

CHAPTER 3.0

ALTERNATIVES

3.1 INTRODUCTION

This chapter of the Draft Environmental Impact Statement (DEIS) describes the alternatives evaluation and screening process that was used by the Federal Aviation Administration (FAA), presents a rigorous exploration of possible alternatives, provides reasoning as to why some alternatives were eliminated from detailed study, describes those reasonable alternatives that were retained for detailed evaluation, and presents a comparative analysis of the reasonable alternatives retained for detailed environmental impact evaluation.

The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act of 1969 (NEPA) stipulate that alternatives are the heart of the environmental impact statement. Those regulations require that the Federal decision-maker perform the following tasks:

- “Rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.”
- “Devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits.”
- “Include reasonable alternatives not within the jurisdiction of the lead agency.”
- “Include the alternative of no action.”

The range of alternatives examined during the environmental evaluation was generated to satisfy the purpose and need described in [Chapter 2.0](#) of this DEIS. The Metropolitan Washington Airports Authority (MWAA) submitted a proposal to FAA for airside and landside developments that would meet the operational requirements of forecasted activity levels (by providing the immediate capability for dual simultaneous independent operations and the future ability to conduct triple simultaneous independent operations at Washington Dulles International Airport [IAD]) while ensuring the airport operates safely and efficiently for all airport users. It is important to note that in the future, MWAA may propose and FAA will consider proposals for triple simultaneous Instrument Flight Rule (IFR) arrivals utilizing runway separations down to a minimum of 4,300 feet with high-update radar/monitoring equipment.

Alternatives were generated by FAA and through the Environmental Impact Statement (EIS) Scoping process. Along with the “No-Action” Alternative, FAA found that a large range of alternatives should be identified and evaluated. As a result, off-site as well as a significant number of on-site alternatives were developed and explored that could meet the purpose and need of the proposed project.

The National Oceanic and Atmospheric Administration (NOAA) will prepare separate NEPA documentation from this FAA EIS that will contain an evaluation of NOAA/NWS facility relocation alternatives, a detailed analysis of environmental impacts, and selection of a Preferred Alternative for the relocation of its facilities. FAA and NOAA/NWS will be coordinating their respective decisions regarding any required property transfer to MWAA and relocation of NOAA/NWS facilities.

As described in [Section 1.1.2](#), FAA's role is to: 1) disclose and evaluate potential environmental impacts that may result from the proposed project and reasonable alternatives, and 2) evaluate the ability of the proposed project and reasonable alternatives to provide safe and efficient airspace and airport operations. FAA will select its preferred alternative after balancing the environmental impacts discussed in this DEIS with economic, technological, and safety concerns it must consider to fulfill its statutory mission and responsibilities.

3.2 ALTERNATIVES EVALUATION AND SCREENING PROCESS

FAA completed a thorough and objective review of reasonable alternatives to MWAA's proposed project at IAD. CEQ regulations require that an agency look at "reasonable" alternatives, while 49 U.S. Code (USC) 47106(1)(c)(C) requires as a condition to granting Federal funds, an analysis of "possible and prudent" (could you and should you) alternatives for a new runway when significant impacts would occur. With those standards in mind, FAA did not evaluate alternatives in detail if they showed no possibility of meeting the project purpose and/or need, as described previously, or no prospect of being built.

One category of alternatives that was considered early in the environmental evaluation process but was not retained for further consideration was the use of other modes of transportation. Other modes of transportation include the use of roadway, conventional rail, and high-speed rail as an alternative to the proposed project. As part of this EIS, FAA determined that alternative modes of transportation do not provide a reasonable fit with the proposed project objectives. The proposed project objectives relate to capacity enhancement measures to accommodate existing and future aviation activity. Therefore, other modes of transportation were eliminated because they do not provide the same service as aviation and would not affect IAD's ability to safely and efficiently accommodate existing and future levels of aviation activity.

As indicated in [Chapter 2.0](#), Purpose and Need, of this DEIS, FAA has carefully examined the purpose of and need for MWAA's proposed project at IAD in consideration of the range of reasonable alternatives identified by FAA. This analysis identifies which alternatives might reasonably meet the purpose and need statements described in [Chapter 2.0](#), Purpose and Need, of this DEIS. Those alternatives that did not reasonably meet the proposed project's purpose and need, or were determined not feasible, practicable, or prudent were not considered further within this DEIS. However, the No-Action Alternative was carried through detailed environmental analysis for baseline comparative purposes to fulfill CEQ requirements and to disclose potential impacts if the project is not built. Potential cumulative environmental impacts associated with any past, present, and reasonably foreseeable actions are discussed separately in [Section 5.23](#) of this DEIS.

In the development of this DEIS, FAA re-examined the recommendations of previous IAD planning studies and identified and independently evaluated numerous alternatives for further consideration.

Off-site alternatives that were examined included:

- Development of a new airport, and
- Use of other existing airports within the metropolitan Washington region.

On-site alternatives that were examined included:

- No-Action,
- MWAA's proposed project, and
- Various parallel runway configurations.

The alternatives analysis utilized a two-level evaluation and screening process formulated to concentrate on the purpose and need for the proposed project and the reasonableness of the alternatives. Those alternatives that did not meet the purpose and need were eliminated from further consideration. As the alternatives evaluation proceeded through both levels of screening analysis, certain alternatives that did not meet the criteria were eliminated from further evaluation. Those that met the Level 1 criteria continued on to the Level 2 analysis. At the conclusion of the second level of evaluation and screening, those alternatives that remained were subject to detailed analysis in subsequent sections of this DEIS. The following briefly describes the evaluation criteria used in the analysis of alternatives.

3.2.1 LEVEL 1 ANALYSIS: PURPOSE AND NEED CRITERIA

The first level of analysis evaluated whether the various alternatives met the purpose and need criteria that details specific improvements in airfield layout to safely accommodate existing and projected aviation activity levels. These airfield improvement needs, established in [Chapter 2.0](#), Purpose and Need, are:

- A new north-south parallel runway immediately capable of dual simultaneous independent operations during Instrument Meteorological Conditions (IMC) while reserving the capability of triple simultaneous independent operations during IMC in the future,
- A new east-west parallel runway capable of dual simultaneous independent operations during IMC, and
- Redundant runways.

Annual Service Volume (ASV) calculations and simulation analysis (SIMMOD) determined that the combination of the airfield improvements would allow IAD to safely accommodate existing and projected aviation activity levels. Those alternatives that satisfied the first-level criteria were retained for evaluation under the second level of screening analysis. Since all Build Alternatives would include Tier 3 Concourse development, the need for the passenger terminal and aircraft gate capacity was not included as a first-level criterion. The following presents a summary of the Level 1 criteria used in the alternatives screening process.

3.2.1.1 Provide a Parallel North-South Transport Category Runway Immediately Capable of Dual Simultaneous Independent Operations during IMC while Reserving the Capability of Triple Simultaneous Independent Operations during IMC in the Future

As described in detail in [Section 2.2.3.1](#), a parallel north-south runway at IAD would benefit the major operating flows used at the airport. Specifically, a new north-south runway would:

- Provide an additional runway dedicated to arrivals in the Mixed Flow;

- Provide a runway to accommodate arrivals and departures, while enabling the existing Runway 1L to be used solely for arrivals in the North Flow; and
- Provide an additional runway to accommodate arrivals and departures in the South Flow.

Based on simulation analysis, a new north-south parallel runway would reduce the average delay per operation by 32 percent to 4.7 minutes in 2010, when compared to the existing runway configuration.

Through the development and use of parallel runways that offer the ability to conduct dual or triple simultaneous independent approach capabilities, the maximum reduction in aircraft operational delay can be achieved when compared to close-in parallel runways that offer reduced operational flexibility through dependent arrival/departure operations. Analysis of forecast hourly arrival data and maximum hourly IFR arrival rates (**Figure 2.2-3**) showed that a runway separation that allows for triple simultaneous independent arrival operations during IMC will be required as early as 2010.

Currently, triple simultaneous independent instrument operations are recommended to have 5,000 feet in separation between runways. However, consideration is given to runway separations of less than 5,000 feet. FAA Advisory Circular (AC) 150/5300-13, Change 6, *Airport Design*, Section 208(a) states:

- (2) Triple simultaneous precision instrument approaches for airports below 1,000 feet elevation [IAD elevation is 313 feet above mean sea level] normally require parallel runway centerline separation of 5,000 feet between adjacent runways. Triple simultaneous precision instrument approaches for airport elevations at and above 1,000 feet and reduction in separation are currently under study by the FAA. In the interim, the FAA, on a case-by-case basis, will consider proposals utilizing separations down to a minimum of 4,300 feet where a 5,000-foot separation is impractical or the airport elevation is at or above 1,000 feet. Reduction of separation may require special radar, monitoring equipment, etc.

Further, FAA Order 7110.65, *Air Traffic Control*, Paragraph 5-9-7 details the radar requirements (high-update radar/monitoring equipment) for runway separations below 5,000 feet:

4. A high-resolution color monitor with alert algorithms, such as the final monitor aid or that required in the precision runway monitor program shall be used to monitor approaches where:
 - (a) Triple parallel runway centerlines are at least 4,300 but less than 5,000 feet apart and airport field elevation is less than 1,000 feet MSL [IAD elevation is 313 feet above mean sea level].

3.2.1.2 Provide a Parallel East-West Transport Category Runway Capable of Dual Simultaneous Independent Operations during IMC

As described in detail in **Section 2.2.3.2**, a parallel east-west runway at IAD would benefit the operating flows that contribute to the majority of average delay in the existing runway configuration. Specifically, a new east-west runway would:

- Provide an additional runway dedicated to departures in the Mixed Flow,
- Provide an additional runway dedicated to departures in the North Flow, and
- Provide an additional runway to accommodate arrivals and departures in the Northwest Flow.

Based on simulation analysis, a new east-west parallel runway would reduce the average delay per operation by 45 percent to 3.8 minutes in 2010, when compared to the existing runway configuration.

It should be noted that adding both new runways would have a much more significant effect on delay reduction at IAD. Adding both runways (north-south and east-west) would reduce the average delay per operation by 62 percent to 2.6 minutes in 2010, when compared to the existing runway configuration.

FAA AC 150/5300-13, Change 6, *Airport Design*, Section 208, states that although a parallel runway centerline separation of at least 5,000 feet is recommended, “dual simultaneous precision instrument approaches are normally approved on parallel runway centerline separation of 4,300 feet.”

3.2.1.3 Provide Redundant Runways

Disruptions to aircraft operations, either on the ground or in the air, could lead to significant operational and economic consequences. Historically, runway closures have accounted for approximately 5 percent of all aircraft delays over 15 minutes. Each of the airfield improvements described earlier in this section would benefit delay levels as well as enhance safety by providing a certain level of redundancy.

With adequate spacing, the north-south parallel runway would immediately provide the ability for dual simultaneous independent operations during IMC with the existing Runway 1L/19R. Therefore, a new north-south runway would provide redundancy for the existing north-south parallel runways to provide similar capabilities in the event of a runway closure of either north-south runway. A new east-west runway would provide a redundant east-west runway in the event of a runway closure, most critical during the Northwest Flow conditions.

3.2.2 LEVEL 2 ANALYSIS: CONSTRUCTABILITY, COST, AND ENVIRONMENTAL CONSIDERATIONS

Level 2 of the alternatives screening analysis was designed to determine which alternatives were considered feasible, practicable, and prudent alternatives to the proposed project. This level of the alternatives screening analysis considered the constructability of alternatives, including their effects on and costs of facilities, infrastructure, property acquisition, relocating residences and businesses, and environmental impacts. Alternatives that were retained after the Level 2 evaluation are analyzed further in [Chapter 5.0](#), Environmental Consequences. The following presents a summary of the Level 2 criteria used in the alternatives screening process.

3.2.2.1 Infrastructure

The effects of each of the alternatives on existing infrastructure were evaluated in the Level 2 screening process. This consisted of quantification of impacts to existing infrastructure, including roadways and utilities. This evaluation criterion was used because impacts to existing infrastructure can affect airside and landside operations; the complexity of staging, phasing, and construction activities; the coordination and integration of the proposed project with other ongoing development projects; the safety of the general public; the ability to obtain all the required Federal, state, and local permits; and the total cost of a project. Therefore, in the Level 2 screening analysis, those alternatives that resulted in greater impacts to existing and planned infrastructure were considered to be less feasible and prudent than those that resulted in fewer infrastructure impacts.

3.2.2.2 Property Acquisition

The effects of each of the alternatives in terms of the number and type of properties that would have to be acquired were evaluated in the Level 2 screening process. This consisted of quantification of the number and type (residential, commercial, manufacturing, etc.) and cost of properties that would have to be acquired to construct the proposed airside and landside facilities associated with the alternative. Similar to the infrastructure discussion above, the amount and type of property acquisition required for an alternative can have multiple effects on the implementation of a proposed project. Residential property acquisition results in social impacts and increases the cost of a project, but can generally be accomplished within a relatively short timeframe. Acquisition of commercial and manufacturing properties generally results in less social impact (community disruption, public service demands, etc.), but is more expensive than residential acquisition and can take extended periods of time for completion of the acquisition process. Therefore, in the Level 2 screening analysis, a comparison was made of the acquisitions associated with each alternative. Those alternatives that resulted in no acquisition or lower amounts of residential and commercial/manufacturing property acquisition were considered to be more feasible and prudent than those that required extensive property acquisition.

3.2.2.3 Relocations

The effects of each of the alternatives in terms of the number and type of relocations that would have to occur were evaluated in the Level 2 screening process. This consisted of quantification of the number and type (residential, commercial, manufacturing, etc.) of properties that would have to be relocated, including certain facilities within the NOAA/National Weather Service (NWS) Sterling facility, to construct the proposed airside facilities associated with the alternative. Similar to the infrastructure and acquisition discussions above, the amount and type of facility relocations required for an alternative can have multiple effects (social impacts, increased cost, extended timeframes) on the implementation of a proposed project. Therefore, in the Level 2 screening analysis, a comparison was made of the number and type of relocations associated with each alternative. Those alternatives that resulted in no relocations or lower amounts of relocation were considered to be more feasible and prudent than those that required extensive relocations.

3.2.2.4 Comparative Cost Considerations

The evaluation of comparative costs for each of the alternatives involved an analysis of the total costs of those portions of the alternatives that would be eligible for Federal funding. This did not include other costs that are not eligible for Federal funding and would be borne directly by MWAA such as building and equipment costs. The cost of the various alternatives considered the following items:

- Costs associated with infrastructure impacts;
- Costs associated with property acquisition;
- Costs associated with construction induced relocations of residences, businesses, and other facilities (excluding relocation of NOAA/NWS facilities);
- Costs associated with construction of the runways and associated improvements; and
- Preliminary costs for wetlands mitigation.

In the Level 2 screening analysis, alternatives with lower total project costs were considered more feasible and prudent than those with higher total costs.

3.2.2.5 Environmental Impacts

Level 2 of the alternatives screening analysis also evaluated the potential for the alternatives to cause or result in environmental impacts. The initial screening process focused on several environmental categories that are protected under special purpose environmental laws and that contain specific provisions for the avoidance and minimization of impacts. These categories include wetlands, floodplains, Department of Transportation (DOT) Section 4(f) sites (e.g., recreational areas, wildlife refuges, etc.), and Section 106 historic and archaeological resources. The following provides a brief overview of these categories. Detailed analysis of other environmental categories covered by specific protective or restorative Federal legislation including noise, air quality, endangered species, and hazardous materials was also conducted for those alternatives that were retained for detailed evaluation by meeting all of the purpose and need criteria and the Level 2 criteria. Detailed discussions of each of the environmental impact categories prescribed in FAA Order 5050.4A, *Airport Environmental Handbook*, are contained in [Chapter 5.0](#), Environmental Consequences. Alternatives that were retained after the Level 2 evaluation are analyzed in detail in [Chapter 5.0](#).

It should be noted that complete avoidance of some impacts to environmental categories such as wetlands, streams, and 100-year floodplains associated with the proposed project is not feasible due to the large area of land disturbance required, and the need to meet specific airfield design criteria (e.g., FAA AC 5300-13, Change 5, *Standards and Recommendations for Airport Design*). The impacts calculated for each alternative include all elements of the proposed project, including development of the Tier 3 Concourse.

Wetlands - Executive Order 11990 states that Federal agencies should avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Impacts should only be allowed if there is no practicable alternative to a proposed project, and the proposed project includes all practicable measures to minimize harm to wetlands. In keeping with the direction provided in Executive Order 11990, as well as that provided in DOT Order 5660.1A, Section 10 of the *Rivers and Harbors Act of 1899* and Sections 401 and 404 of the Clean Water Act (CWA), FAA evaluated each of the remaining alternatives in the Level 2 screening process based on the approximate acreage, type, and functional assessment of wetlands that would be impacted. Those alternatives that would result in no impacts or less impacts to wetlands were considered to be more practicable than those alternatives that would result in a greater amount of impacts.

The IAD property contains approximately 748 acres of wetlands. Potential impacts to wetlands were categorized by calculating the acreage of directly impacted wetlands associated with filling and clearing, additional direct wetland acreage impacts associated with clearing for line-of-sight (between runways) for the new Airport Traffic Control Tower (ATCT), and additional direct wetland impacts associated with Wildlife Hazard Management.

Floodplains - Executive Order 11988 directs Federal agencies to “take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains...” The Executive Order and DOT Order 5650.2 establish a policy for FAA to avoid taking an action within a 100-year floodplain where practicable. Every effort must be made to minimize the potential risks to human safety and property damage and the adverse impacts on natural and beneficial floodplain values. In keeping with the policy provided in Executive Order 11988 and DOT Order 5650.2, FAA evaluated each of the remaining alternatives in the Level 2 screening process based on the approximate acreage of 100-year floodplains that would be impacted. Those alternatives that would result in no impacts or less impacts to floodplains were considered to be more practicable than those alternatives that would result in a greater amount of impacts.

The Broad Run and Cub Run watersheds are located in the IAD area. Potential impacts to floodplains were categorized by calculating the acreage of storage floodplain and detention ponds that would be cleared or filled as a result of each of the alternatives.

Section 4(f) Resources - The *DOT Act of 1966*, Section 4(f) of 49 USC, also referred to as Section 303(c), provides that “the Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land of an historic site of national, state, or local significance as determined by the official having jurisdiction thereof unless there is no feasible and prudent alternative to the use of such land and such program or project includes all possible planning to minimize harm resulting from the use.” In keeping with the direction provided in Section 4(f), FAA evaluated each of the remaining alternatives in the Level 2 screening process based on the potential to result in direct or indirect impacts to properties protected under Section 4(f). Those alternatives that would result in no impacts or less impacts to Section 4(f) resources were considered to be more feasible and prudent than those alternatives that would result in a greater amount of impacts.

Historic/Architectural and Archaeological Resources - Historic and archaeological resources are protected under several Federal laws. The most applicable to the proposed project are the *National Historic Preservation Act of 1966* and the *Archaeological and Historic Preservation Act of 1974*. Both of these laws require Federal agencies implementing Federal actions take into consideration historic and archaeological resources included in or eligible for inclusion in the National Register of Historic Places (NRHP) that are found within a proposed project's Area of Potential Effect (APE). In keeping with the direction provided in these laws, FAA evaluated each of the remaining alternatives in the Level 2 screening process based on the potential to result in direct or indirect impacts to historic and archaeological resources. Those alternatives that would result in no impacts or less impacts to these resources were considered to be more prudent than those alternatives that would result in a greater amount of impacts.

Alternatives that were retained through the Level 2 screening process were considered to be the most feasible, practicable, prudent, and reasonable alternatives to the proposed project and were retained by FAA for further detailed environmental evaluation in [Chapter 5.0](#), Environmental Consequences, of this DEIS.

3.3 ALTERNATIVES CONSIDERED

The following sections describe the alternatives that FAA evaluated within this DEIS. The discussion of alternatives briefly describes those alternatives that were considered by FAA but were eliminated through the Level 1 and 2 screening process, as well as those alternatives that do fulfill the purpose and need and were examined in more detail.

3.3.1 OFF-SITE ALTERNATIVES

The ability of off-site alternatives to accommodate existing and future growth in air traffic in the metropolitan Washington region was examined by FAA for this EIS. These alternatives include development of a new airport or expansion and upgrade of an existing general aviation airport, and use of other existing air carrier airports in the metropolitan Washington region.

3.3.1.1 Development of a New Airport or Expansion and Upgrade of an Existing General Aviation Airport

This alternative consists of developing a new airport or “greenfield” site or expanding an existing general aviation airport as alternatives to the proposed project at IAD. A detailed evaluation of “greenfield” sites was not conducted in any of the recent IAD planning studies. The results of FAA’s analysis for this EIS indicate that development of a new airport or an upgrade of an existing area general aviation airport to air carrier standards would not satisfy the purpose and need for the proposed project at IAD. While a new airport or an expansion and upgrade of an existing general aviation airport could be designed expressly for the Level 1 airfield configuration, the Level 2 criteria - including infrastructure and cost - would be prohibitive.

A “greenfield” site (including existing area general aviation airports) would require substantial investment and time to provide the infrastructure required to support a major airport such as that needed to safely accommodate existing and projected aviation activity levels in the metropolitan Washington region. The drawbacks and areas of concern associated with a “greenfield” site include, but are not limited to: operational authority to move aircraft operations, the development cost of the new facility, development cost of new infrastructure, access to highways and mass transit facilities, availability of a sponsoring organization (such as a local government or airport authority), community acceptance, financial feasibility, potentially significant environmental impacts, potential airspace conflicts, and the willingness of the air carrier operators to locate there. Some of these items may be of concern at IAD and other existing air carrier airports, but all of them would have to be resolved at a “greenfield” site or existing area general aviation airports.

No sponsoring authority has indicated an interest in developing a new air carrier airport site or developing an air carrier airport from an existing general aviation facility. Therefore, FAA has determined for this EIS that construction/development of a new airport or expansion and upgrade of an existing general aviation airport as an alternative to the proposed project at IAD is not a reasonable, feasible, practicable, or prudent alternative and, therefore, was not retained for further consideration in this DEIS.

3.3.1.2 Use of Other Existing Air Carrier Airports within the Metropolitan Washington Region

This alternative scenario consists of the use/expansion of an existing air carrier airport within the metropolitan Washington region as an alternative to the proposed project at IAD. The other existing air carrier airports in the region are Ronald Reagan Washington National Airport (DCA) and Baltimore-Washington International Airport (BWI).

As detailed in [Chapter 2.0](#) of this DEIS, aviation activity in 2002 at IAD accounted for 73 percent of the existing airfield's capacity, expressed as ASV. FAA recommends that planning studies for increased capacity be initiated when aviation activity reaches 60 to 75 percent of ASV. When the aviation activity approaches 100 percent of an airport's ASV, then theoretically the average delay per operation would reach or exceed 4 minutes. FAA's *National Plan of Integrated Airport Systems* (NPIAS) (2001-2005) states that an airport is considered congested when average delay exceeds 5 minutes per operation. Therefore, an off-airport alternative would need to safely and efficiently accommodate all future growth in aviation traffic at IAD, which would prevent the airport from reaching 100 percent of its existing airfield configuration ASV and becoming congested. In 2010, an off-airport alternative would need to safely and efficiently accommodate an additional 195,774 annual operations from IAD, or the difference between the forecast operations at IAD (568,410) and the existing operations (372,636). In addition, an alternative airport would need to accommodate the aircraft types or "fleet mix" of aircraft currently operating at and forecast to operate at IAD. The critical aircraft in terms of airfield geometry standards at IAD is currently the Boeing 747-400 (Airplane Design Group [ADG] V). In the future, the critical aircraft at IAD would be the New Large Aircraft/Airbus A380 (ADG VI). Therefore, airside and landside facilities at an alternative airport would also need to be able to accommodate these types of aircraft.

The following provides a brief description of the existing air carrier airports in the metropolitan Washington region that were evaluated by FAA in this DEIS as potential alternatives to the proposed project at IAD, and FAA's findings associated with each of these alternative airports. FAA used the Level 1 Purpose and Need screening criteria described earlier to assess these airports. The locations of these airports are depicted on [Figure 3.3.1-1](#).

Ronald Reagan Washington National Airport - DCA is located along the Potomac River in Arlington, Virginia, immediately adjacent to Washington, DC and approximately 23 miles from IAD. The airport encompasses approximately 860 acres (733 acres on land and 127 acres under water), is operated by MWAA, and is designated as a "primary commercial service" airport by FAA. DCA has three runways - Runway 1/19 is 6,869 feet long, Runway 15/33 is 5,204 feet long, and Runway 4/22 is 4,911 feet long. The airport is served by 20 passenger airlines providing service to 60 U.S. destinations and 3 Canadian/Caribbean destinations. In 2000, DCA handled 297,879 total annual aircraft operations. In 2002, DCA recorded 215,691 operations and served 12,881,601 passengers. In 2003, DCA had 250,802 operations.

For reasons detailed in [Section 2.0](#) of this DEIS, review of this alternative airport indicated that DCA does not meet the purpose and need for the proposed project because it could not efficiently accommodate the growth in aviation activity in the metropolitan Washington region. The legislation authorizing the transfer of IAD and DCA to MWAA places operational limitations on DCA.

These limitations include the High Density Rule, limiting the number of flights at the airport, and the Perimeter Rule, which limits the distance of markets served nonstop by airlines at DCA. All of the “slots” in place due to the High Density Rule are utilized; therefore, growth in commercial aviation at DCA is limited. As a compounding factor, general aviation operations are currently prohibited from using DCA.

In addition to the legislative limits to growth, DCA would not be able to provide all of the facilities that IAD does to accommodate long-haul domestic and international air carrier (and cargo) operations. Primarily, the current runway lengths at DCA could not accommodate non-stop flights to all domestic locations (approximately 9,000 feet recommended) or international locations (approximately 11,000 feet recommended; non-stop to Tokyo, Japan) according to guidance provided in FAA AC 150/5325-4, *Runway Length Requirements for Airport Design*, and FAA Airport Design (for Microcomputers) Version 4.2. The use of DCA is not a reasonable alternative due to lack of ability to expand, community support, and political support.

Baltimore-Washington International Airport - BWI is located in Anne Arundel County, Maryland approximately 9 miles south of the City of Baltimore, 30 miles from Washington DC, and approximately 45 miles from IAD. The airport encompasses approximately 3,595 acres of land, is owned and operated by the Maryland Aviation Administration, and is designated as a “primary commercial service” airport by FAA. BWI has two parallel runways and two non-parallel runways. The parallel runways are 15R/33L, at 9,501 feet long and 150 feet wide, and 15L/33R, at 5,000 feet long and 100 feet wide. Runway 10/28 is 10,502 feet long and 200 feet wide. Runway 4/22 is 6,000 feet long and 150 feet wide. In 2002, the airport recorded approximately 305,000 operations (Baltimore-Washington International Airport, 2003).

Although BWI and IAD share some of the same service area (within a half-hour to an hour driving time of the airport) in the metropolitan Washington area, BWI does not generally serve the rapidly growing northern Virginia area, in particular the industrial and commercial growth of the “Dulles Corridor.” This alternative would require airlines to commit to moving operations from IAD to BWI. As of the time of publication of this DEIS, no airlines have approached MWAA regarding moving operations from IAD to BWI.

Based on recent forecasts, BWI would need to safely and efficiently accommodate the growth in aviation activity at IAD (additional 195,774 annual operations by 2010) while also safely accommodating the forecasted growth in operations at BWI (additional 65,710 annual operations forecasted in 2010, over 2002 activity levels based on the FAA’s *Terminal Area Forecast, 2002*). Annual capacity (in terms of ASV) at BWI is estimated to be 420,000 operations (URS Corporation, 2003), which is significantly less than the forecasted combined total of 566,500 operations at BWI by 2010 (the 2002 BWI operations plus year 2002 to 2010 growth for BWI and IAD). Since planning studies for the expansion of BWI are just beginning, and there are no FAA approved expansion projects at BWI that would allow it to accommodate the above levels of operations, FAA determined that the use of BWI is not a reasonable alternative to the proposed project at IAD.

Summary of Use of Other Air Carrier Airports - For this EIS, FAA reviewed existing air carrier airports in the metropolitan Washington area to see if they could accommodate the growth in aviation activity forecast at IAD. The following paragraphs present the results of this review.

Growth in aviation at DCA is severely limited due to Federal legislation regarding number of commercial operations and trip length. Recently, security concerns have restricted general aviation activity at the airport. Also, the airfield at DCA could not accommodate many of the longer-haul aircraft that utilize IAD, and DCA is not able to expand for a variety of reasons.

Similar to IAD, aviation demand at BWI has increased recently. However, BWI does not and could not serve the same aviation service area as IAD, in particular the Northern Virginia area because of its distance from the IAD service area/user group population. Projected growth at IAD, combined with growth at BWI, would total approximately 566,500 annual operations. This level of operations is beyond the capacity of the existing BWI airfield, and improvements similar to those proposed at IAD would need to be implemented in order for BWI to accommodate this level of operations in a safe and efficient manner.

Because neither DCA nor BWI can serve the entire air service needs of the IAD area and neither of these airports meets the Level 1 criteria, FAA has determined for this EIS that they are not reasonable alternatives and, therefore, has not retained them for further consideration in this DEIS.

3.3.2 ON-SITE ALTERNATIVES

3.3.2.1 Introduction

On-site alternatives evaluated in this DEIS include the No-Action Alternative, which is required by CEQ regulations, and various runway development alternatives. Past MWAA planning efforts, detailed in [Section 1.2.5](#) of this DEIS, have concluded that certain airfield improvements were necessary to accomplish the goal of safely and efficiently providing adequate airfield capacity to meet future aviation demand. All of the past planning studies have recommended a new north-south parallel runway (west of the existing north-south runways) and a new east-west parallel runway (south of the existing east-west runway). Each of the studies also recommended that these runways should be located with adequate separation from the existing runways to provide independent operations during IMC to provide the greatest capacity enhancement.

The most recent MWAA planning studies have continued to identify the need to increase airfield capacity at the airport to safely and efficiently accommodate existing and forecast operations through 2010 and beyond, and have refined the specific airfield improvements needed to accomplish this objective. According to recently completed FAA-accepted forecasts of IAD aviation activity, the aviation demand at the airport would reach 568,410 annual operations and 15,350,500 annual passenger enplanements by 2010. The required improvements are shown on the airport's current FAA conditionally approved Airport Layout Plan (ALP) and include:

- A new runway having a length of 9,473 feet and width of 150 feet, parallel to existing Runways 1L/19R and 1R/19L that would immediately provide the ability to perform dual simultaneous independent operations during IMC while reserving the capability of providing triple simultaneous independent arrival operations during IMC (with high-update radar/monitoring equipment) in the future;
- A new runway having a length of 10,500 feet and width of 150 feet, parallel to existing Runway 12/30 that would provide the ability to perform dual simultaneous independent arrival operations during IMC;
- Tier 3 Concourse development; and
- Changes to air traffic procedures.

When identifying on-site alternative locations for the development of new runways, technical considerations were grouped into two major categories: 1) FAA runway separation requirements for operations during IMC, and 2) the proximity of existing airfield components (runways, taxiways, and taxiway connectors) and future terminal improvements that are essential and required for the efficient operation of the airport. Identification of viable alternative locations on which to develop the airfield system included review and assessment of the airport's existing runway/taxiway system, land areas, land uses, and land uses immediately adjacent to the airport.

A systematic process to identify and assess the relative merits and opportunities for locations of the proposed runways necessary to safely and efficiently accommodate existing and forecast aviation activity through 2010 examined a total of four potential north-south runway locations (parallel to Runways 1L/19R and 1R/19L which are separated by 6,700 feet). One location of the proposed east-west runway (parallel to existing Runway 12/30 and separated by 4,300 feet) was examined since it satisfied the operational requirements (dual simultaneous independent operations) while remaining on airport property without the need for additional property acquisition.

The differences in runway length for the new north/south runway in each of the alternatives was based on the maximum runway length resulting from the runway separation distance, a "fixed" north threshold, and design/safety considerations associated with the proximity of the new runway's south threshold and existing Runway 12/30. The "fixed" north threshold for each of the Runway 1W/19W alternatives was based on an agreement that was made between MWA and local government. This agreement stipulated that the northern end of any new runway developed at IAD would not extend beyond the northern terminus of existing Runway 1L/19R. The purpose of this agreement was to prevent unanticipated noise impacts to noise sensitive land uses located north of the airport. As a result of the "fixed" north threshold, the subsequent runway lengths for the alternatives were dependent on the south threshold's proximity to existing Runway 12/30, therefore resulting in uneven runway lengths. The runway lengths for the alternatives were determined to be approximately 9,765 feet for a 3,500-foot runway separation; approximately 9,580 feet for a 4,000-foot separation; approximately 9,473 feet for a 4,300-foot separation, and approximately 9,218 feet for a 5,000-foot separation. In addition, each Build Alternative included Tier 3 Concourse development. This process yielded six possible runway alternative scenarios, which are described in this section of this DEIS.

3.3.2.2 No-Action Alternative

The No-Action Alternative, shown on [Figure 3.3.2-1](#), would not include any of the needed runway development features or the Tier 3 Concourse development described previously. The No-Action Alternative is part of the alternatives analysis (and ultimately, retained for detailed analysis) to ensure a complete FAA environmental impact evaluation and to provide a baseline comparison in accordance with CEQ regulations.

3.3.2.3 Description of Runway Development Alternative Scenarios

The individual runway alternatives were developed and evaluated for their abilities to meet the minimum facility and operational requirements addressed in the Sponsor's proposal, which stressed the need for widely spaced parallel runways that allowed for dual simultaneous independent operations during IMC

when the runway is operational while reserving the capability of triple simultaneous independent operations during IMC in the future in the north-south direction and dual simultaneous independent operations during IMC in the east-west direction. For the parallel runway alternative scenarios, the minimum runway centerline separations for dual and triple simultaneous independent all-weather arrival operations as prescribed by FAA AC 150/5300-13, Change 6, *Airport Design*, and FAA Order 7110.65, *Air Traffic Control*, were used and are listed below:

Runway Centerline Separation Criteria - Dual Simultaneous Independent IMC Arrivals

- 3,400 feet - high-update radar/monitoring equipment required
- 4,300 feet - radar required

Runway Centerline Separation Criteria - Triple Simultaneous Independent IMC Arrivals

- 4,300 feet - high-update radar/monitoring equipment required
- 5,000 feet - radar required

All of the Build Alternatives include common elements such as construction and operation of crossfield and taxiway connectors, navigational aids (NAVAIDS), aircraft holding aprons, and de-icing pads. Build Alternatives 1, 2, 3, 4, and 6 also include a crossfield taxiway connector between existing Runway 30R and Taxiway Juliette 5 ("J5").

Those runway alternative scenarios that did not meet the operational/capacity needs of the airport through the year 2010 and beyond were not retained for further consideration after the Level 1 screening analysis because these alternatives did not fulfill the purpose and need for the proposed project. Those runway alternative scenarios that did meet the Level 1 purpose and need criteria were retained for additional analysis in Level 2 of the alternatives screening process.

Build Alternative 1 - This alternative concept consists of the construction of a new north-south oriented runway (1W/19W) approximately 9,765 feet long located 3,500 feet west of existing Runway 1L/19R. Also included in this alternative concept is construction of a new 10,500-foot east-west oriented runway (12R/30L), located 4,300 feet south of existing Runway 12/30, and development of the Tier 3 terminal concourse. This alternative was recommended in the 1985 *Master Plan Update* and 1990 *Capacity Plan* (**Section 1.2.5**) and is depicted on **Figure 3.3.2-2**. This alternative could be constructed entirely on existing airport property and would not require the relocation of NOAA/NWS Sterling facilities.

Build Alternative 1 would allow some flexibility in future runway use, as it would permit dual simultaneous arrivals during IMC to the new north-south runway (with high-update radar/monitoring equipment) and the existing Runway 1L/19R in the event that Runway 1R/19L is closed. However, a 3,500-foot lateral separation would not allow for triple simultaneous arrivals during IMC and would not provide significant additional independent arrival capacity during IMC.

Also associated with Build Alternative 1 is a proposed new 10,500-foot parallel Runway 12R/30L with a lateral separation of 4,300 feet. This would increase arrival capacity during IMC by allowing dual simultaneous arrivals to the east-west runways in IMC without the use of high-update radar/monitoring equipment.

Build Alternative 2 - Build Alternative 2 consists of the construction of a new north-south oriented runway (1W/19W) approximately 9,580 feet long located 4,000 feet west of existing Runway 1L/19R, construction of a 10,500-foot east-west oriented runway (12R/30L) located 4,300 feet south of existing Runway 12/30, and development of the Tier 3 terminal concourse. This alternative was recommended by MWAA in the 2002 *Capacity Review and Alternatives for the Fourth and Fifth Runways* study (Section 1.2.5) and is depicted on Figure 3.3.2-3. This alternative could be constructed entirely on airport property; however, it includes property acquisition on the west side of the airport in order to meet Federal Aviation Regulation (FAR) Part 77 and Runway Protection Zone (RPZ) clearance requirements and serve as a buffer to neighboring properties. FAR Part 77 clearance requirements are provided in Volume 4 of this DEIS. Based on these considerations, Build Alternative 2 would include the acquisition of 431 acres (shown on Figure 3.3.2-3). This alternative would also require the relocation of some NOAA/NWS Sterling facilities (Weather Surveillance Radar [WSR-88D], Upper Air Inflation Building [UAIB], Surface Testing Equipment, and Weather Forecast Office [WFO]).

Build Alternative 2 would allow some flexibility in future runway use, as it would permit dual simultaneous arrivals with high-update radar/monitoring equipment during IMC to the new north-south runway and the existing Runway 1L/19R. However, current FAA design standards do not allow triple simultaneous operations with runway separations less than 4,300 feet.

Also associated with Build Alternative 2 is a proposed new 10,500-foot parallel Runway 12R/30L with a lateral separation of 4,300 feet. This would increase arrival capacity by allowing dual simultaneous arrivals to the east-west runways during IMC.

Build Alternative 3 - This alternative consists of the construction of a new north-south oriented runway approximately 9,473 feet long (1W/19W) located 4,300 feet west of existing Runway 1L/19R, construction of a new 10,500-foot east-west oriented runway (12R/30L) located 4,300 feet south of existing Runway 12/30, and development of the Tier 3 terminal concourse. This alternative is the proposed project defined by MWAA and depicted in its most recent 2004 ALP submitted to FAA (see Figure 1.2-1a). Build Alternative 3 is shown on Figure 3.3.2-4. This alternative would include property acquisition on the west side of the airport in order to meet FAR Part 77 and RPZ clearance requirements and serve as a buffer to neighboring properties. Based on these considerations, Build Alternative 3 would include the acquisition of 448 acres (shown on Figure 3.3.2-4). This alternative would also require the relocation of NOAA/NWS Sterling facilities.

A 4,300-foot lateral separation would provide additional arrival capacity in the north, south, and mixed runway use configurations during VMC and IMC, and departure capacity in the south and north configurations during VMC and IMC by allowing for immediate dual simultaneous independent operation and the potential for triple simultaneous independent operations in the future. FAA will consider proposals for triple simultaneous IFR arrivals utilizing separations down to a minimum of 4,300 feet with high-update radar/monitoring equipment (FAA AC 150/5300-13, Change 6, *Airport Design*, page 11).

Also associated with Alternative 3 is a proposed new 10,500-foot parallel Runway 12R/30L with a lateral separation of 4,300 feet. This would increase IFR arrival capacity by allowing dual simultaneous IFR arrivals to the east-west runways.

Build Alternative 4 - Build Alternative 4 consists of the construction of a new north-south oriented runway (1W/19W) approximately 9,218 feet long located 5,000 feet west of existing Runway 1L/19R, construction of a new 10,500-foot east-west oriented runway (12R/30L) located 4,300 feet south of existing Runway 12/30, and development of the Tier 3 terminal concourse. This alternative is depicted on [Figure 3.3.2-5](#). This alternative would include property acquisition on the west side of the airport in order to meet FAR Part 77 and RPZ clearance requirements and serve as a buffer to neighboring properties. Based on these considerations, Build Alternative 4 would include the acquisition of 480 acres (shown on [Figure 3.3.2-5](#)). This alternative would also require the relocation of NOAA/NWS Sterling facilities.

A 5,000-foot lateral separation would provide additional arrival capacity in the north, south, and mixed runway use configurations during VMC and IMC, and departure capacity in the south and north configurations during VMC and IMC. Based on current FAA design standards, the 5,000 feet separation distance associated with this alternative is the recommended lateral separation distance for triple simultaneous operations capabilities during VMC and IMC without the need for high-update radar/monitoring system (FAA AC 150/5300-13, Change 6, *Airport Design*, page 11).

Also associated with Build Alternative 4 is a proposed new 10,500-foot parallel Runway 12R/30L with a lateral separation of 4,300 feet. This would increase arrival capacity by allowing dual simultaneous arrivals to the east-west runways during IMC.

Build Alternative 5 - This alternative consists of the construction of a new north-south oriented runway (1W/19W) approximately 9,473 feet long located 4,300 feet west of existing Runway 1L/19R and development of the Tier 3 terminal concourse. This alternative, depicted on [Figure 3.3.2-6](#), does not include a new parallel east-west Runway 12R/30L. Property acquisition on the west side of the airport to meet FAR Part 77 and RPZ clearance requirements and serve as a buffer to neighboring properties would include the acquisition of 448 acres (shown on [Figure 3.3.2-6](#)). This alternative would require the relocation of NOAA/NWS Sterling facilities.

The lateral separation associated with Build Alternative 5 would be 4,300 feet and would provide flexible future runway use. The FAA will consider proposals for triple simultaneous arrivals during IMC utilizing separations down to a minimum of 4,300 feet with high-update radar/monitoring equipment (FAA AC 150/5300-13, Change 6, *Airport Design*, page 11).

Build Alternative 6 - This alternative consists of the construction of a new 10,500-foot east-west oriented runway (12R/30L) with a 4,300-foot separation to the south from the existing Runway 12/30 and development of the Tier 3 terminal concourse. This alternative, depicted on [Figure 3.3.2-7](#), does not include a new parallel north-south Runway 1W/19W. Build Alternative 6 could be constructed entirely on existing airport property. This alternative would not require the relocation of NOAA/NWS Sterling facilities.

Build Alternative 6 would provide minimal FAA standard lateral separation for dual simultaneous arrivals during IMC on the east-west runways (FAA AC 150/5300-13, Change 6, *Airport Design*, page 11) and would allow a large area for potential future aviation related development.

3.3.3 EVALUATION OF IAD RUNWAY ALTERNATIVES

3.3.3.1 Introduction

The evaluation of on-site alternatives was based on an examination of each of the previously described six potential runway configurations. Each of the six alternative development scenarios was subjected to the two-level alternatives screening process to determine which alternatives were reasonable, feasible, practicable, and prudent to be retained for detailed evaluation in this DEIS. The following is a summary of the results of the screening process for these alternatives. [Table 3.3.3-1](#) depicts how each alternative passed through the two-level alternatives screening process.

3.3.3.2 Level 1 Screening

Level 1 of FAA's alternatives screening process evaluated each of the six development alternative scenarios for their ability to fully satisfy all of the purpose and need criteria previously established in [Chapter 2.0](#), Purpose and Need, of this DEIS. The Level 1 screening criteria include the following:

- A new north-south parallel runway immediately capable of dual simultaneous independent operations during IMC while reserving the capability of triple simultaneous independent operations during IMC in the future,
- Provide a new east-west parallel runway capable of dual simultaneous independent operations during IMC, and
- Provide redundant runways.

For an alternative to continue to the Level 2 screening analysis, it had to meet all of the Level 1 screening criteria. Since all of the Build Alternatives would include the Tier 3 Concourse development, the need for the passenger terminal and gate capacity was not included as a Level 1 screening criteria. A discussion of the Tier 3 Concourse development is provided in [Section 3.5](#). Those alternatives that did not meet all of the Level 1 screening criteria were not retained for further evaluation in this DEIS.

No-Action Alternative - The No-Action Alternative would not meet any of the purpose and need criteria for the proposed project at IAD. This alternative would not provide a new north-south parallel runway, which would reserve the capability of triple simultaneous independent operations during IMC in the future, a new east-west parallel runway capable of dual simultaneous independent operations during IMC, or redundant runways. As described in [Chapter 2.0](#), Purpose and Need, the proposed improvements are needed for the airport to safely and efficiently accommodate future aviation activity at the airport without incurring unacceptable aircraft operational delay. Although the No-Action Alternative did not meet the purpose and need criteria, it was retained for further consideration in Level 2 of the Alternatives screening to ensure a complete FAA environmental impact evaluation and to provide a baseline comparison in accordance with CEQ regulations.

**TABLE 3.3.3-1
TWO-LEVEL ALTERNATIVES SCREENING ANALYSIS**

Level	Screening Criteria	No-Action ¹	Off-Site Alternatives			On-Site Development Alternatives					
			Other Airports		Other Modes of Transportation	Build Alt. 1	Build Alt. 2	Build Alt. 3	Build Alt. 4	Build Alt. 5	Build Alt. 6
			New	Supplemental							
1 Purpose and Need	Provide a new north-south parallel runway immediately capable of dual simultaneous independent operations during IMC while reserving the capability of triple simultaneous independent operations during IMC in the future	No	No	No	No	No	No	Yes	Yes	Yes	No
	Provide a new east-west parallel runway capable of dual simultaneous independent operations during IMC	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes
	Provide redundant runways	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Continue to Level 2? Yes or No		Yes	No	No	No	No	No	Yes	Yes	No	No
2 Constructability/ Practicability/ Environmental Considerations	Infrastructure	No						No	No		
	Property Acquisition (acres)	0						448	480		
	Relocation (homes / NOAA/NWS Sterling)	0 / 0						0 / 1 ²	0 / 1 ²		
	Cost (\$ billions)	\$0.0						\$1.49 ³	\$1.51 ³		
	Wetland loss (acres) within Limits of Disturbance	0						174.7 ⁴	180.5 ⁴		
	100-Year Floodplains Impacts (acres)	0						39	35		
	Potential Section 4(f) Resources (# of directly impacted sites/ # of potential indirectly impacted sites)	0 / 0						0 / 0	0 / 0		
	Potential Historic Architectural Resources (# of directly impacted sites/ # of potential indirectly impacted sites)	0 / 0						0 / 0	0 / 0		
	Archaeological Resources (# of sites directly impacted)	0						14 ⁵	14 ⁵		
Retain for Further Evaluation? Yes or No		Yes						Yes	Yes		

¹ No-Action Alternative was retained for detailed analysis for baseline comparative purposes.

² Analysis of Potential Effects of Dulles International Airport Proposed Runway Expansion Project on the NOAA/NWS Weather Forecasting Office and Sterling Research and Development Center, Sterling, Virginia - Revised Final Report (SRI International, February 2004) recommended that certain facilities that are part of the NOAA/NWS Sterling Research and Development Facility (specifically, the WFO Building, WSR-88D, and Upper Air [UA] facilities, test beds, and support buildings) would require relocation due to Build Alternatives 3 and 4. NOAA/NWS will evaluate the alternative facilities relocations at a later date separate from this FAA DEIS.

³ Cost estimates include cost associated with the construction of runways, taxiways, related facilities, property acquisition, and Tier 3 Concourse. Costs associated with the relocation of NOAA/NWS facilities are not included in the alternatives analysis. NOAA/NWS will evaluate facilities relocation alternatives at a later date separate from this FAA EIS.

⁴ The estimates of wetland loss are preliminary and subject to revision through the CWA Section 401/404 permit process.

⁵ Resources have not yet been fully assessed for eligibility for listing in the NRHP. Further assessment and consultation with the Virginia State Historic Preservation Office (SHPO) is ongoing. Results of the SHPO coordination will be included in the FEIS.

Source: Compiled by URS Corporation, 2004.

Build Alternative 1 - Airfield development associated with Build Alternative 1 would only partially meet the purpose and need criteria for the proposed project at IAD. This alternative would provide new north-south and new east-west parallel runways capable of dual simultaneous independent operations during IMC and it would provide redundant runways in the north-south and east-west directions. However, this alternative would not provide a new north-south parallel runway capable of triple simultaneous independent operations during IMC in the future because the 3,500-foot separation between the proposed Runway 1W/19W and the existing Runway 1L/19R does not satisfy FAA lateral separation requirements for triple simultaneous independent operations during IMC (FAA AC 150/5300-13, Change 6, *Airport Design*). Since Build Alternative 1 did not meet all of the Level 1 purpose and need criteria, it was not retained for further evaluation in this DEIS.

Build Alternative 2 - Similar to Build Alternative 1, airfield development associated with Build Alternative 2 would only partially meet the purpose and need criteria for the proposed project at IAD. This alternative would provide new north-south and east-west parallel runways capable of dual simultaneous independent operations during IMC (with high-update radar/monitoring equipment) and it would provide redundant runways in the north-south and east-west directions. However, this alternative would not provide a new north-south parallel runway that would reserve the capability of triple simultaneous independent operations during IMC in the future because the 4,000-foot separation between the proposed Runway 1W/19W and the existing Runway 1L/19R would not satisfy FAA lateral separation requirements for triple simultaneous independent operations during IMC (FAA AC 150/5300-13, Change 6, *Airport Design*). Since Build Alternative 2 did not meet all of the Level 1 purpose and need criteria, it was not retained for further evaluation in this DEIS.

Build Alternative 3 - Airfield development associated with Build Alternative 3 would meet all of the purpose and need criteria for the proposed project at IAD. This alternative would provide a new north-south parallel runway immediately capable of dual simultaneous independent operations during IMC while reserving the capability of triple simultaneous independent operations during IMC in the future (with operation of high-update radar monitoring equipment), a new east-west parallel runway capable of dual simultaneous independent operations during IMC, and redundant runways. Therefore, Build Alternative 3 would provide IAD the required capacity to safely and efficiently accommodate future aviation activity levels without incurring unacceptable aircraft operational delay. Since Build Alternative 3 met all of the Level 1 purpose and need criteria, it was retained for further evaluation in this DEIS.

Build Alternative 4 - Airfield development associated with Build Alternative 4 would meet all of the purpose and need criteria for the proposed project at IAD. This alternative would provide a new north-south parallel runway immediately capable of dual simultaneous independent operations during IMC while reserving the capability of triple simultaneous independent operations during IMC in the future, a new east-west parallel runway capable of dual simultaneous independent operations during IMC, and redundant runways. Therefore, Build Alternative 4 would provide IAD the required capacity to safely and efficiently accommodate future aviation activity levels without incurring unacceptable aircraft operational delay. The 5,000-foot lateral north-south runway separation provided by Build Alternative 4 would provide the future ability to conduct triple simultaneous independent approach capabilities to safely meet operational demand during IMC (without operation of high-update radar/monitoring equipment). Since Build Alternative 4 met all of the Level 1 purpose and need criteria, it was retained for further evaluation in this DEIS.

Build Alternative 5 - Airfield development associated with Build Alternative 5 would only partially meet the purpose and need criteria for the proposed project at IAD. This alternative would provide a new north-south parallel runway immediately capable of dual simultaneous independent operations during IMC while reserving the capability of triple simultaneous independent operations during IMC in the future (with operation of high-update radar/monitoring equipment). However, this alternative would not provide a new east-west parallel runway capable of dual simultaneous independent operations during IMC, and redundant runways (in the east-west direction). Therefore, Build Alternative 5 would not provide IAD the required capacity to safely and efficiently accommodate future aviation activity levels without incurring unacceptable aircraft operational delay. Since Build Alternative 5 did not meet all of the Level 1 purpose and need criteria, it was not retained for further evaluation in this DEIS.

Build Alternative 6 - Airfield development associated with Build Alternative 6 would only partially meet the purpose and need criteria for the proposed project at IAD. This alternative would provide a new east-west parallel runway capable of dual simultaneous independent operations during IMC. However, this alternative would not provide a new north-south parallel runway immediately capable of dual simultaneous independent operations during IMC while reserving the capability of triple simultaneous independent operations during IMC in the future, or redundant runways (in the north-south direction). Therefore, Build Alternative 6 would not provide IAD the required capacity to safely and efficiently accommodate future aviation activity levels without incurring unacceptable aircraft operational delay. Since Build Alternative 6 did not meet all of the Level 1 purpose and need criteria, it was not retained for further evaluation in this DEIS.

Level 1 Screening Summary - As a result of the detailed assessment and analysis of each of the six runway alternatives in the Level 1 screening process, two Build Alternatives (Build Alternatives 3 and 4) met all of the Level 1 purpose and need criteria (see [Table 3.3.3-1](#)). These two alternatives were retained for further evaluation in the Level 2 screening process. All other IAD runway alternatives did not meet one or more of the Level 1 purpose and need screening criteria and were, therefore, not retained for further evaluation. The No-Action Alternative was retained for Level 2 screening evaluation to fulfill CEQ regulations implementing NEPA.

3.3.3.3 Level 2 Screening

The two runway alternatives retained through the Level 1 analysis (Build Alternatives 3 and 4) as well as the No-Action Alternative were carried forward to the Level 2 screening process, which evaluated the alternatives in terms of constructability issues, cost considerations, and environmental impacts. The Level 2 screening analysis is shown in [Table 3.3.3-1](#). Constructability issues included impacts to existing or planned infrastructure, the number of residences and businesses that would have to be relocated to construct each alternative, and the amount of property acquisition required. Cost considerations included the estimated total cost of construction (including land acquisition) for those development items eligible for FAA reimbursement. Environmental impacts included direct and indirect impacts to wetlands, 100-Year Floodplains, Section 4(f) resources, and Section 106 resources (the complete investigation and discussion of the affected environment and impact analysis appears in [Chapter 4.0](#) and [Chapter 5.0](#) of this DEIS). The following presents the results of the Level 2 screening analysis.

No-Action Alternative - Under the No-Action Alternative, the new runways, Tier 3 Concourse, relocation of NOAA/NWS Sterling facilities, and associated improvements would not be developed at IAD. This alternative would involve no new construction of airside facilities or landside facilities associated with the runways and no other IAD airside and landside developments beyond those FAA has unconditionally approved and that are already programmed or undertaken by MWA for safety and maintenance reasons. If the No-Action Alternative were to be selected as FAA's preferred alternative, the following projects on IAD property already have been or will be initiated whether or not the runway improvements are implemented at IAD:

- Tier 2 Concourse improvements;
- Construction and operation of the automated people mover (APM) from the Main Terminal to Concourse B, and Concourse B to Tier 2 (Concourse C/D);
- On-airport roadway improvements;
- Reconstruction of existing Runway 12/30;
- Reconstruction of East T-Gates;
- Construction and operation of new airport traffic control tower (ATCT);
- IAD Metro Rail line link; and
- Smithsonian National Air and Space Museum.

These projects have been completed or will have undergone separate environmental review before they could be approved by the appropriate agency. The potential impacts of these projects are discussed in [Section 5.23](#), Cumulative Impacts, of this DEIS.

Implementation of the No-Action Alternative would not require the relocation of homes, the acquisition of property, or adverse impacts to wetlands or 100-year floodplains (see [Chapter 5.0](#), Environmental Consequences). This alternative would also not result in direct or indirect impacts to Section 4(f) or Section 106 historic resources.

Build Alternative 3 - Construction of the projects associated with Build Alternative 3 would not significantly affect any on-airport infrastructure, since both proposed runways would be located within existing airport property in areas that have been planned for future aviation growth and development. The existing Smithsonian National Air and Space Museum hangar will impact ATCT line-of-sight to the proposed de-icing pad for future Runway 12R/30L and will have to be modified or demolished. Some facilities located at NOAA/NWS Sterling such as the WFO, Upper Air (UA) launch facility, UA operational support pads and support buildings, the National Data Buoy Center (NDBC) Test Bed facilities, and the WSR-88D, would require relocation due to airspace and radar interference (SRI International, 2004). The construction and operation of Runway 1W/19W would include the acquisition of 448 acres of property to accommodate FAR Part 77 surfaces, a RPZ, and buffer area. No residences would need to be relocated as a result of Build Alternative 3. The cost for Build Alternative 3, including property acquisition, construction of two parallel runways, taxiways, NAVAIDS, and Tier 3 Concourse, is estimated to be \$1.49 billion¹.

¹ Costs associated with relocation of NOAA/NWS facilities are not included in this DEIS.

A discussion of environmental impacts associated with this alternative is contained in [Chapter 5.0](#), Environmental Consequences. NOAA will prepare separate NEPA documentation that will contain an evaluation of environmental impacts associated with relocated NOAA/NWS facilities. The alternatives analysis Level 2 environmental impacts associated with Build Alternative 3 are shown on [Figure 3.3.3-1](#). Development associated with Build Alternative 3 would result in 174.7 acres of wetlands impacts. Also, 39 acres of 100-year floodplain would be impacted.

Development associated with Build Alternative 3 would result in no direct or indirect impacts to Section 106 historic architectural resources or Section 4(f) resources. Fourteen archaeological resources were also identified within the APE for Build Alternative 3. These archaeological resources are currently being analyzed to determine their eligibility for the NRHP.

Build Alternative 4 - The east-west runway would be built entirely on airport property, and the north-south runway would be built partially off existing airport property. Construction of the projects associated with Build Alternative 4 would not significantly affect any on-airport infrastructure. The existing Smithsonian National Air and Space Museum hangar will impact ATCT line-of-sight to the proposed de-icing pad for future Runway 12R/30L and will have to be modified or demolished. Construction of the projects associated with Build Alternative 4 would include the acquisition of approximately 480 acres of property. No residences would need to be relocated as a result of Build Alternative 4. However, the same NOAA/NWS Sterling facilities as in Build Alternative 3 would have to be relocated. The cost for Build Alternative 4, including property acquisition, construction of two parallel runways, taxiways, NAVAIDS, and Tier 3 Concourse is estimated to be \$1.51 billion².

A discussion of environmental impacts associated with this alternative is contained in [Chapter 5.0](#), Environmental Consequences. NOAA will prepare separate NEPA documentation that will contain an evaluation of environmental impacts associated with relocated NOAA/NWS facilities. The alternatives analysis Level 2 environmental impacts associated with Build Alternative 4 are shown on [Figure 3.3.3-2](#). Development associated with Build Alternative 4 would result in 180.5 acres of wetlands impacts. Also, 35 acres of 100-year floodplain would be impacted.

Development associated with Build Alternative 4 would result in no direct or indirect impacts to Section 106 historic architectural resources or Section 4(f) resources. Fourteen archaeological resources were also identified within the APE for Build Alternative 4. These archaeological resources are currently being analyzed to determine their eligibility for the NRHP.

Level 2 Screening Summary - As a result of the systematic assessment and analysis of each of the remaining alternatives in the Level 2 screening process, three alternatives (No-Action, Build Alternative 3, and Build Alternative 4) were retained for further detailed environmental analysis in [Chapter 5.0](#) of this DEIS. Both Build Alternatives 3 and 4 were retained because there was not a significant difference between them based on the Level 2 screening criteria.

² Costs associated with relocation of NOAA/NWS facilities are not included in this DEIS.

3.3.4 ALTERNATIVES CONSIDERED AND NOT RETAINED FOR DETAILED ANALYSIS

In this section of the DEIS, numerous alternatives that had some reasonable potential to meet the purpose and need for the proposed project were examined. However, some of these alternatives were not considered to adequately fulfill the criteria of the two-level alternatives screening analysis process and were therefore not considered to be reasonable alternatives. Alternatives that were not retained for further detailed study in this DEIS include the following:

- Other modes of transportation,
- The development of a new airport (“Greenfield Site”) or expansion and upgrade of an existing general aviation airport,
- The use/expansion of other existing air carrier airports, and
- Build Alternatives 1, 2, 5, and 6.

3.3.5 ALTERNATIVES CONSIDERED AND RETAINED FOR DETAILED ANALYSIS

Alternatives that were retained for detailed study in this DEIS include the following:

- No-Action Alternative,
- Build Alternative 3, and
- Build Alternative 4.

The alternatives that were retained by FAA for detailed study at this point in this DEIS, prior to thorough environmental analysis, appear to meet the purpose and need for the proposed project. The No-Action Alternative has also been retained for detailed analysis in subsequent sections of this DEIS for baseline comparative purposes and to disclose any potential environmental impacts without implementation of the proposed project in accordance with CEQ regulations.

3.4 DESCRIPTION OF ALTERNATIVES RETAINED FOR DETAILED ANALYSIS

This section of the DEIS provides a more detailed description of the runway alternatives that remained after passing through the two-level alternatives screening process. On the basis of being able to meet all of the Level 1 purpose and need criteria and the fact that there is not a significant difference between the two Build Alternatives in the Level 2 constructability, cost, and environmental considerations, two Build Alternative concepts, Build Alternative 3 and Build Alternative 4, were retained as reasonable alternatives. Both Build Alternative scenarios provide a new north-south parallel runway immediately capable of dual simultaneous independent operations during IMC while reserving the capability of triple simultaneous independent operations during IMC in the future, a new east-west parallel runway capable of dual simultaneous independent operations during IMC, and redundant runways. Build Alternatives 3 and 4 also include Tier 3 Concourse development. The two Build Alternatives are depicted on [Figure 3.3.2-4](#) and [Figure 3.3.2-5](#).

It should be noted that the proposed new north/south runways (1W/19W) in Build Alternatives 3 and 4 are of slightly different lengths (approximately 9,473 feet for Build Alternative 3 and approximately 9,218 feet for Build Alternative 4). Both runways would provide sufficient length to accommodate the critical aircraft forecast to use this runway, and therefore both runways would provide comparable ASV levels at IAD. However, a runway length less than that provided by Build Alternative 4 would significantly affect the utility of the new runway and the corresponding future ASV levels. This would result in less delay reduction benefits and fail to meet the purpose and need criteria.

3.4.1 NO-ACTION ALTERNATIVE

The No-Action Alternative assumes that none of the direct or connected projects would be developed at IAD. This alternative would involve no new construction of airside or landside facilities and no other IAD airside and landside developments beyond those that are already programmed or undertaken by MWWA for safety and maintenance reasons.

3.4.2 BUILD ALTERNATIVE 3

Build Alternative 3 would provide a new airfield layout, aircraft gates, and passenger terminal space to safely and efficiently accommodate existing and projected aviation activity levels, the ability to provide triple simultaneous independent approach capabilities in the future (with operation of high-update radar/monitoring equipment), and redundant runways. The proposed improvements associated with Build Alternative 3 illustrated on [Figure 3.3.2-4](#) include the following elements:

- Construction of a new north-south oriented runway (1W/19W) approximately 9,473 feet long located 4,300 feet west of existing Runway 1L/19R;
- Construction of a new 10,500-foot east-west oriented runway (12R/30L) located 4,300 feet south of existing Runway 12/30;
- Acquisition of 448 acres of property on the west side of the airport to accommodate FAR Part 77 clearance surfaces, a RPZ, and buffer area;
- Construction and operation of a new full-length parallel taxiway on the east side of new Runway 1L/19R;
- Construction and operation of taxiway connectors between new Runway 1W/19W and existing Runway 1L/19R;
- Construction and operation of a new full-length parallel taxiway on the north side of new Runway 12R/30L;
- Construction and operation of taxiway connectors between new Runway 12R/30L and existing Runway 12/30;
- Construction and operation of crossfield taxiways between existing Runway 30 and Taxiway "J5";
- Installation and operation of NAVAIDS for New Runways 1W/19W and 12R/30L including high-update radar/monitoring equipment, localizer antennas, glideslope antennas, Precision Approach Path Indicators (PAPIs), runway visual range (RVR) equipment, Inner Marker (IM), Far Field Monitor (FFM), High Intensity Approach Lighting System with Sequenced Flashers (ALSF-2), and Touchdown Zone Lighting (TDZL);

- Tier 3 Concourse development;
- Construction and operation of the APM from the Tier 2 Concourse to the Tier 3 Concourse;
- Obtain State Water Quality Section 401 certification and U.S. Army Corps of Engineers (USACE) Section 404 wetland fill permit prior to start of construction and implementation of mitigation measures;
- Changes in air traffic procedures;
- Support facility improvements; and
- Relocation of NOAA/NWS Sterling facilities. NOAA will prepare separate NEPA documentation from this FAA EIS that will contain an evaluation of NOAA/NWS facility relocation alternatives, a detailed analysis of environmental impacts, selection of a Preferred Alternative, and description of mitigation measures. FAA and NOAA/NWS will be coordinating their respective decisions regarding any required property transfer to MWA and relocation of NOAA/NWS facilities.

Table 3.4-1 contains a comparative summary of the Operational, Constructability, Financial, and Environmental Consequences of the alternatives retained for detailed evaluation.

**TABLE 3.4-1
COMPARISON SUMMARY OF ENVIRONMENTAL CONSEQUENCES
FOR ALTERNATIVES RETAINED FOR DETAILED EVALUATION**

Evaluation Criteria	No-Action Alternative	Build Alternative 3	Build Alternative 4
Operational			
Provide a parallel north-south runway immediately capable of providing dual simultaneous instrument operations during IMC while reserving the ability to perform triple simultaneous instrument operations during IMC in the future	No	Yes	Yes
Provide a parallel east-west runway capable of providing dual simultaneous instrument operations during IMC	No	Yes	Yes
Provide redundant runways	No	Yes	Yes
Provide adequate passenger terminal and aircraft gate capacity to accommodate forecasted growth in aviation demand	No	Yes	Yes
Constructability - Off-Airport Construction Impacts			
Infrastructure	No	No	No
Acquisition (acres)	0	448	480
Total Relocations (homes/ NOAA/NWS Sterling) ¹	0 / 0	0 / 1	0 / 1
Financial Feasibility			
Total Cost (\$ billion) ²	\$0.0	\$1.49	\$1.51
Environmental Factors			
Noise			
- Noise sensitive sites (including residential parcels) within DNL 65 dBA contour experiencing a DNL 1.5 dBA increase in noise	0	0	0
- Noise sensitive sites (including residential parcels) within DNL 60 dBA experiencing a 3.0 dBA increase in noise or newly included in DNL 65 dBA contour	0	15	15
Social Impacts			
- Construction relocations - population/household	0 / 0	0 / 0	0 / 0

TABLE 3.4-1 (Continued)
COMPARISON SUMMARY OF ENVIRONMENTAL CONSEQUENCES
FOR ALTERNATIVES RETAINED FOR DETAILED EVALUATION

Evaluation Criteria	No-Action Alternative	Build Alternative 3	Build Alternative 4
Environmental Justice Impacts	No	No	No
Induced Socioeconomic Impacts ³			
- Direct and indirect jobs	0	18,255	18,533
- Economic contribution (\$ billions; includes labor, income, business revenues and taxes)	0	\$2.21	\$2.25
Air Quality	No	No	Yes
Water Quality	No	Yes	Yes
Section 4(f) (# sites Direct/Indirect Impacts)	0 / 0	0 / 0	0 / 0
Section 106 Historical and Archaeological Sites			
- Historic Architectural sites Direct/Indirect Impacts	0 / 0	0 / 0	0 / 0
- Archaeological (potential impacts) ⁴	0	14	14
Biotic Communities (acres)	0.0	3,485.6	3,658.7
Endangered/Threatened Species	No	No	No
Wetlands ⁵			
- Acres of wetland loss within Limits of Disturbance	0.0	174.7	180.5
- Linear feet of stream loss within Limits of Disturbance	0	60,858	63,500
100-Year Floodplains (acres)	0.0	39	35
Coastal Zone Management	No	Yes	Yes
Coastal Barriers	No	No	No
Wild/Scenic Rivers	No	No	No
Prime Farmland (acres) ⁶	0	40.28	41.35
Energy Supply/Natural Resources	No	No	No
Light Emissions	No	No	No
Solid Waste			
- Amount generated (tons per year)	3,705	3,705	3,705
- Landfill proximity conflicts	No	No	No
Construction Impacts	No	No	No
Potential Hazardous Materials (# sites)	0	0	0

¹ Analysis of Potential Effects of Dulles International Airport Proposed Runway Expansion Project on the NOAA/NWS Weather Forecasting Office and Sterling Research and Development Center, Sterling, Virginia - Revised Final Report (SRI International, February 2004) recommended that certain facilities that are part of the NOAA/NWS Sterling Research and Development Facility (specifically, the WFO Building, WSR-88D, and UA facilities, test beds, and support buildings) would require relocation due to Build Alternatives 3 and 4. NOAA/NWS will evaluate the environmental impacts of relocating facilities at a later date separate from this FAA EIS.

² Includes costs associated with the construction of runways, taxiways, related facilities, property acquisition, and Tier 3 Concourse. Costs associated with the relocation of NOAA/NWS facilities are not included in the alternatives analysis.

³ Induced socioeconomic impacts related to construction activities (runways, taxiways, and Tier 3 Concourse).

⁴ Resources have not yet been fully assessed for eligibility for listing in the NRHP. Further assessment and consultation with the Virginia SHPO is ongoing. Results of the SHPO coordination will be included in the FEIS.

⁵ The estimates of wetland and stream impacts and loss are preliminary and subject to revision through the CWA Section 401/404 permit process.

⁶ Provisions of the Farmland Protection Policy Act (FPPA) would not apply to Build Alternatives 3 and 4 for farmland impacts.

Source: Compiled by URS Corporation, 2004.

3.4.3 BUILD ALTERNATIVE 4

Build Alternative 4 would provide a new airfield layout, aircraft gates, and passenger terminal space to safely accommodate existing and projected aviation activity levels, the ability to provide triple simultaneous independent approach capabilities in the future, and redundant runways. The proposed improvements associated with Build Alternative 4 illustrated on [Figure 3.3.2-5](#) include the following elements:

- Construction of a new north-south oriented runway (1W/19W) approximately 9,218 feet long located 5,000 feet west of existing Runway 1L/19R;
- Construction of a new 10,500-foot east-west oriented runway (12R/30L) located 4,300 feet south of existing Runway 12/30;
- Acquisition of 480 acres of property on the west side of the airport to accommodate FAR Part 77 clearance surfaces, an RPZ, and buffer area;
- Construction and operation of a new full-length parallel taxiway on the east side of new Runway 1L/19R;
- Construction and operation of taxiway connectors between new Runway 1W/19W and existing Runway 1L/19R;
- Construction and operation of a new full-length parallel taxiway on the north side of new Runway 12R/30L;
- Construction and operation of taxiway connectors between new Runway 12R/30L and existing Runway 12/30;
- Construction and operation of crossfield taxiways between existing Runway 30 and Taxiway "J5";
- Installation and operation of NAVAIDS for new Runways 1W/19W and 12R/30L including localizer antennas, glide slope antennas, PAPI, RVR equipment, IM, FFM, ALSF-2, and TDZL;
- Tier 3 Concourse development;
- Construction and operation of the APM from the Tier 2 Concourse to the Tier 3 Concourse;
- Obtain State Water Quality Section 401 certification and USACE Section 404 wetland fill permit prior to start of construction and implementation of mitigation measures;
- Changes in air traffic procedures;
- Support facility improvements; and
- Relocation of NOAA/NWS Sterling facilities. NOAA will prepare separate NEPA documentation from this FAA EIS that will contain an evaluation of NOAA/NWS facility relocation alternatives, a detailed analysis of environmental impacts, selection of a Preferred Alternative, and description of mitigation measures. FAA and NOAA/NWS will be coordinating their respective decisions regarding any required property transfer to MWAA and relocation of NOAA/NWS facilities.

[Table 3.4-1](#) contains a comparative summary of the Operational, Constructability, Financial, and Environmental Consequences of the alternatives retained for detailed evaluation.

3.5 TIER 3 CONCOURSE DEVELOPMENT

The Tier 3 Concourse development is proposed to accommodate the forecasted passenger demand at IAD through 2010. According to *Washington Dulles International Airport Updated Activity Forecasts and Simulation* (HNTB Corporation, November 2003) and shown in **Table 1.3-1**, enplaned passengers are forecasted to increase from 8,515,498 in 2002 to 15,350,500 in 2010 (an 80 percent increase).

Preliminary layout and design of the Tier 3 Concourse (as shown on the ALP on **Figure 1.2-1a**) shows the building would be approximately 3,300 feet long and 142 feet wide, located south of the existing Concourses C and D, and the future Tier 2 Concourse. Approximately 40 gates are anticipated with the proposed Tier 3 Concourse, depending on the airline tenants and fleet mix.

The only other concourse development planned at IAD during the project time period is the Tier 2 Concourse improvements. The Tier 2 Concourse is intended to replace the temporary Concourse C/D and enhance services currently provided by IAD (EA Engineering, August, 2002). No additional gate capacity will be developed as a result of the Tier 2 Concourse improvements.

The No-Action Alternative would not include the Tier 3 Concourse development. Although forecasted passenger growth would occur at the same pace as the Build Alternatives' forecast through 2010, IAD would experience unacceptable airside delays and decreased passenger services within the airside terminals.

All of the Build Alternatives would include the Tier 3 Concourse and related improvements. Development items would include the Tier 3 Concourse, an extension of the APM system (with a possible extension of the International Arrivals APM), and baggage tug and conveyor tunnels. The Tier 3 Concourse development is shown on **Figures 3.3.2-4** and **3.3.2-5**.

3.6 NOAA/NWS FACILITIES RELOCATION

Several of FAA's alternatives presented in this DEIS include a new north/south runway (identified as Runway 1W/19W) which, if selected as the Preferred Alternative, would require the DOT to request that the Department of Commerce convey to MWAA a property interest in land which is administered by NOAA/NWS and which is necessary to carry out the project proposed in this DEIS. These same alternatives also require relocation of certain NOAA/NWS Sterling facilities. The NOAA/NWS facilities that may be relocated are those located along Thunder Road, which include the WFO; WSR-88D; UAIB; Surface Test Beds; Buildings 15, 16, and 17; and associated structures and equipment antennas (collectively "the NOAA/NWS facilities").

NOAA will prepare separate NEPA documentation from this FAA EIS that will contain an evaluation of NOAA/NWS facility relocation alternatives, a detailed analysis of environmental impacts, and selection of a Preferred Alternative for the relocation of its facilities. FAA and NOAA/NWS will be coordinating their respective decisions regarding any required property transfer to MWAA and relocation of NOAA/NWS facilities.

3.7 PREFERRED ALTERNATIVE

The Sponsor of the proposed project, MWAA, approached FAA with a proposed airport development program (proposed project) for IAD, which would provide airside and landside improvements. Build Alternative 2, evaluated within this DEIS, was the proposed project that MWAA originally submitted to the FAA for review. However, it was determined that Build Alternative 2 would only partially fulfill the purpose and need for the proposed project because it would not provide for the ability to conduct triple simultaneous instrument operations during IMC in the future (see [Table 3.3.3-1](#)). As a result, MWAA revised their ALP in 2003 and 2004 and resubmitted it to FAA depicting a new north-south runway with a separation distance of 4,300 feet. This revised development concept is evaluated in this DEIS as Build Alternative 3. MWAA has identified to FAA that the development of Build Alternative 3 is the proposed project and the Sponsor's Preferred Alternative.

At this draft stage in the EIS process, FAA has not identified its preferred alternative(s) for the proposed project. This decision will be made after issuance of the Draft EIS and after FAA has had an opportunity to consider comments from interested agency representatives and the public.

The three alternatives considered in detail in this DEIS have clear advantages and disadvantages. The No-Action Alternative has fewer adverse environmental impacts, but it does not meet the Level 1 screening criteria including a new north-south parallel runway immediately capable of dual simultaneous independent operations during IMC while reserving the capability of triple simultaneous independent operations during IMC in the future, a new east-west parallel runway capable of dual simultaneous independent operations during IMC, or redundant runways. The two Build Alternatives meet all of the Level 1 screening criteria (see [Table 3.3.3-1](#)). However, each of these Build Alternatives are costly and would result in unavoidable adverse environmental impacts.

Build Alternative 3 would result in adverse environmental impacts to 174.7 acres of wetlands (clearing and filling) and 39 acres of 100-year floodplain. Build Alternative 3 would include the acquisition of approximately 448 acres of property. The NOAA/NWS facilities detailed in [Section 3.3.3.3](#) would have to be relocated either onto existing NOAA/NWS Sterling property or onto another suitable site, the decision of which will be made following the completion of the separate NEPA documentation being prepared by NOAA for that action. The costs for Build Alternative 3, including property acquisition, construction of two parallel runways, taxiways, and associated NAVAIDS, and Tier 3 Concourse development is estimated to be \$1.49 billion³.

Development associated with Build Alternative 3 would result in no direct or indirect impacts to Section 4(f) resources or historic architectural resources. Fourteen archaeological resources would be directly impacted by Build Alternative 3. FAA determined that these resources are not eligible for listing on the NRHP. However, this determination is being further coordinated with the Virginia State Preservation Historic Office (SHPO).

³ Costs associated with relocation of NOAA/NWS facilities are not included in this DEIS.

Build Alternative 4 would result in adverse environmental impacts to 180.5 acres of wetlands (clearing and filling) and 35 acres of 100-year floodplain. Build Alternative 4 would include the acquisition of approximately 480 acres of property. The NOAA facilities detailed in [Section 3.3.3.3](#) would have to be relocated either onto existing NOAA/NWS Sterling property or to another suitable site, the decision of which will be made following the completion of the separate NEPA documentation being prepared by NOAA for that action. The costs for Build Alternative 4, including property acquisition, construction of two parallel runways, taxiways and associated NAVAIDS, and Tier 3 Concourse development is estimated to be \$1.51 billion⁴.

Development associated with Build Alternative 4 would result in no direct or indirect impacts to Section 4(f) resources or historic architectural resources. Fourteen archaeological resources would be directly impacted by Build Alternative 4. FAA determined that these resources are not eligible for listing in the NRHP. However, this determination is being further coordinated with the Virginia SHPO.

The No-Action Alternative is the environmentally preferred alternative; however, it would not provide the facilities necessary to meet the project purpose and need. Of the two Build Alternatives that meet the purpose and need for the project, Build Alternative 3 would result in less amount of property acquisition, slightly less impacts to wetlands, and slightly more impacts to 100-year floodplains.

Approximately 30 days after publication of the DEIS, FAA will conduct a Public Hearing to present the results of the DEIS to the public and interested agencies. FAA will consider all comments on the DEIS submitted by the public and interested agencies. Appropriate revisions to the DEIS document will be made by FAA based on the comments received, and FAA will publish a FEIS that sets forth the impacts of alternatives, identifies the Sponsor's and FAA's Preferred Alternative(s), and establishes a mitigation program that will be implemented by MWAA. No sooner than 30 days following the release of the FEIS, FAA will publish its findings and decisions on the proposed project in a document called the Record of Decision (ROD). The ROD will document the FAA's decision on the Federal actions necessary to implement the Preferred Alternative at IAD.

3.8 LISTING OF FEDERAL LAWS AND REGULATIONS CONSIDERED

The following is a list of Federal laws and regulations considered by FAA in the preparation of this DEIS:

FEDERAL LAWS AND STATUTES:

Subtitle VII, Title 49 U.S. Code - "Aviation Programs" (Section 40101, *et seq.*) recodified from, and formerly known as the "Federal Aviation Act of 1958" as amended, (P.L. 85-726).

Airport and Airway Improvement Act of 1982, (P.L. 97-248).

Airports and Airway Safety, Capacity, Noise Improvement, and Intermodal Transportation Act of 1992, (P.L. 102-581 and P.L. 103-13; 49 USC Section 47101, *et seq.*) (recodified from and formerly known as "Airport and Airway Safety and Capacity Expansion Act of 1987," (P.L. 100-223).

⁴ Costs associated with relocation of NOAA/NWS facilities are not included in this DEIS.

Airport and Airway Revenue Act of 1987, (P.L. 100-223, Title IV).

Airport Noise and Capacity Act of 1990, (P.L. 101-508; 49 USC App. 2151, *et seq.*), now recodified as 49 U.S.C, App. 4752, *et. seq.*

National Environmental Policy Act of 1969, (“NEPA,” P.L. 91-190; 42 USC 4321, *et seq.*) as amended by P.L. 94-52, P.L. 94-83, and P.L. 97-258, 4(b).

Clean Air Act, (As amended by P.L. 91-604 42 USC 7401, *et seq.*).

Noise Control Act of 1972, (P.L. 92-574; 42 USC 4901).

Aviation Safety and Noise Abatement Act of 1979, (P.L. 96-193; 49 USC App 2101) 49 USC 7501, *et seq.*

Section 303, Title 49 U.S. Code, recodified from, and formerly known as “*Section 4(f) of the Department of Transportation Act of 1966*”.

National Historic Preservation Act of 1966, Section 106, (P.L. 89-665; 16 USC 470(f)).

Archaeological and Historic Data Preservation Act of 1974, (P.L. 86-253, as amended by P.L. 93291, 16 USC 469).

Endangered Species Act of 1973, (P.L. 85-624; 16 USC 661, 664, 1008 note).

Federal Water Pollution Control Act Amendments of 1972, Section 404, (P.L. 92-500; 33 USC 1344), as amended by the Clean Water Act of 1977 (P.L. 95-217; 33 USC 1251).

Coastal Zone Management Act of 1972, (P.L. 92-583; 16 USC 1451-1464).

Coastal Barrier Resources Act of 1982, (P.L. 97-384; 16 USC 3501-3510).

Section 2 of the Water Bank Act, (P.L. 91-559; 16 USC 1301 note) .

Uniform Relocation and Real Property Acquisition Policies Act, (P.L. 91-528; 42 USC 4601).

Wild and Scenic Rivers Act, (16 USC 1274, *et seq.*).

Farmland Protection Policy Act, (P.L. 97-98 and 7 CFR Part 658).

Section 201(a), Federal Land Policy and Management Act of 1976, (P.L. 94-579; 43 USC 1701 *et seq.*).

Resource Conservation and Recovery Act of 1976, P.L. 94-580; 42 USC 6901 *et seq.* as amended by the *Solid Waste Disposal Act of 1980*, (P.L. 96-482); and the *1984 Hazardous and Solid Waste Amendments*, (P.L. 98-616).

Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”), as amended by *Community Environmental Resource Facilitation Act (“CERFA”)*, October 1992. 42USC. 9601, *et seq.*

Land and Water Conservation Fund Act, (P.L. 88-578); 16 USC 460I-8(f)3

EXECUTIVE ORDERS:

Protection and Enhancement of the Cultural Environment, Executive Order 11593, (dated May 13, 1971).

Floodplain Management, Executive Order 11988, (43 FR 6030) and **Order DOT 5650.2-Floodplain Management and Protection**, (dated April 23, 1979).

Protection of Wetlands, Executive Order 11990, and **Order DOT 5660.IA, Preservation of the Nation's Wetlands**, (dated August 24, 1978).

Intergovernmental Review of Federal Programs, Executive Order 12372, (dated July 14, 1982) and **49 CFR Part 17, Intergovernmental Review of DOT Programs and Activities**.

President's 1979 Environmental Message Directive on Wild and Scenic Rivers, (dated August 2, 1979).

Protection and Enhancement of Environmental Quality, Executive Order 11514, (dated March 4, 1970).

Flood Hazard Evaluation Guidelines, Executive Order 11296.

Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Executive Order 12898.

Federalism, Executive Order 13132, August 4, 1999.

Invasive Species, Executive Order 13112, February 3, 1999.

Protection of Children from Environmental Health Risks and Safety Risks, Executive Order 13045, April 21, 1997.

FEDERAL REGULATIONS:

40 CFR Parts 1500-1508, CEQ implementation of NEPA procedural provisions establishes uniform procedures, terminology, and standards for implementing the procedural requirements of NEPA's Section 102(2).

40 CFR Part 93.153, Subpart B, (58 FR 63247, November 30, 1993), Determining Conformity of General Federal Action to State or Federal Implementation Plans.

40 CFR Part 50, (July 1, 2001), National Primary and Secondary Ambient Air Quality Standards.

40 CFR Part 51, (July 1999), Requirements for Preparation, Adoption, and Submittal of Implementation Plans.

40 CFR Part 81, (69FR23857, April 30, 2004), Air Quality Designations and Classifications for the 8-hour Ozone National Ambient Air Quality Standards.

36 CFR Part 800, (39 FR 3365, January 25, 1974, and 51 FR 31115, September 2, 1986), Protection of Historic Properties.

36 CFR Part 59, (July 1, 1996), Land and Water Conservation Fund Program of Assistance to States; Post-completion Compliance Responsibilities.

7 CFR Part 657, (43 FR 4030, January 31, 1978), Prime and Unique Farmlands.

49 CFR Part 18, (March 11, 1988), Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Government.

49 CFR Part 24, (March 2, 1989), Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs.

50 CFR Part 17.11, .12 (Subpart B), (May 31, 1997), Endangered and Threatened Wildlife and Endangered and Threatened Plants.

15 CFR Part 930, Federal Consistency with Approved Coastal Management Programs and Subpart D, Consistency for Activities Requiring a Federal License or Permit.

49 CFR Part 77, Objects Affecting Navigable Airspace.