# Environmental Assessment: Five – Year Development Plan

## Volume I - Report

## Richmond Executive Airport - Chesterfield County

Chesterfield, Virginia

Prepared for:

**County of Chesterfield, Virginia**

**Draft - October 2014**

# Table of Contents

**PAGE NO.**

**I INTRODUCTION AND BACKGROUND ..... 1-1**
**II PROPOSED ACTION ..... 1-4**
**III PURPOSE AND NEED ..... 1-6**
**IV ALTERNATIVES ..... 1-12**
**V AFFECTED ENVIRONMENT ..... 1-29**
**VI ENVIRONMENTAL CONSEQUENCES ..... 1-37**
A AIR QUALITY ..... 1-37
B COASTAL RESOURCES ..... 1-40
C COMPATIBLE LAND USE ..... 1-42
D CONSTRUCTION IMPACTS ..... 1-43
E DEPARTMENT OF TRANSPORTATION ACT: SECTION 4(F) ..... 1-44
F FARMLANDS ..... 1-45
G FISH, WILDLIFE AND PLANTS ..... 1-47
H FLOODPLAINS ..... 1-47
I HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE ..... 1-48
J HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES 1-51
K LIGHT EMISSIONS AND VISUAL IMPACTS ..... 1-52
L NATURAL RESOURCES AND ENERGY SUPPLY ..... 1-53
M NOISE ..... 1-54
N SECONDARY (INDUCED IMPACTS) ..... 1-58
O SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS ..... 1-61
P WATER QUALITY ..... 1-63
Q WETLANDS ..... 1-67
R WILD AND SCENIC RIVERS ..... 1-73
**VII MITIGATION ..... 1-75**
**VIII LIST OF PREPARERS ..... 1-79**
**IX LIST OF AGENCIES AND PERSONS CONSULTED ..... 1-81**

## EXHIBITS

**PAGE NO.**

EXHIBIT 1 AIRPORT LAYOUT ..... 1-2
EXHIBIT 2 PROPOSED ACTION ..... 1-5
EXHIBIT 3 FORECAST SUMMARY ..... 1-7
EXHIBIT 4 CRITICAL AIRCRAFT SUMMARY ..... 1-9
EXHIBIT 5 RUNWAY LENGTH REQUIREMENTS ..... 1-10
EXHIBIT 6 ALTERNATIVE 1, NO ACTION ALTERATIVE ..... 1-14
EXHIBIT 7 ALTERNATIVE 2 ..... 1-20
EXHIBIT 8 ALTERNATIVE 3 ..... 1-25
EXHIBIT 9 QUALITATIVE ALTERNATIVE EVALUATION MATRIX ..... 1-26
EXHIBIT 10 QUANTITATIVE ALTERNATIVE EVALUATION MATRIX ..... 1-27

EXHIBIT 11 LOCATION MAP ..... 1-30
EXHIBIT 12 VICINITY MAP ..... 1-31
EXHIBIT 13 USGS MAP ..... 1-32
EXHIBIT 14 EXISTING LAND USE MAP ..... 1-34
EXHIBIT 15 POPULATION CHANGE ..... 1-35
EXHIBIT 16 DE MINIMIS LEVEL SUMMARY ..... 1-38
EXHIBIT 17 PROJECTION OF AIR QUALITY EMISSION ..... 1-39
EXHIBIT 18 COASTAL ZONE MAP ..... 1-41
EXHIBIT 19 FARMLAND ..... 1-46
EXHIBIT 20 EPA – CLEANUPS IN MY COMMUNITY ..... 1-50
EXHIBIT 21 EXISTING NOISE EXPOSURE MAP ..... 1-56
EXHIBIT 22 NOISE EXPOSURE ..... 1-57
EXHIBIT 23 DRAINAGE PATTERNS ..... 1-64
EXHIBIT 24 WATERS OF THE UNITED STATES ..... 1-68
EXHIBIT 25 DELINEATED WETLANDS ..... 1-70
EXHIBIT 26 IMPACTED WETLANDS (ALTERNATIVE 2) (SHEET1) ..... 1-71
EXHIBIT 27 IMPACTED WETLANDS (ALTERNATIVE 2) (SHEET 2) ..... 1-72
EXHIBIT 28 COMPARISON OF ENVIRONMENTAL CONSEQUENCES FOR RUNWAY DEVELOPMENT ALTERNATIVES ..... 1-74
EXHIBIT 29 PERMITS, LETTERS & CONCURRENCES (DURING EA) ..... 1-77
EXHIBIT 30 PERMITS, LETTERS & CONCURRENCES (AFTER EA) ..... 1-78

# I) INTRODUCTION AND BACKGROUND

This Environmental Assessment (EA) is prepared pursuant to the National Environmental Policy Act (NEPA) in accordance with the requirements of Federal Aviation Administration (FAA) Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects;* and FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures.*

This EA further complies with the Commonwealth of Virginia's environmental regulations, and applicable Chesterfield County, Virginia, rules and regulations. The purpose of this EA is to analyze and disclose the potential environmental impacts of the five-year development plan for Richmond Executive-Chesterfield County Airport (FCI), as described in the 2012 Master Plan Update (MPU) and included in the approved 2012 Airport Layout Plan (ALP).

## Airport Setting and Background

The Airport is a general aviation reliever airport located approximately one mile north of Chesterfield, Virginia**.** Chesterfield is the county seat of Chesterfield County and is situated approximately 14 miles south of Richmond, Virginia.

The airport is owned and operated by the County of Chesterfield, Virginia. A full-time airport manager is appointed by the County Administrator to oversee the day-to-day operations of the facility. A staff of an additional four full-time employees and two part-time employees provide overall administrative, maintenance, and service functions for FCI.

The current location of the Airport was determined through a site selection study completed in 1969. **Exhibit 1** depicts existing facilities as documented in the 2012 MPU.

EXISTING RUNWAY PROTECTION ZONE (1,000' X 1,510' X 1,700')

AUTO PARKING

BEACON

NORTH TERMINAL APRON

AIRFIELD DRIVE

FUEL FARM

TERMINAL APRON

WASH RACK

HELICOPTER APRON

AWOS

TW "D"

SOUTH GA APRON

TW "A"

COGBILL ROAD

LOCALIZER

PAPI-4

TW "C"

TW "E"

EXISTING RUNWAY 15 - 33 (5,500' X 100')

PAPI-4

GLIDE SLOPE

LOCALIZER CRITICAL AREA

STATE RTE 10

EXISTING RUNWAY PROTECTION ZONE (1,000' X 1,750' X 2,500')

STATE RTE 288

WHITEPINE ROAD

CHESTERFIELD COUNTY AIRPORT INDUSTRIAL PARK

RPZ ROFA RSA TOFA TSA

FACILITY INDEX

1. AIRPORT TERMINAL BUILDING
2. FBO / MAINTENANCE HANGAR
3. CORPORATE HANGAR - PRIVATE
4. ELECTRICAL VAULT
5. COMMUNITY HANGAR - FBO
6. STATE POLICE AVIATION UNIT
7. CIVIL AIR PATROL
8. CORPORATE HANGAR
9. CORPORATE HANGAR
10. DISTRICT 15 FIRE STATION
11. T-HANGAR
12. T-HANGAR
13. T-HANGAR
14. T-HANGAR
15. T-HANGAR
16. T-HANGAR

LEGEND

- AIRPORT PROPERTY LINE
- ADJACENT PROPERTY OWNER
- EXISTING PAVEMENT
- RPZ — RUNWAY PROTECTION ZONE
- ROFA — RUNWAY OBJECT FREE AREA
- RSA — RUNWAY SAFTEY AREA
- TOFA — TAXIWAY OBJECT FREE AREA
- TSA — TAXIWAY SAFTEY AREA
- AWOS
- BEACON
- SEGMINTED CIRCLE / WINDCONE
- AVIGATION EASEMENT

800 0 800 1600

SCALE: 1"=800' FEET

DRAWING: 10086-exh-airport-layout-ex.dwg LAYOUT: L-1

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# EXISTING AIRPORT LAYOUT

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | 1"=800' | DATE: | NOVEMBER 2013 |
|---|---|---|---|---|---|---|---|

EXHIBIT 1

## Airport Role

The National Plan of Integrated Airport Systems (NPIAS) is a planning document utilized by the FAA to identify the nation's airport needs over a 10-year planning period as well as to identify the service level and role of all airports in the federal airport system. Likewise, the Virginia Air Transportation System Plan (VATSP) identifies the state's airport needs. The Airport is identified by both NPIAS and VATSP as a *reliever* airport. Reliever airports are defined as high-capacity, general aviation airports located in the vicinity of metropolitan areas which relieve congestion at nearby busy commercial service airports.

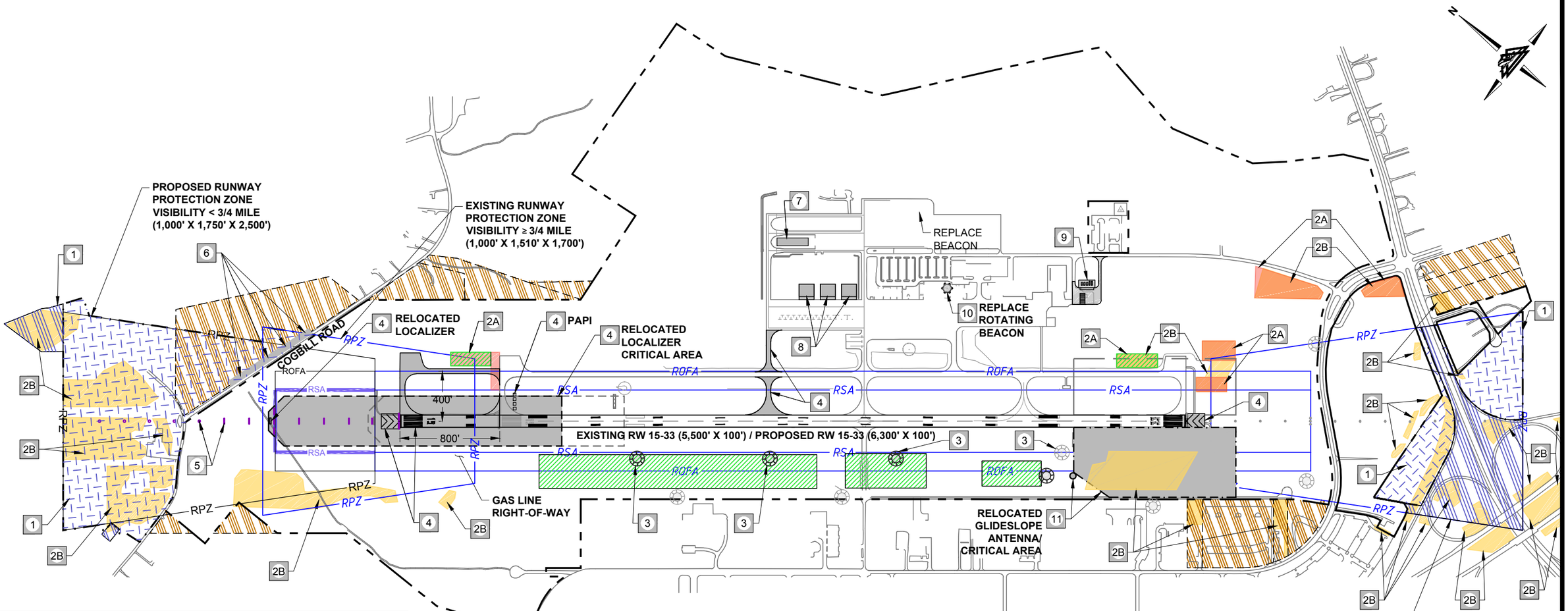
## II) PROPOSED ACTION

This EA addresses airfield infrastructure projects that collectively enhance FCI's ability to improve safety and security, meet FAA design criteria, and achieve the County's long-term goals for the airport. Together, the projects are defined as the Proposed Action in this EA. The projects are also included in the airport's five-year Airport Capital Improvement Program (ACIP) and on the approved 2012 ALP.

The Proposed Action includes extending the airport's runway, associated projects, and facility development in order to accommodate the anticipated short term demand at FCI. Projects associated with the proposed action include:

1. Land Acquisition – fee simple and avigation easement
2. Obstruction Removal – existing and proposed, on and off airport
3. Obstruction Lighting – terrain penetrations
4. Extend Runway 15-33 and Parallel Taxiway – includes extension of the runway safety area (RSA), blast pad construction, relocation of the localizer, glideslope, and precision approach path indicators (PAPIs)
5. Install MALSR- Runway 15
6. Relocate Power Lines (underground)
7. Construct T-Hangar (east side of airfield)
8. Construct Conventional Hangars (3) (east side of airfield)
9. Fuel Farm Improvement
10. Replace Rotating Beacon
11. Relocate Glideslope

The Proposed Action is depicted in **Exhibit 2.**




| LEGEND | | |
|---|---|---|
| DESCRIPTION | EXISTING | PROPOSED |
| AIRPORT PROPERTY LINE | | |
| RUNWAY SAFETY AREA (RSA) | RSA | RSA |
| RUNWAY OBJECT FREE AREA (ROFA) | ROFA | ROFA |
| RUNWAY PROTECTION ZONE (RPZ) | RPZ | RPZ |
| LOCALIZER CRITICAL AREA | NA | |
| AVIGATION EASEMENT | | |
| FEE SIMPLE LAND ACQUISITION | NA | |
| TERRAIN OBSTRUCTIONS (APPROX.) | | NA |
| OBSTRUCTIONS (TO BE REMOVED) | | |
| OBSTRUCTION LIGHT | | |

**SOURCES:**

1. WETLAND AREA AND STREAM LOCATIONS WERE DETERMINED BY A SURVEY AND DELINEATION PROVIDED BY MILL CREEK ENVIRONMENTAL CONSULTANTS, LTD. (SEPTEMBER 2009); JURISDICTIONAL DETERMINATION FROM ARMY CORP OF ENGINEERS IS PENDING.
2. THE TERRAIN OBSTRUCTION AREAS WERE DETERMINED FROM DATA COLLECTED AND PROVIDED BY WOOLPERT SURVEYS (2008-2009).

## PROJECTS

1. LAND ACQUISITION - FEE SIMPLE & AVIGATION EASEMENT
2. OBSTRUCTION REMOVAL
   - 2A OBSTRUCTION REMOVAL - EXISTING
   - 2B OBSTRUCTION REMOVAL - PROPOSED
3. OBSTRUCTION LIGHTING
4. EXTEND RUNWAY 15 & PARALLEL TAXIWAY - INCLUDES RSA, BLAST PADS, LOCALIZER, PAPI RELOCATION
5. INSTALL MALSR
6. RELOCATE POWER LINES (UNDERGROUND)
7. CONSTRUCT T-HANGAR
8. CONSTRUCT CONVENTIONAL HANGARS (3)
9. FUEL FARM IMPROVEMENT
10. REPLACE ROTATING BEACON
11. RELOCATE GLIDESLOPE OUTSIDE OF ROFA

800 0 800 1600

SCALE: 1"=800' FEET

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# PROPOSED ACTION
## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | 1"=800' | DATE: | APRIL 2014 |
|---|---|---|---|---|---|---|---|

**EXHIBIT 2**

DRAWING: 10086-exh-Proposed Action.dwg LAYOUT: L1

## III) PURPOSE AND NEED

The purpose and need of the proposed action is to provide airfield infrastructure to meet FAA design criteria as outlined in FAA Advisory Circular 150/5300-13a *Airport Design (Airport Design AC)*; to serve the family of medium size business jets; and to meet current and future operational demand. As per the *Airport Design* AC, airport design standards provide basic guidelines for a safe, efficient and economic airport system. The projects outlined and evaluated in this EA will fulfill existing and projected aviation demands, as well as accomplish the facility requirements defined in the 2012 MPU. These projects will allow FCI to meet existing and future operational demands and to accommodate the existing and forecasted fleet of aircraft. In addition this EA evaluates those projects to be completed within approximately five years following completion of the EA as shown on the approved ALP.

The forecast of aeronautical activity at FCI during the 20-year planning period (2008-2027), as defined in the 2012 MPU, is a key element of the planning process. This FAA and Department of Aviation (DOAV) approved forecast of aviation activity established the basis for determining and planning the airfield infrastructure and facility requirements necessary to adequately serve the community's current and future aviation needs.

Forecast data used for the purposes of this EA are detailed in **Exhibit 3**. These forecasts indicate that nearly all aspects of aviation demand at FCI will experience growth during the planning period.

The development projects identified in the 2012 MPU will enable FCI to continue to accommodate the growth in aviation demand as well as contribute to the economic vitality of the service area.

**Exhibit 3**
**Richmond Executive-**
**Chesterfield County Airport**

**Forecast Summary**

| | BASE | FORECAST YEARS | | | | AVERAGE ANNUAL COMPOUND GROWTH RATES | | | |
|---|---|---|---|---|---|---|---|---|---|
| **FORECAST ELEMENT** | **2007** | **2008** | **2013** | **2018** | **2027** | **2008 [3]** | **2013** | **2018** | **2027** |
| **Total Based Aircraft [1]** | **130** | **130** | **137** | **143** | **155** | **0.0%** | **1.1%** | **0.9%** | **0.9%** |
| Single Engine Piston | 97 | 91 | 96 | 100 | 108 | -6.2% | 1.1% | 0.8% | 0.9% |
| Multi-Engine Piston | 18 | 18 | 18 | 18 | 18 | 0.0% | 0.0% | 0.0% | 0.0% |
| Multi-Engine Turbo-Prop | 3 | 5 | 5 | 5 | 5 | 66.7% | 0.0% | 0.0% | 0.0% |
| TurboJet | 7 | 10 | 12 | 14 | 18 | 42.9% | 3.7% | 3.1% | 2.8% |
| Rotorcraft | 4 | 5 | 5 | 5 | 5 | 25.0% | 0.0% | 0.0% | 0.0% |
| Other | 1 | 1 | 1 | 1 | 1 | 0.0% | 0.0% | 0.0% | 0.0% |
| **Operations** | **82,500** | **83,597** | **90,301** | **96,213** | **107,855** | **1.3%** | **1.6%** | **1.3%** | **1.2%** |
| Local[4] | 33,000 | 33,439 | 35,722 | 38,087 | 42,744 | 1.3% | 1.3% | 1.3% | 1.2% |
| Itinerant | 49,500 | 50,158 | 54,579 | 58,126 | 65,111 | 1.3% | 1.8% | 1.3% | 1.2% |
| **Operations by Aircraft Type (GA & Air Taxi)** | **82,250** | **83,347** | **89,056** | **94,969** | **106,610** | **1.3%** | **1.3%** | **1.3%** | **1.3%** |
| Single Engine Piston | 55,930 | 56,676 | 60,558 | 63,628 | 71,429 | 1.3% | 1.3% | 1.0% | 1.3% |
| Multi-Engine Piston | 7,402 | 7,501 | 8,015 | 8,547 | 9,595 | 1.3% | 1.3% | 1.3% | 1.3% |
| Multi-Engine Turbo-Prop | 5,758 | 5,834 | 6,234 | 6,648 | 7,463 | 1.3% | 1.3% | 1.3% | 1.3% |
| TurboJet | 9,870 | 10,002 | 10,687 | 12,346 | 13,859 | 1.3% | 1.3% | 2.9% | 1.3% |
| Rotorcraft | 3,290 | 3,334 | 3,562 | 3,800 | 4,264 | 1.3% | 1.3% | 1.3% | 1.3% |
| **Military Operations** | **250** | **250** | **1,245** | **1,245** | **1,245** | **0.0%** | **398.0%** | **0.0%** | **0.0%** |
| Fixed Wing | 250 | 250 | 250 | 250 | 250 | 0.0% | 0.0% | 0.0% | 0.0% |
| Rotorcraft | 0 | 0 | 995 | 995 | 995 | 0.0% | 99500.0% | 0.0% | 0.0% |
| **Total Peak Hour Operations** | **38** | **38** | **41** | **44** | **49** | **0.0%** | **1.5%** | **1.4%** | **1.2%** |
| **Total Instrument Approaches** | **2,063** | **2,090** | **2,233** | **2,380** | **2,672** | **1.3%** | **1.3%** | **1.3%** | **1.3%** |
| **Total GA Pilots & Passengers** | **102,813** | **104,185** | **111,320** | **118,710** | **133,263** | **1.3%** | **1.3%** | **1.3%** | **1.3%** |

Notes: [1] Source for based aircraft data is airport records; growth rates 2013 and beyond are from VATSP. [2] Source for operations base data is 5010-1 dated March 2007 with growth rates from VATSP. [3] Actual Survey data from airport records and resulting growth rate, January 2009. [4] Based on Average flight training hours provided by Dominion Aviation Services, February 2009. [5] Additional operations added to approved forecast due to potential relocation of military helicopters basing at FCI during 2013.

Sources: FCI 2008 Based Aircraft Summary Report as reported to DOAV January 2009; Virginia Air Transportation System Plan Update (VATSP) – 2003
FAA Long-Range Aerospace Forecasts FY 2020, 2025, 2030; Delta Airport Consultants, Inc. Analysis

The current airport reference code (ARC) for FCI is C-II, and the current critical aircraft is the Gulfstream III. The critical aircraft is defined as the aircraft or family or aircraft with the largest wingspan and highest approach to landing speed that uses the airport on a regular basis (i.e., more than 500 times per year). **Exhibit 4** details the future critical aircraft for FCI as justified by the family of medium size business jets which currently use the airport.

The 2012 MPU discussed that the critical aircraft at FCI during the current planning period (2008-2027) is the medium business jet, similar to the Challenger 604 and Hawker 800 type aircraft. These aircraft represent approach category 'C' aircraft and comprise approximately 10,000 of the current and forecasted annual operations. Operational activity is forecasted to increase during the planning period; however, the overall role of the airport will remain as general aviation.

The recommended length for a primary runway at an airport is determined by considering either the family of airplanes having similar performance characteristics or a specific aircraft requiring the longest runway. This need is based on the aircraft or family of aircraft that has been established as the critical aircraft. Additional factors considered include critical aircraft approach speed, its maximum certificated take-off weight, useful load and length of haul, the airport's field elevation above sea level, the mean daily maximum temperature at the airfield, and typical runway surface conditions.

**Exhibit 4**
**Richmond Executive-Chesterfield County Airport**
**Critical Aircraft Summary**

| | Approach Speed | Wingspan* | Maximum Take-off Weight (lbs) |
|---|---|---|---|
| **Previous Planning Period (1992-2012)** | | | |
| Gulfstream III | 136 | 78 | 69,700 |
| **Current Planning Period (2008-2027)** | | | |
| Challenger 604 | 125 | 54 | 47,600 |
| Hawker 800 | 127 | 52 | 28,000 |
| Gulfstream 200 | 133 | 58 | 35,450 |

*rounded to nearest foot
Sources: Delta Airport Consultants Inc.
Aircraft Characteristics, 9th Edition, Burns & McDonnell

**Exhibit 5** illustrates the take-off and landing runway distance required for select business jets, highlighting those requirements greater than FCI's existing runway length of 5,500 feet. The data provided in Exhibit 5 also highlights the runway landing distance requirements for fractional and air taxi charters operating under FAR Part 91K and Part 135, respectively. Operational limitations for Part 135 arrivals include the ability to land within 60 percent of the available runway. A runway length shorter than that noted in the fractional/air taxi column would limit the useful load of the inbound aircraft.

**Exhibit 5**
**Richmond Executive-Chesterfield County Airport**
**Runway Length Requirements (in feet)**

| Aircraft Type | Take-off Distance Required | | Landing Distance Required | | | |
|---|---|---|---|---|---|---|
| | | | Dry | | Wet | |
| | Dry | Wet | Distance | Fractional/ Air Taxi | Distance | Fractional/ Air Taxi |
| **Citation (560) Encore** | 4,300 | 5,258 | 3,308 | 5,514 | 4,987 | 6,341 |
| **Citation (561XL) Excel** | 4,593 | 4,593 | 3,652 | 6,086 | 5,797 | 7,000 |
| **Citation (680) Sovereign** | 4,303 | 5,015 | 3,164 | 5,274 | 4,096 | 6,065 |
| **Citation (750) X** | 6,772 | 7,555 | 3,787 | 6,312 | 5,377 | 7,259 |
| **Hawker 800XP** | 6,135 | 6,135 | 2,667 | 4,445 | 2 ,667 | 4,445 |
| **Challenger** | 6,217 | 6,217 | 2,776 | 4,676 | 2,776 | 4,676 |
| **Falcon 2000** | 6,975 | 6,975 | 3,139 | 5,232 | 3,610 | 6,017 |
| **Gulfstream 200** | 6,991 | 7,506 | 3,420 | 5,472 | 3,975 | 6,355 |
| **G-III** | 6,320 | 6,320 | 4,347 | 7,245 | 4,347 | 7,245 |
| **G-IV - SP** | 6,667 | 8,040 | 3,192 | 5,320 | 3,671 | 6,118 |

Note: _____ indicates requirement greater than existing runway length (5,500')
Assumes: 30 degrees C, 237 MSL, Max take-off and landing weight
Source: Operator supplied data
Delta Airport Consultants analysis (Aerospace Source book, FAA runway length calculation)

In reviewing the runway length requirements produced from the FAA performance charts and computer program as well as the runway length requirements from the critical aircraft family, the existing useable primary runway length of 5,500 feet was found to be inadequate to accommodate the large airplane fleet operating at FCI (both current and future) as the useful load approaches 90 percent.

In addition to the findings discussed previously, operational details from based and transient jet operators were solicited to confirm their operational needs.

- Massey Energy Company, the fourth largest coal company in the United States and a key employer to the greater Richmond area, bases a Challenger 601 at FCI and documented the need for 6,217 feet of runway as the current length does not fully support their operational needs.

- Dominion Aviation Services, which provides FBO, jet charter, and aircraft management services at FCI, operates a Hawker 800XP and expressed that during inclement weather conditions the current runway length is inadequate to support their operational needs.

- NetJets, a national leader in providing fractional jet services, noted that six of its ten aircraft offered at FCI incur Part 135 operational limitations due to the current runway length. A runway length of 6,000 feet to 7,300 feet would be required to remove the landing limitations.

- Kids R Kids, a national education provider, frequently operates a Citation Excel at FCI and noted that the existing runway length is inadequate to support their operations year round and specifically during wet and winter weather conditions.

- A review of performance data for other aircraft within the FAA defined national fleet of general aviation business jets documented need for greater than the existing runway length as useful loads approach 90 percent.

Given this input, it has been determined that a runway length of 6,300 feet is necessary for development during Phase I which would be sufficient to accommodate the Challenger 604, Hawker 800, and Gulfstream 200, which are the future critical aircraft for FCI. Blast pads would also be constructed with the runway extension to mitigate erosion due to forecasted increase of jet traffic. The input detailed above provides the Purpose and Need for the sponsor's Proposed Action described in **Section II**.

Operational detail, performance charts, and correspondence from operators are provided in **Appendix C**.

# IV) ALTERNATIVES

This chapter describes the process used to identify reasonable alternatives meeting the Purpose and Need for the sponsor's Proposed Action described in **Section II**.

## Alternatives Considered but Not Carried Forward

### Achieve Standards

An "Achieve Standards" alternative was considered during the master planning process. This was "Alternative 2" in the MPU. Under the Achieve Standards Alternative, no runway extension would occur; however the existing parallel taxiway would be relocated to 400 foot separation at a width of 35 feet to achieve standard conditions and the glideslope would be relocated outside the Runway Object Free Area (ROFA). Taxiways 'B', 'C', 'D' and 'E' would be reduced to 35 feet in width to meet standard. Specific actions to achieve compliance with 14 CFR Part 77 and control of Runway Protection Zones (RPZs) would be undertaken including appropriate environmental analysis, land acquisition, and obstruction removal. This alternative would require an estimated 16 acres of avigation easement acquisition within the Runway 33 RPZ and 15 acres of fee simple acquisition[1] (two acres within the Runway 15 RPZ and 13 acres within the Runway 33 RPZ) to achieve the recommended RPZ control. This alternative would also remove existing natural growth obstructions.

As existing obstructions are located within delineated wetland areas, approximately eight acres of wetland impacts could occur with the implementation of this Achieve Standards alternative.

This Achieve Standards alternative meets FAA design standards and allows the airport to gain control over RPZs. However, it does not achieve the recommended runway length of 6,300-feet and is therefore not considered further.

[1] 13 acres of fee simple acquisition and 16 acres of avigation easement shown within the Runway 33 RPZ would be transferred from the County to a dedicated airport designation or subjected to the appropriate land use restrictions.

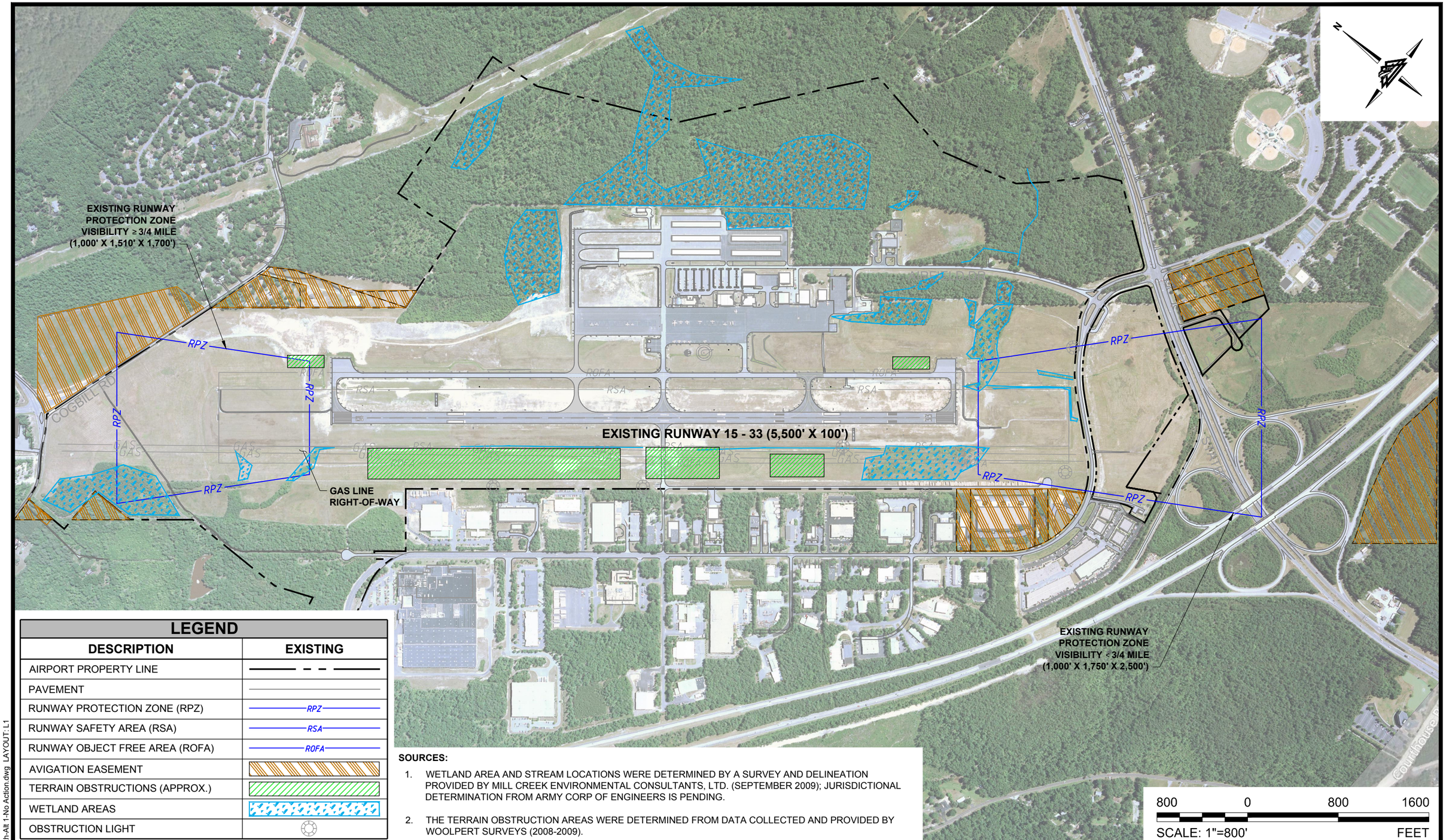
**Alternatives Considered and Carried Forward:**

***No-Build Alternative:***

**1) Alternative 1/No Action**

The No Action Alternative serves as a basis for comparing the environmental consequences of other potential alternatives. Under the No Action alternative, the airport would remain as it exists in the 2012 MPU. As no development would occur on the airfield, no environmental impacts would result from Alternative 1. However, this alternative does not meet the project Purpose and Need as the airport would remain as it exists in the 2012 MPU, which would not improve safety and precludes future growth and, thereby, does not accommodate future demand. For example, Alternative 1 does not provide for control of the land within the existing RPZs; does not mitigate existing obstructions to Part 77 surfaces; and does not achieve the recommended runway length of 6,300-feet. Although this alternative does not meet the stated project Purpose and Need, it is evaluated in this EA in accordance with CEQ and FAA guidance to serve as a baseline against which to measure impacts.

The No Action alternative is illustrated in **Exhibit 6**.




## LEGEND

| DESCRIPTION | EXISTING |
|---|---|
| AIRPORT PROPERTY LINE | |
| PAVEMENT | |
| RUNWAY PROTECTION ZONE (RPZ) | RPZ |
| RUNWAY SAFETY AREA (RSA) | RSA |
| RUNWAY OBJECT FREE AREA (ROFA) | ROFA |
| AVIGATION EASEMENT | |
| TERRAIN OBSTRUCTIONS (APPROX.) | |
| WETLAND AREAS | |
| OBSTRUCTION LIGHT | |

**SOURCES:**

1. WETLAND AREA AND STREAM LOCATIONS WERE DETERMINED BY A SURVEY AND DELINEATION PROVIDED BY MILL CREEK ENVIRONMENTAL CONSULTANTS, LTD. (SEPTEMBER 2009); JURISDICTIONAL DETERMINATION FROM ARMY CORP OF ENGINEERS IS PENDING.
2. THE TERRAIN OBSTRUCTION AREAS WERE DETERMINED FROM DATA COLLECTED AND PROVIDED BY WOOLPERT SURVEYS (2008-2009).

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# ALTERNATIVE 1 - NO ACTION

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | CMC | SCALE: | 1"=800' | DATE: | NOVEMBER 2013 |
|---|---|---|---|---|---|---|---|

**EXHIBIT**
**6**

DRAWING: 10086-exh-Alt 1-No Action.dwg LAYOUT: L1

***Build Alternatives:***

The two build alternatives under consideration both propose a runway extension to 6,300 feet, although they achieve the additional length differently. See the Preliminary Engineering Report (**Appendix I**) for additional discussion and exhibits depicting the proposed development for Alternatives 2 and 3.

Both build alternatives include the proposals listed below for airfield development, which are detailed in each alternative development discussion as well as in **Appendix I**:

1. Land Acquisition
2. Existing Obstruction Removal
    a. Install Obstruction Lights
    b. Existing Obstruction Removal
3. Hangar Construction (east side of airfield)
    a. Construct One (1) T-Hangar
    b. Construct Three (3) Conventional Hangars
4. Fuel Farm Improvement
5. Replace Rotating Beacon
6. Relocate Glideslope Equipment

**2) Alternative 2/Proposed Action - Extend Runway 15 by 800 feet**

The details of Alternative 2/Proposed Action are described below:

Runway Extension: Alternative 2 proposes to extend Runway 15-33 and the associated parallel taxiway 800 feet to the north (Runway 15 end) to provide the recommended 6,300 feet of runway length (see **Exhibit 7**). The project would require relocation of the existing Runway 15 threshold lighting, existing 4-box Precision Approach Path Indicators (PAPIs), and the existing localizer. Blast pads would be constructed at each runway end to mitigate erosion due to forecasted increase in jet traffic. The Runway Safety Area (RSA) would be extended along with the runway.

A Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) is proposed on the Runway 15 end as part of this alternative to reduce (improve) the visibility minimums.

Land Acquisition: The reduced visibility minimums enabled by the MALSR would result in a larger RPZ on the Runway 15 end, requiring land acquisition. Approximately 44 acres of fee simple land acquisition are required in order to control the Runway 15 RPZ. Additionally, approximately 14 acres of fee simple land acquisition and approximately 16 acres of easement acquisition are required in order for the Airport to control all land within the Runway 33 RPZ. Land acquisition would also be undertaken for the purpose of obstruction removal of both natural growth vegetation and terrain. The land acquisition on the Runway 15 end would result in the relocation of two residences and an existing church. Property owners have been involved in public open houses for both the MPU and the EA effort. County leadership has kept them informed throughout the process and continues to do so. Upon receipt of the FONSI, the County will proceed with land services consistent with federal land acquisition guidelines.

Obstruction Removal: There are approximately 49 total acres of obstruction removal proposed for Alternative 2, which includes a total of 12 acres of wetlands impacts. Twenty-two acres of

obstruction removal are proposed for the Runway 15 extension; this includes five acres of wetlands which will be cleared flush to the ground with no impact to the stumps or root mat. Twenty seven acres of obstruction removal are proposed for the Runway 33 approach to remove penetrations to the existing Part 77 surfaces; this includes approximately 7 acres of wetlands impacts. Of these 7 acres, approximately 1.5 acres are within the Resource Protection Area (RPA) of the Chesapeake Bay Preservation Area. All trees and vegetation that are within wetlands will be cleared flush to the ground with no impact to the stumps or root mat.

There are existing off-airport obstructions to the Transitional Surface that will continue to be mitigated by obstruction lights.

Terrain penetrations exist on the west side of Runway 15-33 as a result of a buried gas pipeline installed prior to airport construction. The terrain penetrations will be removed by grading where possible. Obstruction lights would be installed along the pipeline easement as depicted on the current approved ALP.

The power lines along Cogbill Road would require relocation underground as they would become obstructions to the ultimate Runway 15 approach surface. Lastly, a natural gas pipeline valve station in the proposed Runway 15 RPZ will be relocated outside the RPZ. This work has been coordinated with the owner of the pipeline, Columbia Gas.

Hangar Construction: A T-Hangar unit and three conventional hangars would be constructed on the east side of the airfield, between the North Terminal Apron and the North parking lot. Site work has already been completed; however, the construction of a stormwater management and stormwater quality facility is anticipated for each hangar type (t-hangars and conventional hangars). The stormwater facilities will include grading drainage and wetland impacts. Approximately two acres of wetlands impacts is anticipated for each stormwater facility. As part of the site work for each of the two stormwater facilities, approximately two acres of trees must be removed.

Relocate Glideslope Equipment: The existing Runway 33 Glideslope equipment is located between the runway and parallel taxiway inside the ROFA; it will be relocated to the west side of the runway outside the ROFA, as required by FAA guidance. FAA Order 6750.16D requires that the area in front of the glide slope antenna be graded to allow the equipment to work properly. The existing grades in front of the proposed equipment do not meet the guidelines and would have to be graded. The grading would impact approximately 6.2 acres of wetlands. The wetlands would be graded to drain.

Fuel Farm Improvement: Improvements to the existing fuel farm would include replacement of the existing underground storage tanks (UST) with above-ground storage tanks (AST) in a site adjacent to the existing facility. The facility would also include a delivery truck and tender loading position that meets current Virginia Department of Environmental Quality (VDEQ) requirements. No additional capacity would be added to the fuel farm. The grading limits of the fuel farm, which include a stormwater management basin, will impact approximately 0.3 acres of wetlands and will require the clearing of approximately 2 acres of trees.

Replace Rotating Beacon: The existing rotating beacon is over 30 years old and in need of replacement as it is difficult to locate bulbs and support routine maintenance. This project has no earthwork, drainage impacts, or wetland impacts.

Potential Impacts and Mitigation Measures: Impacts resulting from the relocation of residences and wetland impacts are to be mitigated in accordance with the requirements set forth by the Army Corps of Engineers (USACE) and the Uniform Relocation Act (URA) such that the impacts are below the threshold of significance defined in FAA Order 1050.1E. Wetlands impacts would require coordination with both the USACE and VDEQ to ensure that permitting and mitigation requirements are met as necessary. Coordination with VDEQ would also be necessary to meet coastal zone consistency requirements.

A noise analysis was conducted for Alternative 2/Proposed Action during the 2012 Master

Planning effort (see **Exhibit 22**); while the DNL 65 noise contour extends beyond the airport property line along the southwest boundary, the adjacent land is zoned Industrial, which is compatible with airport operations. Therefore no adverse noise impacts are anticipated.

Alternative 2 is depicted in **Exhibit 7** and is evaluated with the other development alternatives in **Exhibits 9 and 10**.

PROPOSED RUNWAY PROTECTION ZONE VISIBILITY < 3/4 MILE (1,000' X 1,750' X 2,500')

EXISTING RUNWAY PROTECTION ZONE VISIBILITY ≥ 3/4 MILE (1,000' X 1,510' X 1,700')

COGBILL ROAD

RELOCATED LOCALIZER

PAPI

RELOCATED LOCALIZER CRITICAL AREA

REPLACE BEACON

REPLACE ROTATING BEACON

EXISTING RW 15-33 (5,500' X 100') / PROPOSED RW 15-33 (6,300' X 100')

400'

800'

GAS LINE RIGHT-OF-WAY

RELOCATED GLIDESLOPE ANTENNA/ CRITICAL AREA

EXISTING RUNWAY PROTECTION ZONE (1,000' x 1,750' x 2,500') VISIBILITY < 3/4 MILE

## LEGEND

| DESCRIPTION | EXISTING | PROPOSED |
|---|---|---|
| AIRPORT PROPERTY LINE | | |
| RUNWAY SAFETY AREA (RSA) | RSA | RSA |
| RUNWAY OBJECT FREE AREA (ROFA) | ROFA | ROFA |
| RUNWAY PROTECTION ZONE (RPZ) | RPZ | RPZ |
| LOCALIZER CRITICAL AREA | NA | |
| AVIGATION EASEMENT | | |
| FEE SIMPLE LAND ACQUISITION | NA | |
| WETLAND AREAS | | NA |
| TERRAIN OBSTRUCTIONS (APPROX.) | | NA |
| OBSTRUCTIONS (TO BE REMOVED) | | |
| OBSTRUCTION LIGHT | | |

**SOURCES:**

1. WETLAND AREA AND STREAM LOCATIONS WERE DETERMINED BY A SURVEY AND DELINEATION PROVIDED BY MILL CREEK ENVIRONMENTAL CONSULTANTS, LTD. (SEPTEMBER 2009); JURISDICTIONAL DETERMINATION FROM ARMY CORP OF ENGINEERS IS PENDING.
2. THE TERRAIN OBSTRUCTION AREAS WERE DETERMINED FROM DATA COLLECTED AND PROVIDED BY WOOLPERT SURVEYS (2008-2009).

## PROJECTS

1. LAND ACQUISITION - FEE SIMPLE & AVIGATION EASEMENT
2. OBSTRUCTION REMOVAL
   - 2A OBSTRUCTION REMOVAL - EXISTING
   - 2B OBSTRUCTION REMOVAL - PROPOSED
3. OBSTRUCTION LIGHTING
4. EXTEND RUNWAY 15 & PARALLEL TAXIWAY - INCLUDES RSA, BLAST PADS, LOCALIZER, PAPI RELOCATION
5. INSTALL MALSR
6. RELOCATE POWER LINES (UNDERGROUND)
7. CONSTRUCT T-HANGAR
8. CONSTRUCT CONVENTIONAL HANGARS (3)
9. FUEL FARM IMPROVEMENT
10. REPLACE ROTATING BEACON
11. RELOCATE GLIDESLOPE OUTSIDE OF ROFA

800 0 800 1600

SCALE: 1"=800' FEET

# ALTERNATIVE 2 - EXTEND RUNWAY 15 (800')

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

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|---|---|---|---|---|---|---|---|

EXHIBIT 7

DRAWING: 10086-exh-Alt-2.dwg LAYOUT: L1

**3) Alternative 3-Extend Runway 15 (600 feet) and Runway 33 (200 feet)**

Runway Extension: Alternative 3 proposes to extend Runway 15-33 and the associated parallel taxiway 600 feet to the north and 200 feet to the south, to provide the recommended critical runway length of 6,300 feet (see **Exhibit 8**). The project would require relocation of the existing Runway 15 threshold lighting, existing 4-box Precision Approach Path Indicators (PAPIs) at each end of the runway, and the existing localizer, as well as demolition of the existing holding bay. Blast pads at each runway end would also be included to mitigate erosion due to the forecasted increase in jet traffic. The RSA would be extended along with the runway. The extension on the Runway 33 end would require the relocation of Whitepine Road.

A Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) is proposed on the Runway 15 end as part of this alternative as well to reduce the visibility minimum.

The extension of the runway toward the south and the relocation of Whitepine Road would impact additional wetlands.

Land Acquisition: The reduced visibility minimums enabled by the MALSR would result in a larger RPZ on the Runway 15 end, requiring land acquisition. Approximately 37 acres of fee-simple land acquisition is required to control the Runway 15 RPZ. Approximately 14 acres of fee simple land acquisition and 16 acres of easement acquisition are also required in order for the Airport to control all land within the Runway 33 RPZ. Land acquisition would also be undertaken for the purpose of obstruction removal of both natural growth vegetation and terrain. The land acquisition on the Runway 15 end would result in the relocation of two residences and an existing church. Property owners have been involved in public open houses for both the MPU and the EA effort. County leadership has kept them informed throughout the process and continues to do so. Upon receipt of the FONSI, the County will proceed with land services consistent with federal land acquisition guidelines.

Obstruction Removal: There are approximately 49 total acres of obstruction removal proposed for Alternative 3, which includes a total of 12 acres of wetlands impacts. Twenty-two acres of obstruction removal are proposed for the Runway 15 extension; this includes five acres of wetlands which will be cleared flush with the ground with no impact to the stumps or root mat. Twenty seven acres of obstruction removal are proposed for the Runway 33 approach to remove penetrations to the existing Part 77 surfaces; this includes approximately 7 acres of wetlands impacts. Of these 7 acres, approximately 1.5 acres are within the Resource Protection Area (RPA) of the Chesapeake Bay Preservation Area. All trees and vegetation that are within wetlands will be cleared flush to the ground with no impact to the stumps or root mat.

Terrain penetrations exist on the west side of Runway 15-33 as a result of a buried gas pipeline installed prior to airport construction. The terrain penetrations will be removed by grading where possible. Obstruction lights would be installed along the pipeline easement as depicted on the current approved ALP.

To the south, this alternative would also require the relocation of Whitepine Road to maintain clearance of the proposed ROFA and RSA, and to provide adequate vertical clearance over the road for the 14 CFR Part 77 Approach Surface. Coordination with the Virginia Department of Transportation (VDOT) would be required. The 200 foot extension would create a penetration (Route 288) to the 50:1 approach surface which would require approval by the FAA and completion of an aeronautical study. At minimum, additional obstruction lights would be required to alert pilots of the roadway overpass.

The power lines along Cogbill Road would require relocation underground as they would become obstructions to the ultimate Runway 15 approach surface. Lastly, a natural gas pipeline valve station in the proposed Runway 15 RPZ will be relocated outside the RPZ. This work has been coordinated with the owner of the pipeline, Columbia Gas.

Hangar Construction: A T-Hangar unit and three conventional hangars would be constructed on the east side of the airfield, between the North Terminal Apron and the North parking lot. Site work has already been completed; however, the construction of a stormwater management and stormwater quality facility is anticipated for each hangar type (t-hangars and conventional hangars). The stormwater facilities will include grading drainage and wetland impacts. Approximately two acres of wetlands impacts is anticipated for each stormwater facility. As part of the site work for each of the two stormwater facilities, approximately two acres of trees must be removed.

Relocate Glideslope Equipment: The existing Runway 33 glideslope equipment is located between the runway and parallel taxiway inside the ROFA; it will be relocated to the west side of the runway outside the ROFA, as required by FAA guidance. FAA Order 6750.16D requires that the area in front of the glide slope antenna be graded to allow the equipment to work properly. The existing grades in front of the proposed equipment do not meet the guidelines and would have to be graded. The grading would impact approximately 6.2 acres of wetlands. The wetlands would be graded to drain.

Fuel Farm Improvement: Improvements to the existing fuel farm would include replacement of the existing underground storage tanks (UST) with above-ground storage tanks (AST) in a site adjacent to the existing facility. The facility would also include a delivery truck and tender loading position that meets current Virginia Department of Environmental Quality (VDEQ) requirements. No additional capacity would be added to the fuel farm. The grading limits of the fuel farm, which include a stormwater management basin, will impact approximately 0.3 acres of wetlands and will require the clearing of approximately 2 acres of trees.

Replace Rotating Beacon: The existing rotating beacon is over 30 years old and in need of replacement as it is difficult to locate bulbs and support routine maintenance. This project has no earthwork, drainage impacts, or wetland impacts.

Potential Impacts and Mitigation Measures: Impacts resulting from the relocation of residences and wetland impacts are to be mitigated in accordance with the requirements set forth by the Army Corps of Engineers (USACE) and the Uniform Relocation Act (URA) such that the impacts are below the threshold of significance defined in FAA Order 1050.1E. Wetlands impacts would require coordination with both the USACE and VDEQ to ensure that permitting and mitigation requirements are met as necessary. Coordination with VDEQ would also be necessary to meet coastal zone consistency requirements.

A noise analysis was conducted for Alternative 3 during the 2012 Master Planning effort (see **Exhibit 22**); while the DNL 65 noise contour extends beyond the airport property line along the southwest boundary, the adjacent land is zoned Industrial, which is compatible with airport operations. Therefore no adverse noise impacts are anticipated.

Alternative 3 would meet the recommended runway length of 6,300 feet as well as provide related infrastructure to meet the Purpose and Need as defined in **Section III**. This alternative is comprised of the project elements necessary for compliance with FAA design standards and meets both existing and future aviation demand at FCI. However, the relocation of Whitepine Road and the minimal reduction of impacts to property owners on the Runway 15 end make this alternative less than optimal.

Alternative 3 is illustrated on **Exhibit 8** and is evaluated with the other development alternatives in **Exhibits 9 and 10**.

PROPOSED RUNWAY PROTECTION ZONE VISIBILITY < 3/4 MILE (1,000' x 1,750' x 2,500')

EXISTING RUNWAY PROTECTION ZONE VISIBILITY ≥ 3/4 MILE (1,000' X 1,510' X 1,700')

RELOCATED LOCALIZER

PAPI

RELOCATED LOCALIZER CRITICAL AREA

REPLACE ROTATING BEACON

PROPOSED WHITE PINE ROAD RELOCATION

COGBILL RD

MALSR

EXISTING RW 15-33 (5,500' X 100') / PROPOSED RW 15-33 (6,300' X 100')

GAS LINE RIGHT-OF-WAY

RELOCATED GLIDESLOPE ANTENNA/ CRITICAL AREA

PROPOSED RUNWAY PROTECTION ZONE (1,000' x 1,750' x 2,500') VISIBILITY < 3/4 MILE

EXISTING RUNWAY PROTECTION ZONE (1,000' X 1,750' X 2,500') VISIBILITY < 3/4 MILE

## LEGEND

| DESCRIPTION | EXISTING | PROPOSED |
|---|---|---|
| AIRPORT PROPERTY LINE | | |
| RUNWAY SAFETY AREA (RSA) | RSA | RSA |
| RUNWAY OBJECT FREE AREA (ROFA) | ROFA | ROFA |
| RUNWAY PROTECTION ZONE (RPZ) | RPZ | RPZ |
| LOCALIZER CRITICAL AREA | NA | |
| AVIGATION EASEMENT | | |
| FEE SIMPLE LAND ACQUISITION | NA | |
| WETLAND AREAS | | NA |
| TERRAIN OBSTRUCTIONS (APPROX.) | | NA |
| OBSTRUCTIONS (TO BE REMOVED) | | |
| OBSTRUCTION LIGHT | | |

**SOURCES:**

1. WETLAND AREA AND STREAM LOCATIONS WERE DETERMINED BY A SURVEY AND DELINEATION PROVIDED BY MILL CREEK ENVIRONMENTAL CONSULTANTS, LTD. (SEPTEMBER 2009); JURISDICTIONAL DETERMINATION FROM ARMY CORP OF ENGINEERS IS PENDING.
2. THE TERRAIN OBSTRUCTION AREAS WERE DETERMINED FROM DATA COLLECTED AND PROVIDED BY WOOLPERT SURVEYS (2008-2009).

## PROJECTS

1. LAND ACQUISITION - FEE SIMPLE & AVIGATION EASEMENT
2. OBSTRUCTION REMOVAL
   - 2A OBSTRUCTION REMOVAL - EXISTING
   - 2B OBSTRUCTION REMOVAL - PROPOSED
3. OBSTRUCTION LIGHTING
4. EXTEND RUNWAY 15/33 & ASSOCIATED PARALLEL TAXIWAYS - INCLUDES RSA, BLAST PADS, LOCALIZER, GLIDESLOPE, MALSR, PAPI RELOCATION
5. INSTALL MALSR
6. RELOCATE POWER LINES (UNDERGROUND)
7. CONSTRUCT T-HANGAR
8. CONSTRUCT CONVENTIONAL HANGARS (3)
9. FUEL FARM IMPROVEMENT
10. REPLACE ROTATING BEACON
11. RELOCATE GLIDESLOPE OUTSIDE OF ROFA
12. RELOCATE ROAD

800 0 800 1600

SCALE: 1"=800' FEET

# ALTERNATIVE 3 - EXTEND RUNWAY 15 (600') & RUNWAY 33 (200')

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

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|---|---|---|---|---|---|---|---|

EXHIBIT 8

DRAWING: 10086-exh-Alt-3.dwg LAYOUT: L1

**Exhibit 9**
**Richmond Executive-Chesterfield County Airport**
**Qualitative Alternative Evaluation Matrix**

| Evaluation Criteria | Alternative 1 (No Action) | Alternative 2 (Proposed Action) | Alternative 3 |
|---|---|---|---|
| Operational Objectives | | | |
| Achieves Recommended Runway Length | No | Yes | Yes |
| Enhances All Weather Capability | No | Yes | Yes |
| Achieves FAA Design Criteria | Standards are met. | Yes | Requires special consideration be given for Part 77 penetrations over Route 288. |
| Anticipated Environmental and Land Impacts | | | |
| Land Requirements: Runway 15 | None | 44± acres (Fee) | 37± acres (Fee) |
| Land Requirements: Runway 33 | None | 14 ± acres (Fee); 16acres ± (Easement) | 14 ± acres (Fee); 16 ± acres (Easement) |
| Relocation Impacts | None | 1 Church; 2 Residences | 1 Church; 2 Residences |
| Obstruction Removal | None | Approximately 49 acres. [1] | Approximately 49 acres. [1] |
| Wetland Impacts | None | Approximately 23.2 acres. [1] | Approximately 27.2 acres. [1] |
| Constructability | | | |
| Road Realignment | None | None | Whitepine Road must be realigned outside RSA/ROFA. |
| Phasing | None | Only Runway 15 end involved. | Involves construction at both ends of the runway. |
| Utilities Impacts | None | Bury overhead power lines along Cogbill Road. | Utility relocation associated with road realignment. Bury overhead power lines along Cogbill Road. |
| 14 CFR Part 77 Compliance | Not compliant obstructions exist. | Avigation easement offset with fee simple requirements. | Creates additional surface penetrations over Route 288. |

Note: [1] Includes impacts associated with the "Achieve Standards" alternative (Alternative 2 from 2012 MPU Update).
Source: 2012 MPU Update, Chesterfield County Airport

**Exhibit 10**
**Richmond Executive-Chesterfield County Airport**
**Quantitative Alternative Evaluation Matrix**

| Evaluation Criteria | Alternative 1 (No Action) | Alternative 2 (Proposed Action) | Alternative 3 |
|---|---|---|---|
| Operational Objectives | | | |
| Achieves Recommended Runway Length | 1 | 3 | 3 |
| Enhances All Weather Capability | 1 | 3 | 3 |
| Achieves FAA Design Criteria | 1 | 3 | 2 |
| Anticipated Environmental and Land Impacts | | | |
| Land Requirements/Relocation Impacts | 3 | 1 | 1 |
| Obstruction Removal | 1 | 1 | 1 |
| Wetland Impacts | 3 | 1 | 1 |
| Constructability | | | |
| Road Realignment | 3 | 3 | 1 |
| Phasing | 3 | 3 | 1 |
| Utilities Impacts | 3 | 1 | 1 |
| 14 CFR Part 77 Compliance | 1 | 2 | 2 |
| TOTAL | 20 | 21 | 17 |

Notes: Based on Ability to Achieve Evaluation Criteria
1 – Least
2 – Moderate
3 – Best
Source: 2012 MPU Update, Chesterfield County Airport

**Exhibit 10** ranks the three development alternatives quantitatively based on the evaluation criteria included in **Exhibit 9**. Alternative 2, the Proposed Action, ranks highest in this table. Alternative 2, No Action, ranks higher than Alternative 3. This is because, although Alternative 3 would technically meet the Purpose and Need, the necessary road realignment, the phasing requirements, and the alternative's impacts on wetlands make it a less desirable option in this quantitative ranking exercise.

**Proposed Action**

The Proposed Action (the Proposed Action) was selected as a result the alternative screening described above, keeping in mind the Purpose and Need for the proposed development. The public involvement process to educate and involve the public involved three public open houses, to which property owners were specifically invited and comments were collected (see **Appendix M**). A Master Plan Steering Committee was formed at the initiation of the study process to solicit comments regarding the needs and concerns of the public at large. The committee was made up of representatives including the airport owner, the Airport Advisory Board, tenants and users, as well as representatives from the FAA and DOAV.

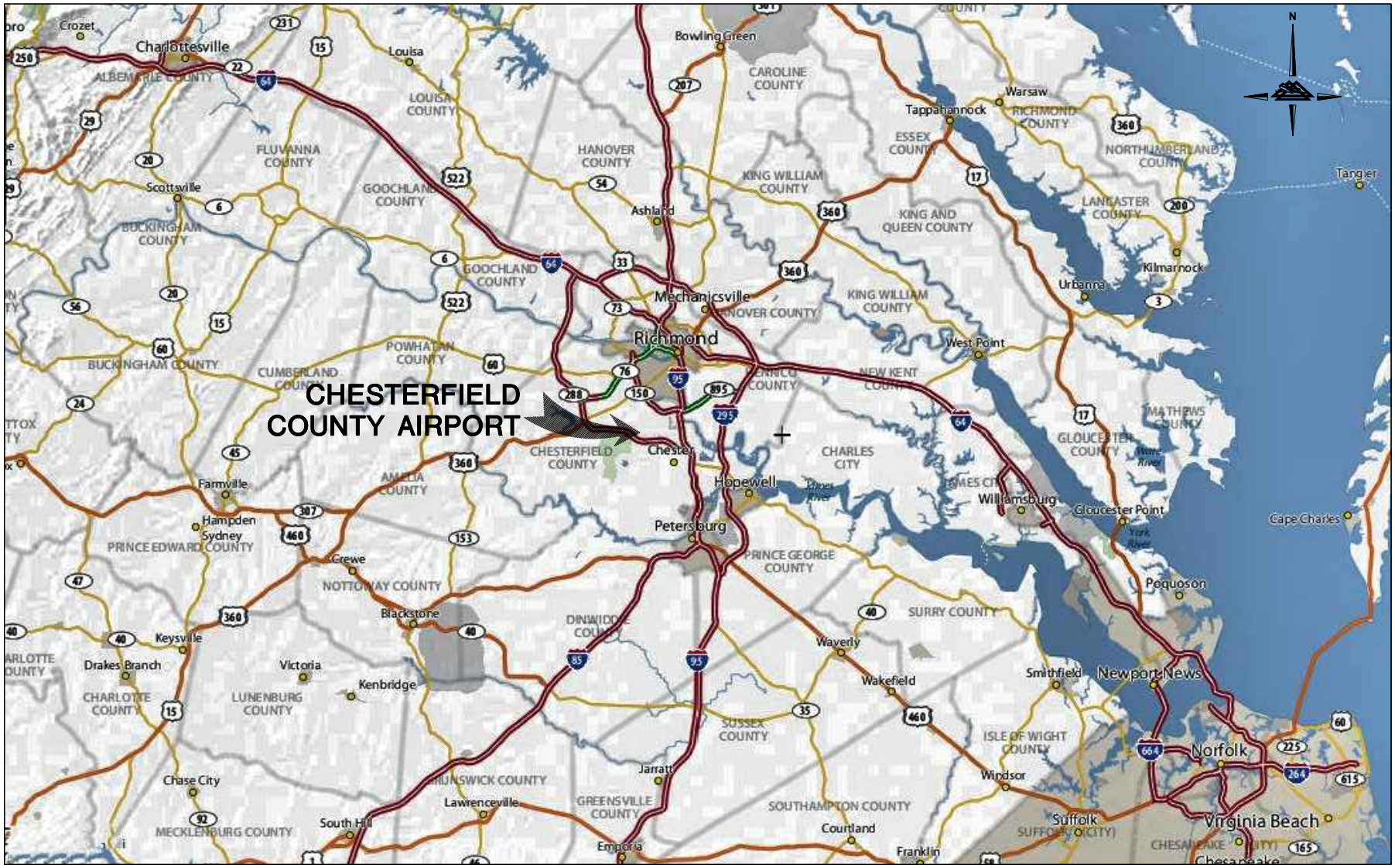
Although Alternative 1, No Action, involves no environmental impacts, it does not meet the Purpose and Need of the proposed action as stated in Section III. Although Alternative 3 meets the Purpose and Need, the relocation of Whitepine Road as well as construction required on both ends of the runway make this alternative less than optimal. Alternative 2, however, meets the most critical aspects of the defined Purpose and Need and would provide FCI a runway and facilities that will accommodate existing and future demand while complying with FAA design standards. Therefore, Alternative 2 was selected as the preferred development alternative and is included in this report as the Proposed Action. Alternative 2 provides the most efficient means of meeting the recommended runway length of 6,300 feet. The alternative also provides related infrastructure to meet the stated Purpose and Need in **Section III**. The alternative may be implemented with little disruption to daily operations.

## V) AFFECTED ENVIRONMENT

FCI is located approximately one mile north of Chesterfield, Virginia and approximately 14 miles south of Richmond, Virginia. Norfolk and Tidewater Virginia are located approximately 90 miles southeast of the airport via Interstate 64 while Washington, D.C. is located approximately 120 miles to the north, via Interstate 95. **Exhibit 11**, Location Map, identifies the immediate vicinity around the airport, while **Exhibit 12,** Vicinity Map, locates the airport relative to Chesterfield County.

The topography of the county and immediate area surrounding FCI is comprised of level to cut topography. The Chesterfield, VA USGS 7.5 minute quadrangle map is provided as **Exhibit 13.** The existing topography within the airport boundary ranges between approximately 180 and 250 feet above Mean Sea Level (MSL). FCI is situated at an elevation of 237 MSL, with a current airport reference point of 37°24’23.20” North latitude and 77°31’29.40” West longitude. Tributaries of Reedy Creek flow through the southern portion of the airport property.

DRAWING: 10086-exh-location-map.dwg LAYOUT: L1

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# LOCATION MAP
## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

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|---|---|---|---|---|---|---|---|

EXHIBIT
11

DRAWING: 10086-exh-vicinity-map.dwg LAYOUT: L1

# VICINITY MAP

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

EXHIBIT 12

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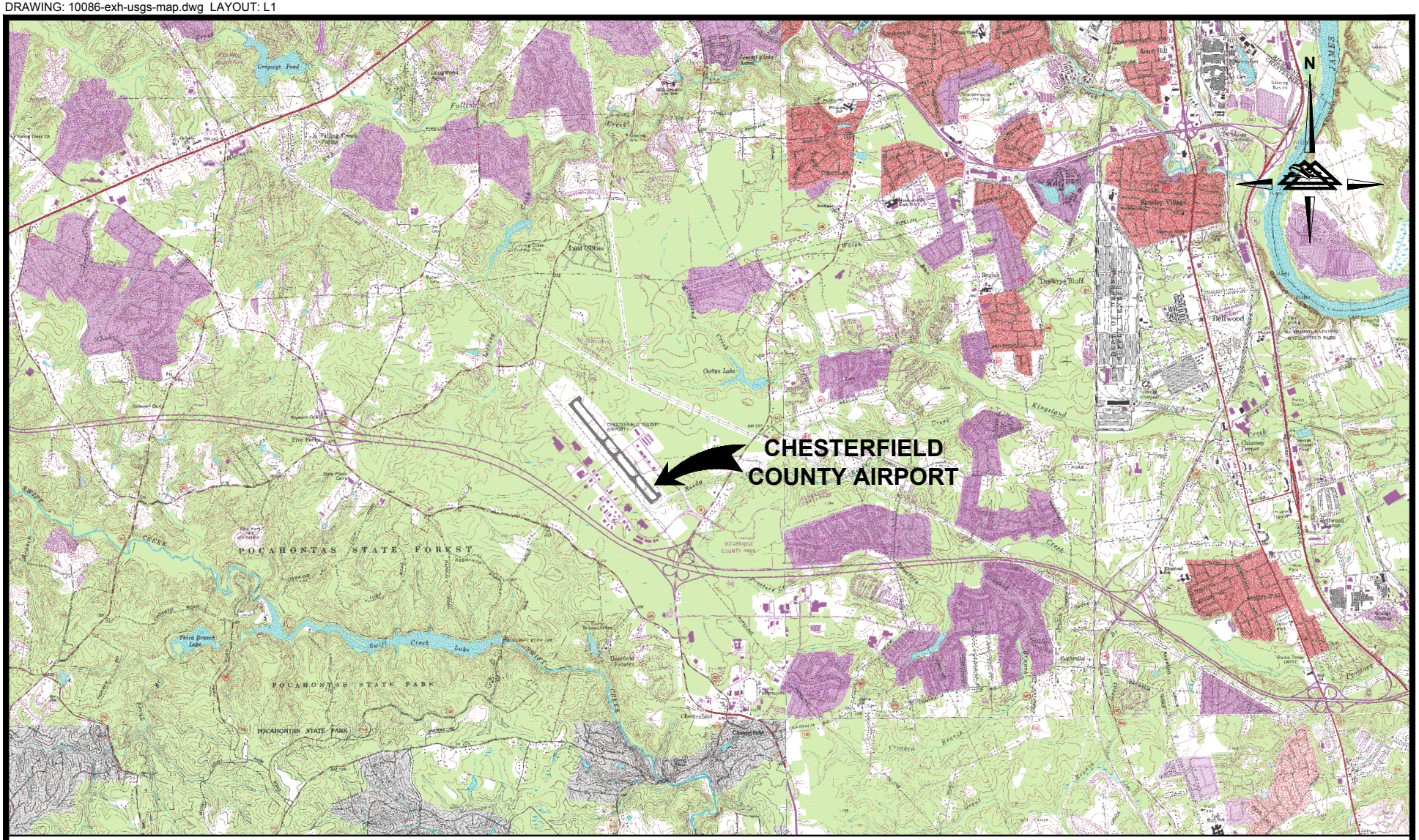


SOURCE: BASE MAPS FROM USGS 7.5 MINUTE SERIES QUADS:

| | |
|---|---|
| BEACH, VA | 1994 |
| CHESTER, VA | 1969 / PHOTOREVISED 1987 |
| CHESTERFIELD, VA | 1963 / REVISED 1994 |
| DREWRYS BLUFF, VA | 1969 / REVISED 1994 |

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# USGS MAP
## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

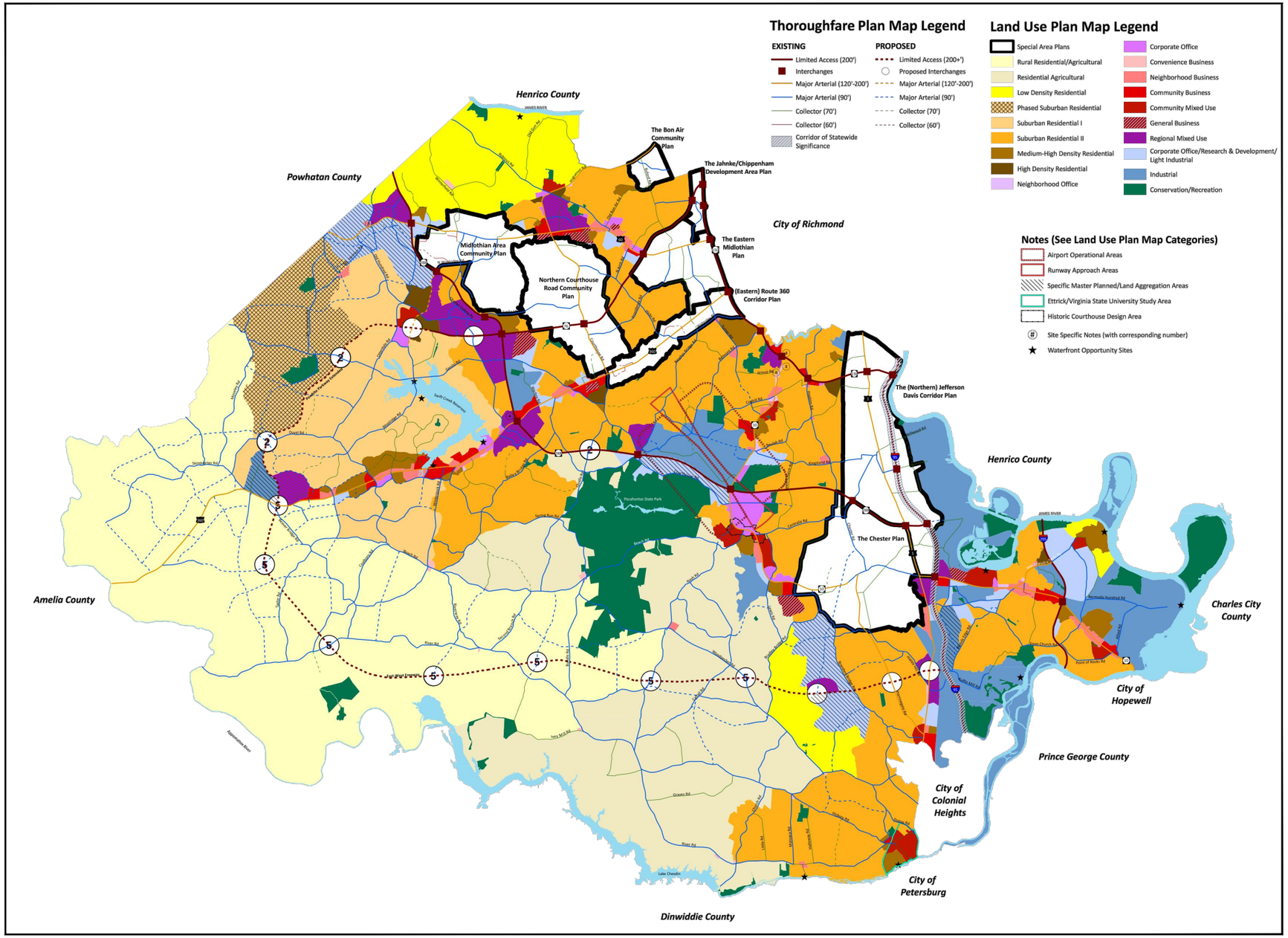
| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | NONE | DATE: | NOVEMBER 2013 |
|---|---|---|---|---|---|---|---|

EXHIBIT
13

**Land Use:** The airport is currently zoned Industrial. The area surrounding airport property is characterized by light industrial, mixed use, and parkland. Several large residential subdivisions are located north of the airport including the developments of Five Forks Village, Ravenswood, Land O Pines, Kingsland Glen, and King's Forest. No incompatible residential development exists within the DNL 65 noise contour. **Exhibit 14** illustrates Chesterfield County's land use plan as depicted in the County's Comprehensive Plan, which was adopted in October, 2012. The proposed development is consistent with County's land use planning. The Chesterfield County Comprehensive Plan expressly discourages residential and other incompatible land uses within the airport vicinity.

The purpose of the RPZ is to enhance the protection of people and property on the ground, which is best achieved through airport owner control of the land within the RPZ trapezoidal area. FAA Advisory Circular (AC) 150/5300-13a explains that the preferred method of control is the acquisition of sufficient property interest in the RPZ. Land use around the airport is a concern within the RPZ as FCI does not currently own all of the land within the existing RPZs.

Several schools, childcare facilities, nursing homes, and churches are located within a two mile radius of the airport; however, none of these facilities is impacted by the existing DNL 65 noise contour or is located within the RPZs.




SOURCES:

1. THIS IS AN ARCMAP PRODUCT PRODUCED BY THE CHESTERFIELD COUNTY PLANNING DEPARTMENT.
2. LAND USE CLASSIFICATIONS AND BOUNDARIES SHOULD BE CONFIRMED BY THE PLANNING DEPARTMENT.
3. THE EXACT RIGHT OF WAY WIDTHS AND PROPOSED ROAD ALIGNMENTS SHOULD BE VERIFIED WITH THE CHESTERFIELD COUNTY TRANSPORTATION DEPARTMENT.
4. ADOPTED BY THE CHESTERFIELD BOARD OF SUPERVISORS OCTOBER 24, 2012

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# EXISTING LAND USE MAP

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | NONE | DATE: | NOVEMBER 2013 |
|---|---|---|---|---|---|---|---|

EXHIBIT

14

DRAWING: 10086-exh-land-use-plan.dwg LAYOUT: L1

## Area Population

A review of 2010 census data indicated double digit growth since 2000 for Chesterfield County, the Richmond Metropolitan Statistical Area (MSA), and the Commonwealth of Virginia. **Exhibit 15** presents details of the comparative census data.

**Exhibit 15**
**Population Change**

| | Chesterfield County | Richmond MSA | Virginia |
|---|---|---|---|
| 2000 Population | 259,903 | 1,096,957 | 7,078,515 |
| 2010 Population | 316,236 | 1,258,251 | 8,001,031 |
| 2000 to 2010 Percent Change | 21.67% | 14.7% | 13.03% |
| Population, 2012 Estimate | 323,856 | 1,231,980 | 8,185,867 |

Source: 2010 U.S. Census Bureau, http://quickfacts.census .gov

## Recreation and Culture

The County of Chesterfield offers a wide array of recreation and culture to both residents and visitors. The County offers more than 30 parks, with 37 baseball and softball fields, ten soccer fields, ten football fields, basketball, tennis and volleyball courts, a disc golf course, and two handball/racquetball courts.[2]

Pocahontas State Park, one of the top ten campsites in the country, is located in the center of the County and includes 7,724 scenic acres. The Heritage Center and amphitheater complex hosts concerts and special events. The First Tee Chesterfield is located in Harry G. Daniel Park at Iron Bridge and includes an 18-hole golf course, driving range with practice areas, and a three-hole/par-three practice course.

Other attractions include the Metro Richmond Zoo and the 300-year-old Swift Creek Mill that has been preserved as a Virginia Historical Landmark and is listed in the National Register of

[2] Chesterfield County, Parks & Facilities, http://www.chesterfield.gov/Parks.aspx?id=6442455361#Clover_Hill_Athletic_Complex

Historic Places (NRHP). The County is also home to the Chesterfield Center for the Arts and the Swift Creek Mill Theatre.[3]

**Past, Present, and Reasonably Foreseeable Actions**

FAA Order 1050.1E suggests that the "Affected Environment" section of an EA include a discussion of any past, present, and reasonably foreseeable actions, whether Federal or non-Federal, to show the cumulative effects of these actions on the affected environment.

According to the Chesterfield County Planning Division, at the time of document preparation there is an ongoing residential and commercial development approximately one and one half miles north of the airport property. The Watermark development is zoned for 650 residential units and 220,000 square feet of commercial and office space. The residential units remain under construction at the time of this writing with the commercial space yet to be initiated. An internet search identified a website for the Watermark development which indicated that the development is "on its way."

According to the Chesterfield County Planning Division, there is a planned development of townhomes west of the airport near the intersection of Route 288 and Courthouse Road. The Chesterfield County Planning Division reported that plan has been approved for some time, but is not yet under construction.

The majority of upcoming on-airport construction projects relate to the proposed runway extension. The list of upcoming on-airport projects is included in **Section VI-N**.

The collective group of projects is not anticipated to result in the disruption to natural habitat, wildlife, or the surrounding environment.

[3] http://visitchesterfieldva.com/

# VI) ENVIRONMENTAL CONSEQUENCES

This section examines the 18 environmental categories listed in FAA Order 1050.1E *Environmental Impacts: Policies and Procedures.* All reasonably foreseeable environmental consequences of the proposed and no action alternatives will be discussed. The anticipated potential impacts of each of the three alternative development plans considered are compared in **Exhibit 28**.

## A) Air Quality

The federal Clean Air Act (CAA) established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM-10 and PM-2.5), and sulfur dioxide (SO2). Regions that comply with the NAAQS are designated as "attainment" areas; areas that do not meet the NAAQS are designated from marginal to extreme "nonattainment" areas. Areas which have been previously designated as "nonattainment" but which have later met the standard are classified as "maintenance" and states are required to develop and implement Maintenance State Implementation Plans (SIPs) to ensure that these areas remain in maintenance. *Chesterfield County is considered to be "maintenance" for the 1997 ozone NAAQS, effective June 18, 2007*.

If an airport action is within a "nonattainment" or "maintenance" area and the action is not exempt or on the FAA Presumed to Conform list, an applicability analysis is required. This analysis uses an emissions inventory of the Proposed Action's future direct and indirect emissions and those of the No Action alternative. FAA uses the analysis to determine if the net emissions caused by the Proposed Action in a nonattainment or maintenance area exceed the applicable *de minimis* thresholds (see **Exhibit 16**). Total net emissions are defined as Future No Action emissions minus Future proposed airport action emissions. If an action's net emissions exceed the de minimis thresholds, a General Conformity Determination must be conducted.

**Exhibit 16**
**De Minimis Level Summary**

| Pollutant | Area Type | Tons/Year |
|---|---|---|
| **Ozone (VOC or Nox)** | Serious Nonattainment | 50 |
| | Severe Nonattainment | 25 |
| | Extreme Nonattainment | 10 |
| | Other areas outside an ozone transport region | 100 |
| **Ozone (NOx)** | Marginal and moderate nonattainment inside an ozone transport region | 100 |
| | Maintenance | 100 |
| **Ozone (VOC)** | Marginal and moderate nonattainment inside an ozone transport region | 50 |
| | Maintenance within an ozone transport region | 50 |
| | Maintenance outside an ozone transport region | 100 |
| **Carbon monoxide, SO2 and NO2** | All nonattainment and maintenance | 100 |
| **Particulate Matter ($PM_{-10}$)** | Serious nonattainment | 70 |
| | Nonattainment and maintenance | 100 |
| **Lead (Pb)** | All nonattainment and maintenance | 25 |

Source: Environmental Protection Agency

A simple emissions inventory was conducted for both 2013 (Base Year) and 2018 (Base Year plus five years) using Emissions Dispersion and Monitoring Software (EDMS) Version 5.1.2. The Base Year emissions are meant to represent the Future No Action emissions. The Base Year plus five years represents the Base Year plus the Proposed Action. The inputs into the EDMS software took into account operations by aircraft type as well as the increase in operations forecasted for the airport over the next five-year period; and the addition of a fuel truck in the Base Year plus the Proposed Action analysis as part of the fuel farm improvements included in

the Five-Year Development Plan.

As shown in **Exhibit 17**, while air emissions will increase over the planning period, the Proposed Action is not anticipated to have an adverse impact on air quality, and stays well below the de minims standards shown in **Exhibit 16**. There will be a temporary increase in air pollutants due to the actual construction of the proposed airport projects; however the nuisance is anticipated to be minimal and the effect would be temporary. **Therefore no adverse impacts to air quality are anticipated.** Air Quality data inputs are located in **Appendix N**.

**Exhibit 17**
**Projection of Air Quality Emissions**

| EMISSIONS (tons per year) | | | |
|---|---|---|---|
| **POLLUTANT** | **Existing** | **Build** | **CHANGE** |
| Carbon Monoxide (CO) | 491.052 | 513.699 | **22.647** |
| Hydrocarbons (HC) | 19.490 | 21.029 | **1.539** |
| Sulfur Oxide (SO) | 3.299 | 3.665 | **0.366** |
| Particulate Matter (PM-10) | 2.172 | 2.219 | **0.047** |
| Ozone (VOC) | 20.605 | 21.849 | **1.244** |
| Ozone (NOx) | 17.411 | 16.416 | **-0.995** |

Source: Delta Airport Consultants, Inc.

**B) Coastal Resources**

The Airport lies within the coastal plain of Virginia at the extreme western edge of this physiographic region. The airport is part of the James River watershed. Storm water runoff from this area drains into Licking Creek, Reedy Creek, Proctor's Creek, and other small stream systems which empty into the James River, which leads to the Chesapeake Bay and into the Atlantic Ocean. As the Airport is located within Virginia's coastal zone, a Coastal Zone Management (CZM) Consistency Determination is required pursuant to the Coastal Zone Management Act of 1972. Virginia's coastal zone areas are depicted on **Exhibit 18.** The VDEQ is responsible for making the CZM Consistency Determination.

A review of the Advisory Policies (recommendations) of the Virginia CZM Program was completed as part of this EA. The review determined that no recommendations should be made on any of the Geographic Areas of Particular Concern or Shorefront Access Planning and Protection. The proposed action is consistent with Virginia CZM Program and it is not anticipated that any of the proposed projects would be inconsistent with the Enforceable Regulatory Programs.

Alternative 1, No Action, does not affect coastal resources as no improvements to the existing airport would occur. **Although both Alternatives 2 and 3 involve land acquisition, the proposed projects are not anticipated to result in a significant impact to coastal resources.**

A Coastal Zone Consistency Certification Report has been prepared in conjunction with this EA and is included in **Appendix J** for review by the VDEQ.

SOURCE: VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, ENVIRONMENTAL IMPACT REVIEW, FEDERAL CONSISTENCY MANUAL 7-21-11

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# COASTAL ZONE MAP

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | NONE | DATE: | NOVEMBER 2013 |
|---|---|---|---|---|---|---|---|

**EXHIBIT**

**18**

DRAWING: 10086-exh-coastal-zone-map.dwg LAYOUT: L1

### C) Compatible Land Use

FCI property is zoned Industrial. There is a variety of land use classifications surrounding FCI, including Corporate Office, Research and Development, Light Industrial, Community Business, Conservation/Recreation, and Suburban Residential. Refer to **Exhibit 14** for the Land Use Map and Thoroughfare Plan adopted by the Chesterfield County Board of Supervisors October 24, 2012.

The primary factor defining land use compatibility between airports and the surrounding community is typically aircraft noise. However, the airport sponsor must also maintain compatibility from an operational standpoint as well. Planning guidelines suggest that all planned airport elements, including the following, should be on airport property or property which the sponsor has acquired an appropriate interest to prevent incompatible land uses: (1) Object Free Areas (OFA); (2) Runway Protection Zones (RPZ); and (3) areas under 14 CFR Part 77 Imaginary Surfaces where the surfaces obtain a height of at least 35 feet above the primary surface. The FAA prefers that the airport owner control the defined RPZ area to enhance protection of people and property on the ground.

Alternative 1, No Action, would not alter the current conditions at the site and no land acquisition would be required. The area surrounding airport property is characterized by light industrial, mixed use, and parkland. While several large residential subdivisions are located north of the airport, no incompatible residential development exists within the DNL 65 noise contour. **Therefore, no land use incompatibility is anticipated with the No Action alternative**.

Alternative 2 (Proposed Action) would require approximately 58 acres of fee-simple land acquisition and 31 acres of avigation easement in order to achieve land use compatibility. The proposed fee-simple acquisition would provide the County with sufficient property interest to prevent incompatible land uses within the RPZs and easements would allow for the removal of existing and future obstructions to 14 CFR Part 77 surfaces. Two residential properties and one church would be relocated.

Alternative 3 would require approximately 51 acres of fee-simple land acquisition and 39 acres of avigation easements in order to achieve land use compatibility. The proposed fee-simple land acquisition would provide the County with sufficient property interest to prevent incompatible land uses within the RPZs and easements would allow for existing obstruction removal for 14 CFR Part 77 surfaces. Two residential properties and one church would be relocated.

**Because the "build" alternatives require that incompatible land uses be prevented, no impacts to compatibility are anticipated.**

**D) Construction Impacts**

Potential impacts from construction activity are not expected to be significant, provided that all activities are carried out in accordance with established Best Management Practices (BMPs) in accordance with FAA Advisory Circular (AC) 150/5370-10F, *Standards for Specifying Construction of Airports*. Construction impacts are not generally considered to be significant because they result solely from construction operations and are limited to specific construction periods.

Construction activity could generate impacts with respect to air quality, equipment noise, water quality, and traffic. A brief description of the potential impacts and associated mitigation for equipment noise and traffic impacts is included below; detailed discussions on potential construction impacts to air quality and water quality are included in **Sections VI-A** and **VI-P**, respectively.

As no construction is associated with the No Action (Alternative 1), no construction would occur and therefore no adverse impacts are anticipated.

Alternatives 2 and 3 would produce a temporary increase in ambient noise levels during periods of active construction. Heavy construction equipment operations would generate noise; however, it is expected that this noise would occur during daylight hours.

The impacts on traffic as a result of construction on the airport site will be limited as once the construction equipment is mobilized, traffic should be minimal on surrounding roadways during construction for fueling, maintenance operations, and changes of equipment.

Risks to water quality during construction would be from erosion and siltation created during clearing, grubbing, earth moving, and excavating activities. A Storm Water Pollution Prevention Plan (SWPPP) dated March 31, 2009 has been prepared for the airport consistent with the Virginia Department of Conservation and Recreation (DCR) and the U.S. Environmental Protection Agency (EPA). The SWPPP would be updated upon completion of any development affecting the contents of the plan.

Alternatives 2 and 3 could be completed without appreciable construction impacts to the surrounding environment since BMPs would be followed for sediment control and standard construction procedures. In the event of conflict between these requirements and the pollution control laws, rules or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations will apply. Elements of constructing Alternative 3 would require realignment of Whitepine Road, thereby involving some level of temporary traffic rerouting that would be coordinated with the County to minimize impact to the traveling public.

**For the Proposed Action, no adverse impacts from construction activities are anticipated.**

**E) Department of Transportation Act: Section 4(f)**

Section 4(f) of the Department of Transportation Act states that any project requiring the use of any publicly owned land from a public park, recreation area, or from a historic site of national, state, or local significance shall not be approved unless there is no feasible and prudent alternative to the use of such land. While several parks are located in the airport vicinity there are no Section 4(f) lands within the Chesterfield boundaries of FCI. Pocahontas State Park is situated southwest of FCI and community parks including Iron Bridge Park and Fairgrounds Park are located south of the airport. Fernbrook Park, a neighborhood park, is located northwest

of FCI. However, the development included in the Proposed Action would not represent a physical or constructive use of these parklands. The closest National Wildlife Refuge to the Airport is James River National Wildlife Refuge in Hopewell (approximately 25 miles from the Airport). The Proposed Action would not adversely affect any known historic or cultural sites (see **Section VI-J**). **Therefore no impacts to Section 4(f) lands are anticipated.**

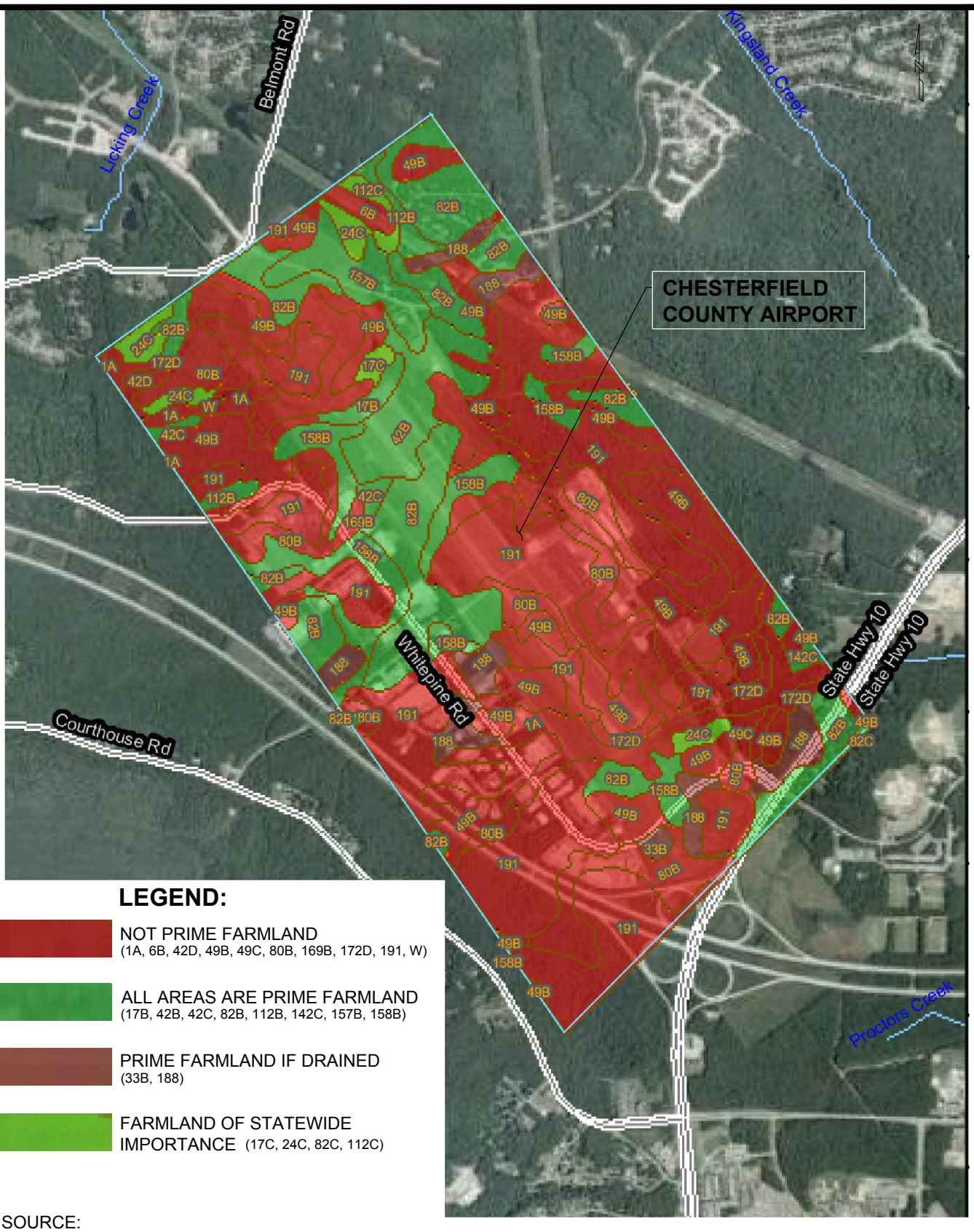
**F) Farmlands**

Farmlands are protected under the Farmland Protection Policy Act (FPPA). According to Order 1050.1E, the FPPA authorizes the Department of Agriculture (USDA) to develop criteria for identifying the effects of Federal programs on the conversion of farmland to non-agricultural uses to minimize the extent to which those programs contribute to the unnecessary and irreversible conversion of prime, unique, and statewide or locally important farmlands to nonagricultural uses.

Guidelines established by the USDA under the FPPA for identifying the effects of federal programs on the conversion of farmland to nonagricultural uses became effective August 1, 1989. However, according to the provisions of the FPPA, it does not apply if the following exists: 1) the land for development was purchased prior to August 6, 1984 and 2) the potential area for development is zoned for airport development.

Prime farmlands in the airport vicinity are depicted in **Exhibit 19.**

According to 7CFR Part 658.2 (a) of the FPPA, the airport property does not meet the definition of farmland because it is "already in or committed to urban development," and therefore exempt from the FPPA. **Therefore, no impacts are anticipated.**




## LEGEND:

- NOT PRIME FARMLAND (1A, 6B, 42D, 49B, 49C, 80B, 169B, 172D, 191, W)
- ALL AREAS ARE PRIME FARMLAND (17B, 42B, 42C, 82B, 112B, 142C, 157B, 158B)
- PRIME FARMLAND IF DRAINED (33B, 188)
- FARMLAND OF STATEWIDE IMPORTANCE (17C, 24C, 82C, 112C)

SOURCE:

NATURAL RESOURCES CONSERVATION SERVICES - SOIL SURVEY AREA: CHESTERFIELD COUNTY, VIRGINIA / SURVEY AREA DATA: VERSION 7, DEC. 19, 2008 / AERIAL DATED JUNE 24-25, 2003

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# PRIME FARMLAND

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

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**EXHIBIT 19**

DRAWING: 100861-exh-prime farmland soilmap.dwg LAYOUT: L1

### G) Fish, Wildlife, and Plants

Endangered and Threatened Species**:** Section 7 of the Endangered Species Act, as amended, requires federal agencies to ensure that any proposed action does not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of associated habitat. Section 7a (3) also requires that consultation occur with the USFWS regarding the presence of threatened and endangered species within the proposed project area. Under the act, an "endangered" species is defined as any species that is in danger of extinction throughout all, or a significant portion, of its range. A "threatened" species is considered to be any species that is likely to become an endangered species within the foreseeable future. In a letter dated September 8, 2009, USFWS indicated that no existing endangered or threatened species are located in the airport vicinity.

Biotic Communities**:** Biotic communities may be directly or indirectly affected by aviation development and aviation activities. Specifically, development that affects existing watercourses or vegetation may alter wildlife habitat in the area, resulting in potentially significant impacts to flora and fauna. In a letter dated September 8, 2009, the USFWS noted that no designated critical habitat is located within FCI boundaries and surrounding areas.

The entire ETS Survey Report is included as **Appendix D**. **No impacts to fish, wildlife, and plants are anticipated.**

### H) Floodplains

The Flood Insurance Rate Map (FIRM) for Chesterfield County, Virginia, Community Panel Numbers 5100350058B and 5100350086B Effective Date: March 16, 1983, indicates that FCI is located in Zone C, areas of minimal flooding, and outside of the 100-year floodplain. **Therefore, no floodplain impacts are anticipated.** See **Appendix E**, Flood Insurance Rate Map.

### I) Hazardous Materials, Pollution Prevention, and Solid Waste

The term 'hazardous materials' represents both hazardous wastes (defined as solid wastes that are ignitable, corrosive, reactive, or toxic) and hazardous substances (defined more broadly as including hazardous waste, hazardous air pollutants, hazardous substances designated as such by the Clean Water Act and the Toxic Substances Control Act, and elements, compounds, mixtures, solutions, or substances listed in 40 CFR Part 302 that post substantial harm to human health or environmental resources.)

Potential impacts could result from construction activities that disturb existing hazardous materials or contaminated soils, causing them to be released into the surrounding environment. Additionally, impacts could also be caused by the introduction and use of hazardous materials, such as fuels, lubricants, solvents, degreasers, cleansers, hydraulic fluids, and deicing agents, in the newly developed areas. Also, the increased use and volume of these hazardous materials could increase the risk of accidental spills or leaks and result in the release of these products into the environment.

**Exhibit 20** illustrates hazardous waste sites in proximity to the airport; it should be noted all are outside the existing airport boundary. No landfills are located adjacent to or in the vicinity of FCI.

Alternative 1, No Action, is not anticipated to have negative environmental impacts as no construction and associated debris is associated with this alternative.

The addition and/or demolition of certain facilities at an airport can result in the generation of additional solid waste. Airfield improvements, however, do not normally have a direct effect on solid waste collection or disposal, other than that associated with construction. Therefore, Alternative 2 and Alternative 3 are not anticipated to impact solid waste facilities. Solid waste, including construction and land clearing debris generated from the project, will be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Every effort

will be made to recycle materials; however this will ultimately be the decision of the contractor who is awarded the construction contract under competitive bid. Very little construction and demolition (C & D) waste is anticipated because the majority of the Proposed Action involves new construction.

Fuel farm improvements will include the removal of all existing fuel farm infrastructure including Underground Storage Tanks (UST), piping, mechanical equipment, and monitoring equipment. They will be removed in accordance with all federal, state, and local hazardous waste guidelines by certified hazardous waste disposal specialists.

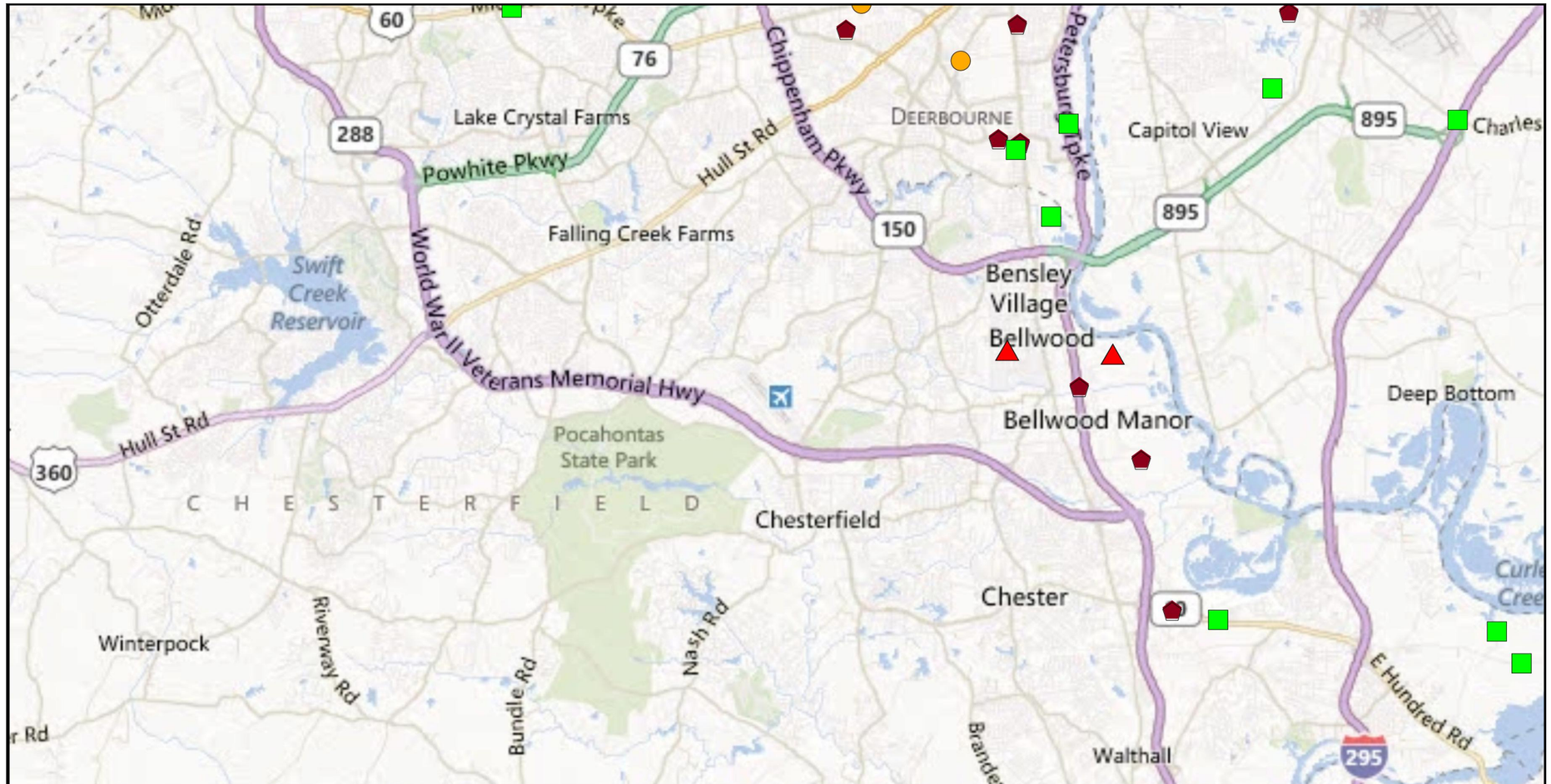
The fuel tanks have been refurbished twice in the past 20 years and all the piping has been replaced within the last 10 years. There were no reports of asbestos during either action. Therefore, it is reasonable to assume that the structures to be demolished do not contain asbestos.

While the lack of soil contamination has not been visually confirmed, monitoring equipment is in place and has not indicated the presence of fuel in the vicinity of the tanks. Therefore it is reasonable to assume that there is little to no soil contamination in the project area.

There will be no hazardous materials used in the development stage of the proposed projects. Projects similar to the proposed projects have been developed in the past without the use of hazardous materials.

As mandated by the FAA, FCI prepared a Spill Prevention Countermeasures and Control (SPCC) Plan to comply with 40 CFR 112 and EPA regulations in 2011; the plan is valid for three years.

**No adverse impacts within this category are anticipated.**




**Legend**

- Incidents of National Significance
- Brownfields
- Hazardous Waste - Corrective Action
- Superfund
- Emergency Response
- Tribal Lands
- Job Training Grant
- Job Training Pilot
- Assessment Grant
- Assessment Pilot
- Cleanup Grant
- RLF Grant
- RLF Pilot
- State and Tribal Grant
- Multiple Grants
- Congressional Districts
- Impaired Waters Point
- Impaired Waters Line
- Impaired Waters Area
- Toxic Release Inventory
- Water Monitoring Locations

SOURCE: U. S. EPA - CLEANUPS IN MY COMMUNITY (CIMC), http://iaspub.epa.gov/apex/cimc/f?p=255:63, FEBRUARY 2013

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# HAZARDOUS WASTE SITES
## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | NONE | DATE: | NOVEMBER 2013 |
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EXHIBIT
20

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### J) Historical, Architectural, Archeological, and Cultural Resources

A Phase I cultural resources survey was conducted for the area of potential effects (APE) for the proposed projects at FCI (see **Appendix F**). The survey identified one previously recorded architectural resource within the current APE and five new architectural resources. Four of the new resources are dwellings determined during the survey to lack significance and represent common designs for the period of construction and place; thus the four were recommended as not eligible for listing on the NRHP. The fifth resource is a small family cemetery with internment dates ranging from 1891 to 1935. The cemetery is also recommended not eligible for the NRHP; however, all relevant statutes regarding the protection and relocation of cemeteries must be followed.

Four archaeological sites and one artifact location were recorded during the survey. The archaeological sites were recorded to contain Native American lithic scatter and presenting a variety of characteristics such as relatively low artifact density, lacking evidence of intact subsurface deposits or features, or displaying evidence of disturbance. None of the newly recorded archaeological resources were recommended as potentially eligible for the NRHP and no previously recorded sites are located in the current APE.

The complete Phase I survey is presented in **Appendix F**. The survey report was submitted to the Virginia Department of Historic Resources (DHR) on September 25, 2013; on December 6, 2013, the DHR confirmed that the sites would *not* be eligible for listing in the NRHP.

**As none of the resources were recommended as potentially eligible for NRHP and no known sites are located within the APE, no impacts to historical, architectural, archeological, and cultural resources are anticipated.**

### K) Light Emissions and Visual Impacts

Lighting required for airfield and terminal areas, obstruction marking, navigational aids, and automobile parking facilities are the chief contributors to light emissions from an airport. Airport-related light emissions are considered to have a noticeable adverse impact if light is directed toward residential areas.

As an existing facility, FCI is a fully lighted airfield providing 24-hour-a-day services. The airfield is currently supported by high intensity runway lights, medium intensity taxiway lights, a rotating beacon, and a segmented circle with lighted wind indicator. The approach to Runway 33 is supported by a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). There are currently no existing impacts to surrounding properties due to light emissions or visual impacts at FCI.

Under Alternative 1, the No Action alternative, the existing lights would remain in their current location and no additional lighting would be added. Accordingly, no light emission, visual or aesthetic impacts would occur under this alternative.

In both Alternative 2 (Proposed Action) and Alternative 3, a MALSR is proposed for installation along the approach path to Runway 15. The airfield lighting design and installation would be in accordance with FAA AC 150/5340-30*, Design and Installation Details for Airport Visual Aids*, latest edition. Each of these fixtures is designed to emit light visible only in specific directions or in certain areas. In addition, the MALSR will be installed on airport property which is zoned Industrial.

The closest residential community to the proposed MALSR is the Five Forks community. The residential property in the Five Forks community which is the closest to the first (i.e., northernmost) light in the MALSR sequence is approximately ¼ mile from the light. There is an approximately 500 foot buffer of trees between the light and the residential property.

**Therefore, light emission impacts are not anticipated to be significant.**

**L) Natural Resources and Energy Supply and Sustainable Design**

According to FAA Order 1050.1E, principles of environmental design and sustainability, including pollution prevention, waste minimization, and resource conservation should be followed generally in project or program planning. This EA will identify any proposed major changes in stationary facilities or the movement of aircraft and ground vehicles that would have a measurable effect on local supplies of energy or natural resources. Existing operations at FCI do not adversely impact natural resources or energy supply.

Electricity is supplied by Dominion Virginia Power. Energy consumption related to the alternatives under consideration includes an increase in electrical consumption for the proposed additional runway and taxiway lighting, approach lighting system, and additional hangars. Neither water consumption nor other resource consumption will be significantly increased due to the proposed development.

The No Action alternative would not result in construction or operation of new or modified airport facilities. Therefore, no changes on energy demand, aircraft operating times, fuel consumption, or off-airport impacts would occur.

In both Alternatives 2 (Proposed Action) and 3, increases in energy consumption due to the additional runway and taxiway lighting, approach lighting system, and additional hangars would not adversely affect the areas local energy supply. The additional runway and taxiway lighting electrical service needs would be supported from the existing airfield electrical vault. Electrical supply needs for the MALSR and additional hangars is anticipated to be provided by separate dedicated service connections.

Sustainable elements such as low-flow channels and water quality facilities are included in the Proposed Development plan. LED lights will not be included because the existing circuits have

incandescent lights; general practice is not to mix LED and incandescent lighting. These measures are anticipated to create a positive impact on natural resources and energy supply.

**Therefore, no adverse impacts to natural resources and energy supply are anticipated.**

**M) Noise**

Noise Exposure Maps (NEMs) were developed using the FAA's Integrated Noise Model (INM) Version 7.0c (released January 3, 2012). The INM produces aircraft noise contours that delineate areas of equal day-night sound levels (DNL). A DNL is a 24-hour (average day), time-weighted sound level that is expressed in A-weighted decibels and is abbreviated as dB(A) or dB. The FAA, and other federal agencies, use DNL as the primary measure of noise impact because: it correlates well with the results of attitudinal surveys regarding noise; it increases with the duration of noise events; and, it accounts for an increased sensitivity to noise at night by increasing each noise event that occurs during nighttime hours (i.e., 10 pm to 7 am) by 10 dB(A). The contours were developed for 2012 and 2020 (design plus five years[4]) scenarios. Design plus five years was selected as the future noise scenario as this is the typical amount of time from design through construction. Projected aircraft noise exposure in the airport environs is described in this section, as well as the potential effects of the project alternatives in terms of aircraft noise exposure.

Aircraft noise exposure in the airport environs was analyzed for future conditions (under each build alternative) in accordance with the methodology for preparing aircraft noise exposure maps contained in FAA Order 1050.1E. Operations at FCI are not anticipated to vary between alternatives. The annual aircraft operations by type for 2012 and 2020 are provided in **Appendix K**.

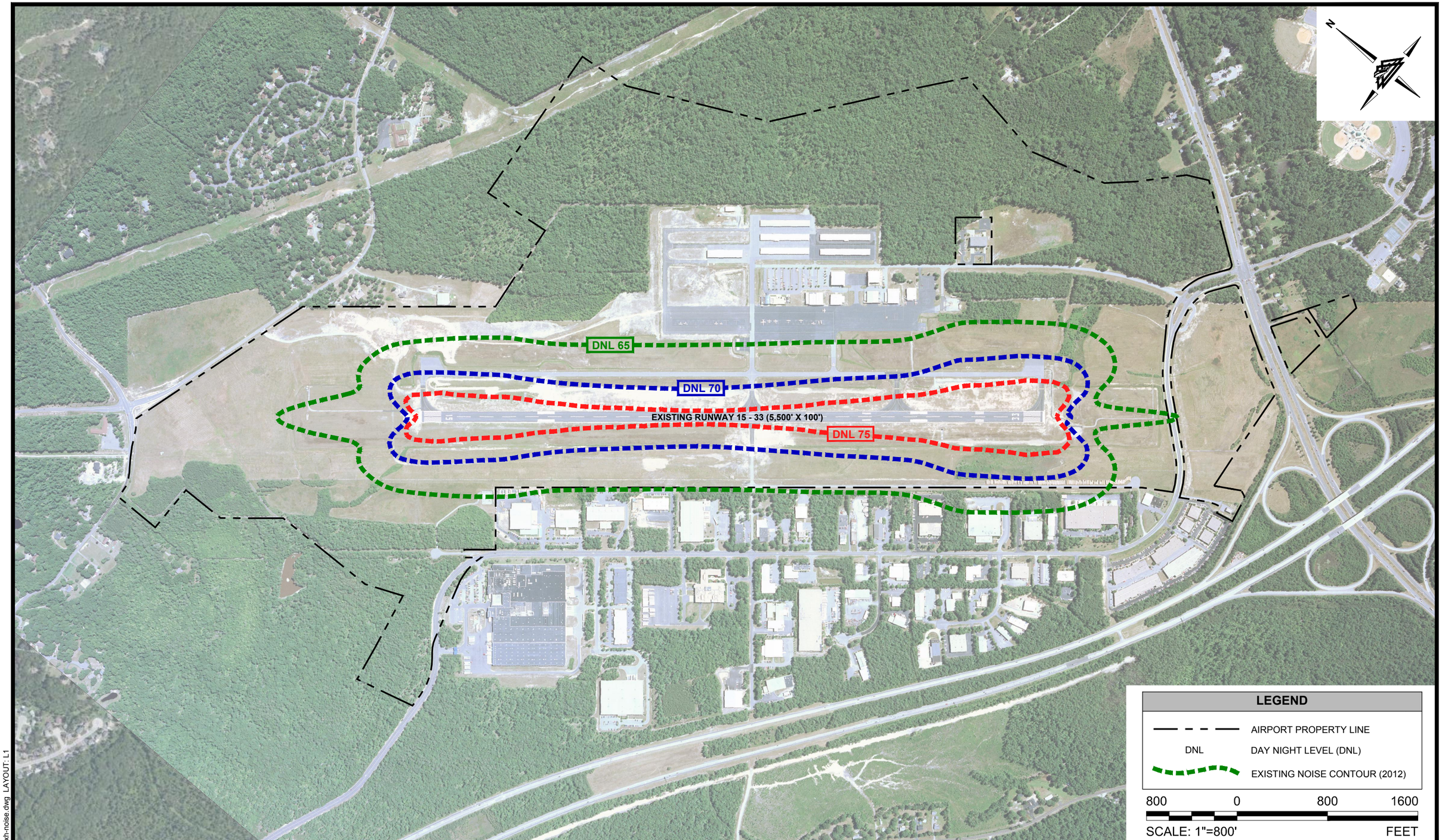
As depicted on **Exhibit 21,** existing contours for existing conditions (2012) are mostly on airport property. The noise map contour extends beyond airport property to the southwest; however, the

[4] A Preliminary Engineering Report was completed as part of this Environmental Assessment (**Appendix I**).

land is compatible as no existing residential buildings are located within the contour.

Alternative 1 would not result in the construction of new airfield facilities or modified airport facilities. The future no build model indicates that the DNL 65 contour extends beyond airport property along the southwest boundary; however, the land is zoned Industrial and thus represents compatible land use. The noise contour for this alternative as projected for 2020 is depicted on **Exhibit 22.**

Alternatives 2 and 3 would not cause significant noise impacts on residential property or noise-sensitive facilities. In both cases, the DNL 65 contour extends beyond airport property along the southwest boundary; however, the land is zoned Industrial, and thus represents compatible land use. The noise contour for these alternatives as projected for 2020 are depicted on **Exhibit 22**. **In consideration of the criteria specified in FAA Order 1050.1E, no impacts are anticipated from aircraft noise as a result of the implementation of any of the three alternatives.**

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# EXISTING (2012) NOISE CONTOURS

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | 1"=800' | DATE: | NOVEMBER 2013 |
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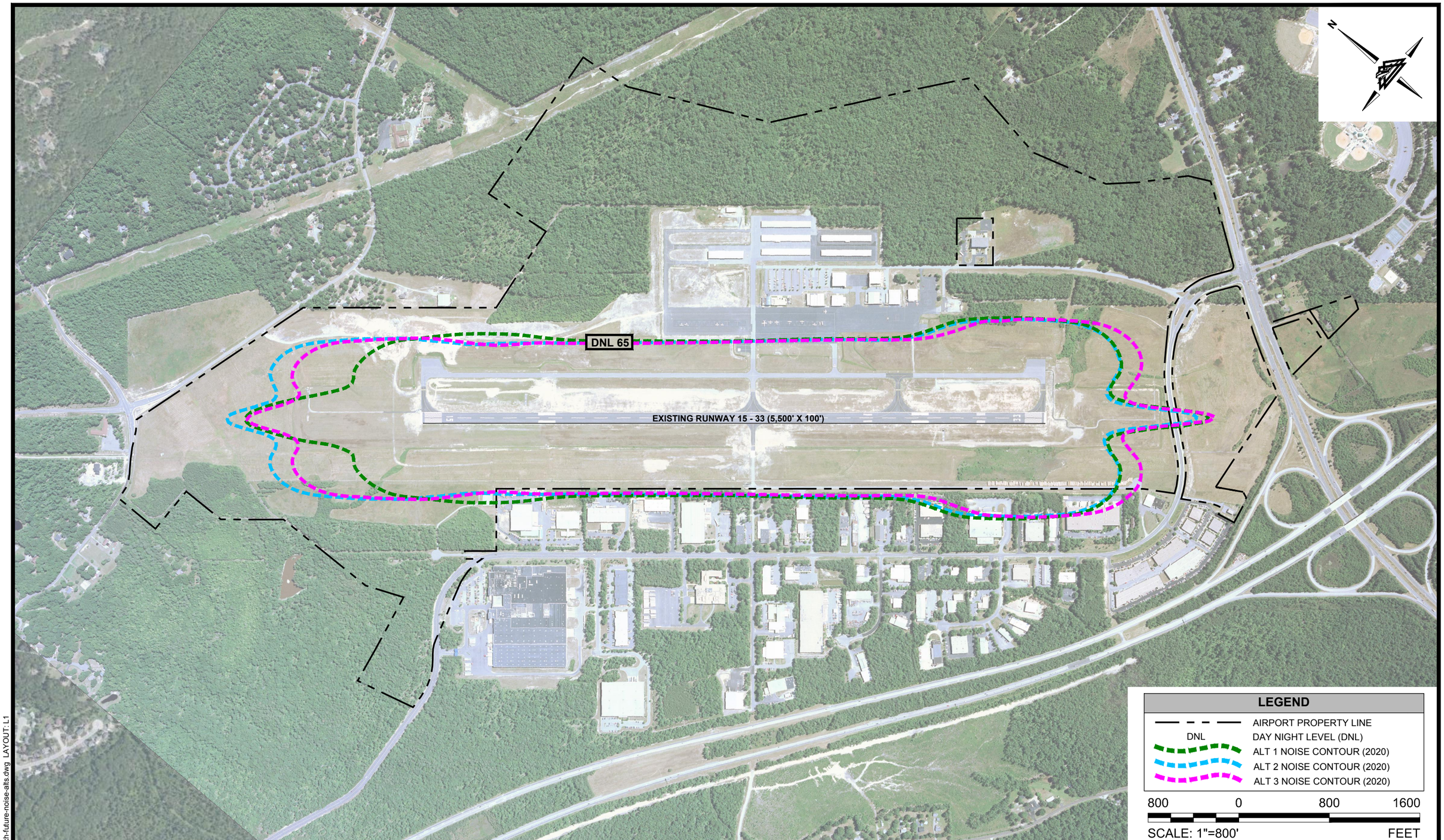
EXHIBIT

21




# ALTERNATIVE COMPARISON - NOISE CONTOURS

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

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| DRAWN BY: | DWS/RWW | CHECKED BY: | RGL | SCALE: | 1" = 800' | DATE: | NOVEMBER 2013 |
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**EXHIBIT**
**22**

DRAWING: 10086-exh-future-noise-alts.dwg LAYOUT: L1

**N) Secondary (Induced) Impacts**

In accordance with FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airports* and 1050.1E, *Environmental Impacts, Policies and Procedures,* any planned development project that is not included in the alternatives section of an EA should be described to show its relationship to the proposed action and to show that the sponsor's intentions regarding NEPA documentation for the project are considered. Other past, present, and reasonably foreseeable projects that were considered for the potential to generate cumulative impacts are discussed in this section.

Off-Airport Projects**:** Chesterfield County's Planning Division reported an ongoing residential and commercial development approximately one and one half miles north of the airport property. The Watermark development is zoned for 650 residential units and 220,000 square feet of commercial and office space. The residential units remain under construction at the time of this writing with the commercial space yet to be initiated.

County Planning also noted a planned development of townhomes west of the airport near the intersection of Route 288 and Courthouse Road. The plan has been approved for some time, but is not yet under construction.

On-Airport Projects: The majority of upcoming on-airport construction projects relate to the proposed runway extension. The following projects are based on the phasing contained in the Preliminary Design Engineering Report, **Appendix I**.

2014

- Runway 33 Approach Obstruction Removal

2015

- Extend Runway 15-33 Land Acquisition Services

2016

- Extend Runway 15-33 Land and Easement Acquisition-Phase 1
- Extend Runway 15-33 Land and Easement Acquisition-Phase2
- Construct 10-unit hangar

2017

- Extend Runway 15-33-Design
- Extend Runway 15-33-Wetland Mitigation

2018

- Extend Runway 15-33 (incl. Proposed Obstruction Removal, Relocate Power Lines, Runway 15 MALSR, Runway 33 glideslope)

2019

- Construct Apron GA Taxiway Hold Apron
- Rehabilitate Airport Rotating Beacon
- Construct Conventional Hangars

2020

- Construct Apron GA Taxiway Hold Apron
- Relocate Fuel Farm

The collective group of on- and off- airport projects is not anticipated to result in the disruption to natural habitat, wildlife, or the surrounding environment. No significant off-airport environmental impacts are anticipated. The use of BMPs during the construction of these projects would minimize the short-term impacts from earth disturbing activities.

**Consequently, there would be no secondary or induced (cumulative) impacts, and the proposed projects, when evaluated with other past and foreseeable projects, would not incrementally cause an adverse impact upon any of the environmental categories evaluated in this document.**

**O) Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks**

According to FAA Order 1050.1E, the principal social impacts of an alternative to be considered in an EA are as follows: extensive relocation of residents without sufficient replacement housing; relocation of businesses creating a severe economic hardship for the community; disruptions of local traffic patterns that would substantially reduce the levels of service of the roads serving the airport and its surrounding communities; and a substantial loss in community tax base.

Children's environmental health and safety risks include those that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or to products which they may use or be exposed.

Alternative 1, No Action, involves no development and therefore no impacts to this category would occur.

Alternative 2, Proposed Action, includes acquisition of land that would enable FCI to meet FAA design standards and to accommodate future aviation demand. The Proposed Action would require approximately 31 acres of avigation easement and 58 acres of fee simple land acquisition. In addition, this alternative would require relocation of two residential properties and one church. None of the properties proposed for acquisition would disproportionately impact either minority or low income populations and no populations of concern have been identified nearby. Each of the impacted property owners have been contacted regarding the proposed acquisition and several public open houses have been held throughout the planning and environmental processes to inform the public of the proposed airport development (see **Appendix M**). **Exhibit 7** depicts the proposed land acquisition for Alternative 2.

Provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act (the Uniform Act) of 1970 would be met for each acquisition.

Alternative 3 would require approximately 39 acres of avigation easement and 51 acres of fee simple land acquisition. This alternative would also require relocation of two residential properties and one church. None of the properties to be acquired would disproportionately impact either minority or low-income populations. Provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act (the Uniform Act) of 1970 would be met for each acquisition. Alternative 3 also requires the realignment of Whitepine Road along the southern boundary of the airfield. **Exhibit 8** depicts the proposed land acquisition for Alternative 3.

Alternatives 2 and 3 would require the fee-simple acquisition of a portion of the parcel of land which is owned by New Jerusalem International Christ Ministry. The group has indicated that they had plans to construct church facilities on a portion of this parcel. The New Jerusalem International Christ Ministry currently meets in North Chesterfield. According to FAA Order 1050.1E, significant impact thresholds for Socioeconomic Impacts are:

1. Extensive relocation of residents is required, but sufficient replacement housing is unavailable.
2. Extensive relocation of community business, which would create severe economic hardship for the affected communities.
3. Disruptions of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and its surrounding communities.
4. A substantial loss in community tax base.

The land acquisition related to the proposed project would not require the relocation or displacement of any residents, businesses, or groups, nor would it cause disruptions in traffic patterns or a substantial loss in community tax base. Therefore no significant socioeconomic impacts are anticipated.

Disproportionate impacts to children's health and safety would not occur from any of the

proposed alternatives.

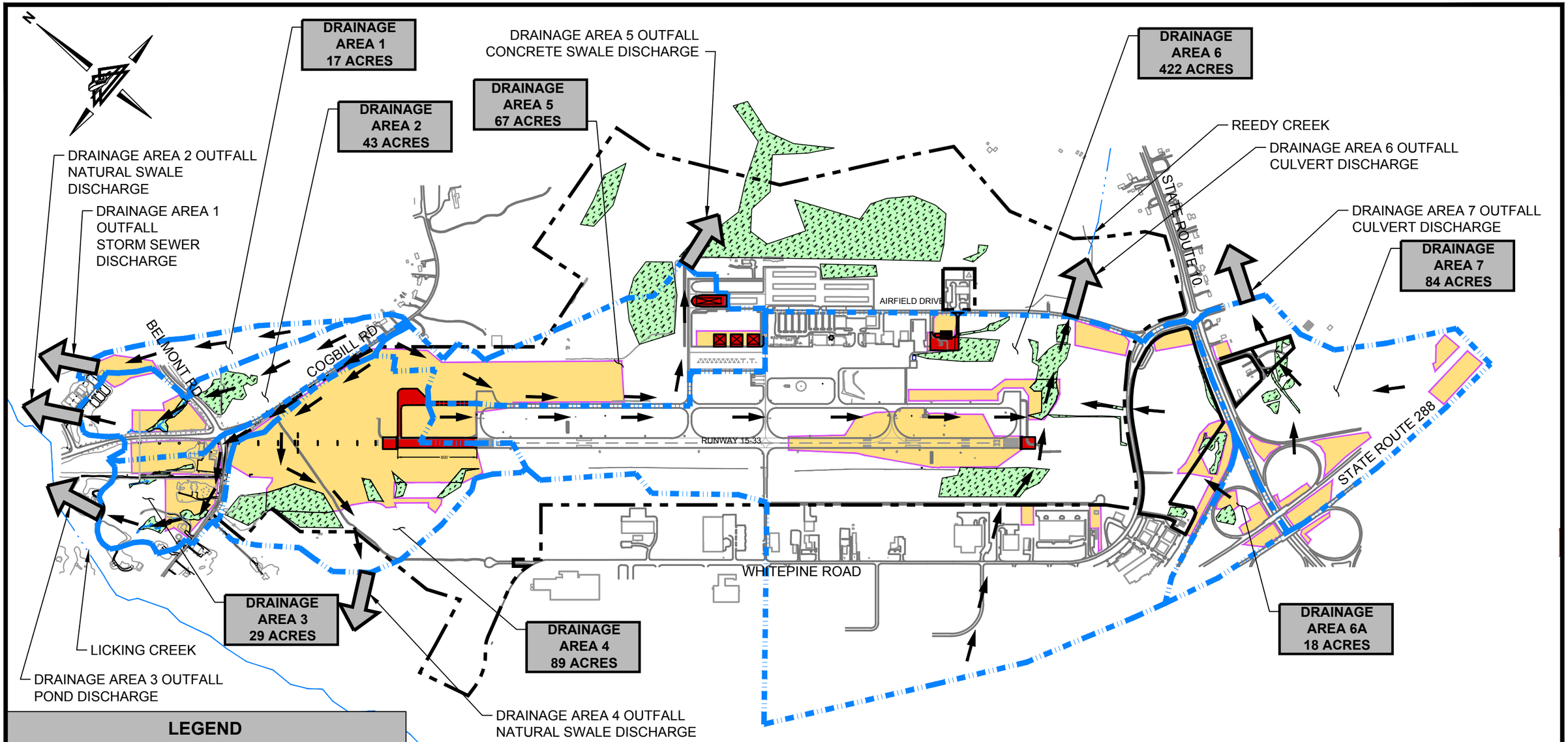
**No socioeconomic impacts or impacts to environmental justice or children's health and safety are anticipated.**

**P) Water Quality**

Airport activities can affect water quality, primarily due to storm water runoff that carries pollutants from paved surfaces. Water pollution problems can be intensified during winter when deicing/anti-icing compounds are used to clear ice and snow from runways, taxiways, aprons, and aircraft. Addressing the issues of controlled drainage and clean water, this section provides an overview of water resources in the airport environs, including groundwater and surface water as detailed in the Water Quality Assessment Report prepared by Millcreek Environmental Consultants, Ltd., **Appendix G.**

The Airport lies within the coastal plain of Virginia and is part of the James River watershed. Storm water runoff from this area drains into Licking Creek, Reedy Creek, Proctor's Creek, and other small stream systems which empty into the James River, which leads to the Chesapeake Bay and into the Atlantic Ocean.

The characteristics of the airport site, topography, and surface watercourses, suggest that regional groundwater flows enter airport property from the northwest and southeast corners of the property boundary. From the northwest corner, the flows move west and southwest off of airport property or southeast running parallel to the runway. Starting at the approximate runway mid-point and continuing to the southeast, the flows move to the northeast both along the northern end of the terminal area and across the approach end of Runway 33. **Exhibit 23** depicts the existing drainage patterns.




## LEGEND

| DESCRIPTION | EXISTING |
|---|---|
| AIRPORT PROPERTY LINE | |
| EXISTING STREAM | |
| WETLANDS | |
| GENERAL DRAINAGE FLOW | |
| DRAINAGE AREA BOUNDARY | |
| DISTURBED AREA | |
| NEW PAVEMENT/BUILDINGS | |

* DRAINAGE AREAS 1, 2, 3, & 4 ALL DRAIN TO LICKING CREEK
** DRAINAGE AREAS 5, 6, & 7 ALL DRAIN TO REEDY CREEK

1000 0 1000 2000
SCALE: 1"=1000' FEET

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# DRAINAGE PATTERNS
## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | DWS | CHECKED BY: | DES | SCALE: | 1" = 1000' | DATE: | NOVEMBER 2013 |
|---|---|---|---|---|---|---|---|

EXHIBIT
23

DRAWING: 10086-exh-drainage-patterns.dwg LAYOUT: L1

The Airport developed and implemented an SPCC Plan effective June 30, 2011. This plan is maintained by County airport staff and is to be reviewed after three years. VDEQ issued General Permit Number VAR051129 effective July 1, 2009 for storm water discharges associated with industrial activity (SWPPP); the permit expires effective June 30, 2014.

A Perennial Stream Determination and Resource Protection Area (RPA) Designation Application (see **Appendix G**) was prepared by Mill Creek Environmental Consultants, Ltd. during August, 2013. During the course of the Airport Master Plan and this EA, Mill Creek conducted multiple wetland delineations and identified several stream systems that currently have no RPA designation associated with the Chesapeake Bay Preservation Act. In anticipation of the proposed land clearing activity in the vicinity of the identified streams, it became necessary to determine the perenniality of the systems to determine if an RPA designation is needed.

The North Carolina Division of Water Quality, *Identification Methods for the Origins of Intermittent and Perennial Streams*, (Version 3.1, February 2005) was the Perennial Flow Field Indicator Protocol used for the assessment of all streams presented in the Application.

The Application does not include all stream reaches within or adjacent to airport property, but only those streams identified in the Preliminary Engineering Report (see **Appendix I**) as having potential impacts. The Application was submitted to Chesterfield County Environmental Engineering for review on September 13, 2013. The RPA determination by Chesterfield County was issued on September 19, 2013 (see **Appendix G**). There are no anticipated impacts to the RPA.

The wetland delineation survey also conducted by Mill Creek indicated that there are several wetland areas and stream tributaries within the airport boundary as detailed in **Section VI-Q** and **Exhibit 25**.

Water quality impacts encompass areas that could be affected by construction activity and waters

receiving storm water runoff. Construction and operation of new airport facilities and other projects may have short and long-term impacts on surface and ground water quality. Impacts would be minimized by using BMPs during construction and by following guidelines set forth in the National Pollution Discharge Elimination System (NPDES) permit.

Alternative 1, No Action alternative, would not result in construction or operation of any new or modified airport facilities. No impacts to surface or ground water would occur from the proposed obstruction removal. The existing impervious surfaces and resulting storm water runoff volumes would remain unchanged.

Alternative 2, the Proposed Action, including elements illustrated as Existing Conditions, would impact approximately 23.2 acres of wetlands as presented on **Exhibits 26 and 27**. This involves 11.3 acres of filling and grading and 11.9 acres of conversion/cutting (no grubbing or stump removal).

Alternative 3, including elements illustrated as Existing Conditions, would impact approximately 27.2 acres of wetlands. This includes approximately four more acres of wetland impact than Alternative 2 as a result of the runway extension toward the south and the relocation of Whitepine Road.

Impacts that could occur as a result of the development include increased runoff, increased water degradation, and altered drainage patterns. Degradation of water quality might be due to fuel spills, lubricant leakage, and deicing runoff from increased aircraft operations.

Grading analysis conducted during the Preliminary Engineering Report for Permitting (**Appendix I**) considered requirements outlined in FAA AC 150/5300-13A, *Airport Design*. Additionally, during a meeting with the Chesterfield County Environmental Engineering Department on December 11, 2013, the Department noted that new guidelines for the Chesapeake Bay Act would go into effect July 1, 2014. In order to accommodate the new

guidelines, stormwater management and stormwater quality measures (i.e., stormwater facilities) were added to the fuel farm, t-hangar and conventional hangar projects.

Storm water runoff can be expected to increase in the future as a result of additional impervious surfaces, such as the extended runway and parallel taxiway, as well as hangar construction. The greatest potential impact to surface water resources is from erosion and sedimentation during construction activities. Best management practices, such as proper erosion control, reseeding, and adherence to the NPDES permit would be used during construction to minimize potential water quality impacts. These practices and controls would facilitate meeting water quality standards. Coordination with Chesterfield County Environmental Engineering and the USACE would ensure that all permits were obtained and proper procedures followed. Final project design is intended to result in no adverse impacts to the RPA.

The County will follow required state and federal rules and regulations in regard to mitigation. Permits will be acquired during final design and prior to any land-disturbing activity in wetlands or waters of the United States. **In light of these practices discussed above, no adverse impacts to water quality are anticipated.**

**Q) Wetlands**

A review of the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) map for the airport area indicates large areas of Freshwater Forested/Shrub wetlands bordering the terminal development to the east and scattered areas of Freshwater Emergent wetlands around the airfield to the east, south, and southwest.

No other waters of the U.S. are mapped within the airport on the NWI map. Note that NWI maps are designed for general planning purposes only and typically do not show all wetland resources within a given area.

Wetlands on and off FCI property were delineated by Mill Creek Environmental Consultants,

Ltd. in accordance with the *1987 Corps of Engineers Wetland Delineation Manual*, along *with the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).* The delineations were performed during 2011 in conjunction with the MPU and during 2012 and 2013 in conjunction with this EA. Preliminary Jurisdictional Determination (JD) documentation for each field study is provided in **Appendix H**.

**Exhibit 24** details the Waters of the U.S. found within the defined project area.

**Exhibit 24**
**Richmond Executive- Chesterfield County Airport**
**Waters of the United States**

| Jurisdictional Determination | Wetlands (AC) | Streams (LF) |
|---|---|---|
| 2011 | **66.61** | **2,983** |
| 2012 | **29.93** | **3,414.7** |
| 2013 | **4.4** | **793** |
| Total | **100.94** | **7,190.7** |

Source: Wetland Delineation Report, Millcreek Environmental Consultants, LTD, 2011, 2012, 2013
Jurisdictional Determinations, USACE. 2011, 2012, 2013

Delineated wetlands and streams from the three successive field surveys on airport and adjacent properties are illustrated on **Exhibit 25.**

Alternative 1, the No Action alternative, would not impact delineated wetlands as no construction is proposed for this alternative.

Alternative 2, the Proposed Action, including elements illustrated as Existing Conditions, would impact approximately 23.2 acres of wetlands. This includes the filling and grading of 11.3 acres and the clearing (no grubbing or stump removal) of 11.9 acres.

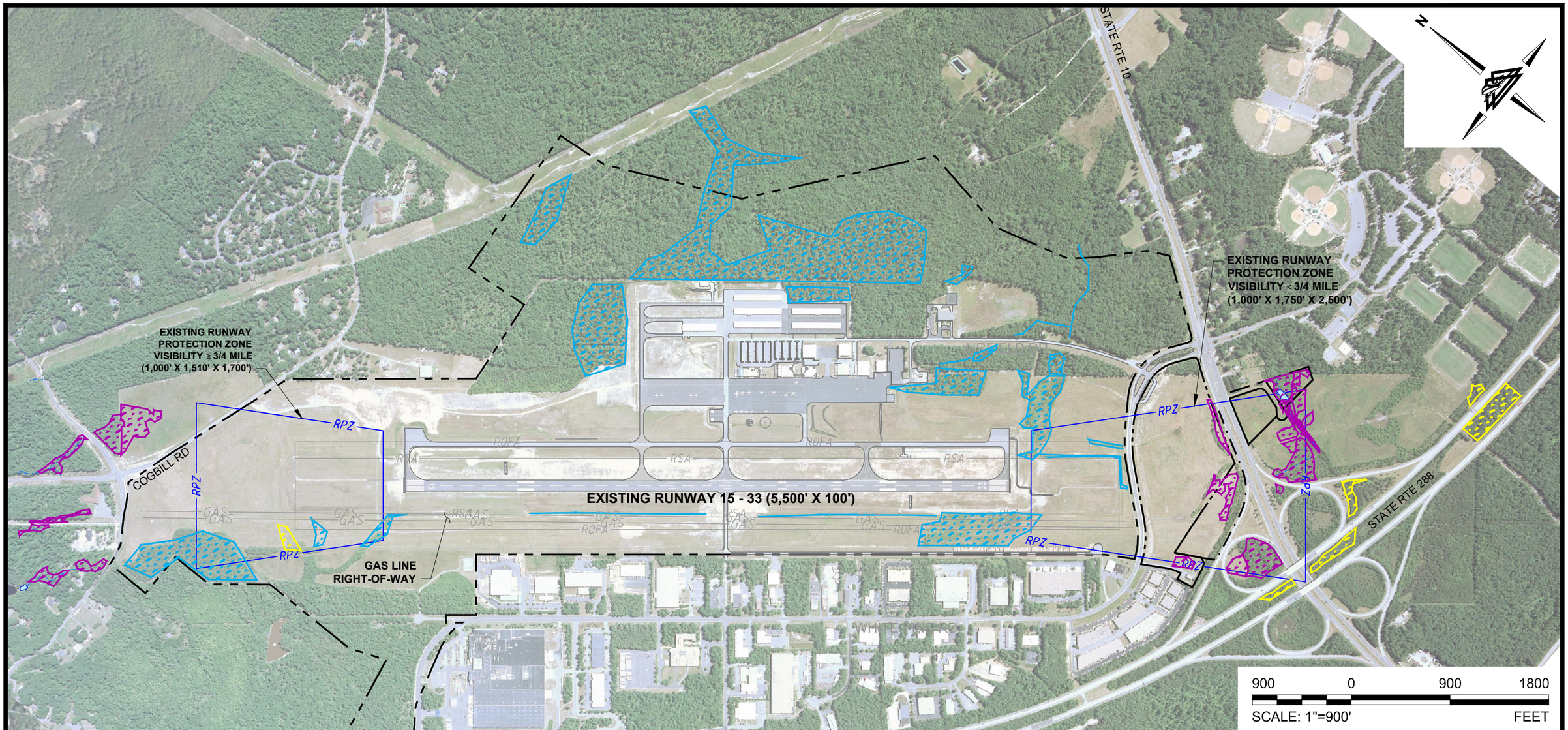
Alternative 3 would impact approximately 27.2 acres of wetlands (approximately four more acres of wetland impacts are required for this alternative as a result of the southward runway

extension and the relocation of Whitepine Road.)

It was anticipated that the delineated wetlands located within the project area would be jurisdictional and subject to regulation under Section 404 of the Clean Water Act (CWA). Consequently, as the Proposed Action would impact wetlands as illustrated on **Exhibits 26 and 27**, mitigation will be required (see **Section VII**).

A Standard Joint Permit Application has been drafted for these impacts, and is incorporated into this document as **Appendix L**. The application will be submitted during the design phase, at which point more progressive pre-application meetings with the USACE will have taken place and a more detailed alternatives application will have been developed. Information from preliminary meetings with the USACE and VDEQ indicate that multiple applications may be necessary depending on project phasing, and project funding schedules and availability. The proposed development will also require a Virginia Water Protection Permit (VWPP) issued by VDEQ.

Mitigation requirements were determined during meetings with the USACE during winter 2014. Estimated wetland mitigation fees are included in the Preliminary Engineering Report (**Appendix I**).**There are no anticipated adverse impacts to the RPA. After the proper mitigation measures are taken, no adverse impacts to wetlands are anticipated as a result of the Proposed Action.** Mitigation is discussed further in **Section VII**.




## LEGEND

| DESCRIPTION | EXISTING | DESCRIPTION | EXISTING |
|---|---|---|---|
| AIRPORT PROPERTY LINE | | BODY OF WATER (POND) | |
| RUNWAY PROTECTION ZONE (RPZ) | RPZ | WETLAND AREAS (SEPTEMBER 2009) | |
| RUNWAY SAFETY AREA (RSA) | RSA | WETLAND AREAS (DECEMBER 2012) | |
| RUNWAY OBJECT FREE AREA (ROFA) | ROFA | WETLAND AREAS (JUNE 2013) | |

**SOURCE:** WETLAND AREA AND STREAM LOCATIONS WERE DETERMINED BY A SURVEY AND DELINEATION PROVIDED BY MILL CREEK ENVIRONMENTAL CONSULTANTS, LTD., (SEPTEMBER 2009, DECEMBER 2012, AND JUNE 2013); THE ARMY CORPS OF ENGINEERS ISSUED PRELIMINARY JURISDICTIONAL DETERMINATIONS ON JUNE 30, 2011, NOVEMBER 13, 2012, AND JUNE 12, 2013.

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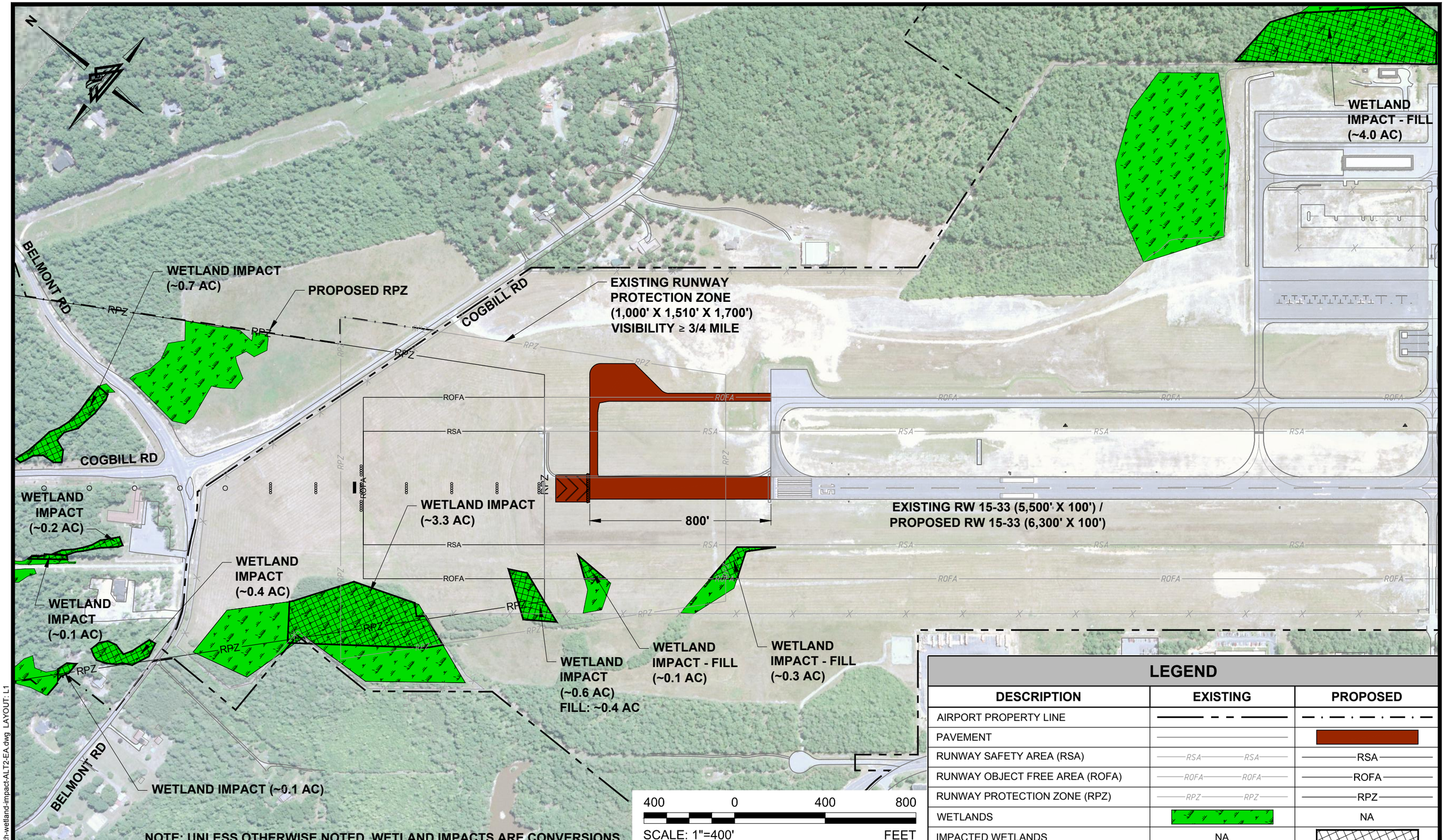
# DELINEATED WETLANDS
## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | DWS/RWW | CHECKED BY: | RGL | SCALE: | 1"=900' | DATE: | NOVEMBER 2013 |
|---|---|---|---|---|---|---|---|

**EXHIBIT**
**25**

DRAWING: 10086-exh-wetlands.dwg LAYOUT: L1




NOTE: UNLESS OTHERWISE NOTED, WETLAND IMPACTS ARE CONVERSIONS

## LEGEND

| DESCRIPTION | EXISTING | PROPOSED |
|---|---|---|
| AIRPORT PROPERTY LINE | | |
| PAVEMENT | | |
| RUNWAY SAFETY AREA (RSA) | RSA RSA | RSA |
| RUNWAY OBJECT FREE AREA (ROFA) | ROFA ROFA | ROFA |
| RUNWAY PROTECTION ZONE (RPZ) | RPZ RPZ | RPZ |
| WETLANDS | | NA |
| IMPACTED WETLANDS | NA | |

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# WETLAND IMPACT - ALTERNATIVE 2 - SHEET 1

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | ####### | DATE: | MARCH 2014 |
|---|---|---|---|---|---|---|---|

EXHIBIT 26

DRAWING: 10086-exh-wetland-impact-ALT2-EA.dwg LAYOUT: L1

AIRFIELD DRIVE

WETLAND IMPACT - FILL (~0.3 AC)

WETLAND IMPACT (~1.5 AC)

EXISTING RW 15-33 (5,500' X 100')

WETLAND IMPACT - FILL (~6.2 AC)

WHITEPINE ROAD

ROUTE 10

WETLAND IMPACT (~0.1 AC)

WETLAND IMPACT (~0.2 AC)

WETLAND IMPACT (~0.6 AC)

WETLAND IMPACT (~0.1 AC)

WETLAND IMPACT (~0.6 AC)

WETLAND IMPACT (~0.3 AC)

WETLAND IMPACT (~2.3 AC)

STATE ROUTE 288

WETLAND IMPACT (~0.8 AC)

WETLAND IMPACT (~0.4 AC)

STATE ROUTE 288

NOTE: UNLESS OTHERWISE NOTED, WETLAND IMPACTS ARE CONVERSIONS

400 0 400 800

SCALE: 1"=400' FEET

## LEGEND

| DESCRIPTION | EXISTING | PROPOSED |
|---|---|---|
| AIRPORT PROPERTY LINE | | |
| PAVEMENT | | |
| RUNWAY SAFETY AREA (RSA) | RSA RSA | RSA |
| RUNWAY OBJECT FREE AREA (ROFA) | ROFA ROFA | ROFA |
| RUNWAY PROTECTION ZONE (RPZ) | RPZ RPZ | RPZ |
| WETLANDS | | NA |
| IMPACTED WETLANDS | NA | |

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# WETLAND IMPACT - ALTERNATIVE 2 - SHEET 2

## RICHMOND EXECUTIVE - CHESTERFIELD COUNTY AIRPORT

| DRAWN BY: | RWW | CHECKED BY: | RGL | SCALE: | ####### | DATE: | MARCH 2014 |
|---|---|---|---|---|---|---|---|

EXHIBIT 27

DRAWING: 10086-exh-wetland-impact-ALT2-EA.dwg LAYOUT: L2

### R) Wild and Scenic Rivers

There are no federally-designated wild and scenic rivers in the Commonwealth of Virginia; the nearest designated river is the White Clay Creek located in southeastern Pennsylvania/northern Delaware. According to the Chesterfield County Comprehensive Plan, approximately 19 miles of the Appomattox River in Chesterfield have been designated by the state as a scenic river. The Appomattox River runs along the southern border of Chesterfield County, approximately 10 miles south of the airport; therefore the Proposed Action will take place outside of the ¼ mile boundary mentioned in the FAA Environmental Desk Reference for Airport Actions. **Therefore, no adverse impacts to wild and scenic rivers are anticipated.**

**Exhibit 28**
**Richmond Executive-Chesterfield County Airport**
**Comparison of Environmental Consequences for Runway Development Alternatives**

| Impact Category | Anticipated Adverse Environmental Consequence | | |
|---|---|---|---|
| | **Alternative 1 – No Action** | **Alternative 2- Proposed Action** | **Alternative 3** |
| Air Quality | None | None | None |
| Coastal Resources | None | None | None |
| Compatible Land Use | None | None | None |
| Construction Impacts | None | None | None |
| Department of Transportation 4(f) | None | None | None |
| Farmlands | None | None | None |
| Fish, Wildlife, and Plants | None | None | None |
| Floodplains | None | None | None |
| Hazardous Materials, Pollution Prevention, and Solid Waste | None | None | None |
| Historic, Architectural, Archaeological, and Cultural Resources | None | None | None |
| Light Emissions and Visual Impacts | None | None | None |
| Natural Resources, Energy Supply and Sustainable Design | None | None | None |
| Noise | None | None | None |
| Secondary (Induced) Impacts | None | None | None |
| Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks | None | None | None |
| Water Quality | None | None | None |
| Wetlands | None | Approximately 23.2 acres before mitigation | Approximately 27.2 acres before mitigation |
| Wild and Scenic Rivers | None | None | None |

Source: Delta Airport Consultants, Inc. Analysis

## VII) MITIGATION

The sponsor's Proposed Action conforms to the approved ALP and does not conflict with federal, state, and local plans or objectives. Appropriate coordination would be maintained with governmental agencies, including the FAA, Virginia Department of Aviation (DOAV), USACE, and VDEQ.

**Exhibits 29 and 30** list the permits, letters and concurrences to be acquired for the Proposed Action. In addition to those listed, the implementation of BMPs will minimize construction impacts. BMPs are defined as a practice or combination of practices that are determined to be the most effective means of reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals. The design of the Proposed Action will include practices to minimize impacts to the surrounding areas. The use of erosion and sediment controls will be required throughout the construction period.

Wetlands: The Proposed Action would impact approximately 23.2 acres of wetlands which involves 11.3 acres of wetland fill and 11.9 acres of wetland conversion/cutting. A Standard Joint Permit Application has been drafted for these impacts, and is incorporated into this document as **Appendix L**. The application will be submitted during the design phase, at which point more progressive pre-application meetings with the USACE will have taken place and a more detailed alternatives application will have been developed. Information from preliminary meetings with the USACE and VDEQ indicate that multiple applications may be necessary depending on project phasing, and project funding schedules and availability.

Mitigation, as required, will be completed prior to construction.

In coordination with the US Army Corps of Engineers (USACE), the County will mitigate the determined wetland impacts through acquisition of 30.6 credits from wetland banks, an amount which was determined using USACE mitigation ratios, at an estimated $50,000 per credit. The mitigation guide was derived based upon the commonly accepted ratios and a preliminary

permitting meeting on February 4, 2014 with Bill Pfeifle of VDEQ and Silvia Gazzera of USACE. Research into 10 wetland banks within the impacted watershed revealed 136 available credits as of January 17, 2014. Restoration and enhancement of the mitigation bank is interceded to increase wetland functions and provide species diversity. This mitigation effort also serves to relocate wetlands away from the airport operational environment in accordance with FAA Advisory Circular AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports*.

The final impacts were determined through the permit application process and meetings with the USACE during winter 2014. Acquisition of the credits is required prior to issuance of the Section 404 permit.

Estimated wetland mitigation fees are included in the Preliminary Engineering Report (**Appendix I**).

Land acquisition**:** The provisions set forth in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 would be followed along with FAA guidance. As stated in FAA AC 150/5100-17, *Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects*, "It is the Sponsor's obligation under the Uniform Act to provide an adequate relocation assistance program that insures prompt and equitable relocation and reestablishment of persons displaced as a result of its federally assisted airport projects."

**Exhibit 29**
**Richmond Executive- Chesterfield County Airport**
**Permits, Letters, & Concurrences**

**Permits/Approval/Concurrence/ to be Obtained During Environmental Assessment**

| Item | Permit/Approval/ Concurrence | Responsible Agencies | Remarks/ Comments |
|---|---|---|---|
| Areas of Potential Effect | Concurrence | DHR, FAA | Based upon area encompassed by alternatives presented in 2012 MP Update |
| Phase I Cultural Resources Survey | Concurrence | DHR | |
| Coastal Zone Management Consistency Determination | Concurrence | VDEQ | |
| Jurisdictional Determination | Approval | USACE[2], VDEQ[3] | |
| Perennial Flow and Resource Protection Area (RPA) Designation | Concurrence | Chesterfield County Department of Environmental Engineering | Confirmation received September 19, 2013 |
| USACE/VDEQ Joint Permit – Wetland Impacts | Permit Application Submittal | USACE, VDEQ | Delta and Mill Creek cannot guarantee that the regulatory agencies will issue permits. Only conceptual mitigation is presented in this scope, final wetlands mitigation plans will be under a separate scope of work and will likely need to be completed prior to issuance of permits from resource agencies for impacts to wetlands |

Notes:

[1]Stormwater Requirements Checklist, Forms, and Templates included in the Preliminary Engineering Report, Appendix I.
[2] USACE - Army Corps of Engineers
[3] VDEQ - Department of Environmental Quality

**Exhibit 30**
**Richmond Executive-Chesterfield County Airport**
**Permits, Letters, & Concurrences**

**Permits/Approval/Concurrence/ to be Obtained**
**After Environmental Assessment**

| Item | Permit/Approval/ Concurrence | Responsible Agencies | When Issued/Conducted | Remarks/ Comments |
|---|---|---|---|---|
| USACE[2]/VDEQ[3] Joint Permit & USACE Individual Permit – wetland impacts | Permit | USACE, VDEQ | Design | Agencies **will not** issue permit(s) until limits of disturbance have been completed |
| Environmental Due Diligence Audit | Approval/Concurrence | VDEQ | Land Acquisition Services | |
| Virginia Water Protection Permit (VWPP) | Permit | VDEQ | Design | |
| Stormwater Management Plan | Approval | Chesterfield County | Design | |
| Erosion and Sediment Control Plans | Approval | Soil Conservation District – Review Chesterfield County - Enforcement | Construction | Contractor acquires prior to construction, after design and bid phase |
| Grading Permits | Permit | Chesterfield County | Construction | Contractor acquires prior to Construction, after design and bid phase |

Notes:

[1] Stormwater Requirements Checklist, Forms, and Templates included in the Preliminary Engineering Report, Appendix I.
[2] USACE - Army Corps of Engineers
[3] VDEQ - Department of Environmental Quality

## VIII) LIST OF PREPARERS

The individuals who were primarily responsible for the preparation of this EA are listed below, together with their qualifications.

**Chesterfield County / Richmond Executive-Chesterfield County Airport**

Thomas Trudeau – former Airport Manager
Charles Dane – Deputy Director, General Services

**Delta Airport Consultants, Inc.**

Roy G. Lewis, A.A.E. – Bachelor of Aviation Management, 35 years aviation experience including 12 years planning and environmental experience. Project Manager - Responsible for overall EA document preparation, environmental agency coordination, and public participation program/information.

Mary Ashburn Pearson, AICP – Master of Urban and Regional Planning (MURP), 5 years experience. Project Manager - Responsible for overall EA document preparation.

Douglas E. Sander, P.E. - B.S. Civil Engineering, 17 years experience. Project Manager - Responsible for the Preliminary Design Engineering Report for Permitting and technical support.

**Mill Creek Environmental Consultants, Ltd.**

Robert Neely – Ph.D. Ecological Sciences; M.S. Forestry and Wildlife Management; B.A. in English/Biology, 24 years experience in the natural resource field and environmental consulting. Natural Resource Project Manager - Responsible for drafting the Wetland Delineation Report;

Endangered, Threatened, and Species of Concern (ETS) Species Report; and the Biological Assessment Report.

Matt Neely – M.S. Environmental Science Policy; B.S. United States Naval Academy, 6 years experience in the natural resources field. Field Manager - Responsible for leading the completion of all field work and regulatory agency coordination. Responsible for drafting the Water Quality Assessment Report.

**Coastal Carolina Research**

Susan E. Bamann, Ph.D. R.P.A. – Ph.D., M.A., and B.A. Anthropology, 25 years experience on research and cultural resource management. Project Manager - Conducted and prepared Report for Phase I Cultural Resources Survey.

## IX) LIST OF AGENCIES AND PERSONS CONSULTED

Army Corps of Engineers
2011, 2012, 2013 *Jurisdictional Determinations*

Chesterfield County
2010 Chesterfield County, Parks & Facilities, http://www.chesterfield.gov/Parks.aspx?id=6442455361#Clover_Hill_Athletic_Complex

Chesterfield County
2010 http://visitchesterfieldva.com

Chesterfield County Department of Environmental Engineering
2013 Perennial Flow and Resource Protection Area (RPA) Designations

Chesterfield County Government
2010 http://www.chesterfield.gov/government.aspx?id=7964

Chesterfield Industrial and Business Parks
2010 http://chesterfield business.com/

Delta Airport Consultants, Inc.
2012 *ALP Update, Chesterfield County Airport*
2012 *Master Plan Update, Chesterfield County Airport*

Delta Airport Consultants, Inc.
2013 Preliminary Engineering Report

Federal Aviation Administration
Washington Airports District Office (WADO)

Millcreek Environmental Consultants, LTD
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