
ENVIRONMENTAL ASSESSMENT

Expansion of Rivanna Station, Charlottesville, Virginia



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Department of the Army
US Army Garrison Fort Belvoir, VA

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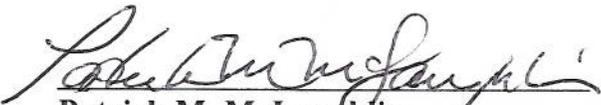
FINAL ENVIRONMENTAL ASSESSMENT

Expansion of Rivanna Station US Army Garrison Fort Belvoir, Virginia

March 2008

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1 PURPOSE AND NEED

In accordance with the Base Realignment and Closure (BRAC) Commission 2005 Recommendation 167, which became federal law on November 9, 2005, the Defense Intelligence Agency (DIA) is required to realign approximately 830 military, government civilian, and 220 contract personnel currently located at the Defense Intelligence Analysis Center (DIAC) at Bolling Air Force Base, District of Columbia to Rivanna Station outside of Charlottesville, Virginia, for collocation with elements of US Army Intelligence and Security Command's (INSCOM) National Ground Intelligence Center (NGIC). This realignment and collocation requires the construction of a new facility at Rivanna Station. At the same time, NGIC missions have increased since the 2001 construction of the Nicholson Building at Rivanna Station.

As part of BRAC 2005, DIA and Fort Belvoir plan to construct:

- A new Joint Use Intelligence Analysis Facility (JUIAF).
- Surface parking lots for the JUIAF.
- An access control point (ACP) with an associated visitor control center (VCC).
- A two-lane extension to Boulders Road, which provides access from US Route 29 to Rivanna Station.

To accommodate the mission growth at NGIC, INSCOM plans to construct:

- A separate remote delivery facility/warehouse (RDF) for mail and other deliveries.
- An addition to the existing NGIC building (Nicholson Building).
- A multi-storied parking garage for the NGIC.

As part of the construction projects, DIA and INSCOM would also reconfigure existing landscaping, walkways, and roadways, and provide new utilities infrastructure to accommodate the new facilities. Both the addition to the Nicholson Building and the new JUIAF building would be constructed as sensitive compartmented information facilities (SCIFs). The Army is also proposing to purchase land adjacent to the Station on Boulders Road, to prevent future

encroachment around the Station by private development; and has purchased land to the east and southeast to locate proposed facilities.

DIA is a Defense agency, reporting directly to the Department of Defense (DoD), whose mission is to provide, or ensure the provision of, military intelligence to DoD organizations worldwide. DIA will be a tenant at Rivanna Station. NGIC is a subordinate organization of INSCOM, a Direct Reporting Unit (DRU) of the Army Deputy Chief of Staff, G-2 (Intelligence), which is responsible for conducting intelligence, security, and information operations for military commanders and national decision-makers. INSCOM's mission is to provide soldiers with the intelligence needed to understand battlefield situations and to focus and leverage combat power. INSCOM agencies conduct a wide range of intelligence production activities, ranging from intelligence preparation for the battlefield to situation development, signals intelligence analysis, imagery exploitation, and science and technology intelligence production. INSCOM also has major responsibilities in the areas of counterintelligence, force protection, electronic warfare, information warfare, and support to force modernization and training (USAINSCOM Website, 2006).

1.1 Purpose and Need for the Proposed Action

The purpose of proposed construction of the JUIAF and realignment of DIA personnel is to co-locate certain DIAC and NGIC intelligence operations that require regular coordination and communication with each other to one military installation. Collocation would enhance the interoperability of the two agencies, as well as improve the acquisition, assimilation, and analysis of information supporting military intelligence. The DIA functions to be realigned to Rivanna Station are presently located 120 miles away from the NGIC, at Bolling Air Force Base in Washington, DC, a distance that undercuts their ability to coordinate and cooperate. The need for the action is also for DIA and the Army to comply with the 2005 Defense BRAC Commission's recommendations that are now part of BRAC statute.

The purpose of extending Boulders Road would be to provide access to the property recently acquired by the Army adjacent to the Station, where the ACP/VCC, RDF, and JUIAF would be

constructed. At present, Boulders Road is a private road which stops several hundred feet west of the proposed new ACP for Rivanna Station. Construction of the JUIAF would house the 830 relocated DIA personnel and 220 NGIC personnel designated for collocation.

The purpose of the addition to the NGIC building is to relieve current overcrowding and to accommodate projected increases in personnel by the year 2015. Designed to accommodate approximately 700 personnel, the Nicholson Building currently houses approximately 1,200 personnel, and will likely grow by almost three hundred additional personnel by the year 2015. Work space is shared, and non-mission space has been diverted to mission work space, thereby eliminating space for personnel support facilities. The expansion would provide enough cubicle and office space to meet current standards, accommodate projected growth, and allow space for non-mission personnel support functions (e.g., a food service area, a Wellness Center, conference and training areas adjacent to personnel work stations, etc).

The proposed NGIC parking garage structure is needed to address the existing and projected parking shortfall for personnel associated with the NGIC. The number of personnel has already exceeded the capacity of the existing surface parking lots, which until very recently, caused an overflow of commuter vehicles, resulting in the vehicles being parked along the shoulders of Boulders Road. To temporarily address this problem, NGIC recently leased a gravel parking area on acreage the Army proposes to purchase. The lease is to provide temporary parking space until the garage can be constructed, in order to alleviate safety concerns for personnel parking and walking along the shoulder of Boulders Road and any resulting traffic issues.

The purpose and need for both the ACP/VCC and RDF is to isolate those operational support activities geared to detect potential terrorist and other attacks (e.g., explosives detection for incoming vehicles, screening of mail and other deliveries, and uncleared visitor processing) from operational facilities at Rivanna Station. The construction of the RDF will serve the Station requirements, and allow the NGIC to vacate space they currently lease outside the Station. Antiterrorism/force protection (AT/FP) requirements mandated by the Department of Defense (DoD) after September 11, 2001 (Unified Facilities Criteria [UFC] 4-010-01, 22 January 2007, *Minimum Antiterrorism Standards for Buildings*, and UFC 4-010-02, 19 January 2007, *Minimum*

Antiterrorism Standoff Distances for Buildings) stipulate minimum distances between such facilities and those facilities occupied by personnel.

The purpose of the purchase of the land north of Boulders Road is to provide protection against encroachment on the Rivanna Station by industrial or residential development, and to allow for future expansion, if needed. The purchase of the land to the east and southeast is to locate proposed facilities. It is critical that the Army provide sufficient buffers to meet AT/FP requirements and to prevent land uses that could eventually conflict with missions of the U.S. Government. Rivanna Station is currently located at the edge of a developing industrial area, which could ultimately lead to AT/FP and hostile intelligence risks to the facility and personnel through electronic eavesdropping and observation.

1.2 Location and Background

Rivanna Station, a subordinate post of Fort Belvoir, is located in northern Albemarle County, Virginia, just east of US Route 29 at its intersection with Boulders Road, approximately 10 miles north of Charlottesville, Virginia (Figure 1-1, Location of Rivanna Station). It is approximately 100 miles southwest of Washington, DC and 85 miles west of Richmond, the capital of the Commonwealth of Virginia.

Rivanna Station currently encompasses approximately 76 acres, of which 29 acres has been developed for its only tenant, the NGIC (Figure 1-2, Rivanna Station). The Army's facilities now at the Station include the Nicholson Building (260,000 square foot [SF]), two entrance gates with information signs, and two access control facilities. Rivanna Station is bounded to the north by Boulders Road, to the east by privately-owned property, to the west by US Route 29, and to the south by the North Fork of the Rivanna River.

1.3 The NEPA Process

In compliance with the National Environmental Policy Act (NEPA) of 1969, Fort Belvoir has prepared this environmental assessment (EA) to publicly document the environmental

consequences of the proposed action. The EA has been prepared pursuant to the Council on Environmental Quality (CEQ) regulations in 40 Code of Federal Regulations (CFR) Part 1500-1508, and Army Regulation (AR) 200-2 published at 32 CFR Part 651.

NEPA provides for the consideration of environmental issues in federal agency planning and decision-making. Under NEPA and 32 CFR Part 651, the Army must prepare an environmental impact statement (EIS) or an EA for any federal action, except those actions that are determined to be exempt by law, “emergencies”, or “categorically excluded.” An EIS is prepared for those federal actions that may significantly affect the quality of the human environment. An EA is a concise public document that provides sufficient evidence and analysis for determining whether or not to prepare an EIS. The EA includes brief discussion of:

- The need for the proposal.
- The alternatives (as required under Section 102 (2) (E) of NEPA).
- The environmental impacts of the proposed action and alternatives.
- A listing of agencies and persons consulted.

The EA results in either a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an EIS. An evaluation of the environmental consequences of the proposed action and alternatives includes direct, indirect, and cumulative effects as defined at 40 CFR 1508.7 and 1508.8, as well as qualitative and quantitative (where possible) assessment of the level of significance of these effects. If Fort Belvoir determines that the proposed action may have a significant impact on the quality of the human environment, then an EIS will be prepared.

The BRAC law (the Defense Base Closure and Realignment Act of 1990, Public Law 101-510, as amended by Title XXX of the National Defense Authorization Act for Fiscal Year 2002, Public Law 107-107) exempts consideration of the need for the action or addressing other installations as alternative receiving installations when preparing environmental documentation pursuant to the NEPA. However, an appropriate level of NEPA documentation is required to analyze how the BRAC actions will be implemented for concurrent actions, both BRAC-directed

and discretionary, at each installation that is receiving realigned missions. A NEPA document is not required for those installations which are only losing activities.

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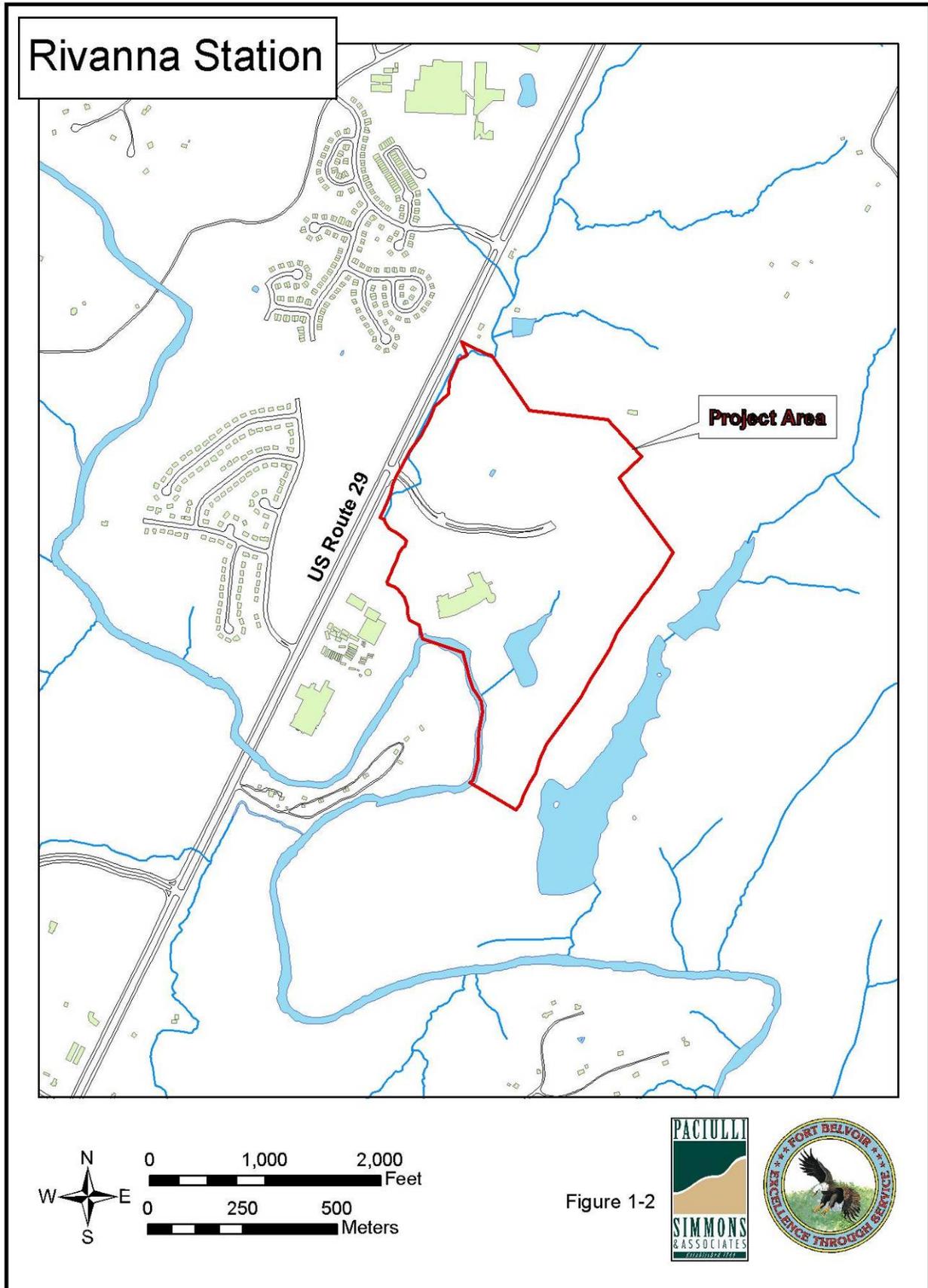


Figure 1-2

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2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

CEQ's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* establish a number of policies for federal agencies, including "...using the NEPA process to identify and assess the reasonable alternatives to the proposed action that will avoid or minimize the adverse effects of these actions on the quality of the human environment" (40 CFR 1500.2 [e]). This EA examines several related actions:

- The addition to the existing NGIC (Nicholson) Building, and the increase of parking spaces associated with that facility.
- The construction of the JUIAF and all associated facilities and infrastructure under BRAC 2005 statute, as incrementally funded as military construction project numbers (PN) 64115 and 66201.
- Construction of an ACP with associated VCC, under PN 64115 and 66204.
- Construction of an RDF/warehouse, under PN 60273.
- The purchase of additional land, under PN 64028.

To some extent, each of these actions can be evaluated separately in terms of configuration of the buildings and parking areas, and specific locations for each within Rivanna Station. However, the proposed actions listed above are driven by DIA's and INSCOM's overall need to comply with BRAC 2005, and to accommodate the combined number of personnel that will be working at the NGIC and the JUIAF over the next few years. DIA and INSCOM must provide sufficient office, laboratory, and associated personnel support space to accommodate these personnel in a manner that will allow them to coordinate effectively and carry out their mission in a secure and safe manner, in compliance with AT/FP and other requirements.

Therefore, in order for an alternative to be reasonable for this proposed action, the alternative must provide:

- Sufficient space to accommodate a total of at least 2,555 personnel, which is the approximate anticipated combined NGIC and DIA workforce at Rivanna Station by the year 2015.
- Provision of this space entirely within a single military installation.
- Assurance that the facilities will meet current AT/FP-standards.

Compliance with AT/FP requirements will add to the space requirements. For the NGIC and DIA, compliance with the UFC would require:

- Siting the proposed new ACP on Boulders Road (the only road providing access to Rivanna Station) or its proposed extension.
- Siting the VCC and RDF in the entry sequence between the ACP and any occupied building (the Nicholson Building and JUIAF).
- Providing a minimum of 148-feet (ft) as a buffer between the RDF, the VCC, and any occupied building.
- Providing a minimum of 148 ft between any fence line and any occupied building.

In addition, for security of any compromising electromagnetic emanations (EMSEC), there should be an inspectable zone of 328 ft between both the Nicholson Building and JUIAF and any installation fence line. The EMSEC buffer zone can overlap or encompass the AT/FP buffer zone, but expands the overall space requirement even more than the AT/FP requirements.

Finally, the reasonableness of alternatives is also driven by the topography and geomorphology of Rivanna Station. The overall site consists of several relatively flat hilltops separated by steep-sided valleys, some of which contain streams and/or wetlands. Soils on these slopes are thin, with bedrock occurring near the ground surface. The designer has attempted to fit the proposed facilities on the flatter areas, to avoid impacting stream valleys and the need for excessive cut and fill, or blasting of bedrock, to provide appropriate building grades.

Only those alternatives that can fulfill the overall purpose and need for the action in a reasonable manner are considered reasonable and warrant a detailed environmental analysis in this EA.

2.1 Proposed Action Alternative

Figures 2–1 and 2–2 (Aerial Photo 1 and Aerial Photo 2) show Rivanna Station as it exists today. Figure 2–3 (Concept Plan) shows the Proposed Action Alternative. The Proposed Action Alternative includes construction of:

- The 73,000+ SF four-story addition to the 260,000 SF NGIC Nicholson Building. The addition would be constructed on the north side matching levels 2 to 5 of the existing building. It would have a base footprint of approximately 20,750 SF. The third and fourth floors would be benched into the hillside to the north and east of the existing building, which would require excavation (and some blasting of bedrock) of an approximately 20,000 SF area. The volume of bedrock and excavated materials would be determined prior to the construction of the Nicholson Building addition. The addition would be equipped with an energy management control system and two 1,000 kilowatt (kW) standby generators. Construction would not begin before 2013.
- Construction of a 3-level, 260-space parking garage on the north half of the existing NGIC parking lot. The new garage would have a footprint of approximately 44,200 SF. It is anticipated that NGIC will continue to lease the gravel parking area on the north side of Boulders Road and could possibly provide some swing space for employee parking while the garage is under construction. Construction would not begin before 2013.
- The 170,502 SF four-story JUIAF building. The JUIAF would include open and closed SCIF workspace, a video teleconference center, a technical laboratory, storage space, an automated data processing center, a cafeteria, etc. The new building would include an energy control management system and a 900 KW back-up generator, at minimum. The JUIAF could have up to 7.5 megawatt (MW) back-up generator capacity. Construction would begin in 2008 or 2009.
- Approximately 230,000 SF of surface parking for DIA personnel at the JUIAF. Construction would begin in 2008 and end in 2009.
- Approximately 1,200 SF VCC with a small 40,000 SF parking area for visitors to park while they obtain passes to Rivanna Station. Construction would not begin before 2009.
- Approximately 20,000 SF RDF/warehouse with a small parking area for RDF personnel working at the RDF/warehouse and incoming delivery vehicles. The RDF would provide

sufficient space for the reception, sorting, and screening of mail and packages coming onto Rivanna Station.

- A new ACP for Rivanna Station including a gate and entry roadway to the proposed RDF and VCC. Boulders Road would be extended approximately 1,000 LF (70,000 SF) as a four-lane roadway (two lanes in each direction) to the property boundary. Construction would not begin before 2009.
- All internal roadways, walkways, curbs and gutters, storm drainage, electric service, potable water lines, sanitary sewer lines, etc., as well as construction entrances and temporary stockpiling areas for excess excavated material. Suitable material would be reused on-site; unsuitable soils would be disposed of properly. Approximately 213,000 SF of new internal roadway would be constructed to service the JUIAF, VCC, and RDF, and to connect the RDF and VCC with the NGIC.
- New facilities will incorporate low impact development (LID), stormwater management (SWM), and water quality best management practices (BMPs) to the maximum extent practicable. For SWM, Fort Belvoir will repair and retrofit an existing farm pond south of the NGIC surface parking lot and west of the proposed JUIAF building site prior to construction of the new facilities. Construction would begin in 2008 or 2009.

In addition to the construction projects listed above, the Army has purchased approximately 50 acres to the east and southeast of the existing NGIC building (Parcel Y) and would purchase an additional three parcels of land totaling approximately 50 acres across and on the north side of Boulders Road (Parcel X). Parcel Y is vacant, and Parcel X is vacant except for the gravel parking area. The location of both parcels is shown in Figure 2-3.

The concept plan shown in Figure 2–3 would accommodate the current and anticipated personnel workforce at the NGIC, as well as release space at the NGIC for personnel support functions. The concept plan shown in Figure 2–3 would also accommodate the DIA workforce transferring to Rivanna Station, and anticipated growth in the total workforce. It would allow DIA and INSCOM to accommodate all personnel at one installation to optimize functional relationships among user groups, increase efficiency, and minimize security risks. It would ensure that all personnel working at Rivanna Station worked from facilities meeting current AT/FP standards.

Therefore, this alternative meets the purpose and need for the project and is a reasonable alternative.

2.2 Alternatives Eliminated from Detailed Study

As per the BRAC statute (Subchapter 1.3), the selection of Rivanna Station as the receiving installation for the DIA personnel being realigned is a BRAC 2005 recommendation that was approved by the Presidential order and allowed to pass into law by Congress. It is exempt from the consideration of addressing other installations as alternatives to receive the realigned function and personnel (alternative receiving installations were already evaluated by the BRAC 2005 Commission, prior to Presidential signature and Congressional concurrence). Alternatives for the realignment of personnel to other military installations are therefore not reasonable and not evaluated further in this EA.

Likewise, the lease of office space off-station would not comply with the BRAC 2005 statute, is not considered reasonable, and is not evaluated further. The 2005 BRAC Commission recognized the need to collocate the like intelligence functions of two intelligence organizations at one shared location on a military post where security of information and personnel could be better assured.

The proposed location of the Nicholson Building addition is driven first by the location of the existing building, and second by the topography of the ground surface around the building. The south side of the building abuts a steep slope descending to the North Fork of the Rivanna River. An expansion in this direction would be difficult without massive amounts of fill to bring the area up to grade, and would likely have an adverse effect on the stream valley. Essentially the same situation exists for the west and northwest sides of the building, where the ground slopes steeply down to the Herring Branch stream valley, a tributary of the North Fork of the Rivanna River. An expansion to the east or northeast would require displacing surface parking or the proposed parking garage, and require massive excavation and blasting (for bedrock) into the hillside northeast of the existing building. These alternatives are therefore not reasonable, and are not evaluated further in this EA.

As an alternative to constructing a parking garage, INSCOM considered constructing additional surface parking north of Boulders Road – the area is relatively flat and has more than enough room to accommodate the needed number of spaces. However, the Army does not currently own this property and additionally, this alternative would require workers to cross Boulders Road, which is projected to become a four-lane divided arterial, state road. The Army does not consider this alternative to be reasonable due to the safety risk to personnel crossing the road.

The proposed locations of the ACP, VCC, and RDF are somewhat fixed by the need for the ACP to accommodate access from Boulders Road, and the need for the RDF and VCC to be in the entry sequence between the road and occupied buildings. These proposed locations are also influenced by the need to comply with the 148-ft AT/FP setbacks. While the specific locations of the RDF and VCC could be interchanged, the alternative would result in essentially no difference in the footprint of environmental impact. The construction of the two facilities, associated parking, and internal roadway connections would require essentially the same square footage, and impact the same area.

DIA looked at two potential locations for the JUIAF (Figure 2–4, Alternative JUIAF Locations). Either site alternative would be reasonable, but the resulting environmental impact would essentially be the same, since the site not occupied by the JUIAF would become the site for JUIAF parking – either alternative would have the same footprint and affect the same area. Decked parking for the JUIAF could reduce the impact footprint, but would raise the costs of construction significantly. Decked parking is part of the proposal for the Nicholson Building addition only because there is no reasonable alternative to obtain the parking space needed for the NGIC workforce.

The purpose of purchasing the land north of Boulders Road is primarily to prevent future private industrial development from occurring close to Rivanna Station, and to retain some land for expansion of the Station, if needed. Privately-controlled development at this location could be used as a base for hostile intelligence gathering or for observation of the station by terrorist groups. The potential for private development is not an issue to the west, south, or east of Rivanna Station, where the highway (US Route 29), the North Fork of the Rivanna River, or

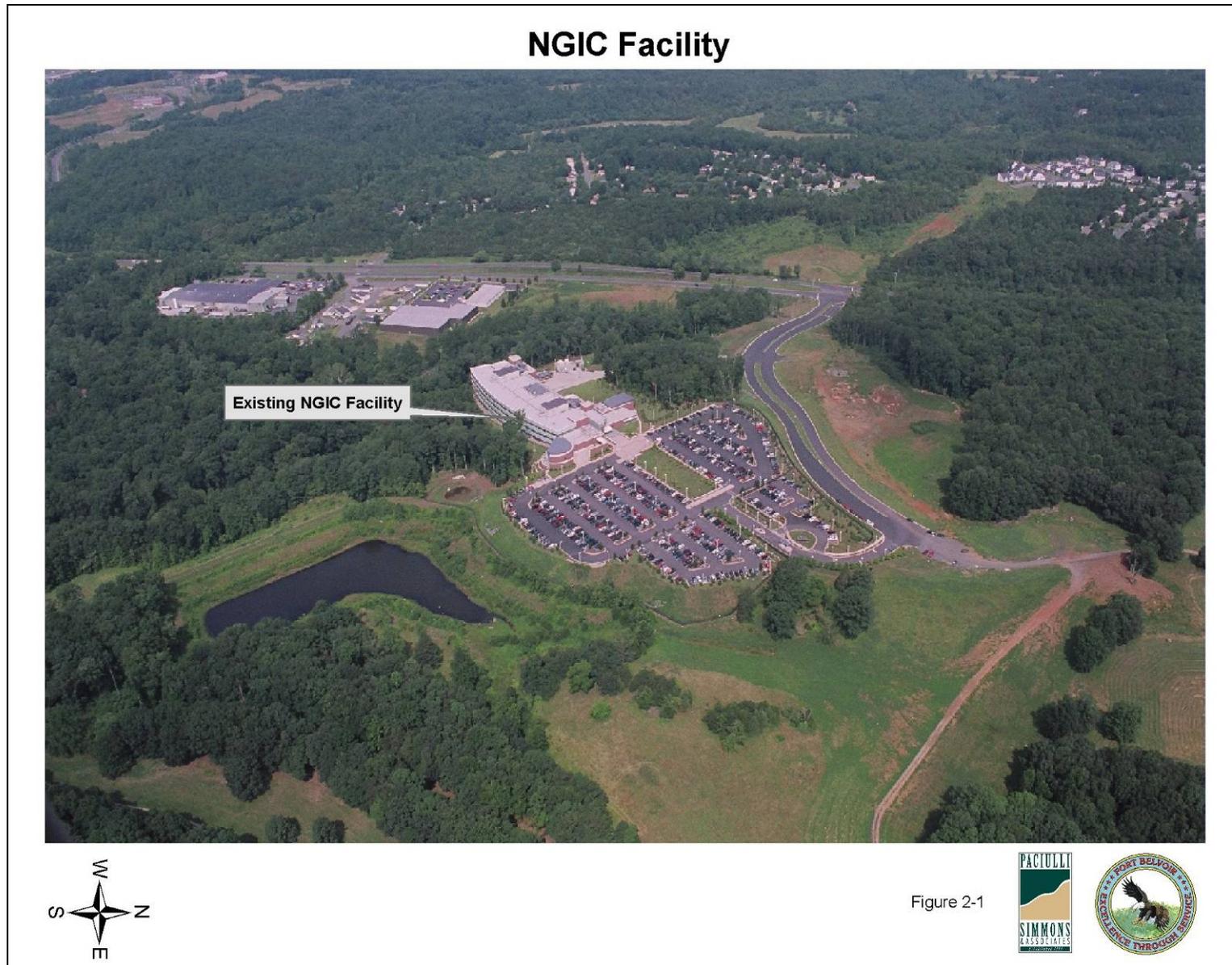
existing station landholdings already provide adequate natural or man-made buffers to prevent observation of NGIC and future DIA activities. Therefore, the purchase of alternative parcels would not fulfill the purpose of this action, is not considered reasonable, and is not evaluated further in this EA.

2.3 No Action Alternative

The No Action Alternative represents the status quo. Under this alternative, neither the addition to the Nicholson Building nor the new JUIAF Building and their associated infrastructure would be constructed. Personnel at the NGIC would continue to be overcrowded, and there would be no room for personnel support facilities. DIA personnel and functions would not be relocated, and would continue to work with a 120-mi separation from the NGIC, a condition that adversely affects intelligence sharing and overall efficiency and effectiveness. There would be no way to comply with the BRAC 2005 statute. The Army would not purchase the 50-acre parcel north of Boulders Road, and thus there would be no protection against encroachment on Rivanna Station by future industrial or residential development.

The No Action Alternative is also not considered reasonable, as it would not fulfill the purpose and need for the proposed action. However, the No Action Alternative is evaluated further in this EA, in accordance with CEQ guidance and in order to serve as a baseline against which to compare the impacts of the Proposed Action Alternative.

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Figure 2-2

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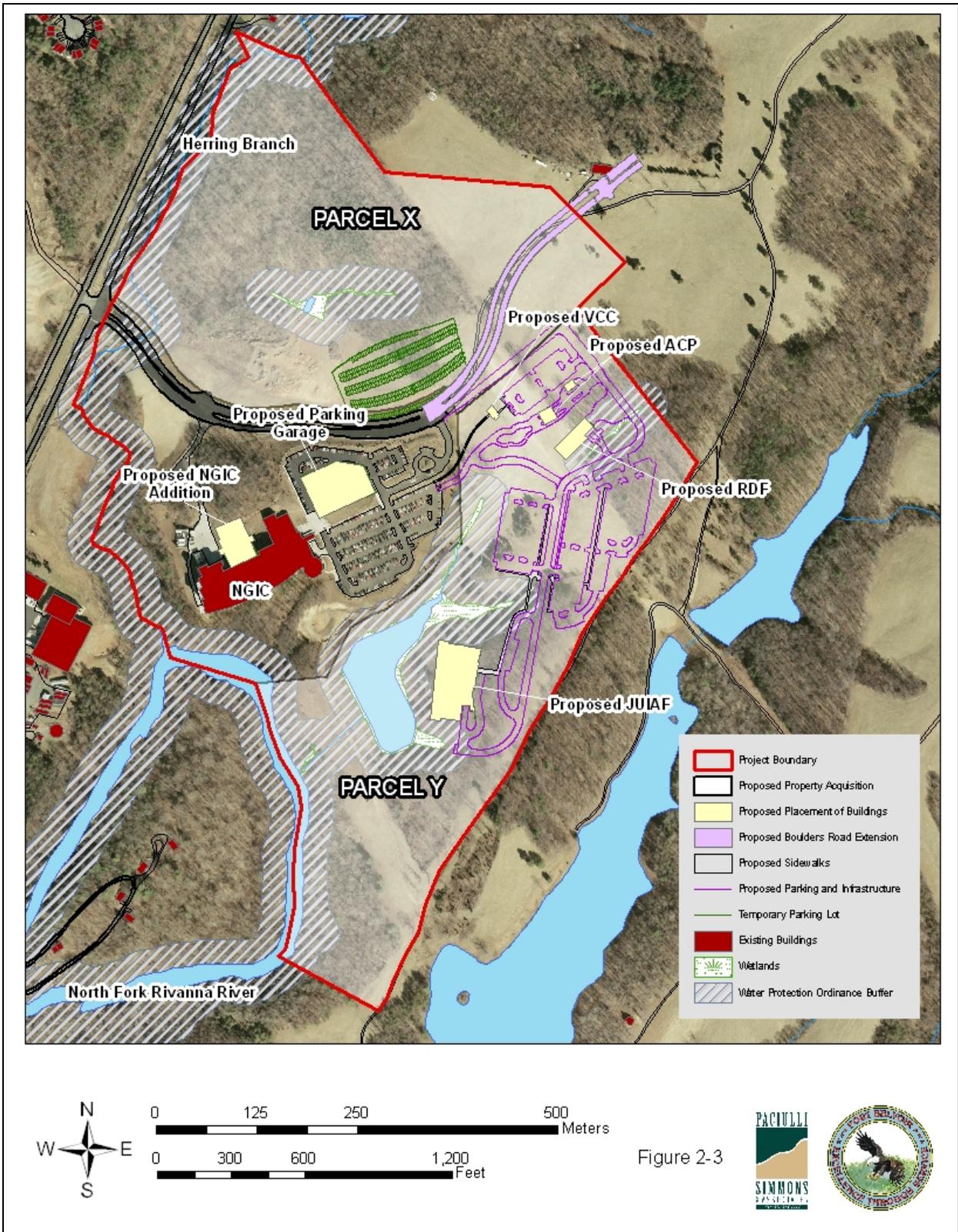


Figure 2-3

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Figure 2-4

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3 AFFECTED ENVIRONMENT

The CEQ regulations implementing NEPA (40 CFR Part 1500) require documentation succinctly describing the environment of the area(s) to be affected by the alternatives under consideration, as well as a discussion of the impacts in proportion to their significance. The affected environment under the Proposed Action Alternative(s) ranges from site-specific physical, natural and cultural resources to broader regional concerns (i.e., air quality variables, noise, infrastructure, socioeconomic conditions, community facilities and services, transportation, and traffic).

3.1 Land Use, Plans, Aesthetics, and Coastal Zone Management

3.1.1 Land Use

Rivanna Station currently covers approximately 76 acres south of Boulders Road and east of US Route 29. It is part of an area designated in the Albemarle County Land Use Plan and the draft Places 29 Master Plan as the Piney Mountain Community Development Area. Albemarle County has had a longstanding comprehensive planning goal to direct development into designated “Development Areas,” particularly in the locations designated as “Urban Areas” or “Communities.” The Development Area concept is a critical planning component that the County is using to achieve growth management goals. “Urban Areas” are intended to be more urban, or “city like,” in character and less suburban. It is to be supported by a full range of public utilities, facilities, services and amenities (Albemarle County, July 2002).

“Communities” are intended to be smaller urban centers removed from the City of Charlottesville and the County’s neighboring “Urban Area.” Similar to Urban Areas, Communities encompass an expansive variety of land uses at a multitude of densities which are supported by public utilities and facilities. The Rivanna Station site is within the Piney Mountain Community, as designated within the Albemarle County Land Use Plan.

The Piney Mountain Community is located about two miles south of the border between Albemarle and Greene Counties. It is bounded to the south by the North Fork Rivanna River floodplain, to the east by an intermittent unnamed tributary of the North Fork Rivanna River, to the west by Route 606, and to the north by a line alternately formed by Route 763, Herring Branch (a tributary to North Fork Rivanna River), and the 500 foot contour. The existing land use of the Piney Mountain Community is characterized by a mix of residential dwelling units, including two large residential areas identified as the Camelot and Briarwood subdivisions, limited commercial development, and a large industrial area identified as the GE-Fanuc facility. Other similar development in the adjacent Hollymead Community includes University of Virginia Research Park at North Fork and Northside Industrial Park. Nearby are several tracts in public ownership, including Chris Greene Lake Park, Charlottesville-Albemarle Airport, Baker-Butler Elementary School, Hollymead Elementary School, and Mortimer Sutherland Jr. Middle School.

As identified in the Albemarle County Land Use Plan, Rivanna Station is within an area zoned as Light Industrial. Land uses at Rivanna Station are presently consistent with that designation and include the NGIC building, internal roadways, open space, buffers, and surface parking lots. The property north of Boulders Road which INSCOM proposes to purchase is currently partially fallow field, forest, and partially a gravel parking lot. These parcels are zoned as Rural Areas. The area surrounding Rivanna Station is comprised of a variety of zoning categories, such as commercial, industrial, residential, planned development, and neighborhood model districts (Albemarle County GIS, September 2007).

The draft Places 29 Master Plan, which will be incorporated into the County's Comprehensive Plan, makes reference to the Rivanna Station expansion. The "Places 29" plan classifies the area as Office/Research and Development with Legal Stream Buffer designations. The Northern Development Areas Transect Zone (NDT) designation for the project site is NDT 4 – Urban General (Albemarle County 2008).

The zoning of the northeastern adjacent property has recently been changed from Rural Areas to Commercial Office. The current land owner is planning the construction of office buildings to

support NGIC operations. This construction will require the extension of Boulders Road past the site boundary.

The Albemarle County Land Use Plan also recommends the establishment of a greenway along the North Fork Rivanna River, which borders the southern portion of the site. Since greenways often follow natural facets of the landscape, they are designed for conservation, recreation, and alternative transportation. Greenways are intended to connect nearby residential and non-residential areas (The Virginia Greenways and Trails Toolbox, October 2000).

Rivanna Station is approximately 1.3 miles east of the Charlottesville-Albemarle Airport. Due to the site's close proximity to this public facility, the Nicholson Building and associated structures at Rivanna Station are located within the Airport Impact Area (AIA) Overlay District. The Albemarle County Zoning Ordinance states that its intent "... *is to minimize the creation of physical, visual, and other obstructions to the safe operations of the airport facility and to minimize adverse airport-related impact on persons and properties in the vicinity*" (Section 30.2.1 Albemarle County Zoning Ordinance, June 2005). The AIA District consists of an Airport Protection Area, Runway Protection Zone (RPZ), and an AIA Noise Impact Area.

The AIA District regulations are designed to prevent the breach of "*buildings, structures, objects of natural growth, or uses*" in airport protection areas. Airport Protection Areas are "*imaginary conical, horizontal, transitional, and approach surfaces*" surrounding the Charlottesville-Albemarle Airport (Section 30.2.3 Albemarle County Zoning Ordinance, June 2005). Rivanna Station is located just at the point that the Airport Protection Area begins to transition from the 780 ft absolute height above mean sea level (msl) to a 20:1 transition surface. The maximum ranges of the building heights for Rivanna Station, based on topography will range from approximately 280 ft to 405 ft.

The Runway Protection Zone (RPZ) is "*trapezoidal in shape and centered about the extended runway centerline, with dimensions for a particular runway end defined by the type of aircraft and approach visibility minimum associated with the end of the runway*" (Section 30.2.3 Albemarle County Zoning Ordinance, June 2005). Rivanna Station is well outside the RPZ.

The AIA noise impact area identifies acoustical performance standards to guide design and construction by outlining the maximum permitted interior noise levels for various land use categories. Rivanna Station is well outside the AIA.

Albemarle County contains two astrological observatories and University of Virginia Department of Astronomy. To protect the functioning of these institutions Albemarle County has a “Dark Skies” code to limit excessive lighting from new construction (Section 4.17 et seq. Chapter 18, Albemarle County Code).

3.1.2 Aesthetics

The character of the visual environment on and around Rivanna Station varies substantially depending on land use and development density. Rivanna Station itself is characterized by the NGIC office building and associated surface parking in the northeast corner, and open space (forest, farm pond, and old fields) on the remainder. Residential, commercial, and industrial developments dominate the west and southwest. Conversely, to the north, south, and east, open space (primarily forest and some old fields) and aquatic resources like the North Fork Rivanna River and its tributaries characterize the landscape.

Since the facility at Rivanna Station is located on a topographic ridge, it is visually evident from surrounding areas, including vehicles passing on US Route 29. The Army therefore designed the existing NGIC (Nicholson Building) to be a visually commanding structure. The uses of natural light, innovative form, and site integration have been incorporated into a distinctive architectural design that is not only pleasing but protects the intelligence missions conducted there. Existing vegetation and the North Fork Rivanna River provide a visual buffer around the perimeter of the site.

3.1.3 Coastal Zone Management

The Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451, et seq., as amended) provides assistance to the states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307(c)(1) of the Coastal Zone Management Act Reauthorization Amendment (CZMARA) stipulates that federal projects that

affect land uses, water uses, or coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally-approved coastal management plan.

Since Rivanna Station is not within a Coastal Management Zone, the Coastal Zone Management Program (CZMP) legislation and policies are not applicable.

3.2 TRAFFIC AND TRANSPORTATION

3.2.1 Existing Traffic Conditions

Rivanna Station is located on Boulders Road in Albemarle County, north of Charlottesville, Virginia. It is approximately 100 miles southwest of Washington, D.C. and 85 miles west of Richmond. It currently employs 1,175 people and hosts about 30 conferences a year. The facility routinely attracts about sixty visitors a day. A typical conference attracts another 80 visitors and lasts for two to three days. Boulders Road provides the sole vehicle access to Rivanna Station. It is a privately developed, divided, four-lane collector road, running east from a signalized intersection at Seminole Trail. NGIC is currently the only development on the road. There are currently two access points to the facility, one for employees and visitors and one for access to the loading dock.

Seminole Trail is part of US Route 29, which runs northeast to Washington, D.C. and south to Charlottesville, N.C., and on to Pensacola, Florida. The section of Seminole Trail fronting Boulders Road has a four-lane divided section with a depressed median. There is a median break approximately 2,300 feet south of Boulders Road and another 2,000 feet to the north. According to the VDOT 2005 traffic count records, there are 33,000 trips per day on Seminole Trail at Boulders Road (LDG, 2007).

Level of Service (LOS) is a qualitative measure of the operating conditions of an intersection or other transportation facilities. There are six LOS (A through F) defined; LOS A represents the best operating conditions with no congestion, and LOS F is the worst with heavy congestion. Roadways and intersections with LOS E or F would have traffic conditions at or above capacity.

Traffic patterns would be congested, unstable, and normally unacceptable to individuals attempting to access and use roadways and intersections with LOS E or F (Table 3.2-1).

Table 3.2-1
Description of Traffic Level of Service (LOS)

Level of Service	Description
A	<i>(Free flow conditions)</i> Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream with a high level of physical and psychological comfort. The effects of minor accidents or breakdowns are easily absorbed at this level.
B	<i>(Reasonably free flow conditions)</i> The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and breakdowns are still easily absorbed.
C	<i>(Stable operations)</i> Traffic flows are approaching the range in which small increases in traffic will cause substantial deterioration in service. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require additional care and vigilance. Minor accidents may still be absorbed, but the local deterioration in service will be substantial with delay forming behind any blockage. The driver now experiences a noticeable tension due to the additional vigilance required for safe operation.
D	<i>(High density, but stable flow. Bordering unstable flow)</i> Small increases in traffic could cause substantial deterioration in service. Freedom to maneuver within the traffic stream is severely limited, and the driver experiences drastically reduced physical and psychological comfort levels. Even minor accidents can be expected to create substantial delays because the traffic stream has little space to absorb disruptions.
E	<i>(Very unstable operations)</i> Virtually no usable gaps exist within the traffic stream. This means that any disruption, such as a vehicle entering from a ramp or changing lanes, causes following vehicles to slow or stop to admit the vehicle disrupting the flow. Any incident can be expected to produce substantial delay. Maneuverability within the traffic stream is extremely limited, and the level of physical and psychological comfort is extremely poor.
F	<i>(Forced or breakdown flow)</i> Such conditions generally exist for a number of reasons such as traffic accidents, recurring points of congestion, or peak hour conditions that exceed the current design of the facility. LOS F is used to identify that point where the facility has reached maximum capacity and a complete breakdown of service occurs.

Source: (TRB, 2000)

Peak period traffic counts at the intersection of Seminole Trail and Boulders Road were analyzed using the High Capacity Manual software, HCS+. With the exiting signal timings, vehicles making the southbound left turn movement are able to flow through gaps in northbound traffic with little delay. Current delays are 5.0 seconds per vehicle with queues less than one vehicle per cycle during the A.M. peak period. During the P.M. peak period, traffic exiting Boulders Road is subject to longer delays. The actuated signal system minimizes the amount of green time allowed on the side street to maintain through traffic flows on Seminole Trail. During the P.M. peak hour, traffic volumes on Seminole Trail operate at LOS C, while the exiting traffic from NGIC

experiences level of service D. The current delays and levels of service for each movement of the intersection are listed in Table 3.2-2 (LDG 2007).

Table 3.2-2
Summary of Intersection Capacity Analysis Year 2007 Conditions
Seminole Trail and Boulders Road

Approach	Movement	A.M. Peak		P.M. Peak	
		Delay	LOS	Delay	LOS
Westbound	Left	46.0	D	52.9	D
Westbound	Right	42.7	D	53.7	D
Northbound	Through	7.0	A	27.2	C
Northbound	Right	7.8	A	65	A
Southbound	Left	5.0	A	30.1	A
Southbound	Through	7.9	A	7.0	A
Intersection		8.1	A	18.9	B

Source: (LDG, 2007)

3.2.2 Existing Parking Conditions

The existing surface parking at the NGIC facility consist of approximately 720 spaces and is inadequate for the current employees. NGIC recently leased a gravel parking area to alleviate safety concerns for personnel parking and walking along the shoulder of Boulders Road. The number of personnel has already exceeded the capacity of the existing surface parking lots.

3.2.3 Existing Transit Use

There is no public transportation that serves Rivanna Station except taxicabs or pay for livery services. Rivanna Station employees rely primarily on single occupancy vehicles (SOV) as their primary means of transportation to work. Rivanna Station is served by the Charlottesville-Albemarle Regional Airport, which is four miles southwest of the proposed site. Flights from this regional airport are routed through Washington Dulles, Cincinnati, Atlanta and Philadelphia. Richmond International Airport is approximately 75 miles from Rivanna Station. The Charlottesville Transit System runs multiple routes within the city limits. There currently are no routes that run north to Rivanna Station. However, a review of proposed and upcoming developments in the county revealed that transit provisions along US 29 north of Charlottesville would be appropriate and are planed (VADRPT, 2006). Neither the City of Charlottesville, nor Albemarle County, has light rail systems for public transportation.

3.3 Air Quality

3.3.1 National Ambient Air Quality Standards and Attainment Status

Environmental Protection Agency (EPA) Region 3 and the Virginia Department of Environmental Quality (VDEQ) regulate air quality in Virginia. The Clean Air Act (CAA) (42 USC 7401-7671q), as amended, gives EPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) that set acceptable concentration levels for six criteria pollutants: particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), carbon monoxide (CO), nitrous oxides (NO_x), ozone (O₃), and lead. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (annual averages) have been established for pollutants contributing to chronic health effects. Based on the severity of the pollution problem and the pollutant of concern, nonattainment areas can be categorized as marginal, moderate, serious, severe, or extreme. Each state has the authority to adopt standards stricter than those established under the federal program; however, the Commonwealth of Virginia accepts the federal standards.

Federal regulations designate Air-Quality Control Regions (AQCRs) in violation of the NAAQS as “nonattainment” areas. Federal regulations designate AQCRs with levels below the NAAQS as “attainment” areas. “Maintenance” AQCRs are areas that have previously been designated “nonattainment,” and have been redesignated to “attainment” for a probationary period through implementation of maintenance plans. Albemarle County, and therefore Rivanna Station, is within the Northeastern Virginia Intrastate AQCR (AQCR 224) (40 CFR 81.144). Federal regulations designate AQCR 224 as an attainment area for all criteria pollutants (40 CFR 81.338). Because Rivanna Station is in an attainment AQCR, the air conformity regulations do not apply. A record of non-applicability (RONA) is located in Appendix A. The closest non-attainment or maintenance areas to Rivanna Station are the National Capital Interstate AQCR (AQCR 47) and the State Capital Intrastate Air Quality Control Region (AQCR 225). AQCR 47 is a moderate nonattainment area for the 8-hour O₃ and nonattainment for the PM_{2.5} NAAQS. AQCR 225 is a maintenance area for the 8-hour O₃ NAAQS. Because O₃ and PM_{2.5} can be transported regionally, their precursors NO_x, VOC, SO_x and PM_{2.5} were included in a more detailed analysis of air emissions resulting from the proposed action.

3.3.2 Local Ambient Air Quality

Existing ambient air quality conditions near Rivanna Station can be estimated from measurements conducted at air-quality monitoring stations close to the facility (Table 3.3-1). With the exception of the eight-hour O₃ standards, air-quality measurements are below the NAAQS (USEPA, 2007). The monitored maximum of 0.116 parts per million (ppm) for an eight-hour sampling period exceeds the standard of 0.08 ppm; however, the 3-year average of the fourth highest daily maximum 8-hour average ozone concentrations over each year has not exceeded 0.08 ppm; hence, the attainment status.

Table 3.3-1
National Ambient Air Quality Standards and Monitored Air Quality Concentrations
for AQCR 224

Pollutant and Averaging Time	Primary NAAQS ¹	Secondary NAAQS ¹	Monitored Data ²	Location of Station
CO				
8-Hour Maximum ³ (ppm)	9	(None)	(no data)	-
1-Hour Maximum ³ (ppm)	35	(None)	(no data)	-
NO₂				
Annual Arithmetic Mean (ppm)	0.053	0.053	(no data)	-
Ozone				
8-Hour Maximum ⁴ (ppm)	0.08	0.12	0.116	Stafford County
PM_{2.5}				
Annual Arithmetic Mean ⁵ (µg/m ³)	15	15	7.8	Madison County
24-Hour Maximum ⁶ (µg/m ³)	35	35	19	
PM₁₀				
Annual Arithmetic Mean ⁷ (µg/m ³)	50	50	21	King William County
24-Hour Maximum ³ (µg/m ³)	150	150	52	
SO₂				
Annual Arithmetic Mean (ppm)	0.03	(None)	0.002	Madison County
24-Hour Maximum ³ (ppm)	0.14	(None)	0.010	
3-Hour Maximum ³ (ppm)	-	0.5	0.017	

1 - Source: 40 CFR 50.1-50.12.

2 - Source: (USEPA, 2007)

3 - Not to be exceeded more than once per year

4 - The 3-year average of the fourth highest daily maximum 8-hour average ozone concentrations over each year must not exceed 0.08 ppm.

5 - The 3-year average of the weighted annual mean PM_{2.5} concentrations from must not exceed 15.0 µg/m³.

6 - The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor must not exceed 65 µg/m³.

7 - The 3-year average of the weighted annual mean PM₁₀ concentration at each monitor within an area must not exceed 50 µg/m³.

ppm = parts per million

µg/m³ = micrograms per cubic meter

NO₂ = Nitrogen dioxide

3.3.3 Existing Facility Emissions

Existing stationary sources of air emissions at Rivanna Station include two natural gas boilers, three natural gas domestic water heaters, two diesel emergency generators, one diesel underground storage tank (UST), two aboveground storage tanks (ASTs) and a document shredder. Based on the type of pollutants emitted, the CAA set permit rules and emission standards for sources of certain sizes. EPA oversees programs for stationary source operating permits (Title V) and for new or modified major stationary source construction and operation (New Source Review). Based on the facility's potential to emit, Rivanna Station is a minor source of air emissions. The facility is applying for an operating permit for their existing air emission sources. The Army has developed an emission inventory for these sources as part of the application process. The total 2006 stationary source emissions at Rivanna Station are outlined in Table 3.3-2.

Table 3.3-2
2006 Stationary Source Emissions at Rivanna Station

Equipment	Emissions (tpy)				
	NO _x	CO	VOC	PM _{2.5}	SO _x
Boilers	0.036	0.076	0.005	0.007	0.001
Generators	1.251	0.246	0.018	0.02	0.02
Document Destructor	-	-	-	1.749	-
TOTAL	1.287	0.322	0.023	1.778	0.019

3.4 Infrastructure and Utilities

3.4.1 Potable Water Supply

Potable water is currently supplied by the Rivanna Water and Sewer Authority (RWSA) from the North Fork Rivanna Water Treatment Plant located approximately 4,500 ft west of the site. The maximum allowable intake from the North Fork Rivanna River is 2.0 million gallons per day (mgd). The current average consumption is 0.25 mgd, with a peak consumption of 1.4 mgd (Rivanna Water and Sewer Authority Website, 2007).

Based on the average consumption rate of 16 gallons per day (gpd) per worker (Capelle, 2007), the NGIC workforce presently generates a potable water demand of approximately 18,700 gpd.

3.4.2 Sanitary Sewer

The NGIC building is currently serviced by the RWSA and the Camelot Waste Water Treatment Plant (WWTP). The Camelot WWTP has a current permitted capacity of 200,000 gpd. The existing incoming wastewater flows are approximately 130,000 gpd (Albemarle County Service Authority, 2007). The current workforce presently generates approximately 18,700 gpd of sanitary sewage.

3.4.3 Stormwater

Section 402 of the Clean Water Act (CWA) of 1977 established requirements for discharges of industrial and sanitary wastewater effluents, and for discharges of stormwater through the National Pollutant Discharge Elimination System (NPDES) permit program. Within the Commonwealth of Virginia, the stormwater portion of the NPDES program is administered through the Virginia Stormwater Management Permit (VSMP) program administered by the Virginia Department of Conservation and Recreation (DCR). The DCR is also responsible for enforcing the other requirements of the Virginia Stormwater Management Law (Title 10.1, Chapter 6, Article 1.1 of the Code of Virginia) and regulations (4VAC3-20 et seq.) of the Virginia Administrative Code.

Fort Belvoir, classified as a small municipal separate storm sewer system (MS-4) discharger under the Phase 2 stormwater regulations, has a general stormwater permit that is in effect through December 2008. Since Rivanna Station is a subinstallation of Fort Belvoir, Rivanna Station falls under Fort Belvoir's MS-4 permit. Rivanna Station will obtain a separate MS-4 Permit in the future. Under the Phase 2 stormwater regulations, any construction activity such as clearing, grading, and excavation that is greater than 1 acre requires a VSMP. In addition, based on the Executive Council of the Chesapeake Bay Program Directive 01-1, *Managing Stormwater on State, Federal and District-owned Lands and Facilities*, Fort Belvoir personnel are to lead by example in controlling nutrient, sediment and chemical contaminant runoff during project construction and operation of the proposed site.

The existing stormwater system consists predominately of open channels that receive sheet flow. One portion of the on-site system collects rainwater from roof drains and flows through a

vegetated swale to the North Fork Rivanna River. Sheet flow from the paved parking areas, to the northeast of the NGIC building, is conveyed via grassed swales to a stormwater pond located north of the farm pond then to the North Fork Rivanna River.

Stormwater in the undeveloped southeastern portion of the site is conveyed to the pond via sheet flow and vegetated drainage features. Stormwater, north of Boulders Road, is conveyed to the Herring Branch via sheet flow and small tributaries.

3.4.4 Natural Gas

Natural gas is supplied to the NGIC facility by the City of Charlottesville Department of Public Works, Public Utilities Division.

3.4.5 Electricity

Electricity is purchased by Fort Belvoir from Rappahannock Electric Cooperative. Continued availability is anticipated.

3.4.6 Communications

The installation owns the entire communications system, including copper and fiber-optic cables, utility poles, and computerized switchboard systems. Most distribution cable and fiber-optic cable is carried through an underground duct bank, along with some conventional cable (RTKL, 2007).

3.4.7 Solid Waste

Pursuant of Department of Defense sustainability goals Rivanna Station is integrated into Fort Belvoir Pollution Prevention Plan and Environmental Management System. The NGIC Facility at Rivanna Station participates in a Qualified Recycling Program (QRP), and personnel collect aluminum cans, tin/steel cans, glass bottles, and plastic containers. Due to the classified nature of the activities at the NGIC, paper is not recycled. In 2006, 1.75 tons of glass, aluminum, and plastic items were collected, processed, and shipped off-site. Fluorescent light bulbs are also

collected and recycled as needed. A civilian contractor collects NGIC's solid waste, which is disposed at an approved landfill (Ange, 2007).

Assuming an average rate of 4.5 lbs per day per worker (Central Virginia Waste Management Authority Website, 2006), the NGIC workforce presently generates approximately 5,287 lbs of solid waste per day.

3.5 Socioeconomics

3.5.1 Demographics

Albemarle County has a 2000 US Census population of 79,236, and a 2006 US Census population estimate of 92,035 (US Census Bureau, accessed 2007). Rivanna Station immediately borders but is outside the Charlottesville, Virginia metropolitan area, and is located about 100 miles from Washington, D.C. The Charlottesville metropolitan area, which includes the City of Charlottesville, and Albemarle, Greene, Fluvanna, and Nelson Counties, had an estimated population of 189,123 in 2006.

As of July 2007, Albemarle County had a working population of about 51,286 persons (Virginia Employment Commission, accessed 2007). In 2005, approximately 177,569 people lived in the neighboring Charlottesville metro area, which is not included in the Albemarle County data (American Community Survey, accessed 2007).

3.5.2 Age, Race and Ethnicity

Available data on racial and ethnic distribution as counted in 2000 and estimated for 2005 in areas around Rivanna Station, Albemarle County, and Virginia are summarized in Table 3.5-1 and 3.5-2. The site is located within Census Tract 102 (Figure 3-1), located just north of Charlottesville metropolitan area, and incorporates a small section of both the Rivanna and White Hall Districts of the County.

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Census Tract 102, Albemarle County, Virginia

- Boundaries**
- State
- '00 County
- '00 Census Tract
- '00 Block Group
- '00 Place
- '00 Place
- '00 Urban Area
- '00 Urban Area
- Features**
- Major Road
- Street
- Stream/Waterbody
- Stream/Waterbody
- Census Tract 102

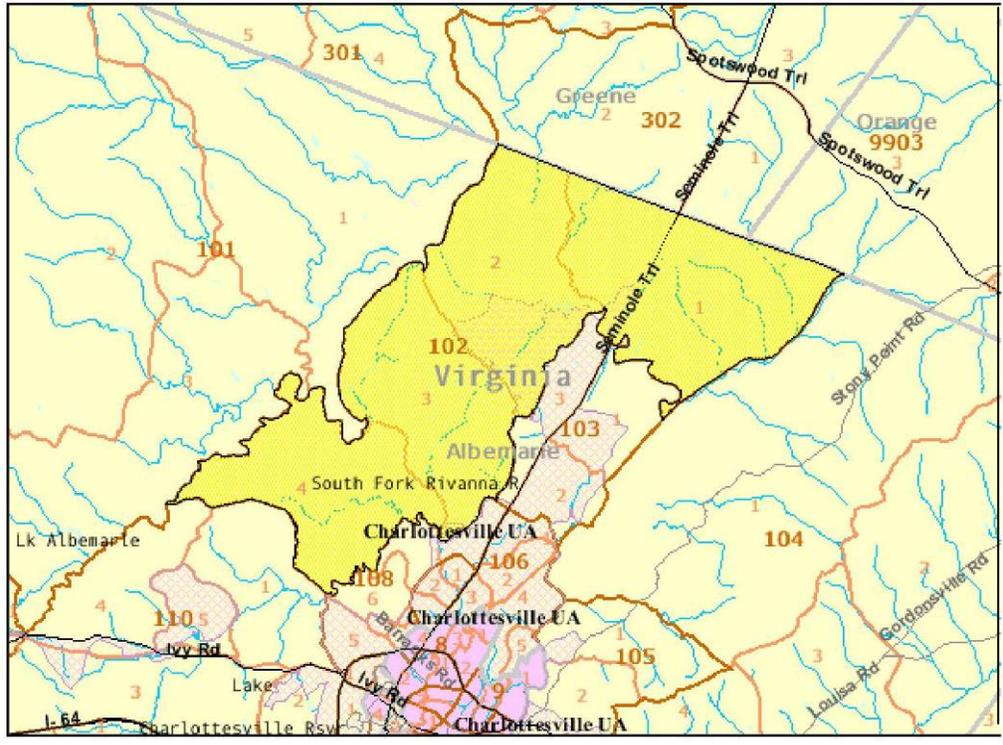


Figure 3-1

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The 2005 American Community Survey does not break out data for the census tract or smaller areas. Instead, data for the 5th Congressional District (110th Congress) are presented for comparison; the 5th Congressional District includes all of Albemarle county, as well as 18 other counties located mostly to the south.

Table 3.5-1
Race and Ethnic Distribution for 2000 Census (Percent)

Jurisdiction	White	Black ¹	Other Non-White	Two or More Races	Total Non-White	Hispanic ²
Census Tract 102	91.7	6.0	1.5	0.8	8.3	1.2
Rivanna District	86.9	9.2	2.8	1.1	13.1	1.6
Albemarle County	85.2	9.7	3.8	1.3	14.8	2.6
Commonwealth of Virginia	72.3	19.6	6.1	2.0	27.7	4.7

Source: US Census Bureau Website, 2000 Census Data.

¹ Having origins in any black racial groups of Africa.

² Hispanic origin, may be of any race.

Table 3.5-2
2005 Total Population Estimate (Percent)

Race	State of Virginia	Albemarle County	Charlottesville, VA Metro Area	5th Congressional District
White	71.7	83.9	80.6	73.8
Black or African American	19.1	9.2	13.4	22.5
Other Non-white	9.2	6.9	6.0	3.7
Hispanic (any race)	6.0	3.5	3.2	2.2

Source: US Census Bureau, 2005 American Community Survey

Albemarle County and surrounding areas are home to proportionately less non-white minorities than the state as a whole. The Commonwealth of Virginia has proportionally three times the amount of non-white residents than Census Tract 102 (including Rivanna Station), and almost two times the percentage of minorities than Albemarle County. Table 3.5-2 shows little change in the racial and ethnic distribution of Virginia or Albemarle County since 2000, with slight increases of in the “Other Non-White” category for both. Both the state as a whole and the 5th

Congressional District are more ethnically diverse than the Albemarle County or the Charlottesville metro area.

Table 3.5-3 shows the proportion of persons under-18 living in Census Tract 102, Albemarle County, and Virginia in 2000. The Rivanna Station area (Census Tract 102) had a higher proportion of under-18 residents than the state as a whole, though not significantly greater, and Albemarle County nearly matches Virginia's population of under-18 residents.

Table 3.5-3
Under-18 Population in 2000 (Percent)

Jurisdiction/Area	Population under 18
Census Tract 102	27.3
Albemarle County	24.8
State of Virginia	24.6

Source: US Census Bureau Website, September 2007.

3.5.3 Employment and Income

Based on Census 2000 data, 6.7 percent of the population within Albemarle County was living in poverty (Table 3.5-4), compared to 9.6 percent in the state of Virginia. Census 2000 poverty data are available for smaller areas, as well; within Census Tract 102, which includes Rivanna Station, approximately 1.7 percent of the population lived in poverty. This is less than for Virginia as a whole (9.5 percent), and much less than neighboring Charlottesville metropolitan area (11.5 percent).

Additionally, income data indicate that in 1999, the median household income in Census Tract 102 was \$70,392, as opposed to \$50,749 for Albemarle County and \$46,677 for Virginia as a whole. Thus, the population around Rivanna Station generally has a higher income level than the surrounding jurisdictions.

The Virginia Employment Commission reported Albemarle County's average employment in July 2007 to be 49,997. The number for Virginia as a whole was 3,989,048; thus, Albemarle

County accounted for only 1.3 percent of statewide employment. Unemployment in Albemarle County in July 2007 was 2.5 percent, as compared with 3.1 percent for Virginia and 4.9 percent for the United States as a whole (Virginia Employment Commission Website, September 2007).

Table 3.5-4
Median Income and Poverty for 2005 (Inflation-Adjusted Dollars)

Jurisdiction	Median Household Income (\$)	Median Family Income (\$)	Persons Living in Poverty (Percent)
Albemarle County	60,398	77,297	6.3
Charlottesville, VA	47,543	62,286	13.5
State of Virginia	54,240	65,174	10.0

Source: US Census Bureau Website, American Community Survey, 2005

3.5.4 Environmental Justice

Signed on February 11, 1994, Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs all federal departments and agencies to incorporate environmental justice considerations in achieving their mission. Each federal department or agency is to accomplish this by conducting programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, nor subject communities to discrimination under such actions because of their race, color, or national origin.

According to CEQ guidance on EO 12898, “minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. Low-income populations in an affected area should be identified using the annual statistical poverty thresholds from the Bureau of the Census.”

As shown in Section 3.5-2, much less than half the residents of Albemarle County are minorities. Therefore, the area does not qualify as an Environmental Justice community on racial or ethnic criteria. Based on available income data, as provided in Section 3.5-4, it is also true that Albemarle County does not qualify as an Environmental Justice community on the basis of income.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, was signed on April 21, 1997. Because the scientific community has recognized that children may suffer disproportionately from environmental health and safety risks, the EO directs federal agencies to identify and assess such risks, and consequently to ensure that its policies, programs, activities, and standards address effects on children. “Environmental health and safety risks” are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.” Regulatory actions that are affected by this EO are those substantive actions that involve an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children.

Based on the age data provided in Table 3.5-3, Census Tract 102, the smallest survey area containing Rivanna Station, has more under-18 residents than the surrounding jurisdictions. The Albemarle County population of children under 18 is greater than Virginia as a whole by only 0.2%, and Census Tract 102 only includes 2.5% more under-18 residents. Rivanna Station is therefore not located in an area that supports an unusually high population of children under EO 13045.

3.6 Community Facilities and Services

3.6.1 Services

Safety and security issues at the INSCOM facilities at Rivanna Station are handled by the Albemarle County Police Department and Hollymead Fire Rescue (Station 12). The Albemarle County Police Department was created in 1983 “*to assume primary responsibility for law enforcement in the area.*” It is located in the City of Charlottesville. Currently, 119 sworn officers, 23 civilian employees, and three animal control officers comprise the local law

enforcement department (Albemarle County website, 2007). The Department is also assisted by eight Virginia State Troopers.

Hollymead Fire Rescue provides services to a 94-square mile territory. Temporarily, the station operates out of the Charlottesville-Albemarle Airport until construction of a new facility located off Airport Road is complete in the fall of 2007. The station will be staffed 24 hours a day, seven days a week with both career and volunteer staff. The new fire and rescue resources provided by Station 12 will include an ambulance, engine, ladder, and water tanker.

The University of Virginia (UVA) Medical Center and Martha Jefferson Hospital have the ability to serve the medical needs of the employees of the facilities at Rivanna Station. Both medical facilities are located in the City of Charlottesville and are considered voluntary, non-profit, short-term acute care facilities. UVA Medical Center has a total of 591-staffed beds while Martha Jefferson Hospital has a total of 176-staffed beds (Charlottesville Area Fact Sheet, 2006). In addition to the wide variety of in-patient services provided by Martha Jefferson Hospital, an urgent care center is also open daily for minor illnesses and injuries.

The Albemarle County Public School System serves 12,500 students in 26 schools, with 16 elementary schools, five middle schools, three comprehensive high schools, one alternative high school, and one special needs school (Charlottesville Area Fact Sheet, 2006 and County of Albemarle Information Sheet, 2007). The Charlottesville-Albemarle Technical Education Center (CATEC) is a secondary and post-secondary vocational/technical school jointly operated by Albemarle County and the City of Charlottesville. Piedmont Virginia Community College and the UVA are also located within Albemarle County.

3.6.2 Recreational Facilities

Albemarle County offers nine parks to the public, providing approximately 2,000 acres of recreational areas (Charlottesville Area Fact Sheet, 2006). Leisure activities include picnicking, fishing, swimming, boating, biking, and canoeing. To promote use of these amenities, areas for boat launching and pier fishing are provided to the public. Currently, Albemarle County has 28.5 miles of trails which can be used for a walking, running, and hiking.

The Albemarle County Land Use Plan Map also shows a greenway parallel to the North Fork Rivanna River, which is adjacent to the INSCOM facilities at Rivanna Station. While greenways are intended for recreational and non-motorized transportation purposes, they are also fashioned to promote wildlife, biodiversity, and scenic beauty.

Albemarle County recreation programs include dance and fitness classes, special events, a summer playground program, middle school sports program, tennis and swimming lessons, and soccer and baseball camps. Youth and adult athletic programs are offered throughout the County as well. Three beaches are also available to residents within Albemarle County at Chris Greene Lake, Walnut Creek, and Mint Springs Valley Park. Walnut Creek Park also has 15 miles of single-track mountain bike trails available to the public. In addition, Darden Town Park has a 2 acre, fenced dog park for dogs off leash.

In addition to the recreational opportunities provided by Albemarle County, major historical attractions are also prominent in the area.

- Ash-Lawn Highland, the home of President James Monroe, offers operas, musical theater, concerts, Christmas festivities, a wine festival, and Plantation Days.
 - Court House Square, constructed in 1803, presently serves as the Albemarle County Courthouse.
 - Michie Tavern, located on State Highway 53, has been restored and authentically furnished as a Museum of Historical Tavern Americana.
 - Monticello, also known as the 'Little Mountain' home of Thomas Jefferson, has been completely restored and authentically furnished by the Thomas Jefferson Memorial Foundation.
 - Montpelier, the home of President James Madison, is a museum offering guided tours, preservation work, interpretative programs, and archaeological experiences.
-

3.7 Noise

3.7.1 Noise Fundamentals

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise may interfere with communication, produce awakenings from sleep or, in some cases, damage hearing. Noise is often generated by activities essential to a community's "quality of life", such as construction or vehicular traffic.

Sound varies by both intensity described in decibels (dB) and frequency described in Hertz (Hz). The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. The human ear responds differently to different frequencies. "A-weighting", described in a-weighted decibels (dBA), approximates this frequency response to express accurately the perception of sound by humans. Sounds encountered in daily life and their approximate level in dBA is provided in Table 3.7-1.

Table 3.7-1
Common Sound Levels

Outdoor	Sound Level [dBA]	Indoor
Snowmobile	100	Subway Train
Tractor	90	Garbage Disposal
Noisy Restaurant	85	Blender
Downtown (Large City)	80	Ringling Telephone
Freeway Traffic	70	TV Audio
Normal Conversation	60	Sewing Machine
Rainfall	50	Refrigerator
Quiet Residential Area	40	Library

Source: (Harris, 1998)

The dBA noise metric describes steady noise levels, although very few noises are, in fact, constant. Therefore, a noise metric, A-weighted Day-night Sound Level (ADNL) has been developed. Day-night Sound Level (DNL) is defined as the average sound energy in a 24-hour period with a 10-dB penalty added to the nighttime levels (10 p.m. to 7 a.m.). DNL is a useful descriptor for noise because: (1) it averages ongoing yet intermittent noise, and (2) it measures total sound energy over a 24-hour period. In addition, Equivalent Sound Level (Leq) is often used to describe the overall noise environment. Leq is the average sound level in dB.

3.7.2 Regulatory Requirements

The Noise Control Act of 1972 (PL 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. In 1974, the EPA provided information suggesting continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, and hospitals.

Albemarle County Code prohibits the creation of sound that causes a 15 dBA increase above the ambient sound level. In addition, it prohibits the creation of any excessive noise on any street adjacent to any school, institution of learning, court, or hospital that interferes with its function. Sounds generated from construction and demolition activities are exempt from the ordinance between 7:00 A.M. and 10:00 P.M. (Albemarle County Code 7-100 through 108).

3.7.3 Existing Conditions

Several existing sources of noise near the proposed site currently exist, including local road traffic, high-altitude aircraft overflights, and natural noises such as bird vocalizations. Existing noise levels (DNL and Leq(24)) were estimated for the proposed site and surrounding areas using the techniques specified in the “American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-term measurements with an observer present”; Section 9.3.2 “Table look-up method to determine the long-term background sound level”, ANSI S 12.9-1993 (R2003)/Part 3 (Table 3.7-2).

Table 3.7-2
Estimated Existing Noise Levels (dBA) at Proposed Site

Leq(Daytime)	Leq(Nighttime)	Leq(24)	ADNL
51	45	48.3	53.0

Source: (ANSI, 2003)

3.8 Natural Resources

Rivanna Station is located in a wooded area with former pasture land, north of Charlottesville. Fort Belvoir actively manages and conserves natural resources within its boundaries, as well as at Rivanna Station.

3.8.1 Physiography and Soils

Physiography

Rivanna Station lies in the foothills portion of the Piedmont Physiographic Province. The Piedmont extends from the fall line on the east to the Blue Ridge Mountains in the center of the state. Hard, crystalline igneous and metamorphic formations dominate this region, with some areas of sedimentary rocks with saprolite deposits overlying the bedrock.

Land features at Rivanna Station range from rolling hills to relatively steep stream valleys. The elevation of Rivanna Station ranges from approximately 360 ft above msl along the North Fork Rivanna River to approximately 515 ft above msl at the in the northeastern portion of the site.

The NGIC building is located in the relatively flat central portion of the site. Steep hillsides to the west of the NGIC building slope down to North Fork Rivanna River and Herring Branch. Steep hillsides to the south of the NGIC building also slope down to the North Fork Rivanna River, while the existing parking area to the south of the NGIC slopes downward to the old farm pond on the property. The proposed JUIAF site is in the southern rolling hill portion of the site, which also slopes downward, northwest toward the farm pond. The land north of Boulders Road proposed for purchase consists of relatively steep slopes that border Herring Branch, which forms the northwestern property boundary.

Soils

The Natural Resources Conservation Service (NRCS) – formerly the Soil Conservation Service (SCS) – described and delineated the soil units in the project site as Albemarle fine sandy loam, Albemarle very stony fine sandy loam, Buncombe loamy sand, Catoctin very stony silt loam, Cullen loam, Elioak loam, Fluvanna silt loam, Glenelg loam, Hazel loam, Louisburg sandy loam, manor loam, and Meadowville loam (Figure 3-2: Soils and Stream Buffers). The letter in the alphanumeric designation for the soil series indicates slope characteristics. The Hydrologic Unit indicates permeability and infiltration capacity, with A and B being relatively rapid, and C and D being relatively slow. Soils with a Hydrologic Unit Code of A or B are suitable for LID practices as a means for managing stormwater; those soils with a Hydrologic Unit Code of C or D are not suitable.

Albemarle fine sandy loams (soil series 2B, 2C, and 2D on Figure 3-5) and Albemarle very stony fine sandy loam (soil series 3D) are gently sloping to steep, shallow, well drained soils. These soils are classified as Hydrologic Group B and their permeability is moderate. These soils are not flooded, ponded, or hydric.

Buncombe loamy sand (soil series 10) is a nearly level to gently sloping excessively drained soil. This is classified as Hydrologic Group A and its permeability is rapid. This soil is frequently flooded and not ponded or hydric.

Catoctin very stony silt loam (soil series 13 C and D) is a strongly sloping to steep, well drained soil. It is classified as Hydrologic Group C and its permeability is moderately rapid. This soil is not flooded, ponded or hydric.

Cullen loam (soil series 19C) is a strongly sloping to moderately steep, well drained soil. This soil is classified as hydrologic group C, and its permeability is moderate. Cullen loam is not flooded, ponded or hydric.

Elioak loam (soil series 27B and C) is a gently to moderately steep, well drained soil. This is classified as hydrologic group C and its permeability is moderately slow. This soil is not flooded, ponded or hydric.

Fluvanna silt loam (soil series 32C) is strongly sloping to moderately steep, well drained soil. This soil is classified as hydrologic group C and its permeability is slow. This soil is not flooded, ponded, or hydric.

Glenelg loam (soil series 34D and E) is a moderately steep to steep, well drained soil. This is classified as hydrologic group B and its permeability is moderate. This soil is not flooded, ponded or hydric.

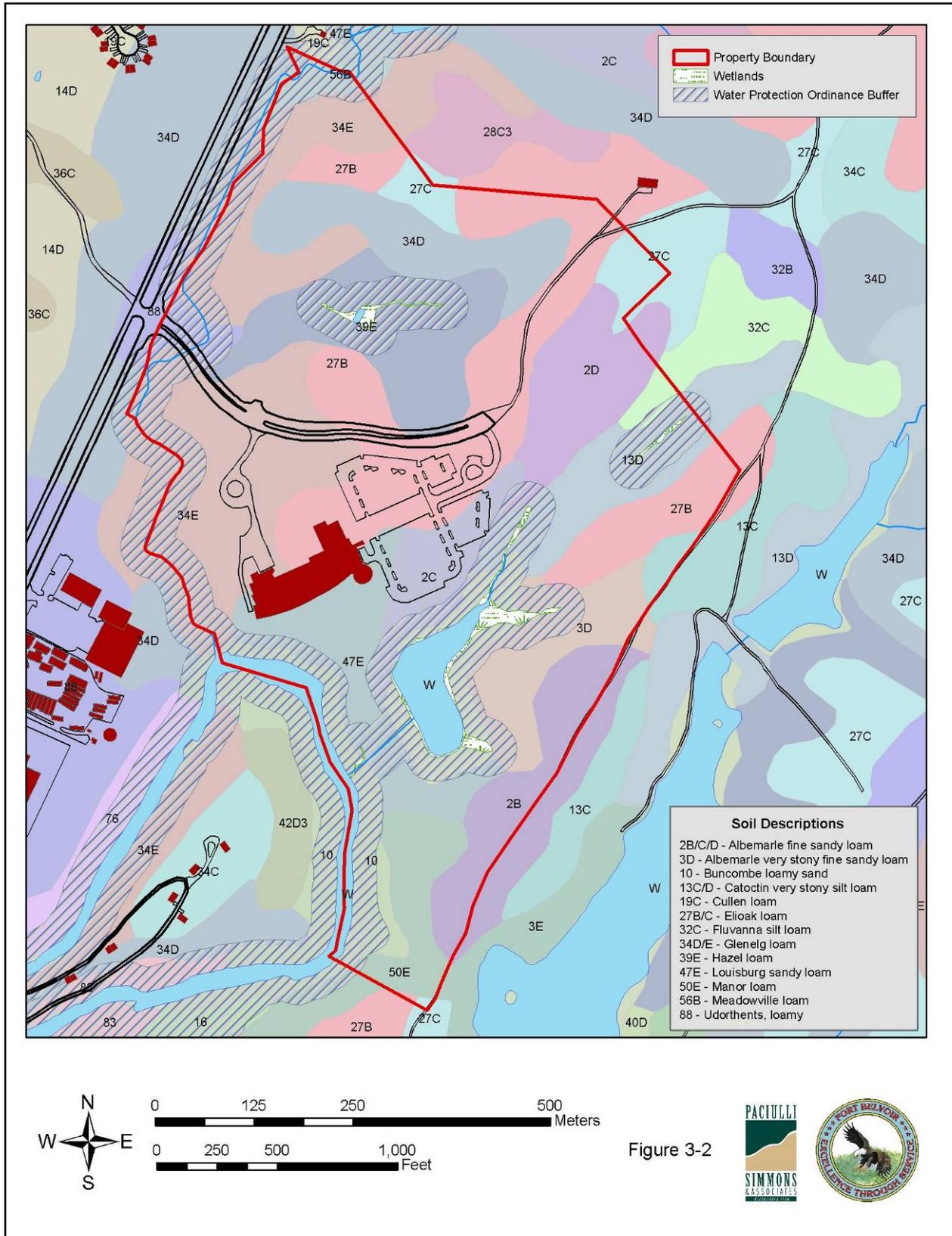
Hazel loam (soil series 27B) is a steep, excessively drained soil. This is classified as hydrologic group C and its permeability is moderately rapid. This soil is not flooded, ponded or hydric.

Louisburg sandy loam (soil series 47E) is a steep, well drained soil. This is classified as hydrologic group B and its permeability is rapid. This soil is not flooded, ponded or hydric.

Manor loam is a steep, well drained soil. This is classified as hydrologic group B and its permeability is moderate. This soil is not flooded, ponded or hydric.

Meadowville loam (soil series 50E) is a gently sloping to moderately sloping, well drained soil. This is classified as hydrologic group B and its permeability is moderate. This soil is not flooded, ponded or hydric.

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3.8.2 Water Resources

Groundwater

All of the Albemarle County's major public water supplies are surface supplies, which approximately half of the County's population uses for consumptive uses. The other half uses groundwater via private, individual wells and springs or small community systems (Albemarle County Comprehensive Plan, 1999).

Albemarle County consists primarily of metamorphic and igneous rocks overlain by a "regolith" layer composed of soil, saprolite or weathered bedrock, and alluvium from streams. Groundwater is stored in the pore spaces of the regolith and in fractures of the underlying bedrock. Fractures are the usual source of well water, since most wells are cased to the depth of bedrock to prevent surface contamination. Fractures decrease with depth, and most occur within one hundred feet of the top of the bedrock. The greater the number of fractures in the rock aquifer penetrated by the well, the greater the well yield.

Black and Veatch completed the Urban Raw Water Management Study in November 1994, for the RWSA. An addendum to the report outlined the possibility, based on computer models, of augmenting the safe yield of the North Fork water system by using supplemental releases of water from Chris Greene Lake. According to the study, the North Fork system could increase its safe yield from 1 million gallons per day to approximately 2 million gallons per day, which is the current treatment capacity of the North Fork plant (Albemarle County Comprehensive Plan, 1999).

Surface Water

The North Fork Rivanna River forms a portion of the southwestern site boundary. The Herring Branch flows along the western site boundary and discharges to the North Fork Rivanna River. Surface water from the portion of the site located north of Boulders Road, is conveyed by sheet flow to small tributaries and Herring Branch. An existing SWM pond, located northwest of the farm pond is currently used for stormwater retention for runoff from the parking lots is located in the southern central portion of the site. Sheet flow from the existing NGIC parking lots currently flows east or southeast into vegetated swales, and into the stormwater management pond, which

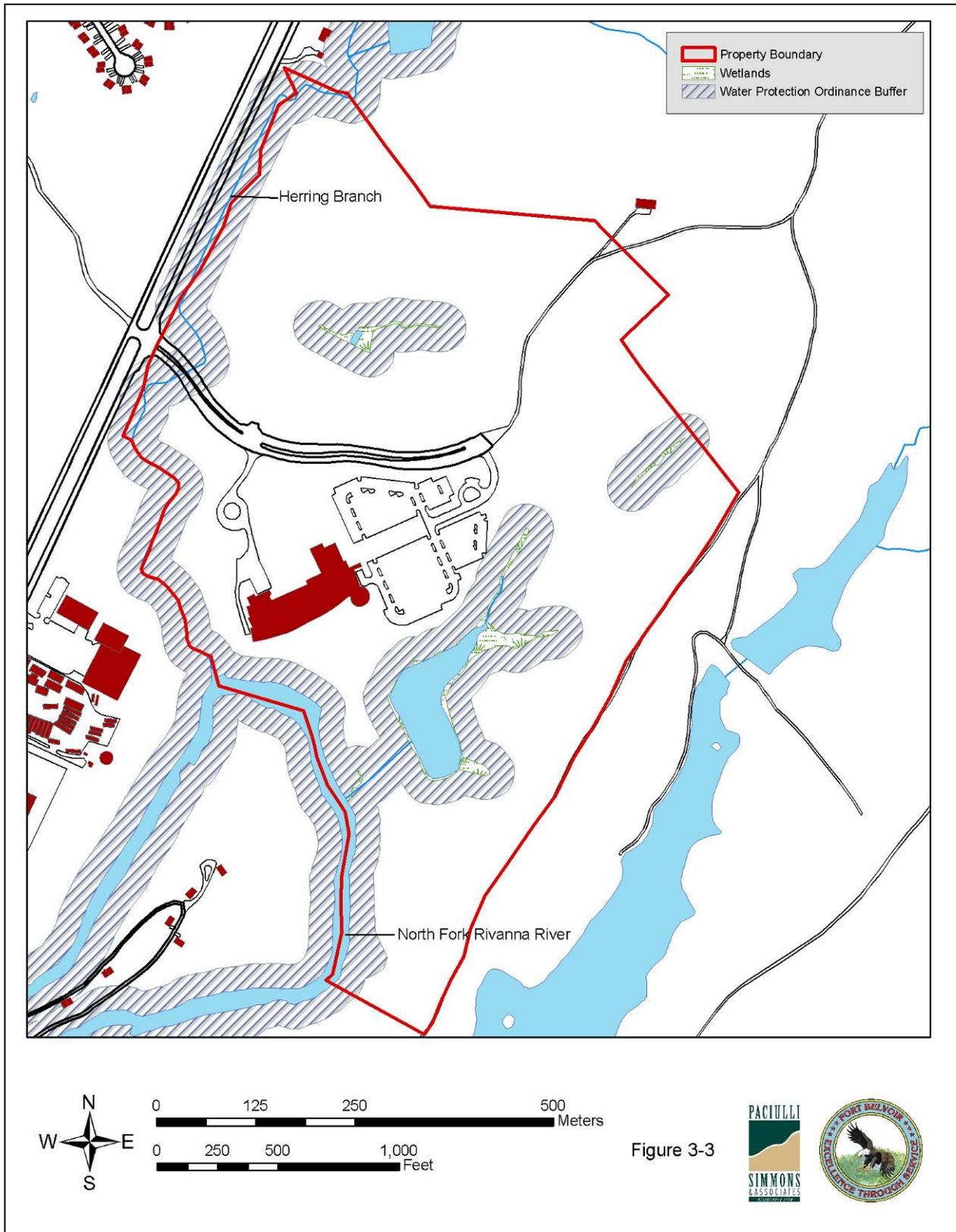
discharges into the North Fork Rivanna River. Sheet flow from the undeveloped southeastern portion of the site flows to the northwest towards the farm pond. Overall drainage is ultimately to the southwest, into the North Fork Rivanna River.

3.8.3 Environmentally Sensitive Areas

Environmentally sensitive areas are defined as those areas where development would adversely affect the region surrounding that area, or where the engineering for development would incur excessive costs. Environmentally sensitive areas include wetlands, floodplains, and areas with steep topography, poor soils, endangered species habitat, and cultural resources (US Army Garrison Fort Belvoir, 2001b). The latter two categories are addressed in Subchapters 3.8.5 and 3.9, respectively.

North Fork Rivanna River is habitat for the federal and state endangered James spiny mussel (*Pleurobema collina*), a freshwater mussel, the federal species of concern and state threatened Atlantic pigtoe (*Fusconaia masoni*), a freshwater mussel, and there are federally listed species in Albemarle and adjacent counties. These species are also addressed in Subchapter 3.8.5.

The Corps of Engineers (COE) and the VDEQ both regulate waterways and wetlands. Section 404 of the CWA directed the COE to require permits for the discharge of dredged and fill material into “waters of the US,” a term that includes rivers, lakes, and most streams and wetlands. Any action requiring a Section 404 CWA permit also requires a Section 401 water quality certification from the state agency with authority over water quality issues, which in Virginia is the VDEQ. The Commonwealth of Virginia adopted legislation in 1997 that expanded their authority beyond commenting on water quality issues for the Section 401 certification program into a state wetland regulatory program, the Water Protection Permit (VWP) program, and the Commonwealth now requires permits for any project that would alter a waterway or wetland. Whereas the COE does not typically regulate isolated wetlands, the VDEQ does. A wetland survey was completed by Williamsburg Environmental Group (WEG) in November 2003 and a jurisdictional determination was obtained in February 2004 for the site. The identified wetlands are depicted on Figure 3-3, Wetlands and Stream Buffers.



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Chapter 17, Water Protection, of the Albemarle County Code designates stream buffers, including floodplains, as environmentally sensitive areas that may be constrained for construction and are compatible only with very low-density or no development (Albemarle County Code, 2007). In accordance with the Albemarle County Code, development within stream buffers is restricted to water dependent activities, maintenance of public activities, passive recreation, water wells, and historic preservation. The Albemarle County Code states that stream buffer shall be no less than 100 feet wide on each side of such perennial streams and contiguous nontidal wetlands, measured horizontally from the edge of the nontidal wetlands, or the top of the stream bank if no wetlands exist.

The proposed site is for the most part outside the limits of the stream buffers (Figure 3-3). The existing pond, south of the NGIC building is within the stream buffer, and there are some small wetlands near the proposed JUIAF, VCC, and RDF sites.

3.8.4 Vegetation and Wildlife

Rivanna Station possesses a range of habitats, from fairly extensive areas of undisturbed mature forest to significant areas of grassy habitat succeeding to old-field, with transition areas between them.

Rivanna Station includes natural vegetation of a mix of forested areas, open grasslands, and built-up areas. The forest species include tulip poplar (*Liriodendron tulipifera*), American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*) and white oak (*Quercus alba*) with red maple (*Acer rubrum*) and sycamore (*Platanus occidentalis*) found in the wetlands and along the floodplain. The existing NGIC facility includes developed areas, improved grounds, and semi-improved grounds. Dominant vegetation in the developed area includes mixed turf grasses and landscape trees and shrubs along the site periphery, in parking lot islands, and in association with existing buildings.

3.8.5 Threatened and Endangered Species

Under the Endangered Species Act (ESA) of 1973, plant and animal species in danger of extinction throughout all or a part of their range are listed as “endangered.” Species that are

likely to become endangered within the foreseeable future throughout all or a significant part of their range are listed as “threatened.” Endangered and threatened listings impart protective status to the listed species and their habitats. Additional designations under the ESA are “proposed endangered” and “proposed threatened” for species awaiting additional data to determine the need for listing; and “candidate” where the data support a species listing, but the listing procedure has been delayed.

States also list and protect “endangered” and “threatened” species vulnerable to extinctions at the state level. States generally have Natural Heritage Programs that maintain listings and rarity (i.e., conservation) rankings of rare plant and animal species, and ecological communities. Unlike endangered and threatened listings, rare species listings and their rankings are not legal designations, and do not provide any protective status. They are used to prioritize resources for conservation. Virginia’s Department of Conservation and Recreation, Division of Natural Heritage (VDCR-DNH) manages the Virginia Natural Heritage Program (VNHP).

In addition to maintaining the endangered and threatened species lists, VDCR-DNH rates individual species and communities with resource conservation rankings from S1 (extremely rare) to S5 (very common). VNHP rates specific sites of these species and communities with site conservation rankings of B1 (outstanding significance) to B5 (general biodiversity significance).

Coordination with the VDCR-DNH (letter dated September 12, 2007) has indicated that the Atlantic pigtoe (*Fusconaia masoni*) has been documented in the North Fork Rivanna River adjacent to the project site. The Atlantic pigtoe is a medium-sized freshwater mussel reaching a length of 60 mm. The Atlantic pigtoe prefers clear, swift waters with gravel or sand and gravel substrates and is limited to the headwater areas of drainages. The VDCR-DNH letter also states that the proposed activity will not affect any documented state-listed plants or insects.

Coordination with U.S. Fish and Wildlife Service (USFWS) (letter dated September 4, 2007) has indicated that federally listed, proposed, and candidate species of James spiny mussel (*Pleurobema collina*) and the Indiana bat (*Myotis sodalists*) have been identified in the county or adjacent counties. USFWS also identified the following “species of concern” in the county: Bald

eagle (*haliaeetus leucocephalus*), Atlantic pigtoe (*Fusconaia masoni*), Appalachian grizzled skipper (*Pyrgus wyandot*), sword-leaved phlox (*Phlox buckleyi*), and Virginia mallow (*Sida hermaphrodita*). USFWS recommends surveys for the James spiny mussel and the Indiana bat, if appropriate habitat is present. Based on the potential for suitable habitat for the Appalachian grizzled skipper identified in previous EAs, Fort Belvoir completed a survey to identify current or potential future habitat for the Appalachian grizzled skipper.

Coordination with the Virginia Department of Game and Inland Fisheries (VGIF) (letter dated September 26, 2007) has indicated that the federally and state endangered species of the James spiny mussel (*Pleurobema collina*) and the federal species of concern and state threatened Atlantic pigtoe (*Fusconaia masoni*) have been documented approximately 0.5 mile and 1.75 miles, from the project site. VGIF indicated that field surveys may be necessary to determine the presence or absence of the freshwater mussels.

3.9 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires federal agencies to integrate consideration of historic preservation issues into the early stages of their planning projects. Under Section 106, the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking is required to account for the effects of this action on any district, site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places (NRHP). Eligibility determinations are based on criteria for historic significance contained in 36 CFR 60.4.

The Virginia Department of Historic Resources (DHR) is the designated State Historic Preservation Office (SHPO), in charge of administering Section 106 in the Commonwealth of Virginia. The SHPO must be consulted about any potential adverse effects from a federal action to protected architectural or archaeological resources. If adverse effects are expected, appropriate mitigation measures must be developed, also in cooperation with the SHPO.

The first step in the Section 106 review process is to determine whether any protected cultural resources that might potentially be affected by the proposed action exist in or near the project area. For this project, only resources fully or partially located on or within the NGIC and JUIAF project boundary are likely to be potentially affected by the proposed action. Therefore, the area of potential effect (APE) for this proposed action consists of the proposed development area within Rivanna Station.

3.9.1 Architectural Resources

There are no National Register-listed or eligible architectural resources on the property. The existing NGIC building is of recent vintage (2001) and does not qualify for listing under the criteria in 36 CFR 60.4.

3.9.2 Archaeological Resources

Rivanna Station and surrounding area, has been surveyed for purposes of archaeological resource identification. A total of 11 archaeological sites have been identified within one mile of Rivanna Station. Two archaeological sites and one isolated find are known to be present on the Rivanna Station Property: 44AB0514, 44AB0528 and Isolated Find 495-2.

44AB0514, located on a small ridge to the northeast of the pond, appears to be a domestic trash scatter dating to the late nineteenth to early twentieth centuries. The site was identified in the Phase I Cultural Resources Survey of the Proposed Expansion South of Boulder Way, NGIC Facility, Albemarle County, Virginia, dated March 2004. The initial survey determined that due to modern impacts to the site and the lack of site integrity, 44AB0514 was not eligible for listing in the National Register of Historic Places (NRHP). Fort Belvoir requested the Virginia SHPO's concurrence on this finding in a letter dated May 3, 2007. On June 15, 2007, the SHPO concurred with this finding. Copies of both letters are included in Appendix B.

44AB0528, located within the project area north of Boulder Way, is a cemetery dating to the late nineteenth to early twentieth centuries. The site is currently forested. The site was identified in the Phase I Cultural Resources Survey of the Proposed Expansion North of Boulder Way, NGIC Facility, Albemarle County, Virginia, dated January 2007. The initial survey identified: six

graves with both headstones and footstones recording the names of the individual; seven graves marked with fieldstones; and one grave appeared with no formal markings, identified only by a depression. A review of local history did not reveal any information related to this cemetery, and it does not appear to be eligible for listing in the NHRP.

Fort Belvoir requested the Virginia SHPO's concurrence on this finding in a letter dated May 3, 2007. On June 15, 2007, the SHPO concurred with this finding. Copies of both letters are included in Appendix B.

Isolated Find 495-2 was a possible Hardaway-Dalton type projectile point that was discovered during shovel testing south of the pond. No other artifacts were recovered during shovel testing. Since this is an isolated find and does not meet the minimum criteria established by VDHR, it may not be considered for inclusion on the NRHP, and no further work was recommended for the area.

3.10 Hazardous Substances

Hazardous waste management at Rivanna Station is conducted in compliance with RCRA. There are no hazardous waste accumulation sites within the immediate vicinity of the proposed site, therefore the site is considered Category I.

Rivanna Station participates in the "Greening of Government" program (EO 13101, Chapter 7) that promotes the purchasing of products to reduce solid and hazardous waste through implementing a centralized system for tracking procurement, distribution, and management of toxic or hazardous material. In addition, the cleaning and maintenance departments have replaced toxic and hazardous materials with environmentally-friendly chemicals. The Emergency Planning and Community Right-to-Know Act (EPCRA) responsibility for filing annual hazardous material and toxic chemical reports is through Fort Belvoir Environmental Natural Resources Division (ENRD) (Chapter 7).

Rivanna Station has one 10,000-gallon diesel UST, which is located northwest of the current NGIC building. The 10,000-gallon diesel UST is constructed of double walled fiberglass and was installed on June 6, 2001. The UST is equipped with a Veeder-Root leak detection system. The diesel fuel is pumped from the 10,000-gallon UST to two 100-gallon ASTs, which serve as day-tanks, and are located adjacent to the emergency generator.

Based on a review of federal and state environmental databases, the proposed site does not appear to have been subjected to disposal of any hazardous waste. There are no known hazardous waste contaminated sites in close proximity to the proposed site (USEPA and VDEQ websites, September 2007).

4 IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter provides an assessment of the potential environmental impacts that would result from the proposed action. In performing this environmental assessment, the short- and long-term environmental impacts of the Proposed Action Alternative and the No Action Alternative are evaluated.

This chapter is organized similarly to Chapter 3. Subchapters 4.1 through 4.10 address the impacts on specific resources. Subchapters 4.11 through 4.14 address cumulative impacts; unavoidable adverse impacts; mitigation measures of impacts; the relationship between local short-term uses of the environment and the enhancement of long-term productivity; and irreversible and irretrievable commitments of resources.

4.1 Impacts on Land Use, Plans, Aesthetics, and Coastal Zone Management

4.1.1 Proposed Action Alternative

4.1.1.1 Existing and Planned Land Use

The Proposed Action Alternative would result in a larger worker population, more infrastructure, and a larger landholding at the station. However, the overall use of the station would be the same – for intelligence gathering, interpretation, and communication. It would continue to fit with the existing industrial, commercial, residential, and institutional uses of Piney Mountain Community and the UVA Research Park at North Fork in the Hollymead Community. The Proposed Action Alternative would build upon an existing employment center and provide development consistent with the Light Industrial zoning and NDT-4 Urban General designations for the area.

Sharp-cutoff style luminaries that meet the strict Institute for Defense Analyses (IDA) fixture approval would be used to minimize light pollution. The proposed new structures would not

exceed the building height restrictions (780 ft above msl absolute elevation for the NGIC, and slightly greater for the JUIAF) in the AIA associated with the Charlottesville-Albemarle Airport (Delta Airport Consultants, Inc., July 2004). The purchase of the 50 acres across Boulders Road would result in this land becoming part of a federal installation and would remove this acreage from the county tax rolls. The economic impacts to the county would be slight, and are addressed in Subchapter 3.5.

The Proposed Action Alternative would have little overall short- or long-term impact on land use at the station or within the area surrounding the station.

4.1.1.2 Aesthetics

The proposed action would change the observer's perception of the visual aspect of the site, from one that is characterized by farm fields interspersed with patches of woods, to an office or research park with well-separated buildings, surface parking, lawns, and landscaping. While perception is subjective, the addition to the NGIC, the parking garage, and new JUIAF building have been designed to fit well with the existing infrastructure and to enhance the landscape, and would not adversely impact the overall aesthetic perception of the site. The new structures would add a greater variety of materials and surfaces to the site, resulting in a visually more interesting environment.

4.1.1.3 Coastal Zone Management

As indicated in Subchapter 3.1.3, Rivanna Station is not within, and would therefore have no effect on, any Coastal Management Zone.

4.1.2 No Action Alternative

The No Action Alternative would have no impact on land use, plans, aesthetics, or coastal zone resources. Existing conditions at Rivanna Station would continue for the foreseeable future.

4.2 Impacts on Transportation and Traffic

4.2.1 Proposed Action Alternative

4.2.1.1 Traffic Impacts

Short-term and long-term minor adverse effects on traffic would be expected. The changes would be primarily contributable to construction vehicles and increases in localized traffic patterns due to the additional employees at Rivanna Station.

Traffic congestion would increase in the area due to additional construction vehicles and traffic delays near construction sites. These effects would be temporary in nature and would end with the construction phase of the Proposed Action. The local road infrastructure would be sufficient to support any increase in construction vehicle traffic. In addition, accommodations to facilitate utility system work would be expected, creating short-term traffic delays. Such effects would be minimized by placing construction staging areas where they interfere with traffic the least, and limiting construction vehicle movement during peak traffic hours. All construction vehicles would be equipped with backing alarms, two-way radios, and Slow Moving Vehicle signs when appropriate.

LOS is a qualitative measure of the operating conditions of an intersection or other transportation facilities. There are six LOS (A through F) defined. LOS A represents the best operating conditions with no congestion, and LOS F is the worst with heavy congestion. Traffic patterns would be unstable and normally unacceptable to individuals attempting to use roadways and intersections with LOS E or F. The NGIC expansion would accommodate approximately 220 people and the JUIAF would employ 830 people. The facility routinely attracts about sixty visitors on a normal day. A typical event day attracts another 80 visitors and lasts for two to three days.

A 2007 traffic study determined the 2015 traffic delays and LOS at the intersection of Seminole Trail and Boulders Road with the implementation of the Proposed Action. Analysis was performed for both normal and event-day operations (Tables 4.2-1 and 4.2-2). LOS for most movements at the intersection would not change significantly. The northbound through traffic would degrade from LOS A to LOS F during the P.M. peak period between 2007 and 2015.

Alternately, the southbound through traffic during the P.M. peak period would upgrade from LOS C to LOS A between 2007 and 2015. These changes would be due to both the naturally occurring increase in background traffic and the increases in the trips generated by Rivanna Station. It was subsequently determined that the natural traffic growth rate used in the study was higher than the historical growth rate for this portion of Seminole Trail (VDEQ, 2007). Therefore, the changes in service (both positive and negative) would be even less pronounced than identified in the 2007 study.

Table 4.2-1
2015 Intersection Delays and Level of Service
Seminole Trail and Boulders Road - Normal Operations

Approach	Movement	A.M. Peak		P.M. Peak	
		Delay	LOS	Delay	LOS
Westbound	Left	41.1	D	53.8	D
Westbound	Right	40.8	D	37.2	D
Northbound	Through	8.8	A	162.4	F
Northbound	Right	8.9	A	8.7	A
Southbound	Left	4.4	A	30.1	C
Southbound	Through	28.1	C	9.7	A
Intersection		21.1	C	97.9	F

Source: (LDG, 2007)

Table 4.2-2
2015 Intersection Delays and Level of Service
Seminole Trail and Boulders Road - Event Day Operations

Approach	Movement	A.M. Peak		P.M. Peak	
		Delay	LOS	Delay	LOS
Westbound	Left	41.1	D	65.4	E
Westbound	Right	40.8	D	39.3	D
Northbound	Through	8.8	A	162.4	F
Northbound	Right	9.5	A	8.7	A
Southbound	Left	5.6	A	30.1	C
Southbound	Through	28.1	C	9.7	A
Intersection		20.9	C	98.3	F

Source: (LDG, 2007)

In addition, VDOT independently analyzed the Seminole Trail intersection at Boulders Road in the 2005 US 29 North Corridor Transportation Study. The analysis included the expansion proposed for the NGIC site and a planned development that would be located west of the intersection, with growth projected through 2025. The analysis showed LOS C for Seminole

Trail at the intersection, which did not warrant a recommendation by the agency to widen Seminole Trail (VDEQ 2008).

Because VDOT anticipates the intersection of Seminole Trail and Boulders Road to operate at LOS C, and the natural traffic growth is a significant contributing factor to the reduction in service, the adverse effects of the Proposed Action Alternative on traffic can be considered minor.

4.2.1.2 Proposed Action Parking Impacts

The Proposed Action Alternative would have a minor beneficial effect to parking resources. The construction of a 260-space parking garage on the north half of the existing NGIC parking lot would alleviate the existing parking shortage and provide parking for new NGIC employees. It is anticipated that NGIC would continue to lease the gravel parking area on the north side of Boulders Road until the completion of parking garage construction in 2008. The proposed JUIAF facilities would include ample surface parking for the new employees located at that facility.

4.2.1.3 Proposed Action Impacts to Transit Services

The Proposed Action Alternative would have no adverse effects to transit services. Because the transit routes do not service the proposed facilities no additional riders are expected. However, the additional personnel may contribute to future transit demands north of Charlottesville. Albemarle County fully anticipates transit service to be provided along the Route 29 corridor in the future (VDEQ 2008).

4.2.1.4 Best Management Practices

The following best management practices could be implemented to reduce these already-limited effects as follows:

- Continue to study impacts on the intersection in conjunction with long-term growth plans for Rivanna Station During the Real Property Master Plan process, and
- Develop an aggressive Ride Share, Transit and Travel Demand Management Program to reduce to a nominal amount the vehicle trips to and from the site.

4.2.2 No Action Alternative

Selecting the No Action Alternative would result in minor adverse effects to traffic when compared to the existing conditions. The population of Albemarle County and the associated Seminole Trail traffic would continue to increase while the LOS at the intersection of Seminole Trail and Boulders Road would continuously decrease. The US 29 North Corridor Transportation Study did not recommend widening Route 29 through the Boulders Road intersection. However, the intersection is of concern to VDOT (VDEQ, 2008). No changes in the current traffic from Rivanna Station would be expected. No improvements to the current parking or transit services would be expected.

4.3 Air Quality

This EA evaluates potential changes to air quality that would result from implementation of the Proposed Action and No Action Alternatives. Direct and indirect air emission and their potential impacts are addressed. For the purpose of this analysis air pollution impacts would be considered significant if project emissions would be expected to exceed 100 tons per year (tpy) of any criteria pollutant or 10 tpy of any hazardous air pollutant, would be regionally significant, or would contribute to a violation of air regulations.

4.3.1 Proposed Action Alternative

Both short-term and long-term minor increases in emissions would be expected with the implementation of the Proposed Action Alternative. However, these minor increases would not be expected to exceed 100 tpy of any criteria pollutant or 10 tpy of any hazardous air pollutant, would not be regionally significant, and would not contribute to a violation of air regulations.

The general conformity rules require federal agencies to determine whether their action(s) would increase emissions of criteria pollutants above preset threshold levels (40 CFR 93.153(b)). These *de minimis* (of minimal importance) rates vary depending on the severity of the nonattainment and geographic location. Because Rivanna Station is in an attainment AQCR, the air conformity regulations do not apply. The closest non-attainment or maintenance areas to Rivanna Station are

AQCR 47 and AQCR 225. AQCR 47 is moderate nonattainment for the 8-hour O₃ and the PM_{2.5} NAAQS. AQCR 225 is a maintenance area for the 8-hour O₃ NAAQS.

The total direct and indirect emissions associated with the implementation of the Proposed Action Alternative were estimated (Table 4.3-1). Both construction and operation related emissions were included. Air emission factors and subsequent air emissions were estimated using URBEMIS2007v9.2 air emissions model. The operational emissions would primarily be due to vehicle operation, and the proposed boilers and back-up generators at the new facilities.

Based on our analysis, total direct and indirect emissions associated with the Proposed Action Alternative are not expected to exceed 100 tpy of any criteria pollutant or 10 tpy of any hazardous air pollutant. Due to the limited size and scope of the Proposed Action Alternative and the level of existing development in the region, it is also not anticipated that the estimated emission increases from the Proposed Action Alternative would equal 10 percent or more of regional emissions for any criteria pollutant and would therefore not be regionally significant. Detailed breakdown of construction and operation emissions are located in Appendix A (LDG 2007).

Table 4.3-1

Estimated Emissions Resulting from the Proposed Action Alternative

Construction Year	VOC [tpy]	NO _x [tpy]	SO ₂ [tpy]	PM _{2.5} [tpy]	<i>De minimis</i> threshold [tpy]	Would emissions exceed applicability levels? [Yes/No]
2008	5.1	11.7	0.0	1.0	100	No
2009	4.0	6.3	0.0	0.4	100	No
Operational Emissions	26.3	42.8	0.3	8.0	100	No

Notes:

tpy = tons per year

4.3.1.1 Mobile Sources

Mobile sources of concern include primarily automobiles and vehicular traffic. The primary air pollutants from mobile-sources are CO, NO_x, and VOCs. Lead emissions from mobile sources have declined in recent years through the increased use of unleaded gasoline and are extremely small. Potential SO₂ and particulate emissions from mobile sources are small compared to

emissions from point sources, such as power plants and industrial facilities. Air quality impacts from traffic are generally evaluated on two scales: meso-scale and micro-scale.

- **Meso-scale:** Meso-scale analysis is performed at the regional level. Changes in traffic patterns in AQCR 224 resulting from the Proposed Action Alternative would introduce negligible changes in regional pollutant levels. Therefore, meso-scale analysis is not necessary for this EA.
- **Micro-scale:** CO is a site-specific pollutant with higher concentrations found adjacent to roadways and signalized intersections. Micro-scale analysis is performed to identify localized hot spots of criteria pollutants. Micro-scale analysis is often conducted on a project-specific basis in regions where CO is of particular concern. Albemarle County, and therefore Rivanna Station, is not a nonattainment or maintenance areas for CO; therefore, micro-scale analysis is not necessary for this EA.

The traffic associated with the Proposed Action Alternative is not anticipated to be an air quality concern for PM because it does not involve new highways or expressways, and the intersections affected are primarily secondary arterial roads (USEPA 2006). In addition, Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and non-road equipment. As with PM, traffic from these intersections is not anticipated to be an air quality concern for MSAT because the intersections affected are primarily secondary arterial roads and new traffic is expected to be very small. Quantitative procedures to address MSAT analysis have not yet been standardized and are not standard practice for nontransportation projects on secondary arterials; therefore not included in this EA (FHWA 2006).

4.3.1.2 Regulatory Review

New sources of emissions may be subject to both federal and state permitting requirements. These requirements include, but are not limited to, new source review (NSR), prevention of significant deterioration (PSD), and new source performance standards (NSPS) for selected categories of industrial sources. In addition, under the National Emission Standards for Hazardous Air Pollutants (NESHAP), new and modified stationary sources of air emissions may be subject to Maximum Achievable Control Technology (MACT) requirements if their potential

to emit Hazardous Air Pollutants (HAPs) exceeds either 10 tons per year of a single HAP, or 25 tons per year of all regulated HAPs (Table 4.3-2).

The exact size and type of new stationary sources are unknown at this time. For the purposes of this EA it was assumed NGIC would be equipped with two (2) additional 1,000 kW emergency generators; JUIAF would be equipped with three (3) 2,500 kW emergency generators; and both would have combustion-based sources of heating for the additional facilities. Therefore, federal and state air permitting regulations for new point sources of air emissions would apply. The combustion units would have to be recorded and included in Rivanna Station's annual emissions statement. Rivanna Station is a minor source of air emissions under the Title V provisions. If with the additional sources the potential to emit (PTE) exceeds major source thresholds, federally enforceable limits on the operation of the facility would be established so the source does not trigger Title V applicability.

Table 4.3-2
Air Quality Regulatory Review for Proposed Stationary Sources

Regulation	Project Status
Nonattainment New Source Review (NNSR)	Rivanna Station is in an attainment region. Therefore, NNSR would not apply.
Prevention of Significant Deterioration	Potential emissions would not exceed the 250-tpy PSD threshold. Therefore, the project would not be subject to PSD review.
New source Review and Title V Permitting	Rivanna Station is a minor source of air emissions. If with the additional sources the potential to emit exceeds major new source thresholds, federally enforceable limits on the operation of the facility would be established so the source does not trigger Title V applicability
National Emission Standards for Hazardous Air Pollutants	Potential HAP emissions would not exceed NESHAP thresholds. Therefore, the use of MACT would not be required.
New Source Performance Standards	Boilers rated greater than 10 million BTU/hrs heat input and all generators would have to comply with NSPS.

In addition, all construction would be accomplished in full compliance with Albemarle County Code Chapter 6 Article IV. Burning of Brush, Etc. (August 1998) and the Virginia Regulations for the Control and Abatement of Air Pollution, particularly 9 VAC 5, Chapter 40, Part II. Articles of particular relevance are:

- Article 1, Visible Emissions and Fugitive Dust/Emissions (9 VAC 5-40-60 to 120);
- Article 40, Open Burning (9 VAC 5-40-5600 to 5645); and
- Article 42, Portable Fuel Containers Spillage Control (9 VAC 5-40-5700 to 5770).

4.3.2 No Action Alternative

Selecting the No Action Alternative would result in no impact to ambient air-quality conditions. No construction would be undertaken and no changes in operations or traffic would be expected. Ambient air-quality conditions would remain as described in Sections 3.3.

4.4 Impacts on Infrastructure and Utilities

4.4.1 Proposed Action Alternative

Due to highly sensitive operations conducted at the NGIC Building and the proposed JUIAF, the implementation of the Proposed Action Alternative would not cause short-term disconnections and reconnections of buried and aboveground infrastructure items, such as communications and electrical lines. It would result in long term minor increases in demand for utility services such as electricity, potable water, sanitary wastewater conveyance and treatment, solid waste removal, and stormwater quantity and quality management.

The proposed JUIAF building would be connected to the existing water distribution system via an 8-in pipe for fire protection water service and a 4-in pipe for domestic water service. Domestic hot water would be supplied from building electric or gas-fired water heaters. In the short-term, additional potable water would be required for the mixing of cement, mortar, washing and dust suppression during the expansion of the NGIC Building and the construction of the JUIAF. Over the long term, the increase in workforce (approximately 1,050 people by 2015) would increase the demand for potable water by approximately 16,800 gpd. Both the short- and long-term increase in demand is within the capacity of the designated RWSA Water Treatment Plant.

The proposed JUIAF building would connect to the existing sanitary sewer system via an 8-inch sewer line. The increase in workforce would approximately double sewage discharge after the completion of the proposed NGIC addition and the construction of the JUIAF.

The proposed NGIC addition and the construction of the JUIAF, in conjunction with other planned developments in the area, will exceed the capacity of the Camelot WWTP. Camelot is at

capacity now and RWSA is considering increasing operational capacity through the use of a surge tank as a short-term solution. Albemarle County is currently reviewing the RWSA Comprehensive Sanitary Sewer Capacity Analysis and is considering the construction of a regional pump station to replace the Camelot WWTP as a proposed resolution for capacity demands. The proposed pump station would move wastewater to the Morris Creek WWTP. The proposed NGIC addition and the JUIAF will be connected to the sanitary sewer system when the RWSA upgrades are complete. Fort Belvoir will work with Albemarle County to identify appropriate mitigation measures as the County works through the process of upgrading the sewer system. The relocation of sanitary sewer lines located within the NGIC addition, the proposed JUIAF, and any proposed hardscape feature may be necessary.

Through careful design and use of LID principles and practices, Rivanna Station would first attempt to minimize any increase in stormwater flows. The project would comply with the Virginia Stormwater Management Regulations and the Fairfax County Chesapeake Bay Preservation Area ordinance, and have minimal adverse effect on stormwater quantity and quality.

The JUIAF facility would be connected to the current natural gas line. If required, the proposed NGIC expansion and JUIAF could be serviced by natural gas. The natural gas distribution system serving the current NGIC building has the capabilities to support the system. The use of natural gas in the generators and other equipment could help reduce geothermal systems air pollutants. A new gas main would have to be constructed to service the proposed JUIAF. The existing equipment at the NGIC could also be converted to natural gas.

The current copper and fiber-optic lines would be sufficient to accommodate the proposed NGIC expansion and increase in power usage. However, new copper and fiber-optic lines may be required to accommodate the JUIAF, VCC and RDF. New transformers may be needed to handle the increased power requirement for the NGIC addition and the JUIAF. The proposed NGIC addition and the JUIAF would use natural lighting, energy efficient lighting, and computerized power management systems.

The existing telecommunications service to the proposed NGIC addition and the JUIAF would be adequate to service the new facilities. The increased telecommunication services required to serve the site would fall within the current capabilities and planned growth for the county, as per the Albemarle County Comprehensive Plan.

Short-term solid waste generation would increase as construction and demolition debris is generated from the construction of the JUIAF and NGIC building addition. This debris would be removed from the site and disposed of at an approved facility. The construction and demolition debris should be minimal and contain small sections of pavement, office partitions and a small amount of the building façade. Any potential building debris should not contain hazardous substances, such as asbestos or lead paint, since the current NGIC building was built after 1980. Activities will be managed under Fort Belvoir's Pollution Prevention Plan. Fort Belvoir strives to comply with 50% diversion of construction and demolition debris on current projects.

Soils and bedrock that would be excavated during the construction of the proposed NGIC addition and the JUIAF may be used onsite as fill for a parking lot addition, or disposed of in some other appropriate manner. In the long term, solid waste generation and recyclable materials would increase by approximately 4,725 lbs, as the workforce increased. Non-hazardous wastes would be collected in onsite dumpsters, then collected and transported by a contract solid-waste refuse firm to an approved landfill. Recyclable wastes would be separated for pickup at NGIC and JUIAF, in an effort to meet Department of Army waste diversion standards, which require monthly reporting by item description and weight of any materials removed for recycling or reuse by the contractor.

The Rivanna Station is planned for integration into the Fort Belvoir Pollution Prevention Plan and Environmental Management System (EMS). In addition as a minimum LEED Silver and LID principles will guide the choice of sustainable materials and practices for building and infrastructure construction and design.

4.4.2 No Action Alternative

Under the No Action Alternative, there would be no short- or long-term adverse impact on any of Albemarle County's utility systems. There would be no increases in demands for potable water, electricity, communications, or HVAC systems. No stormwater runoff, sanitary wastewater, or solid waste would be generated.

4.5 Socioeconomic Impacts

4.5.1 Proposed Action Alternative

4.5.1.1 Demography and Employment

The proposed expansions of Rivanna Station would bring 830 military and up to 220 contract personnel positions from the Washington, DC area to the station and Albemarle County. The 1,050 new personnel represents almost a doubling of the working population at Rivanna Station, but only about 2 percent of the worker population (51,286) in Albemarle County. Thus, the impact of the proposed action on employment in Albemarle County would be insignificant.

The Proposed Action Alternative would generate direct economic benefits for the contractors performing the job and their employees, as well as indirect benefits to the communities in which the construction workers are based. Additional earnings would generate spin-off benefits as these earnings are spent in the local economy. These positive impacts would be relatively small and temporary.

The Proposed Action Alternative would remove an additional 50 acres from the County's tax rolls. This amount of taxable acreage represents a fraction of a percent of the property generating tax income for the County at this time.

4.5.1.2 Environmental Justice

As indicated in Section 3.5.4, no areas near Rivanna Station qualify as Environmental Justice Communities. Thus, there is no potential for implementation of the Proposed Action Alternative to disproportionately affect minority or low income populations through traffic or construction-related air and noise impacts. Therefore, implementation of the Proposed Action Alternative does not raise Environmental Justice issues.

Nor would the proposed action disproportionately affect populations of children. While the Rivanna Station area (Census Tract 102) has a higher proportion of under-18 residents than the state as a whole (though not significantly greater), there are no residential areas near the station. Housing developments near Rivanna Station are over ¼ mile away, on the opposite side of US Route 29 – too far away to be affected by noise or air quality impacts.

4.5.2 No Action Alternative

Under the No Action Alternative, there would be no changes to the Rivanna Station working population and no impacts on demography, employment, Environmental Justice, or children.

4.6 Community Facilities and Services Impacts

4.6.1 Proposed Action Alternative

The Proposed Action Alternative would bring approximately 1,050 workers to Rivanna Station from the Washington, DC area. These additional personnel and their families would generate an increased demand for the use of community facilities in Albemarle County and the Charlottesville metropolitan area. While the additional working population at the station could potentially generate more fire and rescue calls, the increase would be small and is not expected to overtax the emergency services of Albemarle County. Nor would these additional people have significant impacts on area or regional recreational facilities. Planning for emergency services would be coordinated with Albemarle County through the Installation Support Services Agreement (ISSA) process. Expansion of Rivanna Station would not compromise the establishment of the County-proposed greenway along the North Fork Rivanna River. Rivanna

Station would need to evaluate force protection impacts of the County-proposed greenway along the North Fork Rivanna River once plans are available.

The relocation of family households would not appreciably impact any one public school system. The location is within commuting distance of several public school jurisdictions. Together these school districts have more than 92 schools, and total enrollment was almost 44,803 students (NCES, 2008). Since the proposed action does not include the construction of housing, family households that do relocate must do so to private, non-federal properties that are subject to local taxes. The majority of the relocating persons would be federal civilian employees and contractors. Children of military personnel residing off-post attend the school district for the area in which they live. These new residents would buy or rent property in the community in which they live and their tax dollars would support public services, including public schools.

The BRAC actions at Rivanna Station must be completed no later than September 15, 2011, so the population shift would be expected to begin in late 2011, as employees would decide whether to relocate relative to their new place of employment. Where families relocate within the region of impact also would be constrained by available housing and influenced by housing cost and household income, which could deter a family from moving, or from moving into a certain area. An increase in population would cause an increase in the demand for public education services; however, services would be funded by tax revenue from new civilian population. In addition, the Federal Impact Aid Program, through Basic Support Payments (Section 8003[b]) would continue to help local school districts that educate federally connected children. To qualify for Section 8003(b) funding, a local education agency must meet threshold eligibility requirements and submit an electronic application (U.S. Department of Education 2006).

Short- and long-term minor adverse effects would be expected on off-post schools. The potential population that might relocate within the region of impact because of the proposed Rivanna Station BRAC action would cause an increase in the demand for public education services; however, services would be funded by tax revenue from new civilian population. It is quite probable family households may choose to enroll their children in a private school or home school. Also, a family moving into an area could be replacing a family moving out of the region.

From a regional perspective, the social effects of the Rivanna Station BRAC action would have short- and long-term minor adverse effects on regional services. Tax revenues from new residents would provide funding for public services (police, fire, medical, schools and social services). The number and type of shopping and service businesses and community support morale, welfare and recreation facilities and services would be expected to increase with demand as they would be market driven.

4.6.2 No Action Alternative

The No Action Alternative would generate no impacts to community facilities.

4.7 Noise Impacts

4.7.1 Proposed Action Alternative

Short-term minor adverse effects to the noise environment would be expected with the implementation of the Proposed Action Alternative. The effects would be primarily due to heavy equipment noise during construction.

Individual pieces of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 ft. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise typically extends to distances of 400 to 800 ft from the site of major equipment operations. Locations more than 1,000 ft from construction sites seldom experience noteworthy levels of construction noise. Table 4.7-1 presents typical noise levels (dBA at 50 ft) that EPA has estimated for the main phases of outdoor construction. Given the temporary nature of proposed construction activities, the limited amount of noise that construction equipment would generate, and the distance to the nearest off-post noise sensitive area - this effect would be considered negligible.

**Table 4.7-1
Noise Levels Associated With Outdoor Construction**

Construction phase	Sound level (dBA)
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: (USEPA, 1971)

Although construction-related noise effects would be small, the following best management practices would be used to reduce these already-limited noise effects further:

- Construction would predominately occur during normal weekday business hours in areas adjacent to noise-sensitive land uses such as residential areas, recreational areas, and any off-post areas; and
- Construction equipment mufflers would be properly maintained and in good working order.

Construction noise is expected to dominate the soundscape for all on-site personnel. Construction personnel, and particularly equipment operators, would don adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations. In addition, since construction noise is the only expected source of noise associated with the Proposed Action Alternative, no violation of the county noise ordinance is expect.

No long-term increases in the overall noise environment (e.g. ADNL) can be expected with the implementation of the Proposed Action Alternative. No military training activities, use of weaponry, demolitions, or aircraft operations would occur. Therefore, no changes in the existing noise environment associated with these sources would be expected.

4.7.2 No Action Alternative

Selecting the No Action Alternative would result in no impact on the ambient noise environment. No construction, changes in traffic, or changes operations at Rivanna Station would be expected. Ambient noise conditions would remain as described in section 3.7.

4.8 Impacts on Natural Resources

4.8.1 Physiographic and Soils Impacts

4.8.1.1 Proposed Action Alternative

With the exception of steep slopes, there are no unique or sensitive landforms or rock formations at the site. The Proposed Action Alternative would not significantly alter the geomorphology of the overall site. The proponent has planned the NGIC addition to utilize the area already altered by previous construction to the extent possible, to minimize any further encroachment on the steep slopes toward the North Fork Rivanna River and its tributary, Herring Branch. Some excavation and blasting of bedrock would be needed to even out topography in the immediate area of construction.

Soils and bedrock would be removed for excavation of the basements for the proposed expansion of the NGIC building, construction of the proposed parking garage, and construction of the proposed JUIAF. The proposed buildings and surface parking would cover approximately 8.5 acres of currently permeable soils with impermeable surfaces. The designers are evaluating LID measures to offset the loss of stormwater infiltration.

The construction activity would cause short-term erosion and sedimentation during clearing and grading. Grading would result in minor, localized changes in slopes, soil infiltration rates, and surface runoff patterns. Because the proposed project would affect more than 1 acre, an erosion and sediment control plan (ESC) employing soil BMPs, and a VSMP would be required for the clearing and grading activities. The ESC plan would include measures consistent with the Virginia Erosion and Sediment Control Handbook, such as silt fences and super silt fences around the limits of clearing and grading, to reduce construction impacts.

4.8.1.2 No Action Alternative

Under the No Action Alternative, there would be no short- or long-term adverse impact on existing physiographic or soil resources.

4.8.2 Impacts on Water Resources

4.8.2.1 Proposed Action Alternative

Implementation of the Proposed Action Alternative would have minor indirect effects on the stream resources (Subchapter 3.8.2). The nearest water features are: the existing pond located in the southern central portion of the site; Herring Branch located along the western property boundary; and, the North Fork Rivanna River along the southwestern property boundary. North Fork Rivanna River is located approximately 170 ft south of the current NGIC building. The existing pond is located approximately 170 ft south of the current parking lot. The Herring Branch convergence with the North Fork Rivanna River is located approximately 205 ft southwest of the current NGIC building.

Implementation of the Proposed Action Alternative would create minor short- and long-term impacts on the stream resources (Subchapter 3.8.2). Clearing, grading, and excavation during construction could produce short-term direct impacts to surface water flow and quality. During the design of JUIAF and NGIC construction projects a Rivanna Station stormwater management system will be developed. The existing farm pond will be evaluated to determine appropriate role in a comprehensive stormwater management system. Best management practices (BMPs) to control erosion and sedimentation during construction would minimize impacts on the water quality of North Fork Rivanna River and its tributaries. The permanent increase in impermeable surface from proposed construction would, over the long term, increase surface water runoff. Fort Belvoir acts consistently with Fairfax County Chesapeake Bay Preservation Area regulations (Chapter 118 of the Fairfax County Code), namely maintenance of a RPA buffer and provision of nutrient control best management practices in the RMA, and would minimize these impacts.

The increase in impermeable surface would reduce infiltration of stormwater to groundwater resources. The site for the Proposed Action Alternative is not near any groundwater recharge areas for Albemarle County. No withdrawal of groundwater would be necessary for the proposed action – potable water is supplied from the RWSA.

While design is conceptual at this stage, the design of stormwater management facilities would be required to comply with the sizing requirements of the Virginia Stormwater Management Regulations. Pending preparation of a Phase II Stormwater Permit for Rivanna Station, stormwater will be managed in accordance with Fort Belvoir's MS-4 Permit. Also, because Fort Belvoir acts consistently with the Fairfax County Chesapeake Bay Preservation Area regulations (Chapter 118 of the Fairfax County Code) in accordance with Fort Belvoir's MS-4 permit, a BMP would be provided for all areas prior to discharge into existing farm pond. Compliance with these regulations would ensure that the harmful effects of surface runoff on adjacent soils, steep slopes, the swales, and the surface water quality of North Fork Rivanna River and its tributaries would be minimized. Stormwater would be discharged, after treatment, into North Fork Rivanna River.

The Proposed Action Alternative would have a minor impact on the overall availability or quality of groundwater and surface water resources.

4.8.2.2 No Action Alternative

Under the No Action Alternative, there would be no short- or long-term adverse impact on surface or groundwater resources.

4.8.3 Impacts on Environmentally Sensitive Areas

4.8.3.1 Proposed Action Alternative

Environmentally sensitive areas are defined as those areas where development would adversely affect the region surrounding that area, or where the engineering for development would incur excessive costs. Environmentally sensitive areas include wetlands, floodplains, and areas with steep topography, poor soils, endangered species habitat, and cultural resources (US Army Garrison Fort Belvoir, 2001b). Fort Belvoir has minimized encroachment on these areas to the extent practicable, by proposing to construct the NGIC addition to the northwest of the current building on land that is already disturbed, constructing a multi-storied parking garage to reduce the project footprint, and planning the JUIAF, VCC, and RDF on the relatively flat hilltops, away from steeply sloping areas.

The construction of the proposed NGIC addition would not impact any vegetated wetlands or floodplains because there are none of these resources near the proposed addition site. However, the construction of the JUIAF and parking lots and associated infrastructure may result in the loss of approximately 0.07 acres of wetlands (Figure 4-1). Prior to the start of construction, the exact impacts to the wetlands will be determined and the appropriate permits will be obtained from the Corps and DEQ. If final concept for the JUIAF building or parking requirements impact the RPA then appropriate mitigation measures for the long-term effects would be determined as part of the permitting process. Mitigation efforts currently under consideration for the project would include trees that were removed from the site would be replaced at a 2:1 ratio.

Impacts on threatened and endangered species habitat, or lands containing cultural resources, are addressed in Subchapters 4.8.5 and 4.9, respectively. By letter dated September 12, 2007, the VDCR-NH indicated that the DCR files do not indicate the presence of any State Natural Area Preserves under their jurisdiction in the project vicinity (VDCR, 2007).

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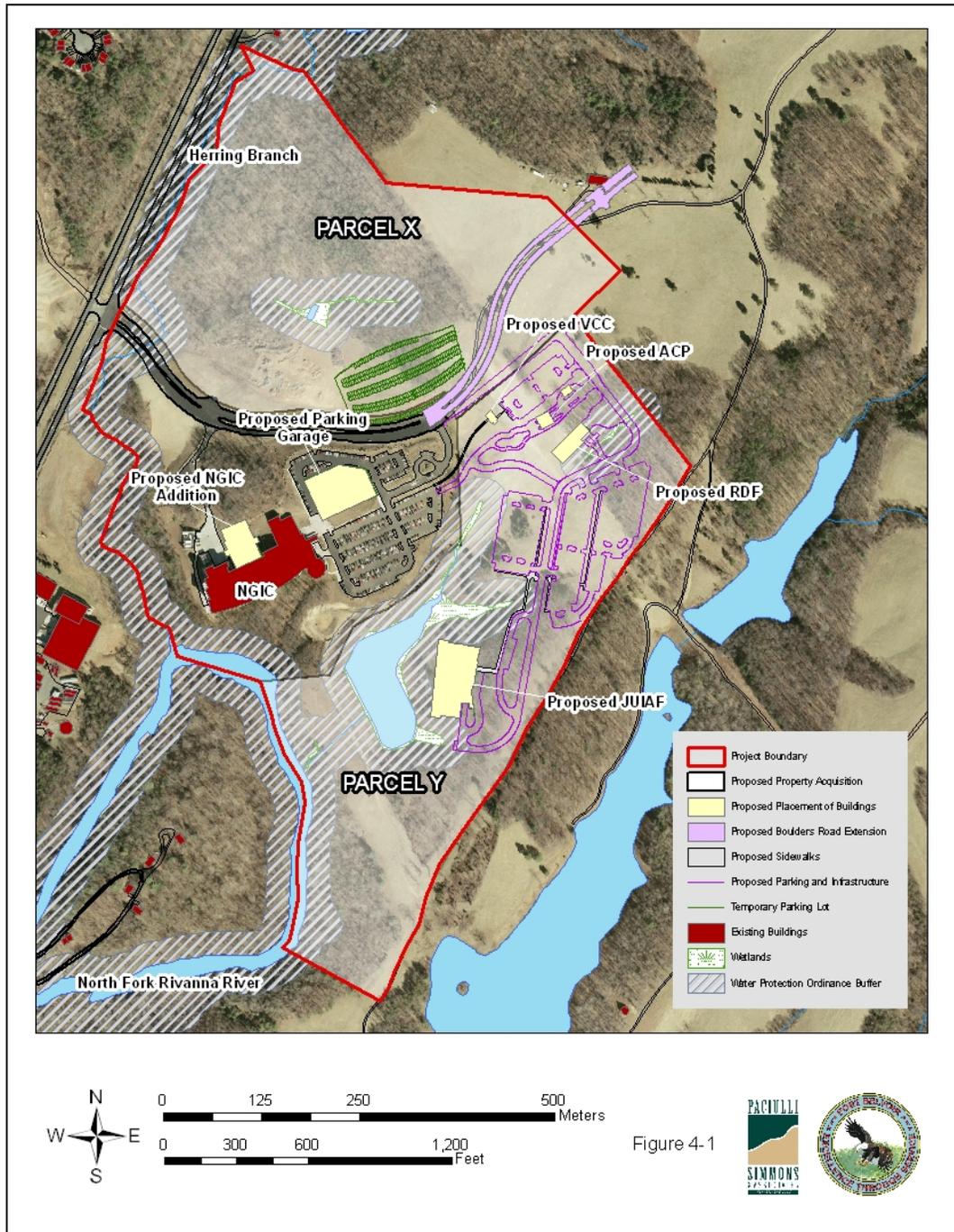


Figure 4-1

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4.8.3.2 No Action Alternative

Under the No Action Alternative, there would be no short- or long-term adverse impact on environmentally sensitive areas.

4.8.4 Impacts on Vegetation and Wildlife Habitats

4.8.4.1 Proposed Action Alternative

The plant community types and acreages potentially affected by the proposed project include a variety of forest types, as described in Subchapter 3.8.4.1. The NGIC building extension would affect a minimal amount of forest to the northwest of the current building. Construction of the JUIAF, parking lots and associated infrastructure would result in the removal of approximately 7.5 acres of forest to the east and north. The construction of the RDF and VCC should result in the removal of approximately 0.15 acres of forest to the northwest of the current Nicholson Building.

The proposed action would reduce forested habitats within the project area, and would reduce the carrying capacity of these habitats for wildlife. However, NGIC and JUIAF will make every effort to limit these impacts.

At Rivanna Station, the major potential threats to amphibians and reptiles are habitat loss, degradation, and fragmentation, and chemical exposures. Amphibian survival depends on continuity among wet habitats as well as between upland and wet habitats. Limiting the intrusion caused by the proposed expansion to the hilltops above stream valleys associated with the North Fork Rivanna River and Herring Branch would maintain the continuity of wet habitats throughout this part of the installation.

Fort Belvoir controls the potential threats from pesticides by following an Integrated Pest Management (IPM) program. The Rivanna Station was added to Fort Belvoir's IPM program in 2005 (Watters, 2007). IPM methods would continue to limit chemical contamination of soils at the site and water bodies adjacent to the site through application of IPM techniques and principles. Similarly, compliance with Virginia Stormwater Management regulations and the application of Chesapeake Bay BMP requirements would limit transport of excess nutrients and

other chemical contaminants to receiving waters, as well as control habitat degradation by controlling sedimentation.

4.8.4.2 No Action Alternative

Under the No Action Alternative, there would be no short- or long-term adverse impact on vegetation and wildlife habitat.

4.8.5 Impacts on Threatened and Endangered Species

4.8.5.1 Proposed Action Alternative

Strict adherence to state and local erosion and sediment control, and stormwater management laws and regulations, should protect the habitat of the James spiny mussel (*Pelurobema collina*) (VGIF, 2007) and Atlantic pigtoe (*Fusconaia masoni*) (VDCR, 2007). Surveys for the James spiny mussel, the Atlantic pigtoe, and the Indiana bat (*Myotis sodalists*) would be completed prior to the commencement of construction activities. If the results of the surveys show species presence then Fort Belvoir would commence Section 7 consultation to determine and conduct conservation and mitigation measures. The project would not affect any documented state-listed plant or insects (VDCR, 2007). Based on the potential for suitable habitat for the Appalachian grizzled skipper (*Pyrgus wyandot*), Fort Belvoir requested a study to identify the possibility of shale barrens which provide the habitat for the Appalachian grizzled skipper. S&ME, Inc. conducted a geotechnical investigation in 2007 for the JUIAF throughout the area identified as Parcel Y on Figure 4-1. The geotechnical investigation report stated that the bedrock was composed of granite and gneiss. Mr. Matthew Heller of the Virginia Department of Mines, Minerals, and Energy (VDMME) (2007) stated that the potential for shale barrens at the site is low. Based on a review of the geotechnical report and correspondence with Matthew Heller, the required shale barrens for the Appalachian grizzled skipper habitat are not likely to be present, since the bedrock types encountered were granite and gneiss.

4.8.5.2 No Action Alternative

Under the No Action Alternative, there would be no short- or long-term adverse impact on threatened or endangered species or their critical habitat.

4.9 Impacts on Cultural Resources

4.9.1 Proposed Action Alternative

As indicated in Section 3.9, there are no National Register-listed or -eligible architectural resources within Rivanna Station. Two archaeological sites (44AB0514 and 44AB0528) are known to exist on the proposed land for acquisition north of Boulders Road, and it is likely that construction of the proposed expansion of the NGIC building, construction of the JUIAF and associated parking would not disturb these sites. Both sites have been determined to be non-eligible for listing in the National Register of Historic Places. If the cemetery (44AB0528) is disturbed, Fort Belvoir will conduct a formal boundary determination and comply with all relevant Federal, State and Local statutes regarding the protection and relocation of cemeteries. In accordance with the SHPO, Fort Belvoir will maintain a minimum of a 50 foot buffer around the cemetery.

As a result of the historic resources identification and evaluation efforts, the proposed action would not affect cultural resources under Section 106 of the NHPA. The SHPO concurred with this finding in a letter dated June 15, 2007 (Appendix B).

4.9.2 No Action Alternative

Under the No Action Alternative, there would be no adverse impacts to cultural resources. The two known archaeological sites on the Rivanna Station would remain undisturbed.

4.10 Impacts of Hazardous Substances

4.10.1 Proposed Action Alternative

Construction of the Proposed Action Alternative would result in a short-term increase in the use of construction materials such as fuels and oils, asphalt substances, fertilizers, and would generate solid and sanitary waste. Some of these substances may be considered “hazardous” if released. Various types of control measures would be implemented to minimize such releases.

The expansion of the NGIC building and the construction of the JUIAF may require the installation of new emergency generators, which would require the installation of additional USTs to fuel the generators. All state and local requirements would be followed to ensure the safe storage and transfer of fuel to the USTs. If a fuel spill were to occur, the Fort Belvoir Master Spill Plan would be followed and ENRD would be notified of any problems. The Fort Belvoir Master Spill Plan would be revised to include Rivanna Station. Any hazardous substance or petroleum contaminants and contaminated soils generated would be disposed of in accordance with state and federal regulations. A tank activity permit is required to be submitted to Fort Belvoir ENRD prior to installation of USTs. Permits and inspections by the VDEQ are required for installation, upgrade, repair or closure of USTs.

4.10.2 No Action Alternative

Under the No Action Alternative, there would be no short- or long-term adverse increase in the production of hazardous substances or waste.

4.11 Cumulative Impacts

Cumulative impacts have been defined by the CEQ as:

Impacts on the environment, which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

The CEQ regulations require NEPA environmental analyses to address connected, cumulative, and similar actions in the same document. This requirement prohibits segmentation of a project into smaller components to avoid required environmental analysis. Expansions and development may occur in the future as mission changes are defined and the need for additional facilities arises, but the Proposed Action Alternative analyzed herein is not dependent on such future actions.

Fort Belvoir is in the process of revising the long-term component of its Master Plan, which will include Rivanna Station. There is the potential for development of the property proposed to be acquired to the north of Boulders Road. The potential development may consist of a Community Support Facility and Fire Station. Other potential development may include a Child Development Center that is planned to be located on the existing NGIC parcel south of Boulders Road on the west side of the parcel. If the Army proposes to develop this property in the future, it will prepare the appropriate level of NEPA document to address that development, with adequate opportunity for public input.

No long-term noise increases are associated with the Proposed Action Alternative. Therefore, it is not anticipated that it would contribute to adverse cumulative effects to the noise environment.

The Commonwealth of Virginia takes into account the effects of all past, present, and reasonably foreseeable emissions during the development of the State Implementation Plan (SIP). The Commonwealth of Virginia accounts for all significant stationary, area, and mobile emission sources in the development of this plan. Estimated emissions generated by the Proposed Action Alternative would be *de minimis* and would not be regionally significant. Therefore, it is not anticipated that the Proposed Action Alternative would contribute significantly to adverse cumulative effects to air quality.

Next Generation, LLC plans to construct two four-story SCIF office buildings (80,000 SF each) at the eastern end of Boulders Road. The US General Services Administration (GSA) has signed a contract with Next Generation, LLC to lease two floors (40,000 SF) to house contractors and NGIC personnel currently working in the existing NGIC building. A Categorical Exclusion (CE) (2007) was completed by GSA for the leasing of the building. Based on a review of the CE, GSA required further review for potential archaeological resources under Section 106 of the NHPA. The report from the archaeological study recommended no further archaeological investigations (Greenhorne & O'Mara, Inc., 2007). No other impacts were identified in the CE.

Next Generation, LLC also plans to construct a 120 residential apartment building contiguous to its two planned office buildings. The federal government has no direct plans or contractual arrangements to lease any of these residential units (Wait, 2007).

Next Generation, LLC has planned improvements on the intersection of Route 29 and Boulders Road that are based on a VDOT-approved analysis. Provisions include the construction of dual left turn lanes on Route 29 and signalization adjustments (Albemarle County, 2007). These intersection upgrades and the potential availability of nearby housing for NGIC and JUIAF personnel would have a net beneficial effect on traffic, and would reduce the already minor impacts due to the Proposed Action Alternative. In addition, the size and scope of the changes in the transportation systems associated with the Proposed Action Alternative would be extremely small when compared to other planned transportation related projects in the area. As a result, the traffic impacts would not contribute appreciably to cumulative effects.

A residential development is planned for the west side of Seminole Trail with access via the Boulders Road intersection. As part of the development, construction would include the western leg to the Seminole Trail – Boulders Road intersection, and modifications to the intersection configuration, traffic patterns, and signal timing (VDEQ, 2008). Since the development would mitigate for its traffic impacts, no appreciable contribution to cumulative effects is expected.

Through a combination of VDOT planned widening and proffers from North Point Development and North Fork Research Park, Seminole Trail will be widened from four to six lanes to approximately 0.5 miles south of the Boulders Road intersection. These projects would not impact traffic at the Boulders Road intersection (VDEQ, 2008).

4.12 Unavoidable Adverse Impacts

Implementation of the Proposed Action Alternative would lead to permanent changes in vegetation and wildlife habitat. Forested areas would be displaced by open, herbaceous vegetation and “hardscaping.” The proposed NGIC building extension, JUIAF, RDF, VCC, and associated infrastructure would intrude into currently undisturbed habitat to the north, east, and

south of the current NGIC building. Long-term unavoidable adverse impacts would include the loss of approximately 7.8 acres of wildlife habitat.

Short-term unavoidable adverse impacts that would occur during construction include:

- Minor erosion of soils during grading.
- Expenditure of oil, gasoline, and construction materials for construction.
- Localized increase in noise and air emissions from operation of construction equipment.
- Localized increase in fugitive dust.

4.13 Mitigation Measures

Compliance with regulatory requirements is not considered mitigation by Fort Belvoir. Thus, construction of SWM/BMPs and use of ESC are not considered mitigation practices, although compliance with these requirements would help mitigate certain potential adverse effects of the proposed action.

NGIC and JUIAF would incorporate LEED and LID measures in their project design. For example, LEED and LID measures would include.

- Reduction in the footprint of the improvements through the shape and location of the building addition.
- Integration of Energy Star compliant cool roofing with a high reflectance and a high emissivity to reduce urban heat islands.
- Use of interior lighting programmed to automatically turn off during non-business hours. Use of exterior lighting for safety and comfort only to limit offsite light pollution.
- Utilization of native or drought-tolerant plants and high-efficiency irrigation strategies incorporating moisture and rain sensors To conserve water, incorporation of high efficiency water - conserving plumbing fixtures along with occupant sensors.

Virginia's air pollution control regulations require NGIC and JUIAF to incorporate the following additional measures:

- Minimize fugitive particle emissions during construction through use of standard control measures outlined in Virginia Standards for Fugitive Dust Emissions (9 VAC 5-50-90) and a Title V operating permit, which is in the process of being obtained. Use, where possible, water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, and the grading of roads or the clearing of land.
- Apply water or suitable chemicals on dirt roads, materials stockpiles, and other surfaces, which may create airborne dust.
- Cover open equipment for conveying or transporting material likely to create objectionable air pollution when in motion.
- Promptly remove spilled or tracked dirt or other materials from paved streets and dried sediments resulting from soil erosion.
- Perform periodic street sweeping.

To mitigate impacts on vegetation and wildlife habitat, the contractor will:

- Adopt site-planning techniques to protect existing trees to the extent feasible by removing only those trees that will interfere with proper alignment and grading for buildings and asphalt surfaces.
- Plant trees and shrubs to replace those lost after clearing and grading.
- Remove the least amount of native vegetation possible during clearing.
- Revegetate areas adjacent to the shoulder with herbaceous and woody species to provide for aesthetics and food and cover for wildlife.
- Implement infiltration practices that allow stormwater to make contact with sandy soils.
- Plant native wetland plants in storm drainage areas to promote water quality through infiltration and/or filtration.
- Designs will allow for solids to settle from stormwater prior to storms.
- Landscape with a mixture of deciduous shade and flowering trees, such as maple, southern red oak and eastern redbud. Seedlings, such as dogwood, viburnum, euonymus, and deerberry will be interspersed through out the landscaping.
- Use sharp-cutoff style luminaries that meet Institute for Defense Analyses (IDA) fixture approval would be used to minimize light pollution.

Other mitigation measures the contractor will adopt are:

- Implement traffic management measures, such as reducing speeds and truck traffic restrictions. Speed reduction would result in unperceivable noise reduction. Typically, a 10 mph reduction would result in a 2-dBA decrease in noise level. Heavy equipment delivery will occur during non-peak traffic congestion hours or nocturnal hours.
- Restrict construction to daytime hours to mitigate noise impacts.
- Collect and appropriately dispose of soils contaminated by leaks or spills from construction vehicle repair and refueling.
- Trees that are removed from the site would be replaced at a 2:1 ratio in accordance with Fort Belvoir Integrated Natural Resources Management Plan.
- If the area near the cemetery (44AB0528) is to be disturbed, Fort Belvoir will conduct a formal boundary determination and comply with all relevant Federal, State and Local statutes regarding the protection and relocation of cemeteries. In accordance with the SHPO, Fort Belvoir will maintain a minimum of a 50 foot buffer around the cemetery.

Mitigation measures to be negotiated in process:

- Wastewater mitigations will be negotiated as the County works through WWTP upgrades to resolve capacity demands of ongoing development in the area.
 - If final concept for the JUIAF building or parking requirements impact the RPA then appropriate mitigation measures for the long-term effects would be determined as part of the wetland permitting process.
 - Surveys for the James spiny mussel, the Atlantic pigtoe, and the Indiana bat would be completed prior to the commencement of construction activities. Appropriate mitigations will be determined during section 7 consultations for Endangered and Threatened species.
-

4.14 Relationship between Local Short-term Use of the Environment and the Enhancement of Long-term Productivity

Implementation of the Proposed Action Alternative would result in long-term benefits for the mission-critical facilities and personnel at NGIC and JUIAF with minor long-term impacts on the environment.

4.15 Irreversible and Irretrievable Commitments of Resources

The construction and operation of the proposed NGIC addition and the JUIAF would expend modest amounts of man-hours, fuel, and materials. The project would consume non-renewable resources (oil, gasoline) and modest amounts of money and man-hours to build and operate the new facilities.

4.16 Conclusion

The anticipated consequences of the Proposed Action Alternative and No Action Alternative are summarized in Table 4.16-1. These impacts represent a subjective rating that is representative of:

- Quality/uniqueness of the resources affected.
- Intensity and duration of the impact.
- Potential to minimize the impact through mitigation.

In summary, this EA described and identified the potential impacts of the Proposed Action Alternative and the No Action Alternative. The Proposed Action Alternative would not result in a significant impact on the quality of the human environment, and an EIS is not required.

**Table 4.16-1
Summary of Impacts of Proposed Action and the No Action Alternatives**

Resources	Proposed Action Alternative	No Action
Land Use		
<i>Land Use</i>	0	0
<i>Plans</i>	0	0
<i>Aesthetics</i>	0	0
Natural Resources		
<i>Physiography</i>		
Geology	0	0
Geomorphology	-L	0
Topography	-L	0
Soils	-L	0
<i>Water Resources</i>		
Groundwater	0	0
Surface Water	0	0
<i>Environmentally Sensitive Areas</i>		
Forest & Wildlife Corridor	-L	0
Floodplains	0	0
Wetlands	-L	0
Chesapeake Bay RPAs	0	0
<i>Vegetation & Wildlife Habitats</i>	-M	0
<i>Threatened & Endangered Species</i>	0	0
Cultural Resources	0	0
Air Quality	-L	0
Noise	-L	0
Hazardous Substances	-L	0
Infrastructure & Utilities	-M	0
Socioeconomics	0	0
Community Facilities & Services	0	0
Transportation & Traffic	L	0

0 = No Impact H = High Impact M = Moderate impact L = Low impact - = Adverse Impact + = Positive Impact

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6 RELATIONSHIP OF THE PROPOSED ACTION TO FEDERAL, STATE, AND LOCAL PLANS, POLICIES AND CONTROLS

Implementation of the Proposed Action Alternative would comply with applicable federal and state regulations, policies, and programs. The federal acts, executive orders, and policies with which the proposed action must demonstrate compliance to the maximum extent practicable include:

- National Environmental Policy Act (NEPA).
- Clean Water Act (CWA).
- Clean Air Act (CAA).
- CERCLA, SARA, and EPCRA.
- Endangered Species Act (ESA).
- National Historic Preservation Act (NHPA).
- Executive Order 11988, Floodplain Management.
- Executive Order 11990, Protection of Wetlands.
- Executive Order 12372, Coordination with State and Regional Agencies.
- Executive Order 12898 Environmental Justice.
- Executive Order 13045, Protection of Children.
- Executive Order 13101, “Greening” the Government through Waste Prevention, Recycling, and Federal Acquisition.
- Executive Order 13148, “Greening” the Government through Leadership in Environmental Management

6.1 National Environmental Policy Act (NEPA)

This Environmental Assessment has been prepared in accordance with the CEQ regulations implementing National Environmental Policy Act of 1969 – NEPA (40 CFR Part 1500–1508) and Army Regulation (AR) 200-2, “Environmental Effects of Army Actions” at 32 CFR Part

651. Executive Order 11991 of May 24, 1977 directed the CEQ to issue regulations for procedural provisions of NEPA; these are binding for all federal agencies.

This EA has been prepared by Fort Belvoir to comply with the requirements of NEPA.

6.2 Clean Water Act (CWA)

The CWA of 1977 (which amends the Federal Water Pollution Control Act Amendments of 1972) and subsequent amendments were designed to assist in restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The act covers the discharge of pollutants into navigable waters, wastewater treatment management, and protection of relevant fish, shellfish, and wildlife. Congress also passed the Water Quality Act of 1987 to address the excessive levels of toxic pollutants still found in some waters.

Section 402 of the CWA of 1977 established requirements for discharges of industrial and sanitary wastewater effluents, and of storm water through the NPDES permit program. Within the Commonwealth of Virginia, the stormwater portion of the program is administered through the VSMP program administered by the VDCR.

Section 404 of the CWA directed the Secretary of the Army, acting through the Corps of Engineers, to regulate wetlands and other waterways. The discharge of dredged or fill material into these areas requires first obtaining a permit or approval from the Corps of Engineers.

The Proposed Action Alternative would require obtaining a VSMP permit from the VDCR, and likely a Section 404 permit from the Corps of Engineers. It is likely that the proposed action would require filling (associated with the JUIAF) and excavation of soil and bedrock (associated with the NGIC addition).

6.3 Clean Air Act (CAA)

The CAA of 1955 (42 USC 7401-7671q), as amended, gives the USEPA the responsibility to establish the primary and secondary NAAQS (40 CFR §50) that set safe concentration levels for six criteria pollutants: particulate matter measuring less than 10 microns in diameter (PM₁₀), sulfur dioxide (SO₂), carbon monoxide (CO), nitrous oxides (NO_x), ozone (O₃), and lead (Pb). Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (annual averages) have been established for pollutants contributing to chronic health effects.

Albemarle County, and therefore Rivanna Station, is within the Northeastern Virginia Intrastate AQCR (AQCR 224) (40 CFR 81.144). Federal regulations designate AQCR 224 as an attainment area for all criteria pollutants (40 CFR 81.338). Because Rivanna Station is in an attainment AQCR, the air conformity regulations do not apply. The Clean Air Act Amendments (CAAA) of 1990 requires federal agencies to ensure that their actions conform to the appropriate State Implementation Plan (SIP) in a nonattainment area. Under Section 176(c) of CAAA, a project is in “conformity” if it corresponds to a SIP’s purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. The USEPA published final rules on general conformity (40 CFR Parts 51 and 93) that apply to federal actions in areas designated nonattainment for any of the criteria pollutants under the CAAA. The proposed rules specify *de minimis* emission levels by pollutant to determine the applicability of conformity requirements for a project.

It is not anticipated that emissions of criteria pollutants or their precursors would be regionally significant. Therefore, the General Conformity Rule does not apply and no conformity determination is required. Detailed methodologies for estimating air emissions and a draft RONA to the General Conformity Rule are located in Appendix C and Appendix A, respectively.

The proposed NGIC addition would be equipped two (2) new 1,000 kW diesel fired emergency back-up generators, the JUIAF would be equipped with three (3) 2,500 kW emergency generators, and would have combustion based sources of heating and cooling for the facility. Therefore, federal and state air permitting regulations for new point sources of air emissions

would apply to the Proposed Action Alternative. Therefore, federal and state air permitting regulations for new point sources of air emissions would apply. The combustion units would have to be recorded and included in Rivanna Station's annual emissions statement. Rivanna Station is a minor source of air emissions under the Title V provisions. If with the additional sources the potential to emit (PTE) exceeds major source thresholds, federally enforceable limits on the operation of the facility would be established so the source does not trigger Title V applicability.

6.4 CERCLA, SARA, and EPCRA

In 1980, CERCLA was passed in order to provide a superfund for cleanup of sites with uncontrolled releases of hazardous substances. This program was continued in the Superfund Amendments and Reauthorization Act (SARA) of 1986. Section 211 of SARA provides continued authorization for the DoD Environmental Restoration Program and the Defense Environmental Restoration Account. Major responsibilities for monitoring compliance with these acts rest with the USEPA. Title III of SARA, the EPCRA was enacted by Congress as the national legislation on community safety. This law was designated to local communities protect public health, safety, and the environment from chemical hazards. To implement EPCRA, Congress required states be divided into Emergency Planning Districts and appoint a Local Emergency Planning Committee (LEPC) for each district. The Act has four sections: Emergency Planning, Emergency Notification, Hazardous Chemical Reporting and Toxic Chemical Reporting.

Long-term operation of the NGIC expansion and the JUIAF will require the storage of heating fuel in USTs. This fuel may be considered "hazardous" if spilled. All state and local requirements would be followed to ensure the safe storage and transfer of this fuel. If such a spill were to occur, the Fort Belvoir Master Spill Plan would be followed and ENRD would be notified of any incidents. Any hazardous substance or petroleum contaminants and contaminated soils generated would be disposed of in accordance with state and federal regulations.

6.5 Endangered Species Act (ESA)

Section 7 of the ESA of 1973 and subsequent amendments provide for the conservation of threatened and endangered species of animals and plants and the habitats in which they are found. The Department of the Army ensures that consultations are conducted as required under Section 7 for any action that “may affect” a federally listed threatened or endangered species (AR 200-3, Natural Resources – Land, Forest, Wildlife Management). The INRMP implements the requirements of the Sikes Act (16 USC 670a et seq.) as amended in the Sikes Act Improvement Act of 1997; DoD Instruction 4715.3, *Environmental Conservation Program*; and Army Regulation (AR) 200-3, *Natural Resources – Land, Forest and Wildlife Management* (US Army Garrison Fort Belvoir, 2001b).

Surveys for the James spiny mussel and the Atlantic pigtoe would be completed prior to the commencement of construction activities. Based on correspondence with an Indiana bat expert, it is not likely that the Indiana bat is present on the site, therefore a Indiana bat survey is not recommended. The project would not affect any documented state-listed plant or insects (VDCR, 2007). Based on a review of the geotechnical report, the required shale barrens for the Appalachian grizzled skipper (*Pyrgus wyandot*) habitat are not likely to be present, since the bedrock types encountered were granite and gneiss.

6.6 National Historic Preservation Act (NHPA)

The NHPA was passed in 1966 to provide for the protection, enhancement, and preservation of any property that possesses significant architectural, archaeological, historical, or cultural characteristics. EO 11593 of 1974 further defined the obligations of federal agencies concerning this act. Section 106 of NHPA requires the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking, prior to the expenditure of any federal funds on the undertaking, to take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP.

Implementation of a proposed action must comply with Section 106 of the NHPA of 1966 (as amended) which provides that federal agencies take into account the effects of their actions on any district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP. The intent of the NHPA is to integrate consideration of historic preservation issues into the early stages of project planning by a federal agency. Implementing regulations for Section 106 established by the Advisory Council on Historic Preservation (ACHP) are contained in 36 CFR 800; Protection of Historic Properties, as amended in January 2001. These regulations provide specific criteria for identifying adverse effects on historic properties. The effects of an undertaking on a cultural resource are predicted by evaluating the significant characteristics of the resource and the design and anticipated consequences of the undertaking. Criteria of Adverse Effect is set forth in 36 CFR 800.5(a)(1).

The proposed action would not affect cultural resources under Section 106 of the NHPA. The VA SHPO concurred with this finding in letters dated May 3, 2007 and June 15, 2007 (see Appendix B). However, if the cemetery (44AB0528) were to be disturbed, a formal boundary determination will be conducted and all relevant statutes regarding the protection and relocation of cemeteries will be complied with. In accordance with the SHPO, Fort Belvoir will maintain a minimum of a 50 foot buffer around the cemetery.

6.7 Executive Order (EO) 11988, Floodplain Management

EO 11988, *Floodplain Management*, sets forth the responsibilities of federal agencies in reducing the risk of flood loss or damage to personal property, minimizing the impact of flood loss, and restoring the natural and beneficial functions of floodplains. The order was issued in furtherance of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. There are no floodplains within the area of the Proposed Action Alternative.

6.8 Executive Order (EO) 11990, Protection of Wetlands

EO 11990, *Protection of Wetlands*, signed May 24, 1977, directs federal agencies to take action to protect wetlands on their property and mandates review of proposed actions on wetlands through procedures established by NEPA. The proposed action would have no impact on vegetated wetlands.

The construction of the proposed NGIC addition would not impact any vegetated wetlands or floodplains because there are none of these resources near the proposed addition site. However, the construction of the JUIAF and parking lots and associated infrastructure may result in the loss of approximately 0.07 acres of wetlands. Prior to the start of construction, the exact impacts to the wetlands will be determined and the appropriate permits will be obtained from the U.S. Army Corp of Engineers and DEQ.

6.9 Executive Order (EO) 12372, Coordination with State and Regional Agencies

EO 12372, *The Presidential Intergovernmental Review of Federal Programs*, signed on July 14, 1982, directs the Army to pursue close and harmonious planning relations with local and regional agencies and planning commissions of adjacent cities, counties, and states for cooperation and resolution of mutual land use and environmentally-related problems. In addition, notification may be made to state and regional planning clearinghouses. This EA is being circulated to the Virginia State Clearinghouse for review by various interested state agencies. A copy will also be provided to Albemarle County.

6.10 Executive Order (EO) 12898, Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed on February 11, 1994, aims to prevent minority and low-income communities being disproportionately affected by the negative impacts on the environment of federal actions. EO 12898 directs all federal departments and agencies to incorporate

environmental justice considerations in achieving their mission. Each federal department or agency accomplishes this by evaluating programs, policies, and activities that may substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, nor subject communities to discrimination under such actions because of their race, color, or national origin.

The Proposed Action Alternative would not disproportionately affect any minority or low-income populations.

6.11 Executive Order (EO) 13045, Environmental Protection of Children

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, signed on April 21, 1997, aims to prevent children being disproportionately affected by such impacts. Because the scientific community recognized that children may suffer disproportionately from environmental health and safety risks, each federal agency is directed to identify and assess such risks, and consequently to ensure that its policies, programs, activities, and standards address effects on children. “Environmental health and safety risks” are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.” Covered regulatory actions that are affected by this EO are those substantive actions that concern an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children. The Proposed Action Alternative would not disproportionately affect any populations of children.

6.12 Executive Orders (EOs) 13101 & 13148 “Greening” the Government

EO 13101, *“Greening” the Government through Waste Prevention, Recycling, and Federal Acquisition*, directs the Army agencies to ensure that strategies are established to support

environmental promoting the purchase of green products, through both environmentally preferable purchasing (EPP) and comprehensive procurement guidelines (CPG) or buy-recycled program. The Resource Conservation Challenge (RCC) looks to reduce solid and hazardous waste, proactively analyze environmental impacts, and promote environmental stewardship on federal lands. EO 13148, "*Greening*" the Government through Leadership in Environmental Management, directs the Army agencies to ensure that strategies are established to support environmental leadership programs, policies, and procedures and that agency senior level managers explicitly and actively endorse these strategies through development and implementation of environmental management systems, such as environmentally and economically beneficial landscaping; promoting environmental management and leadership; environmental compliance, right-to-know and pollution prevention, release and use reduction of toxic chemicals; reductions in Ozone Depleting substances; and emergency planning, community right-to-know, and pollution prevention.

The proposed project is being programmed achieve the SILVER level of LEED-NC (New Construction). The facility will utilize climate-tolerant plants and high-efficiency irrigation strategies incorporating moisture and rain sensors. High efficiency water- conserving plumbing fixtures along with occupant sensors will be incorporated.

It will include extremely efficient mechanical systems, low-e glazing, and increased R values in the exterior closure to reduce energy usage. Preliminary Envelope Compliance check using DOE software COMcheck v. 3.2.1 indicates that the building envelope is 27% better than the code. The preliminary lighting compliance check indicates that the design is approximately ½ of the wattage allowed by the code. There will be no use of CFC-based refrigerants in the new facilities and a comprehensive CFC phase-out conversion will be accomplished for the existing NGIC Building.

The new facilities will integrate into the post's recycling program by providing recycling space in common areas as well as a centralized collection point. Materials used in construction will utilize recycled content materials and local/regionally available materials. The intent is to maintain 95% of the existing building structure and exterior building envelope. Specifications for

construction waste management will be employed with the goal of diverting a minimum of 75% of the construction and demolition debris from disposal in landfills and incinerators.

The IDC will meet ASHRAE standards and smoking will not be allowed in the facility. Selected materials, adhesives, sealants, paints and carpet will have little or no VOC off gassing, minimize chemical and pollutant sources, meet thermal comfort and ventilation standards, provide for acoustic separation and noise control, and take full advantage of daylight and views to reduce lighting loads. The contractor will conduct a two week flush-out with new filtration media prior to occupancy. Commissioning will develop a facility in use IAQ management plan.

7 ACRONYMS, ABBREVIATIONS AND CONVERSIONS

Acronym	Definition
AASHTO	American Association of State Highway Officials
ACHP	Advisory Council on Historic Preservation
ACP	Access Control Point
ADNL	A-Weighted Day-Night Sound Level
ADT	Average Daily Traffic
AIA	Airport Impact Area
AM	12 Midnight to 12 Noon
AMC	Army Materiel Command
AMSL	Above Mean Sea Level
APE	Area of Potential Effect
AQCR	Air-Quality Control Regions
AR	Army Regulation
AST	Above Ground Storage Tank
ASTM	American Standards Testing and Measurements
AT/FP	Antiterrorism/Force Protection
ATM	Asynchronous Transfer Mode
BMP	Best Management Practices
BRAC	Defense Base Closure and Realignment Commission
°C	degrees Centigrade
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAMA	Coastal Area Management Act
CATEC	Charlottesville-Albemarle Technical Education Center
CBLAD	Chesapeake Bay Local Assistance Department
CBPA	Chesapeake Bay Preservation Act
CBPO	Chesapeake Bay Preservation Ordinance
CC	Conference Center
CDP	Census Designated Place
CE	Categorical Exclusion
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cm	Centimeters
CO	Carbon Monoxide
COE	Corps of Engineers
CPNC	Comprehensive Plan for the National Capital
CRMP	Coastal Resources Management Plan
CWA	Clean Water Act
CZMP	Coastal Zone Management Program

Acronym	Definition
CZMA CZMARA	Coastal Zone Management Act Coastal Zone Management Act Reauthorization Amendments
DA dB dBA dBP DCEETA DCR DEIS DHR DIA DIAC DIS DLA DNH DNL DoD DRMO DRU DSA DSV DSWC DTRA DVP	Department of the Army Decibel A-weighted Sound Pressure Level in Decibels Linear Peak Sound Level Defense Communications Electronics Evaluation and Testing Activity Department of Conservation and Recreation Draft EIS Department of Historic Resources Defense Intelligence Agency Defense Intelligence Analysis Center Directorate of Installation Support Defense Logistics Agency Division of Natural Heritage Day-Night Average Sound Level Department of Defense Defense Reutilization and Marketing Office Direct Reporting Unit Delivery Screening Area Daily Service Volume Division of Soil and Water Conservation Defense Threat Reduction Agency Dominion Virginia Power
EA ECP EDA EIS EMS EMSEC EMT ENRD EO EPA EPCRA EPG ESA ESC	Environmental Assessment Entry Control Point Explosives Detection Area Environmental Impact Statement Emergency Medical Service Electromagnetic Emanations Emergency Medical Technician Environmental Natural Resources Division Executive Order Environmental Protection Agency Emergency Planning and Community Right-to-Know Act Engineer Proving Grounds Endangered Species Act Erosion and Sediment Control
°F FCPS FCWA FEIS FEMA FHWA FICON FNSI	degrees Fahrenheit Fairfax County Public Schools Fairfax County Water Authority Final EIS Federal Emergency Management Agency Federal Highway Administration Federal Interagency Committee on Noise Finding of No Significant Impact

Acronym	Definition
FR FS ft FWC FY	Federal Register Feasibility Study foot Forest and Wildlife Corridor Fiscal year
gal GIS Gpd GSA	Gallon Geographic Information System gallons per day US General Services Administration
HAP HEC HQC HQDA HUD Hz	Hazardous Air Pollutant Humphries Engineering Center Headquarters Complex Headquarters, Department of Army Department of Housing and Urban Development Hertz
ICPRB INCMP INRMP INSCOM IPM IRP ISDN	Interstate Commission on the Potomac River Basin Integrated Cultural Resources Management Plan Integrated Natural Resources Management Plan US Army Intelligence and Security Command Integrated Pest Management Installation Restoration Program Integrated Services Digital Network
JUIAF	Joint Use Intelligence Analysis Facility
kpy kW kV	Kilograms per year Kilowatt Kilovolts
L Leq LID LOS LPD	liter Equivalent Sound Level Low Impact Development Level of Service Liters per Day
MACOM MDW mgd MLD MOA MP mph msl MSAT MTMC MW MWAQC MWCOG	Major Army Command Military District of Washington Million gallons per day Million liters per day Memorandum of Agreement Military Police Miles per Hour Mean Sea Level Maximum Achievable Control Technology Military Transport Management Command Megawatt Metropolitan Washington Air Quality Committee Metropolitan Washington Council of Governments

Acronym	Definition
NAAQS	National Ambient Air Quality Standards
NAC	Noise Ambient Criteria
NAWQA	National Water Quality Assessment
NBS	National Bureau of Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGIC	National Ground Intelligence Center
NHP	National Heritage Program
NHPA	National Historic Preservation Act
NO ₂	Nitrogen dioxide
NO _x	Nitrogen Oxide
NOA	Notice of Availability
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
O ₃	Ozone
Pb	Lead
PDEIS	Preliminary Draft EIS
PIDS	Personnel Intrusion Detection System
PIF	Partners in Flight
PM	12 Noon to 12 midnight
PM _{2.5}	Particulate matter – 2.5 microns or less
PM ₁₀	Particulate matter – 10 microns or less
PN	Project Number
PPA	Personnel Processing Area
ppm	Parts per Million
PPMS	Program Project Monitoring System
PTE	Potential to Emit
PX	Post Exchange
QRP	Qualified Recycling Program
RCRA	Resource Conservation and Recovery Act
RDF	Remote Delivery Facility
REC	Record of Environmental Consideration
RMA	Resource Management Area
ROD	Record of Decision
RONA	Record of Non-Applicability
RPA	Resource Protection Area
RPMP-LRC	Real Property Master Plan-Long Range Component
RPZ	Runway Protection Zone
ROW	Right-of-Way
RWSA	Rivanna Water and Sewer Authority
SA	Secretary of the Army
SARA	Superfund Amendments and Reauthorization Act
SCIF	Sensitive Compartmented Information Facility

Acronym	Definition
SCS SEIS SF SHPO SIP SO ₂ SOV Sq SWM SWMU	Soil Conservation Service Supplemental EIS Square Foot State Historic Preservation Office State Implementation Plan Sulfur Dioxide Single Occupancy Vehicle Square Stormwater Management Solid Waste Management Unit
TES TMH TPM tpy TSP	Threatened and Endangered Species Transportation Management Plan Total Particulate Matter Tons per Year Total Suspended Particulate Matter
UFC ug/m ³ US 1 USASAC USALIA USBEA USBLS USC USDA USEPA USFWS USGS UST UVA	Unified Facilities Criteria Micrograms per Cubic Meter U.S. Route 1, Jefferson Davis Highway (Richmond Highway) US Army Security Assistance Command US Army Logistics Integration Agency US Bureau of Economic Analysis US Bureau of Labor Statistics United States Code US Department of Agriculture US Environmental Protection Agency US Fish and Wildlife Service US Geological Survey Underground Storage Tank University of Virginia
V/C VAC VCC VDACS VDCR VDCR-DNH VDEQ VDGIF VDHR VDMME VDOT VDWM VEDP VMT VNHP VOC VPF	Volume to Capacity Ratio Code of Virginia Visitor Control Center Virginia Department of Agriculture and Consumer Services Virginia Department of Conservation and Recreation Virginia Department of Conservation and Recreation – Division of Natural Heritage Virginia Department of Environmental Quality Virginia Department of Game and Inland Fisheries Virginia Department of Historic Resources Virginia Department of Mines, Minerals, and Energy Virginia Department of Transportation Virginia Department of Waste Management Virginia Economic Development Partnership Vehicle Miles Traveled Virginia National Heritage Program Volatile Organic Compound Virginia Pine Forest

Acronym	Definition
VR	Virginia Regulation
VRE	Virginia Railway Express
VSMP	Virginia Stormwater Management Program
VWP	Virginia Water Protection Permit
WEG	Williamsburg Environmental
WWTP	Waste Water Treatment Plant

Conversions

Length:

1 meter (m) = 3.28 feet, 1,000 mm

1 kilometer (km) = 0.62 miles, or 3,281 feet

1 millimeter (mm) = 0.03937 inches

1 mile (mi) = 1.61 km

1 foot (ft) = 0.305 m

Area:

1 hectare (ha) = 2.47 acres or 10,000 meter²

1 acre (ac) = 43,560 feet² or 0.405 hectares

1 meter (m)² = 10.76 feet²

1 foot (ft)² = 0.093 meter²

Volume:

1 gallon (gal) = 3.8 liters (l)

1 liter (l) = 0.264 gal

Weight:

1 ton = 1.02 tons (metric)

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