. The analysis would indicate what actions are necessary to adequately compact the soils prior to installing the extended runway and taxiways. Most soils subject to grading at the south end of the West Runway are mapped as Udorthents, smoothed (U1) or as Udorthents, clayey, smoothed (U4) (SCS, 1974). Udorthents are areas where the natural soil profile has been so disturbed by urban development that assignment to a specific soil series (natural soil mapping unit) is not possible. The classification of Udorthents provides no information regarding the suitability of an area's soil for construction or other engineering activities.

Small areas of soils identified as luka fine sandy loam and Fallsington sandy loam are also mapped in close proximity to the south end of the West Runway. The luka soil series is described as moderately well drained, but the Fallsington soil series is described as poorly drained and is designated as a hydric soil (SCS, 1974). Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. Most hydric soils occur within wetlands. The possible occurrence of wetlands near the south end of the West Runway and the potential for impacts resulting from Alternative 3 is discussed in Section 4.3.4.

Suitland Parkway: Impacts would be as described for Alternative 2.

Other Off-Base Land: Impacts would be as described for Alternative 2.

Mitigation

Measures for preventing soil erosion would be detailed in a Soil Erosion and Sediment Control Plan prepared in accordance with the *Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE, 1994). The plan would require silt fences at the edges of exposed soils, temporary vegetative stabilization of construction sites when possible, and permanent vegetative stabilization of exposed soils upon completion of work. Silt fences would be removed once permanent vegetative stabilization is successfully achieved. Trucks, chippers, and other equipment would be staged in areas that are paved or regularly mowed to avoid compacting soils in naturally vegetated areas.

4.5.4 Noise

Alternatives 1 and 2 would not alter the position of the noise contours shown in Figure 313, which correspond to the day-night average sound levels (DNLs) experienced by persons on the ground

underneath the flight paths of aircraft approaching or taking off from Andrews AFB. Alternative 3 would theoretically shift the position of the noise contours extending directly north from the West Runway southward by as much as 500 feet. The noise contour displacement would not be exactly 500 feet because the contribution from aircraft using the East Runway would not change. Alternative 3 would also shift the noise contours south of the West Runway further south by 500 feet. The noise contour displacement would be approximately 500 feet because the contribution from the East Runway would not change. Despite these slight displacements of the noise contours, the overall noise levels experienced over the landscape surrounding Andrews AFB and Suitland Parkway would not be substantially altered by Alternative 3.

Alternatives 2 and 3 would temporarily generate brief periods of noise due to the operation of equipment used in trimming and cutting trees (such as chain saws and chippers), and Alternative 3 would temporarily generate brief periods of noise due to the operation of bulldozers, cement mixers, and other equipment used to construct the extension to the West Runway and associated taxiways. These activities take place only during the daytime and would be within background noise levels resulting from operation of military aircraft and from urban traffic.

Alternative 1

No changes in noise contours or in noise generation would result from Alternative 1. Periods of noise generation caused by light trimming of occasional trees to maintain Category II ILS would be brief, each lasting less than a few hours out of a single day.

Alternative 2

Andrews AFB: Operation of equipment used to trim and remove trees would generate brief periods of noise for a few days per vegetation management event. A person in close proximity to an area where a chain saw is in use generally experiences sound levels of approximately 120 decibels (dB) (Federal Interagency Committee on Noise, 1992). Persons within 15 feet of an area where a pneumatic chipper is in use experience sound levels of approximately 130 dB (Crowley, 1997). These sound levels could cause annoyance in typical urban areas (where noise levels are around 90 dB) or suburban areas (where noise levels are around 50 dB) (Federal Interagency Committee on Noise, 1992). However, Andrews AFB is dominated by noise generated by the takeoff and landing of aircraft. A person within 25 meters (approximately 82 feet) of a jet aircraft during takeoff would experience a sound level of 150 dB. A person within 100 meters (approximately 328 feet) of a jet aircraft during takeoff would experience a sound level of 130 dB (Federal Interagency Committee on Noise, 1992). The noise generated by the jet

is substantially greater than that generated by the chain saw or chipper. No noise would be generated for Alternative 2 during the nighttime hours, when it could disturb residents in on-base housing.

Suitland Parkway: Suitland Parkway passes through the 75 dB DNL noise contour north of the Andrews AFB runways and thus experiences very high sound levels from aircraft passing overhead on approach to, or in takeoff from, the runways. That portion of Suitland Parkway north of Andrews AFB lacks facilities such as trails, campgrounds, picnic areas, or playgrounds whose users would be disturbed by high noise levels. Motorists using Suitland Parkway with their car windows open might notice chain saw or chipper noise but would likely be no more disturbed than by the frequent overflight of low flying aircraft.

Other Off-Base Land: Alternative 2 would not alter the existing DNL noise contours shown in Figure 3-13. The noise levels attributable to Andrews AFB flight operations experienced by residents in the landscape surrounding the base would not change.

Removing trees in the southern part of the base could increase the noise levels experienced by private residences directly south of the base due to ground-level noise generation on the runways. The distance between the residences south of the base and the south end of the West Runway is more than 5,000 feet (lands south of the East Runway are undeveloped). Each doubling of the distance between a noise source (such as a jet operating on the West Runway) and a noise receptor (such as a residence) decreases the sound level by 6 dB (NPS, 1972). If a person standing within roughly 80 feet of a jet operating at the south end of the West Runway experiences 150 dB, then a person standing 5,000 feet south in an open area would experience roughly 110 dB.

A 100-foot wide band of forest cover is reported to reduce sound levels by approximately 7 dB (NPS, 1972). Separate data is not available for deciduous versus evergreen forest cover. Figure 34 indicates that a strip of forest approximately 300 feet wide lies between the south end of the West Runway and the southern perimeter of the base. If all of the trees in the forest strip were cut down, the noise experienced by a house directly south would increase by about 21 dB. With the forest, the house would experience an estimated 90 dB; without the forest it would experience an estimated 110 dB.

However, the forest strip lies at the base perimeter, more than 4,000 feet south of the West Runways. At that distance, tree heights would only have to be reduced to below 70 feet (assuming a level landscape) to provide the required clearance below the approach-departure surface. It is expected that most trees in forested areas close to the southern perimeter of the base could be trimmed and survive without being killed or seriously deformed. Alternatively, replacing the tall trees near the southern base perimeter with a dense planting of a low-growing evergreen such as leyland cypress (*Cupressocyparis leylandii*) could

provide the same acoustic benefit as preserving the existing hardwood forest. A leyland cypress planting would also provide superior visual screening between the residences and the base.

Alternative 3

Andrews AFB: Noise generated by the operation of bulldozers, cement mixers, and other equipment used in the construction of the extension to the West Runway and associated taxiways would be within the background noise levels generated by flight operations. Impacts from the operation of chain saws, chippers, and other equipment used to trim and remove trees would be as described for Alternative 2.

Suitland Parkway: Impacts would generally be as described for Alternative 2. Despite the 500-foot southward displacement of the threshold at the north end of the West Runway, Suitland Parkway would still pass through the 75 dB DNL noise contour.

Other Off-Base Lands: Impacts would generally be as described for Alternative 2. The 500-foot threshold displacement on the north and south ends of the West Runway would not appreciably alter the position of the noise contours associated with Andrews AFB flight operations.

Mitigation

The proposed mitigation would consist of (1) conducting tree trimming and removal that is part of Alternative 2 or 3 only during daytime hours; (2) conducting runway construction activities (part of Alternative 3) only during daylight hours; and (3) for Alternative 2 or 3, trimming and retaining trees in forested areas between the golf course and the southern perimeter of the base, or replacing those trees with an acoustic screen consisting of a low-growing evergreen such as leyland cypress.

4.5.5 Waste Management

No alternative would disturb any sites under investigation or remediation as part of the Andrews AFB Installation Restoration Program (IRP), any sites on the National Priorities List (NPL), nor interfere in any way with the investigation or remediation of sites under the IRP or on the NPL. None of the alternatives would generate hazardous waste. Alternatives 2 and 3 would generate solid waste in the form of logs, wood chips, and other wood products derived from trees. Much of this waste could be recycled and used in landscaping projects, although a portion could require disposal at county facilities designed for disposal of solid waste.

Alternative 1

Alternative 1 would not generate hazardous or solid waste or interfere with the IRP or with NPL sites.

Alternative 2

Andrews AFB: Alternative 2 would not generate any hazardous waste or disturb any of the IRP sites on Andrews AFB (Figure 3-14). Tree removal and trimming would generate solid waste as follows:

- Logs from trunks and limbs exceeding 2 inches in diameter,
- Wood chips from limbs and slash less than 2 inches in diameter, and
- Grubbed stumps and roots from areas of clearing and grading.

Logs generated on the base would be offered or sold to interested persons to use as firewood, pulpwood, or sawlogs. Logs and wood chips could also be used for landscaping purposes. Excess logs and wood chips are in high demand for firewood and mulch. It is unlikely that any would require disposal.

There is less demand for grubbed stumps. Loose stumps with attached roots could be used to stabilize stream banks and improve fish habitat. Planners of stream restoration projects might be interested in using some of the stumps. Excess stumps would have to be disposed of at county facilities.

Suitland Parkway: The affected segment of the Suitland Parkway right-of-way is not on the NPL. Work on the Suitland Parkway right-of-way would also generate logs and wood chips but no stumps. The logs and wood chips would be available to NPS for use in landscaping on Suitland Parkway or other NPS properties.

Other Off-Base Land: Work elsewhere off of Andrews AFB would not affect any NPL sites. It would also generate logs and wood chips but no stumps. The logs and wood chips would be offered to the property owner. If declined, the logs and wood chips would be made available to other interested parties for landscaping or other use.

Alternative 3

Andrews AFB: Like Alternative 2, Alternative 3 would not generate any hazardous waste or disturb any of the IRP sites on Andrews AFB (Figure 3-14). Alternative 3 would generate solid waste in the form of logs, wood chips, and stumps that would be used or disposed of as described for Alternative 2.

Suitland Parkway: Alternative 3 would generate solid waste in the form of logs, wood chips, and stumps. Material would be used or disposed of as described for Alternative 2; however, the quantities would be somewhat less.

Other Off-Base Land: Alternative 3 would generate solid waste in the form of logs, wood chips, and stumps that would be used or disposed of as described for Alternative 2.

Mitigation

The high demand for logs and wood chips for landscaping purposes would help ensure that these materials would be recycled rather than disposed of as solid waste.

4.6 SOCIOECONOMICS

Issues addressed as part of socioeconomics include employment (Section 4.6.1) and housing (Section 4.6.2). A final section addresses environmental justice issues.

4.6.1 Employment

Alternative 1 could require the 89 AW and other Andrews AFB tenants to curtail flight operations reducing employment at the base. Andrews AFB is one of the largest employers of military and civilian personnel in Prince George's County, Maryland. Alternatives 2 or 3 would not substantially affect regional employment opportunities, although both would create a minor, short-term increase in the demand for tree and landscape care. A large number of companies presently offer tree and landscape care to businesses and homeowners in the county. Extension of the West Runway and taxiways as part of Alternative 3 could also create a minor, short-term increase in the demand for construction labor.

Alternative 1

No short-term change in employment would result. However, flight operations could have to be curtailed in the future if forest vegetation continues to be unmanaged and the numbers of trees that are flight obstructions increase. Over the long term, employment levels at Andrews AFB could substantially decrease as an indirect result of Alternative 1. Andrews AFB is a major employer of military and civilian employees in Prince George's County and the loss of jobs on the base could adversely affect the regional job market.

Alternative 2

Andrews AFB: Implementation of Alternative 2 would increase short-term demand for the services of tree care businesses serving Prince George's County. Tree trimming and tree removal work would be contracted to firms licensed to provide tree care services in Maryland. Once the initial tree work is completed, limited vegetation maintenance work would be necessary every 2 or 3 years. More than 200 tree care businesses serve the area. Work on the base would be overseen by the staff of the 89 CES.

Suitland Parkway: Implementation of Alternative 2 would increase the short-term demand for the services of tree care businesses serving Prince George's County. Tree trimming and tree removal work would be contracted to firms licensed to provide tree care services in Maryland. Once the initial tree work is completed, limited vegetation maintenance work would be conducted as specified in the management plan. Arborists or horticulturists on the staff of NPS would oversee the work on the base.

Other Off-Base Land: Implementation of Alternative 2 would increase the short-term demand for the services of tree care businesses serving Prince George's County. Tree trimming and tree removal work would be contracted to firms licensed to provide tree care services in Maryland. Once the initial tree work is completed, limited vegetation maintenance work would be necessary every 2 or 3 years. Work on off-base lands other than Suitland Parkway would be overseen by the staff of the 89 CES.

Alternative 3

Andrews AFB: Extending the West Runway and associated taxiways would result in a brief short-term increase in the demand for bulldozer operators, concrete workers, truck drivers, and other construction laborers. Tree trimming and removal work under Alternative 3 would increase the short-term demand for the services of tree care businesses serving Prince George's County, as described for Alternative 2.

Suitland Parkway: Impacts would be the same as those described for Alternative 2.

Other Off-Base Land: Impacts would be the same as those described for Alternative 2.

Mitigation

Local labor that is available would be used. Other than Alternative 1 (the no-action alternative), the effect of any alternative on the local economy would be beneficial and therefore no mitigation is proposed.

4.6.2 Housing

If Alternative 1 (the no action alternative) leads to indirect long-term losses in employment at Andrews AFB, those losses could ultimately affect the local housing market. Local contractor personnel residing off-base would meet most of the labor demands resulting from implementation of Alternatives 2 or 3. Alternatives 2 and 3 would therefore have little potential to affect the local housing market.

Alternative 1

Decreases in employment resulting from a reduction in the mission of Andrews AFB could affect the local housing market.

Alternative 2

Andrews AFB: It is expected that all work performed as part of Alternative 2 would be performed by contractors employing local residents. These contractors would not use on-base housing. It is possible, although unlikely, that contractor personnel might seek temporary lodging from commercial establishments in the vicinity of Andrews AFB.

Suitland Parkway: As on Andrews AFB, it is expected that all work performed as part of Alternative 2 would be done by contractors employing local residents. It is possible, although unlikely, that contractor personnel might seek temporary lodging from commercial establishments in the vicinity of Andrews AFB.

Other Off-Base Land: As on Andrews AFB, it is expected that all work performed as part of Alternative 2 would be done by contractors employing local residents. It is possible, although unlikely, that contractor personnel might seek temporary lodging from commercial establishments in the vicinity of Andrews AFB.

Alternative 3

Andrews AFB: It is expected that most work performed as part of Alternative 3 would be done by contractors employing local residents. Contributions from certain specialty trades could be required to complete the extension to the West Runway and associated taxiways. No contractor would use on-base housing. It is possible that some contractor personnel might seek temporary lodging from commercial establishments in the vicinity of Andrews AFB.

Suitland Parkway: Impacts would be the same as those described for Alternative 2.

Other Off-Base Land: Impacts would be the same as those described for Alternative 2.

Mitigation

None of the alternatives impacts the availability of housing and other accommodations, and therefore no mitigation is proposed.

4.6.3 Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means no groups of people should bear a greater share of the negative environmental effects from industrial, municipal, and commercial operations or the execution of Federal, state, local, or tribal programs and policies.

The Air Force and NPS seek to ensure actions and activities related do not disproportionately affect any segment of the population. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," directs Federal agencies to develop an environmental justice strategy that identifies and addresses disproportionately high adverse human health or environmental effects of program policies and activities on minority and low-income populations.

The overall minority percentage for Maryland is 65 percent with 9.5 percent of the population below the poverty level. The poverty level for 2001 is defined as a family of four people with an income of \$18,000 or less per year. Andrews AFB is located within Prince George's County with population 801,515. 71.5 percent of the Prince George's County population is minority. The median household income in Prince George's County is \$47,882, with 9.3 percent of the people in the county below the poverty level (U.S. Census Bureau, 2001).

Within a 3-mile radius of Andrews AFB, less than 4% of the population have incomes below the poverty level. The minority population within the 3-mile radius of Andrews AFB is 56.5 percent (USEPA, 2001).

Disproportionately high or adverse environmental impacts on low-income or minority communities are not expected for any of the alternatives.

Alternative 1

No impacts potentially affecting low-income or minority communities would result from Alternative 1.

Alternative 2

Andrews AFB: Minority and low-income residents in the vicinity of Andrews AFB tend to be concentrated to the west and northwest of Andrews AFB in older neighborhoods inside (west) of the Capital Beltway. Impacts to trees would occur primarily in areas north and south of the runways at Andrews AFB, which are not visible from the older neighborhoods likely to contain substantial numbers of minority and low-income residents.

Suitland Parkway: The segment of Suitland Parkway that passes north of Andrews AFB is the eastern terminus of the parkway. It primarily serves motorists traveling from, or to, Andrews AFB or newer suburban areas east of Andrews AFB. Minority and low-income residents live primarily west of Andrews AFB and the Capital Beltway in neighborhoods that are not serviced by the affected segment of Suitland Parkway. The area to the north of Suitland Parkway is primarily an industrial park. Impacts to trees in the industrial park would not be visible from older residential neighborhoods likely to contain large numbers of minority or low-income residents.

Other Off-Base Land: Impacts to trees would affect areas within an industrial park north of Suitland Parkway and areas directly south of Andrews AFB. Since minority and low income populations live primarily to the west and northwest of Andrews AFB, these impacts would not disproportionately affect low-income or minority communities.

Alternative 3

Andrews AFB: Impacts would be the same as those described for Alternative 2. However, the slight reduction in residential land encompassed within the APZs north of the West Runway as a result of the runway threshold displacement that is part of Alternative 3 would benefit older residential neighborhoods likely to contain minority and low-income residents.

Suitland Parkway: Impacts would be the same as those described for Alternative 2.

Other Off-Base Land: Impacts would be the same as those described for Alternative 2.

Mitigation

No mitigation is proposed for any of the alternatives.

4.7 CUMULATIVE IMPACTS

Cumulative impacts are impacts that result from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions regardless of the source of the actions. Specific consideration of cumulative impacts is required in all documents prepared to comply with the National Environmental Policy Act (NEPA) regulations of both the Air Force and the NPS.

The environmental impact analyses presented above indicate that none of the alternatives could adversely affect the following resources: land use (Section 4.2.1); vehicular transportation (Section 4.2.3); utilities (Section 4.2.4); threatened and endangered species (Section 4.3.3); streams and aquatic biota (Section 4.3.5); floodplains (Section 4.3.6); archaeological resources (Section 4.4.1); cold war structures (Section 4.4.3); climate and air quality (Section 4.5.1); surface water and groundwater (Section 4.5.2); soils, geology, and prime farmland (Section 4.5.3); noise (Section 4.5.4); waste management (Section 4.5.5); employment (Section 4.6.1); housing (Section 4.6.2); or environmental justice (Section 4.6.3). No further consideration of potential cumulative impacts is necessary for these resources.

Flight Operations and Safety: Alternative 1 (the no-action alternative) could adversely impact the future of flight operations and safety at Andrews AFB. Although a potentially significant adverse impact, this is not a cumulative impact. Alternatives 2 and 3 would not adversely affect the future of flight operations and safety at Andrews AFB or other facilities.

Trees and Other Vegetation: The potential for cumulative impacts resulting from the trimming and removal of trees required as part of Alternatives 2 or 3 pertains primarily to possible effects on the visual setting and historic integrity of Suitland Parkway. Those issues are discussed below under "Historic Resources." Impacts to trees elsewhere would be confined to areas in close proximity to an active military airfield and forest remnants in an industrial park. Landscape trees in housing areas on the base and in residential areas south of the base would be subject only to light trimming. If any such trees require removal, they would be replaced *in situ* with lower-growing tree species of equal or higher aesthetic contribution to a residential landscape. Alternative 1 (no action) would not adversely affect any trees or other vegetation.

Terrestrial Wildlife: Like many other suburban counties in the northeastern United States, Prince George's County, Maryland, has experienced substantial fragmentation of its forest cover due to urban development and construction of an increasing network of roads, utility lines, and other linear features serving that development. The result has been a decrease in the availability of habitat for FIBs and other wildlife favoring large, unbroken forest stands. Alternatives 2 or 3 would result in the loss or fragmentation of additional forest cover, primarily on Suitland Parkway and in the southeastern quadrant

of Andrews AFB. However, the affected forest cover consists of small, already fragmented patches that do not at this time provide good habitat for FIBs or similar wildlife.

Wetlands: Alternatives 1 (no action) and 2 would not result in a net loss of wetlands. Construction to extend the West Runway southward under Alternative 3 would require permanently filling as much as 15 acres of emergent wetlands occupying a depression in the southern part of the airfield. These wetlands have already been altered by the original construction of the airfield and are frequently mowed and kept free of woody vegetation as part of routine airfield maintenance. If Alternative 3 is selected, the Air Force would create new wetlands at a minimum replacement ratio of 1 acre created elsewhere in the Piscataway Creek watershed for each acre lost (1:1 mitigation ratio). This mitigation would assure no cumulative net loss of wetlands.

Historic Resources and Aesthetics: Alternatives 2 and 3 would noticeably alter the appearance of approximately 0.75 mile of Suitland Parkway where it passes north of Andrews AFB. Suitland Parkway, which was constructed in 1943, was listed on the NRHP in 1995 along with several other scenic parkways in the Washington, DC, region. Maintaining the historic setting of a feature such as Suitland Parkway requires maintaining its scenic and natural appeal despite the close proximity of suburban development. Cutting trees creates gaps in the linear corridor of forest vegetation lining the parkway, breaking the scenic continuity experienced by motorists and making the adjoining densely developed suburban landscape more visible to the motorists.

Recent construction of an extension to the Washington Regional Rapid Rail Transit System (Metro Rail) Green Line resulted in the removal of forest vegetation and the introduction of modern concrete structures to more than a mile of the Suitland Parkway right-of-way several miles west of Andrews AFB. This construction was supported by a supplemental environmental impact statement prepared in 1992. At that time, Suitland Parkway provided motorists with predominantly sylvan driving experience traversing an otherwise densely developed urban landscape. The scenic driving experience is now interrupted near its midpoint by concrete structures that are inconsistent with the parkway's natural and historic setting.

The cumulative effect of Alternatives 2 or 3 within the affected area would be to further break the strip of mature deciduous forest that forms an element of the historic character of Suitland Parkway. However, Alternative 2 or 3 would affect only a short segment of Suitland Parkway close to its eastern terminus. Unlike the Green Line, Alternative 2 or 3 would serve to truncate, but not interrupt, the predominantly visual experience offered by Suitland Parkway. Furthermore, the forest cover bordering the affected segment Suitland Parkway has already been visually altered by earlier rounds of tree clearing to construct navigational aids north of the runways and maintain the instrument landing capabilities. The forest in this segment of the right-of-way was also previously altered to construct entrance and exit ramps leading to

the Andrews AFB North Gate. Motorists traversing this segment of Suitland Parkway do not presently experience an intact forest setting and are visually aware of their proximity to the Andrews AFB and the runways.

4.8 CHAPTER 4 REFERENCES

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5.0 SUMMARY OF MITIGATION MEASURES

Table 5-1 summarizes measures that would be taken to mitigate each type of potentially adverse environmental impact that could result from implementation of one or more of the alternatives. Mitigation is also discussed as an integral part of the environmental consequences analysis presented in Section 4.0. Mitigation measures are summarized below for each alternative.

Alternative 1: No mitigation is proposed if Alternative 1, the no-action alternative, is chosen. Although Alternative 1 could result in adverse impacts related to decreased flight safety, a curtailed mission, and reduced future employment at Andrews Air Force Base (AFB), no mitigation is possible to address these impacts.

Alternative 2: Most of the potentially adverse environmental impacts associated with Alternative 2 would result from alterations to forested areas, especially on Suitland Parkway. Work in these areas would be completed in a manner that best preserves the low trees, shrubs, groundcover, and leaf litter. Removal of the tree canopy (the layer of tallest trees) from areas lying under the imaginary surfaces would be the objective for areas on Andrews AFB. However, tall-growing trees would be trimmed and retained wherever possible on Suitland Parkway. The trimming required for some canopy trees on Suitland Parkway could result in their death or deformity. Those trees would have to be removed, and low-growing replacement trees and shrubs would be planted in the gaps as mitigation.

The replacement planting on Suitland Parkway would be directed by NPS. Only regionally indigenous tree and shrub species would be used. The plan would use a mixture of deciduous and evergreen shrubs and trees with a mature height of less than 30 feet. Examples of low-growing trees that are regionally indigenous include American holly (*Ilex opaca*), eastern redbud (*Cercis canadensis*), and flowering dogwood (*Cornus florida*). A few of species such as white oak (*Quercus alba*) or eastern redcedar (*Juniperus virginiana*) whose mature height is tall but whose growth rate is slow may also be planted. A list of tree and shrub species that could be used is provided in Table 5-2.

Replacement of cut/removed trees to expedite the recovery of a “natural” woodland appearance would emphasize screening any cutover areas on Suitland Parkway as well as helping to screen from view developed areas visible from the Parkway. Replanting the interior forest would be designed to expedite forest recovery, while undertaking a program of manipulating natural re-growth and succession. This program would actively remove undesirable tree species and would especially include an active program of invasive and exotic plant removal.

Table 5-1

Summary of Mitigation Measures

| Resource | Potential Impacts | Proposed Mitigation |
|------------------------------|--|--|
| Land Use and Infrastructure | | |
| Land Use | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Tree trimming and removal would alter the status of land cover in areas of Andrews Air Force Base (AFB), Suitland Parkway, and off base but not alter land use. No potential for conflicts with current land use plans or policies. | Shrubs and low-growing replacement trees would be planted at locations on Suitland Parkway where tall trees are removed. Similar replacement planting would be conducted off-base wherever requested by affected landowners. |
| Flight Operations and Safety | Alternative 1: Taking no action would adversely affect safe use of runways. | If no action is taken, no mitigation is possible to offset safety risk. |
| | Alternatives 2 and 3: No potential impacts. | No mitigation is proposed. |
| Vehicular Transportation | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Trucks and other equipment used to trim or cut trees would be briefly staged on the sides of Suitland Parkway and other arterial roadways. The equipment could briefly distract passing motorists and cause minor traffic congestion. | Work capable of affecting traffic flow would not be scheduled for the morning or evening rush hours. |
| Utilities | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Work would likely require that trees be trimmed or cut in the vicinity of overhead electric distribution lines. | Tree work near overhead utilities would be performed by qualified line-clearance arborists. |
| | Alternatives 2 or 3: Would involve grading (on Andrews AFB only) where forest vegetation has encroached into the primary surface or Clear Zone graded areas of the East Runway. | Areas subject to grading would be inspected for underground utilities prior to soil disturbance. |

Table 5-1

Summary of Mitigation Measures (Continued)

| Resource | Potential Impacts | Proposed Mitigation |
|----------------------------|---|---|
| Biological Environment | | |
| Trees and Other Vegetation | Alternative 1: Light trimming of occasional trees to maintain Category II Instrument Landing System (ILS) capabilities. No effect on overall appearance or character of forested lands. | No mitigation is proposed. |
| | Alternatives 2 or 3: Work would involve complete removal of forest vegetation (on Andrews AFB only) where forest vegetation has encroached into the primary surface or Clear Zone graded areas of the East Runway (approx. 15 acres). | Because the forest cover loss would affect an airfield setting only, no mitigation is proposed. |
| | Alternative 3: Grading to construct 500-foot southward extension of the West Runway would require complete removal of roughly 2.5 acres of forest cover. | Because the forest cover loss would affect an airfield setting only, no mitigation is proposed. |
| | Alternatives 2 or 3: Work would involve trimming and removing trees from forested areas on Andrews AFB close to the runways. | Tree work on Andrews AFB would emphasize removals, without replacement. However, certain trees near Belle Chance, in the Base Lake Recreation Area, or the golf course could be trimmed or replaced. |
| | Alternatives 2 or 3: Trimming for the imaginary approach-departure surfaces would affect forest land on Suitland Parkway north of Andrews AFB, land in an industrial park north of Suitland Parkway, and land south of Andrews AFB. | Work would minimize disturbance to low trees, shrubs, groundcover, and leaf litter. Trees would be trimmed rather than removed whenever possible. Shrubs and low-growing replacement trees would be planted where tall trees are removed. Replacement planting would be conducted on private land where requested by affected landowners. |
| Terrestrial Wildlife | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Gaps created by tree removals could reduce habitat for wildlife favoring forest interior settings. However, affected forested areas are presently fragmented. | No mitigation proposed, but preservation of understory vegetation and the replacement planting described above would benefit wildlife. |

Table 5-1

Summary of Mitigation Measures (Continued)

| Resource | Potential Impacts | Proposed Mitigation |
|-----------------------------------|---|---|
| Threatened and Endangered Species | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Although unlikely, tree work on Andrews AFB could affect areas containing two plant species regarded as rare by the Maryland Department of Natural Resources (MDNR), but not listed as threatened or endangered under state or federal regulations. The species are chinquapin and tall nutrush. | Midland sedge individuals in affected areas on Suitland Parkway would be temporarily fenced during tree work to protect against inadvertent damage. Forest cover on Andrews AFB northwest of the West Runway would be inspected for chinquapin, and forest cover in wetlands on the southern edge of the golf course would be inspected for tall nutrush, before initiating work in those areas. Plants would be marked to avoid inadvertent disturbance. |
| Wetlands | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Tree trimming and removal would alter forested wetland vegetation but would not result in a net loss of wetlands. | Mitigation requirements established by Maryland Department of Natural Resources (MDNR) would be met. MDNR typically requires reforestation of non-forested wetlands at a 1:1 compensation ratio for impacts resulting in the conversion of forested wetlands to other wetlands. |
| | Alternative 3: Construction of the extension to the West Runway under Alternative 3 would fill as much as 15 acres of wetlands in the southeastern part of the airfield, directly south of the West Runway. | Minimum wetland mitigation ratios established by MDNR and Baltimore District of the U.S. Corps of Engineers (COE) would be met. Both set ratios of 1:1 replacement for filling emergent (non-forested) wetlands and 2:1 for filling forested wetlands. |
| Streams and Aquatic Biota | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Work would remove trees from riparian areas bordering Hensen Creek (on and north of Suitland Parkway) and Piscataway Creek (on Andrews AFB south of airfield and on undeveloped land southeast of base). | Stumps and roots would be left in place to provide bank stabilization until shrubs and low trees develop root systems equally capable of stabilizing the banks. |
| Floodplains | No alternatives would fill any floodplain or otherwise alter flood flows. Retained understory vegetation would continue to slow overland runoff. | No mitigation is proposed. |

Table 5-1

Summary of Mitigation Measures (Continued)

| Resource | Potential Impacts | Proposed Mitigation |
|--------------------------|--|--|
| Cultural Environment | | |
| Archaeological Resources | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Grading would be limited to areas on base where Maryland State Historic Preservation Officer (SHPO) has not identified archaeological resources. | No mitigation is proposed. |
| | Alternatives 2 or 3: Tree planting performed as mitigation on Suitland Parkway could result in light physical disturbance of surface and shallow subsurface archaeological resources. The affected area has not previously been surveyed for archaeological resources. | A preliminary archaeological survey consisting of a literature review and site reconnaissance by a professional archaeologist is presently underway for the affected portion of Suitland Parkway. Based on the outcome of this survey, further investigation will be conducted and appropriate mitigation measures proposed for the tree re-planting effort. |
| Historic Resources | None of the alternatives would physically alter historic buildings or structures such as Belle Chance or walls, railings, or other structural components to Suitland Parkway. | No mitigation is proposed. |
| | Alternatives 2 or 3: Work would alter the forest vegetation essential to the historic setting of Suitland Parkway. Enough trees would be retained near Belle Chance to leave its rural ambiance intact. | Work on Suitland Parkway would minimize disturbance to low trees, shrubs, groundcover, and leaf litter. Shrubs and low-growing replacement trees would be planted where tall trees are removed. State-of-the-art trimming techniques would be used to ensure that trimmed trees appear natural rather than deformed. Only regionally indigenous deciduous and evergreen species would be used. |
| Cold War Structures | None of the alternatives would disturb Cold War structures. | No mitigation is proposed. |

Table 5-1

Summary of Mitigation Measures (Continued)

| Resource | Potential Impacts | Proposed Mitigation |
|------------------------------------|--|--|
| Aesthetics | Alternative 1: Trimming occasional trees to maintain Category II ILS would not result in visible changes to forest cover. | No mitigation is proposed. |
| | Alternatives 2 or 3: Work would alter the appearance of forest vegetation essential to the historic setting of Suitland Parkway. Enough trees would be retained near Belle Chance to leave its rural ambiance intact. | Work on Suitland Parkway would minimize disturbance to low trees, shrubs, groundcover, and leaf litter. Shrubs and low-growing replacement trees would be planted where tall trees are removed. State-of-the-art trimming techniques would be used to ensure that trimmed trees appear natural rather than deformed. Only regionally indigenous deciduous and evergreen species would be used. |
| Physical Environment | | |
| Climate and Air Quality | Alternative 1: No potential for substantial impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: Limited grading performed only on Andrews AFB could result in temporary generation of fugitive dust emissions. | Fugitive dust control measures, such as spraying water onto exposed soil surfaces, would be taken as necessary. |
| Surface Water and Groundwater | Alternatives 1 or 2: No potential impacts | No mitigation is proposed. |
| | Alternative 3: New runway and taxiway surfaces would generate increased stormwater runoff in watershed of Piscataway Creek. | Stormwater management measures approved by MDE would be implemented following construction of new impervious surfaces. |
| Soils, Geology, and Prime Farmland | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3: A small area of topsoil would be disturbed to clear forest encroachment into imaginary primary surface and Clear Zone graded area for East Runway. Grading would also be necessary to extend the West Runway under Alternative 3. | Exposed soils would be covered with topsoil as necessary to create a suitable medium for the establishment of permanent vegetation. Soil erosion control measures would follow the <i>Maryland Standards and Specifications for Soil Erosion and Sediment Control</i> . |

Table 5-1

Summary of Mitigation Measures (Continued)

| Resource | Potential Impacts | Proposed Mitigation |
|-----------------------|--|---|
| Noise | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 and 3: Operation of chainsaws, chippers, and other equipment used to cut trees would generate brief periods of noise. Longer periods of construction noise would be generated as part of Alternative 3. | Operation of equipment that generates noise would be limited to daytime business hours. |
| | Alternatives 2 and 3: Removing trees in southern part of golf course could expose residential areas to increased noise levels originating from base operations. | Trees in southern part of golf course would be trimmed and retained rather than removed to the extent possible. Alternatively, an acoustic screen consisting of densely spaced evergreens would be planted on the southern perimeter of the base, if requested by the affected residents. |
| Waste Management | Alternative 1: No potential impacts. | No mitigation is proposed. |
| | Alternatives 2 or 3 would generate solid waste in the form of logs, wood chips, and stumps. | Most of the solid waste would be recycled as landscaping materials. |
| Socioeconomics | | |
| Employment | Alternative 1: Future curtailment of mission because of increasing aviation safety risks could indirectly lead to decreased employment on the base. | No mitigation is possible. |
| | Alternatives 2 and 3: Minor, temporary increase in employment for contractors engaged in tree care and landscaping. | No mitigation is proposed. |
| Housing | None of the alternatives would employ large numbers of workers who do not reside locally. | No mitigation is proposed. |
| Environmental Justice | None of the alternatives could potentially result in impacts. | No mitigation is proposed. |

Table 5-2

**Trees and Shrubs for Replanting
Suitland Parkway and Other Areas
North and South of Andrews Air Force Base Runways**

| Scientific Name | Common Name | Form | Landscape Position |
|--------------------------------|--------------------------|--|-----------------------------------|
| <i>Alnus serrulata</i> | Common Alder | Deciduous Shrub | Wetlands |
| <i>Amalanchier canadensis</i> | Shadblow Serviceberry | Low Deciduous Tree | Wetlands, Riparian Areas |
| <i>Carpinus caroliniana</i> | American Hornbeam | Low Deciduous Tree | Uplands |
| <i>Cercis canadensis</i> | Eastern Redbud | Low Deciduous Tree | Uplands |
| <i>Cornus amomum</i> | Silky Dogwood | Deciduous Shrub | Wetlands, Riparian Areas |
| <i>Cornus florida</i> | Flowering Dogwood | Low Deciduous Tree | Uplands |
| <i>Crataegus crusgalli</i> | Cockspur Hawthorne | Deciduous Shrub | Uplands |
| <i>Hamamelis virginiana</i> | Common Witchhazel | Low Deciduous Tree | Uplands |
| <i>Ilex opaca</i> | American Holly | Low Evergreen Tree | Uplands |
| <i>Juniperus virginiana</i> | Eastern Redcedar | Low Evergreen Tree | Uplands |
| <i>Kalmia latifolia</i> | Mountain Laurel | Evergreen Shrub | Uplands |
| <i>Lindera benzoin</i> | Spicebush | Deciduous Shrub | Wetlands, Riparian Areas |
| <i>Rhododendron nudiflorum</i> | Pinxterbloom Azalea | Deciduous Shrub | Uplands |
| <i>Sassafras albidum</i> | Common Sassafras | Low Deciduous Tree | Uplands |
| <i>Vaccinium corymbosum</i> | Highbush Blueberry | Deciduous Shrub or Low Deciduous Tree | Wetlands, Riparian Areas |
| <i>Viburnum dentatum</i> | Southern Arrowwood | Deciduous Shrub | Wetlands, Riparian Areas, Uplands |
| <i>Rhus glabra</i> | Smooth Sumac | Deciduous Shrub | Uplands |

It is not expected that the mitigation described above will result in no visible change to the appearance of forest vegetation on Suitland Parkway and no alteration of the historical character of Suitland Parkway, even once the planted saplings and seedlings have an opportunity to mature. However, the application of state-of-the-art arboricultural practices that minimize damage to trimmed trees and lower vegetation coupled with the proposed aggressive program to replace tall-growing with lower-growing woody vegetation will preserve much of the visually appearing naturalistic and rural ambiance of the affected segment of Suitland Parkway.

Other mitigation options might be considered as the Air Force and NPS coordinate on preparing a management plan prior to initiating work. Such options might include selective spraying or hand removal of certain exotic or invasive species from the affected segment of Suitland Parkway, stabilization of existing eroded slopes on Suitland Parkway, stormwater management practices designed to solve existing problems on Hensen Creek, or reforestation of other land on Suitland Parkway not affected by work related to Andrews AFB.

The approach for preserving and replacing trees on affected private land would be dictated by the landowner. Where requested, the 89th Airlift Wing would attempt to trim and retain trees and plant replacements as described for Suitland Parkway. Elsewhere, the Air Force would remove tall-growing tree species from the affected areas without replacement.

Trees in certain aesthetically sensitive areas on the base would also be trimmed wherever possible instead of removed. Examples include forested areas near Belle Chance, the Base Lake Recreation Area, and the golf course. Shrubs and low growing trees listed in Table 5-2 would be planted as replacements where trees are removed from these sensitive areas. No residential areas on the base would be affected.

Other mitigation measures would be implemented. To avoid interfering with traffic, tree work on Suitland Parkway would not be scheduled during morning or evening rush hour times. Chain saws, chippers, and other noise-generating equipment would be operated only during daytime business hours. Standard practices for control of fugitive dust, stormwater runoff, and sedimentation would be employed to prevent adverse impacts. An acoustic screen of dense evergreens would be planted on the southern perimeter of the base if large numbers of trees must be removed close to off-base residences adjoining the perimeter. To the extent possible, logs, wood chips, and stumps generated by tree work would be reused as landscaping materials rather than disposed of as solid waste.

Alternative 3: The mitigation measures proposed for Alternative 2 would also be implemented for Alternative 3. Alternative 3 would also involve major military construction to extend the West Runway and

6.0 CONSULTATION

The following agencies were consulted during the preparation of this Environmental Assessment.

| Name | Agency |
|--------------------|--|
| Joyce Beck | Citizens Concerned for a Cleaner County, Prince George's County Department of Environmental Resources |
| Howard Berger | Maryland-National Capital Park and Planning Commission, Historic Preservation |
| Lori Byrne | Maryland Department of Natural Resources, Wildlife and Heritage Division |
| Elizabeth Cole | Maryland Historical Trust |
| Chris Conner | US Environmental Protection Agency, Chesapeake Bay Program Office, Public Relations |
| Rick Cooksey | US Environmental Protection Agency, Chesapeake Bay Program Office, US Forest Service Liaison |
| Andrew Derr | Maryland Department of the Environment, Water Management, Nontidal & Waterways Division |
| Daniel Estevez | Maryland Department of Natural Resources, Wildlife Division |
| Kim Finch | Maryland-National Capital Park and Planning Commission, Natural Resources |
| Greg Golden | Maryland Department of the Environment, Environmental Review Unit |
| George Harman | Maryland Department of the Environment, Federal Facilities |
| George Harrison | US Army Corps of Engineers, District Office |
| Ronald Healey | US Department of Agriculture, APHIS Wildlife Service |
| John Hurt | Maryland Department of the Environment, Water Management, Nontidal & Waterways Division |
| Linda C. Janey | Maryland Office of Planning, Clearinghouse and Plan Review Unit |
| Ken Jolie | Maryland Department of Natural Resources, Forest Service |
| Kim Lemaster | Maryland Department of the Environment, Hazardous and Solid Waste Management Administration |
| Katharine McCarthy | Maryland Department of Natural Resources, Wildlife and Heritage Division |
| Andy Moser | US Fish & Wildlife Service, Chesapeake Bay Field Office |
| Kevin Porteck | Headquarters, Air Force Center for Environmental Excellence (HQ AFCEE/ECR), Resource Conservation Division |
| Steve Olson | US Department of Defense, Chesapeake Bay Program |
| Andrew Sochanski | US Environmental Protection Agency, Region III |
| Tanya Tully | Maryland Historical Trust |
| Bernadette Turner | Maryland Department of Natural Resources, Forest Service |
| Anne Williams | Prince George's County Health Department, Environmental Crime |
| Samuel Wynkoop | Prince George's County DER |
| Ken Yetman | Maryland Department of Natural Resources, Watershed and Restoration Division |

taxiways and therefore would require additional mitigation measures. A soil erosion and sediment control plan would be prepared before grading any land. The plan would follow the *Maryland Standards and Specifications for Soil Erosion and Sediment Control*. Temporary seeding of annual grasses would be performed when necessary to prevent erosion of exposed soils during construction work, and permanent seeding of perennial grasses and/or legumes would be performed immediately following completion of construction work. Topsoil would be added as necessary to create soil conditions suitable for seeding. Silt fences and other temporary devices would be installed around the perimeter of graded areas to prevent sedimentation of adjoining areas. A stormwater management plan would be prepared before beginning construction of extended runways and taxiways. The plan would assess the suitability of existing stormwater management facilities serving the airfield and determine whether additional facilities must be constructed.

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7.0 LIST OF PREPARERS

| Name | Affiliation | Experience | Degrees | EA Responsibility |
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| John Annett | Tetra Tech NUS, Inc. Germantown, MD | 32 | B.A., Mathematics | Research, Analysis, and Writing |
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